State of Ohio Environmental Protection Agency

RE: DRAFT PERMIT TO INSTALL MODIFICATION **CERTIFIED MAIL**
DEFIANCE COUNTY

Street Address: Mailing Address:
Lazarus Gov. Center **TELE:** (614) 644-3020 **FAX:** (614) 644-2329 Lazarus Gov. Center

Application No: 03-14001

DATE: 11/4/2003

GM Powertrain Group, Defiance Plant
Dennis Veith
26437 St Rte 281 E
Defiance, OH 435120070

You are hereby notified that the Ohio Environmental Protection Agency has made a draft action recommending that the Director issue a Permit to Install modification for the air contaminant source(s) [emissions unit(s)] shown on the enclosed draft permit modification. This draft action is not an authorization to begin construction or modification of your emissions unit(s). The purpose of this draft is to solicit public comments on the proposed installation. A public notice concerning the draft permit will appear in the Ohio EPA Weekly Review and the newspaper in the county where the facility will be located. Public comments will be accepted by the field office within 30 days of the date of publication in the newspaper. Any comments you have on the draft permit modification should be directed to the appropriate field office within the comment period. A copy of your comments should also be mailed to Robert Hodanbosi, Division of Air Pollution Control, Ohio EPA, P.O. Box 1049, Columbus, OH, 43266-0149.

A Permit to Install modification may be issued in proposed of final form based on the draft action, any written public comments received within 30 days of the public notice, or record of a public meeting if one is held. You will be notified in writing of a scheduled public meeting. Upon issuance of a final Permit to Install modification a fee of **$ 0** will be due. Please do not submit any payment now.

The Ohio EPA is urging companies to investigate pollution prevention and energy conservation. Not only will this reduce pollution and energy consumption, but it can also save you money. If you would like to learn ways you can save money while protecting the environment, please contact our Office of Pollution Prevention at (614) 644-3469. If you have any questions about this draft permit, please contact the field office where you submitted your application, or Mike Ahern, Field Operations & Permit Section at (614) 644-3631.

Very truly yours,
Michael W. Ahern
Michael W. Ahern, Supervisor
Field Operations and Permit Section
Division of Air Pollution Control

CC: USEPA NWDO IN MI

PUBLIC NOTICE

ISSUANCE OF DRAFT PERMIT TO INSTALL **03-14001** FOR AN AIR CONTAMINANT SOURCE FOR

GM POWERTRAIN GROUP, DEFIANCE PLANT

On 11/4/2003 the Director of the Ohio Environmental Protection Agency issued a draft action of a Permit To Install an air contaminant source for **GM Powertrain Group, Defiance Plant**, located at **26427 St Rte 281 E, Defiance**, Ohio.

Installation of the air contaminant source identified below may proceed upon final issuance of Permit To Install 03-14001:

administrative modification of the core room permit issued September 4,2003.

Comments concerning this draft action, or a request for a public meeting, must be sent in writing to the address identified below no later than thirty (30) days from the date this notice is published. All inquiries concerning this draft action may be directed to the contact identified below.

Don Waltermeyer, Ohio EPA, Northwest District Office, 347 North Dunbridge Road, Bowling Green, OH 43402 [(419)352-8461]

STATE OF OHIO ENVIRONMENTAL PROTECTION AGENCY

Permit To Install | **Issue Date: To be entered upon final issuance**
Terms and Conditions | **Effective Date: To be entered upon final issuance**

DRAFT MODIFICATION OF PERMIT TO INSTALL 03-14001

Application Number:	03-14001
APS Premise Number:	0320010001
Permit Fee:	**To be entered upon final issuance**
Name of Facility:	GM Powertrain Group, Defiance Plant
Person to Contact:	Dennis Veith
Address:	26437 St Rte 281 E Defiance, OH 435120070

Location of proposed air contaminant source(s) [emissions unit(s)]:
26427 St Rte 281 E
Defiance, Ohio

Description of proposed emissions unit(s):
administrative modification of the core room permit issued September 4,2003.

The above named entity is hereby granted a modification to the permit to install described above pursuant to Chapter 3745-31 of the Ohio Administrative Code. Issuance of this modification does not constitute expressed or implied approval or agreement that, if constructed or modified in accordance with the plans included in the application, the above described source(s) of environmental pollutants will operate in compliance with applicable State and Federal laws and regulations, and does not constitute expressed or implied assurance that if constructed or modified in accordance with those plans included in the application, the above described source(s) of pollutants will be granted the necessary operating permits.

This permit is granted subject to the conditions attached hereto.

Ohio Environmental Protection Agency

Director

A. State and Federally Enforceable Permit To Install General Terms and Conditions

1. Monitoring and Related Recordkeeping and Reporting Requirements

a. Except as may otherwise be provided in the terms and conditions for a specific emissions unit, the permittee shall maintain records that include the following, where applicable, for any required monitoring under this permit:

i. The date, place (as defined in the permit), and time of sampling or measurements.

ii. The date(s) analyses were performed.

iii. The company or entity that performed the analyses.

iv. The analytical techniques or methods used.

v. The results of such analyses.

vi. The operating conditions existing at the time of sampling or measurement.

b. Each record of any monitoring data, testing data, and support information required pursuant to this permit shall be retained for a period of five years from the date the record was created. Support information shall include, but not be limited to, all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit. Such records may be maintained in computerized form.

c. Except as may otherwise be provided in the terms and conditions for a specific emissions unit, the permittee shall submit required reports in the following manner:

i. Reports of any required monitoring and/or recordkeeping of federally enforceable information shall be submitted to the appropriate Ohio EPA District Office or local air agency.

ii. Quarterly written reports of (i) any deviations from federally enforceable <u>emission limitations</u>, <u>operational restrictions</u>, <u>and control device operating parameter limitations</u>, excluding deviations resulting from malfunctions reported in accordance with OAC rule 3745-15-06, that have been detected by the testing, monitoring and recordkeeping requirements specified in this permit, (ii) the probable cause of such deviations, and (iii) any corrective actions or preventive measures taken, shall be made to the appropriate Ohio EPA District Office or local air agency. The written reports shall be submitted quarterly, i.e., by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters. See B.9 below if no deviations occurred during the quarter.

iii. Written reports, which identify any deviations from the federally enforceable monitoring, recordkeeping, and reporting requirements contained in this permit shall be submitted to the appropriate Ohio EPA District Office or local air agency every six months, i.e., by January 31 and July 31 of each year for the previous six calendar months. If no deviations occurred during a six-month period, the permittee shall submit a semi-annual report, which states that no deviations occurred during that period.

iv. Each written report shall be signed by a responsible official certifying that, based on information and belief formed after reasonable inquiry, the statements and information in the report are true, accurate, and complete.

2. Scheduled Maintenance/Malfunction Reporting

Any scheduled maintenance of air pollution control equipment shall be performed in accordance with paragraph (A) of OAC rule 3745-15-06. The malfunction, i.e., upset, of any emissions units or any associated air pollution control system(s) shall be reported to the appropriate Ohio EPA District Office or local air agency in accordance with paragraph (B) of OAC rule 3745-15-06. (The definition of an upset condition shall be the same as that used in OAC rule 3745-15-06(B)(1) for a malfunction.) The verbal and written reports shall be submitted pursuant to OAC rule 3745-15-06**.**
Except as provided in that rule, any scheduled maintenance or malfunction necessitating the shutdown or bypassing of any air pollution control system(s) shall be accompanied by the shutdown of the emission unit(s) that is (are) served by such control system(s).

3. Risk Management Plans

If the permittee is required to develop and register a risk management plan pursuant to section 112(r) of the Clean Air Act, as amended, 42 U.S.C. 7401 et seq. ("Act"), the permittee shall comply with the requirement to register such a plan.

4. Title IV Provisions

If the permittee is subject to the requirements of 40 CFR Part 72 concerning acid rain, the permittee shall ensure that any affected emissions unit complies with those requirements. Emissions exceeding any allowances that are lawfully held under Title IV of the Act, or any regulations adopted thereunder, are prohibited.

5. Severability Clause

A determination that any term or condition of this permit is invalid shall not invalidate the force or effect of any other term or condition thereof, except to the extent that any other term or condition depends in whole or in part for its operation or implementation upon the term or condition declared invalid.

6. General Requirements

a. The permittee must comply with all terms and conditions of this permit. Any noncompliance with the federally enforceable terms and conditions of this permit constitutes a violation of the Act, and is grounds for enforcement action or for permit revocation, revocation and reissuance, or modification, or for denial of a permit renewal application.

b. It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the federally enforceable terms and conditions of this permit.

c. This permit may be modified, reopened, revoked, or revoked and reissued, for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or revocation, or of a notification of planned changes or anticipated noncompliance does not stay any term and condition of this permit.

d. This permit does not convey any property rights of any sort, or any exclusive privilege.

e. The permittee shall furnish to the Director of the Ohio EPA, or an authorized representative of the Director, upon receipt of a written request and within a reasonable time, any information that may be requested to determine whether cause exists for modifying, reopening or revoking this permit or to determine compliance with this permit. Upon request, the permittee shall also furnish to the Director or an authorized representative of the Director, copies of records required to be kept by this permit. For information claimed to be confidential in the submittal to the Director, if the Administrator of the U.S. EPA requests such information, the permittee may furnish such records directly to the Administrator along with a claim of confidentiality.

7. Fees

The permittee shall pay fees to the Director of the Ohio EPA in accordance with ORC section 3745.11 and OAC Chapter 3745-78. The permittee shall pay all applicable Permit To Install fees within 30 days after the issuance of this Permit To Install.

8. Federal and State Enforceability

Only those terms and conditions designated in this permit as federally enforceable, that are required under the Act, or any of its applicable requirements, including relevant provisions designed to limit the potential to emit of a source, are enforceable by the Administrator of the U.S. EPA, the State, and citizens under the Act. All other terms and conditions of this permit

shall not be federally enforceable and shall be enforceable under State law only.

9. Compliance Requirements

a. Any document (including reports) required to be submitted and required by a federally applicable requirement in this permit shall include a certification by a responsible official that, based on information and belief formed after reasonable inquiry, the statements in the document are true, accurate, and complete.

b. Upon presentation of credentials and other documents as may be required by law, the permittee shall allow the Director of the Ohio EPA or an authorized representative of the Director to:

i. At reasonable times, enter upon the permittee's premises where a source is located or the emissions-related activity is conducted, or where records must be kept under the conditions of this permit.

ii. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit, subject to the protection from disclosure to the public of confidential information consistent with ORC section 3704.08.

iii. Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit.

iv. As authorized by the Act, sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the permit and applicable requirements.

c. The permittee shall submit progress reports to the appropriate Ohio EPA District Office or local air agency concerning any schedule of compliance for meeting an applicable requirement. Progress reports shall be submitted semiannually, or more frequently if specified in the applicable requirement or by the Director of the Ohio EPA. Progress reports shall contain the following:

i. Dates for achieving the activities, milestones, or compliance required in any schedule of compliance, and dates when such activities, milestones, or compliance were achieved.

ii. An explanation of why any dates in any schedule of compliance were not or will not be met, and any preventive or corrective measures adopted.

10. Permit To Operate Application

a. If the permittee is required to apply for a Title V permit pursuant to OAC Chapter 3745-77, the permittee shall submit a complete Title V permit application or a complete

Title V permit modification application within twelve (12) months after commencing operation of the emissions units covered by this permit. However, if the proposed new or modified source(s) would be prohibited by the terms and conditions of an existing Title V permit, a Title V permit modification must be obtained before the operation of such new or modified source(s) pursuant to OAC rule 3745-77-04(D) and OAC rule 3745-77-08(C)(3)(d).

b. If the permittee is required to apply for permit(s) pursuant to OAC Chapter 3745-35, the source(s) identified in this Permit To Install is (are) permitted to operate for a period of up to one year from the date the source(s) commenced operation. Permission to operate is granted only if the facility complies with all requirements contained in this permit and all applicable air pollution laws, regulations, and policies. Pursuant to OAC Chapter 3745-35, the permittee shall submit a complete operating permit application within ninety (90) days after commencing operation of the source(s) covered by this permit.

11. Best Available Technology

As specified in OAC Rule 3745-31-05, all new sources must employ Best Available Technology (BAT). Compliance with the terms and conditions of this permit will fulfill this requirement.

12. Air Pollution Nuisance

The air contaminants emitted by the emissions units covered by this permit shall not cause a public nuisance, in violation of OAC rule 3745-15-07.

B. State Only Enforceable Permit To Install General Terms and Conditions

1. Compliance Requirements

The emissions unit(s) identified in this Permit to Install shall remain in full compliance with all applicable State laws and regulations and the terms and conditions of this permit.

2. Reporting Requirements Related to Monitoring and Recordkeeping Requirements

The permittee shall submit required reports in the following manner:

a. Reports of any required monitoring and/or recordkeeping of state-only enforceable information shall be submitted to the appropriate Ohio EPA District Office or local air agency.

b. Except as otherwise may be provided in the terms and conditions for a specific emissions unit, quarterly written reports of (a) any deviations (excursions) from state-only required emission limitations, operational restrictions, and control device operating parameter limitations that have been detected by the testing, monitoring, and recordkeeping requirements specified in this permit, (b) the probable cause of such deviations, and (c) any corrective actions or preventive measures which have been or will be taken, shall be submitted to the appropriate Ohio EPA District Office or local air agency. If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report, which states that no deviations occurred during that quarter. The reports shall be submitted quarterly, i.e., by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters. (These quarterly reports shall exclude deviations resulting from malfunctions reported in accordance with OAC rule 3745-15-06.)

3. Permit Transfers

Any transferee of this permit shall assume the responsibilities of the prior permit holder. The appropriate Ohio EPA District Office or local air agency must be notified in writing of any transfer of this permit.

4. Termination of Permit To Install

This permit to install shall terminate within eighteen months of the effective date of the permit to install if the owner or operator has not undertaken a continuing program of installation or modification or has not entered into a binding contractual obligation to undertake and complete within a reasonable time a continuing program of installation or modification. This deadline may be extended by up to 12 months if application is made to the Director within a reasonable time before the termination date and the party shows good cause for any such extension.

5. Construction of New Sources(s)

The proposed emissions unit(s) shall be constructed in strict accordance with the plans and application submitted for this permit to the Director of the Ohio Environmental Protection Agency. There may be no deviation from the approved plans without the express, written approval of the Agency. Any deviations from the approved plans or the above conditions may lead to such sanctions and penalties as provided under Ohio law. Approval of these plans does not constitute an assurance that the proposed facilities will operate in compliance with all Ohio laws and regulations. Additional facilities shall be installed upon orders of the Ohio Environmental Protection Agency if the proposed sources cannot meet the requirements of this permit or cannot meet applicable standards.

If the construction of the proposed emissions unit(s) has already begun or has been completed prior to the date the Director of the Environmental Protection Agency approves the permit application and plans, the approval does not constitute expressed or implied assurance that the proposed facility has been constructed in accordance with the approved plans. The action of beginning and/or completing construction prior to obtaining the Director's approval constitutes a violation of OAC rule 3745-31-02. Furthermore, issuance of the Permit to Install does not constitute an assurance that the proposed source will operate in compliance with all Ohio laws and regulations. Approval of the plans in any case is not to be construed as an approval of the facility as constructed and/or completed. Moreover, issuance of the Permit to Install is not to be construed as a waiver of any rights that the Ohio Environmental Protection Agency (or other persons) may have against the applicant for starting construction prior to the effective date of the permit. Additional facilities shall be installed upon orders of the Ohio Environmental Protection Agency if the proposed facilities cannot meet the requirements of this permit or cannot meet applicable standards.

6. Public Disclosure

The facility is hereby notified that this permit, and all agency records concerning the operation of this permitted source, are subject to public disclosure in accordance with OAC rule 3745-49-03.

7. Applicability

This Permit to Install is applicable only to the emissions unit(s) identified in the Permit To Install. Separate application must be made to the Director for the installation or modification of any other emissions unit(s).

8. Construction Compliance Certification

The applicant shall provide Ohio EPA with a written certification (see enclosed form) that the facility has been constructed in accordance with the Permit To Install application and the terms and conditions of the Permit to Install. The certification shall be provided to Ohio EPA upon completion of construction but prior to startup of the source.

9. Additional Reporting Requirements When There Are No Deviations of Federally Enforceable Emission Limitations, Operational Restrictions, or Control Device Operating Parameter Limitations (See Section A of This Permit)

If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report, which states that no deviations occurred during that quarter. The reports shall be submitted quarterly, i.e., by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters.

C. Permit To Install Summary of Allowable Emissions

The following information summarizes the total allowable emissions, by pollutant, based on the individual allowable emissions of each air contaminant source identified in this permit.

SUMMARY (for informational purposes only)
TOTAL PERMIT TO INSTALL ALLOWABLE EMISSIONS

Pollutant	Tons Per Year
OC	1207.90
PE	151.56

A. State and Federally Enforceable Permit To Install Facility Specific Terms and Conditions

None

B. State Only Enforceable Permit To Install Facility Specific Terms and Conditions

1. The permit to install for this permit action as evaluated based on the actual materials and the design parameters of the emissions unit's exhaust system, as specified by the permittee in the permit to install application. The Ohio EPA's "Review of New Sources of Air Toxic Emissions" policy ("Air Toxic Policy") was applied for each pollutant emitted by the Plant 1 core room emissions units using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutant(s):

   a. Pollutant: formaldehyde
      TLV (mg/m3): 4.139
      MAGLC (ug/m3): 98.54

stack #	Maximum Hourly Emission Rate (estimated to be 0.5% of OC emissions) (lb/hr)	Predicted 1-Hour Maximum Ground-Level Concentration (ug/m3)
841	0.12	2.03
842	0.07	1.15
924	0.05	1.15
631	0.05	0.91
950	0.10	0.52
952	0.10	0.43
845	0.03	1.14
933	0.03	0.98
925	0.12	7.83
957	0.06	1.14
963	0.11	0.96
836	0.02	0.56
949	0.01	0.18
951	0.01	0.21

953	0.01	0.21
956	0.01	0.18

2. Physical changes to or changes in the method of operation of the emissions unit after its installation or modification could affect the parameters used to determine whether or not the " Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be still satisfied. If, upon evaluation, the permittee determines that the "Air Toxic Policy" will not be satisfied, the permittee will not make the change. Changes that can affect the parameters used in applying the "Air Toxic Policy" include the following:

   a. changes in the composition of the materials used (typically for coatings or cleanup materials), or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value previously modeled;

   b. changes in the composition of the materials, or use of new materials, that would result in an increase in emissions of any pollutant with a listed TLV that was proposed in the application and modeled; and

   c. physical changes to the emissions unit or its exhaust parameters (e.g., increased/ decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).

3. If the permittee determines that the "Air Toxic Policy" will be satisfied for the above changes, the Ohio EPA will not consider the change(s) to be a "modification" under OAC rule 3745-31-01(VV)(1)(a)(ii), and a modification of the existing permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition (other than (VV)(1)(a)(ii)), then the permittee shall obtain a final permit to install prior to the change.

4. The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy:"

   a. a description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);

   b. documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and

   c. where computer modeling is performed, a copy of the resulting computer model runs that

show the results of the application of the "Air Toxic Policy" for the change.

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	OAC rule 3745-23-06(B)
P122 - core oven #13	OAC rule 3745-31-05(A)(3)	OAC rule 3745-21-07(G)(2)
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B). 1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a. 151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a. 1.20 lbs OC/hr, 1.00 tons OC/year 0.39 lbs PE/hr, 0.27 tons PE/yr Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule. The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3). See A.I.2..d.	See A.II.2.	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit..

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-31-05(A)(3) in this permit to install.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625

1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The use of photochemically reactive material, as defined in OAC rule 3745-21-01(C)(5), in this emissions unit is prohibited.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

   b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

   c. the calculated emission rate for OC, in tons, determined by the following equation:

      $$TOCE = (2.a)(Q + R) + (2.b)(S) + (1.a)(T)$$

      where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

4. The permittee shall maintain records of the following information for this emissions unit:

a. company identification for each liquid organic material employed in this emissions unit; and

b. documentation on whether or not each liquid organic material employed is a photochemically reactive material.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

3. The permittee shall notify the Director (the appropriate Ohio EPA District Office or local air agency) in writing of any monthly record showing the use of photochemically reactive material. The notification shall include a copy of such a record and shall be sent to the Director (the appropriate Ohio EPA District Office or local air agency) within 30 days following the end of the calendar month.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 1.20 lbs OC/hr, 1.00 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in

accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 4110 lbs/hr by an emission factor of 0.000293 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 6724 tons/yr by an emission factor of 0.000148 ton OC/ton of sand.

e. Emission Limitation: 0.39 lbs PE/hr, 0.27 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 4110 lbs/hr by the an emission factor of 0.000094 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 6724 tons/yr by an emission rate of 0.0000396 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P122 - core oven 13	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P184 - hot box core machine # 16/17 (two station machine), core sand mixer and associated conveyor	OAC rule 3745-31-05(A)(3)	OAC rule 3745-23-06(B) OAC rule 3745-21-07(G)(1)&(2)
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures	
	See A.I.2..d.
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	See A.I.2.e.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
49.20 lbs OC/hr, 42.31 tons OC/year (includes conveyor emissions)	
5.80 lbs PE/hr, 3.67 tons PE/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-31-05(A)(3) in this permit to install.

2.e The core sand mixer portion of this emissions unit does not employ, apply, evaporate or dry any photochemically reactive material (PRM), or any substance containing such as PRM. Also, the liquid organic material/substance containing liquid organic material in the hot box core machine portion of this emissions unit does not come into contact with a flame and is not baked, heat-cured, or heat-polymerized, in the presence of oxygen. Therefore, there are no applicable emission limitations established by this rule.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand),

for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

   a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

      Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

   b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

      Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

   c. Emission Limitation: 151.56 tons PE per rolling 12-month period

      Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

   d. Emission Limitation: 49.20 lbs OC/hr, 42.31 tons OC/year

      Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

      *The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 9600 lbs/hr by an emission factor of 0.005125 lb OC/lb sand (sum of hot box core emission factor, 0.004932 and conveyor emission factor, 0.000193). The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 24,000 tons/yr by an emission factor of 0.001763 ton OC/ton of sand (sum of hot box core emission factor, 0.001347 and hot box conveyor emission factor,

0.000416).

e. Emission Limitation: 5.80 lbs PE/hr, 3.67 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 9600 lbs/hr by the an emission factor of 0.000604 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 24,000 tons/yr by an emission rate of 0.000153 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P184 - hot box core machine # 16/17 (two station machine), core sand mixer and associated conveyor	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Emissions Unit ID: P184

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P211 - core oven #14 (hot box dip drying oven for machines 21/22)	OAC rule 3745-31-05(A)(3)	OAC rule 3745-17-11(B)
		OAC rule 3745-23-06(B)
		OAC rule 3745-21-07(G)(2)
	OAC rule 3745-17-07(A)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	See A.I.2..d. See A.II.2.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
7.21 lbs OC/hr, 5.96 tons OC/year	
2.31 lbs PE/hr, 1.59 tons PE/yr	
0.80 lb carbon monoxide (CO)/hr, 1.31 tons CO/yr	
0.95 lb nitrogen oxide (NOx)/hr, 1.56 tons NOx/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit..

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-31-05(A)(3) in this permit to install.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The use of photochemically reactive material, as defined in OAC rule 3745-21-01(C)(5), in this emissions unit is prohibited.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand),

for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

4. The permittee shall maintain records of the following information for this emissions unit:

a. company identification for each liquid organic material employed in this emissions unit; and

b. documentation on whether or not each liquid organic material employed is a photochemically reactive material.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

   a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

   b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

   c. the rolling, 12-month emission limitations for PE and OC.

   These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

3. The permittee shall notify the Director (the appropriate Ohio EPA District Office or local air agency) in writing of any monthly record showing the use of photochemically reactive material. The notification shall include a copy of such a record and shall be sent to the Director (the appropriate Ohio EPA District Office or local air agency) within 30 days following the end of the calendar month.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

   a. <u>Emission Limitation:</u> 1,024,555 tons of sand per rolling 12-month period

      <u>Compliance Method:</u> Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

   b. <u>Emission Limitation:</u> 1,207.90 tons OC per rolling 12-month period

      <u>Compliance Method:</u> Compliance shall be demonstrated by the record keeping

requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 7.21 lbs OC/hr, 5.96 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 24,600 lbs/hr by an emission factor of 0.000293 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 40,244 tons/yr by an emission factor of 0.000148 ton OC/ton of sand.

e. Emission Limitation: 2.31 lbs PE/hr, 1.59 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 24,600 lbs/hr by the an emission factor of 0.000094 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 40,244 tons/yr by an emission rate of 0.0000396 ton PE/ton of sand.

f. Emission Limitation: 0.80 lb CO/hr, 1.31 tons CO/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 10 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 9545 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (84 lbs CO/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 31.23 mm scf by the AP 42 emission factor.

g. Emission Limitation: 0.95 lb NOx/hr, 1.56 tons NOx/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 7 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 9545 scf/hr by the AP42 emission factor, Table 1-4.1 Revised

7/98 (100 lbs NOx/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 31.23 mm scf by the AP 42 emission factor.

h. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P211 -core oven #14 (hot box dip drying oven for machines 21/22)	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P212 - hot box core machine no. 18/19 (two station machine), core sand mixer and associated conveyor	OAC rule 3745-31-05(A)(3)	OAC rule 3745-23-06(B) OAC rule 3745-21-07(G)(1)&(2)
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures	See A.I.2.d.
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	See A.I.2.e.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
36.90 lbs OC/hr, 31.73 tons OC/year (includes conveyor emissions)	
4.35 lbs PE/hr, 2.75 tons PE/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-31-05(A)(3) in this permit to install.

2.e The core sand mixer portion of this emissions unit does not employ, apply, evaporate or dry any photochemically reactive material (PRM), or any substance containing such PRM. Also, the liquid organic material/substance containing liquid organic material in the hot box core machine portion of this emissions unit does not come into contact with a flame and is not baked, heat-cured, or heat-polymerized, in the presence of oxygen. Therefore, there are no applicable emission limitations established by this rule.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 36.90 lbs OC/hr, 31.73 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in

accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 7200 lbs/hr by an emission factor of 0.005125 lb OC/lb sand (sum of hot box core emission factor, 0.004932 and conveyor emission factor, 0.000193). The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 18,000 tons/yr by an emission factor of 0.001763 ton OC/ton of sand (sum of hot box core emission factor, 0.001347 and hot box conveyor emission factor, 0.000416).

e. Emission Limitation: 4.35 lbs PE/hr, 2.75 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 7200 lbs/hr by the an emission factor of 0.000604 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 18,000 tons/yr by an emission rate of 0.000153 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P212 - hot box core machine no. 18/19 (two station machine)	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements
P213 - hot box core machine no. 20/21 (two station machine), core sand mixer and associated conveyor	OAC rule 3745-31-05(A)(3)
	OAC rule 3745-17-07(A)
	OAC rule 3745-17-11(B)
	OAC rule 3745-23-06(B)
	OAC rule 3745-21-07(G)(1)&(2)

Applicable Emissions Limitations/Control Measures	See A.I.2.d.
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	See A.I.2.e.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
36.90 lbs OC/hr, 31.73 tons OC/year (includes conveyor emissions)	
4.35 lbs PE/hr, 2.75 tons PE/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-31-05(A)(3) in this permit to install.

2.e The core sand mixer portion of this emissions unit does not employ, apply, evaporate or dry any photochemically reactive material (PRM), or any substance containing such PRM. Also, the liquid organic material/substance containing liquid organic material in the hot box core machine portion of this emissions unit does not come into contact with a flame and is not baked, heat-cured, or heat-polymerized, in the presence of oxygen. Therefore, there are no applicable emission limitations established by this rule.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Emissions Unit ID: P213

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

   b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 36.90 lbs OC/hr, 31.73 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly

sand usage rate of 7200 lbs/hr by an emission factor of 0.005125 lb OC/lb sand (sum of hot box core emission factor, 0.004932 and conveyor emission factor, 0.000193). The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 18,000 tons/yr by an emission factor of 0.001763 ton OC/ton of sand (sum of hot box core emission factor, 0.001347 and hot box conveyor emission factor, 0.000416).

e. Emission Limitation: 4.35 lbs PE/hr, 2.75 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 7200 lbs/hr by the an emission factor of 0.000604 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 18,000 tons/yr by an emission rate of 0.000153 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P213 - hot box core machine no. 20/21 (two station machine)	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
		OAC rule 3745-17-11(B)
P233 - core oven no.1	OAC rule 3745-31-05(A)(3)	
		OAC rule 3745-23-06(B)
		OAC rule 3745-21-07(G)(2)
	OAC rule 3745-17-07(A)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3). See A.I.2..d. See A.II.2.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
11.25 lbs OC/hr, 9.30 tons OC/year	
3.61 lbs PE/hr, 2.49 tons PE/yr	
1.25 lb carbon monoxide (CO)/hr, 2.05 tons CO/yr	
1.49 lb nitrogen oxide (NOx)/hr, 2.44 tons NOx/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit..

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-31-05(A)(3) in this permit to install.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Emissions Unit ID: P233

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The use of photochemically reactive material, as defined in OAC rule 3745-21-01(C)(5), in this emissions unit is prohibited.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

4. The permittee shall maintain records of the following information for this emissions unit:

a. company identification for each liquid organic material employed in this emissions unit; and

b. documentation on whether or not each liquid organic material employed is a photochemically reactive material.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

   a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

   b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

   c. the rolling, 12-month emission limitations for PE and OC.

   These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

3. The permittee shall notify the Director (the appropriate Ohio EPA District Office or local air agency) in writing of any monthly record showing the use of photochemically reactive material. The notification shall include a copy of such a record and shall be sent to the Director (the appropriate Ohio EPA District Office or local air agency) within 30 days following the end of the calendar month.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

   a. <u>Emission Limitation:</u> 1,024,555 tons of sand per rolling 12-month period

      <u>Compliance Method:</u> Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

   b. <u>Emission Limitation:</u> 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 11.25 lbs OC/hr, 9.30 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 38,400 lbs/hr by an emission factor of 0.000293 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 62,820 tons/yr by an emission factor of 0.000148 ton OC/ton of sand.

e. Emission Limitation: 3.61 lbs PE/hr, 2.49 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 38,400 lbs/hr by the an emission factor of 0.000094 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 62,820 tons/yr by an emission rate of 0.0000396 ton PE/ton of sand.

f. Emission Limitation: 1.25 lb CO/hr, 2.05 tons CO/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 10 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 14,899 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (84 lbs CO/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 48.75 mm scf by the AP 42 emission factor.

g. Emission Limitation: 1.49 lbs NOx/hr, 2.44 tons NOx/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 7 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 14,899 scf/hr by the AP42 emission factor, Table 1-4.1 Revised

7/98 (100 lbs NOx/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 48.75 mm scf by the AP 42 emission factor.

h. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P233 - core oven no.1	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements
P292 - hot box core machine no. 38/39 (two station machine), core sand mixer and associated conveyor [Modification of PTI 03-820 issued July 1, 1980]	OAC rule 3745-31-05(A)(3) OAC rule 3745-17-07(A) OAC rule 3745-17-11(B) OAC rule 3745-23-06(B) OAC rule 3745-21-07(G)(1)&(2)

Applicable Emissions Limitations/Control Measures	See A.I.2.d.
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	See A.I.2.e
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
29.73 lbs OC/hr, 25.56 tons OC/year (includes conveyor emissions)	
3.50 lbs PE/hr, 2.22 tons PE/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

2.e The core sand mixer portion of this emissions unit does not employ, apply, evaporate or dry any photochemically reactive material (PRM), or any substance containing such PRM. Also, the liquid organic material/substance containing liquid organic material in the hot box core machine portion of this emissions unit does not come into contact with a flame and is not baked, heat-cured, or heat-polymerized, in the presence of oxygen. Therefore, there are no applicable emission limitations established by this rule.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Emissions Unit ID: P292

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

   b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 29.73 lbs OC/hr, 25.56 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly

sand usage rate of 5800 lbs/hr by an emission factor of 0.005125 lb OC/lb sand (sum of hot box core emission factor, 0.004932 and conveyor emission factor, 0.000193). The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 14,500 tons/yr by an emission factor of 0.001763 ton OC/ton of sand (sum of hot box core emission factor, 0.001347 and hot box conveyor emission factor, 0.000416).

e. Emission Limitation: 3.50 lbs PE/hr, 2.22 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 5800 lbs/hr by the an emission factor of 0.000604 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 14,500 tons/yr by an emission rate of 0.000153 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P292 - hot box core machine no. 38/39 (two station machine) [Modification of PTI 03-820 issued July 1, 1980]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P297 - dip oven no. 2 [Modification of PTI 03-624 issued March 3, 1978]	OAC rule 3745-31-05(A)(3)	OAC rule 3745-17-11(B)
		OAC rule 3745-23-06(B)
		OAC rule 3745-21-07(G)(2)
	OAC rule 3745-17-07(A)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	See A.I.2..d. See A.II.2.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
7.21 lbs OC/hr, 5.96 tons OC/year	
2.31 lbs PE/hr, 1.59 tons PE/yr	
0.80 lb carbon monoxide (CO)/hr, 1.31 tons CO/yr	
0.95 lb nitrogen oxide (NOx)/hr, 1.56 tons NOx/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit..

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Emissions Unit ID: P297

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The use of photochemically reactive material, as defined in OAC rule 3745-21-01(C)(5), in this emissions unit is prohibited.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

4. The permittee shall maintain records of the following information for this emissions unit:

a. company identification for each liquid organic material employed in this emissions unit; and

b. documentation on whether or not each liquid organic material employed is a photochemically reactive material.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

   a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

   b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

   c. the rolling, 12-month emission limitations for PE and OC.

   These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

3. The permittee shall notify the Director (the appropriate Ohio EPA District Office or local air agency) in writing of any monthly record showing the use of photochemically reactive material. The notification shall include a copy of such a record and shall be sent to the Director (the appropriate Ohio EPA District Office or local air agency) within 30 days following the end of the calendar month.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

   a. <u>Emission Limitation:</u> 1,024,555 tons of sand per rolling 12-month period

      <u>Compliance Method:</u> Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

   b. <u>Emission Limitation:</u> 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keepingrequirements specified in section A.III.2.

d. Emission Limitation: 7.21 lbs OC/hr, 5.96 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 24,600 lbs/hr by an emission factor of 0.000293 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 40,244 tons/yr by an emission factor of 0.000148 ton OC/ton of sand.

e. Emission Limitation: 2.31 lbs PE/hr, 1.59 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 24,600 lbs/hr by the an emission factor of 0.000094 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 40,244 tons/yr by an emission rate of 0.0000396 ton PE/ton of sand.

f. Emission Limitation: 0.80 lb CO/hr, 1.31 tons CO/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 10 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 9545 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (84 lbs CO/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 31.23 mm scf by the AP 42 emission factor.

g. Emission Limitation: 0.95 lb NOx/hr, 1.56 tons NOx/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 7 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 9545 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (100 lbs NOx/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 31.23 mm scf by the AP 42 emission factor.

h. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P297 - dip oven no. 2 [Modification of PTI 03-624 issued March 3, 1978]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P298 - hot box core machine no. 47/48 (two station machine), core sand mixer and associated conveyor [Modification of PTI 03-1603 issued March 21, 1984]	OAC rule 3745-31-05(A)(3)	OAC rule 3745-23-06(B) OAC rule 3745-21-07(G)(1)&(2)
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures	See A.I.2.d.
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	See A.I.2.e.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
36.90 lbs OC/hr, 31.73 tons OC/year (includes conveyor emissions)	
4.35 lbs PE/hr, 2.75 tons PE/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

2.e The core sand mixer portion of this emissions unit does not employ, apply, evaporate or dry any photochemically reactive material (PRM), or any substance containing such PRM. Also, the liquid organic material/substance containing liquid organic material in the hot box core machine portion of this emissions unit does not come into contact with a flame and is not baked, heat-cured, or heat-polymerized, in the presence of oxygen. Therefore, there are no applicable emission limitations established by this rule.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Emissions Unit ID: P298

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

   b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 36.90 lbs OC/hr, 31.73 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly

sand usage rate of 7200 lbs/hr by an emission factor of 0.005125 lb OC/lb sand (sum of hot box core emission factor, 0.004932 and conveyor emission factor, 0.000193). The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 18,000 tons/yr by an emission factor of 0.001763 ton OC/ton of sand (sum of hot box core emission factor, 0.001347 and hot box conveyor emission factor, 0.000416).

e. Emission Limitation: 4.35 lbs PE/hr, 2.75 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 7200 lbs/hr by the an emission factor of 0.000604 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 18,000 tons/yr by an emission rate of 0.000153 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P298 - hot box core machine no. 47/48 (two station machine) [Modification of PTI 03-1603 issued March 21, 1984]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P299 - hot box machine no. 49/50 (two station machine), core sand mixer and associated conveyor [Modification of PTI 03-1603 issued March 21, 1984]	OAC rule 3745-31-05(A)(3)	OAC rule 3745-23-06(B) OAC rule 3745-21-07(G)(1)&(2)
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures	See A.I.2..d.
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	See A.I.2.e.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
36.90 lbs OC/hr, 31.73 tons OC/year (includes conveyor emissions)	
4.35 lbs PE/hr, 2.75 tons PE/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

2.e The core sand mixer portion of this emissions unit does not employ, apply, evaporate or dry any photochemically reactive material (PRM), or any substance containing such PRM. Also, the liquid organic material/substance containing liquid organic material in the hot box core machine portion of this emissions unit does not come into contact with a flame and is not baked, heat-cured, or heat-polymerized, in the presence of oxygen. Therefore, there are no applicable emission limitations established by this rule.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Emissions Unit ID: P299

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

   b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 36.90 lbs OC/hr, 31.73 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly

sand usage rate of 7200 lbs/hr by an emission factor of 0.005125 lb OC/lb sand (sum of hot box core emission factor, 0.004932 and conveyor emission factor, 0.000193). The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 18,000 tons/yr by an emission factor of 0.001763 ton OC/ton of sand (sum of hot box core emission factor, 0.001347 and hot box conveyor emission factor, 0.000416).

e. Emission Limitation: 4.35 lbs PE/hr, 2.75 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 7200 lbs/hr by the an emission factor of 0.000604 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 18,000 tons/yr by an emission rate of 0.000153 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P299 - hot box machine no. 49/50 (two station machine) [Modification of PTI 03-1603 issued March 21, 1984]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
		OAC rule 3745-21-07(G)(9)(h)
P302 - cold box core machine no. 60 and core sand mixer [Modification of PTI 03-2108 issued July 3, 1985]	OAC rule 3745-31-05(A)(3)	
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures	emissions.
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A).	
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
5.36 lbs OC/hr, 4.93 tons OC/year	
1.12 lbs PE/hr, 1.01 tons PE/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	
The catalyst gas emissions shall be vented to a sulfuric acid scrubber that is designed and operated to removed at least 98 percent, by weight, of the catalyst gas	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology" (BAT) has been determined to be the use of a catalyst gas scrubber designed for the control of catalyst gas on cold box core machines.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525

1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The pH and liquor flow rate of the catalyst gas scrubbers shall be maintained at the following levels:

   a. the catalyst gas scrubber liquor pH shall be continuously maintained at or below 5 while the emissions unit is in operation; and

   b. the catalyst gas scrubber liquor flow rate shall be continuously maintained at a value of 3 to 5 gallons per minute per 1,000 cubic feet per minute (cfm) of gas flow at all time while the emissions unit is in operation.

3. To ensure proper operation of the catalyst gas scrubber during operation of this emissions unit, the permittee shall employ an "interlock system" that will shutdown the cold box core machine within 30 minutes after the catalyst gas scrubber liquid pH rises above 5.

   The "interlock system" shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations with any modifications deemed necessary by the permittee.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand),

for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall collect and record the following information each day:

a. the pH of the catalyst gas scrubber, once per operating shift;

b. the catalyst gas scrubber liquor flow rate, in gallons per minute, on a once per shift basis.

c. all periods of time the catalyst gas scrubber was not operating in accordance with the requirements in condition A.II.2. above, and the corrective action taken to bring the catalyst gas scrubber into compliance with these operating conditions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

d. all periods of time during which the scrubber for these emissions units was not maintained in accordance with the following:

i. the pH of the scrubber exceeded 5.

ii. the catalyst gas scrubber liquor flow rate was less than 3 gallons per minute per 1,000 cfm of gas flow.

e. any time periods the "interlock system" associated with the catalytic gas scrubber did not operate in compliance with the requirements specified in section A.II.3.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 5.36 lbs OC/hr, 4.93 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly

sand usage rate of 6300 lbs/hr by an emission factor of 0.00085 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 15,750 tons/yr by an emission factor of 0.000313 ton OC/ton of sand.

e. Emission Limitation: 1.12 lbs PE/hr, 1.01 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 6300 lbs/hr by the an emission factor of 0.000178 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 15,750 tons/yr by an emission rate of 0.0000643 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

g. Emission Limitation: 98% control efficiency for catalyst gas emissions, by weight

Compliance Method: The catalyst gas scrubber has a manufacturer's guarantee of 99% removal by weight of catalyst gas emissions. If required, compliance with the control efficiency (i.e. the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined in accordance with the following:

i. the outlet mass emission rate shall be determined using USEPA Methods 1-4 and 18 in 40 CFR Part 60; and

ii. the inlet mass emission rate shall be determined using emission factors developed from inlet testing on similar emissions units at the facility and data collected (i.e. process weight rate, etc.) during the testing of the control outlet for this emissions unit (inlet mass emission testing is not possible on this emissions unit).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P302 - cold box core machine no. 60 [Modification of PTI 03-2108 issued July 3, 1985]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P320 - core oven no. 3 [Modification of PTI 03-5627 issued April 10, 1991]	OAC rule 3745-31-05(A)(3)	OAC rule 3745-17-11(B) OAC rule 3745-23-06(B) OAC rule 3745-21-07(G)(2)
	OAC rule 3745-17-07(A)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	See A.I.2..d. See A.II.2.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
7.74 lbs OC/hr, 6.39 tons OC/year	
2.48 lbs PE/hr, 1.71 tons PE/yr	
0.86 lb carbon monoxide (CO)/hr, 1.41 tons CO/yr	
1.02 lbs nitrogen oxide (NOx)/hr, 1.68 tons NOx/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit..

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The use of photochemically reactive material, as defined in OAC rule 3745-21-01(C)(5), in this emissions unit is prohibited.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand),

for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

4. The permittee shall maintain records of the following information for this emissions unit:

a. company identification for each liquid organic material employed in this emissions unit; and

b. documentation on whether or not each liquid organic material employed is a photochemically reactive material.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

   a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

   b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

   c. the rolling, 12-month emission limitations for PE and OC.

   These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

3. The permittee shall notify the Director (the appropriate Ohio EPA District Office or local air agency) in writing of any monthly record showing the use of photochemically reactive material. The notification shall include a copy of such a record and shall be sent to the Director (the appropriate Ohio EPA District Office or local air agency) within 30 days following the end of the calendar month.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

   a. <u>Emission Limitation:</u> 1,024,555 tons of sand per rolling 12-month period

      <u>Compliance Method:</u> Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

   b. <u>Emission Limitation:</u> 1,207.90 tons OC per rolling 12-month period

      <u>Compliance Method:</u> Compliance shall be demonstrated by the record keeping

requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 7.74 lbs OC/hr, 6.39 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 26,400 lbs/hr by an emission factor of 0.000293 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 43,189 tons/yr by an emission factor of 0.000148 ton OC/ton of sand.

e. Emission Limitation: 2.48 lbs PE/hr, 1.71 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 26,400 lbs/hr by the an emission factor of 0.000094 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 43,189 tons/yr by an emission rate of 0.0000396 ton PE/ton of sand.

f. Emission Limitation: 0.86 lb CO/hr, 1.41 tons CO/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 10 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 10,243 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (84 lbs CO/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 33.51 mm scf by the AP 42 emission factor.

g. Emission Limitation: 1.02 lb NOx/hr, 1.68 tons NOx/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 7 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 10,243 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (100 lbs NOx/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 33.51 mm scf by the AP 42 emission factor.

h. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P320 - core oven no. 3 [Modification of PTI 03-5627 issued April 10, 1991]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P321 - cold box core machine no. 66/67 (two station machine) and sand core mixer [Modification of PTI 03-5562 issued April 24, 1991]	OAC rule 3745-31-05(A)(3)	OAC rule 3745-21-07(G)(9)(h)
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A).	designed and operated to remove at least 98% percent, by weight, of the catalyst gas emissions.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
5.95 lbs OC/hr, 5.48 tons OC/year	
1.25 lbs PE/hr, 1.13 tons PE/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	
The catalyst gas emissions shall be vented to a sulfuric acid scrubber that is	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology" (BAT) has been determined to be the use of a catalyst gas scrubber designed for the control of catalyst gas on cold box core machines.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525

1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The pH and liquor flow rate of the catalyst gas scrubbers shall be maintained at the following levels:

   a. the catalyst gas scrubber liquor pH shall be continuously maintained at or below 5 while the emissions unit is in operation; and

   b. the catalyst gas scrubber liquor flow rate shall be continuously maintained at a value of 3 to 5 gallons per minute per 1,000 cubic feet per minute (cfm) of gas flow at all time while the emissions unit is in operation.

3. To ensure proper operation of the catalyst gas scrubber during operation of this emissions unit, the permittee shall employ an "interlock system" that will shutdown the cold box core machine within 30 minutes after the catalyst gas scrubber liquid pH rises above 5.

   The "interlock system" shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations with any modifications deemed necessary by the permittee.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand),

for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall collect and record the following information each day:

a. the pH of the catalyst gas scrubber, once per operating shift;

b. the catalyst gas scrubber liquor flow rate, in gallons per minute, on a once per shift basis.

c. all periods of time the catalyst gas scrubber was not operating in accordance with the requirements in condition A.II.3 above, and the corrective action taken to bring the catalyst gas scrubber into compliance with these operating conditions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

d. all periods of time during which the scrubber for these emissions units was not maintained in accordance with the following:

i. the pH of the scrubber exceeded 5.

ii. the catalyst gas scrubber liquor flow rate was less than 3 gallons per minute per 1,000 cfm of gas flow.

e. any time periods the "interlock system" associated with the catalytic gas scrubber did not operate in compliance with the requirements specified in Section A.II.3.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 5.95 lbs OC/hr, 5.48 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 7000 lbs/hr by an emission factor of 0.00085 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 17,500 tons/yr by an emission factor of 0.000313 ton OC/ton of sand.

e. Emission Limitation: 1.25 lbs PE/hr, 1.13 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 7000 lbs/hr by the an emission factor of 0.000178 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 17,500 tons/yr by an emission rate of 0.0000643 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

g. Emission Limitation: 98% control efficiency for catalyst gas emissions, by weight

Compliance Method: The catalyst gas scrubber has a manufacturer's guarantee of 99% removal by weight of catalyst gas emissions. If required, compliance with the control efficiency (i.e. the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined in accordance with the following:

i. the outlet mass emission rate shall be determined using USEPA Methods 1-4 and 18 in 40 CFR Part 60; and

ii. the inlet mass emission rate shall be determined using emission factors developed from inlet testing on similar emissions units at the facility and data collected (i.e. process weight rate, etc.) during the testing of the control outlet for this emissions unit. Inlet mass emission testing is not possible on this emissions unit.

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P321 - cold box core machine no. 66/67 (two station machine) [Modification of PTI 03-5562 issued April 24, 1991]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P322 - bowl cleaning oven [Modification of PTI 03-5709 issued May 22, 1991]	OAC rule 3745-31-05(A)(3)	The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B). 1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a. 151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.
	OAC rule 3745-17-07(A)	Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.
	OAC rule 3745-17-11(B)	The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).
	OAC rule 3745-23-06(B)	See A.I.2..d.
	OAC rule 3745-21-07(G)(2)	See A.II.2.

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625

1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The use of photochemically reactive material, as defined in OAC rule 3745-21-01(C)(5), in this emissions unit is prohibited.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

   b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

   c. the calculated emission rate for OC, in tons, determined by the following equation:

      $$TOCE = (2.a)(Q + R) + (2.b)(S) + (1.a)(T)$$

      where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

4. The permittee shall maintain records of the following information for this emissions unit:

a. company identification for each liquid organic material employed in this emissions unit; and

b. documentation on whether or not each liquid organic material employed is a photochemically reactive material.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to

install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

3. The permittee shall notify the Director (the appropriate Ohio EPA District Office or local air agency) in writing of any monthly record showing the use of photochemically reactive material. The notification shall include a copy of such a record and shall be sent to the Director (the appropriate Ohio EPA District Office or local air agency) within 30 days following the end of the calendar month.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P322 - bowl cleaning oven [Modification of PTI 03-5709 issued May 22, 1991]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P323 - hot box core machine no.71/72 (two station machine), core sand mixer and associated conveyor	OAC rule 3745-31-05(A)(3)	OAC rule 3745-17-11(B)
[Modification of PTI 03-6675 issued March 3, 1993]		OAC rule 3745-23-06(B)
		OAC rule 3745-21-07(G)(1)&(2)
	OAC rule 3745-17-07(A)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3). See A.I.2.d. See A.I.2.e.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
73.80 lbs OC/hr, 63.47 tons OC/year (includes conveyor emissions)	
8.70 lbs PE/hr, 5.51 tons PE/yr	
0.43 lbs carbon monoxide (CO)/hr, 1.08 tons CO/yr	
0.52 lbs nitrogen oxide (NOx)/hr, 1.29 tons NOx/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

2.e The core sand mixer portion of this emissions unit does not employ, apply, evaporate or dry any photochemically reactive material (PRM), or any substance containing such PRM. Also, the liquid organic material/substance containing liquid organic material in the hot box core machine portion of this emissions unit does not come into contact with a flame and is not baked, heat-cured, or heat-polymerized, in the presence of oxygen. Therefore, there are no applicable emission limitations established by this rule.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)

1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

   b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

   c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 73.80 lbs OC/hr, 63.47 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 14,400 lbs/hr by an emission factor of 0.005125 lb OC/lb sand (sum of hot box core emission factor, 0.004932 and conveyor emission factor, 0.000193). The

maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 36,000 tons/yr by an emission factor of 0.001763 ton OC/ton of sand (sum of hot box core emission factor, 0.001347 and hot box conveyor emission factor, 0.000416).

e. Emission Limitation: 8.70 lbs PE/hr, 5.51 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 14,400 lbs/hr by the an emission factor of 0.000604 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 36,000 tons/yr by an emission rate of 0.000153 ton PE/ton of sand.

f. Emission Limitation: 0.43 lb CO/hr, 1.08 tons CO/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 10 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 5155 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (84 lbs CO/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 25.78 mm scf by the AP 42 emission factor.

g. Emission Limitation: 0.52 lb NOx/hr, 1.29 tons NOx/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 7 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 5155 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (100

lbs NOx/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 25.78 mm scf by the AP 42 emission factor.

h. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P323 - hot box core machine no.71/72 (two station machine) [Modification of PTI 03-6675 issued March 3, 1993]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P324 - hot box core machine no. 73/74 (two station machine), core sand mixer and associated conveyor	OAC rule 3745-31-05(A)(3)	OAC rule 3745-17-11(B)
[Modification of PTI 03-6675 issued March 3, 1993]		OAC rule 3745-23-06(B)
		OAC rule 3745-21-07(G)(1)&(2)
	OAC rule 3745-17-07(A)	

Applicable Emissions Limitations/Control Measures	rule 3745-31-05(A)(3).
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	See A.I.2.d.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	See A.I.2.e.
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
73.80 lbs OC/hr, 63.47 tons OC/year (includes conveyor emissions)	
8.70 lbs PE/hr, 5.51 tons PE/yr	
0.43 lbs carbon monoxide (CO)/hr, 1.08 tons CO/yr	
0.52 lbs nitrogen oxide (NOx)/hr, 1.29 tons NOx/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

2.e The core sand mixer portion of this emissions unit does not employ, apply, evaporate or dry any photochemically reactive material (PRM), or any substance containing such PRM. Also, the liquid organic material/substance containing liquid organic material in the hot box core machine portion of this emissions unit does not come into contact with a flame and is not baked, heat-cured, or heat-polymerized, in the presence of oxygen. Therefore, there are no applicable emission limitations established by this rule.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)

1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

   b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in

2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 73.80 lbs OC/hr, 63.47 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 14,400 lbs/hr by an emission factor of 0.005125 lb OC/lb sand (sum of hot box core emission factor, 0.004932 and conveyor emission factor, 0.000193). The

maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 36,000 tons/yr by an emission factor of 0.001763 ton OC/ton of sand (sum of hot box core emission factor, 0.001347 and hot box conveyor emission factor, 0.000416).

e. Emission Limitation: 8.70 lbs PE/hr, 5.51 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 14,400 lbs/hr by the an emission factor of 0.000604 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 36,000 tons/yr by an emission rate of 0.000153 ton PE/ton of sand.

f. Emission Limitation: 0.43 lb CO/hr, 1.08 tons CO/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 10 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 5155 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (84 lbs CO/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 25.78 mm scf by the AP 42 emission factor.

g. Emission Limitation: 0.52 lb NOx/hr, 1.29 tons NOx/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 7 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 5155 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (100

lbs NOx/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 25.78 mm scf by the AP 42 emission factor.

h. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P324 - hot box core machine no. 73/74 (two station machine) [Modification of PTI 03-6675 issued March 3, 1993]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P325 - hot box core machine no. 75/76 (two station machine), core sand mixer and associated conveyor	OAC rule 3745-31-05(A)(3)	OAC rule 3745-17-11(B)
[Modification of PTI 03-6675 issued March 3, 1993]		OAC rule 3745-23-06(B)
		OAC rule 3745-21-07(G)(1)&(2)
	OAC rule 3745-17-07(A)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3). See A.I.2.d. See A.I.2.e.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
73.80 lbs OC/hr, 63.47 tons OC/year (includes conveyor emissions)	
8.70 lbs PE/hr, 5.51 tons PE/yr	
0.43 lbs carbon monoxide (CO)/hr, 1.08 tons CO/yr	
0.52 lbs nitrogen oxide (NOx)/hr, 1.29 tons NOx/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

2.e The core sand mixer portion of this emissions unit does not employ, apply, evaporate or dry any photochemically reactive material (PRM), or any substance containing such as PRM. Also, the liquid organic material/substance containing liquid organic material in the hot box core machine portion of this emissions unit does not come into contact with a flame and is not baked, heat-cured, or heat-polymerized, in the presence of oxygen. Therefore, there are no applicable emission limitations established by this rule.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)

1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

   b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

   c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

These deviation reports shall be submitted in accordance with the General Terms and Conditions

of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

   a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

      Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

   b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

      Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

   c. Emission Limitation: 151.56 tons PE per rolling 12-month period

      Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

   d. Emission Limitation: 73.80 lbs OC/hr, 63.47 tons OC/year

      Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

      *The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 14,400 lbs/hr by an emission factor of 0.005125 lb OC/lb sand (sum of hot box core emission factor, 0.004932 and conveyor emission factor, 0.000193). The

maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 36,000 tons/yr by an emission factor of 0.001763 ton OC/ton of sand (sum of hot box core emission factor, 0.001347 and hot box conveyor emission factor, 0.000416).

e. Emission Limitation: 8.70 lbs PE/hr, 5.51 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 14,400 lbs/hr by the an emission factor of 0.000604 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 36,000 tons/yr by an emission rate of 0.000153 ton PE/ton of sand.

f. Emission Limitation: 0.43 lb CO/hr, 1.08 tons CO/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 10 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 5155 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (84 lbs CO/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 25.78 mm scf by the AP 42 emission factor.

g. Emission Limitation: 0.52 lb NOx/hr, 1.29 tons NOx/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 7 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 5155 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (100 lbs NOx/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 25.78 mm scf by the AP 42 emission factor.

h. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P325 - hot box core machine no. 75/76 (two station machine) [Modification of PTI 03-6675 issued March 3, 1993]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
		OAC rule 3745-17-11(B)
P329 - core oven FECO line no. 1	OAC rule 3745-31-05(A)(3)	
[Modification of PTI 03-6871 issued January 13, 1993]		OAC rule 3745-23-06(B)
		OAC rule 3745-21-07(G)(2)
	OAC rule 3745-17-07(A)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	See A.I.2..d. See A.II.2.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
7.38 lbs OC/hr, 6.10 tons OC/year	
2.37 lbs PE/hr, 1.63 tons PE/yr	
0.82 lb carbon monoxide (CO)/hr, 1.34 tons CO/yr	
0.98 lb nitrogen oxide (NOx)/hr, 1.60 tons NOx/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit..

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The use of photochemically reactive material, as defined in OAC rule 3745-21-01(C)(5), in this emissions unit is prohibited.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

4. The permittee shall maintain records of the following information for this emissions unit:

a. company identification for each liquid organic material employed in this emissions unit; and

b. documentation on whether or not each liquid organic material employed is a

photochemically reactive material.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

   a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

   b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

   c. the rolling, 12-month emission limitations for PE and OC.

   These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

3. The permittee shall notify the Director (the appropriate Ohio EPA District Office or local air agency) in writing of any monthly record showing the use of photochemically reactive material. The notification shall include a copy of such a record and shall be sent to the Director (the appropriate Ohio EPA District Office or local air agency) within 30 days following the end of the calendar month.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

   a. <u>Emission Limitation:</u> 1,024,555 tons of sand per rolling 12-month period

      <u>Compliance Method:</u> Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

   b. <u>Emission Limitation:</u> 1,207.90 tons OC per rolling 12-month period

      <u>Compliance Method:</u> Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 7.38 lbs OC/hr, 6.10 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 25,200 lbs/hr by an emission factor of 0.000293 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 41,226 tons/yr by an emission factor of 0.000148 ton OC/ton of sand.

e. Emission Limitation: 2.37 lbs PE/hr, 1.63 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 25,200 lbs/hr by the an emission factor of 0.000094 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 41,226 tons/yr by an emission rate of 0.0000396 ton PE/ton of sand.

f. Emission Limitation: 0.82 lb CO/hr, 1.34 tons CO/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 10 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 9778 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (84 lbs CO/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 31.99 mm scf by the AP 42 emission factor.

g. Emission Limitation: 0.98 lb NOx/hr, 1.60 tons NOx/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 7 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 9778 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (100 lbs NOx/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 31.99 mm scf by the AP 42 emission factor.

h. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P329 - core oven FECO line no. 1 [Modification of PTI 03-6871 issued January 13, 1993]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P330 - core oven FECO line no.2 [Modification of PTI 03-6871 issued January 13, 1993]	OAC rule 3745-31-05(A)(3)	OAC rule 3745-17-11(B) OAC rule 3745-23-06(B) OAC rule 3745-21-07(G)(2)
	OAC rule 3745-17-07(A)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	See A.I.2..d. See A.II.2.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
7.38 lbs OC/hr, 6.10 tons OC/year	
2.37 lbs PE/hr, 1.63 tons PE/yr	
0.82 lb carbon monoxide (CO)/hr, 1.34 tons CO/yr	
0.98 lb nitrogen oxide (NOx)/hr, 1.60 tons NOx/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The use of photochemically reactive material, as defined in OAC rule 3745-21-01(C)(5), in this emissions unit is prohibited.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

4. The permittee shall maintain records of the following information for this emissions unit:

a. company identification for each liquid organic material employed in this emissions unit; and

b. documentation on whether or not each liquid organic material employed is a

photochemically reactive material.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

   a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

   b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

   c. the rolling, 12-month emission limitations for PE and OC.

   These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

3. The permittee shall notify the Director (the appropriate Ohio EPA District Office or local air agency) in writing of any monthly record showing the use of photochemically reactive material. The notification shall include a copy of such a record and shall be sent to the Director (the appropriate Ohio EPA District Office or local air agency) within 30 days following the end of the calendar month.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

   a. <u>Emission Limitation:</u> 1,024,555 tons of sand per rolling 12-month period

      <u>Compliance Method:</u> Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

   b. <u>Emission Limitation:</u> 1,207.90 tons OC per rolling 12-month period

      <u>Compliance Method:</u> Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 7.38 lbs OC/hr, 6.10 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 25,200 lbs/hr by an emission factor of 0.000293 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 41,226 tons/yr by an emission factor of 0.000148 ton OC/ton of sand.

e. Emission Limitation: 2.37 lbs PE/hr, 1.63 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 25,200 lbs/hr by the an emission factor of 0.000094 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 41,226 tons/yr by an emission rate of 0.0000396 ton PE/ton of sand.

f. Emission Limitation: 0.82 lb CO/hr, 1.34 tons CO/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 10 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 9778 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (84 lbs CO/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 31.99 mm scf by the AP 42 emission factor.

g. Emission Limitation: 0.98 lb NOx/hr, 1.60 tons NOx/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 7 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 9778 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (100 lbs NOx/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 31.99 mm scf by the AP 42 emission factor.

h. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P330 - core oven FECO line no.2 [Modification of PTI 03-6871 issued January 13, 1993]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P331 - core oven FECO line no.3 [Modification of PTI 03-6871 issued January 13, 1993]	OAC rule 3745-31-05(A)(3)	OAC rule 3745-17-11(B) OAC rule 3745-23-06(B) OAC rule 3745-21-07(G)(2)
	OAC rule 3745-17-07(A)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3). See A.I.2..d. See A.II.2.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
14.77 lbs OC/hr, 12.20 tons OC/year	
4.74 lbs PE/hr, 3.27 tons PE/yr	
1.64 lb carbon monoxide (CO)/hr, 2.69 tons CO/yr	
1.96 lb nitrogen oxide (NOx)/hr, 3.20 tons NOx/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit..

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The use of photochemically reactive material, as defined in OAC rule 3745-21-01(C)(5), in this emissions unit is prohibited.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand),

for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

4. The permittee shall maintain records of the following information for this emissions unit:

a. company identification for each liquid organic material employed in this emissions unit; and

b. documentation on whether or not each liquid organic material employed is a

photochemically reactive material.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

   a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

   b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

   c. the rolling, 12-month emission limitations for PE and OC.

   These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

3. The permittee shall notify the Director (the appropriate Ohio EPA District Office or local air agency) in writing of any monthly record showing the use of photochemically reactive material. The notification shall include a copy of such a record and shall be sent to the Director (the appropriate Ohio EPA District Office or local air agency) within 30 days following the end of the calendar month.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

   a. <u>Emission Limitation:</u> 1,024,555 tons of sand per rolling 12-month period

      <u>Compliance Method:</u> Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 14.77 lbs OC/hr, 12.20 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 50,400 lbs/hr by an emission factor of 0.000293 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 82,451 tons/yr by an emission factor of 0.000148 ton OC/ton of sand.

e. Emission Limitation: 4.74 lbs PE/hr, 3.27 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 50,400 lbs/hr by the an emission factor of 0.000094 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 82,451 tons/yr by an emission rate of 0.0000396 ton PE/ton of sand.

f. Emission Limitation: 1.64 lb CO/hr, 2.69 tons CO/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 10 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 19,555 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (84 lbs CO/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 63.98 mm scf by the AP 42 emission factor.

g. Emission Limitation: 1.96 lb NOx/hr, 3.20 tons NOx/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 7 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 19,555 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (100 lbs NOx/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 63.98 mm scf by the AP 42 emission factor.

h. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P331 - core oven FECO line no.3 [Modification of PTI 03-6871 issued January 13, 1993]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P332 - core oven FECO line no.4 [Modification of PTI 03-6871 issued January 13, 1993]	OAC rule 3745-31-05(A)(3)	OAC rule 3745-17-11(B) OAC rule 3745-23-06(B) OAC rule 3745-21-07(G)(2)
	OAC rule 3745-17-07(A)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	See A.I.2..d. See A.II.2.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
7.70 lbs OC/hr, 6.36 tons OC/year	
2.47 lbs PE/hr, 1.70 tons PE/yr	
0.86 lb carbon monoxide (CO)/hr, 1.40 tons CO/yr	
1.02 lb nitrogen oxide (NOx)/hr, 1.67 tons NOx/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Emissions Unit ID: P332

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The use of photochemically reactive material, as defined in OAC rule 3745-21-01(C)(5), in this emissions unit is prohibited.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand),

for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

4. The permittee shall maintain records of the following information for this emissions unit:

a. company identification for each liquid organic material employed in this emissions unit; and

b. documentation on whether or not each liquid organic material employed is a photochemically reactive material.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

   a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

   b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

   c. the rolling, 12-month emission limitations for PE and OC.

   These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

3. The permittee shall notify the Director (the appropriate Ohio EPA District Office or local air agency) in writing of any monthly record showing the use of photochemically reactive material. The notification shall include a copy of such a record and shall be sent to the Director (the appropriate Ohio EPA District Office or local air agency) within 30 days following the end of the calendar month.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

   a. <u>Emission Limitation:</u> 1,024,555 tons of sand per rolling 12-month period

      <u>Compliance Method:</u> Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

   b. <u>Emission Limitation:</u> 1,207.90 tons OC per rolling 12-month period

      <u>Compliance Method:</u> Compliance shall be demonstrated by the record keeping

requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 7.70 lbs OC/hr, 6.36 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 26,280 lbs/hr by an emission factor of 0.000293 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 42,992 tons/yr by an emission factor of 0.000148 ton OC/ton of sand.

e. Emission Limitation: 2.47 lbs PE/hr, 1.70 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 26,280 lbs/hr by the an emission factor of 0.000094 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 42,992 tons/yr by an emission rate of 0.0000396 ton PE/ton of sand.

f. Emission Limitation: 0.86 lb CO/hr, 1.40 tons CO/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 10 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 10,197 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (84 lbs CO/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 33.36 mm scf by the AP 42 emission factor.

g. Emission Limitation: 1.02 lb NOx/hr, 1.67 tons NOx/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 7 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 10,197 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (100 lbs NOx/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 33.36 mm scf by the AP 42 emission factor.

h. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P332 - core oven FECO line no. 4 [Modification of PTI 03-6871 issued January 13, 1993]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P333 - vertical cooler - FECO line no.1 [Modification of PTI 03-6871 issued January 13, 1993]	OAC rule 3745-31-05(A)(3)	The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A). 1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a. 151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a. 7.38 lbs OC/hr, 6.10 tons OC/year 2.37 lbs PE/hr, 1.63 tons PE/yr
	OAC rule 3745-17-07(A)	Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.
	OAC rule 3745-17-11(B)	The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be no control for this emissions unit.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525

1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

   b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

   c. the calculated emission rate for OC, in tons, determined by the following equation:

   TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

   where:

   TOCE = total organic compound emissions, in tons

   Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when

the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

   a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

   b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

   c. the rolling, 12-month emission limitations for PE and OC.

   These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

   a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

      Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 7.38 lbs OC/hr, 6.10 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 25,200 lbs/hr by an emission factor of 0.000293 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 41,226 tons/yr by an emission factor of 0.000148 ton OC/ton of sand.

e. Emission Limitation: 2.37 lbs PE/hr, 1.63 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 25,200 lbs/hr by the an emission factor of 0.000094 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 41,226 tons/yr by an emission rate of 0.0000396 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P333 - vertical cooler - FECO line no.1 [Modification of PTI 03-6871 issued January 13, 1993]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P334 - vertical cooler - FECO line no.2 [Modification of PTI 03-6871 issued January 13, 1993]	OAC rule 3745-31-05(A)(3)	The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A). 1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a. 151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a. 7.38 lbs OC/hr, 6.10 tons OC/year 2.37 lbs PE/hr, 1.63 tons PE/yr
	OAC rule 3745-17-07(A)	Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.
	OAC rule 3745-17-11(B)	The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined no control for this emissions unit..

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525

1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

   b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

   c. the calculated emission rate for OC, in tons, determined by the following equation:

   TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

   where:

   TOCE = total organic compound emissions, in tons

   Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when

the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

   a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

   b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

   c. the rolling, 12-month emission limitations for PE and OC.

   These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

   a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

      Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 7.38 lbs OC/hr, 6.10 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 25,200 lbs/hr by an emission factor of 0.000293 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 41,226 tons/yr by an emission factor of 0.000148 ton OC/ton of sand.

e. Emission Limitation: 2.37 lbs PE/hr, 1.63 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 25,200 lbs/hr by the an emission factor of 0.000094 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 41,226 tons/yr by an emission rate of 0.0000396 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P334 - vertical cooler - FECO line no.2 [Modification of PTI 03-6871 issued January 13, 1993]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P335 - vertical cooler - FECO line no.3 [Modification of PTI 03-6871 issued January 13, 1993]	OAC rule 3745-31-05(A)(3)	The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A). 1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a. 151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a. 14.77 lbs OC/hr, 12.20 tons OC/year 4.74 lbs PE/hr, 3.27 tons PE/yr
	OAC rule 3745-17-07(A)	Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.
	OAC rule 3745-17-11(B)	The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined no control for this emissions unit..

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525

1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

   b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

   c. the calculated emission rate for OC, in tons, determined by the following equation:

   TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

   where:

   TOCE = total organic compound emissions, in tons

   Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when

the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

   a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

   b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

   c. the rolling, 12-month emission limitations for PE and OC.

   These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

   a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

      Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 14.77 lbs OC/hr, 12.20 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 50,400 lbs/hr by an emission factor of 0.000293 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 82,451 tons/yr by an emission factor of 0.000148 ton OC/ton of sand.

e. Emission Limitation: 4.74 lbs PE/hr, 3.27 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 50,400 lbs/hr by the an emission factor of 0.000094 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 82,451 tons/yr by an emission rate of 0.0000396 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with

OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P335 - vertical cooler - FECO line no.3 [Modification of PTI 03-6871 issued January 13, 1993]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P336 - vertical cooler - FECO line no. 4 [Modification of PTI 03-6871 issued January 13, 1993]	OAC rule 3745-31-05(A)(3)	The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A). 1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a. 151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a. 7.70 lbs OC/hr, 6.36 tons OC/year 2.47 lbs PE/hr, 1.70 tons PE/yr
	OAC rule 3745-17-07(A)	Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.
	OAC rule 3745-17-11(B)	The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be no control for this emissions unit..

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525

1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

   b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

   c. the calculated emission rate for OC, in tons, determined by the following equation:

      TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

      where:

      TOCE = total organic compound emissions, in tons

      Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when

the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

   a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

   b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

   c. the rolling, 12-month emission limitations for PE and OC.

   These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

   a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

      Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 7.70 lbs OC/hr, 6.36 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 26,280 lbs/hr by an emission factor of 0.000293 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 42,992 tons/yr by an emission factor of 0.000148 ton OC/ton of sand.

e. Emission Limitation: 2.47 lbs PE/hr, 1.70 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 26,280 lbs/hr by the an emission factor of 0.000094 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 42,992 tons/yr by an emission rate of 0.0000396 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with

OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P336 - vertical cooler - FECO line no.4 [Modification of PTI 03-6871 issued January 13, 1993]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P337 - paste dry oven FECO line no.1 [Modification of PTI 03-6871 issued January 13, 1993]	OAC rule 3745-31-05(A)(3)	OAC rule 3745-17-11(B) OAC rule 3745-23-06(B) OAC rule 3745-21-07(G)(2)
	OAC rule 3745-17-07(A)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	See A.I.2..d. See A.II.2.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
7.38 lbs OC/hr, 6.10 tons OC/year	
2.37 lbs PE/hr, 1.63 tons PE/yr	
0.82 lb carbon monoxide (CO)/hr, 1.34 tons CO/yr	
0.98 lb nitrogen oxide (NOx)/hr, 1.60 tons NOx/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit..

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The use of photochemically reactive material, as defined in OAC rule 3745-21-01(C)(5), in this emissions unit is prohibited.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

4. The permittee shall maintain records of the following information for this emissions unit:

a. company identification for each liquid organic material employed in this emissions unit; and

b. documentation on whether or not each liquid organic material employed is a

photochemically reactive material.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

   a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

   b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

   c. the rolling, 12-month emission limitations for PE and OC.

   These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

3. The permittee shall notify the Director (the appropriate Ohio EPA District Office or local air agency) in writing of any monthly record showing the use of photochemically reactive material. The notification shall include a copy of such a record and shall be sent to the Director (the appropriate Ohio EPA District Office or local air agency) within 30 days following the end of the calendar month.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

   a. <u>Emission Limitation:</u> 1,024,555 tons of sand per rolling 12-month period

      <u>Compliance Method:</u> Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

   b. <u>Emission Limitation:</u> 1,207.90 tons OC per rolling 12-month period

      <u>Compliance Method:</u> Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 7.38 lbs OC/hr, 6.10 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 25,200 lbs/hr by an emission factor of 0.000293 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 41,226 tons/yr by an emission factor of 0.000148 ton OC/ton of sand.

e. Emission Limitation: 2.37 lbs PE/hr, 1.63 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 25,200 lbs/hr by the an emission factor of 0.000094 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 41,226 tons/yr by an emission rate of 0.0000396 ton PE/ton of sand.

f. Emission Limitation: 0.82 lb CO/hr, 1.34 tons CO/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 10 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 9778 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (84 lbs CO/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 31.99 mm scf by the AP 42 emission factor.

g. Emission Limitation: 0.98 lb NOx/hr, 1.60 tons NOx/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 7 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 9778 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (100 lbs NOx/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 31.99 mm scf by the AP 42 emission factor.

h. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P337 - paste dry oven FECO line no.1 [Modification of PTI 03-6871 issued January 13, 1993]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P338 - paste dry oven FECO line no.2 [Modification of PTI 03-6871 issued January 13, 1993]	OAC rule 3745-31-05(A)(3)	OAC rule 3745-17-11(B) OAC rule 3745-23-06(B) OAC rule 3745-21-07(G)(2)
	OAC rule 3745-17-07(A)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	See A.I.2..d. See A.II.2.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
7.38 lbs OC/hr, 6.10 tons OC/year	
2.37 lbs PE/hr, 1.63 tons PE/yr	
0.82 lb carbon monoxide (CO)/hr, 1.34 tons CO/yr	
0.98 lb nitrogen oxide (NOx)/hr, 1.60 tons NOx/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit..

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The use of photochemically reactive material, as defined in OAC rule 3745-21-01(C)(5), in this emissions unit is prohibited.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

4. The permittee shall maintain records of the following information for this emissions unit:

a. company identification for each liquid organic material employed in this emissions unit; and

b. documentation on whether or not each liquid organic material employed is a

photochemically reactive material.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

   a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

   b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

   c. the rolling, 12-month emission limitations for PE and OC.

   These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

3. The permittee shall notify the Director (the appropriate Ohio EPA District Office or local air agency) in writing of any monthly record showing the use of photochemically reactive material. The notification shall include a copy of such a record and shall be sent to the Director (the appropriate Ohio EPA District Office or local air agency) within 30 days following the end of the calendar month.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

   a. <u>Emission Limitation:</u> 1,024,555 tons of sand per rolling 12-month period

      <u>Compliance Method:</u> Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

   b. <u>Emission Limitation:</u> 1,207.90 tons OC per rolling 12-month period

      <u>Compliance Method:</u> Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 7.38 lbs OC/hr, 6.10 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 25,200 lbs/hr by an emission factor of 0.000293 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 41,226 tons/yr by an emission factor of 0.000148 ton OC/ton of sand.

e. Emission Limitation: 2.37 lbs PE/hr, 1.63 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 25,200 lbs/hr by the an emission factor of 0.000094 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 41,226 tons/yr by an emission rate of 0.0000396 ton PE/ton of sand.

f. Emission Limitation: 0.82 lb CO/hr, 1.34 tons CO/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 10 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 9778 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (84 lbs CO/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 31.99 mm scf by the AP 42 emission factor.

g. Emission Limitation: 0.98 lb NOx/hr, 1.60 tons NOx/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 7 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 9778 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (100 lbs NOx/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 31.99 mm scf by the AP 42 emission factor.

h. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P338 - paste dry oven FECO line no.2 [Modification of PTI 03-6871 issued January 13, 1993]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P339 - paste dry oven FECO line no.3 [Modification of PTI 03-6871 issued January 13, 1993]	OAC rule 3745-31-05(A)(3)	OAC rule 3745-17-11(B) OAC rule 3745-23-06(B) OAC rule 3745-21-07(G)(2)
	OAC rule 3745-17-07(A)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3). See A.I.2..d. See A.II.2.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
14.77 lbs OC/hr, 12.20 tons OC/year	
4.74 lbs PE/hr, 3.27 tons PE/yr	
1.64 lb carbon monoxide (CO)/hr, 2.69 tons CO/yr	
1.96 lb nitrogen oxide (NOx)/hr, 3.20 tons NOx/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit..

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The use of photochemically reactive material, as defined in OAC rule 3745-21-01(C)(5), in this emissions unit is prohibited.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

4. The permittee shall maintain records of the following information for this emissions unit:

a. company identification for each liquid organic material employed in this emissions unit; and

b. documentation on whether or not each liquid organic material employed is a photochemically reactive material.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

   a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

   b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

   c. the rolling, 12-month emission limitations for PE and OC.

   These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

3. The permittee shall notify the Director (the appropriate Ohio EPA District Office or local air agency) in writing of any monthly record showing the use of photochemically reactive material. The notification shall include a copy of such a record and shall be sent to the Director (the appropriate Ohio EPA District Office or local air agency) within 30 days following the end of the calendar month.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

   a. <u>Emission Limitation:</u> 1,024,555 tons of sand per rolling 12-month period

      <u>Compliance Method:</u> Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 14.77 lbs OC/hr, 12.20 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 50,400 lbs/hr by an emission factor of 0.000293 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 82,451 tons/yr by an emission factor of 0.000148 ton OC/ton of sand.

e. Emission Limitation: 4.74 lbs PE/hr, 3.27 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 50,400 lbs/hr by the an emission factor of 0.000094 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 82,451 tons/yr by an emission rate of 0.0000396 ton PE/ton of sand.

f. Emission Limitation: 1.64 lb CO/hr, 2.69 tons CO/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 10 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 19,555 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (84 lbs CO/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 63.98 mm scf by the AP 42 emission factor.

g. Emission Limitation: 1.96 lb NOx/hr, 3.20 tons NOx/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 7 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 19,555 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (100 lbs NOx/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 63.98 mm scf by the AP 42 emission factor.

h. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P339 - paste dry oven FECO line no.3 [Modification of PTI 03-6871 issued January 13, 1993]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements
P340 - paste dry oven FECO line no.4 [Modification of PTI 03-6871 issued January 13, 1993]	OAC rule 3745-31-05(A)(3) OAC rule 3745-17-07(A)
	OAC rule 3745-17-11(B) OAC rule 3745-23-06(B) OAC rule 3745-21-07(G)(2)

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	See A.I.2..d. See A.II.2.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
7.70 lbs OC/hr, 6.36 tons OC/year	
2.47 lbs PE/hr, 1.70 tons PE/yr	
0.86 lb carbon monoxide (CO)/hr, 1.40 tons CO/yr	
1.02 lb nitrogen oxide (NOx)/hr, 1.67 tons NOx/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit..

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Emissions Unit ID: P340

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The use of photochemically reactive material, as defined in OAC rule 3745-21-01(C)(5), in this emissions unit is prohibited.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand),

for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

4. The permittee shall maintain records of the following information for this emissions unit:

a. company identification for each liquid organic material employed in this emissions unit; and

b. documentation on whether or not each liquid organic material employed is a photochemically reactive material.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

   a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

   b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

   c. the rolling, 12-month emission limitations for PE and OC.

   These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

3. The permittee shall notify the Director (the appropriate Ohio EPA District Office or local air agency) in writing of any monthly record showing the use of photochemically reactive material. The notification shall include a copy of such a record and shall be sent to the Director (the appropriate Ohio EPA District Office or local air agency) within 30 days following the end of the calendar month.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

   a. <u>Emission Limitation:</u> 1,024,555 tons of sand per rolling 12-month period

      <u>Compliance Method:</u> Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

   b. <u>Emission Limitation:</u> 1,207.90 tons OC per rolling 12-month period

      <u>Compliance Method:</u> Compliance shall be demonstrated by the record keeping

requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 7.70 lbs OC/hr, 6.36 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 26,280 lbs/hr by an emission factor of 0.000293 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 42,992 tons/yr by an emission factor of 0.000148 ton OC/ton of sand.

e. Emission Limitation: 2.47 lbs PE/hr, 1.70 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 26,280 lbs/hr by the an emission factor of 0.000094 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 42,992 tons/yr by an emission rate of 0.0000396 ton PE/ton of sand.

f. Emission Limitation: 0.86 lb CO/hr,1.40. tons CO/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 10 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 10,197 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (84 lbs CO/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 33.36 mm scf by the AP 42 emission factor.

g. Emission Limitation: 1.02 lb NOx/hr, 1.67 tons NOx/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 7 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 10,197 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (100 lbs NOx/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 33.36 mm scf by the AP 42 emission factor.

h. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P340 - paste dry oven FECO line no.4 [Modification of PTI 03-6871 issued January 13, 1993]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	OAC rule 3745-23-06(B)
P352 - core oven no.4 (block dip dry oven no.1) [Modification of PTI 03-7069 issued March 10, 1993]	OAC rule 3745-31-05(A)(3)	OAC rule 3745-21-07(G)(2)
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B). 1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a. 151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a. 1.85 lbs OC/hr, 1.53 tons OC/year 0.59 lbs PE/hr, 0.41 tons PE/yr Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule. The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3). See A.I.2..d.	See A.II.2.	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit..

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625

1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The use of photochemically reactive material, as defined in OAC rule 3745-21-01(C)(5), in this emissions unit is prohibited.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

   b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

   c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

4. The permittee shall maintain records of the following information for this emissions unit:

a. company identification for each liquid organic material employed in this emissions unit; and

b. documentation on whether or not each liquid organic material employed is a photochemically reactive material.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to

install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

3. The permittee shall notify the Director (the appropriate Ohio EPA District Office or local air agency) in writing of any monthly record showing the use of photochemically reactive material. The notification shall include a copy of such a record and shall be sent to the Director (the appropriate Ohio EPA District Office or local air agency) within 30 days following the end of the calendar month.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. <u>Emission Limitation:</u> 1,024,555 tons of sand per rolling 12-month period

<u>Compliance Method:</u> Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. <u>Emission Limitation:</u> 1,207.90 tons OC per rolling 12-month period

<u>Compliance Method:</u> Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. <u>Emission Limitation:</u> 151.56 tons PE per rolling 12-month period

<u>Compliance Method:</u> Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. <u>Emission Limitation:</u> 1.85 lbs OC/hr, 1.53 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 6300 lbs/hr by an emission factor of 0.000293 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 10,306 tons/yr by an emission factor of 0.000148 ton OC/ton of sand.

e. Emission Limitation: 0.59 lbs PE/hr, 0.41 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 6300 lbs/hr by the an emission factor of 0.000094 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 10,306 tons/yr by an emission rate of 0.0000396 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P352 - core oven no.4 (block dip dry oven #1) [Modification of PTI 03-7069 issued March 10, 1993]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P353 - hot box core machine no.77/78 (two station machine), core sand mixer and associated conveyor	OAC rule 3745-31-05(A)(3)	OAC rule 3745-17-11(B)
[Modification of PTI 03-6912 issued June 3, 1993]		OAC rule 3745-23-06(B)
		OAC rule 3745-21-07(G)(1)&(2)
	OAC rule 3745-17-07(A)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	See A.I.2.d.
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	See A.I.2.e.
73.80 lbs OC/hr, 63.47 tons OC/year (includes conveyor emissions)	
8.70 lbs PE/hr, 5.51 tons PE/yr	
0.43 lbs carbon monoxide (CO)/hr, 1.08 tons CO/yr	
0.52 lbs nitrogen oxide (NOx)/hr, 1.29 tons NOx/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

2.e The core sand mixer portion of this emissions unit does not employ, apply, evaporate or dry any photochemically reactive material (PRM), or any substance containing such as PRM. Also, the liquid organic material/substance containing liquid organic material in the hot box core machine portion of this emissions unit does not come into contact with a flame and is not baked, heat-cured, or heat-polymerized, in the presence of oxygen. Therefore, there are no applicable emission limitations established by this rule.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)

1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

   b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

   c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

These deviation reports shall be submitted in accordance with the General Terms and Conditions

of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

   a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

      Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

   b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

      Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

   c. Emission Limitation: 151.56 tons PE per rolling 12-month period

      Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

   d. Emission Limitation: 73.80 lbs OC/hr, 63.47 tons OC/year

      Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

      *The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 14,400 lbs/hr by an emission factor of 0.005125 lb OC/lb sand (sum of hot box core emission factor, 0.004932 and conveyor emission factor, 0.000193). The

maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 36,000 tons/yr by an emission factor of 0.001763 ton OC/ton of sand (sum of hot box core emission factor, 0.001347 and hot box conveyor emission factor, 0.000416).

e. Emission Limitation: 8.70 lbs PE/hr, 5.51 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 14,400 lbs/hr by the an emission factor of 0.000604 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 36,000 tons/yr by an emission rate of 0.000153 ton PE/ton of sand.

f. Emission Limitation: 0.43 lb CO/hr, 1.08 tons CO/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 10 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 5115 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (84 lbs CO/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 25.78 mm scf by the AP 42 emission factor.

g. Emission Limitation: 0.52 lb NOx/hr, 1.29 tons NOx/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 7 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 5155 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (100 lbs NOx/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 25.78 mm scf by the AP 42 emission factor.

h. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not

exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P353 - hot box core machine no.77/78 (two station machine) [Modification of PTI 03-6912 issued June 3, 1993]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P354 - hot box core machine no.79/80 (two station machine), core sand mixer and associated conveyor	OAC rule 3745-31-05(A)(3)	OAC rule 3745-17-11(B)
[Modification of PTI 03-6912 issued June 3, 1993]		OAC rule 3745-23-06(B)
		OAC rule 3745-21-07(G)(1)&(2)
	OAC rule 3745-17-07(A)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3). See A.I.2.d. See A.I.2.e.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
73.80 lbs OC/hr, 63.47 tons OC/year (includes conveyor emissions)	
8.70 lbs PE/hr, 5.51 tons PE/yr	
0.43 lbs carbon monoxide (CO)/hr, 1.08 tons CO/yr	
0.52 lbs nitrogen oxide (NOx)/hr, 1.29 tons NOx/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

2.e The core sand mixer portion of this emissions unit does not employ, apply, evaporate or dry any photochemically reactive material (PRM), or any substance containing such as PRM. Also, the liquid organic material/substance containing liquid organic material in the hot box core machine portion of this emissions unit does not come into contact with a flame and is not baked, heat-cured, or heat-polymerized, in the presence of oxygen. Therefore, there are no applicable emission limitations established by this rule.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)

1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

   b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

   c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 73.80 lbs OC/hr, 63.47 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 14,400 lbs/hr by an emission factor of 0.005125 lb OC/lb sand (sum of hot box core emission factor, 0.004932 and conveyor emission factor, 0.000193). The

maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 36,000 tons/yr by an emission factor of 0.001763 ton OC/ton of sand (sum of hot box core emission factor, 0.001347 and hot box conveyor emission factor, 0.000416).

e. Emission Limitation: 8.70 lbs PE/hr, 5.51 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 14,400 lbs/hr by the an emission factor of 0.000604 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 36,000 tons/yr by an emission rate of 0.000153 ton PE/ton of sand.

f. Emission Limitation: 0.43 lb CO/hr, 1.08 tons CO/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 10 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 5155 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (84 lbs CO/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 25.78 mm scf by the AP 42 emission factor.

g. Emission Limitation: 0.52 lb NOx/hr, 1.29 tons NOx/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 7 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 5155 scf/hr by the AP42 emission factor, Table

1-4.1 Revised 7/98 (100 lbs NOx/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 25.78 mm scf by the AP 42 emission factor.

h. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P354 - hot box core machine no.79/80 (two station machine) [Modification of PTI 03-6912 issued June 3, 1993]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P355 - hot box core machine no.81/82 (two station machine), core sand mixer and associated conveyor	OAC rule 3745-31-05(A)(3)	OAC rule 3745-17-11(B)
[Modification of PTI 03-6912 issued June 3, 1993]		OAC rule 3745-23-06(B)
		OAC rule 3745-21-07(G)(1)&(2)
	OAC rule 3745-17-07(A)	

Applicable Emissions Limitations/Control Measures	
	rule 3745-31-05(A)(3).
	See A.I.2.d.
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	See A.I.2.e.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
73.80 lbs OC/hr, 63.47 tons OC/year (includes conveyor emissions)	
8.70 lbs PE/hr, 5.51 tons PE/yr	
0.43 lbs carbon monoxide (CO)/hr, 1.08 tons CO/yr	
0.52 lbs nitrogen oxide (NOx)/hr, 1.29 tons NOx/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

2.e The core sand mixer portion of this emissions unit does not employ, apply, evaporate or dry any photochemically reactive material (PRM), or any substance containing such as PRM. Also, the liquid organic material/substance containing liquid organic material in the hot box core machine portion of this emissions unit does not come into contact with a flame and is not baked, heat-cured, or heat-polymerized, in the presence of oxygen. Therefore, there are no applicable emission limitations established by this rule.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)

1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

   b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in

2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 73.80 lbs OC/hr, 63.47 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 14,400 lbs/hr by an emission factor of 0.005125 lb OC/lb sand (sum of hot box core emission factor, 0.004932 and conveyor emission factor, 0.000193). The

maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 36,000 tons/yr by an emission factor of 0.001763 ton OC/ton of sand (sum of hot box core emission factor, 0.001347 and hot box conveyor emission factor, 0.000416).

e. Emission Limitation: 8.70 lbs PE/hr, 5.51 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 14,400 lbs/hr by the an emission factor of 0.000604 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 36,000 tons/yr by an emission rate of 0.000153 ton PE/ton of sand.

f. Emission Limitation: 0.43 lb CO/hr, 1.08 tons CO/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 10 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 5155 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (84 lbs CO/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 25.78 mm scf by the AP 42 emission factor.

g. Emission Limitation: 0.52 lb NOx/hr, 1.29 tons NOx/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 7 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 5155 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (100

lbs NOx/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 25.78 mm scf by the AP 42 emission factor.

h. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P355 - hot box core machine no.81/82 (two station machine) [Modification of PTI 03-6912 issued June 3, 1993]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P356 - hot box core machine no.83/84 (two station machine), core sand mixer and associated conveyor	OAC rule 3745-31-05(A)(3)	OAC rule 3745-17-11(B)
[Modification of PTI 03-6912 issued June 3, 1993]		OAC rule 3745-23-06(B)
		OAC rule 3745-21-07(G)(1)&(2)
	OAC rule 3745-17-07(A)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	See A.I.2.d.
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	See A.I.2.e.
73.80 lbs OC/hr, 63.47 tons OC/year (includes conveyor emissions)	
8.70 lbs PE/hr, 5.51 tons PE/yr	
0.43 lbs carbon monoxide (CO)/hr, 1.08 tons CO/yr	
0.52 lbs nitrogen oxide (NOx)/hr, 1.29 tons NOx/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

2.e The core sand mixer portion of this emissions unit does not employ, apply, evaporate or dry any photochemically reactive material (PRM), or any substance containing such as PRM. Also, the liquid organic material/substance containing liquid organic material in the hot box core machine portion of this emissions unit does not come into contact with a flame and is not baked, heat-cured, or heat-polymerized, in the presence of oxygen. Therefore, there are no applicable emission limitations established by this rule.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)

1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

   b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

   c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

These deviation reports shall be submitted in accordance with the General Terms and Conditions

of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

   a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

      Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

   b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

      Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

   c. Emission Limitation: 151.56 tons PE per rolling 12-month period

      Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

   d. Emission Limitation: 73.80 lbs OC/hr, 63.47 tons OC/year

      Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

      *The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 14,400 lbs/hr by an emission factor of 0.005125 lb OC/lb sand (sum of hot box core emission factor, 0.004932 and conveyor emission factor, 0.000193). The

maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 36,000 tons/yr by an emission factor of 0.001763 ton OC/ton of sand (sum of hot box core emission factor, 0.001347 and hot box conveyor emission factor, 0.000416).

e. Emission Limitation: 8.70 lbs PE/hr, 5.51 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 14,400 lbs/hr by the an emission factor of 0.000604 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 36,000 tons/yr by an emission rate of 0.000153 ton PE/ton of sand.

f. Emission Limitation: 0.43 lb CO/hr, 1.08 tons CO/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 10 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 5155 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (84 lbs CO/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 25.78 mm scf by the AP 42 emission factor.

g. Emission Limitation: 0.52 lb NOx/hr, 1.29 tons NOx/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 7 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 5155 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (100 lbs NOx/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 25.78 mm scf by the AP 42 emission factor.

h. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not

exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P356 - hot box core machine no.83/84 (two station machine) [Modification of PTI 03-6912 issued June 3, 1993]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P358 - cold box core machine no.69/70 (two station machine) and core sand mixer [Modification of PTI 03-7105 issued April 21, 1993]	OAC rule 3745-31-05(A)(3)	OAC rule 3745-21-07(G)(9)(h)
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A).	acid scrubber that is designed and operated to remove at least 98% percent, by weight, of the catalyst gas emissions.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
7.93 lbs OC/hr, 7.30 tons OC/year (see A.I.2.c)	
6.02 lbs PE/hr, 4.18 tons PE/yr (see A.I.2.c)	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	
The catalyst gas emissions shall be vented to a sulfuric	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology" (BAT) has been determined to be the use of a catalyst gas scrubber designed for the control of catalyst gas on cold box core machines.

2.c The emission limitations include emissions from miscellaneous stack #836.

2.d For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075

1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The pH and liquor flow rate of the catalyst gas scrubbers shall be maintained at the following levels:

   a. the catalyst gas scrubber liquor pH shall be continuously maintained at or below 5 while the emissions unit is in operation; and

   b. the catalyst gas scrubber liquor flow rate shall be continuously maintained at a value of 3 to 5 gallons per minute per 1,000 cubic feet per minute (cfm) of gas flow at all time while the emissions unit is in operation.

3. To ensure proper operation of the catalyst gas scrubber during operation of this emissions unit, the permittee shall employ an "interlock system" that will shutdown the cold box core machine within 30 minutes after the catalyst gas scrubber liquid pH rises above 5.

   The "interlock system" shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations with any modifications deemed necessary by the permittee.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand),

for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall collect and record the following information each day:

a. the pH of the catalyst gas scrubber, once per operating shift;

b. the catalyst gas scrubber liquor flow rate, in gallons per minute, on a once per shift basis.

c. all periods of time the catalyst gas scrubber was not operating in accordance with the requirements in condition A.II.2. above, and the corrective action taken to bring the catalyst gas scrubber into compliance with these operating conditions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

d. all periods of time during which the scrubber for these emissions units was not maintained in accordance with the following:

i. the pH of the scrubber exceeded 5.

ii. the catalyst gas scrubber liquor flow rate was less than 3 gallons per minute per 1,000 cfm of gas flow.

e. any time periods the "interlock system" associated with the catalytic gas scrubber did not operate in compliance with the requirements specified in Section A.II.3.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall notify the Director (the appropriate Ohio EPA District Office or local air agency) in writing of any monthly record showing the use of photochemically reactive material. The notification shall include a copy of such record and shall be sent to the Director (the appropriate Ohio EPA District Office or local air agency) within 30 days following the end of the calendar month.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 7.93 lbs OC/hr, 7.30 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates.

Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 7700 lbs/hr by an emission factor of 0.00085 lb OC/lb sand for the main stack and 0.00018 lb OC/lb sand for miscellaneous exhaust stack #836. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 19,250 tons/yr by an emission factor of 0.000313 ton OC/ton of sand for the main stack and 0.0000665 ton OC/ton of sand for miscellaneous exhaust stack #836.

e. Emission Limitation: 6.02 lbs PE/hr, 4.18 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 7700 lbs/hr by the an emission factor of 0.000178 lbs PE/lb sand for the main stack and 0.000604 lb PE/lb sand for miscellaneous stack #836. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 19,250 tons/yr by an emission rate of 0.0000643 ton PE/ton of sand for the main stack and 0.000153 lb PE/lb sand for miscellaneous stack #836..

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

g. Emission Limitation: 98% control efficiency for catalyst gas emissions, by weight

Compliance Method: The catalyst gas scrubber has a manufacturer's guarantee of 99% removal by weight of catalyst gas emissions. If required, compliance with the control efficiency (i.e. the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined in accordance with the following:

i. the outlet mass emission rate shall be determined using USEPA Methods 1-4 and

18 in 40 CFR Part 60; and

ii. the inlet mass emission rate shall be determined using emission factors developed from inlet testing on similar emissions units at the facility and data collected (i.e. process weight rate, etc.) during the testing of the control outlet for this emissions unit. Inlet mass emission testing is not possible on this emissions unit.

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P358 - cold box core machine no.69/70 (two station machine) [Modification of PTI 03-7105 issued April 21, 1993]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	OAC rule 3745-23-06(B)
P361 - core oven no.5 [Modification of PTI 03-7169 issued July 14, 1993]	OAC rule 3745-31-05(A)(3)	OAC rule 3745-21-07(G)(2)
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B). 1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a. 151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a. 2.49 lbs OC/hr, 2.06 tons OC/year 0.80 lbs PE/hr, 0.55 tons PE/yr Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule. The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3). See A.I.2..d.	See A.II.2.	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075

1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The use of photochemically reactive material, as defined in OAC rule 3745-21-01(C)(5), in this emissions unit is prohibited.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

   b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

   c. the calculated emission rate for OC, in tons, determined by the following equation:

   $$TOCE = (2.a)(Q + R) + (2.b)(S) + (1.a)(T)$$

   where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines,

and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

4. The permittee shall maintain records of the following information for this emissions unit:

a. company identification for each liquid organic material employed in this emissions unit; and

b. documentation on whether or not each liquid organic material employed is a photochemically reactive material.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to

install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

3. The permittee shall notify the Director (the appropriate Ohio EPA District Office or local air agency) in writing of any monthly record showing the use of photochemically reactive material. The notification shall include a copy of such a record and shall be sent to the Director (the appropriate Ohio EPA District Office or local air agency) within 30 days following the end of the calendar month.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 2.49 lbs OC/hr, 2.06 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 8500 lbs/hr by an emission factor of 0.000293 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 13,905 tons/yr by an emission factor of 0.000148 ton OC/ton of sand.

e. Emission Limitation: 0.80 lbs PE/hr, 0.55 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 8500 lbs/hr by the an emission factor of 0.000094 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 13,905 tons/yr by an emission rate of 0.0000396 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P361 - core oven no.5 [Modification of PTI 03-7169 issued July 14, 1993]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P369 - cold box core machine no.68 and core sand mixer [Modification of PTI 03-7776 issued August 3, 1994]	OAC rule 3745-31-05(A)(3)	OAC rule 3745-21-07(G)(9)(h)
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures	emissions.
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A).	
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
4.02 lbs OC/hr, 3.70 tons OC/year (see A.I.2.c)	
3.05 lbs PE/hr, 2.12 tons PE/yr (see A.I.2.c)	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	
The catalyst gas emissions shall be vented to a sulfuric acid scrubber that is designed and operated to remove at least 98% percent, by weight, of the catalyst gas	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology" (BAT) has been determined to be the use of a catalyst gas scrubber designed for the control of catalyst gas on cold box core machines.

2.c The emissions limitations include emissions from miscellaneous stack #836.

2.d For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075

1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The pH and liquor flow rate of the catalyst gas scrubbers shall be maintained at the following levels:

   a. the catalyst gas scrubber liquor pH shall be continuously maintained at or below 5 while the emissions unit is in operation; and

   b. the catalyst gas scrubber liquor flow rate shall be continuously maintained at a value of 3 to 5 gallons per minute per 1,000 cubic feet per minute (cfm) of gas flow at all time while the emissions unit is in operation.

3. To ensure proper operation of the catalyst gas scrubber during operation of this emissions unit, the permittee shall employ an "interlock system" that will shutdown the cold box core machine within 30 minutes after the catalyst gas scrubber liquid pH rises above 5.

   The "interlock system" shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations with any modifications deemed necessary by the permittee.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

   b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

   c. the calculated emission rate for OC, in tons, determined by the following equation:

      TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

      where:

      TOCE = total organic compound emissions, in tons

      Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

      R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

      S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

      T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

      *These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

   d. the calculated emission rate for PE, in tons, determined by the following equation:

      TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

      where:

      TPE = total particulate emissions, in tons

      U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall collect and record the following information each day:

a. the pH of the catalyst gas scrubber, once per operating shift;

b. the catalyst gas scrubber liquor flow rate, in gallons per minute, on a once per shift basis.

c. all periods of time the catalyst gas scrubber was not operating in accordance with the requirements in condition A.II.2. above, and the corrective action taken to bring the catalyst gas scrubber into compliance with these operating conditions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

d. all periods of time during which the scrubber for these emissions units was not maintained in accordance with the following:

i. the pH of the scrubber exceeded 5.

ii. the catalyst gas scrubber liquor flow rate was less than 3 gallons per minute per 1,000 cfm of gas flow.

e. any time periods the "interlock system" associated with the catalytic gas scrubber did not operate in compliance with the requirements specified in Section A.II.3.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 4.02 lbs OC/hr, 3.70 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 3900 lbs/hr by an emission factor of 0.00085 lb OC/lb sand for the main stack and 0.00018 lb OC/lb sand for miscellaneous stack #836. The maximum annual

emission limitation is calculated by multiplying the maximum annual sand usage rate of 9750 tons/yr by an emission factor of 0.000313 ton OC/ton of sand for the main stack and 0.0000665 ton OC/ton sand for miscellaneous stack #836.

e. Emission Limitation: 3.05 lbs PE/hr, 2.12 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 3900 lbs/hr by the an emission factor of 0.000178 lbs PE/lb sand for the main stack and 0.000604 lb PE/lb sand for miscellaneous stack #836. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 9750 tons/yr by an emission rate of 0.0000643 ton PE/ton of sand for the main stack and 0.000153 lb PE/lb sand for miscellaneous stack #836.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

g. Emission Limitation: 98% control efficiency for catalyst gas emissions, by weight

Compliance Method: The catalyst gas scrubber has a manufacturer's guarantee of 99% removal by weight of catalyst gas emissions. If required, compliance with the control efficiency (i.e. the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined in accordance with the following:

i. the outlet mass emission rate shall be determined using USEPA Methods 1-4 and 18 in 40 CFR Part 60; and

ii. the inlet mass emission rate shall be determined using emission factors developed from inlet testing on similar emissions units at the facility and data collected (i.e. process weight rate, etc.) during the testing of the control outlet for this emissions unit. Inlet mass emission testing is not possible on this emissions unit.

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P369 - cold box core machine no.68 [Modification of PTI 03-7776 issued August 3, 1994]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
		OAC rule 3745-21-07(G)(9)(h)
P370 - cold box core machine no.92 and core sand mixer [Modification of PTI 03-7776 issued August 3, 1994]	OAC rule 3745-31-05(A)(3)	
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A).	acid scrubber that is designed and operated to removed at least 98 percent, by weight, of the catalyst gas emissions.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
5.36 lbs OC/hr, 4.93 tons OC/year	
1.12 lbs PE/hr, 1.01 tons PE/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	
The catalyst gas emissions shall be vented to a sulfuric	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology" (BAT) has been determined to be the use of a catalyst gas scrubber designed for the control of catalyst gas on cold box core machines.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525

1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The pH and liquor flow rate of the catalyst gas scrubbers shall be maintained at the following levels:

   a. the catalyst gas scrubber liquor pH shall be continuously maintained at or below 5 while the emissions unit is in operation; and

   b. the catalyst gas scrubber liquor flow rate shall be continuously maintained at a value of 3 to 5 gallons per minute per 1,000 cubic feet per minute (cfm) of gas flow at all time while the emissions unit is in operation.

3. To ensure proper operation of the catalyst gas scrubber during operation of this emissions unit, the permittee shall employ an "interlock system" that will shutdown the cold box core machine within 30 minutes after the catalyst gas scrubber liquid pH rises above 5.

   The "interlock system" shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations with any modifications deemed necessary by the permittee.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand),

for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall collect and record the following information each day:

a. the pH of the catalyst gas scrubber, once per operating shift;

b. the catalyst gas scrubber liquor flow rate, in gallons per minute, on a once per shift basis.

c. all periods of time the catalyst gas scrubber was not operating in accordance with the requirements in condition A.II.2. above, and the corrective action taken to bring the catalyst gas scrubber into compliance with these operating conditions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

d. all periods of time during which the scrubber for these emissions units was not maintained in accordance with the following:

i. the pH of the scrubber exceeded 5.

ii. the catalyst gas scrubber liquor flow rate was less than 3 gallons per minute per 1,000 cfm of gas flow.

e. any time periods the "interlock system" associated with the catalytic gas scrubber did not operate in compliance with the requirements specified in section A.II.3.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 5.36 lbs OC/hr, 4.93 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 6300 lbs/hr by an emission factor of 0.00085 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 15,750 tons/yr by an emission factor of 0.000313 ton OC/ton of sand.

e. Emission Limitation: 1.12 lbs PE/hr, 1.01 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 6300 lbs/hr by the an emission factor of 0.000178 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 15,750 tons/yr by an emission rate of 0.0000643 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

g. Emission Limitation: 98% control efficiency for catalyst gas emissions, by weight

Compliance Method: The catalyst gas scrubber has a manufacturer's guarantee of 99% removal by weight of catalyst gas emissions. If required, compliance with the control efficiency (i.e. the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined in accordance with the following:

i. the outlet mass emission rate shall be determined using USEPA Methods 1-4 and 18 in 40 CFR Part 60; and

ii. the inlet mass emission rate shall be determined using emission factors developed from inlet testing on similar emissions units at the facility and data collected (i.e. process weight rate, etc.) during the testing of the control outlet for this emissions unit (inlet mass emission testing is not possible on this emissions unit).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P370 - cold box core machine no.92 [Modification of PTI 03-7776 issued August 3, 1994]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
		OAC rule 3745-21-07(G)(9)(h)
P371 - cold box core machine no.91 and core sand mixer [Modification of PTI 03-7776 issued August 3, 1994]	OAC rule 3745-31-05(A)(3)	
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A).	acid scrubber that is designed and operated to removed at least 98 percent, by weight, of the catalyst gas emissions.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
5.36 lbs OC/hr, 4.93 tons OC/year	
1.12 lbs PE/hr, 1.01 tons PE/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	
The catalyst gas emissions shall be vented to a sulfuric	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology" (BAT) has been determined to be the use of a catalyst gas scrubber designed for the control of catalyst gas on cold box core machines.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975

1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The pH and liquor flow rate of the catalyst gas scrubbers shall be maintained at the following levels:

   a. the catalyst gas scrubber liquor pH shall be continuously maintained at or below 5 while the emissions unit is in operation; and

   b. the catalyst gas scrubber liquor flow rate shall be continuously maintained at a value of 3 to 5 gallons per minute per 1,000 cubic feet per minute (cfm) of gas flow at all time while the emissions unit is in operation.

3. To ensure proper operation of the catalyst gas scrubber during operation of this emissions unit, the permittee shall employ an "interlock system" that will shutdown the cold box core machine within 30 minutes after the catalyst gas scrubber liquid pH rises above 5.

   The "interlock system" shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations with any modifications deemed necessary by the permittee.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall collect and record the following information each day:

a. the pH of the catalyst gas scrubber, once per operating shift;

b. the catalyst gas scrubber liquor flow rate, in gallons per minute, on a once per shift basis.

c. all periods of time the catalyst gas scrubber was not operating in accordance with the requirements in condition A.II.2. above, and the corrective action taken to bring the catalyst gas scrubber into compliance with these operating conditions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

d. all periods of time during which the scrubber for these emissions units was not maintained in accordance with the following:

i. the pH of the scrubber exceeded 5.

ii. the catalyst gas scrubber liquor flow rate was less than 3 gallons per minute per 1,000 cfm of gas flow.

e. any time periods the "interlock system" associated with the catalytic gas scrubber did not operate in compliance with the requirements specified in section A.II.3.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 5.36 lbs OC/hr, 4.93 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 6300 lbs/hr by an emission factor of 0.00085 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 15,750 tons/yr by an emission factor of 0.000313 ton OC/ton of sand.

e. Emission Limitation: 1.12 lbs PE/hr, 1.01 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 6300 lbs/hr by the an emission factor of 0.000178 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 15,750 tons/yr by an emission rate of 0.0000643 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

g. Emission Limitation: 98% control efficiency for catalyst gas emissions, by weight

Compliance Method: The catalyst gas scrubber has a manufacturer's guarantee of 99% removal by weight of catalyst gas emissions. If required, compliance with the control efficiency (i.e. the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined in accordance with the following:

i. the outlet mass emission rate shall be determined using USEPA Methods 1-4 and 18 in 40 CFR Part 60; and

ii. the inlet mass emission rate shall be determined using emission factors developed from inlet testing on similar emissions units at the facility and data collected (i.e. process weight rate, etc.) during the testing of the control outlet for this emissions unit (inlet mass emission testing is not possible on this emissions unit).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P371 - cold box core machine no.91 [Modification of PTI 03-7776 issued August 3, 1994]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P372 - cold box core machine no.85 and core sand mixer [Modification of PTI 03-7907 issued August 3, 1994]	OAC rule 3745-31-05(A)(3)	OAC rule 3745-21-07(G)(9)(h)
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures	emissions.
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A).	
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
7.42 lbs OC/hr, 6.83 tons OC/year (see A.I.2.c)	
5.63 lbs PE/hr, 3.91 tons PE/yr (see A.I.2.c)	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	
The catalyst gas emissions shall be vented to a sulfuric acid scrubber that is designed and operated to remove at least 98% percent, by weight, of the catalyst gas	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology" (BAT) has been determined to be the use of a catalyst gas scrubber designed for the control of catalyst gas on cold box core machines.

2.c The emissions limitations include emissions from miscellaneous stack #949.

2.d For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075

1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The pH and liquor flow rate of the catalyst gas scrubbers shall be maintained at the following levels:

   a. the catalyst gas scrubber liquor pH shall be continuously maintained at or below 5 while the emissions unit is in operation; and

   b. the catalyst gas scrubber liquor flow rate shall be continuously maintained at a value of 3 to 5 gallons per minute per 1,000 cubic feet per minute (cfm) of gas flow at all time while the emissions unit is in operation.

3. To ensure proper operation of the catalyst gas scrubber during operation of this emissions unit, the permittee shall employ an "interlock system" that will shutdown the cold box core machine within 30 minutes after the catalyst gas scrubber liquid pH rises above 5.

   The "interlock system" shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations with any modifications deemed necessary by the permittee.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

   b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

   c. the calculated emission rate for OC, in tons, determined by the following equation:

      TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

      where:

      TOCE = total organic compound emissions, in tons

      Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

      R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

      S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

      T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

      *These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

   d. the calculated emission rate for PE, in tons, determined by the following equation:

      TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

      where:

      TPE = total particulate emissions, in tons

      U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall collect and record the following information each day:

a. the pH of the catalyst gas scrubber, once per operating shift;

b. the catalyst gas scrubber liquor flow rate, in gallons per minute, on a once per shift basis.

c. all periods of time the catalyst gas scrubber was not operating in accordance with the requirements in condition A.II.2. above, and the corrective action taken to bring the catalyst gas scrubber into compliance with these operating conditions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

d. all periods of time during which the scrubber for these emissions units was not maintained in accordance with the following:

i. the pH of the scrubber exceeded 5.

ii. the catalyst gas scrubber liquor flow rate was less than 3 gallons per minute per 1,000 cfm of gas flow.

e. any time periods the "interlock system" associated with the catalytic gas scrubber did not operate in compliance with the requirements specified in Section A.II.3.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 7.42 lbs OC/hr, 6.83 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 7200 lbs/hr by an emission factor of 0.00085 lb OC/lb sand for the main stack and 0.00018 lb OC/lb sand for miscellaneous stack #949. The maximum annual

emission limitation is calculated by multiplying the maximum annual sand usage rate of 18,000 tons/yr by an emission factor of 0.000313 ton OC/ton of sand for the main stack and 0.0000665 lb OC/lb sand for miscellaneous stack #949.

e. Emission Limitation: 5.63 lbs PE/hr, 3.91 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 7200 lbs/hr by the an emission factor of 0.000178 lbs PE/lb sand for the main stack and 0.000604 lb PE/lb sand for miscellaneous stack #949. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 18,000 tons/yr by an emission rate of 0.0000643 ton PE/ton of sand for the main stack and 0.000153 lb PE/lb sand for miscellaneous stack #949.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

g. Emission Limitation: 98% control efficiency for catalyst gas emissions, by weight

Compliance Method: Compliance with the control efficiency shall be determined using the results of the testing performed on the inlet and outlet of the control equipment using Method 18 in 40 CFR Part 60, Appendix A and the following equation:

control efficiency = [(inlet testing results - outlet testing results)/inlet testing results] x 100%

2. The permittee shall conduct, or have conducted, emission testing for this emissions unit in accordance with the following requirements:

a. The emissions testing shall be conducted within 6 months after operation of this emissions unit under this PTI (PTI # 03-14001).

b. The emissions testing shall be conducted to demonstrate compliance with the catalyst gas control efficiency requirement.

c. The following test method shall be employed to demonstrate compliance with the catalyst

gas control efficiency: Method 18 in 40 CFR part 60, Appendix A, to determine the concentration of catalyst gas.

d. The test shall be conducted while the emissions unit is operating at its maximum capacity, unless otherwise specified or approved by the Director or appropriate Ohio EPA District Office or local air agency.

e. Not later than 30 days prior to the proposed test date(s), the permittee shall submit and "Intent to Test" notification to the appropriate Ohio EPA District Office or local air agency. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Ohio EPA District Office's or local air agency's refusal to accept the results of the emission test(s).

Personnel from the appropriate Ohio EPA District Office or local air agency shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions unit and/or the performance of the control equipment.

A comprehensive written report on the results of the emissions test(s) shall be signed by the person or persons responsible for the tests and submitted to the appropriate Ohio EPA District Office or local air agency within 30 days following completion of the test(s). The permittee shall include in the report the operating parameters as required in (V)(1)(c) above.

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P372 - cold box core machine no.85 [Modification of PTI 03-7907 issued August 3, 1994]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P373 - cold box core machine no.86 and core sand mixer [Modification of PTI 03-7907 issued August 3, 1994]	OAC rule 3745-31-05(A)(3)	OAC rule 3745-21-07(G)(9)(h)
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures	emissions.
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A).	
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
7.42 lbs OC/hr, 6.83 tons OC/year (see A.I.2.c)	
5.63 lbs PE/hr, 3.91 tons PE/yr (see A.I.2.c)	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	
The catalyst gas emissions shall be vented to a sulfuric acid scrubber that is designed and operated to remove at least 98% percent, by weight, of the catalyst gas	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology" (BAT) has been determined to be the use of a catalyst gas scrubber designed for the control of catalyst gas on cold box core machines.

2.c The emissions limitations include emissions from miscellaneous stack #949.

2.d For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075

1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The pH and liquor flow rate of the catalyst gas scrubbers shall be maintained at the following levels:

   a. the catalyst gas scrubber liquor pH shall be continuously maintained at or below 5 while the emissions unit is in operation; and

   b. the catalyst gas scrubber liquor flow rate shall be continuously maintained at a value of 3 to 5 gallons per minute per 1,000 cubic feet per minute (cfm) of gas flow at all time while the emissions unit is in operation.

3. To ensure proper operation of the catalyst gas scrubber during operation of this emissions unit, the permittee shall employ an "interlock system" that will shutdown the cold box core machine within 30 minutes after the catalyst gas scrubber liquid pH rises above 5.

   The "interlock system" shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations with any modifications deemed necessary by the permittee.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

   b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

   c. the calculated emission rate for OC, in tons, determined by the following equation:

      TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

      where:

      TOCE = total organic compound emissions, in tons

      Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

      R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

      S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

      T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

      *These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

   d. the calculated emission rate for PE, in tons, determined by the following equation:

      TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

      where:

      TPE = total particulate emissions, in tons

      U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall collect and record the following information each day:

a. the pH of the catalyst gas scrubber, once per operating shift;

b. the catalyst gas scrubber liquor flow rate, in gallons per minute, on a once per shift basis.

c. all periods of time the catalyst gas scrubber was not operating in accordance with the requirements in condition A.II.2. above, and the corrective action taken to bring the catalyst gas scrubber into compliance with these operating conditions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

d. all periods of time during which the scrubber for these emissions units was not maintained in accordance with the following:

i. the pH of the scrubber exceeded 5.

ii. the catalyst gas scrubber liquor flow rate was less than 3 gallons per minute per 1,000 cfm of gas flow.

e. any time periods the "interlock system" associated with the catalytic gas scrubber did not operate in compliance with the requirements specified in Section A.II.3.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 7.42 lbs OC/hr, 6.83 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 7200 lbs/hr by an emission factor of 0.00085 lb OC/lb sand for the main stack and 0.00018 lb OC/lb sand for miscellaneous stack #951. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 18,000 tons/yr by an emission factor of 0.000313 ton OC/ton of sand for the main stack and 0.0000665 lb OC/lb sand for miscellaneous stack #951.

e. Emission Limitation: 5.63 lbs PE/hr, 3.91 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 7200 lbs/hr by the an emission factor of 0.000178 lbs PE/lb sand for the main stack and 0.000604 lb PE/lb sand for miscellaneous stack #951. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 18,000 tons/yr by an emission rate of 0.0000643 ton PE/ton of sand for the main stack and 0.000153 lb PE/lb sand for miscellaneous stack #951.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

g. Emission Limitation: 98% control efficiency for catalyst gas emissions, by weight

Compliance Method: Compliance with the control efficiency shall be determined using the results of the testing performed on the inlet and outlet of the control equipment using Method 18 in 40 CFR Part 60, Appendix A and the following equation:

control efficiency = [(inlet testing results - outlet testing results)/inlet testing results] x 100%

2. The permittee shall conduct, or have conducted, emission testing for this emissions unit in accordance with the following requirements:

a. The emissions testing shall be conducted within 6 months after operation of this emissions unit under this PTI (PTI # 03-14001).

b. The emissions testing shall be conducted to demonstrate compliance with the catalyst gas control efficiency requirement.

c. The following test method shall be employed to demonstrate compliance with the catalyst

gas control efficiency: Method 18 in 40 CFR part 60, Appendix A, to determine the concentration of catalyst gas.

d. The test shall be conducted while the emissions unit is operating at its maximum capacity, unless otherwise specified or approved by the Director or appropriate Ohio EPA District Office or local air agency.

e. Not later than 30 days prior to the proposed test date(s), the permittee shall submit and "Intent to Test" notification to the appropriate Ohio EPA District Office or local air agency. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Ohio EPA District Office's or local air agency's refusal to accept the results of the emission test(s).

Personnel from the appropriate Ohio EPA District Office or local air agency shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions unit and/or the performance of the control equipment.

A comprehensive written report on the results of the emissions test(s) shall be signed by the person or persons responsible for the tests and submitted to the appropriate Ohio EPA District Office or local air agency within 30 days following completion of the test(s). The permittee shall include in the report the operating parameters as required in (V)(1)(c) above.

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P373 - cold box core machine no.86 [Modification of PTI 03-7907 issued August 3, 1994]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P374 - cold box core machine no.87 and core sand mixer [Modification of PTI 03-7907 issued August 3, 1994]	OAC rule 3745-31-05(A)(3)	OAC rule 3745-21-07(G)(9)(h)
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A).	acid scrubber that is designed and operated to remove at least 98% percent, by weight, of the catalyst gas emissions.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
7.42 lbs OC/hr, 6.83 tons OC/year (see A.I.2.c)	
5.63 lbs PE/hr, 3.91 tons PE/yr (see A.I.2.c)	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	
The catalyst gas emissions shall be vented to a sulfuric	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology" (BAT) has been determined to be the use of a catalyst gas scrubber designed for the control of catalyst gas on cold box core machines.

2.c The emissions limitations include emissions from miscellaneous stack #949.

2.d For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250

1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The pH and liquor flow rate of the catalyst gas scrubbers shall be maintained at the following levels:

   a. the catalyst gas scrubber liquor pH shall be continuously maintained at or below 5 while the emissions unit is in operation; and

   b. the catalyst gas scrubber liquor flow rate shall be continuously maintained at a value of 3 to 5 gallons per minute per 1,000 cubic feet per minute (cfm) of gas flow at all time while the emissions unit is in operation.

3. To ensure proper operation of the catalyst gas scrubber during operation of this emissions unit, the permittee shall employ an "interlock system" that will shutdown the cold box core machine within 30 minutes after the catalyst gas scrubber liquid pH rises above 5.

   The "interlock system" shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations with any modifications deemed necessary by the permittee.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in

the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall collect and record the following information each day:

a. the pH of the catalyst gas scrubber, once per operating shift;

b. the catalyst gas scrubber liquor flow rate, in gallons per minute, on a once per shift basis.

c. all periods of time the catalyst gas scrubber was not operating in accordance with the requirements in condition A.II.2. above, and the corrective action taken to bring the catalyst gas scrubber into compliance with these operating conditions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

d. all periods of time during which the scrubber for these emissions units was not maintained in accordance with the following:

i. the pH of the scrubber exceeded 5.

ii. the catalyst gas scrubber liquor flow rate was less than 3 gallons per minute per 1,000 cfm of gas flow.

e. any time periods the "interlock system" associated with the catalytic gas scrubber did not operate in compliance with the requirements specified in Section A.II.3.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 7.42 lbs OC/hr, 6.83 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 7200 lbs/hr by an emission factor of 0.00085 lb OC/lb sand for the main stack and 0.00018 lb OC/lb sand for miscellaneous stack #953. The maximum annual

emission limitation is calculated by multiplying the maximum annual sand usage rate of 18,000 tons/yr by an emission factor of 0.000313 ton OC/ton of sand for the main stack and 0.0000665 lb OC/lb sand for miscellaneous stack #953.

e. Emission Limitation: 5.63 lbs PE/hr, 3.91 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 7200 lbs/hr by the an emission factor of 0.000178 lbs PE/lb sand for the main stack and 0.000604 lb PE/lb sand for miscellaneous stack #953. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 18,000 tons/yr by an emission rate of 0.0000643 ton PE/ton of sand for the main stack and 0.000153 lb PE/lb sand for miscellaneous stack #953.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

g. Emission Limitation: 98% control efficiency for catalyst gas emissions, by weight

Compliance Method: Compliance with the control efficiency shall be determined using the results of the testing performed on the inlet and outlet of the control equipment using Method 18 in 40 CFR Part 60, Appendix A and the following equation:

control efficiency = [(inlet testing results - outlet testing results)/inlet testing results] x 100%

2. The permittee shall conduct, or have conducted, emission testing for this emissions unit in accordance with the following requirements:

a. The emissions testing shall be conducted within 6 months after operation of this emissions unit under this PTI (PTI # 03-14001).

b. The emissions testing shall be conducted to demonstrate compliance with the catalyst gas control efficiency requirement.

c. The following test method shall be employed to demonstrate compliance with the catalyst

gas control efficiency: Method 18 in 40 CFR part 60, Appendix A, to determine the concentration of catalyst gas.

d. The test shall be conducted while the emissions unit is operating at its maximum capacity, unless otherwise specified or approved by the Director or appropriate Ohio EPA District Office or local air agency.

e. Not later than 30 days prior to the proposed test date(s), the permittee shall submit and "Intent to Test" notification to the appropriate Ohio EPA District Office or local air agency. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Ohio EPA District Office's or local air agency's refusal to accept the results of the emission test(s).

Personnel from the appropriate Ohio EPA District Office or local air agency shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions unit and/or the performance of the control equipment.

A comprehensive written report on the results of the emissions test(s) shall be signed by the person or persons responsible for the tests and submitted to the appropriate Ohio EPA District Office or local air agency within 30 days following completion of the test(s). The permittee shall include in the report the operating parameters as required in (V)(1)(c) above.

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P374 - cold box core machine no. 87 [Modification of PTI 03-7907 issued August 3, 1994[	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P375 - cold box core machine no. 88 and core sand mixer [Modification of PTI 03-7907 issued August 3, 1994]	OAC rule 3745-31-05(A)(3)	OAC rule 3745-21-07(G)(9)(h)
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A).	acid scrubber that is designed and operated to remove at least 98% percent, by weight, of the catalyst gas emissions.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
7.42 lbs OC/hr, 6.83 tons OC/year (see A.I.2.c)	
5.63 lbs PE/hr, 3.91 tons PE/yr (see A.I.2.c)	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	
The catalyst gas emissions shall be vented to a sulfuric	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology" (BAT) has been determined to be the use of a catalyst gas scrubber designed for the control of catalyst gas on cold box core machines.

2.c The emissions limitations include emissions from miscellaneous stack #949.

2.d For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075

1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The pH and liquor flow rate of the catalyst gas scrubbers shall be maintained at the following levels:

   a. the catalyst gas scrubber liquor pH shall be continuously maintained at or below 5 while the emissions unit is in operation; and

   b. the catalyst gas scrubber liquor flow rate shall be continuously maintained at a value of 3 to 5 gallons per minute per 1,000 cubic feet per minute (cfm) of gas flow at all time while the emissions unit is in operation.

3. To ensure proper operation of the catalyst gas scrubber during operation of this emissions unit, the permittee shall employ an "interlock system" that will shutdown the cold box core machine within 30 minutes after the catalyst gas scrubber liquid pH rises above 5.

   The "interlock system" shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations with any modifications deemed necessary by the permittee.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand),

for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall collect and record the following information each day:

a. the pH of the catalyst gas scrubber, once per operating shift;

b. the catalyst gas scrubber liquor flow rate, in gallons per minute, on a once per shift basis.

c. all periods of time the catalyst gas scrubber was not operating in accordance with the requirements in condition A.II.2. above, and the corrective action taken to bring the catalyst gas scrubber into compliance with these operating conditions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

d. all periods of time during which the scrubber for these emissions units was not maintained in accordance with the following:

i. the pH of the scrubber exceeded 5.

ii. the catalyst gas scrubber liquor flow rate was less than 3 gallons per minute per 1,000 cfm of gas flow.

e. any time periods the "interlock system" associated with the catalytic gas scrubber did not operate in compliance with the requirements specified in Section A.II.3.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 7.42 lbs OC/hr, 6.83 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 7200 lbs/hr by an emission factor of 0.00085 lb OC/lb sand for the main

stack and 0.00018 lb OC/lb sand for miscellaneous stack #956. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 18,000 tons/yr by an emission factor of 0.000313 ton OC/ton of sand for the main stack and 0.0000665 lb OC/lb sand for miscellaneous stack #956.

e. Emission Limitation: 5.63 lbs PE/hr, 3.91 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 7200 lbs/hr by the an emission factor of 0.000178 lbs PE/lb sand for the main stack and 0.000604 lb PE/lb sand for miscellaneous stack #956. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 18,000 tons/yr by an emission rate of 0.0000643 ton PE/ton of sand for the main stack and 0.000153 lb PE/lb sand for miscellaneous stack #956.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

g. Emission Limitation: 98% control efficiency for catalyst gas emissions, by weight

Compliance Method: Compliance with the control efficiency shall be determined using the results of the testing performed on the inlet and outlet of the control equipment using Method 18 in 40 CFR Part 60, Appendix A and the following equation:

control efficiency = [(inlet testing results - outlet testing results)/inlet testing results] x 100%

2. The permittee shall conduct, or have conducted, emission testing for this emissions unit in accordance with the following requirements:

a. The emissions testing shall be conducted within 6 months after operation of this emissions unit under this PTI (PTI # 03-14001).

b. The emissions testing shall be conducted to demonstrate compliance with the catalyst gas control efficiency requirement.

c. The following test method shall be employed to demonstrate compliance with the catalyst gas control efficiency: Method 18 in 40 CFR part 60, Appendix A, to determine the concentration of catalyst gas.

d. The test shall be conducted while the emissions unit is operating at its maximum capacity,

unless otherwise specified or approved by the Director or appropriate Ohio EPA District Office or local air agency.

e. Not later than 30 days prior to the proposed test date(s), the permittee shall submit and "Intent to Test" notification to the appropriate Ohio EPA District Office or local air agency. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Ohio EPA District Office's or local air agency's refusal to accept the results of the emission test(s).

Personnel from the appropriate Ohio EPA District Office or local air agency shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions unit and/or the performance of the control equipment.

A comprehensive written report on the results of the emissions test(s) shall be signed by the person or persons responsible for the tests and submitted to the appropriate Ohio EPA District Office or local air agency within 30 days following completion of the test(s). The permittee shall include in the report the operating parameters as required in (V)(1)(c) above.

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P375 - cold box core machine no. 88 [Modification of PTI 03-7907 issued August 3, 1994]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P376 - paste dry oven FECO line no. 5 [Modification of PTI 03-8573 issued April 19, 1995]	OAC rule 3745-31-05(A)(3)	OAC rule 3745-17-11(B) OAC rule 3745-23-06(B) OAC rule 3745-21-07(G)(2)
	OAC rule 3745-17-07(A)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3). See A.I.2..d. See A.II.2.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
7.70 lbs OC/hr, 6.36 tons OC/year	
2.47 lbs PE/hr, 1.70 tons PE/yr	
0.86 lb carbon monoxide (CO)/hr, 1.40 tons CO/yr	
1.02 lb nitrogen oxide (NOx)/hr, 1.67 tons NOx/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit..

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625

1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The use of photochemically reactive material, as defined in OAC rule 3745-21-01(C)(5), in this emissions unit is prohibited.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

   b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

   c. the calculated emission rate for OC, in tons, determined by the following equation:

      $$TOCE = (2.a)(Q + R) + (2.b)(S) + (1.a)(T)$$

      where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

4. The permittee shall maintain records of the following information for this emissions unit:

a. company identification for each liquid organic material employed in this emissions unit; and

b. documentation on whether or not each liquid organic material employed is a photochemically reactive material.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to

install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

3. The permittee shall notify the Director (the appropriate Ohio EPA District Office or local air agency) in writing of any monthly record showing the use of photochemically reactive material. The notification shall include a copy of such a record and shall be sent to the Director (the appropriate Ohio EPA District Office or local air agency) within 30 days following the end of the calendar month.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. <u>Emission Limitation:</u> 1,024,555 tons of sand per rolling 12-month period

<u>Compliance Method:</u> Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. <u>Emission Limitation:</u> 1,207.90 tons OC per rolling 12-month period

<u>Compliance Method:</u> Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. <u>Emission Limitation:</u> 151.56 tons PE per rolling 12-month period

<u>Compliance Method:</u> Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. <u>Emission Limitation:</u> 7.70 lbs OC/hr, 6.36 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the

permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 26,280 lbs/hr by an emission factor of 0.000293 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 42,992 tons/yr by an emission factor of 0.000148 ton OC/ton of sand.

e. Emission Limitation: 2.47 lbs PE/hr, 1.70 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 26,280 lbs/hr by the an emission factor of 0.000094 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 42,992 tons/yr by an emission rate of 0.0000396 ton PE/ton of sand.

f. Emission Limitation: 0.86 lb CO/hr, 1.40 tons CO/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 10 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 10,197 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (84 lbs CO/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 33.36 mm scf by the AP 42 emission factor.

g. Emission Limitation: 1.02 lb NOx/hr, 1.67 tons NOx/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing

Emissions Unit ID: P376

in accordance with Method 1-4 & 7 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 10,197 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (100 lbs NOx/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 33.36 mm scf by the AP 42 emission factor.

h. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P376 - paste dry oven FECO line no. 5 [Modification of PTI 03-8573 issued April 19, 1995]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P377 - vertical cooler - FECO line no.5 [Modification of PTI 03-8573 issued April 19, 1995]	OAC rule 3745-31-05(A)(3)	The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A). 1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a. 151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a. 7.70 lbs OC/hr, 6.36 tons OC/year 2.47 lbs PE/hr, 1.70 tons PE/yr
	OAC rule 3745-17-07(A)	Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.
	OAC rule 3745-17-11(B)	The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be no control for this emissions unit..

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975

1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

   b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

   c. the calculated emission rate for OC, in tons, determined by the following equation:

      TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

      where:

      TOCE = total organic compound emissions, in tons

      Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

      R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

   a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

   b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

   c. the rolling, 12-month emission limitations for PE and OC.

   These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

Emissions Unit ID: P377

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

   a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

      Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 7.70 lbs OC/hr, 5.11 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 26,280 lbs/hr by an emission factor of 0.000293 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 42,992 tons/yr by an emission factor of 0.000148 ton OC/ton of sand.

e. Emission Limitation: 2.47 lbs PE/hr, 1.37 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 26,280 lbs/hr by the an emission factor of 0.000094 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 42,992 tons/yr by an emission rate of 0.0000396 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with

OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P377 - vertical cooler - FECO line no.5 [Modification of PTI 03-8573 issued April 19, 1995]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P378 - core oven FECO line no.5 [Modification of PTI 03-8573 issued April 19, 1995]	OAC rule 3745-31-05(A)(3)	OAC rule 3745-17-11(B) OAC rule 3745-23-06(B) OAC rule 3745-21-07(G)(2)
	OAC rule 3745-17-07(A)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	See A.I.2..d. See A.II.2.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
7.70 lbs OC/hr, 6.36 tons OC/year	
2.47 lbs PE/hr, 1.70 tons PE/yr	
0.86 lb carbon monoxide (CO)/hr, 1.40 tons CO/yr	
1.02 lb nitrogen oxide (NOx)/hr, 1.67 tons NOx/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625

1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The use of photochemically reactive material, as defined in OAC rule 3745-21-01(C)(5), in this emissions unit is prohibited.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

   b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

   c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

4. The permittee shall maintain records of the following information for this emissions unit:

a. company identification for each liquid organic material employed in this emissions unit; and

b. documentation on whether or not each liquid organic material employed is a photochemically reactive material.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

3. The permittee shall notify the Director (the appropriate Ohio EPA District Office or local air agency) in writing of any monthly record showing the use of photochemically reactive material. The notification shall include a copy of such a record and shall be sent to the Director (the appropriate Ohio EPA District Office or local air agency) within 30 days following the end of the calendar month.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 7.70 lbs OC/hr, 6.36 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions

unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop

record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 26,280 lbs/hr by an emission factor of 0.000293 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 42,992 tons/yr by an emission factor of 0.000148 ton OC/ton of sand.

e. Emission Limitation: 2.47 lbs PE/hr, 1.70 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 26,280 lbs/hr by the an emission factor of 0.000094 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 42,992 tons/yr by an emission rate of 0.0000396 ton PE/ton of sand.

f. Emission Limitation: 0.86 lb CO/hr, 1.40 tons CO/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 10 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 10,197 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (84 lbs CO/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 33.36 mm scf by the AP 42 emission factor. The maximum annual gas usage rate is calculated by multiplying the maximum hourly natural gas usage rate (10,197 scf/hr) by the ratio of the maximum annual sand (34,545 tons/yr) to the maximum hourly sand usage (26,280 lbs/hr), in pounds.

g. Emission Limitation: 1.02 lb NOx/hr, 1.67 tons NOx/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 7 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 10,197 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (100 lbs NOx/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 33.36 mm scf by the AP 42 emission factor.

h. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P378 - core oven FECO line no.5 [Modification of PTI 03-8573 issued April 19, 1995]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
		OAC rule 3745-21-07(G)(9)(h)
P379 - cold box core machine no.89 and core sand mixer [Modification of PTI 03-8580 issued May 17, 1995	OAC rule 3745-31-05(A)(3)	
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A).	acid scrubber that is designed and operated to remove at least 98% percent, by weight, of the catalyst gas emissions.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
6.12 lbs OC/hr, 5.63 tons OC/year	
1.28 lbs PE/hr, 1.16 tons PE/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	
The catalyst gas emissions shall be vented to a sulfuric	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology" (BAT) has been determined to be the use of a catalyst gas scrubber designed for the control of catalyst gas on cold box core machines.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975

1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The pH and liquor flow rate of the catalyst gas scrubbers shall be maintained at the following levels:

   a. the catalyst gas scrubber liquor pH shall be continuously maintained at or below 5 while the emissions unit is in operation; and

   b. the catalyst gas scrubber liquor flow rate shall be continuously maintained at a value of 3 to 5 gallons per minute per 1,000 cubic feet per minute (cfm) of gas flow at all time while the emissions unit is in operation.

3. To ensure proper operation of the catalyst gas scrubber during operation of this emissions unit, the permittee shall employ an "interlock system" that will shutdown the cold box core machine within 30 minutes after the catalyst gas scrubber liquid pH rises above 5.

   The "interlock system" shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations with any modifications deemed necessary by the permittee.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand),

for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall collect and record the following information each day:

a. the pH of the catalyst gas scrubber, once per operating shift;

b. the catalyst gas scrubber liquor flow rate, in gallons per minute, on a once per shift basis.

all periods of time the catalyst gas scrubber was not operating in accordance with the requirements in condition A.II.2 above, and the corrective action taken to bring the catalyst gas scrubber into compliance with these operating conditions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

d. all periods of time during which the scrubber for these emissions units was not maintained in accordance with the following:

i. the pH of the scrubber exceeded 5.

ii. the catalyst gas scrubber liquor flow rate was less than 3 gallons per minute per

1,000 cfm of gas flow.

e. any time periods the "interlock system" associated with the catalytic gas scrubber did not operate in compliance with the requirements specified in Section A.II.3.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 6.12 lbs OC/hr, 5.63 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 7200 lbs/hr by an emission factor of 0.00085 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 18,000 tons/yr by an emission factor of 0.000313 ton OC/ton of sand.

e. Emission Limitation: 1.28 lbs PE/hr, 1.16 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 7200 lbs/hr by the an emission factor of 0.000178 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 18,000 tons/yr by an emission rate of 0.0000643 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

g. Emission Limitation: 98% control efficiency for catalyst gas emissions, by weight

Compliance Method: The catalyst gas scrubber has a manufacturer's guarantee of 99% removal by weight of catalyst gas emissions. If required, compliance with the control efficiency (i.e. the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined in accordance with the following:

i. the outlet mass emission rate shall be determined using USEPA Methods 1-4 and 18 in 40 CFR Part 60; and

ii. the inlet mass emission rate shall be determined using emission factors developed from inlet testing on similar emissions units at the facility and data collected (i.e. process weight rate, etc.) during the testing of the control outlet for this emissions unit. Inlet mass emission testing is not possible on this emissions unit.

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P379 - cold box core machine no.89 [Modification of PTI 03-8580 issued May 17, 1995]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P383 - hot box core machine no.96, core sand mixer and associated conveyor [Modification of PTI 03-8591 issued June 28, 1995]	OAC rule 3745-31-05(A)(3)	OAC rule 3745-23-06(B) OAC rule 3745-21-07(G)(1)&(2)
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures	See A.I.2.e.
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B). 1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a. 151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a. 30.44 lbs OC/hr, 26.18 tons OC/year (includes conveyor emissions) 3.59 lbs PE/hr, 2.27 tons PE/yr Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule. The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3). See A.I.2.d.	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

2.e The core sand mixer portion of this emissions unit does not employ, apply, evaporate or dry any photochemically reactive material (PRM), or any substance containing such PRM. Also, the liquid organic material/substance containing liquid organic material in the hot box core machine portion of this emissions unit does not come into contact with a flame and is not baked, heat-cured, or heat-polymerized, in the presence of oxygen. Therefore, there are no applicable emission limitations established by this rule.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand),

for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 30.44 lbs OC/hr, 26.18 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 5940 lbs/hr by an emission factor of 0.005125 lb OC/lb sand (sum of

hot box core emission factor, 0.004932 and conveyor emission factor, 0.000193). The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 14,850 tons/yr by an emission factor of 0.001763 ton OC/ton of sand (sum of hot box core emission factor, 0.001347 and hot box conveyor emission factor, 0.000416).

e. Emission Limitation: 3.59 lbs PE/hr, 2.27 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 5940 lbs/hr by the an emission factor of 0.000604 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 14,850 tons/yr by an emission rate of 0.000153 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P383 - hot box core machine no.96 [Modification of PTI 03-8591 issued June 28, 1995]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P384 - hot box core machine no.97, core sand mixer and associated conveyor [Modification of PTI 03-8591 issued June 28, 1995]	OAC rule 3745-31-05(A)(3)	OAC rule 3745-23-06(B) OAC rule 3745-21-07(G)(1)&(2)
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures	
	See A.I.2.d.
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	See A.I.2.e.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
30.44 lbs OC/hr, 26.18 tons OC/year (includes conveyor emissions)	
3.59 lbs PE/hr, 2.27 tons PE/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

2.e The core sand mixer portion of this emissions unit does not employ, apply, evaporate or dry any photochemically reactive material (PRM), or any substance containing such as PRM. Also, the liquid organic material/substance containing liquid organic material in the hot box core machine portion of this emissions unit does not come into contact with a flame and is not baked, heat-cured, or heat-polymerized, in the presence of oxygen. Therefore, there are no applicable emission limitations established by this rule.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Emissions Unit ID: P384

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

   b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand),

for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit

to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 30.44 lbs OC/hr, 26.18 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 5940 lbs/hr by an emission factor of 0.005125 lb OC/lb sand (sum of hot box core emission factor, 0.004932 and conveyor emission factor, 0.000193). The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 14,850 tons/yr by an emission factor of 0.001763 ton OC/ton of sand (sum

of hot box core emission factor, 0.001347 and hot box conveyor emission factor, 0.000416).

e. Emission Limitation: 3.59 lbs PE/hr, 2.27 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 5940 lbs/hr by the an emission factor of 0.000604 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 14,850 tons/yr by an emission rate of 0.000153 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P384 - hot box core machine no.97 [Modification of PTI 03-8591 issued June 28, 1995]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P385 - hot box core machine no.98, core sand mixer and associated conveyor [Modification of PTI 03-8591 issued June 28, 1995]	OAC rule 3745-31-05(A)(3)	OAC rule 3745-23-06(B) OAC rule 3745-21-07(G)(1)&(2)
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures	See A.I.2.
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	See A.I.2.d.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
30.44 lbs OC/hr, 26.18 tons OC/year (includes conveyor emissions)	
3.59 lbs PE/hr, 2.27 tons PE/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

2.e The core sand mixer portion of this emissions unit does not employ, apply, evaporate or dry any photochemically reactive material (PRM), or any substance containing such as PRM. Also, the liquid organic material/substance containing liquid organic material in the hot box core machine portion of this emissions unit does not come into contact with a flame and is not baked, heat-cured, or heat-polymerized, in the presence of oxygen. Therefore, there are no applicable emission limitations established by this rule.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Emissions Unit ID: P385

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

   b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 30.44 lbs OC/hr, 26.18 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 5940 lbs/hr by an emission factor of 0.005125 lb OC/lb sand (sum of hot box

core emission factor, 0.004932 and conveyor emission factor, 0.000193). The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 14,850 tons/yr by an emission factor of 0.001763 ton OC/ton of sand (sum of hot box core emission factor, 0.001347 and hot box conveyor emission factor, 0.000416).

e. Emission Limitation: 3.59 lbs PE/hr, 2.27 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 5940 lbs/hr by the an emission factor of 0.000604 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 14,850 tons/yr by an emission rate of 0.000153 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P385 - hot box core machine no.98 [Modification of PTI 03-8591 issued June 28, 1995]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P386 - hot box core machine no.99, core sand mixer and associated conveyor [Modification of PTI 03-8591 issued June 28, 1995]	OAC rule 3745-31-05(A)(3)	OAC rule 3745-23-06(B) OAC rule 3745-21-07(G)(1)&(2)
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures	See A.I.2.e.
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B). 1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a. 151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a. 30.44 lbs OC/hr, 26.18 tons OC/year (includes conveyor emissions) 3.59 lbs PE/hr, 2.27 tons PE/yr Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule. The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3). See A.I.2.d.	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

2.e The core sand mixer portion of this emissions unit does not employ, apply, evaporate or dry any photochemically reactive material (PRM), or any substance containing such as PRM. Also, the liquid organic material/substance containing liquid organic material in the hot box core machine portion of this emissions unit does not come into contact with a flame and is not baked, heat-cured, or heat-polymerized, in the presence of oxygen. Therefore, there are no applicable emission limitations established by this rule.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for

core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 30.44 lbs OC/hr, 26.18 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 5940 lbs/hr by an emission factor of 0.005125 lb OC/lb sand (sum of hot box core emission factor, 0.004932 and conveyor emission factor, 0.000193). The maximum

annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 14,850 tons/yr by an emission factor of 0.001763 ton OC/ton of sand (sum of hot box core emission factor, 0.001347 and hot box conveyor emission factor, 0.000416).

e. Emission Limitation: 3.59 lbs PE/hr, 2.27 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 5940 lbs/hr by the an emission factor of 0.000604 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 14,850 tons/yr by an emission rate of 0.000153 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P386 - hot box core machine no.99 [Modification of PTI 03-8591 issued June 28, 1995]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P387 - cold box core machine 93,94,95 (three station machine) and core sand mixer [Modification of PTI 03-8624 issued June 28, 1995]	OAC rule 3745-31-05(A)(3)	OAC rule 3745-21-07(G)(9)(h)
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A).	acid scrubber that is designed and operated to remove at least 98% percent, by weight, of the catalyst gas emissions.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
8.03 lbs OC/hr, 7.40 tons OC/year (see A.I.2.c)	
6.10 lbs PE/hr, 4.24 tons PE/yr (see A.I.2.c)	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	
The catalyst gas emissions shall be vented to a sulfuric	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology" (BAT) has been determined to be the use of a catalyst gas scrubber designed for the control of catalyst gas on cold box core machines.

2.c The emissions limitations include emissions from miscellaneous stack #836.

2.d For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075

1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The pH and liquor flow rate of the catalyst gas scrubbers shall be maintained at the following levels:

   a. the catalyst gas scrubber liquor pH shall be continuously maintained at or below 5 while the emissions unit is in operation; and

   b. the catalyst gas scrubber liquor flow rate shall be continuously maintained at a value of 3 to 5 gallons per minute per 1,000 cubic feet per minute (cfm) of gas flow at all time while the emissions unit is in operation.

3. To ensure proper operation of the catalyst gas scrubber during operation of this emissions unit, the permittee shall employ an "interlock system" that will shutdown the cold box core machine within 30 minutes after the catalyst gas scrubber liquid pH rises above 5.

   The "interlock system" shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations with any modifications deemed necessary by the permittee.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

   b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

   c. the calculated emission rate for OC, in tons, determined by the following equation:

      TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

      where:

      TOCE = total organic compound emissions, in tons

      Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

      R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

      S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

      T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

      *These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

   d. the calculated emission rate for PE, in tons, determined by the following equation:

      TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

      where:

      TPE = total particulate emissions, in tons

      U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall collect and record the following information each day:

a. the pH of the catalyst gas scrubber, once per operating shift;

b. the catalyst gas scrubber liquor flow rate, in gallons per minute, on a once per shift basis.

c. all periods of time the catalyst gas scrubber was not operating in accordance with the requirements in condition A.II.2. above, and the corrective action taken to bring the catalyst gas scrubber into compliance with these operating conditions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

d. all periods of time during which the scrubber for these emissions units was not maintained in accordance with the following:

i. the pH of the scrubber exceeded 5.

ii. the catalyst gas scrubber liquor flow rate was less than 3 gallons per minute per 1,000 cfm of gas flow.

e. any time periods the "interlock system" associated with the catalytic gas scrubber did not operate in compliance with the requirements specified in Section A.II.3.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 8.03 lbs OC/hr, 7.40 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 7800 lbs/hr by an emission factor of 0.00085 lb OC/lb sand for the main stack and 0.00018 lb OC/lb sand from miscellaneous stack #836. The maximum annual emission

limitation is calculated by multiplying the maximum annual sand usage rate of 19,500 tons/yr by an emission factor of 0.000313 ton OC/ton of sand for the main stack and 0.0000665 ton OC/ton sand from miscellaneous stack #836.

e. Emission Limitation: 6.10 lbs PE/hr, 4.24 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 7800 lbs/hr by the an emission factor of 0.000178 lbs PE/lb sand from the main stack and 0.000604 lb PE/lb sand from miscellaneous stack #836. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 19,500 tons/yr by an emission rate of 0.0000643 ton PE/ton of sand from the main stack and 0.000153 ton PE/ton sand from miscellaneous stack #836.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

g. Emission Limitation: 98% control efficiency for catalyst gas emissions, by weight

Compliance Method: The catalyst gas scrubber has a manufacturer's guarantee of 99% removal by weight of catalyst gas emissions. If required, compliance with the control efficiency (i.e. the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined in accordance with the following:

i. the outlet mass emission rate shall be determined using USEPA Methods 1-4 and 18 in 40 CFR Part 60; and

ii. the inlet mass emission rate shall be determined using emission factors developed from inlet testing on similar emissions units at the facility and data collected (i.e. process weight rate, etc.) during the testing of the control outlet for this emissions unit. Inlet mass emission testing is not possible on this emissions unit.

VI. Miscellaneous Requirements

None.

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P387 - cold box core machine 93,94,95 (three station machine) [Modification of PTI 03-8591issued June 28, 1995]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P388 - hot box core machine no.100/101, core sand mixer and associated conveyor [Modification of PTI 03-9233 issued March 27, 1996]	OAC rule 3745-31-05(A)(3)	OAC rule 3745-23-06(B) OAC rule 3745-21-07(G)(1)&(2)
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	established pursuant to OAC rule 3745-31-05(A)(3). See A.I.2.d. See A.I.2.e.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
60.89 lbs OC/hr, 52.36 tons OC/year (includes conveyor emissions)	
7.18 lbs PE/hr, 4.54 tons PE/yr	
0.43 lb NOx/hr, 1.06 tons NOx/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

2.e The core sand mixer portion of this emissions unit does not employ, apply, evaporate or dry any photochemically reactive material (PRM), or any substance containing such PRM. Also, the liquid organic material/substance containing liquid organic material in the hot box core machine portion of this emissions unit does not come into contact with a flame and is not baked, heat-cured, or heat-polymerized, in the presence of oxygen. Therefore, there are no applicable emission limitations established by this rule.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)

1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

   b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

   c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of

this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

   a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

      Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

   b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

      Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

   c. Emission Limitation: 151.56 tons PE per rolling 12-month period

      Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

   d. Emission Limitation: 60.89 lbs OC/hr, 52.36 tons OC/year

      Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

      *The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 11,880 lbs/hr by an emission factor of 0.005125 lb OC/lb sand (sum of hot box core emission factor, 0.004932 and conveyor emission factor, 0.000193). The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 29,700 tons/yr by an emission factor of 0.001763 ton OC/ton of sand (sum of

hot box core emission factor, 0.001347 and hot box conveyor emission factor, 0.000416).

e. Emission Limitation: 7.18 lbs PE/hr, 4.54 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 11,880 lbs/hr by the an emission factor of 0.000604 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 29,700 tons/yr by an emission rate of 0.000153 ton PE/ton of sand.

f. Emission Limitation: 0.43 lb NOx/hr, 1.06 tons NOx/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 7 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 4253 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (100 lbs NOx/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 21.27 mm scf by the AP 42 emission factor.

g. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P388 - hot box core machine no.100/101 [Modification of PTI 03-9233 issued March 27, 1996]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
		OAC rule 3745-17-11(B)
P390 - core oven no.6	OAC rule 3745-31-05(A)(3)	
[Modification of PTI 03-9233 issued March 27, 1996]		
		OAC rule 3745-23-06(B)
		OAC rule 3745-21-07(G)(2)
	OAC rule 3745-17-07(A)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	See A.I.2..d. See A.II.2.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
4.22 lbs OC/hr, 3.49 tons OC/year	
1.35 lbs PE/hr, 0.93 tons PE/yr	
0.47 lb carbon monoxide (CO)/hr, 0.77 tons CO/yr	
0.56 lb nitrogen oxide (NOx)/hr, 0.91 tons NOx/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit..

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625

1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The use of photochemically reactive material, as defined in OAC rule 3745-21-01(C)(5), in this emissions unit is prohibited.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

   b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in

2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

4. The permittee shall maintain records of the following information for this emissions unit:

a. company identification for each liquid organic material employed in this emissions unit; and

b. documentation on whether or not each liquid organic material employed is a photochemically reactive material.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

3. The permittee shall notify the Director (the appropriate Ohio EPA District Office or local air agency) in writing of any monthly record showing the use of photochemically reactive material. The notification shall include a copy of such a record and shall be sent to the Director (the appropriate Ohio EPA District Office or local air agency) within 30 days following the end of the calendar month.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. <u>Emission Limitation:</u> 1,024,555 tons of sand per rolling 12-month period

<u>Compliance Method:</u> Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. <u>Emission Limitation:</u> 1,207.90 tons OC per rolling 12-month period

<u>Compliance Method:</u> Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. <u>Emission Limitation:</u> 151.56 tons PE per rolling 12-month period

<u>Compliance Method:</u> Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 4.22 lbs OC/hr, 3.49 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 14,400 lbs/hr by an emission factor of 0.000293 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 23,557 tons/yr by an emission factor of 0.000148 ton OC/ton of sand.

e. Emission Limitation: 1.35 lbs PE/hr, 0.93 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 14,400 lbs/hr by the an emission factor of 0.000094 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 23,557 tons/yr by an emission rate of 0.0000396 ton PE/ton of sand.

f. Emission Limitation: 0.47 lb CO/hr, 0.77 tons CO/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 10 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 5587 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (84 lbs CO/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 18.28 mm scf by the AP 42 emission factor.

g. Emission Limitation: 0.56 lb NOx/hr, 0.91 tons NOx/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 7 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 5587 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (100 lbs NOx/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 18.28 mm scf by the AP 42 emission factor.

h. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P390 - core oven no.6 [Medication of PTI 03-9233 issued March 27, 1996]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
		OAC rule 3745-21-07(G)(9)(h)
P394 - cold box core machine no.104,105,106 (loramendi cell no. 4 three station machine) and core sand mixer [Modification of PTI 03-0003 issued June 2, 1997]	OAC rule 3745-31-05(A)(3)	
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A).	acid scrubber that is designed and operated to remove at least 98% percent, by weight, of the catalyst gas emissions.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
10.20 lbs OC/hr, 9.39 tons OC/year	
2.14 lbs PE/hr, 1.93 tons PE/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	
The catalyst gas emissions shall be vented to a sulfuric	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology" (BAT) has been determined to be the use of a catalyst gas scrubber designed for the control of catalyst gas on cold box core machines.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975

1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The pH and liquor flow rate of the catalyst gas scrubbers shall be maintained at the following levels:

   a. the catalyst gas scrubber liquor pH shall be continuously maintained at or below 5 while the emissions unit is in operation; and

   b. the catalyst gas scrubber liquor flow rate shall be continuously maintained at a value of 3 to 5 gallons per minute per 1,000 cubic feet per minute (cfm) of gas flow at all time while the emissions unit is in operation.

3. To ensure proper operation of the catalyst gas scrubber during operation of this emissions unit, the permittee shall employ an "interlock system" that will shutdown the cold box core machine within 30 minutes after the catalyst gas scrubber liquid pH rises above 5.

   The "interlock system" shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations with any modifications deemed necessary by the permittee.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for

core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall collect and record the following information each day:

a. the pH of the catalyst gas scrubber, once per operating shift;

b. the catalyst gas scrubber liquor flow rate, in gallons per minute, on a once per shift basis.

c. all periods of time the catalyst gas scrubber was not operating in accordance with the requirements in condition A.II.2. above, and the corrective action taken to bring the catalyst gas scrubber into compliance with these operating conditions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

d. all periods of time during which the scrubber for these emissions units was not maintained in accordance with the following:

i. the pH of the scrubber exceeded 5.

ii. the catalyst gas scrubber liquor flow rate was less than 3 gallons per minute per 1,000 cfm of gas flow.

e. any time periods the "interlock system" associated with the catalytic gas scrubber did not operate in compliance with the requirements specified in Section A.II.3.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 10.20 lbs OC/hr, 9.39 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 12,000 lbs/hr by an emission factor of 0.00085 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 30,000 tons/yr by an emission factor of 0.000313 ton OC/ton of sand.

e. Emission Limitation: 2.14 lbs PE/hr, 1.93 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 12,000 lbs/hr by the an emission factor of 0.000178 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 30,000 tons/yr by an emission rate of 0.0000643 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

g. Emission Limitation: 98% control efficiency for catalyst gas emissions, by weight

Compliance Method: The catalyst gas scrubber has a manufacturer's guarantee of 99% removal by weight of catalyst gas emissions. If required, compliance with the control efficiency (i.e. the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined in accordance with the following:

i. the outlet mass emission rate shall be determined using USEPA Methods 1-4 and 18 in 40 CFR Part 60; and

ii. the inlet mass emission rate shall be determined using emission factors developed from inlet testing on similar emissions units at the facility and data collected (i.e. process weight rate, etc.) during the testing of the control outlet for this emissions unit. Inlet mass emission testing is not possible on this emissions unit.

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P394 - cold box core machine no.104,105,106 (loramendi cell no. 4 three station machine) [Modification of PTI 03-0003 issued June 2, 1997]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
		OAC rule 3745-21-07(G)(9)(h)
P395 - cold box core machine no.107/108/109 (loramendi cell no. 5 three station machine) and core sand mixer [Modification of PTI 03-0003 issued June 2, 1997]	OAC rule 3745-31-05(A)(3)	
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A).	acid scrubber that is designed and operated to remove at least 98% percent, by weight, of the catalyst gas emissions.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
10.20 lbs OC/hr, 9.39 tons OC/year	
2.14 lbs PE/hr, 1.93 tons PE/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	
The catalyst gas emissions shall be vented to a sulfuric	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology" (BAT) has been determined to be the use of a catalyst gas scrubber designed for the control of catalyst gas on cold box core machines.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525

1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The pH and liquor flow rate of the catalyst gas scrubbers shall be maintained at the following levels:

   a. the catalyst gas scrubber liquor pH shall be continuously maintained at or below 5 while the emissions unit is in operation; and

   b. the catalyst gas scrubber liquor flow rate shall be continuously maintained at a value of 3 to 5 gallons per minute per 1,000 cubic feet per minute (cfm) of gas flow at all time while the emissions unit is in operation.

3. To ensure proper operation of the catalyst gas scrubber during operation of this emissions unit, the permittee shall employ an "interlock system" that will shutdown the cold box core machine within 30 minutes after the catalyst gas scrubber liquid pH rises above 5.

   The "interlock system" shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations with any modifications deemed necessary by the permittee.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for

cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall collect and record the following information each day:

a. the pH of the catalyst gas scrubber, once per operating shift;

b. the catalyst gas scrubber liquor flow rate, in gallons per minute, on a once per shift basis.

c. all periods of time the catalyst gas scrubber was not operating in accordance with the requirements in condition A.II.2. above, and the corrective action taken to bring the catalyst gas scrubber into compliance with these operating conditions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

d. all periods of time during which the scrubber for these emissions units was not maintained in accordance with the following:

i. the pH of the scrubber exceeded 5.

ii. the catalyst gas scrubber liquor flow rate was less than 3 gallons per minute per 1,000 cfm of gas flow.

e. any time periods the "interlock system" associated with the catalytic gas scrubber did not operate in compliance with the requirements specified in Section A.II.3.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 10.20 lbs OC/hr, 9.39 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 12,000 lbs/hr by an emission factor of 0.00085 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 30,000 tons/yr by an emission factor of 0.000313 ton OC/ton of sand.

e. Emission Limitation: 2.14 lbs PE/hr, 1.93 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 12,000 lbs/hr by the an emission factor of 0.000178 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 30,000 tons/yr by an emission rate of 0.0000643 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

g. Emission Limitation: 98% control efficiency for catalyst gas emissions, by weight

Compliance Method: The catalyst gas scrubber has a manufacturer's guarantee of 99% removal by weight of catalyst gas emissions. If required, compliance with the control efficiency (i.e. the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined in accordance with the following:

i. the outlet mass emission rate shall be determined using USEPA Methods 1-4 and 18 in 40 CFR Part 60; and

ii. the inlet mass emission rate shall be determined using emission factors developed from inlet testing on similar emissions units at the facility and data collected (i.e. process weight rate, etc.) during the testing of the control outlet for this emissions unit. Inlet mass emission testing is not possible on this emissions unit.

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P395 - cold box core machine no.107/108/109 (loramendi cell no. 5 three station machine) [Modification of PTI 03-0003 issued June 2, 1997]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P396 - core oven, loramendi cell no. 4/5 [Modification of PTI 03-0003 issued June 2, 1997]	OAC rule 3745-31-05(A)(3)	OAC rule 3745-17-11(B) OAC rule 3745-23-06(B) OAC rule 3745-21-07(G)(2)
	OAC rule 3745-17-07(A)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	See A.I.2..d. See A.II.2.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
7.03 lbs OC/hr, 5.81 tons OC/year	
2.26 lbs PE/hr, 1.55 tons PE/yr	
0.78 lb carbon monoxide (CO)/hr, 1.28 tons CO/yr	
0.93 lb nitrogen oxide (NOx)/hr, 1.52 tons NOx/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Emissions Unit ID: P396

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The use of photochemically reactive material, as defined in OAC rule 3745-21-01(C)(5), in this emissions unit is prohibited.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for

cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

4. The permittee shall maintain records of the following information for this emissions unit:

a. company identification for each liquid organic material employed in this emissions unit; and

b. documentation on whether or not each liquid organic material employed is a

photochemically reactive material.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

   a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

   b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

   c. the rolling, 12-month emission limitations for PE and OC.

   These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

3. The permittee shall notify the Director (the appropriate Ohio EPA District Office or local air agency) in writing of any monthly record showing the use of photochemically reactive material. The notification shall include a copy of such a record and shall be sent to the Director (the appropriate Ohio EPA District Office or local air agency) within 30 days following the end of the calendar month.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

   a. <u>Emission Limitation:</u> 1,024,555 tons of sand per rolling 12-month period

      <u>Compliance Method:</u> Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

   b. <u>Emission Limitation:</u> 1,207.90 tons OC per rolling 12-month period

      <u>Compliance Method:</u> Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 7.03 lbs OC/hr, 5.81 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 24,000 lbs/hr by an emission factor of 0.000293 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 39,262 tons/yr by an emission factor of 0.000148 ton OC/ton of sand.

e. Emission Limitation: 2.26 lbs PE/hr, 1.55 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 24,000 lbs/hr by the an emission factor of 0.000094 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 39,262 tons/yr by an emission rate of 0.0000396 ton PE/ton of sand.

f. Emission Limitation: 0.78 lb CO/hr, 1.28 tons CO/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 10 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 9312 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (84 lbs CO/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 30.47 mm scf by the AP 42 emission factor.

g. Emission Limitation: 0.93 lb NOx/hr, 1.52 tons NOx/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 7 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 9312 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (100 lbs NOx/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 30.47 mm scf by the AP 42 emission factor.

h. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P396 - core oven, loramendi cell no. 4/5 [Modification of PTI 03-0003 issued June 2, 1997]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
		OAC rule 3745-21-07(G)(9)(h)
P397 - cold box core machine no.110/111/112 and core sand mixer (loramendi cell no.6 three station machine) [Modification of PTI 03-0138 issued September 10, 1997]	OAC rule 3745-31-05(A)(3)	
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A).	acid scrubber that is designed and operated to remove at least 98% percent, by weight, of the catalyst gas emissions.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
10.20 lbs OC/hr, 9.39 tons OC/year	
2.14 lbs PE/hr, 1.93 tons PE/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	
The catalyst gas emissions shall be vented to a sulfuric	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology" (BAT) has been determined to be the use of a catalyst gas scrubber designed for the control of catalyst gas on cold box core machines.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525

1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The pH and liquor flow rate of the catalyst gas scrubbers shall be maintained at the following levels:

   a. the catalyst gas scrubber liquor pH shall be continuously maintained at or below 5 while the emissions unit is in operation; and

   b. the catalyst gas scrubber liquor flow rate shall be continuously maintained at a value of 3 to 5 gallons per minute per 1,000 cubic feet per minute (cfm) of gas flow at all time while the emissions unit is in operation.

3. To ensure proper operation of the catalyst gas scrubber during operation of this emissions unit, the permittee shall employ an "interlock system" that will shutdown the cold box core machine within 30 minutes after the catalyst gas scrubber liquid pH rises above 5.

   The "interlock system" shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations with any modifications deemed necessary by the permittee.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for

cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall collect and record the following information each day:

a. the pH of the catalyst gas scrubber, once per operating shift;

b. the catalyst gas scrubber liquor flow rate, in gallons per minute, on a once per shift basis.

c. all periods of time the catalyst gas scrubber was not operating in accordance with the requirements in condition A.II.2. above, and the corrective action taken to bring the catalyst gas scrubber into compliance with these operating conditions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

d. all periods of time during which the scrubber for these emissions units was not maintained in accordance with the following:

i. the pH of the scrubber exceeded 5.

ii. the catalyst gas scrubber liquor flow rate was less than 3 gallons per minute per 1,000 cfm of gas flow.

e. any time periods the "interlock system" associated with the catalytic gas scrubber did not operate in compliance with the requirements specified in Section A.II.3.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 10.20 lbs OC/hr, 9.39 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 12,000 lbs/hr by an emission factor of 0.00085 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 30,000 tons/yr by an emission factor of 0.000313 ton OC/ton of sand.

e. Emission Limitation: 2.14 lbs PE/hr, 1.93 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 12,000 lbs/hr by the an emission factor of 0.000178 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 30,000 tons/yr by an emission rate of 0.0000643 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

g. Emission Limitation: 98% control efficiency for catalyst gas emissions, by weight

Compliance Method: The catalyst gas scrubber has a manufacturer's guarantee of 99% removal by weight of catalyst gas emissions. If required, compliance with the control efficiency (i.e. the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined in accordance with the following:

i. the outlet mass emission rate shall be determined using USEPA Methods 1-4 and 18 in 40 CFR Part 60; and

ii. the inlet mass emission rate shall be determined using emission factors developed from inlet testing on similar emissions units at the facility and data collected (i.e. process weight rate, etc.) during the testing of the control outlet for this emissions unit. Inlet mass emission testing is not possible on this emissions unit.

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P397 - cold box core machine no.110/111/112 (loramendi cell no.6 three station machine) [Modification of PTI 03-0138 issued September 10, 1997]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
		OAC rule 3745-21-07(G)(9)(h)
P398 - cold box core machine no.113/114/115 and core sand mixer (loramendi cell no.7 three station machine) [Modification of PTI 03-0138 issued September 10, 1997]	OAC rule 3745-31-05(A)(3)	
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A).	acid scrubber that is designed and operated to remove at least 98% percent, by weight, of the catalyst gas emissions.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
10.20 lbs OC/hr, 9.39 tons OC/year	
2.14 lbs PE/hr, 1.93 tons PE/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	
The catalyst gas emissions shall be vented to a sulfuric	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology" (BAT) has been determined to be the use of a catalyst gas scrubber designed for the control of catalyst gas on cold box core machines.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525

1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The pH and liquor flow rate of the catalyst gas scrubbers shall be maintained at the following levels:

   a. the catalyst gas scrubber liquor pH shall be continuously maintained at or below 5 while the emissions unit is in operation; and

   b. the catalyst gas scrubber liquor flow rate shall be continuously maintained at a value of 3 to 5 gallons per minute per 1,000 cubic feet per minute (cfm) of gas flow at all time while the emissions unit is in operation.

3. To ensure proper operation of the catalyst gas scrubber during operation of this emissions unit, the permittee shall employ an "interlock system" that will shutdown the cold box core machine within 30 minutes after the catalyst gas scrubber liquid pH rises above 5.

   The "interlock system" shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations with any modifications deemed necessary by the permittee.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)
where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall collect and record the following information each day:

a. the pH of the catalyst gas scrubber, once per operating shift;

b. the catalyst gas scrubber liquor flow rate, in gallons per minute, on a once per shift basis.

c. all periods of time the catalyst gas scrubber was not operating in accordance with the requirements in condition A.II.2. above, and the corrective action taken to bring the catalyst gas scrubber into compliance with these operating conditions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

d. all periods of time during which the scrubber for these emissions units was not maintained in accordance with the following:

i. the pH of the scrubber exceeded 5.

ii. the catalyst gas scrubber liquor flow rate was less than 3 gallons per minute per 1,000 cfm of gas flow.

e. any time periods the "interlock system" associated with the catalytic gas scrubber did not operate in compliance with the requirements specified in Section A.II.3.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 10.20 lbs OC/hr, 9.39 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 12,000 lbs/hr by an emission factor of 0.00085 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 30,000 tons/yr by an emission factor of 0.000313 ton OC/ton of sand.

e. Emission Limitation: 2.14 lbs PE/hr, 1.93 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 12,000 lbs/hr by the an emission factor of 0.000178 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 30,000 tons/yr by an emission rate of 0.0000643 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

g. Emission Limitation: 98% control efficiency for catalyst gas emissions, by weight

Compliance Method: The catalyst gas scrubber has a manufacturer's guarantee of 99% removal by weight of catalyst gas emissions. If required, compliance with the control efficiency (i.e. the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined in accordance with the following:

i. the outlet mass emission rate shall be determined using USEPA Methods 1-4 and 18 in 40 CFR Part 60; and

ii. the inlet mass emission rate shall be determined using emission factors developed from inlet testing on similar emissions units at the facility and data collected (i.e. process weight rate, etc.) during the testing of the control outlet for this emissions unit. Inlet mass emission testing is not possible on this emissions unit.

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P398 - cold box core machine no.113/114/115 (loramendi cell no.7 three station machine) [Modification of PTI 03-0138 issued September 10, 1997]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	OAC rule 3745-17-07(A)
P399 - core oven, loramendi cell no.6/7	OAC rule 3745-31-05(A)(3)	
[Modification of PTI 03-0138 issued September 10, 1997]		OAC rule 3745-17-11(B)
		OAC rule 3745-23-06(B)
		OAC rule 3745-21-07(G)(2)

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	See A.I.2..d. See A.II.2.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
7.03 lbs OC/hr, 5.81 tons OC/year	
2.26 lbs PE/hr, 1.55 tons PE/yr	
0.78 lb carbon monoxide (CO)/hr, 1.28 tons CO/yr	
0.93 lb nitrogen oxide (NOx)/hr, 1.52 tons NOx/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit..

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The use of photochemically reactive material, as defined in OAC rule 3745-21-01(C)(5), in this emissions unit is prohibited.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for

hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

4. The permittee shall maintain records of the following information for this emissions unit:

a. company identification for each liquid organic material employed in this emissions unit; and

b. documentation on whether or not each liquid organic material employed is a photochemically reactive material.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

   a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

   b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

   c. the rolling, 12-month emission limitations for PE and OC.

   These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

3. The permittee shall notify the Director (the appropriate Ohio EPA District Office or local air agency) in writing of any monthly record showing the use of photochemically reactive material. The notification shall include a copy of such a record and shall be sent to the Director (the appropriate Ohio EPA District Office or local air agency) within 30 days following the end of the calendar month.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

   a. <u>Emission Limitation:</u> 1,024,555 tons of sand per rolling 12-month period

      <u>Compliance Method:</u> Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

   b. <u>Emission Limitation:</u> 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 7.03 lbs OC/hr, 5.81 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 24,000 lbs/hr by an emission factor of 0.000293 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 39,262 tons/yr by an emission factor of 0.000148 ton OC/ton of sand.

e. Emission Limitation: 2.26 lbs PE/hr, 1.55 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 24,000 lbs/hr by the an emission factor of 0.000094 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 39,262 tons/yr by an emission rate of 0.0000396 ton PE/ton of sand.

f. Emission Limitation: 0.78 lb CO/hr, 1.28 tons CO/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 10 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 9312 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (84 lbs CO/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 30.47 mm scf by the AP 42 emission factor.

g. Emission Limitation: 0.93 lb NOx/hr, 1.52 tons NOx/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 7 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 9312 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (100 lbs NOx/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 30.47 mm scf by the AP 42 emission factor.

h. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P399 - core oven, loramendi cell no.6/7 [Modification of PTI 03-0138 issued September 10, 1997]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
		OAC rule 3745-21-07(G)(9)(h)
P401 - cold box core machine no.90 and core sand mixer [Modification of PTI 03-0531 issued September 17, 1997]	OAC rule 3745-31-05(A)(3)	
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A).	acid scrubber that is designed and operated to remove at least 98% percent, by weight, of the catalyst gas emissions.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
6.12 lbs OC/hr, 5.63 tons OC/year	
1.28 lbs PE/hr, 1.16 tons PE/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	
The catalyst gas emissions shall be vented to a sulfuric	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology" (BAT) has been determined to be the use of a catalyst gas scrubber designed for the control of catalyst gas on cold box core machines.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525

1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The pH and liquor flow rate of the catalyst gas scrubbers shall be maintained at the following levels:

   a. the catalyst gas scrubber liquor pH shall be continuously maintained at or below 5 while the emissions unit is in operation; and

   b. the catalyst gas scrubber liquor flow rate shall be continuously maintained at a value of 3 to 5 gallons per minute per 1,000 cubic feet per minute (cfm) of gas flow at all time while the emissions unit is in operation.

3. To ensure proper operation of the catalyst gas scrubber during operation of this emissions unit, the permittee shall employ an "interlock system" that will shutdown the cold box core machine within 30 minutes after the catalyst gas scrubber liquid pH rises above 5.

   The "interlock system" shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations with any modifications deemed necessary by the permittee.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall collect and record the following information each day:

a. the pH of the catalyst gas scrubber, once per operating shift;

b. the catalyst gas scrubber liquor flow rate, in gallons per minute, on a once per shift basis.

all periods of time the catalyst gas scrubber was not operating in accordance with the requirements in condition A.II.2 above, and the corrective action taken to bring the catalyst gas scrubber into compliance with these operating conditions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

d. all periods of time during which the scrubber for these emissions units was not maintained in accordance with the following:

i. the pH of the scrubber exceeded 5.

ii. the catalyst gas scrubber liquor flow rate was less than 3 gallons per minute per 1,000 cfm of gas flow.

e. any time periods the "interlock system" associated with the catalytic gas scrubber did not operate in compliance with the requirements specified in Section A.II.3.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 6.12 lbs OC/hr, 5.63 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 7200 lbs/hr by an emission factor of 0.00085 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 18,000 tons/yr by an emission factor of 0.000313 ton OC/ton of sand.

e. Emission Limitation: 1.28 lbs PE/hr, 1.16 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 7200 lbs/hr by the an emission factor of 0.000178 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 18,000 tons/yr by an emission rate of 0.0000643 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

g. Emission Limitation: 98% control efficiency for catalyst gas emissions, by weight

Compliance Method: The catalyst gas scrubber has a manufacturer's guarantee of 99% removal by weight of catalyst gas emissions. If required, compliance with the control efficiency (i.e. the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined in accordance with the following:

i. the outlet mass emission rate shall be determined using USEPA Methods 1-4 and 18 in 40 CFR Part 60; and

ii. the inlet mass emission rate shall be determined using emission factors developed from inlet testing on similar emissions units at the facility and data collected (i.e. process weight rate, etc.) during the testing of the control outlet for this emissions unit. Inlet mass emission testing is not possible on this emissions unit.

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P401 - cold box core machine no. 90 [Modification of PTI 03-0531 issued September 17, 1997]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements
P402 - core oven no. 7 [Modification of PTI 03-0531 issued September 17, 1997]	OAC rule 3745-31-05(A)(3) OAC rule 3745-17-07(A)
	OAC rule 3745-17-11(B) OAC rule 3745-23-06(B) OAC rule 3745-21-07(G)(2)

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	See A.I.2..d. See A.II.2.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
4.22 lbs OC/hr, 3.49 tons OC/year	
1.35 lbs PE/hr, 0.93 tons PE/yr	
0.47 lb carbon monoxide (CO)/hr, 0.77 tons CO/yr	
0.56 lb nitrogen oxide (NOx)/hr, 0.91 tons NOx/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The use of photochemically reactive material, as defined in OAC rule 3745-21-01(C)(5), in this emissions unit is prohibited.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for

hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

4. The permittee shall maintain records of the following information for this emissions unit:

a. company identification for each liquid organic material employed in this emissions unit; and

b. documentation on whether or not each liquid organic material employed is a

photochemically reactive material.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

   a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

   b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

   c. the rolling, 12-month emission limitations for PE and OC.

   These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

3. The permittee shall notify the Director (the appropriate Ohio EPA District Office or local air agency) in writing of any monthly record showing the use of photochemically reactive material. The notification shall include a copy of such a record and shall be sent to the Director (the appropriate Ohio EPA District Office or local air agency) within 30 days following the end of the calendar month.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

   a. <u>Emission Limitation:</u> 1,024,555 tons of sand per rolling 12-month period

      <u>Compliance Method:</u> Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

   b. <u>Emission Limitation:</u> 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 4.22 lbs OC/hr, 3.49 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 14,400 lbs/hr by an emission factor of 0.000293 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 23,557 tons/yr by an emission factor of 0.000148 ton OC/ton of sand.

e. Emission Limitation: 1.35 lbs PE/hr, 0.93 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 14,400 lbs/hr by the an emission factor of 0.000094 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 23,557 tons/yr by an emission rate of 0.0000396 ton PE/ton of sand.

f. Emission Limitation: 0.47 lb CO/hr, 0.77 tons CO/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 10 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 5587 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (84 lbs CO/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 18.28 mm scf by the AP 42 emission factor.

g. Emission Limitation: 0.56 lb NOx/hr, 0.91 tons NOx/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 7 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 5587 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (100 lbs NOx/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 18.28 mm scf by the AP 42 emission factor.

h. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P402 - core oven no.7 [Modification of PTI 03-0138 issued September 17, 1997]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
		OAC rule 3745-21-07(G)(9)(h)
P403 - cold box core machine no.116 (loramendi cell no.8) and core sand mixer [Modification of PTI 03-3115 issued November 3, 1999]	OAC rule 3745-31-05(A)(3)	
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A).	acid scrubber that is designed and operated to removed at least 98 percent, by weight, of the catalyst gas emissions.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
5.36 lbs OC/hr, 4.93 tons OC/year	
1.12 lbs PE/hr, 1.01 tons PE/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	
The catalyst gas emissions shall be vented to a sulfuric	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology" (BAT) has been determined to be the use of a catalyst gas scrubber designed for the control of catalyst gas on cold box core machines.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525

1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The pH and liquor flow rate of the catalyst gas scrubbers shall be maintained at the following levels:

   a. the catalyst gas scrubber liquor pH shall be continuously maintained at or below 5 while the emissions unit is in operation; and

   b. the catalyst gas scrubber liquor flow rate shall be continuously maintained at a value of 3 to 5 gallons per minute per 1,000 cubic feet per minute (cfm) of gas flow at all time while the emissions unit is in operation.

3. To ensure proper operation of the catalyst gas scrubber during operation of this emissions unit, the permittee shall employ an "interlock system" that will shutdown the cold box core machine within 30 minutes after the catalyst gas scrubber liquid pH rises above 5.

   The "interlock system" shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations with any modifications deemed necessary by the permittee.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for

cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall collect and record the following information each day:

a. the pH of the catalyst gas scrubber, once per operating shift;

b. the catalyst gas scrubber liquor flow rate, in gallons per minute, on a once per shift basis.

c. all periods of time the catalyst gas scrubber was not operating in accordance with the requirements in condition A.II.2. above, and the corrective action taken to bring the catalyst gas scrubber into compliance with these operating conditions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

d. all periods of time during which the scrubber for these emissions units was not maintained in accordance with the following:

i. the pH of the scrubber exceeded 5.

ii. the catalyst gas scrubber liquor flow rate was less than 3 gallons per minute per

1,000 cfm of gas flow.

e. any time periods the "interlock system" associated with the catalytic gas scrubber did not operate in compliance with the requirements specified in section A.II.3.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 5.36 lbs OC/hr, 4.93 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 6300 lbs/hr by an emission factor of 0.00085 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 15,750 tons/yr by an emission factor of 0.000313 ton OC/ton of sand.

e. Emission Limitation: 1.12 lbs PE/hr, 1.01 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 6300 lbs/hr by the an emission factor of 0.000178 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 15,750 tons/yr by an emission rate of 0.0000643 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

g. Emission Limitation: 98% control efficiency for catalyst gas emissions, by weight

Compliance Method: The catalyst gas scrubber has a manufacturer's guarantee of 99% removal by weight of catalyst gas emissions. If required, compliance with the control efficiency (i.e. the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined in accordance with the following:

i. the outlet mass emission rate shall be determined using USEPA Methods 1-4 and 18 in 40 CFR Part 60; and

ii. the inlet mass emission rate shall be determined using emission factors developed from inlet testing on similar emissions units at the facility and data collected (i.e. process weight rate, etc.) during the testing of the control outlet for this emissions unit (inlet mass emission testing is not possible on this emissions unit).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P403 - cold box core machine no.116 (loramendi cell no.8) [Modification of PTI 03-3115 issued November 3, 1999]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
		OAC rule 3745-21-07(G)(9)(h)
P404 - cold box core machine no.117 (loramendi cell no.8) and core sand mixer [Modification of PTI 03-3115 issued November 3, 1999]	OAC rule 3745-31-05(A)(3)	
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A).	acid scrubber that is designed and operated to removed at least 98 percent, by weight, of the catalyst gas emissions.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
5.36 lbs OC/hr, 4.93 tons OC/year	
1.12 lbs PE/hr, 1.01 tons PE/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	
The catalyst gas emissions shall be vented to a sulfuric	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology" (BAT) has been determined to be the use of a catalyst gas scrubber designed for the control of catalyst gas on cold box core machines.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975

1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The pH and liquor flow rate of the catalyst gas scrubbers shall be maintained at the following levels:

   a. the catalyst gas scrubber liquor pH shall be continuously maintained at or below 5 while the emissions unit is in operation; and

   b. the catalyst gas scrubber liquor flow rate shall be continuously maintained at a value of 3 to 5 gallons per minute per 1,000 cubic feet per minute (cfm) of gas flow at all time while the emissions unit is in operation.

3. To ensure proper operation of the catalyst gas scrubber during operation of this emissions unit, the permittee shall employ an "interlock system" that will shutdown the cold box core machine within 30 minutes after the catalyst gas scrubber liquid pH rises above 5.

   The "interlock system" shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations with any modifications deemed necessary by the permittee.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for

core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall collect and record the following information each day:

a. the pH of the catalyst gas scrubber, once per operating shift;

b. the catalyst gas scrubber liquor flow rate, in gallons per minute, on a once per shift basis.

c. all periods of time the catalyst gas scrubber was not operating in accordance with the requirements in condition A.II.2. above, and the corrective action taken to bring the catalyst gas scrubber into compliance with these operating conditions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

d. all periods of time during which the scrubber for these emissions units was not maintained in accordance with the following:

i. the pH of the scrubber exceeded 5.

ii. the catalyst gas scrubber liquor flow rate was less than 3 gallons per minute per 1,000 cfm of gas flow.

e. any time periods the "interlock system" associated with the catalytic gas scrubber did not operate in compliance with the requirements specified in section A.II.3.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 5.36 lbs OC/hr, 4.93 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 6300 lbs/hr by an emission factor of 0.00085 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 15,750 tons/yr by an emission factor of 0.000313 ton OC/ton of sand.

e. Emission Limitation: 1.12 lbs PE/hr, 1.01 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 6300 lbs/hr by the an emission factor of 0.000178 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 15,750 tons/yr by an emission rate of 0.0000643 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

g. Emission Limitation: 98% control efficiency for catalyst gas emissions, by weight

Compliance Method: The catalyst gas scrubber has a manufacturer's guarantee of 99% removal by weight of catalyst gas emissions. If required, compliance with the control efficiency (i.e. the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined in accordance with the following:

i. the outlet mass emission rate shall be determined using USEPA Methods 1-4 and 18 in 40 CFR Part 60; and

ii. the inlet mass emission rate shall be determined using emission factors developed from inlet testing on similar emissions units at the facility and data collected (i.e. process weight rate, etc.) during the testing of the control outlet for this emissions unit (inlet mass emission testing is not possible on this emissions unit).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P404 - cold box core machine no.117 (loramendi cell no.8) [Modification of PTI 03-3115 issued November 3, 1999]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P405 - cold box core machine no.118 (loramendi cell no.8) and core sand mixer [Modification of PTI 03-3115 issued November 3, 1999]	OAC rule 3745-31-05(A)(3)	OAC rule 3745-21-07(G)(9)(h)
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A).	acid scrubber that is designed and operated to removed at least 98 percent, by weight, of the catalyst gas emissions.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
5.36 lbs OC/hr, 4.93 tons OC/year	
1.12 lbs PE/hr, 1.01 tons PE/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	
The catalyst gas emissions shall be vented to a sulfuric	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology" (BAT) has been determined to be the use of a catalyst gas scrubber designed for the control of catalyst gas on cold box core machines.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525

1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The pH and liquor flow rate of the catalyst gas scrubbers shall be maintained at the following levels:

   a. the catalyst gas scrubber liquor pH shall be continuously maintained at or below 5 while the emissions unit is in operation; and

   b. the catalyst gas scrubber liquor flow rate shall be continuously maintained at a value of 3 to 5 gallons per minute per 1,000 cubic feet per minute (cfm) of gas flow at all time while the emissions unit is in operation.

3. To ensure proper operation of the catalyst gas scrubber during operation of this emissions unit, the permittee shall employ an "interlock system" that will shutdown the cold box core machine within 30 minutes after the catalyst gas scrubber liquid pH rises above 5.

   The "interlock system" shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations with any modifications deemed necessary by the permittee.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for

cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall collect and record the following information each day:

a. the pH of the catalyst gas scrubber, once per operating shift;

b. the catalyst gas scrubber liquor flow rate, in gallons per minute, on a once per shift basis.

c. all periods of time the catalyst gas scrubber was not operating in accordance with the requirements in condition A.II.2. above, and the corrective action taken to bring the catalyst gas scrubber into compliance with these operating conditions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

d. all periods of time during which the scrubber for these emissions units was not maintained in accordance with the following:

i. the pH of the scrubber exceeded 5.

ii. the catalyst gas scrubber liquor flow rate was less than 3 gallons per minute per 1,000 cfm of gas flow.

e. any time periods the "interlock system" associated with the catalytic gas scrubber did not operate in compliance with the requirements specified in section A.II.3.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 5.36 lbs OC/hr, 4.93 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 6300 lbs/hr by an emission factor of 0.00085 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 15,750 tons/yr by an emission factor of 0.000313 ton OC/ton of sand.

e. Emission Limitation: 1.12 lbs PE/hr, 1.01 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 6300 lbs/hr by the an emission factor of 0.000178 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 15,750 tons/yr by an emission rate of 0.0000643 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

g. Emission Limitation: 98% control efficiency for catalyst gas emissions, by weight

Compliance Method: The catalyst gas scrubber has a manufacturer's guarantee of 99% removal by weight of catalyst gas emissions. If required, compliance with the control efficiency (i.e. the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined in accordance with the following:

i. the outlet mass emission rate shall be determined using USEPA Methods 1-4 and 18 in 40 CFR Part 60; and

ii. the inlet mass emission rate shall be determined using emission factors developed from inlet testing on similar emissions units at the facility and data collected (i.e. process weight rate, etc.) during the testing of the control outlet for this emissions unit (inlet mass emission testing is not possible on this emissions unit).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P405 - cold box core machine no.118 (loramendi cell no.8) [Modification of PTI 03-3115 issued November 3, 1999]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P406 - core oven no.8 [Modification of PTI 03-3115 issued November 3, 1999]	OAC rule 3745-31-05(A)(3)	OAC rule 3745-17-11(B) OAC rule 3745-23-06(B) OAC rule 3745-21-07(G)(2)
	OAC rule 3745-17-07(A)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3). See A.I.2..d. See A.II.2.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
7.38 lbs OC/hr, 6.10 tons OC/year	
2.37 lbs PE/hr, 1.63 tons PE/yr	
0.82 lb carbon monoxide (CO)/hr, 1.34 tons CO/yr	
0.98 lb nitrogen oxide (NOx)/hr, 1.60 tons NOx/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit..

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Emissions Unit ID: P406

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The use of photochemically reactive material, as defined in OAC rule 3745-21-01(C)(5), in this emissions unit is prohibited.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for

cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

4. The permittee shall maintain records of the following information for this emissions unit:

a. company identification for each liquid organic material employed in this emissions unit; and

b. documentation on whether or not each liquid organic material employed is a

photochemically reactive material.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

   a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

   b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

   c. the rolling, 12-month emission limitations for PE and OC.

   These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

3. The permittee shall notify the Director (the appropriate Ohio EPA District Office or local air agency) in writing of any monthly record showing the use of photochemically reactive material. The notification shall include a copy of such a record and shall be sent to the Director (the appropriate Ohio EPA District Office or local air agency) within 30 days following the end of the calendar month.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

   a. <u>Emission Limitation:</u> 1,024,555 tons of sand per rolling 12-month period

      <u>Compliance Method:</u> Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

   b. <u>Emission Limitation:</u> 1,207.90 tons OC per rolling 12-month period

      <u>Compliance Method:</u> Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 7.38 lbs OC/hr, 6.10 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 25,200 lbs/hr by an emission factor of 0.000293 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 41,226 tons/yr by an emission factor of 0.000148 ton OC/ton of sand.

e. Emission Limitation: 2.37 lbs PE/hr, 1.63 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 25,200 lbs/hr by the an emission factor of 0.000094 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 41,226 tons/yr by an emission rate of 0.0000396 ton PE/ton of sand.

f. Emission Limitation: 0.82 lb CO/hr, 1.34 tons CO/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 10 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 9778 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (84 lbs CO/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 31.99 mm scf by the AP 42 emission factor.

g. Emission Limitation: 0.98 lb NOx/hr, 1.60 tons NOx/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 7 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 9778 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (100 lbs NOx/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 31.99 mm scf by the AP 42 emission factor.

h. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P406 - core oven no. 8 [Modification of PTI 03-3115 issued November 3, 1999]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
		OAC rule 3745-21-07(G)(9)(h)
P430 - cold box core machine no.119 (loramendi cell no.8) and core sand mixer [Modification of PTI 03-13375 issued October 31, 2000]	OAC rule 3745-31-05(A)(3)	
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A).	acid scrubber that is designed and operated to removed at least 98 percent, by weight, of the catalyst gas emissions.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
5.36 lbs OC/hr, 4.93 tons OC/year	
1.12 lbs PE/hr, 1.01 tons PE/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	
The catalyst gas emissions shall be vented to a sulfuric	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology" (BAT) has been determined to be the use of a catalyst gas scrubber designed for the control of catalyst gas on cold box core machines.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525

1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The pH and liquor flow rate of the catalyst gas scrubbers shall be maintained at the following levels:

   a. the catalyst gas scrubber liquor pH shall be continuously maintained at or below 5 while the emissions unit is in operation; and

   b. the catalyst gas scrubber liquor flow rate shall be continuously maintained at a value of 3 to 5 gallons per minute per 1,000 cubic feet per minute (cfm) of gas flow at all time while the emissions unit is in operation.

3. To ensure proper operation of the catalyst gas scrubber during operation of this emissions unit, the permittee shall employ an "interlock system" that will shutdown the cold box core machine within 30 minutes after the catalyst gas scrubber liquid pH rises above 5.

   The "interlock system" shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations with any modifications deemed necessary by the permittee.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for

cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall collect and record the following information each day:

a. the pH of the catalyst gas scrubber, once per operating shift;

b. the catalyst gas scrubber liquor flow rate, in gallons per minute, on a once per shift basis.

c. all periods of time the catalyst gas scrubber was not operating in accordance with the requirements in condition A.II.2. above, and the corrective action taken to bring the catalyst gas scrubber into compliance with these operating conditions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

d. all periods of time during which the scrubber for these emissions units was not maintained in accordance with the following:

i. the pH of the scrubber exceeded 5.

ii. the catalyst gas scrubber liquor flow rate was less than 3 gallons per minute per 1,000 cfm of gas flow.

e. any time periods the "interlock system" associated with the catalytic gas scrubber did not operate in compliance with the requirements specified in section A.II.3.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 5.36 lbs OC/hr, 4.93 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 6300 lbs/hr by an emission factor of 0.00085 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 15,750 tons/yr by an emission factor of 0.000313 ton OC/ton of sand.

e. Emission Limitation: 1.12 lbs PE/hr, 1.01 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 6300 lbs/hr by the an emission factor of 0.000178 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 15,750 tons/yr by an emission rate of 0.0000643 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

g. Emission Limitation: 98% control efficiency for catalyst gas emissions, by weight

Compliance Method: The catalyst gas scrubber has a manufacturer's guarantee of 99% removal by weight of catalyst gas emissions. If required, compliance with the control efficiency (i.e. the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined in accordance with the following:

i. the outlet mass emission rate shall be determined using USEPA Methods 1-4 and 18 in 40 CFR Part 60; and

ii. the inlet mass emission rate shall be determined using emission factors developed from inlet testing on similar emissions units at the facility and data collected (i.e. process weight rate, etc.) during the testing of the control outlet for this emissions unit (inlet mass emission testing is not possible on this emissions unit).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P430 - cold box core machine no.119 (loramendi cell no.8) [Modification of PTI 03-13375 issued October 31, 2000]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P434 - cold box core machine no.120 and core sand mixer	OAC rule 3745-31-05(A)(3)	The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A). 1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a. 151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a. 2.75 lbs OC/hr, 2.54 tons OC/year 0.58 lbs PE/hr, 0.52 tons PE/yr Visible PE from the stack(s) servicing this emissions unit shall not exceed 10% opacity as a 6-minute average, except as provided by rule.
	OAC rule 3745-17-07(A)	See A.I.2.d.
	OAC rule 3745-17-11(B)	See A.I.2.d.
	OAC rule 3745-21-07(G)(9)(h)	The catalyst gas emissions shall be vented

to a sulfuric acid scrubber that is designed and operated to remove at least 98% percent, by weight, of the catalyst gas emissions.

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology" (BAT) has been determined to be the use of a catalyst gas scrubber designed for the control of catalyst gas on cold box core machines.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450

1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The pH and liquor flow rate of the catalyst gas scrubbers shall be maintained at the following levels:

   a. the catalyst gas scrubber liquor pH shall be continuously maintained at or below 5 while the emissions unit is in operation; and

   b. the catalyst gas scrubber liquor flow rate shall be continuously maintained at a value of 3 to 5 gallons per minute per 1,000 cubic feet per minute (cfm) of gas flow at all time while the emissions unit is in operation.

3. To ensure proper operation of the catalyst gas scrubber during operation of this emissions unit, the permittee shall employ an "interlock system" that will shutdown the cold box core machine within 30 minutes after the catalyst gas scrubber liquid pH rises above 5.

   The "interlock system" shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations with any modifications deemed necessary by the permittee.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall collect and record the following information each day:

a. the pH of the catalyst gas scrubber, once per operating shift;

b. the catalyst gas scrubber liquor flow rate, in gallons per minute, on a once per shift basis.

c. all periods of time the catalyst gas scrubber was not operating in accordance with the requirements in condition A.II.2. above, and the corrective action taken to bring the catalyst gas scrubber into compliance with these operating conditions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

d. all periods of time during which the scrubber for these emissions units was not maintained in accordance with the following:

i. the pH of the scrubber exceeded 5.

ii. the catalyst gas scrubber liquor flow rate was less than 3 gallons per minute per 1,000 cfm of gas flow.

e. any time periods the "interlock system" associated with the catalytic gas scrubber did not operate in compliance with the requirements specified in Section A.II.3.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 2.75 lbs OC/hr, 2.54 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates.

Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 3240 lbs/hr by an emission factor of 0.00085 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 8100 tons/yr by an emission factor of 0.000313 ton OC/ton of sand.

e. Emission Limitation: 0.58 lbs PE/hr, 0.52 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 3240 lbs/hr by the an emission factor of 0.000178 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 8100 tons/yr by an emission rate of 0.0000643 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 10% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required, the permittee shall demonstrate compliance with this emission limitation using U.S. EPA Method 9, which is located in 40 CFR Part 60, Appendix A.

g. Emission Limitation: 98% control efficiency for catalyst gas emissions, by weight

Compliance Method: The catalyst gas scrubber has a manufacturer's guarantee of 99% removal by weight of catalyst gas emissions. If required, compliance with the control efficiency (i.e. the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined in accordance with the following:

i. the outlet mass emission rate shall be determined using USEPA Methods 1-4 and 18 in 40 CFR Part 60; and

ii. the inlet mass emission rate shall be determined using emission factors developed from inlet testing on similar emissions units at the facility and data collected (i.e.

process weight rate, etc.) during the testing of the control outlet for this emissions unit. Inlet mass emission testing is not possible on this emissions unit.

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P434 - COLD BOX CORE MACHINE NO.120	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P435 - cold box core machine no.121 and core sand mixer	OAC rule 3745-31-05(A)(3)	The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A). 1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a. 151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a. 2.75 lbs OC/hr, 2.54 tons OC/year 0.58 lbs PE/hr, 0.52 tons PE/yr Visible PE from the stack(s) servicing this emissions unit shall not exceed 10% opacity as a 6-minute average, except as provided by rule.
	OAC rule 3745-17-07(A)	See A.I.2.d.
	OAC rule 3745-17-11(B)	See A.I.2.d.
	OAC rule 3745-21-07(G)(9)(h)	The catalyst gas emissions shall be vented

to a sulfuric acid scrubber that is designed and operated to remove at least 98% percent, by weight, of the catalyst gas emissions.

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology" (BAT) has been determined to be the use of a catalyst gas scrubber designed for the control of catalyst gas on cold box core machines.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900

1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The pH and liquor flow rate of the catalyst gas scrubbers shall be maintained at the following levels:

   a. the catalyst gas scrubber liquor pH shall be continuously maintained at or below 5 while the emissions unit is in operation; and

   b. the catalyst gas scrubber liquor flow rate shall be continuously maintained at a value of 3 to 5 gallons per minute per 1,000 cubic feet per minute (cfm) of gas flow at all time while the emissions unit is in operation.

3. To ensure proper operation of the catalyst gas scrubber during operation of this emissions unit, the permittee shall employ an "interlock system" that will shutdown the cold box core machine within 30 minutes after the catalyst gas scrubber liquid pH rises above 5.

   The "interlock system" shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations with any modifications deemed necessary by the permittee.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall collect and record the following information each day:

a. the pH of the catalyst gas scrubber, once per operating shift;

b. the catalyst gas scrubber liquor flow rate, in gallons per minute, on a once per shift basis.

c. all periods of time the catalyst gas scrubber was not operating in accordance with the requirements in condition A.II.2. above, and the corrective action taken to bring the catalyst gas scrubber into compliance with these operating conditions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to

install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

d. all periods of time during which the scrubber for these emissions units was not maintained in accordance with the following:

i. the pH of the scrubber exceeded 5.

ii. the catalyst gas scrubber liquor flow rate was less than 3 gallons per minute per 1,000 cfm of gas flow.

e. any time periods the "interlock system" associated with the catalytic gas scrubber did not operate in compliance with the requirements specified in Section A.II.3.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 2.75 lbs OC/hr, 2.54 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions

unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 3240 lbs/hr by an emission factor of 0.00085 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 8100 tons/yr by an emission factor of 0.000313 ton OC/ton of sand.

e. Emission Limitation: 0.58 lbs PE/hr, 0.52 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 3240 lbs/hr by the an emission factor of 0.000178 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 8100 tons/yr by an emission rate of 0.0000643 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 10% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required, the permittee shall demonstrate compliance with this emission limitation using U.S. EPA Method 9, which is located in 40 CFR Part 60, Appendix A.

g. Emission Limitation: 98% control efficiency for catalyst gas emissions, by weight

Compliance Method: The catalyst gas scrubber has a manufacturer's guarantee of 99% removal by weight of catalyst gas emissions. If required, compliance with the control efficiency (i.e. the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined in accordance with the following:

i. the outlet mass emission rate shall be determined using USEPA Methods 1-4 and 18 in 40 CFR Part 60; and

ii. the inlet mass emission rate shall be determined using emission factors developed from inlet testing on similar emissions units at the facility and data collected (i.e. process weight rate, etc.) during the testing of the control outlet for this emissions unit. Inlet mass emission testing is not possible on this emissions unit.

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P435 - COLD BOX CORE MACHINE NO.121	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Emissions Unit ID: P436

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P436 - cold box core machine no.122 and core sand mixer	OAC rule 3745-31-05(A)(3)	The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A). 1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a. 151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a. 1.84 lbs OC/hr, 1.69 tons OC/year 0.38 lbs PE/hr, 0.35 tons PE/yr Visible PE from the stack(s) servicing this emissions unit shall not exceed 5% opacity as a 6-minute average, except as provided by rule.
	OAC rule 3745-17-07(A)	See A.I.2.d.
	OAC rule 3745-17-11(B)	See A.I.2.d.
	OAC rule 3745-21-07(G)(9)(h)	The catalyst gas emissions shall be vented to a sulfuric acid scrubber that is designed and operated to remove at least 98% percent, by weight, of the catalyst gas emissions.

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology" (BAT) has been determined to be the use of a catalyst gas scrubber designed for the control of catalyst gas on cold box core machines.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350

1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The pH and liquor flow rate of the catalyst gas scrubbers shall be maintained at the following levels:

   a. the catalyst gas scrubber liquor pH shall be continuously maintained at or below 5 while the emissions unit is in operation; and

   b. the catalyst gas scrubber liquor flow rate shall be continuously maintained at a value of 3 to 5 gallons per minute per 1,000 cubic feet per minute (cfm) of gas flow at all time while the emissions unit is in operation.

3. To ensure proper operation of the catalyst gas scrubber during operation of this emissions unit, the permittee shall employ an "interlock system" that will shutdown the cold box core machine within 30 minutes after the catalyst gas scrubber liquid pH rises above 5.

   The "interlock system" shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations with any modifications deemed necessary by the permittee.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

   b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

   c. the calculated emission rate for OC, in tons, determined by the following equation:

      TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

      where:

      TOCE = total organic compound emissions, in tons

      Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

      R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

      S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

      T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

      *These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

   d. the calculated emission rate for PE, in tons, determined by the following equation:

      TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

      where:

      TPE = total particulate emissions, in tons

      U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for

hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall collect and record the following information each day:

a. the pH of the catalyst gas scrubber, once per operating shift;

b. the catalyst gas scrubber liquor flow rate, in gallons per minute, on a once per shift basis.

c. all periods of time the catalyst gas scrubber was not operating in accordance with the requirements in condition A.II.2. above, and the corrective action taken to bring the catalyst gas scrubber into compliance with these operating conditions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

d. all periods of time during which the scrubber for these emissions units was not maintained in accordance with the following:

i. the pH of the scrubber exceeded 5.

ii. the catalyst gas scrubber liquor flow rate was less than 3 gallons per minute per 1,000 cfm of gas flow.

e. any time periods the "interlock system" associated with the catalytic gas scrubber did not operate in compliance with the requirements specified in Section A.II.3.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 1.84 lbs OC/hr, 1.69 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 2160 lbs/hr by an emission factor of 0.00085 lb OC/lb sand. The maximum

annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 5400 tons/yr by an emission factor of 0.000313 ton OC/ton of sand.

e. Emission Limitation: 0.38 lbs PE/hr, 0.35 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 2160 lbs/hr by the an emission factor of 0.000178 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 5400 tons/yr by an emission rate of 0.0000643 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 10% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required, the permittee shall demonstrate compliance with this emission limitation using U.S. EPA Method 9, which is located in 40 CFR Part 60, Appendix A.

g. Emission Limitation: 98% control efficiency for catalyst gas emissions, by weight

Compliance Method: The catalyst gas scrubber has a manufacturer's guarantee of 99% removal by weight of catalyst gas emissions. If required, compliance with the control efficiency (i.e. the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined in accordance with the following:

i. the outlet mass emission rate shall be determined using USEPA Methods 1-4 and 18 in 40 CFR Part 60; and

ii. the inlet mass emission rate shall be determined using emission factors developed from inlet testing on similar emissions units at the facility and data collected (i.e. process weight rate, etc.) during the testing of the control outlet for this emissions unit. Inlet mass emission testing is not possible on this emissions unit.

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P436 - COLD BOX CORE MACHINE NO.122	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P437 - hot box core machine no.123, core sand mixer and associated conveyor	OAC rule 3745-31-05(A)(3)	OAC rule 3745-23-06(B) OAC rule 3745-21-07(G)(1)&(2)
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures	
	See A.I.2.d.
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	See A.I.2.e.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
17.94 lbs OC/hr, 15.43 tons OC/year (includes conveyor emissions)	
2.11 lbs PE/hr, 1.34 tons PE/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

2.e The core sand mixer portion of this emissions unit does not employ, apply, evaporate or dry any photochemically reactive material (PRM), or any substance containing such PRM. Also, the liquid organic material/substance containing liquid organic material in the hot box core machine portion of this emissions unit does not come into contact with a flame and is not baked, heat-cured, or heat-polymerized, in the presence of oxygen. Therefore, there are no applicable emission limitations established by this rule.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Emissions Unit ID: P437

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

   b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 17.94 lbs OC/hr, 15.43 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 3500 lbs/hr by an emission factor of 0.005125 lb OC/lb sand (sum of hot box

core emission factor, 0.004932 and conveyor emission factor, 0.000193). The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 8750 tons/yr by an emission factor of 0.001763 ton OC/ton of sand (sum of hot box core emission factor, 0.001347 and hot box conveyor emission factor, 0.000416).

e. Emission Limitation: 2.11lbs PE/hr, 1.34 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 3500 lbs/hr by the an emission factor of 0.000604 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 8750 tons/yr by an emission rate of 0.000153 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P437 - hot box core machine no.123	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P438 - hot box core machine no.124, sand core mixer and associated conveyor	OAC rule 3745-31-05(A)(3)	OAC rule 3745-23-06(B) OAC rule 3745-21-07(G)(1)&(2)
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures	
	See A.I.2.d.
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	See A.I.2.e.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
17.94 lbs OC/hr, 15.43 tons OC/year (includes conveyor emissions)	
2.11 lbs PE/hr, 1.34 tons PE/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

2.e The core sand mixer portion of this emissions unit does not employ, apply, evaporate or dry any photochemically reactive material (PRM), or any substance containing such PRM. Also, the liquid organic material/substance containing liquid organic material in the hot box core machine portion of this emissions unit does not come into contact with a flame and is not baked, heat-cured, or heat-polymerized, in the presence of oxygen. Therefore, there are no applicable emission limitations established by this rule.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 17.94 lbs OC/hr, 15.43 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

Emissions Unit ID: P438

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 3500 lbs/hr by an emission factor of 0.005125 lb OC/lb sand (sum of hot box core emission factor, 0.004932 and conveyor emission factor, 0.000193). The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 8750 tons/yr by an emission factor of 0.001763 ton OC/ton of sand (sum of hot box core emission factor, 0.001347 and hot box conveyor emission factor, 0.000416).

e. Emission Limitation: 2.11lbs PE/hr, 1.34 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 3500 lbs/hr by the an emission factor of 0.000604 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 8750 tons/yr by an emission rate of 0.000153 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P438 - hot box core machine no.124	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements
P439 - hot box core machine no.10, core sand mixer and associated conveyor	OAC rule 3745-31-05(A)(3)
	OAC rule 3745-17-07(A)
	OAC rule 3745-17-11(B)
	OAC rule 3745-23-06(B)
	OAC rule 3745-21-07(G)(1)&(2)

Applicable Emissions Limitations/Control Measures	
	See A.I.2.d.
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	See A.I.2.e.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
17.94 lbs OC/hr, 15.43 tons OC/year (includes conveyor emissions)	
2.11 lbs PE/hr, 1.34 tons PE/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

2.e The core sand mixer portion of this emissions unit does not employ, apply, evaporate or dry any photochemically reactive material (PRM), or any substance containing such PRM. Also, the liquid organic material/substance containing liquid organic material in the hot box core machine portion of this emissions unit does not come into contact with a flame and is not baked, heat-cured, or heat-polymerized, in the presence of oxygen. Therefore, there are no applicable emission limitations established by this rule.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Emissions Unit ID: P439

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

   b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 17.94 lbs OC/hr, 15.43 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 3500 lbs/hr by an emission factor of 0.005125 lb OC/lb sand (sum of hot box

core emission factor, 0.004932 and conveyor emission factor, 0.000193). The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 8750 tons/yr by an emission factor of 0.001763 ton OC/ton of sand (sum of hot box core emission factor, 0.001347 and hot box conveyor emission factor, 0.000416).

e. Emission Limitation: 2.11lbs PE/hr, 1.34 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 3500 lbs/hr by the an emission factor of 0.000604 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 8750 tons/yr by an emission rate of 0.000153 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P439 - hot box core machine no.10	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P440 - hot box core machine no.34/35 (two station machine), core sand mixer and associated conveyor	OAC rule 3745-31-05(A)(3)	OAC rule 3745-23-06(B) OAC rule 3745-21-07(G)(1)&(2)
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures	
	See A.I.2.d.
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	See A.I.2.e.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
29.73 lbs OC/hr, 25.56 tons OC/year (includes conveyor emissions)	
3.50 lbs PE/hr, 2.22 tons PE/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

2.e The core sand mixer portion of this emissions unit does not employ, apply, evaporate or dry any photochemically reactive material (PRM), or any substance containing such PRM. Also, the liquid organic material/substance containing liquid organic material in the hot box core machine portion of this emissions unit does not come into contact with a flame and is not baked, heat-cured, or heat-polymerized, in the presence of oxygen. Therefore, there are no applicable emission limitations established by this rule.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Emissions Unit ID: P440

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

   b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 29.73 lbs OC/hr, 25.56 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 5800 lbs/hr by an emission factor of 0.005125 lb OC/lb sand (sum of hot box

core emission factor, 0.004932 and conveyor emission factor, 0.000193). The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 14,500 tons/yr by an emission factor of 0.001763 ton OC/ton of sand (sum of hot box core emission factor, 0.001347 and hot box conveyor emission factor, 0.000416).

e. Emission Limitation: 3.5 lbs PE/hr, 2.22 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 5800 lbs/hr by the an emission factor of 0.000604 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 14,500 tons/yr by an emission rate of 0.000153 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P440 - hot box core machine no.34/35 (two station machine)	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P441 - hot box core machine no.36/37, core sand mixer and associated conveyor	OAC rule 3745-31-05(A)(3)	OAC rule 3745-23-06(B) OAC rule 3745-21-07(G)(1)&(2)
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures	
	See A.I.2.d.
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	See A.I.2.e.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
29.73 lbs OC/hr, 25.56 tons OC/year (includes conveyor emissions)	
3.50 lbs PE/hr, 2.22 tons PE/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

2.e The core sand mixer portion of this emissions unit does not employ, apply, evaporate or dry any photochemically reactive material (PRM), or any substance containing such PRM. Also, the liquid organic material/substance containing liquid organic material in the hot box core machine portion of this emissions unit does not come into contact with a flame and is not baked, heat-cured, or heat-polymerized, in the presence of oxygen. Therefore, there are no applicable emission limitations established by this rule.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for

core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

   a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

      Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

   b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

      Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

   c. Emission Limitation: 151.56 tons PE per rolling 12-month period

      Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

   d. Emission Limitation: 29.73 lbs OC/hr, 25.56 tons OC/year

      Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

      *The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 5800 lbs/hr by an emission factor of 0.005125 lb OC/lb sand (sum of hot box core emission factor, 0.004932 and conveyor emission factor, 0.000193). The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 14,500 tons/yr by an emission factor of 0.001763 ton OC/ton of sand (sum of hot box core emission factor, 0.001347 and hot box conveyor emission factor, 0.000416).

e. Emission Limitation: 3.5 lbs PE/hr, 2.22 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 5800 lbs/hr by the an emission factor of 0.000604 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 14,500 tons/yr by an emission rate of 0.000153 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P441 - hot box core machine no.36/37	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P442 - cold box core machine no.55 and core sand mixer [Modification of PTI 03-2285 issued November 6, 1985]	OAC rule 3745-31-05(A)(3)	The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A). 1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a. 151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a. 3.83 lbs OC/hr, 3.52 tons OC/year 0.80 lbs PE/hr, 0.72 tons PE/yr
	OAC rule 3745-17-07(A)	Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.
	OAC rule 3745-17-11(B)	The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).
	OAC rule 3745-21-07(G)(9)(h)	The catalyst gas emissions shall be vented to a sulfuric acid scrubber that is designed and operated to remove at least 98% percent, by weight, of the catalyst gas

emissions.

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology" (BAT) has been determined to be the use of a catalyst gas scrubber designed for the control of catalyst gas on cold box core machines.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075

1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The pH and liquor flow rate of the catalyst gas scrubbers shall be maintained at the following levels:

   a. the catalyst gas scrubber liquor pH shall be continuously maintained at or below 5 while the emissions unit is in operation; and

   b. the catalyst gas scrubber liquor flow rate shall be continuously maintained at a value of 3 to 5 gallons per minute per 1,000 cubic feet per minute (cfm) of gas flow at all time while the emissions unit is in operation.

3. To ensure proper operation of the catalyst gas scrubber during operation of this emissions unit, the permittee shall employ an "interlock system" that will shutdown the cold box core machine within 30 minutes after the catalyst gas scrubber liquid pH rises above 5.

   The "interlock system" shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations with any modifications deemed necessary by the permittee.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

   b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

   c. the calculated emission rate for OC, in tons, determined by the following equation:

      TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

      where:

      TOCE = total organic compound emissions, in tons

      Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

      R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

      S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

      T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

      *These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

   d. the calculated emission rate for PE, in tons, determined by the following equation:

      TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

      where:

      TPE = total particulate emissions, in tons

      U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall collect and record the following information each day:

a. the pH of the catalyst gas scrubber, once per operating shift;

b. the catalyst gas scrubber liquor flow rate, in gallons per minute, on a once per shift basis.

c. all periods of time the catalyst gas scrubber was not operating in accordance with the requirements in condition A.II.2. above, and the corrective action taken to bring the catalyst gas scrubber into compliance with these operating conditions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

d. all periods of time during which the scrubber for these emissions units was not maintained in accordance with the following:

i. the pH of the scrubber exceeded 5.

ii. the catalyst gas scrubber liquor flow rate was less than 3 gallons per minute per 1,000 cfm of gas flow.

e. any time periods the "interlock system" associated with the catalytic gas scrubber did not operate in compliance with the requirements specified in Section A.II.3.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 3.83 lbs OC/hr, 3.52 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 4500 lbs/hr by an emission factor of 0.00085 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate

of 11,250 tons/yr by an emission factor of 0.000313 ton OC/ton of sand.

e. Emission Limitation: 0.80 lbs PE/hr, 0.72 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 4500 lbs/hr by the an emission factor of 0.000178 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 11,250 tons/yr by an emission rate of 0.0000643 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

g. Emission Limitation: 98% control efficiency for catalyst gas emissions, by weight

Compliance Method: The catalyst gas scrubber has a manufacturer's guarantee of 99% removal by weight of catalyst gas emissions. If required, compliance with the control efficiency (i.e. the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined in accordance with the following:

i. the outlet mass emission rate shall be determined using USEPA Methods 1-4 and 18 in 40 CFR Part 60; and

ii. the inlet mass emission rate shall be determined using emission factors developed from inlet testing on similar emissions units at the facility and data collected (i.e. process weight rate, etc.) during the testing of the control outlet for this emissions unit. Inlet mass emission testing is not possible on this emissions unit.

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P442 - cold box core machine no.55 [Modification of PTI 03-2285 issued November 6, 1985]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P443 - cold box core machine no.56 and core sand mixer [Modification of PTI 03-2285 issued November 6, 1985]	OAC rule 3745-31-05(A)(3)	OAC rule 3745-21-07(G)(9)(h)
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A).	acid scrubber that is designed and operated to remove at least 98% percent, by weight, of the catalyst gas emissions.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
3.83 lbs OC/hr, 3.52 tons OC/year	
0.80 lbs PE/hr, 0.72 tons PE/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	
The catalyst gas emissions shall be vented to a sulfuric	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology" (BAT) has been determined to be the use of a catalyst gas scrubber designed for the control of catalyst gas on cold box core machines.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525

1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The pH and liquor flow rate of the catalyst gas scrubbers shall be maintained at the following levels:

   a. the catalyst gas scrubber liquor pH shall be continuously maintained at or below 5 while the emissions unit is in operation; and

   b. the catalyst gas scrubber liquor flow rate shall be continuously maintained at a value of 3 to 5 gallons per minute per 1,000 cubic feet per minute (cfm) of gas flow at all time while the emissions unit is in operation.

3. To ensure proper operation of the catalyst gas scrubber during operation of this emissions unit, the permittee shall employ an "interlock system" that will shutdown the cold box core machine within 30 minutes after the catalyst gas scrubber liquid pH rises above 5.

   The "interlock system" shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations with any modifications deemed necessary by the permittee.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for

cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall collect and record the following information each day:

a. the pH of the catalyst gas scrubber, once per operating shift;

b. the catalyst gas scrubber liquor flow rate, in gallons per minute, on a once per shift basis.

c. all periods of time the catalyst gas scrubber was not operating in accordance with the requirements in condition A.II.2. above, and the corrective action taken to bring the catalyst gas scrubber into compliance with these operating conditions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

d. all periods of time during which the scrubber for these emissions units was not maintained in accordance with the following:

i. the pH of the scrubber exceeded 5.

ii. the catalyst gas scrubber liquor flow rate was less than 3 gallons per minute per

1,000 cfm of gas flow.

e. any time periods the "interlock system" associated with the catalytic gas scrubber did not operate in compliance with the requirements specified in Section A.II.3.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 3.83 lbs OC/hr, 3.52 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 4500 lbs/hr by an emission factor of 0.00085 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 11,250 tons/yr by an emission factor of 0.000313 ton OC/ton of sand.

e. Emission Limitation: 0.80 lbs PE/hr, 0.72 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 4500 lbs/hr by the an emission factor of 0.000178 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 11,250 tons/yr by an emission rate of 0.0000643 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

g. Emission Limitation: 98% control efficiency for catalyst gas emissions, by weight

Compliance Method: The catalyst gas scrubber has a manufacturer's guarantee of 99% removal by weight of catalyst gas emissions. If required, compliance with the control efficiency (i.e. the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined in accordance with the following:

i. the outlet mass emission rate shall be determined using USEPA Methods 1-4 and 18 in 40 CFR Part 60; and

ii. the inlet mass emission rate shall be determined using emission factors developed from inlet testing on similar emissions units at the facility and data collected (i.e. process weight rate, etc.) during the testing of the control outlet for this emissions unit. Inlet mass emission testing is not possible on this emissions unit.

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
		OAC rule 3745-21-07(G)(9)(h)
P444 - cold box core machine no.57 and core sand mixer [Modification of PTI 03-2285 issued November 6, 1985]	OAC rule 3745-31-05(A)(3)	
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A).	acid scrubber that is designed and operated to remove at least 98% percent, by weight, of the catalyst gas emissions.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
3.83 lbs OC/hr, 3.52 tons OC/year	
0.80 lbs PE/hr, 0.72 tons PE/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	
The catalyst gas emissions shall be vented to a sulfuric	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology" (BAT) has been determined to be the use of a catalyst gas scrubber designed for the control of catalyst gas on cold box core machines.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525

1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The pH and liquor flow rate of the catalyst gas scrubbers shall be maintained at the following levels:

   a. the catalyst gas scrubber liquor pH shall be continuously maintained at or below 5 while the emissions unit is in operation; and

   b. the catalyst gas scrubber liquor flow rate shall be continuously maintained at a value of 3 to 5 gallons per minute per 1,000 cubic feet per minute (cfm) of gas flow at all time while the emissions unit is in operation.

3. To ensure proper operation of the catalyst gas scrubber during operation of this emissions unit, the permittee shall employ an "interlock system" that will shutdown the cold box core machine within 30 minutes after the catalyst gas scrubber liquid pH rises above 5.

   The "interlock system" shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations with any modifications deemed necessary by the permittee.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for

cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall collect and record the following information each day:

a. the pH of the catalyst gas scrubber, once per operating shift;

b. the catalyst gas scrubber liquor flow rate, in gallons per minute, on a once per shift basis.

c. all periods of time the catalyst gas scrubber was not operating in accordance with the requirements in condition A.II.2. above, and the corrective action taken to bring the catalyst gas scrubber into compliance with these operating conditions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

d. all periods of time during which the scrubber for these emissions units was not maintained in accordance with the following:

i. the pH of the scrubber exceeded 5.

ii. the catalyst gas scrubber liquor flow rate was less than 3 gallons per minute per

1,000 cfm of gas flow.

e. any time periods the "interlock system" associated with the catalytic gas scrubber did not operate in compliance with the requirements specified in Section A.II.3.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 3.83 lbs OC/hr, 3.52 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 4500 lbs/hr by an emission factor of 0.00085 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 11,250 tons/yr by an emission factor of 0.000313 ton OC/ton of sand.

e. Emission Limitation: 0.80 lbs PE/hr, 0.72 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 4500 lbs/hr by the an emission factor of 0.000178 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 11,250 tons/yr by an emission rate of 0.0000643 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

g. Emission Limitation: 98% control efficiency for catalyst gas emissions, by weight

Compliance Method: The catalyst gas scrubber has a manufacturer's guarantee of 99% removal by weight of catalyst gas emissions. If required, compliance with the control efficiency (i.e. the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined in accordance with the following:

i. the outlet mass emission rate shall be determined using USEPA Methods 1-4 and 18 in 40 CFR Part 60; and

ii. the inlet mass emission rate shall be determined using emission factors developed from inlet testing on similar emissions units at the facility and data collected (i.e. process weight rate, etc.) during the testing of the control outlet for this emissions unit. Inlet mass emission testing is not possible on this emissions unit.

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P444 - cold box core machine no.57 and core sand mixer [Modification of PTI 03-2285 issued November 6, 1985]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
		OAC rule 3745-21-07(G)(9)(h)
P445 - cold box core machine no.58 and core sand mixer [Modification of PTI 03-2285 issued November 6, 1985]	OAC rule 3745-31-05(A)(3)	
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A).	acid scrubber that is designed and operated to remove at least 98% percent, by weight, of the catalyst gas emissions.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
3.83 lbs OC/hr, 3.52 tons OC/year	
0.80 lbs PE/hr, 0.72 tons PE/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	
The catalyst gas emissions shall be vented to a sulfuric	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology" (BAT) has been determined to be the use of a catalyst gas scrubber designed for the control of catalyst gas on cold box core machines.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975

1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The pH and liquor flow rate of the catalyst gas scrubbers shall be maintained at the following levels:

   a. the catalyst gas scrubber liquor pH shall be continuously maintained at or below 5 while the emissions unit is in operation; and

   b. the catalyst gas scrubber liquor flow rate shall be continuously maintained at a value of 3 to 5 gallons per minute per 1,000 cubic feet per minute (cfm) of gas flow at all time while the emissions unit is in operation.

3. To ensure proper operation of the catalyst gas scrubber during operation of this emissions unit, the permittee shall employ an "interlock system" that will shutdown the cold box core machine within 30 minutes after the catalyst gas scrubber liquid pH rises above 5.

   The "interlock system" shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations with any modifications deemed necessary by the permittee.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for

core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall collect and record the following information each day:

a. the pH of the catalyst gas scrubber, once per operating shift;

b. the catalyst gas scrubber liquor flow rate, in gallons per minute, on a once per shift basis.

c. all periods of time the catalyst gas scrubber was not operating in accordance with the requirements in condition A.II.2. above, and the corrective action taken to bring the catalyst gas scrubber into compliance with these operating conditions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

d. all periods of time during which the scrubber for these emissions units was not maintained in accordance with the following:

i. the pH of the scrubber exceeded 5.

ii. the catalyst gas scrubber liquor flow rate was less than 3 gallons per minute per 1,000 cfm of gas flow.

e. any time periods the "interlock system" associated with the catalytic gas scrubber did not operate in compliance with the requirements specified in Section A.II.3.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 3.83 lbs OC/hr, 3.52 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 4500 lbs/hr by an emission factor of 0.00085 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 11,250 tons/yr by an emission factor of 0.000313 ton OC/ton of sand.

e. Emission Limitation: 0.80 lbs PE/hr, 0.72 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 4500 lbs/hr by the an emission factor of 0.000178 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 11,250 tons/yr by an emission rate of 0.0000643 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

g. Emission Limitation: 98% control efficiency for catalyst gas emissions, by weight

Compliance Method: The catalyst gas scrubber has a manufacturer's guarantee of 99% removal by weight of catalyst gas emissions. If required, compliance with the control efficiency (i.e. the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined in accordance with the following:

i. the outlet mass emission rate shall be determined using USEPA Methods 1-4 and 18 in 40 CFR Part 60; and

ii. the inlet mass emission rate shall be determined using emission factors developed from inlet testing on similar emissions units at the facility and data collected (i.e. process weight rate, etc.) during the testing of the control outlet for this emissions unit. Inlet mass emission testing is not possible on this emissions unit.

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P445 - cold box core machine no.58 and core sand mixer [Modification of PTI 03-2285 issued November 6, 1985]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
		OAC rule 3745-21-07(G)(9)(h)
P446 - cold box core machine no.59 and core sand mixer [Modification of PTI 03-2285 issued November 6, 1985]	OAC rule 3745-31-05(A)(3)	
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A).	acid scrubber that is designed and operated to remove at least 98% percent, by weight, of the catalyst gas emissions.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
3.83 lbs OC/hr, 3.52 tons OC/year	
0.80 lbs PE/hr, 0.72 tons PE/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	
The catalyst gas emissions shall be vented to a sulfuric	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology" (BAT) has been determined to be the use of a catalyst gas scrubber designed for the control of catalyst gas on cold box core machines.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525

1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The pH and liquor flow rate of the catalyst gas scrubbers shall be maintained at the following levels:

   a. the catalyst gas scrubber liquor pH shall be continuously maintained at or below 5 while the emissions unit is in operation; and

   b. the catalyst gas scrubber liquor flow rate shall be continuously maintained at a value of 3 to 5 gallons per minute per 1,000 cubic feet per minute (cfm) of gas flow at all time while the emissions unit is in operation.

3. To ensure proper operation of the catalyst gas scrubber during operation of this emissions unit, the permittee shall employ an "interlock system" that will shutdown the cold box core machine within 30 minutes after the catalyst gas scrubber liquid pH rises above 5.

   The "interlock system" shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations with any modifications deemed necessary by the permittee.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for

cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall collect and record the following information each day:

a. the pH of the catalyst gas scrubber, once per operating shift;

b. the catalyst gas scrubber liquor flow rate, in gallons per minute, on a once per shift basis.

c. all periods of time the catalyst gas scrubber was not operating in accordance with the requirements in condition A.II.2. above, and the corrective action taken to bring the catalyst gas scrubber into compliance with these operating conditions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

d. all periods of time during which the scrubber for these emissions units was not maintained in accordance with the following:

i. the pH of the scrubber exceeded 5.

ii. the catalyst gas scrubber liquor flow rate was less than 3 gallons per minute per 1,000 cfm of gas flow.

e. any time periods the "interlock system" associated with the catalytic gas scrubber did not operate in compliance with the requirements specified in Section A.II.3.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 3.83 lbs OC/hr, 3.52 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 4500 lbs/hr by an emission factor of 0.00085 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 11,250 tons/yr by an emission factor of 0.000313 ton OC/ton of sand.

e. Emission Limitation: 0.80 lbs PE/hr, 0.72 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 4500 lbs/hr by the an emission factor of 0.000178 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 11,250 tons/yr by an emission rate of 0.0000643 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

g. Emission Limitation: 98% control efficiency for catalyst gas emissions, by weight

Compliance Method: The catalyst gas scrubber has a manufacturer's guarantee of 99% removal by weight of catalyst gas emissions. If required, compliance with the control efficiency (i.e. the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined in accordance with the following:

i. the outlet mass emission rate shall be determined using USEPA Methods 1-4 and 18 in 40 CFR Part 60; and

ii. the inlet mass emission rate shall be determined using emission factors developed from inlet testing on similar emissions units at the facility and data collected (i.e. process weight rate, etc.) during the testing of the control outlet for this emissions unit. Inlet mass emission testing is not possible on this emissions unit.

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P446 - cold box core machine no.59 and core sand mixer [Modification of PTI 03-2285 issued November 6, 1985]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
		OAC rule 3745-21-07(G)(9)(h)
P447 - cold box core machine no.61 and core sand mixer [Modification of PTI 03-2285 issued November 6, 1985]	OAC rule 3745-31-05(A)(3)	
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A).	acid scrubber that is designed and operated to removed at least 98 percent, by weight, of the catalyst gas emissions.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
5.36 lbs OC/hr, 4.93 tons OC/year	
1.12 lbs PE/hr, 1.01 tons PE/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	
The catalyst gas emissions shall be vented to a sulfuric	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology" (BAT) has been determined to be the use of a catalyst gas scrubber designed for the control of catalyst gas on cold box core machines.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525

1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The pH and liquor flow rate of the catalyst gas scrubbers shall be maintained at the following levels:

   a. the catalyst gas scrubber liquor pH shall be continuously maintained at or below 5 while the emissions unit is in operation; and

   b. the catalyst gas scrubber liquor flow rate shall be continuously maintained at a value of 3 to 5 gallons per minute per 1,000 cubic feet per minute (cfm) of gas flow at all time while the emissions unit is in operation.

3. To ensure proper operation of the catalyst gas scrubber during operation of this emissions unit, the permittee shall employ an "interlock system" that will shutdown the cold box core machine within 30 minutes after the catalyst gas scrubber liquid pH rises above 5.

   The "interlock system" shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations with any modifications deemed necessary by the permittee.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for

cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall collect and record the following information each day:

a. the pH of the catalyst gas scrubber, once per operating shift;

b. the catalyst gas scrubber liquor flow rate, in gallons per minute, on a once per shift basis.

c. all periods of time the catalyst gas scrubber was not operating in accordance with the requirements in condition A.II.2. above, and the corrective action taken to bring the catalyst gas scrubber into compliance with these operating conditions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

d. all periods of time during which the scrubber for these emissions units was not maintained in accordance with the following:

i. the pH of the scrubber exceeded 5.

ii. the catalyst gas scrubber liquor flow rate was less than 3 gallons per minute per

1,000 cfm of gas flow.

e. any time periods the "interlock system" associated with the catalytic gas scrubber did not operate in compliance with the requirements specified in section A.II.3.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 5.36 lbs OC/hr, 4.93 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 6300 lbs/hr by an emission factor of 0.00085 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 15,750 tons/yr by an emission factor of 0.000313 ton OC/ton of sand.

e. Emission Limitation: 1.12 lbs PE/hr, 1.01 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 6300 lbs/hr by the an emission factor of 0.000178 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 15,750 tons/yr by an emission rate of 0.0000643 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

g. Emission Limitation: 98% control efficiency for catalyst gas emissions, by weight

Compliance Method: The catalyst gas scrubber has a manufacturer's guarantee of 99% removal by weight of catalyst gas emissions. If required, compliance with the control efficiency (i.e. the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined in accordance with the following:

i. the outlet mass emission rate shall be determined using USEPA Methods 1-4 and 18 in 40 CFR Part 60; and

ii. the inlet mass emission rate shall be determined using emission factors developed from inlet testing on similar emissions units at the facility and data collected (i.e. process weight rate, etc.) during the testing of the control outlet for this emissions unit (inlet mass emission testing is not possible on this emissions unit).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P447 - cold box core machine no.61 [Modification of PTI 03-2285 issued November 6, 1985]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements
P448 - core oven no.9 [Modification of PTI 03-2285 issued November 6, 1985]	OAC rule 3745-31-05(A)(3) OAC rule 3745-17-07(A) OAC rule 3745-17-11(B) OAC rule 3745-23-06(B) OAC rule 3745-21-07(G)(2)

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3). See A.I.2..d. See A.II.2.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
7.38 lbs OC/hr, 6.10 tons OC/year	
2.37 lbs PE/hr, 1.63 tons PE/yr	
0.82 lb carbon monoxide (CO)/hr, 1.34 tons CO/yr	
0.98 lb nitrogen oxide (NOx)/hr, 1.60 tons NOx/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit..

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800

1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The use of photochemically reactive material, as defined in OAC rule 3745-21-01(C)(5), in this emissions unit is prohibited.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

   b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

   c. the calculated emission rate for OC, in tons, determined by the following equation:

      TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

      where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

4. The permittee shall maintain records of the following information for this emissions unit:

a. company identification for each liquid organic material employed in this emissions unit; and

b. documentation on whether or not each liquid organic material employed is a photochemically reactive material.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

3. The permittee shall notify the Director (the appropriate Ohio EPA District Office or local air agency) in writing of any monthly record showing the use of photochemically reactive material. The notification shall include a copy of such a record and shall be sent to the Director (the appropriate Ohio EPA District Office or local air agency) within 30 days following the end of the calendar month.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 7.38 lbs OC/hr, 6.10 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates.

Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 25,200 lbs/hr by an emission factor of 0.000293 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 41,226 tons/yr by an emission factor of 0.000148 ton OC/ton of sand.

e. Emission Limitation: 2.37 lbs PE/hr, 1.63 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 25,200 lbs/hr by the an emission factor of 0.000094 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 41,226 tons/yr by an emission rate of 0.0000396 ton PE/ton of sand.

f. Emission Limitation: 0.82 lb CO/hr, 1.34 tons CO/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 10 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 9778 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (84 lbs CO/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 31.99 mm scf by the AP 42 emission factor.

g. Emission Limitation: 0.98 lb NOx/hr, 1.60 tons NOx/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 7 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 9778 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (100

lbs NOx/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 31.99 mm scf by the AP 42 emission factor.

h. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P448 - core oven no.9 [Modification of PTI 03-2285 issued November 6, 1985]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P449 - core oven no. 10 [Modification of PTI 03-2285 issued November 6, 1985]	OAC rule 3745-31-05(A)(3)	OAC rule 3745-23-06(B) OAC rule 3745-21-07(G)(2)
	OAC rule 3745-17-07(A)	
	OAC rule 3745-17-11(B)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	rule 3745-31-05(A)(3).
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	See A.I.2..d.
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	See A.II.2.
3.69 lbs OC/hr, 3.05 tons OC/year	
1.18 lbs PE/hr, 0.82 tons PE/yr	
0.49 lb nitrogen oxide (NOx)/hr, 0.80 tons NOx/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit..

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625

1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The use of photochemically reactive material, as defined in OAC rule 3745-21-01(C)(5), in this emissions unit is prohibited.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

   b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

   c. the calculated emission rate for OC, in tons, determined by the following equation:

   TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)
   where:

   TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

   a. the color of the emissions;
   b. the total duration of any visible emission observation;
   c. identification of the stack(s) and associated emissions unit(s); and
   d. any corrective actions taken to minimize or eliminate the visible emissions.

   If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

4. The permittee shall maintain records of the following information for this emissions unit:

   a. company identification for each liquid organic material employed in this emissions unit; and

   b. documentation on whether or not each liquid organic material employed is a photochemically reactive material.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

   a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

   b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

   c. the rolling, 12-month emission limitations for PE and OC.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

3. The permittee shall notify the Director (the appropriate Ohio EPA District Office or local air agency) in writing of any monthly record showing the use of photochemically reactive material. The notification shall include a copy of such a record and shall be sent to the Director (the appropriate Ohio EPA District Office or local air agency) within 30 days following the end of the calendar month.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

   a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

      Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

   b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

      Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

   c. Emission Limitation: 151.56 tons PE per rolling 12-month period

      Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

   d. Emission Limitation: 3.69 lbs OC/hr, 3.05 tons OC/year

      Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting

requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 12,600 lbs/hr by an emission factor of 0.000293 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 20,613 tons/yr by an emission factor of 0.000148 ton OC/ton of sand.

e. Emission Limitation: 1.18 lbs PE/hr, 0.82 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 12,600 lbs/hr by the an emission factor of 0.000094 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 20,613 tons/yr by an emission rate of 0.0000396 ton PE/ton of sand.

f. Emission Limitation: 0.49 lb NOx/hr, 0.80 tons NOx/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 7 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 4889 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (100 lbs NOx/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 16 mm scf by the AP 42 emission factor.

g. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P449 - core oven no.10 [Modification of PTI 03-2285 issued November 6, 1985]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
		OAC rule 3745-17-11(B)
P450 - core oven no.11	OAC rule 3745-31-05(A)(3)	
[Modification of PTI 03-2285 issued November 6, 1985]		
		OAC rule 3745-23-06(B)
		OAC rule 3745-21-07(G)(2)
	OAC rule 3745-17-07(A)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	See A.I.2..d. See A.II.2.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
7.65 lbs OC/hr, 6.32 tons OC/year	
2.45 lbs PE/hr, 1.69 tons PE/yr	
0.85 lb carbon monoxide (CO)/hr, 1.39 tons CO/yr	
1.01 lb nitrogen oxide (NOx)/hr, 1.66 tons NOx/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit..

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625

1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The use of photochemically reactive material, as defined in OAC rule 3745-21-01(C)(5), in this emissions unit is prohibited.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

   b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

   c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

4. The permittee shall maintain records of the following information for this emissions unit:

a. company identification for each liquid organic material employed in this emissions unit; and

b. documentation on whether or not each liquid organic material employed is a photochemically reactive material.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

3. The permittee shall notify the Director (the appropriate Ohio EPA District Office or local air agency) in writing of any monthly record showing the use of photochemically reactive material. The notification shall include a copy of such a record and shall be sent to the Director (the appropriate Ohio EPA District Office or local air agency) within 30 days following the end of the calendar month.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 7.65 lbs OC/hr, 6.32 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates.

Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 26,100 lbs/hr by an emission factor of 0.000293 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 42,698 tons/yr by an emission factor of 0.000148 ton OC/ton of sand.

e. Emission Limitation: 2.45 lbs PE/hr, 1.69 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 26,100 lbs/hr by the an emission factor of 0.000094 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 42,698 tons/yr by an emission rate of 0.0000396 ton PE/ton of sand.

f. Emission Limitation: 0.85 lb CO/hr, 1.39 tons CO/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 10 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 10,127 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (84 lbs CO/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 33.13 mm scf by the AP 42 emission factor.

g. Emission Limitation: 1.01 lb NOx/hr, 1.66 tons NOx/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in

accordance with Method 1-4 & 7 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 10,127 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (100 lbs NOx/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 33.13 mm scf by the AP 42 emission factor.

h. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P450 - core oven no.11 [Modification of PTI 03-2285 issued November 6, 1985]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	
P451 - core oven no.12 [Modification of PTI 03-2285 issued November 6, 1985]	OAC rule 3745-31-05(A)(3)	OAC rule 3745-17-11(B)
		OAC rule 3745-23-06(B)
		OAC rule 3745-21-07(G)(2)
	OAC rule 3745-17-07(A)	

Applicable Emissions Limitations/Control Measures	
The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A) and OAC rule 3745-23-06(B).	See A.I.2..d. See A.II.2.
1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a.	
6.33 lbs OC/hr, 5.23 tons OC/year	
2.03 lbs PE/hr, 1.40 tons PE/yr	
0.70 lb carbon monoxide (CO)/hr, 1.15 tons CO/yr	
0.84 lb nitrogen oxide (NOx)/hr, 1.37 tons NOx/yr	
Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.	
The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).	

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology " (BAT) has been determined to be the use of natural gas in this emissions unit.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06 by committing to comply with best available technology requirements established pursuant to OAC rule 3745-21-05(A)(3) in this permit to install.

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075

1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The use of photochemically reactive material, as defined in OAC rule 3745-21-01(C)(5), in this emissions unit is prohibited.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

   a. the total sand processed, in tons;

   b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

   c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

   a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

   b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for

core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall perform weekly checks, when the Plant 1 core room is in operation and when the weather conditions allow, for any visible particulate emissions from the stack(s) serving this emissions unit. The presence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

a. the color of the emissions;
b. the total duration of any visible emission observation;
c. identification of the stack(s) and associated emissions unit(s); and
d. any corrective actions taken to minimize or eliminate the visible emissions.

If visible emissions are present, a visible emission incident has occurred. The observer does not have to document the exact start and end times for the visible emission observations under item (b) above or continue the check until the incident has ended. The observer may indicate that the visible emissions were continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

4. The permittee shall maintain records of the following information for this emissions unit:

a. company identification for each liquid organic material employed in this emissions unit; and

b. documentation on whether or not each liquid organic material employed is a photochemically reactive material.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

2. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack(s) serving this emissions unit and (b) describe any corrective actions taken to minimize or eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.

3. The permittee shall notify the Director (the appropriate Ohio EPA District Office or local air agency) in writing of any monthly record showing the use of photochemically reactive material. The notification shall include a copy of such a record and shall be sent to the Director (the appropriate Ohio EPA District Office or local air agency) within 30 days following the end of the calendar month.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping

requirements specified in section A.III.2.

d. Emission Limitation: 6.33 lbs OC/hr, 5.23 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 21,600 lbs/hr by an emission factor of 0.000293 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 35,336 tons/yr by an emission factor of 0.000148 ton OC/ton of sand.

e. Emission Limitation: 2.03 lbs PE/hr, 1.40 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 21,600 lbs/hr by the an emission factor of 0.000094 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 35,336 tons/yr by an emission rate of 0.0000396 ton PE/ton of sand.

f. Emission Limitation: 0.70 lb CO/hr, 1.15 tons CO/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 10 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 8381 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (84 lbs CO/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 27.42 mm scf by the AP 42 emission factor.

g. Emission Limitation: 0.84 lb NOx/hr, 1.37 tons NOx/yr

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates.

Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Method 1-4 & 7 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying maximum hourly natural gas usage rate of 8381 scf/hr by the AP42 emission factor, Table 1-4.1 Revised 7/98 (100 lbs NOx/mm scf). The maximum annual emission limitation is calculated by multiplying the calculated maximum annual gas usage of 27.42 mm scf by the AP 42 emission factor.

h. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 20% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required compliance shall be demonstrated in accordance with OAC rule 3745-17-03(B).

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P451 - core oven no.12 [Modification of PTI 03-2285 issued November 6, 1985]	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P452 - cold box core machine no. 125 and core sand mixer	OAC rule 3745-31-05(A)(3)	The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A). 1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a. 151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a. 3.61 lbs OC/hr, 3.33 tons OC/year 0.76 lbs PE/hr, 0.68 tons PE/yr Visible PE from the stack(s) servicing this emissions unit shall not exceed 10% opacity as a 6-minute average, except as provided by rule.
	OAC rule 3745-17-07(A)	See A.I.2.d.
	OAC rule 3745-17-11(B)	See A.I.2.d.
	OAC rule 3745-21-07(G)(9)(h)	The catalyst gas emissions shall be vented

to a sulfuric acid scrubber that is designed and operated to remove at least 98% percent, by weight, of the catalyst gas emissions.

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology" (BAT) has been determined to be the use of a catalyst gas scrubber designed for the control of catalyst gas on cold box core machines.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450

1-3	251,175
1-4	334,900
1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The pH and liquor flow rate of the catalyst gas scrubbers shall be maintained at the following levels:

a. the catalyst gas scrubber liquor pH shall be continuously maintained at or below 5 while the emissions unit is in operation; and

b. the catalyst gas scrubber liquor flow rate shall be continuously maintained at a value of 3 to 5 gallons per minute per 1,000 cubic feet per minute (cfm) of gas flow at all time while the emissions unit is in operation.

3. To ensure proper operation of the catalyst gas scrubber during operation of this emissions unit, the permittee shall employ an "interlock system" that will shutdown the cold box core machine within 30 minutes after the catalyst gas scrubber liquid pH rises above 5.

The "interlock system" shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations with any modifications deemed necessary by the permittee.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

a. the total sand processed, in tons;

b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall collect and record the following information each day:

a. the pH of the catalyst gas scrubber, once per operating shift;

b. the catalyst gas scrubber liquor flow rate, in gallons per minute, on a once per shift basis.

c. all periods of time the catalyst gas scrubber was not operating in accordance with the requirements in condition A.II.2. above, and the corrective action taken to bring the catalyst gas scrubber into compliance with these operating conditions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

d. all periods of time during which the scrubber for these emissions units was not maintained in accordance with the following:

i. the pH of the scrubber exceeded 5.

ii. the catalyst gas scrubber liquor flow rate was less than 3 gallons per minute per 1,000 cfm of gas flow.

e. any time periods the "interlock system" associated with the catalytic gas scrubber did not operate in compliance with the requirements specified in Section A.II.3.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 3.61 lbs OC/hr, 3.33 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates.

Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 4250 lbs/hr by an emission factor of 0.00085 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 10,625 tons/yr by an emission factor of 0.000313 ton OC/ton of sand.

e. Emission Limitation: 0.76 lbs PE/hr, 0.68 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 4250 lbs/hr by the an emission factor of 0.000178 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 10,625 tons/yr by an emission rate of 0.0000643 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 10% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required, the permittee shall demonstrate compliance with this emission limitation using U.S. EPA Method 9, which is located in 40 CFR Part 60, Appendix A.

g. Emission Limitation: 98% control efficiency for catalyst gas emissions, by weight

Compliance Method: The catalyst gas scrubber has a manufacturer's guarantee of 99% removal by weight of catalyst gas emissions. If required, compliance with the control efficiency (i.e. the percent reduction in mass emissions between the inlet and outlet of the control system) shall be determined in accordance with the following:

i. the outlet mass emission rate shall be determined using USEPA Methods 1-4 and 18 in 40 CFR Part 60; and

ii. the inlet mass emission rate shall be determined using emission factors developed from inlet testing on similar emissions units at the facility and data collected (i.e.

process weight rate, etc.) during the testing of the control outlet for this emissions unit. Inlet mass emission testing is not possible on this emissions unit.

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P452 - cold box core machine no. 125	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None

Part III - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P453 - cold box core machine no. 126 and core sand mixer	OAC rule 3745-31-05(A)(3)	The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07(A). 1207.90 tons of organic compounds (OC) per rolling 12-month period, from all the emissions units identified in A.I.2.a. 151.56 tons particulate emissions (PE) per rolling 12-month period, from all the emissions units identified in A.I.2.a. 3.61 lbs OC/hr, 3.33 tons OC/year 0.76 lbs PE/hr, 0.68 tons PE/yr Visible PE from the stack(s) servicing this emissions unit shall not exceed 10% opacity as a 6-minute average, except as provided by rule.
	OAC rule 3745-17-07(A)	See A.I.2.d.
	OAC rule 3745-17-11(B)	See A.I.2.d.
	OAC rule 3745-21-07(G)(9)(h)	The catalyst gas emissions shall be vented

to a sulfuric acid scrubber that is designed and operated to remove at least 98% percent, by weight, of the catalyst gas emissions.

2. Additional Terms and Conditions

2.a The total PE and OC emission limitations shall apply to the following emissions units, collectively: P122, P184, P211, P212, P213, P233, P292, P297, P298, P299, P302, P320, P321, P322, P323, P324, P325, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P352, P353, P354, P355, P356, P358, P361, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P383, P384, P385, P386, P387, P388, P390, P394, P395, P396, P397, P398, P399, P401, P402, P403, P404, P405, P406, P430, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452 and P453. These emissions unit comprise the Plant 1 core room operations.

2.b "Best Available Technology" (BAT) has been determined to be the use of a catalyst gas scrubber designed for the control of catalyst gas on cold box core machines.

2.c For the purposes of federal enforceability emission limitations on OC effectively restrict emissions of volatile organic compounds (VOC).

2.d The emission limitation established by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).

II. Operational Restrictions

1. The annual sand processed for the Plant 1core room operations (i.e. all the emissions units listed in A.I.2.a) shall not exceed 1,024,555 tons, based upon a rolling, 12-month summation of sand throughput.

   To ensure federal enforceability during the first 12 calendar months of operation following the issuance of this permit to install, the permittee shall not exceed the sand process levels specified in the following table:

Month	Maximum Cumulative Sand Processed (tons)
1	83,725
1-2	167,450
1-3	251,175
1-4	334,900

1-5	418,625
1-6	502,350
1-7	586,075
1-8	669,800
1-9	753,525
1-10	837,250
1-11	920,975
1-12	1,024,555

After the first 12 calendar months of operation following the issuance of this permit, compliance with the annual sand restriction shall be based upon a rolling 12-month summation of monthly sand processed.

2. The pH and liquor flow rate of the catalyst gas scrubbers shall be maintained at the following levels:

a. the catalyst gas scrubber liquor pH shall be continuously maintained at or below 5 while the emissions unit is in operation; and

b. the catalyst gas scrubber liquor flow rate shall be continuously maintained at a value of 3 to 5 gallons per minute per 1,000 cubic feet per minute (cfm) of gas flow at all time while the emissions unit is in operation.

3. To ensure proper operation of the catalyst gas scrubber during operation of this emissions unit, the permittee shall employ an "interlock system" that will shutdown the cold box core machine within 30 minutes after the catalyst gas scrubber liquid pH rises above 5.

The "interlock system" shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations with any modifications deemed necessary by the permittee.

III. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following each month for the Plant 1 core room operations (i.e. all the emissions units listed in A.I.2.a):

a. the total sand processed, in tons;

b. for the first 12 months of operation following the issuance of this permit to install, the cumulative sand processed, in tons; and

c. after the first 12 months operation following the issuance of this permit to install, the sand processed, in tons, based on a rolling, 12-month summation of the sand processed.

2. In addition to the above information, the permittee shall also record the following information each month for all the emissions units listed in A.I.2.a:

a. the quantity of sand processed in the hot box core machines (i.e. the amount of 1.a used in the hot box core machines), in tons;

b. the quantity of sand processed in the cold box core machines (i.e. the amount of 1.a used in the cold box core machines), in tons;

c. the calculated emission rate for OC, in tons, determined by the following equation:

TOCE = (2.a)(Q + R) + (2.b) (S) + (1.a)(T)

where:

TOCE = total organic compound emissions, in tons

Q = OC emission factor, in ton OC/ton sand processed *(0.001347 ton OC/ton sand), for hot box core machine operations

R = OC emission factor, in ton OC/ton sand processed *(0.000416 ton OC/ton sand), for hot box conveyors

S = OC emission factor, in ton OC/ton sand processed * (0.000313 ton OC/ton sand), for cold box core machine operations

T = OC emission factor for OC, in ton OC/ton sand processed* (0.000148 ton OC/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The OC emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines and core dip drying ovens. These tests were conducted using USEPA 25A, calibrated to propane, for OC emissions.

d. the calculated emission rate for PE, in tons, determined by the following equation:

TPE = (2.a)(U) + (2.b)(V) + (1.a)(W)

where:

TPE = total particulate emissions, in tons

U = PE emission factor, in ton PE/ton sand processed* (0.000153 ton PE/ton sand), for hot box core machine operations

V = PE emission factor, in ton PE/ton sand processed*(0.0000643 ton PE/ton sand), for cold box core machine operations

W = PE emission factor, in ton PE/ton sand processed*(0.0000396 ton PE/ton sand), for core oven operations

*These emissions factors were contained in the BAT document submitted and approved in 2002 as part of the permit application. The PE emission factors reflected in this permit to install are derived from various emission test runs for the hot and cold box core machines, and core dip drying ovens. These tests were conducted using USEPA method 5 for PE.

e. the annual OC emission rate, in tons, based upon the rolling, 12-month summation of monthly emission rates.

f. the annual PE emission rate, in tons, based upon the rolling 12-month summation of monthly emission rates.

3. The permittee shall collect and record the following information each day:

a. the pH of the catalyst gas scrubber, once per operating shift;

b. the catalyst gas scrubber liquor flow rate, in gallons per minute, on a once per shift basis.

c. all periods of time the catalyst gas scrubber was not operating in accordance with the requirements in condition A.II.2. above, and the corrective action taken to bring the catalyst gas scrubber into compliance with these operating conditions.

IV. Reporting Requirements

1. The permittee shall submit deviation (excursion) reports, which identify all exceedances of the following:

a. for the first 12 calendar months of operation following the issuance of this permit to install, the maximum allowable cumulative sand throughput restriction;

b. after the first 12 calendar months of operation following the issuance of this permit to

install, the rolling, 12-month sand throughput restriction; and

c. the rolling, 12-month emission limitations for PE and OC.

d. all periods of time during which the scrubber for these emissions units was not maintained in accordance with the following:

i. the pH of the scrubber exceeded 5.

ii. the catalyst gas scrubber liquor flow rate was less than 3 gallons per minute per 1,000 cfm of gas flow.

e. any time periods the "interlock system" associated with the catalytic gas scrubber did not operate in compliance with the requirements specified in Section A.II.3.

These deviation reports shall be submitted in accordance with the General Terms and Conditions of this permit.

V. Testing Requirements

1. Compliance with the emission limitations/usage restrictions of this permit shall be determined in accordance with the following compliance methods:

a. Emission Limitation: 1,024,555 tons of sand per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.1.

b. Emission Limitation: 1,207.90 tons OC per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

c. Emission Limitation: 151.56 tons PE per rolling 12-month period

Compliance Method: Compliance shall be demonstrated by the record keeping requirements specified in section A.III.2.

d. Emission Limitation: 3.61 lbs OC/hr, 3.33 tons OC/year

Compliance Method: The hourly and annual emission limitations represents the emissions

unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-4, 18, 25 and/or 25A of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 4250 lbs/hr by an emission factor of 0.00085 lb OC/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 10,625 tons/yr by an emission factor of 0.000313 ton OC/ton of sand.

e. Emission Limitation: 0.76 lbs PE/hr, 0.68 tons PE/year

Compliance Method: The hourly and annual emission limitations represents the emissions unit's maximum emission rates* based on maximum sand throughput rates. Therefore, it is not necessary to develop record keeping and/or reporting requirements. If required, the permittee shall demonstrate compliance by testing in accordance with Methods 1-5 of 40 CFR Part 60, Appendix A.

*The maximum hourly emission rate is calculated by multiplying the maximum hourly sand usage rate of 4250 lbs/hr by the an emission factor of 0.000178 lbs PE/lb sand. The maximum annual emission limitation is calculated by multiplying the maximum annual sand usage rate of 10,625 tons/yr by an emission rate of 0.0000643 ton PE/ton of sand.

f. Emission Limitation: Visible PE from the stack(s) servicing this emissions unit shall not exceed 10% opacity as a 6-minute average, except as provided by rule.

Compliance Method: If required, the permittee shall demonstrate compliance with this emission limitation using U.S. EPA Method 9, which is located in 40 CFR Part 60, Appendix A.

g. Emission Limitation: 98% control efficiency for catalyst gas emissions, by weight

Compliance Method: The catalyst gas scrubber has a manufacturer's guarantee of 99% removal by weight of catalyst gas emissions emissions. If required, compliance with the control efficiency (i.e. the percent reducation in mass emissions between the inlet and outlet of the control system) shall be determined in accordance with the following:

i. the outlet mass emission rate shall be determined using USEPA Methods 1-4 and 18 in 40 CFR Part 60; and

ii. the inlet mass emission rate shall be determined using emission factors developed from inlet testing on similar emissions units at the facility and data collected (i.e. process weight rate, etc.) during the testing of the control outlet for this emissions unit. Inlet mass emission testing is not possible on this emissions unit.

VI. Miscellaneous Requirements

None

B. State Only Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

1. The specific operations(s), property, and/or equipment which constitute this emissions unit are listed in the following table along with the applicable rules and/or requirements and with the applicable emissions limitations and/or control measures. Emissions from this unit shall not exceed the listed limitations, and the listed control measures shall be specified in narrative form following the table.

Operations, Property, and/or Equipment	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
P453 - cold box core machine no. 126	None	None

2. Additional Terms and Conditions

2.a None

II. Operational Restrictions

None

III. Monitoring and/or Recordkeeping Requirements

None

IV. Reporting Requirements

None

V. Testing Requirements

None

VI. Miscellaneous Requirements

None