

Synthetic Minor Determination and/or **Netting Determination**

Permit To Install **02-19424**

A. Source Description

Humtown Pattern is located at 44708 Columbiana-Waterford Road in Columbiana Ohio, Columbiana County. This facility produces molds and cores using foundry sand, resins and a catalyst.

There are basically three lines of production:

1. Silos 1 and 2 provide sand to mixer 1. Mixer 1 (P022) provides sand/resin to mold/core stations P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015 and P016. The maximum design capacity of each of these mold/core stations is not known. Maximum production rates for each station are derived by review of past production records. The summation of the estimated maximum production rates of these stations is less than the design capacity of mixer 1.
2. Silos 3 and 4 provide sand to mixers 2 & 3. Mixers 2 & 3 (P022) provide sand/resin to mold/core stations P017, P018, P019 and P020. The maximum design capacity of each of these mold/core stations is also not known. Maximum production rates for each station are derived by review of past production records. The summation of the estimated maximum production rates of these four stations is less than the design capacity of mixers 2 & 3.
3. Silos 3 and 4 also provide sand to the Pepset Mixer and Station (P023). The maximum design capacity of this emissions unit is known and used in the emissions calculations.

Emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, and P022 involve "phenolic urethane cold box" operations. Emissions unit P023 involves the "phenolic urethane no bake" operation.

B. Facility Emissions and Attainment Status

Assuming that emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020 could process the mixed sand from mixer 1 and mixers 2 &3, the total, calculated VOC emissions would be 105.99 tons per year. This is calculated using the known maximum capacity values for the mixers.

The maximum design capacity for mold/core stations (P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, and P020) is not known. The production rates reported in the PTI application, and thus those used in the calculations, were derived by review of past records. Product demand has been relatively lower than the reported rates for these mold/core stations. The actual maximum design capacity of the each station has not been adequately demonstrated.

Using the reported production rates for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020 and also using the restricted rates of 41,602 tpy for P022 and 36,213 tpy for P021, the calculated VOC emissions would be 55.55 tons per year.

This permit will restrict the facility's usage of sand so that the VOC emissions remain below 100 tons per year. The restriction will be based on the facility's self-reported maximum rates for the mold/core stations which is based upon historic product demand.

Columbiana County is currently designated "basic non-attainment" for ozone, according to the 4/19/04 PDF map on the DAPC web page.

C. Source Emissions

Using the restricted sand usage of 41,602 tons per rolling 12-months for silos 1 & 2, mixer 1 (P022), and mold/core stations P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015 and P016, and a restricted sand usage of 36,213 tons per rolling 12-months for silos 3 & 4, mixer 2 & 3 (P021) and mold/core stations P017, P018, P019 and P020, along with sand usage up to the maximum design capacity of 51,748 tons per year for P023, the VOC emissions are 55.55 tons per rolling 12-months, 39.77 tons particulate per year, and 5.59 tons Naphthalene per year.

D. Conclusion

The requirements and restrictions in this permit will adequately demonstrate that VOC emissions are well below the Title V threshold limit. The restriction will remove any doubt or possibility that VOC emissions could increase over 100 tons per year if the demand for molds and cores increase in the future, necessitating use of the mold/core stations at higher rates.



State of Ohio Environmental Protection Agency

Street Address:

Lazarus Gov. Center
122 S. Front Street
Columbus, OH 43215

TELE: (614) 644-3020 FAX: (614) 644-2329

Mailing Address:

Lazarus Gov. Center
P.O. Box 1049
Columbus, OH 43216-1049

**RE: DRAFT PERMIT TO INSTALL
COLUMBIANA COUNTY
Application No: 02-19424
Fac ID: 0215000242**

CERTIFIED MAIL

Y	TOXIC REVIEW
	PSD
Y	SYNTHETIC MINOR
	CEMS
	MACT
	NSPS
	NESHAPS
	NETTING
	MAJOR NON-ATTAINMENT
Y	MODELING SUBMITTED
	GASOLINE DISPENSING FACILITY

DATE: 5/18/2006

Humtown Pattern Company
Dianna Stump
PO Box 367
Columbiana, OH 44408

You are hereby notified that the Ohio Environmental Protection Agency has made a draft action recommending that the Director issue a Permit to Install for the air contaminant source(s) [emissions unit(s)] shown on the enclosed draft permit. 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 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 may be issued in proposed or 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 a fee of **\$9850** 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.

Sincerely,

Michael W. Ahern, Manager
Permit Issuance and Data Management Section
Division of Air Pollution Control

COLUMBIANA COUNTY

PUBLIC NOTICE

**ISSUANCE OF DRAFT PERMIT TO INSTALL 02-19424 FOR AN AIR CONTAMINANT SOURCE FOR
Humtown Pattern Company**

On 5/18/2006 the Director of the Ohio Environmental Protection Agency issued a draft action of a Permit To Install an air contaminant source for **Humtown Pattern Company**, located at **44708 Columbiana-Waterford Rd, Columbiana, Ohio**.

Installation of the air contaminant source identified below may proceed upon final issuance of Permit To Install 02-19424:

Sand silos, mold core stations, mixers.

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.

Dennis Bush, Ohio EPA, Northeast District Office, 2110 East Aurora Road, Twinsburg, OH 44087 [(330)425-9171]



**Permit To Install
Terms and Conditions**

**Issue Date: To be entered upon final issuance
Effective Date: To be entered upon final issuance**

DRAFT PERMIT TO INSTALL 02-19424

Application Number: 02-19424
Facility ID: 0215000242
Permit Fee: **To be entered upon final issuance**
Name of Facility: Humtown Pattern Company
Person to Contact: Dianna Stump
Address: PO Box 367
Columbiana, OH 44408

Location of proposed air contaminant source(s) [emissions unit(s)]:
**44708 Columbiana-Waterford Rd
Columbiana, Ohio**

Description of proposed emissions unit(s):
Sand silos, mold core stations, mixers.

The above named entity is hereby granted a Permit to Install for the above described emissions unit(s) pursuant to Chapter 3745-31 of the Ohio Administrative Code. Issuance of this permit 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 emissions unit(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 and specifications, the above described emissions unit(s) of pollutants will be granted the necessary permits to operate (air) or NPDES permits as applicable.

This permit is granted subject to the conditions attached hereto.

Ohio Environmental Protection Agency

Director

Part I - GENERAL TERMS AND CONDITIONS

A. 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

The permittee shall submit required reports in the following manner:

- a. Reports of any required monitoring and/or recordkeeping 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 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. Records Retention Requirements

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.

4. Inspections and Information Requests

The Director of the Ohio EPA, or an authorized representative of the Director, may, subject to the safety requirements of the permittee and without undue delay, enter upon the premises of this source at any reasonable time for purposes of making inspections,

conducting tests, examining records or reports pertaining to any emission of air contaminants, and determining compliance with any applicable State air pollution laws and regulations and the terms and conditions of this permit. 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 verbal or written request, the permittee shall also furnish to the Director of the Ohio EPA, or an authorized representative of the Director, copies of records required to be kept by this permit.

5. 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 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. 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 emissions unit(s) that is (are) served by such control system(s).

6. 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.

7. 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.

8. 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.

9. 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.

10. 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.

11. Applicability

This Permit To Install is applicable only to the emissions unit(s) identified in the Permit To Install. Separate Permit To Install for the installation or modification of any other emissions unit(s) are required for any emissions unit for which a Permit To Install is required.

12. 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.

13. Source Operation and Operating Permit Requirements After Completion of Construction

Humtown Pattern Company**PTI Application: 02-19424****Issued: To be entered upon final issuance****Facility ID: 0215000242**

This facility is permitted to operate each source described by this Permit to Install for a period of up to one year from the date the source commenced operation. This 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 emissions unit(s) covered by this permit.

14. 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.

15. 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.

B. 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

<u>Pollutant</u>	<u>Tons Per Year</u>
Particulates	39.77
Volatile Organic Compounds	55.55
Naphthalene	5.59

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. Applicable Emissions Limitations and/or Control Requirements

- 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.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
<p>P901 - Sand silo No. 1 holding approximately 220,000 lbs and equipped with a silo sock for particulate control, Sand silo No. 2 holding approximately 75,000 lbs and equipped with a silo sock for particulate control, Sand silo No. 3 holding approximately 220,000 lbs and equipped with a silo sock for particulate control, Sand silo No. 4 holding approximately 220,000 lbs and equipped with a silo sock for particulate control, Bucket elevator No. 1 with enclosures for particulate control, Bucket elevator No. 2 with enclosures for particulate control and Sand auger with enclosures for particulate control.</p>	<p>OAC rule 3745-31-05(A)(3)</p>	<p>Silo No. 1: Particulates: 1.2 lbs/hr, 0.75 ton/year Visible emissions: 5% opacity as a six-minute average</p> <p>Silo No. 2: Particulates: 1.2 lbs/hr, 0.75 ton/year Visible emissions: 5% opacity as a six-minute average</p> <p>Silo No. 3: Particulates: 1.2 lbs/hr, 1.58 tons/year Visible emissions: 5% opacity as a six-minute average</p> <p>Silo No. 4: Particulates: 1.2 lbs/hr, 1.58 tons/year Visible emissions: 5% opacity as a six-minute average</p> <p>Bucket elevator No. 1: Fugitive particulates: 3.74 tons/year Fugitive visible emissions: 10% opacity as a three-minute average</p>

OAC rule 3745-17-07(A)(1)

Bucket elevator No. 2:
Fugitive particulates: 7.92
tons/year
Fugitive visible emissions:
10% opacity as a three-minute
average

OAC rule 3745-17-07(B)(1)

Sand auger:
Fugitive particulates: 0.75
ton/year
Fugitive visible emissions:
10% opacity as a three-minute
average

See Section A.2.a.

OAC rule 3745-17-08(B)

The visible emission limitation
specified by this rule is less
stringent than the visible emission
limitation established pursuant to
OAC rule 3745-31-05(A)(3) for
Silos 1, 2, 3 & 4.

OAC rule 3745-17-11(B)(1)

The fugitive visible emission
limitation specified by this rule is
less stringent than the fugitive
visible emission limitation
established pursuant to OAC rule
3745-31-05(A)(3) for Bucket
elevator 1 & 2 and Sand auger.

Reasonably available control
measures shall be used that are
sufficient to minimize or eliminate
visible emissions of fugitive dust
from the Bucket elevators Nos. 1
& 2 and Sand auger. See Section
A.2.a.

The particulate emission limitation
specified by this rule is less
stringent than the particulate
emission limitation established

pursuant to OAC rule 3745-31-05(A)(3) for Silos 1, 2, 3 & 4.

2. Additional Terms and Conditions

- 2.a** The permittee shall employ reasonably available control measures for the Bucket elevators Nos. 1 & 2 and the Sand auger for the purpose of ensuring compliance with the respective above-mentioned applicable requirements. Such reasonably available control measures may include the periodic application of water, or other dust suppressant, as needed; and/or maintaining the enclosures in good condition.

B. Operational Restrictions

1. The permittee shall regularly maintain the silo sock of each silo in accordance with manufacturers recommendations. Maintenance shall include regular repair and/or replacement of the silo sock so as to maximize the particulate collection efficiency of this dust control system. The permittee shall also regularly maintain the enclosures for Bucket elevators Nos. 1 & 2 and Sand auger so that the maximum containment of fugitive particulate emissions is achieved.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall perform checks for any visible particulate emissions from the exhaust of Silo 1, 2, 3, & 4. This check is to be performed each day, when the silo is loaded with sand, during daylight hours and when the weather conditions allow. The presence or absence 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. whether the emissions are representative of normal operations, the cause of the abnormal emissions;
 - c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
 - d. the total duration of any visible emission incident; and
 - e. any corrective actions taken to eliminate the visible emissions.

If a daily check cannot be performed, the permittee shall note the reason in the operations log. Acceptable reasons for not performing a daily check include: 1) the silo was not loaded that day, 2) the silo was loaded at night, and 3) weather conditions did not allow for a check.

If no visible emissions were observed each day for one month and those observations were recorded in the operations log, the frequency of checks for that silo may then be reduced to weekly.

2. The permittee shall maintain an annual record of the throughput of sand to each silo, in tons of sand per calendar year.
3. The permittee shall calculate and document the following annual emissions rates for each calendar year, January 1 - December 31, by using the following equations:
 - a. Silos 1, 2, 3, and 4:

$$ER = A \times EF \times \text{ton}/2,000 \text{ lbs} \times (1-CE)$$
 where;
 - ER = Emission rate, in tons particulate per year
 - A = Annual throughput of sand to the silo, as recorded in Section C.2, in tons/year
 - EF = Emissions Factor of 3.6 lbs PE/ton of sand, taken from AP-42 Table 12.10-7 (1/95)
 - CE = 0.99. The reported control efficiency of the silo sock is 99%.
 - b. Bucket elevator 1:

$$ER = A \times EF \times \text{ton}/2,000 \text{ lbs} \times (1-CE)$$
 where;
 - ER = Emission rate, in tons particulate per year
 - A = Annual throughput of sand to Silo No. 2, as recorded in Section C.2, in tons/year
 - EF = Emissions Factor of 3.6 lbs PE/ton of sand, taken from AP-42 Table 12.10-7 (1/95)
 - CE = 0.95. The reported control efficiency of the bucket elevator enclosure is 95%.
 - c. Bucket elevator 2:

$$ER = A \times EF \times \text{ton}/2,000 \text{ lbs} \times (1-CE)$$
 where;
 - ER = Emission rate, in tons particulate per year
 - A = Annual throughput of sand to Silo Nos. 3 & 4, as recorded in Section C.2, in tons/year
 - EF = Emissions Factor of 3.6 lbs PE/ton of sand, taken from AP-42 Table 12.10-7 (1/95)
 - CE = 0.95. The reported control efficiency of the bucket elevator enclosure is 95%.
 - d. Sand auger:

$$ER = A \times EF \times \text{ton}/2,000 \text{ lbs} \times (1-CE)$$
 where;
 - ER = Emission rate, in tons particulate per year

Humtown Pattern Company

PTI Application: 02-19424

Issued: To be entered upon final issuance

Facility ID: 0215000242

Emissions Unit ID: P901

- A = Annual throughput of sand to Silo No. 1, as recorded in Section C.2, in tons/year
- EF = Emissions Factor of 3.6 lbs PE/ton of sand, taken from AP-42 Table 12.10-7 (1/95)
- CE = 0.99. The reported control efficiency of the sand auger enclosure is 99%.

D. Reporting Requirements

1. The permittee shall submit semiannual written reports that (a) identify all days during which any visible particulate emissions were observed from the stack serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible particulate emissions. These reports shall be submitted to the Ohio EPA, Northeast District Office, by January 31 and July 31 of each year and shall cover the previous 6-month period.
2. The permittee shall submit an annual report to the Ohio EPA, Northeast District Office, by January 31 of each year. The report shall include the annual throughput of sand, in tons per calendar year, for each silo, and the annual emissions rates as calculated and recorded per Section C.3.a - d.

E. Testing Requirements

1. Emissions Limitations for Silo No. 1:
Particulates: 1.2 lbs/hr, 0.75 ton/yr,
Visible emissions: 5% opacity as a six-minute average

Applicable Compliance Method:

If required by Ohio EPA, compliance with the allowable hourly particulate limit shall be determined in accordance with U.S. EPA Reference Method 5 of 40 CFR Part 60, Appendix A.

Compliance with the allowable annual particulate limit shall be determined by the calculation and record keeping in Section C.3.a.

If required by Ohio EPA, compliance with the allowable visible particulate limitation shall be determined in accordance with U.S. EPA Reference Method 9 of 40 CFR Part 60, Appendix A.

2. Emissions Limitations for Silo No.2:
Particulates: 1.2 lbs/hr, 0.75 ton/year
Visible emissions: 5% opacity as a six-minute average

Applicable Compliance Method:

If required by Ohio EPA, compliance with the allowable hourly particulate limit shall be determined in accordance with U.S. EPA Reference Method 5 of 40 CFR Part 60, Appendix A.

Compliance with the allowable annual particulate limit shall be determined by the calculation and record keeping in Section C.3.a.

If required by Ohio EPA, compliance with the allowable visible particulate limitation shall be determined in accordance with U.S. EPA Reference Method 9 of 40 CFR Part 60, Appendix A.

3. Emissions Limitations for Silo No. 3:
Particulates: 1.2 lbs/hr, 1.58 tons/year
Visible emissions: 5% opacity as a six-minute average

Applicable Compliance Method:

If required by Ohio EPA, compliance with the allowable hourly particulate limit shall be determined in accordance with U.S. EPA Reference Method 5 of 40 CFR Part 60, Appendix A.

Compliance with the allowable annual particulate limit shall be determined by the calculation and record keeping in Section C.3.a.

If required by Ohio EPA, compliance with the allowable visible particulate limitation shall be determined in accordance with U.S. EPA Reference Method 9 of 40 CFR Part 60, Appendix A.

4. Emissions Limitations for Silo No.4:
Particulates: 1.2 lbs/hr, 1.58 tons/year
Visible emissions: 5% opacity as a six-minute average

Applicable Compliance Method:

If required by Ohio EPA, compliance with the allowable hourly particulate limit shall be determined in accordance with U.S. EPA Reference Method 5 of 40 CFR Part 60, Appendix A.

Compliance with the allowable annual particulate limit shall be determined by the calculation and record keeping in Section C.3.a.

If required by Ohio EPA, compliance with the allowable visible particulate limitation shall be determined in accordance with U.S. EPA Reference Method 9 of 40 CFR Part 60, Appendix A.

5. Emissions Limitations for Bucket elevator No. 1:
Fugitive particulates: 3.74 tons/year
Fugitive visible emissions: 10% opacity as a three-minute average

Humtown Pattern Company

PTI Application: 02-19424

Issued: To be entered upon final issuance

Facility ID: 0215000242

Emissions Unit ID: P901

Applicable Compliance Method:

Compliance with the allowable annual particulate limit shall be determined by the calculation and record keeping in Section C.3.b.

If required by Ohio EPA, compliance with the allowable fugitive visible limitation shall be determined in accordance with U.S. EPA Reference Method 22 of 40 CFR Part 60, Appendix A.

6. Emissions Limitations for Bucket elevator No. 2:

Fugitive particulates: 7.92 tons/year

Fugitive visible emissions: 10% opacity as a three-minute average

Applicable Compliance Method:

Compliance with the allowable annual particulate limit shall be determined by the calculation and record keeping in Section C.3.c.

If required by Ohio EPA, compliance with the allowable fugitive visible limitation shall be determined in accordance with U.S. EPA Reference Method 22 of 40 CFR Part 60, Appendix A.

7. Emissions Limitations for the Sand auger:

Fugitive particulates: 0.75 ton/year

Fugitive visible emissions: 10% opacity as a three-minute average

Applicable Compliance Method:

Compliance with the allowable annual particulate limit shall be determined by the calculation and record keeping in Section C.3.d.

If required by Ohio EPA, compliance with the allowable fugitive visible limitation shall be determined in accordance with U.S. EPA Reference Method 22 of 40 CFR Part 60, Appendix A.

F. Miscellaneous Requirements

The terms and conditions contained in this permit to install shall supercede the terms and conditions for Silo No. 1 contained in PTI # 17-627 issued on July 27, 1988.

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. 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.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
P001 - Mold core station No.1 vented to a sulfuric acid packed bed wet scrubber	OAC rule 3745-31-05(A)(3)	Particulate (PE) emissions shall not exceed 0.04 pound per hour Volatile Organic Compounds (VOC) emissions shall not exceed 0.40 pound per hour Naphthalene emissions shall not exceed 0.016 pound per hour Visible particulate emissions from the scrubber stack shall not exceed a 10% opacity as a six-minute average See Sections A.2.b & c
	OAC rule 3745-31-05(C)	The maximum sand usage for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015 and P016, as measured at mixer #1, shall not exceed 41,602 tons per year.
	OAC rule 3745-17-07(A)(1)	See Sections A.2.a The visible particulate emission limitation specified by this rule is less stringent than the limitation

OAC rule 3745-17-11(B)(1)	established pursuant to OAC rule 3745-31-05(A)(3).
OAC rule 3745-21-07(G)	The particulate emissions limitation specified 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)	Exempt. See Section A.2.d The emission limitation specified by this rule is equivalent to the limitation established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

- 2.a** Emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 are contained in a building. Emissions generated at each emissions unit are vented to a sulfuric acid packed bed wet scrubber. Emissions from the scrubber stack shall not exceed 22.70 tons PE per year, 5.59 tons Naphthalene per year, and 55.55 tons VOC per rolling 12-months.
- 2.b** The building housing emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 shall be maintained in such a manner, i.e., under negative pressure and at a minimum pressure differential that is not less than 0.01 inch of water, as to ensure that all emissions generated within the building are vented to the sulfuric acid packed bed wet scrubber whenever any of the emissions units in the building are in operation.
- 2.c** Emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 are considered part of a phenolic urethane cold box resin binder system. The sulfuric acid packed bed wet scrubber system serving these emissions units shall have a control efficiency (i.e., destruction or removal efficiency) which is at least 98% by weight of the catalyst gas emissions (i.e., Dimethylethylamine or DMEA).
- 2.d** OAC rule 3745-21-07(G)(9)(h) states that the provisions of paragraph (G) of the rule shall not apply to the use of a phenolic urethane cold box resin binder system in foundry core making and mold making operations, provided the catalyst gas emissions are vented to either a sulfuric acid scrubber that is designed and operated to remove at least 98%, by weight, of the catalyst gas

emissions or a control device that is designed and operated with an equivalent removal efficiency for the catalyst gas emissions.

B. Operational Restrictions

1. During the first twelve (12) months of operation under this permit, the maximum sand usage for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015 and P016, as measured at mixer #1, shall not exceed the amounts specified for each month in the following table:

<u>Calendar Month</u>	<u>Cumulative Allowable Amount of Sand Usage, in tons</u>
1	3,467
2	6,934
3	10,401
4	13,868
5	17,335
6	20,802
7	24,269
8	27,736
9	31,203
10	34,670
11	38,137
12	41,602

2. The sulfuric acid scrubber system shall be used while this emissions unit is in operation.
3. The scrubber solution flow rate shall be continuously maintained at a value of not less than 150 gallons per minute at all times while the emissions unit is in operation.
4. The pH of the scrubber solution shall be maintained at or below 4.5.
5. The fluid level in the scrubber solution holding tanks shall be maintained above 11 inches.
6. The building housing emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 shall be maintained under negative pressure, at a minimum pressure differential that is not less than 0.01 inch of water, whenever any of the emissions units within the building are in operation.
7. An interlock system shall be employed at the loading dock doors so that the doors may not open unless a truck is parked at the opening, under normal operating conditions.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall operate and maintain a system to continuously monitor and record hourly the following information:
 - a. the scrubber solution flow rate, in gallons per minute;
 - b. the pH of the scrubber solution; and
 - c. the fluid level in the scrubber solution holding tanks.
2. The permittee shall install, maintain and operate monitoring devices and a recorder which simultaneously measure and record the pressure inside and outside the building enclosure. The monitoring and recording device shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.
3. The permittee shall maintain the following daily record:
 - a. The difference in pressure between the building enclosure and the surrounding area.
 - b. A log or record of downtime for the capture (collection) system, control device, and monitoring equipment when the associated emissions unit was in operation.
4. The permittee shall maintain the following monthly records:
 - a. the total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016 as measured at mixer #1 or P022;
 - b. the total amount of sand, in tons, employed for emissions units P017, P018, P019, and P020 as measured at mixers #2 and #3;
 - c. the total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016, P017, P018, P019, and P020 (a summation of C.4.a and C.4.b);
 - d. the total amount of sand, in tons, employed for emissions unit P023;
 - e. the cumulative, total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016, P017, P018, P019, and P020 over the past 12 months
 - f. the cumulative, total amount of sand, in tons, employed for P023 during the past 12 months; and

- g. a calculation of the Volatile Organic Compound emissions from the scrubber stack:

$$\text{VOC (tons per rolling 12-months)} = [(A_1 \times EF_1) + (A_2 \times EF_2)] \times \text{ton}/2,000 \text{ lbs}$$

Where:

- A_1 = Amount of sand used, in tons/past 12-months, as recorded in Section C.4.e.
- EF_1 = Emissions factor of 0.65 lb VOC/ton of sand, taken from the Feb. 16, 1998 Ohio EPA memo regarding "New Emission Factors for Core/Mold making operations, Part 1." Emission factor is for the phenolic urethane cold-box system.
- A_2 = Amount of sand used, in tons/past 12-months, as recorded in Section C.4.f.
- EF_2 = Emissions factor of 1.17 lb VOC/ton of sand, taken from the Feb. 16, 1998 Ohio EPA memo regarding "New Emission Factors for Core/Mold making operations, Part 1." Emission factor is for the phenolic urethane no-bake system.

5. The permittee shall maintain the following annual records:
- a. the annual operating hours of the scrubber system;
 - b. the total amount of acid employed in the scrubber, in gallons;
 - c. the total amount of sand employed for P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023, in tons per year;
 - d. each type of resin and the amounts of each resin, in tons per year, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023; and
 - e. each type of catalyst and the amounts of each catalyst, in tons per year, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023.
6. The permittee shall calculate and document the following annual emissions rates for each calendar year, January 1 - December 31 by using the following equations:
- a. Particulate emissions from the scrubber stack:

$$PE \text{ (tons/yr)} = A \times EF \times \text{ton}/2,000 \text{ lbs}$$

Where:

A = Amount of sand used, in tons/year, as recorded in Section C.5.e.

EF = Emissions factor of 0.35 lb PE/ton of sand, taken from Table 2.8-1 of Ohio EPA's RACM guideline.

b. Naphthalene emissions from the scrubber stack:

$$\text{Naphthalene (tons/yr)} = \text{Summation of } [R \times \%wt \times \% \text{ Rel.}] \text{ for each resin containing Naphthalene that was used during the calendar year.}$$

Where:

R = Amount of resin containing Naphthalene, in tons per year

%wt = percent of Naphthalene, by weight, in the resin.

% Rel.= Value representing % Naphthalene released in the Phenolic Urethane Cold Box Process (P001 - P022) and in the Phenolic Urethane No Bake Process (P023), expressed as a decimal in the equation. Value taken from "Form R, Reporting of Binder Chemicals Used in Foundries, Second Edition, 1998." Value for the Phenolic Urethane Cold Box Process (P001 - P022) is 3.25% or 0.0325, and the value for the Phenolic Urethane No Bake Process (P023) is 5.85% or 0.0585.

7. The permit to install for this emissions unit and the other emissions units in this project (P001-P003, P007-P012, P014-P023) was evaluated based on the actual materials (typically coatings and cleanup 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 this emissions unit 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:

Pollutant: Naphthalene

Maximum Hourly Emission Rate: 1.52 lbs/hr *

TLV: 52,430 ug/m³

MAGLC = TLV/42: 1,248.3 ug/m³

Predicted 1-Hour Maximum Ground-Level Concentration: 19.8 ug/m³

* Emission rate is combined naphthalene emissions from P001-P003, P007-P012, P014-P023.

8. 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 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.).

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.

9. 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

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Emissions Unit ID: P001

- 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.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify the following:
 - a. all periods of time when the sulfuric acid scrubber system was not in use while this emissions unit was in operation;
 - b. all periods of time during which the 1) scrubber solution flow rate is below 150 gallons per minute, 2) fluid level in the scrubber solution holding tanks is below 11 inches, and 3) scrubber solution pH is above 4.5;
 - c. all periods of time during which the differential pressure between the inside and outside of the building enclosure was less than 0.01 inch of water;
 - d. all periods of time during which the interlock system for the loading dock doors did not work, or was not in operation; and
 - e. any month during the quarter when the VOC emissions limitation, as calculated in Section C.3.g, was above 55.55 tons per rolling 12-months.

The quarterly deviation reports shall be submitted in accordance with General Term and Condition A.1.c.ii. The written reports shall be submitted quarterly to the Ohio EPA Northeast District Office, i.e., by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters.

If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report which states that no deviations occurred during the quarter.

2. The permittee shall submit annual reports that identify the following:
 - a. the annual operating hours of the scrubber system;
 - b. the total amount of acid employed in the scrubber (in gallons);
 - c. the calculated annual particulate emissions rate as recorded in Section C.6.a;
 - d. the calculated annual naphthalene emissions rate as recorded in Section C.6.b; and
 - e. the calculated VOC emissions rate as recorded for the month of December per Section C.4.g.

The annual report shall cover each calendar year, January 1 - December 31, and shall be submitted to the Ohio EPA Northeast District Office by January 31 of each year.

E. Testing Requirements

1. Emission Limitation:

Particulate emissions shall not exceed 0.04 pound per hour

Applicable Compliance Method:

If required by Ohio EPA, compliance with the hourly particulate emissions limitation shall be determined in accordance with 40 CFR Part 60, Appendix A, Methods 1 - 5.

2. Emission Limitation:

Visible particulate emissions from the scrubber stack shall not exceed a 10% opacity as a six-minute average

Applicable Compliance Method:

If required by Ohio EPA, compliance with the allowable visible particulate emissions limit shall be determined in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

3. Emission Limitation:

Volatile Organic Compound emissions shall not exceed 0.40 pound per hour

Applicable Compliance Method:

The permittee shall conduct, or have conducted, volatile organic compound mass emission testing at the outlet of the scrubber stack to demonstrate compliance with the combined allowable hourly volatile organic compound emission rates for all emissions units in operation at the time of testing in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 4 and 18, 25 or 25A, as appropriate, or an equivalent method as approved by the Ohio EPA.

4. Emission Limitation:

Naphthalene emissions shall not exceed 0.016 pound per hour

Applicable Compliance Method:

If required by Ohio EPA, compliance with the above limitation shall be demonstrated in accordance with 40 CFR Part 60, Appendix A, Method 18, or an equivalent method as approved by the Ohio EPA.

5. Emission Limitation:

The sulfuric acid packed bed wet scrubber system serving emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, and P022 shall have a control efficiency (i.e., destruction or removal efficiency) which is at least 98% by weight of the catalyst gas emissions (i.e., Dimethylethylamine or DMEA).

Applicable Compliance Method:

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 40 CFR Part 60, Appendix A, Methods 1 through 4 and 18 (for Dimethylethylamine), or an equivalent method as approved by the Ohio EPA.

6. Emission Limitation:

Particulate emissions from the scrubber stack shall not exceed 22.70 tons per year

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.6.a.

7. Emission Limitation:

Volatile Organic Compound emissions from the scrubber stack shall not exceed 55.55 tons per rolling 12-months.

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.4.g.

8. Emission Limitation:

Naphthalene emissions from the scrubber stack shall not exceed 5.59 tons per year

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.6.b.

9. All of the required tests in Sections E.3 and E.5 shall be conducted within 90 days of issuance of this permit. All of the required tests shall also be conducted while emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 are operating at or near the capacity reported for each emissions unit in the PTI application.

No later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA Northeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions units operating parameters, the time(s) and date(s) of the tests, and the person(s) who will be conducting the tests. Failure to submit such notification for review and approval prior to the tests may result in the Ohio EPA Northeast District Office's refusal to accept the results of the emission tests.

Personnel from the Ohio EPA Northeast District Office shall be permitted to witness the tests, examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions units and the testing procedures provide a

valid characterization of the emissions from the emissions units and/or the performance of the control equipment.

A comprehensive written report on the results of the emissions tests shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA Northeast District Office within 30 days following completion of the tests. The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA Northeast District Office.

10. The VOC emissions limitation for each emissions unit, except P023, was calculated using the following: reported maximum use capacity for sand in tons per hour, an emissions factor in lb VOC per ton of sand, and an assumption that 50% of the VOCs are emitted at the mixers and 50% at the mold/core stations. The VOC emissions limitation for P023 included an assumption that 100% of the VOCs are emitted at the unit since mixing and mold making are performed at the same unit.

If all emissions units cannot be operated at the same time during the required testing, then compliance with the hourly VOC emissions rate is determined by comparison of the stack emissions result with the combined allowable hourly VOC emissions rates for all mold/core stations in operation at the time of testing multiplied by two. The multiplication by two accounts for the VOC emissions from the mixer. The allowable hourly VOC emissions rate for P023 would not be doubled. The mixer and station(s) must be operating at the same time during the test.

Compliance with the control efficiency requirement (i.e., destruction or removal efficiency of at least 98% by weight of the catalyst gas emissions, Dimethylethylamine or DMEA) is achieved by comparison of the inlet and outlet emissions results.

F. Miscellaneous Requirements

1. The terms and conditions of this permit supercede those contained in PTI # 17-304 issued on 1/24/85.
2. The terms and conditions in Sections A, B, C.1 through C.6, D and E of this permit are federally enforceable.
3. Production rates of 2,461 pounds sand per hour and 20 pounds Part I resin per hour were used in the calculations to determine the hourly particulate, volatile organic compound and naphthalene emissions rates under OAC rule 3745-31-05(A)(3) for this emissions unit. These production rates are derived from actual production records. The maximum design capacity for this emissions unit is not known.

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. 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.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
P002 - Mold core station No. 2 vented to a sulfuric acid packed bed wet scrubber	OAC rule 3745-31-05(A)(3)	Particulate (PE) emissions shall not exceed 0.02 pound per hour Volatile Organic Compounds (VOC) emissions shall not exceed 0.19 pound per hour Naphthalene emissions shall not exceed 0.008 pound per hour Visible particulate emissions from the scrubber stack shall not exceed a 10% opacity as a six-minute average See Sections A.2.b & c
	OAC rule 3745-31-05(C)	The maximum sand usage for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015 and P016, as measured at mixer #1, shall not exceed 41,602 tons per year. See Sections A.2.a
	OAC rule 3745-17-07(A)(1)	The visible particulate emission limitation specified by this rule is less stringent than the limitation

	established pursuant to OAC rule 3745-31-05(A)(3).
OAC rule 3745-17-11(B)(1)	The particulate emissions limitation specified 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)	Exempt. See Section A.2.d
OAC rule 3745-21-07(G)(9)(h)	The emission limitation specified by this rule is equivalent to the limitation established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

- 2.a** Emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 are contained in a building. Emissions generated at each emissions unit are vented to a sulfuric acid packed bed wet scrubber. Emissions from the scrubber stack shall not exceed 22.70 tons PE per year, 5.59 tons Naphthalene per year, and 55.55 tons VOC per rolling 12-months.
- 2.b** The building housing emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 shall be maintained in such a manner, i.e., under negative pressure and at a minimum pressure differential that is not less than 0.01 inch of water, as to ensure that all emissions generated within the building are vented to the sulfuric acid packed bed wet scrubber whenever any of the emissions units in the building are in operation.
- 2.c** Emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 are considered part of a phenolic urethane cold box resin binder system. The sulfuric acid packed bed wet scrubber system serving these emissions units shall have a control efficiency (i.e., destruction or removal efficiency) which is at least 98% by weight of the catalyst gas emissions (i.e., Dimethylethylamine or DMEA).
- 2.d** OAC rule 3745-21-07(G)(9)(h) states that the provisions of paragraph (G) of the rule shall not apply to the use of a phenolic urethane cold box resin binder system in foundry core making and mold making operations, provided the catalyst gas emissions are vented to either a sulfuric acid scrubber that is designed and operated to remove at least 98%, by weight, of the catalyst gas

emissions or a control device that is designed and operated with an equivalent removal efficiency for the catalyst gas emissions.

B. Operational Restrictions

1. During the first twelve (12) months of operation under this permit, the maximum sand usage for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015 and P016, as measured at mixer #1, shall not exceed the amounts specified for each month in the following table:

<u>Calendar Month</u>	<u>Cumulative Allowable Amount of Sand Usage, in tons</u>
1	3,467
2	6,934
3	10,401
4	13,868
5	17,335
6	20,802
7	24,269
8	27,736
9	31,203
10	34,670
11	38,137
12	41,602

2. The sulfuric acid scrubber system shall be used while this emissions unit is in operation.
3. The scrubber solution flow rate shall be continuously maintained at a value of not less than 150 gallons per minute at all times while the emissions unit is in operation.
4. The pH of the scrubber solution shall be maintained at or below 4.5.
5. The fluid level in the scrubber solution holding tanks shall be maintained above 11 inches.
6. The building housing emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 shall be maintained under negative pressure, at a minimum pressure differential that is not less than 0.01 inch of water, whenever any of the emissions units within the building are in operation.
7. An interlock system shall be employed at the loading dock doors so that the doors may not open unless a truck is parked at the opening, under normal operating conditions.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall operate and maintain a system to continuously monitor and record hourly the following information:
 - a. the scrubber solution flow rate, in gallons per minute;
 - b. the pH of the scrubber solution; and
 - c. the fluid level in the scrubber solution holding tanks.
2. The permittee shall install, maintain and operate monitoring devices and a recorder which simultaneously measure and record the pressure inside and outside the building enclosure. The monitoring and recording device shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.
3. The permittee shall maintain the following daily record:
 - a. The difference in pressure between the building enclosure and the surrounding area.
 - b. A log or record of downtime for the capture (collection) system, control device, and monitoring equipment when the associated emissions unit was in operation.
4. The permittee shall maintain the following monthly records:
 - a. the total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016 as measured at mixer #1 or P022;
 - b. the total amount of sand, in tons, employed for emissions units P017, P018, P019, and P020 as measured at mixers #2 and #3;
 - c. the total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016, P017, P018, P019, and P020 (a summation of C.4.a and C.4.b);
 - d. the total amount of sand, in tons, employed for emissions unit P023;
 - e. the cumulative, total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016, P017, P018, P019, and P020 over the past 12 months

- f. the cumulative, total amount of sand, in tons, employed for P023 during the past 12 months; and
- g. a calculation of the Volatile Organic Compound emissions from the scrubber stack:

$$\text{VOC (tons per rolling 12-months)} = [(A_1 \times EF_1) + (A_2 \times EF_2)] \times \text{ton}/2,000 \text{ lbs}$$

Where:

- A_1 = Amount of sand used, in tons/past 12-months, as recorded in Section C.4.e.
- EF_1 = Emissions factor of 0.65 lb VOC/ton of sand, taken from the Feb. 16, 1998 Ohio EPA memo regarding "New Emission Factors for Core/Mold making operations, Part 1." Emission factor is for the phenolic urethane cold-box system.
- A_2 = Amount of sand used, in tons/past 12-months, as recorded in Section C.4.f.
- EF_2 = Emissions factor of 1.17 lb VOC/ton of sand, taken from the Feb. 16, 1998 Ohio EPA memo regarding "New Emission Factors for Core/Mold making operations, Part 1." Emission factor is for the phenolic urethane no-bake system.

- 5. The permittee shall maintain the following annual records:
 - a. the annual operating hours of the scrubber system;
 - b. the total amount of acid employed in the scrubber, in gallons;
 - c. the total amount of sand employed for P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023, in tons per year;
 - d. each type of resin and the amounts of each resin, in tons per year, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023; and
 - e. each type of catalyst and the amounts of each catalyst, in tons per year, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023.

6. The permittee shall calculate and document the following annual emissions rates for each calendar year, January 1 - December 31 by using the following equations:

a. Particulate emissions from the scrubber stack:

$$PE \text{ (tons/yr)} = A \times EF \times \text{ton}/2,000 \text{ lbs}$$

Where:

A = Amount of sand used, in tons/year, as recorded in Section C.5.e.

EF = Emissions factor of 0.35 lb PE/ton of sand, taken from Table 2.8-1 of Ohio EPA's RACM guideline.

b. Naphthalene emissions from the scrubber stack:

$$\text{Naphthalene (tons/yr)} = \text{Summation of } [R \times \%wt \times \% \text{ Rel.}] \text{ for each resin containing Naphthalene that was used during the calendar year.}$$

Where:

R = Amount of resin containing Naphthalene, in tons per year

%wt = percent of Naphthalene, by weight, in the resin.

% Rel.= Value representing % Naphthalene released in the Phenolic Urethane Cold Box Process (P001 - P022) and in the Phenolic Urethane No Bake Process (P023), expressed as a decimal in the equation. Value taken from "Form R, Reporting of Binder Chemicals Used in Foundries, Second Edition, 1998." Value for the Phenolic Urethane Cold Box Process (P001 - P022) is 3.25% or 0.0325, and the value for the Phenolic Urethane No Bake Process (P023) is 5.85% or 0.0585.

7. The permit to install for this emissions unit and the other emissions units in this project (P001-P003, P007-P012, P014-P023) was evaluated based on the actual materials (typically coatings and cleanup 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 this emissions unit 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:

Pollutant: Naphthalene

Maximum Hourly Emission Rate: 1.52 lbs/hr *

TLV: 52,430 ug/m³

MAGLC = TLV/42: 1,248.3 ug/m³

Predicted 1-Hour Maximum Ground-Level Concentration: 19.8 ug/m³

* Emission rate is combined naphthalene emissions from P001-P003, P007-P012, P014-P023.

8. 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 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.).

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.

9. 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.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify the following:
 - a. all periods of time when the sulfuric acid scrubber system was not in use while this emissions unit was in operation;
 - b. all periods of time during which the 1) scrubber solution flow rate is below 150 gallons per minute, 2) fluid level in the scrubber solution holding tanks is below 11 inches, and 3) scrubber solution pH is above 4.5;
 - c. all periods of time during which the differential pressure between the inside and outside of the building enclosure was less than 0.01 inch of water;
 - d. all periods of time during which the interlock system for the loading dock doors did not work, or was not in operation; and
 - e. any month during the quarter when the VOC emissions limitation, as calculated in Section C.3.g, was above 55.55 tons per rolling 12-months.

The quarterly deviation reports shall be submitted in accordance with General Term and Condition A.1.c.ii. The written reports shall be submitted quarterly to the Ohio EPA Northeast District Office, i.e., by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters.

If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report which states that no deviations occurred during the quarter.

2. The permittee shall submit annual reports that identify the following:
 - a. the annual operating hours of the scrubber system;
 - b. the total amount of acid employed in the scrubber (in gallons);
 - c. the calculated annual particulate emissions rate as recorded in Section C.6.a;

- d. the calculated annual naphthalene emissions rate as recorded in Section C.6.b; and
- e. the calculated VOC emissions rate as recorded for the month of December per Section C.4.g.

The annual report shall cover each calendar year, January 1 - December 31, and shall be submitted to the Ohio EPA Northeast District Office by January 31 of each year.

E. Testing Requirements

1. Emission Limitation:

Particulate emissions shall not exceed 0.02 pound per hour

Applicable Compliance Method:

If required by Ohio EPA, compliance with the hourly particulate emissions limitation shall be determined in accordance with 40 CFR Part 60, Appendix A, Methods 1 - 5.

2. Emission Limitation:

Visible particulate emissions from the scrubber stack shall not exceed a 10% opacity as a six-minute average

Applicable Compliance Method:

If required by Ohio EPA, compliance with the allowable visible particulate emissions limit shall be determined in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

3. Emission Limitation:

Volatile Organic Compound emissions shall not exceed 0.19 pound per hour

Applicable Compliance Method:

The permittee shall conduct, or have conducted, volatile organic compound mass emission testing at the outlet of the scrubber stack to demonstrate compliance with the combined allowable hourly volatile organic compound emission rates for all emissions units in operation at the time of testing in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 4 and 18, 25 or 25A, as appropriate, or an equivalent method as approved by the Ohio EPA.

4. Emission Limitation:

Naphthalene emissions shall not exceed 0.008 pound per hour

Applicable Compliance Method:

If required by Ohio EPA, compliance with the above limitation shall be demonstrated in accordance with 40 CFR Part 60, Appendix A, Method 18, or an equivalent method as approved by the Ohio EPA.

5. Emission Limitation:

The sulfuric acid packed bed wet scrubber system serving emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, and P022 shall have a control efficiency (i.e., destruction or removal efficiency) which is at least 98% by weight of the catalyst gas emissions (i.e., Dimethylethylamine or DMEA).

Applicable Compliance Method:

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 40 CFR Part 60, Appendix A, Methods 1 through 4 and 18 (for Dimethylethylamine), or an equivalent method as approved by the Ohio EPA.

6. Emission Limitation:

Particulate emissions from the scrubber stack shall not exceed 22.70 tons per year

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.6.a.

7. Emission Limitation:

Volatile Organic Compound emissions from the scrubber stack shall not exceed 55.55 tons per rolling 12-months.

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.4.g.

8. Emission Limitation:

Naphthalene emissions from the scrubber stack shall not exceed 5.59 tons per year

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.6.b.

9. All of the required tests in Sections E.3 and E.5 shall be conducted within 90 days of issuance of this permit. All of the required tests shall also be conducted while emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 are operating at or near the capacity reported for each emissions unit in the PTI application.

No later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA Northeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions units operating parameters, the time(s) and date(s) of the tests, and the person(s) who will be conducting the tests. Failure to submit such notification for review

and approval prior to the tests may result in the Ohio EPA Northeast District Office's refusal to accept the results of the emission tests.

Personnel from the Ohio EPA Northeast District Office shall be permitted to witness the tests, examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions units and the testing procedures provide a valid characterization of the emissions from the emissions units and/or the performance of the control equipment.

A comprehensive written report on the results of the emissions tests shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA Northeast District Office within 30 days following completion of the tests. The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA Northeast District Office.

10. The VOC emissions limitation for each emissions unit, except P023, was calculated using the following: reported maximum use capacity for sand in tons per hour, an emissions factor in lb VOC per ton of sand, and an assumption that 50% of the VOCs are emitted at the mixers and 50% at the mold/core stations. The VOC emissions limitation for P023 included an assumption that 100% of the VOCs are emitted at the unit since mixing and mold making are performed at the same unit.

If all emissions units cannot be operated at the same time during the required testing, then compliance with the hourly VOC emissions rate is determined by comparison of the stack emissions result with the combined allowable hourly VOC emissions rates for all mold/core stations in operation at the time of testing multiplied by two. The multiplication by two accounts for the VOC emissions from the mixer. The allowable hourly VOC emissions rate for P023 would not be doubled. The mixer and station(s) must be operating at the same time during the test.

Compliance with the control efficiency requirement (i.e., destruction or removal efficiency of at least 98% by weight of the catalyst gas emissions, Dimethylethylamine or DMEA) is achieved by comparison of the inlet and outlet emissions results.

F. Miscellaneous Requirements

1. The terms and conditions of this permit supercede those contained in PTI # 17-304 issued on 1/24/85.
2. The terms and conditions in Sections A, B, C.1 through C.6, D and E of this permit are federally enforceable.

Humtown Pattern Company

PTI Application: 02-19424

Issued: To be entered upon final issuance

Facility ID: 0215000242

Emissions Unit ID: P002

3. The maximum production rates of 1,181 pounds sand per hour and 10 pounds Part I resin per hour were used in the calculations to determine the hourly particulate, volatile organic compound and naphthalene emissions rates under OAC rule 3745-31-05(A)(3) for this emissions unit. These production rates are derived from actual production records. The maximum design capacity for this emissions unit is not known.

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. 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.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
P003 - Mold core station No. 3 vented to a sulfuric acid packed bed wet scrubber	OAC rule 3745-31-05(A)(3)	Particulate (PE) emissions shall not exceed 0.01 pound per hour Volatile Organic Compounds (VOC) emissions shall not exceed 0.10 pound per hour Naphthalene emissions shall not exceed 0.004 pound per hour Visible particulate emissions from the scrubber stack shall not exceed a 10% opacity as a six-minute average See Sections A.2.b & c
	OAC rule 3745-31-05(C)	The maximum sand usage for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015 and P016, as measured at mixer #1, shall not exceed 41,602 tons per year. See Sections A.2.a
	OAC rule 3745-17-07(A)(1)	The visible particulate emission limitation specified by this rule is less stringent than the limitation

OAC rule 3745-17-11(B)(1)	established pursuant to OAC rule 3745-31-05(A)(3). The particulate emissions limitation specified 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)	Exempt. See Section A.2.d
OAC rule 3745-21-07(G)(9)(h)	The emission limitation specified by this rule is equivalent to the limitation established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

- 2.a** Emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 are contained in a building. Emissions generated at each emissions unit are vented to a sulfuric acid packed bed wet scrubber. Emissions from the scrubber stack shall not exceed 22.70 tons PE per year, 5.59 tons Naphthalene per year, and 55.55 tons VOC per rolling 12-months.
- 2.b** The building housing emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 shall be maintained in such a manner, i.e., under negative pressure and at a minimum pressure differential that is not less than 0.01 inch of water, as to ensure that all emissions generated within the building are vented to the sulfuric acid packed bed wet scrubber whenever any of the emissions units in the building are in operation.
- 2.c** Emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 are considered part of a phenolic urethane cold box resin binder system. The sulfuric acid packed bed wet scrubber system serving these emissions units shall have a control efficiency (i.e., destruction or removal efficiency) which is at least 98% by weight of the catalyst gas emissions (i.e., Dimethylethylamine or DMEA).
- 2.d** OAC rule 3745-21-07(G)(9)(h) states that the provisions of paragraph (G) of the rule shall not apply to the use of a phenolic urethane cold box resin binder system in foundry core making and mold making operations, provided the catalyst gas emissions are vented to either a sulfuric acid scrubber that is designed and operated to remove at least 98%, by weight, of the catalyst gas

emissions or a control device that is designed and operated with an equivalent removal efficiency for the catalyst gas emissions.

B. Operational Restrictions

1. During the first twelve (12) months of operation under this permit, the maximum sand usage for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015 and P016, as measured at mixer #1, shall not exceed the amounts specified for each month in the following table:

<u>Calendar Month</u>	<u>Cumulative Allowable Amount of Sand Usage, in tons</u>
1	3,467
2	6,934
3	10,401
4	13,868
5	17,335
6	20,802
7	24,269
8	27,736
9	31,203
10	34,670
11	38,137
12	41,602

2. The sulfuric acid scrubber system shall be used while this emissions unit is in operation.
3. The scrubber solution flow rate shall be continuously maintained at a value of not less than 150 gallons per minute at all times while the emissions unit is in operation.
4. The pH of the scrubber solution shall be maintained at or below 4.5.
5. The fluid level in the scrubber solution holding tanks shall be maintained above 11 inches.
6. The building housing emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 shall be maintained under negative pressure, at a minimum pressure differential that is not less than 0.01 inch of water, whenever any of the emissions units within the building are in operation.
7. An interlock system shall be employed at the loading dock doors so that the doors may not open unless a truck is parked at the opening, under normal operating conditions.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall operate and maintain a system to continuously monitor and record hourly the following information:
 - a. the scrubber solution flow rate, in gallons per minute;
 - b. the pH of the scrubber solution; and
 - c. the fluid level in the scrubber solution holding tanks.
2. The permittee shall install, maintain and operate monitoring devices and a recorder which simultaneously measure and record the pressure inside and outside the building enclosure. The monitoring and recording device shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.
3. The permittee shall maintain the following daily record:
 - a. The difference in pressure between the building enclosure and the surrounding area.
 - b. A log or record of downtime for the capture (collection) system, control device, and monitoring equipment when the associated emissions unit was in operation.
4. The permittee shall maintain the following monthly records:
 - a. the total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016 as measured at mixer #1 or P022;
 - b. the total amount of sand, in tons, employed for emissions units P017, P018, P019, and P020 as measured at mixers #2 and #3;
 - c. the total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016, P017, P018, P019, and P020 (a summation of C.4.a and C.4.b);
 - d. the total amount of sand, in tons, employed for emissions unit P023;
 - e. the cumulative, total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016, P017, P018, P019, and P020 over the past 12 months

- f. the cumulative, total amount of sand, in tons, employed for P023 during the past 12 months; and
- g. a calculation of the Volatile Organic Compound emissions from the scrubber stack:

$$\text{VOC (tons per rolling 12-months)} = [(A_1 \times EF_1) + (A_2 \times EF_2)] \times \text{ton}/2,000 \text{ lbs}$$

Where:

- A_1 = Amount of sand used, in tons/past 12-months, as recorded in Section C.4.e.
- EF_1 = Emissions factor of 0.65 lb VOC/ton of sand, taken from the Feb. 16, 1998 Ohio EPA memo regarding "New Emission Factors for Core/Mold making operations, Part 1." Emission factor is for the phenolic urethane cold-box system.
- A_2 = Amount of sand used, in tons/past 12-months, as recorded in Section C.4.f.
- EF_2 = Emissions factor of 1.17 lb VOC/ton of sand, taken from the Feb. 16, 1998 Ohio EPA memo regarding "New Emission Factors for Core/Mold making operations, Part 1." Emission factor is for the phenolic urethane no-bake system.

- 5. The permittee shall maintain the following annual records:
 - a. the annual operating hours of the scrubber system;
 - b. the total amount of acid employed in the scrubber, in gallons;
 - c. the total amount of sand employed for P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023, in tons per year;
 - d. each type of resin and the amounts of each resin, in tons per year, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023; and
 - e. each type of catalyst and the amounts of each catalyst, in tons per year, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023.

6. The permittee shall calculate and document the following annual emissions rates for each calendar year, January 1 - December 31 by using the following equations:

a. Particulate emissions from the scrubber stack:

$$PE \text{ (tons/yr)} = A \times EF \times \text{ton}/2,000 \text{ lbs}$$

Where:

A = Amount of sand used, in tons/year, as recorded in Section C.5.e.

EF = Emissions factor of 0.35 lb PE/ton of sand, taken from Table 2.8-1 of Ohio EPA's RACM guideline.

b. Naphthalene emissions from the scrubber stack:

$$\text{Naphthalene (tons/yr)} = \text{Summation of } [R \times \%wt \times \% \text{ Rel.}] \text{ for each resin containing Naphthalene that was used during the calendar year.}$$

Where:

R = Amount of resin containing Naphthalene, in tons per year

%wt = percent of Naphthalene, by weight, in the resin.

% Rel.= Value representing % Naphthalene released in the Phenolic Urethane Cold Box Process (P001 - P022) and in the Phenolic Urethane No Bake Process (P023), expressed as a decimal in the equation. Value taken from "Form R, Reporting of Binder Chemicals Used in Foundries, Second Edition, 1998." Value for the Phenolic Urethane Cold Box Process (P001 - P022) is 3.25% or 0.0325, and the value for the Phenolic Urethane No Bake Process (P023) is 5.85% or 0.0585.

7. The permit to install for this emissions unit and the other emissions units in this project (P001-P003, P007-P012, P014-P023) was evaluated based on the actual materials (typically coatings and cleanup 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 this emissions unit 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:

Pollutant: Naphthalene

Maximum Hourly Emission Rate: 1.52 lbs/hr *

TLV: 52,430 ug/m³

MAGLC = TLV/42: 1,248.3 ug/m³

Predicted 1-Hour Maximum Ground-Level Concentration: 19.8 ug/m³

* Emission rate is combined naphthalene emissions from P001-P003, P007-P012, P014-P023.

8. 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 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.).

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.

9. 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.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify the following:
 - a. all periods of time when the sulfuric acid scrubber system was not in use while this emissions unit was in operation;
 - b. all periods of time during which the 1) scrubber solution flow rate is below 150 gallons per minute, 2) fluid level in the scrubber solution holding tanks is below 11 inches, and 3) scrubber solution pH is above 4.5;
 - c. all periods of time during which the differential pressure between the inside and outside of the building enclosure was less than 0.01 inch of water;
 - d. all periods of time during which the interlock system for the loading dock doors did not work, or was not in operation; and
 - e. any month during the quarter when the VOC emissions limitation, as calculated in Section C.3.g, was above 55.55 tons per rolling 12-months.

The quarterly deviation reports shall be submitted in accordance with General Term and Condition A.1.c.ii. The written reports shall be submitted quarterly to the Ohio EPA Northeast District Office, i.e., by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters.

If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report which states that no deviations occurred during the quarter.

2. The permittee shall submit annual reports that identify the following:
 - a. the annual operating hours of the scrubber system;
 - b. the total amount of acid employed in the scrubber (in gallons);
 - c. the calculated annual particulate emissions rate as recorded in Section C.6.a;

- d. the calculated annual naphthalene emissions rate as recorded in Section C.6.b; and
- e. the calculated VOC emissions rate as recorded for the month of December per Section C.4.g.

The annual report shall cover each calendar year, January 1 - December 31, and shall be submitted to the Ohio EPA Northeast District Office by January 31 of each year.

E. Testing Requirements

1. Emission Limitation:

Particulate emissions shall not exceed 0.01 pound per hour

Applicable Compliance Method:

If required by Ohio EPA, compliance with the hourly particulate emissions limitation shall be determined in accordance with 40 CFR Part 60, Appendix A, Methods 1 - 5.

2. Emission Limitation:

Visible particulate emissions from the scrubber stack shall not exceed a 10% opacity as a six-minute average

Applicable Compliance Method:

If required by Ohio EPA, compliance with the allowable visible particulate emissions limit shall be determined in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

3. Emission Limitation:

Volatile Organic Compound emissions shall not exceed 0.10 pound per hour

Applicable Compliance Method:

The permittee shall conduct, or have conducted, volatile organic compound mass emission testing at the outlet of the scrubber stack to demonstrate compliance with the combined allowable hourly volatile organic compound emission rates for all emissions units in operation at the time of testing in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 4 and 18, 25 or 25A, as appropriate, or an equivalent method as approved by the Ohio EPA.

4. Emission Limitation:

Naphthalene emissions shall not exceed 0.004 pound per hour

Applicable Compliance Method:

If required by Ohio EPA, compliance with the above limitation shall be demonstrated in accordance with 40 CFR Part 60, Appendix A, Method 18, or an equivalent method as approved by the Ohio EPA.

5. Emission Limitation:

The sulfuric acid packed bed wet scrubber system serving emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, and P022 shall have a control efficiency (i.e., destruction or removal efficiency) which is at least 98% by weight of the catalyst gas emissions (i.e., Dimethylethylamine or DMEA).

Applicable Compliance Method:

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 40 CFR Part 60, Appendix A, Methods 1 through 4 and 18 (for Dimethylethylamine), or an equivalent method as approved by the Ohio EPA.

6. Emission Limitation:

Particulate emissions from the scrubber stack shall not exceed 22.70 tons per year

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.6.a.

7. Emission Limitation:

Volatile Organic Compound emissions from the scrubber stack shall not exceed 55.55 tons per rolling 12-months.

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.4.g.

8. Emission Limitation:

Naphthalene emissions from the scrubber stack shall not exceed 5.59 tons per year

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.6.b.

9. All of the required tests in Sections E.3 and E.5 shall be conducted within 90 days of issuance of this permit. All of the required tests shall also be conducted while emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 are operating at or near the capacity reported for each emissions unit in the PTI application.

No later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA Northeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions units operating parameters, the time(s) and date(s) of the tests, and the person(s) who will be conducting the tests. Failure to submit such notification for review

and approval prior to the tests may result in the Ohio EPA Northeast District Office's refusal to accept the results of the emission tests.

Personnel from the Ohio EPA Northeast District Office shall be permitted to witness the tests, examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions units and the testing procedures provide a valid characterization of the emissions from the emissions units and/or the performance of the control equipment.

A comprehensive written report on the results of the emissions tests shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA Northeast District Office within 30 days following completion of the tests. The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA Northeast District Office.

10. The VOC emissions limitation for each emissions unit, except P023, was calculated using the following: reported maximum use capacity for sand in tons per hour, an emissions factor in lb VOC per ton of sand, and an assumption that 50% of the VOCs are emitted at the mixers and 50% at the mold/core stations. The VOC emissions limitation for P023 included an assumption that 100% of the VOCs are emitted at the unit since mixing and mold making are performed at the same unit.

If all emissions units cannot be operated at the same time during the required testing, then compliance with the hourly VOC emissions rate is determined by comparison of the stack emissions result with the combined allowable hourly VOC emissions rates for all mold/core stations in operation at the time of testing multiplied by two. The multiplication by two accounts for the VOC emissions from the mixer. The allowable hourly VOC emissions rate for P023 would not be doubled. The mixer and station(s) must be operating at the same time during the test.

Compliance with the control efficiency requirement (i.e., destruction or removal efficiency of at least 98% by weight of the catalyst gas emissions, Dimethylethylamine or DMEA) is achieved by comparison of the inlet and outlet emissions results.

F. Miscellaneous Requirements

1. The terms and conditions of this permit supercede those contained in PTI # 17-814 issued on 7/25/90.
2. The terms and conditions in Sections A, B, C.1 through C.6, D and E of this permit are federally enforceable.

Humtown Pattern Company

PTI Application: 02-19424

Issued: To be entered upon final issuance

Facility ID: 0215000242

Emissions Unit ID: P003

3. The maximum production rates of 591 pounds sand per hour and 5 pounds Part I resin per hour were used in the calculations to determine the hourly particulate, volatile organic compound and naphthalene emissions rates under OAC rule 3745-31-05(A)(3) for this emissions unit. These production rates are derived from actual production records. The maximum design capacity for this emissions unit is not known.

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. Applicable Emissions Limitations and/or Control Requirements

- 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.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
P007 - Mold core station No. 7 vented to a sulfuric acid packed bed wet scrubber	OAC rule 3745-31-05(A)(3)	Particulate (PE) emissions shall not exceed 0.003 pound per hour Volatile Organic Compounds (VOC) emissions shall not exceed 0.03 pound per hour Naphthalene emissions shall not exceed 0.002 pound per hour Visible particulate emissions from the scrubber stack shall not exceed a 10% opacity as a six-minute average See Sections A.2.b & c
	OAC rule 3745-31-05(C)	The maximum sand usage for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015 and P016, as measured at mixer #1, shall not exceed 41,602 tons per year. See Sections A.2.a
	OAC rule 3745-17-07(A)(1)	The visible particulate emission limitation specified by this rule is less stringent than the limitation

<p>OAC rule 3745-17-11(B)(1)</p>	<p>established pursuant to OAC rule 3745-31-05(A)(3).</p> <p>The particulate emissions limitation specified by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).</p>
<p>OAC rule 3745-21-07(G)</p>	<p>Exempt. See Section A.2.d</p>
<p>OAC rule 3745-21-07(G)(9)(h)</p>	<p>The emission limitation specified by this rule is equivalent to the limitation established pursuant to OAC rule 3745-31-05(A)(3).</p>

2. Additional Terms and Conditions

- 2.a** Emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 are contained in a building. Emissions generated at each emissions unit are vented to a sulfuric acid packed bed wet scrubber. Emissions from the scrubber stack shall not exceed 22.70 tons PE per year, 5.59 tons Naphthalene per year, and 55.55 tons VOC per rolling 12-months.
- 2.b** The building housing emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 shall be maintained in such a manner, i.e., under negative pressure and at a minimum pressure differential that is not less than 0.01 inch of water, as to ensure that all emissions generated within the building are vented to the sulfuric acid packed bed wet scrubber whenever any of the emissions units in the building are in operation.
- 2.c** Emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 are considered part of a phenolic urethane cold box resin binder system. The sulfuric acid packed bed wet scrubber system serving these emissions units shall have a control efficiency (i.e., destruction or removal efficiency) which is at least 98% by weight of the catalyst gas emissions (i.e., Dimethylethylamine or DMEA).
- 2.d** OAC rule 3745-21-07(G)(9)(h) states that the provisions of paragraph (G) of the rule shall not apply to the use of a phenolic urethane cold box resin binder system in foundry core making and mold making operations, provided the catalyst gas emissions are vented to either a sulfuric acid scrubber that is designed and operated to remove at least 98%, by weight, of the catalyst gas

emissions or a control device that is designed and operated with an equivalent removal efficiency for the catalyst gas emissions.

B. Operational Restrictions

1. During the first twelve (12) months of operation under this permit, the maximum sand usage for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015 and P016, as measured at mixer #1, shall not exceed the amounts specified for each month in the following table:

<u>Calendar Month</u>	<u>Cumulative Allowable Amount of Sand Usage, in tons</u>
1	3,467
2	6,934
3	10,401
4	13,868
5	17,335
6	20,802
7	24,269
8	27,736
9	31,203
10	34,670
11	38,137
12	41,602

2. The sulfuric acid scrubber system shall be used while this emissions unit is in operation.
3. The scrubber solution flow rate shall be continuously maintained at a value of not less than 150 gallons per minute at all times while the emissions unit is in operation.
4. The pH of the scrubber solution shall be maintained at or below 4.5.
5. The fluid level in the scrubber solution holding tanks shall be maintained above 11 inches.
6. The building housing emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 shall be maintained under negative pressure, at a minimum pressure differential that is not less than 0.01 inch of water, whenever any of the emissions units within the building are in operation.
7. An interlock system shall be employed at the loading dock doors so that the doors may not open unless a truck is parked at the opening, under normal operating conditions.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall operate and maintain a system to continuously monitor and record hourly the following information:
 - a. the scrubber solution flow rate, in gallons per minute;
 - b. the pH of the scrubber solution; and
 - c. the fluid level in the scrubber solution holding tanks.
2. The permittee shall install, maintain and operate monitoring devices and a recorder which simultaneously measure and record the pressure inside and outside the building enclosure. The monitoring and recording device shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.
3. The permittee shall maintain the following daily record:
 - a. The difference in pressure between the building enclosure and the surrounding area.
 - b. A log or record of downtime for the capture (collection) system, control device, and monitoring equipment when the associated emissions unit was in operation.
4. The permittee shall maintain the following monthly records:
 - a. the total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016 as measured at mixer #1 or P022;
 - b. the total amount of sand, in tons, employed for emissions units P017, P018, P019, and P020 as measured at mixers #2 and #3;
 - c. the total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016, P017, P018, P019, and P020 (a summation of C.4.a and C.4.b);
 - d. the total amount of sand, in tons, employed for emissions unit P023;
 - e. the cumulative, total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016, P017, P018, P019, and P020 over the past 12 months

- f. the cumulative, total amount of sand, in tons, employed for P023 during the past 12 months; and
- g. a calculation of the Volatile Organic Compound emissions from the scrubber stack:

$$\text{VOC (tons per rolling 12-months)} = [(A_1 \times EF_1) + (A_2 \times EF_2)] \times \text{ton}/2,000 \text{ lbs}$$

Where:

- A_1 = Amount of sand used, in tons/past 12-months, as recorded in Section C.4.e.
- EF_1 = Emissions factor of 0.65 lb VOC/ton of sand, taken from the Feb. 16, 1998 Ohio EPA memo regarding "New Emission Factors for Core/Mold making operations, Part 1." Emission factor is for the phenolic urethane cold-box system.
- A_2 = Amount of sand used, in tons/past 12-months, as recorded in Section C.4.f.
- EF_2 = Emissions factor of 1.17 lb VOC/ton of sand, taken from the Feb. 16, 1998 Ohio EPA memo regarding "New Emission Factors for Core/Mold making operations, Part 1." Emission factor is for the phenolic urethane no-bake system.

- 5. The permittee shall maintain the following annual records:
 - a. the annual operating hours of the scrubber system;
 - b. the total amount of acid employed in the scrubber, in gallons;
 - c. the total amount of sand employed for P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023, in tons per year;
 - d. each type of resin and the amounts of each resin, in tons per year, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023; and
 - e. each type of catalyst and the amounts of each catalyst, in tons per year, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023.

6. The permittee shall calculate and document the following annual emissions rates for each calendar year, January 1 - December 31 by using the following equations:

a. Particulate emissions from the scrubber stack:

$$\text{PE (tons/yr)} = A \times \text{EF} \times \text{ton}/2,000 \text{ lbs}$$

Where:

A = Amount of sand used, in tons/year, as recorded in Section C.5.e.

EF = Emissions factor of 0.35 lb PE/ton of sand, taken from Table 2.8-1 of Ohio EPA's RACM guideline.

b. Naphthalene emissions from the scrubber stack:

$$\text{Naphthalene (tons/yr)} = \text{Summation of } [R \times \%wt \times \% \text{ Rel.}] \text{ for each resin containing Naphthalene that was used during the calendar year.}$$

Where:

R = Amount of resin containing Naphthalene, in tons per year

%wt = percent of Naphthalene, by weight, in the resin.

% Rel.= Value representing % Naphthalene released in the Phenolic Urethane Cold Box Process (P001 - P022) and in the Phenolic Urethane No Bake Process (P023), expressed as a decimal in the equation. Value taken from "Form R, Reporting of Binder Chemicals Used in Foundries, Second Edition, 1998." Value for the Phenolic Urethane Cold Box Process (P001 - P022) is 3.25% or 0.0325, and the value for the Phenolic Urethane No Bake Process (P023) is 5.85% or 0.0585.

7. The permit to install for this emissions unit and the other emissions units in this project (P001-P003, P007-P012, P014-P023) was evaluated based on the actual materials (typically coatings and cleanup 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 this emissions unit 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:

Pollutant: Naphthalene

Maximum Hourly Emission Rate: 1.52 lbs/hr *

TLV: 52,430 ug/m³

MAGLC = TLV/42: 1,248.3 ug/m³

Predicted 1-Hour Maximum Ground-Level Concentration: 19.8 ug/m³

* Emission rate is combined naphthalene emissions from P001-P003, P007-P012, P014-P023.

8. 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 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.).

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.

9. 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.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify the following:
 - a. all periods of time when the sulfuric acid scrubber system was not in use while this emissions unit was in operation;
 - b. all periods of time during which the 1) scrubber solution flow rate is below 150 gallons per minute, 2) fluid level in the scrubber solution holding tanks is below 11 inches, and 3) scrubber solution pH is above 4.5;
 - c. all periods of time during which the differential pressure between the inside and outside of the building enclosure was less than 0.01 inch of water;
 - d. all periods of time during which the interlock system for the loading dock doors did not work, or was not in operation; and
 - e. any month during the quarter when the VOC emissions limitation, as calculated in Section C.3.g, was above 55.55 tons per rolling 12-months.

The quarterly deviation reports shall be submitted in accordance with General Term and Condition A.1.c.ii. The written reports shall be submitted quarterly to the Ohio EPA Northeast District Office, i.e., by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters.

If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report which states that no deviations occurred during the quarter.

2. The permittee shall submit annual reports that identify the following:
 - a. the annual operating hours of the scrubber system;
 - b. the total amount of acid employed in the scrubber (in gallons);

- c. the calculated annual particulate emissions rate as recorded in Section C.6.a;
- d. the calculated annual naphthalene emissions rate as recorded in Section C.6.b;
and
- e. the calculated VOC emissions rate as recorded for the month of December per Section C.4.g.

The annual report shall cover each calendar year, January 1 - December 31, and shall be submitted to the Ohio EPA Northeast District Office by January 31 of each year.

E. Testing Requirements

1. Emission Limitation:

Particulate emissions shall not exceed 0.003 pound per hour

Applicable Compliance Method:

If required by Ohio EPA, compliance with the hourly particulate emissions limitation shall be determined in accordance with 40 CFR Part 60, Appendix A, Methods 1 - 5.

2. Emission Limitation:

Visible particulate emissions from the scrubber stack shall not exceed a 10% opacity as a six-minute average

Applicable Compliance Method:

If required by Ohio EPA, compliance with the allowable visible particulate emissions limit shall be determined in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

3. Emission Limitation:

Volatile Organic Compound emissions shall not exceed 0.03 pound per hour

Applicable Compliance Method:

The permittee shall conduct, or have conducted, volatile organic compound mass emission testing at the outlet of the scrubber stack to demonstrate compliance with the combined allowable hourly volatile organic compound emission rates for all emissions units in operation at the time of testing in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 4 and 18, 25 or 25A, as appropriate, or an equivalent method as approved by the Ohio EPA.

4. Emission Limitation:

Naphthalene emissions shall not exceed 0.002 pound per hour

Applicable Compliance Method:

If required by Ohio EPA, compliance with the above limitation shall be demonstrated in accordance with 40 CFR Part 60, Appendix A, Method 18, or an equivalent method as approved by the Ohio EPA.

5. Emission Limitation:

The sulfuric acid packed bed wet scrubber system serving emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, and P022 shall have a control efficiency (i.e., destruction or removal efficiency) which is at least 98% by weight of the catalyst gas emissions (i.e., Dimethylethylamine or DMEA).

Applicable Compliance Method:

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 40 CFR Part 60, Appendix A, Methods 1 through 4 and 18 (for Dimethylethylamine), or an equivalent method as approved by the Ohio EPA.

6. Emission Limitation:

Particulate emissions from the scrubber stack shall not exceed 22.70 tons per year

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.6.a.

7. Emission Limitation:

Volatile Organic Compound emissions from the scrubber stack shall not exceed 55.55 tons per rolling 12-months.

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.4.g.

8. Emission Limitation:

Naphthalene emissions from the scrubber stack shall not exceed 5.59 tons per year

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.6.b.

9. All of the required tests in Sections E.3 and E.5 shall be conducted within 90 days of issuance of this permit. All of the required tests shall also be conducted while emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 are operating at or near the capacity reported for each emissions unit in the PTI application.

No later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA Northeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions units operating parameters, the time(s) and date(s) of the tests, and the person(s) who will be conducting the tests. Failure to submit such notification for review and approval prior to the tests may result in the Ohio EPA Northeast District Office's refusal to accept the results of the emission tests.

Personnel from the Ohio EPA Northeast District Office shall be permitted to witness the tests, examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions units and the testing procedures provide a valid characterization of the emissions from the emissions units and/or the performance of the control equipment.

A comprehensive written report on the results of the emissions tests shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA Northeast District Office within 30 days following completion of the tests. The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA Northeast District Office.

10. The VOC emissions limitation for each emissions unit, except P023, was calculated using the following: reported maximum use capacity for sand in tons per hour, an emissions factor in lb VOC per ton of sand, and an assumption that 50% of the VOCs are emitted at the mixers and 50% at the mold/core stations. The VOC emissions limitation for P023 included an assumption that 100% of the VOCs are emitted at the unit since mixing and mold making are performed at the same unit.

If all emissions units cannot be operated at the same time during the required testing, then compliance with the hourly VOC emissions rate is determined by comparison of the stack emissions result with the combined allowable hourly VOC emissions rates for all mold/core stations in operation at the time of testing multiplied by two. The multiplication by two accounts for the VOC emissions from the mixer. The allowable hourly VOC emissions rate for P023 would not be doubled. The mixer and station(s) must be operating at the same time during the test.

Compliance with the control efficiency requirement (i.e., destruction or removal efficiency of at least 98% by weight of the catalyst gas emissions, Dimethylethylamine or DMEA) is achieved by comparison of the inlet and outlet emissions results.

F. Miscellaneous Requirements

1. The terms and conditions of this permit supercede those contained in PTI # 17-304 issued on 1/24/85.
2. The terms and conditions in Sections A, B, C.1 through C.6, D and E of this permit are federally enforceable.

Humtown Pattern Company

PTI Application: 02-19424

Issued: To be entered upon final issuance

Facility ID: 0215000242

Emissions Unit ID: P007

3. The maximum production rates of 197 pounds sand per hour and 2 pounds Part I resin per hour were used in the calculations to determine the hourly particulate, volatile organic compound and naphthalene emissions rates under OAC rule 3745-31-05(A)(3) for this emissions unit. These production rates are derived from actual production records. The maximum design capacity for this emissions unit is not known.

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. 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.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
P008 - Mold core station No. 8 vented to a sulfuric acid packed bed wet scrubber	OAC rule 3745-31-05(A)(3)	Particulate (PE) emissions shall not exceed 0.003 pound per hour Volatile Organic Compounds (VOC) emissions shall not exceed 0.03 pound per hour Naphthalene emissions shall not exceed 0.002 pound per hour Visible particulate emissions from the scrubber stack shall not exceed a 10% opacity as a six-minute average See Sections A.2.b & c
	OAC rule 3745-31-05(C)	The maximum sand usage for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015 and P016, as measured at mixer #1, shall not exceed 41,602 tons per year. See Sections A.2.a
	OAC rule 3745-17-07(A)(1)	The visible particulate emission limitation specified by this rule is less stringent than the limitation

<p>OAC rule 3745-17-11(B)(1)</p>	<p>established pursuant to OAC rule 3745-31-05(A)(3).</p> <p>The particulate emissions limitation specified by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).</p>
<p>OAC rule 3745-21-07(G)</p>	<p>Exempt. See Section A.2.d</p>
<p>OAC rule 3745-21-07(G)(9)(h)</p>	<p>The emission limitation specified by this rule is equivalent to the limitation established pursuant to OAC rule 3745-31-05(A)(3).</p>

2. Additional Terms and Conditions

- 2.a** Emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 are contained in a building. Emissions generated at each emissions unit are vented to a sulfuric acid packed bed wet scrubber. Emissions from the scrubber stack shall not exceed 22.70 tons PE per year, 5.59 tons Naphthalene per year, and 55.55 tons VOC per rolling 12-months.
- 2.b** The building housing emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 shall be maintained in such a manner, i.e., under negative pressure and at a minimum pressure differential that is not less than 0.01 inch of water, as to ensure that all emissions generated within the building are vented to the sulfuric acid packed bed wet scrubber whenever any of the emissions units in the building are in operation.
- 2.c** Emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 are considered part of a phenolic urethane cold box resin binder system. The sulfuric acid packed bed wet scrubber system serving these emissions units shall have a control efficiency (i.e., destruction or removal efficiency) which is at least 98% by weight of the catalyst gas emissions (i.e., Dimethylethylamine or DMEA).
- 2.d** OAC rule 3745-21-07(G)(9)(h) states that the provisions of paragraph (G) of the rule shall not apply to the use of a phenolic urethane cold box resin binder system in foundry core making and mold making operations, provided the catalyst gas emissions are vented to either a sulfuric acid scrubber that is designed and operated to remove at least 98%, by weight, of the catalyst gas

emissions or a control device that is designed and operated with an equivalent removal efficiency for the catalyst gas emissions.

B. Operational Restrictions

1. During the first twelve (12) months of operation under this permit, the maximum sand usage for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015 and P016, as measured at mixer #1, shall not exceed the amounts specified for each month in the following table:

<u>Calendar Month</u>	<u>Cumulative Allowable Amount of Sand Usage, in tons</u>
1	3,467
2	6,934
3	10,401
4	13,868
5	17,335
6	20,802
7	24,269
8	27,736
9	31,203
10	34,670
11	38,137
12	41,602

2. The sulfuric acid scrubber system shall be used while this emissions unit is in operation.
3. The scrubber solution flow rate shall be continuously maintained at a value of not less than 150 gallons per minute at all times while the emissions unit is in operation.
4. The pH of the scrubber solution shall be maintained at or below 4.5.
5. The fluid level in the scrubber solution holding tanks shall be maintained above 11 inches.
6. The building housing emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 shall be maintained under negative pressure, at a minimum pressure differential that is not less than 0.01 inch of water, whenever any of the emissions units within the building are in operation.
7. An interlock system shall be employed at the loading dock doors so that the doors may not open unless a truck is parked at the opening, under normal operating conditions.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall operate and maintain a system to continuously monitor and record hourly the following information:
 - a. the scrubber solution flow rate, in gallons per minute;
 - b. the pH of the scrubber solution; and
 - c. the fluid level in the scrubber solution holding tanks.
2. The permittee shall install, maintain and operate monitoring devices and a recorder which simultaneously measure and record the pressure inside and outside the building enclosure. The monitoring and recording device shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.
3. The permittee shall maintain the following daily record:
 - a. The difference in pressure between the building enclosure and the surrounding area.
 - b. A log or record of downtime for the capture (collection) system, control device, and monitoring equipment when the associated emissions unit was in operation.
4. The permittee shall maintain the following monthly records:
 - a. the total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016 as measured at mixer #1 or P022;
 - b. the total amount of sand, in tons, employed for emissions units P017, P018, P019, and P020 as measured at mixers #2 and #3;
 - c. the total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016, P017, P018, P019, and P020 (a summation of C.4.a and C.4.b);
 - d. the total amount of sand, in tons, employed for emissions unit P023;
 - e. the cumulative, total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016, P017, P018, P019, and P020 over the past 12 months

- f. the cumulative, total amount of sand, in tons, employed for P023 during the past 12 months; and
- g. a calculation of the Volatile Organic Compound emissions from the scrubber stack:

$$\text{VOC (tons per rolling 12-months)} = [(A_1 \times EF_1) + (A_2 \times EF_2)] \times \text{ton}/2,000 \text{ lbs}$$

Where:

- A_1 = Amount of sand used, in tons/past 12-months, as recorded in Section C.4.e.
- EF_1 = Emissions factor of 0.65 lb VOC/ton of sand, taken from the Feb. 16, 1998 Ohio EPA memo regarding "New Emission Factors for Core/Mold making operations, Part 1." Emission factor is for the phenolic urethane cold-box system.
- A_2 = Amount of sand used, in tons/past 12-months, as recorded in Section C.4.f.
- EF_2 = Emissions factor of 1.17 lb VOC/ton of sand, taken from the Feb. 16, 1998 Ohio EPA memo regarding "New Emission Factors for Core/Mold making operations, Part 1." Emission factor is for the phenolic urethane no-bake system.

- 5. The permittee shall maintain the following annual records:
 - a. the annual operating hours of the scrubber system;
 - b. the total amount of acid employed in the scrubber, in gallons;
 - c. the total amount of sand employed for P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023, in tons per year;
 - d. each type of resin and the amounts of each resin, in tons per year, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023; and
 - e. each type of catalyst and the amounts of each catalyst, in tons per year, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023.

6. The permittee shall calculate and document the following annual emissions rates for each calendar year, January 1 - December 31 by using the following equations:

a. Particulate emissions from the scrubber stack:

$$\text{PE (tons/yr)} = A \times \text{EF} \times \text{ton}/2,000 \text{ lbs}$$

Where:

A = Amount of sand used, in tons/year, as recorded in Section C.5.e.

EF = Emissions factor of 0.35 lb PE/ton of sand, taken from Table 2.8-1 of Ohio EPA's RACM guideline.

b. Naphthalene emissions from the scrubber stack:

$$\text{Naphthalene (tons/yr)} = \text{Summation of } [R \times \%wt \times \% \text{Rel.}] \text{ for each resin containing Naphthalene that was used during the calendar year.}$$

Where:

R = Amount of resin containing Naphthalene, in tons per year

%wt = percent of Naphthalene, by weight, in the resin.

% Rel.= Value representing % Naphthalene released in the Phenolic Urethane Cold Box Process (P001 - P022) and in the Phenolic Urethane No Bake Process (P023), expressed as a decimal in the equation. Value taken from "Form R, Reporting of Binder Chemicals Used in Foundries, Second Edition, 1998." Value for the Phenolic Urethane Cold Box Process (P001 - P022) is 3.25% or 0.0325, and the value for the Phenolic Urethane No Bake Process (P023) is 5.85% or 0.0585.

7. The permit to install for this emissions unit and the other emissions units in this project (P001-P003, P007-P012, P014-P023) was evaluated based on the actual materials (typically coatings and cleanup 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 this emissions unit 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:

Pollutant: Naphthalene

Maximum Hourly Emission Rate: 1.52 lbs/hr *

TLV: 52,430 ug/m³

MAGLC = TLV/42: 1,248.3 ug/m³

Predicted 1-Hour Maximum Ground-Level Concentration: 19.8 ug/m³

* Emission rate is combined naphthalene emissions from P001-P003, P007-P012, P014-P023.

8. 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 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.).

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.

9. 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.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify the following:
 - a. all periods of time when the sulfuric acid scrubber system was not in use while this emissions unit was in operation;
 - b. all periods of time during which the 1) scrubber solution flow rate is below 150 gallons per minute, 2) fluid level in the scrubber solution holding tanks is below 11 inches, and 3) scrubber solution pH is above 4.5;
 - c. all periods of time during which the differential pressure between the inside and outside of the building enclosure was less than 0.01 inch of water;
 - d. all periods of time during which the interlock system for the loading dock doors did not work, or was not in operation; and
 - e. any month during the quarter when the VOC emissions limitation, as calculated in Section C.3.g, was above 55.55 tons per rolling 12-months.

The quarterly deviation reports shall be submitted in accordance with General Term and Condition A.1.c.ii. The written reports shall be submitted quarterly to the Ohio EPA Northeast District Office, i.e., by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters.

If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report which states that no deviations occurred during the quarter.

2. The permittee shall submit annual reports that identify the following:
 - a. the annual operating hours of the scrubber system;
 - b. the total amount of acid employed in the scrubber (in gallons);

- c. the calculated annual particulate emissions rate as recorded in Section C.6.a;
- d. the calculated annual naphthalene emissions rate as recorded in Section C.6.b;
and
- e. the calculated VOC emissions rate as recorded for the month of December per Section C.4.g.

The annual report shall cover each calendar year, January 1 - December 31, and shall be submitted to the Ohio EPA Northeast District Office by January 31 of each year.

E. Testing Requirements

1. Emission Limitation:

Particulate emissions shall not exceed 0.003 pound per hour

Applicable Compliance Method:

If required by Ohio EPA, compliance with the hourly particulate emissions limitation shall be determined in accordance with 40 CFR Part 60, Appendix A, Methods 1 - 5.

2. Emission Limitation:

Visible particulate emissions from the scrubber stack shall not exceed a 10% opacity as a six-minute average

Applicable Compliance Method:

If required by Ohio EPA, compliance with the allowable visible particulate emissions limit shall be determined in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

3. Emission Limitation:

Volatile Organic Compound emissions shall not exceed 0.03 pound per hour

Applicable Compliance Method:

The permittee shall conduct, or have conducted, volatile organic compound mass emission testing at the outlet of the scrubber stack to demonstrate compliance with the combined allowable hourly volatile organic compound emission rates for all emissions units in operation at the time of testing in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 4 and 18, 25 or 25A, as appropriate, or an equivalent method as approved by the Ohio EPA.

4. Emission Limitation:

Naphthalene emissions shall not exceed 0.002 pound per hour

Applicable Compliance Method:

If required by Ohio EPA, compliance with the above limitation shall be demonstrated in accordance with 40 CFR Part 60, Appendix A, Method 18, or an equivalent method as approved by the Ohio EPA.

5. Emission Limitation:

The sulfuric acid packed bed wet scrubber system serving emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, and P022 shall have a control efficiency (i.e., destruction or removal efficiency) which is at least 98% by weight of the catalyst gas emissions (i.e., Dimethylethylamine or DMEA).

Applicable Compliance Method:

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 40 CFR Part 60, Appendix A, Methods 1 through 4 and 18 (for Dimethylethylamine), or an equivalent method as approved by the Ohio EPA.

6. Emission Limitation:

Particulate emissions from the scrubber stack shall not exceed 22.70 tons per year

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.6.a.

7. Emission Limitation:

Volatile Organic Compound emissions from the scrubber stack shall not exceed 55.55 tons per rolling 12-months.

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.4.g.

8. Emission Limitation:

Naphthalene emissions from the scrubber stack shall not exceed 5.59 tons per year

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.6.b.

9. All of the required tests in Sections E.3 and E.5 shall be conducted within 90 days of issuance of this permit. All of the required tests shall also be conducted while emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 are operating at or near the capacity reported for each emissions unit in the PTI application.

No later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA Northeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions units operating parameters, the time(s) and date(s) of the tests, and the person(s) who will be conducting the tests. Failure to submit such notification for review and approval prior to the tests may result in the Ohio EPA Northeast District Office's refusal to accept the results of the emission tests.

Personnel from the Ohio EPA Northeast District Office shall be permitted to witness the tests, examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions units and the testing procedures provide a valid characterization of the emissions from the emissions units and/or the performance of the control equipment.

A comprehensive written report on the results of the emissions tests shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA Northeast District Office within 30 days following completion of the tests. The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA Northeast District Office.

10. The VOC emissions limitation for each emissions unit, except P023, was calculated using the following: reported maximum use capacity for sand in tons per hour, an emissions factor in lb VOC per ton of sand, and an assumption that 50% of the VOCs are emitted at the mixers and 50% at the mold/core stations. The VOC emissions limitation for P023 included an assumption that 100% of the VOCs are emitted at the unit since mixing and mold making are performed at the same unit.

If all emissions units cannot be operated at the same time during the required testing, then compliance with the hourly VOC emissions rate is determined by comparison of the stack emissions result with the combined allowable hourly VOC emissions rates for all mold/core stations in operation at the time of testing multiplied by two. The multiplication by two accounts for the VOC emissions from the mixer. The allowable hourly VOC emissions rate for P023 would not be doubled. The mixer and station(s) must be operating at the same time during the test.

Compliance with the control efficiency requirement (i.e., destruction or removal efficiency of at least 98% by weight of the catalyst gas emissions, Dimethylethylamine or DMEA) is achieved by comparison of the inlet and outlet emissions results.

F. Miscellaneous Requirements

1. The terms and conditions of this permit supercede those contained in PTI # 17-304 issued on 1/24/85.
2. The terms and conditions in Sections A, B, C.1 through C.6, D and E of this permit are federally enforceable.

Humtown Pattern Company

PTI Application: 02-19424

Issued: To be entered upon final issuance

Facility ID: 0215000242

Emissions Unit ID: P008

3. The maximum production rates of 197 pounds sand per hour and 2 pounds Part I resin per hour were used in the calculations to determine the hourly particulate, volatile organic compound and naphthalene emissions rates under OAC rule 3745-31-05(A)(3) for this emissions unit. These production rates are derived from actual production records. The maximum design capacity for this emissions unit is not known.

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. 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.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
P009 - Mold core station No. 9 vented to a sulfuric acid packed bed wet scrubber	OAC rule 3745-31-05(A)(3)	Particulate (PE) emissions shall not exceed 0.003 pound per hour Volatile Organic Compounds (VOC) emissions shall not exceed 0.03 pound per hour Naphthalene emissions shall not exceed 0.002 pound per hour Visible particulate emissions from the scrubber stack shall not exceed a 10% opacity as a six-minute average See Sections A.2.b & c
	OAC rule 3745-31-05(C)	The maximum sand usage for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015 and P016, as measured at mixer #1, shall not exceed 41,602 tons per year. See Sections A.2.a
	OAC rule 3745-17-07(A)(1)	The visible particulate emission limitation specified by this rule is less stringent than the limitation

OAC rule 3745-17-11(B)(1)	established pursuant to OAC rule 3745-31-05(A)(3). The particulate emissions limitation specified 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)	Exempt. See Section A.2.d
OAC rule 3745-21-07(G)(9)(h)	The emission limitation specified by this rule is equivalent to the limitation established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

- 2.a** Emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 are contained in a building. Emissions generated at each emissions unit are vented to a sulfuric acid packed bed wet scrubber. Emissions from the scrubber stack shall not exceed 22.70 tons PE per year, 5.59 tons Naphthalene per year, and 55.55 tons VOC per rolling 12-months.
- 2.b** The building housing emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 shall be maintained in such a manner, i.e., under negative pressure and at a minimum pressure differential that is not less than 0.01 inch of water, as to ensure that all emissions generated within the building are vented to the sulfuric acid packed bed wet scrubber whenever any of the emissions units in the building are in operation.
- 2.c** Emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 are considered part of a phenolic urethane cold box resin binder system. The sulfuric acid packed bed wet scrubber system serving these emissions units shall have a control efficiency (i.e., destruction or removal efficiency) which is at least 98% by weight of the catalyst gas emissions (i.e., Dimethylethylamine or DMEA).
- 2.d** OAC rule 3745-21-07(G)(9)(h) states that the provisions of paragraph (G) of the rule shall not apply to the use of a phenolic urethane cold box resin binder system in foundry core making and mold making operations, provided the catalyst gas emissions are vented to either a sulfuric acid scrubber that is designed and operated to remove at least 98%, by weight, of the catalyst gas

emissions or a control device that is designed and operated with an equivalent removal efficiency for the catalyst gas emissions.

B. Operational Restrictions

1. During the first twelve (12) months of operation under this permit, the maximum sand usage for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015 and P016, as measured at mixer #1, shall not exceed the amounts specified for each month in the following table:

<u>Calendar Month</u>	<u>Cumulative Allowable Amount of Sand Usage, in tons</u>
1	3,467
2	6,934
3	10,401
4	13,868
5	17,335
6	20,802
7	24,269
8	27,736
9	31,203
10	34,670
11	38,137
12	41,602

2. The sulfuric acid scrubber system shall be used while this emissions unit is in operation.
3. The scrubber solution flow rate shall be continuously maintained at a value of not less than 150 gallons per minute at all times while the emissions unit is in operation.
4. The pH of the scrubber solution shall be maintained at or below 4.5.
5. The fluid level in the scrubber solution holding tanks shall be maintained above 11 inches.
6. The building housing emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 shall be maintained under negative pressure, at a minimum pressure differential that is not less than 0.01 inch of water, whenever any of the emissions units within the building are in operation.
7. An interlock system shall be employed at the loading dock doors so that the doors may not open unless a truck is parked at the opening, under normal operating conditions.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall operate and maintain a system to continuously monitor and record hourly the following information:
 - a. the scrubber solution flow rate, in gallons per minute;
 - b. the pH of the scrubber solution; and
 - c. the fluid level in the scrubber solution holding tanks.
2. The permittee shall install, maintain and operate monitoring devices and a recorder which simultaneously measure and record the pressure inside and outside the building enclosure. The monitoring and recording device shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.
3. The permittee shall maintain the following daily record:
 - a. The difference in pressure between the building enclosure and the surrounding area.
 - b. A log or record of downtime for the capture (collection) system, control device, and monitoring equipment when the associated emissions unit was in operation.
4. The permittee shall maintain the following monthly records:
 - a. the total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016 as measured at mixer #1 or P022;
 - b. the total amount of sand, in tons, employed for emissions units P017, P018, P019, and P020 as measured at mixers #2 and #3;
 - c. the total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016, P017, P018, P019, and P020 (a summation of C.4.a and C.4.b);
 - d. the total amount of sand, in tons, employed for emissions unit P023;
 - e. the cumulative, total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016, P017, P018, P019, and P020 over the past 12 months

- f. the cumulative, total amount of sand, in tons, employed for P023 during the past 12 months; and
- g. a calculation of the Volatile Organic Compound emissions from the scrubber stack:

$$\text{VOC (tons per rolling 12-months)} = [(A_1 \times EF_1) + (A_2 \times EF_2)] \times \text{ton}/2,000 \text{ lbs}$$

Where:

- A_1 = Amount of sand used, in tons/past 12-months, as recorded in Section C.4.e.
- EF_1 = Emissions factor of 0.65 lb VOC/ton of sand, taken from the Feb. 16, 1998 Ohio EPA memo regarding "New Emission Factors for Core/Mold making operations, Part 1." Emission factor is for the phenolic urethane cold-box system.
- A_2 = Amount of sand used, in tons/past 12-months, as recorded in Section C.4.f.
- EF_2 = Emissions factor of 1.17 lb VOC/ton of sand, taken from the Feb. 16, 1998 Ohio EPA memo regarding "New Emission Factors for Core/Mold making operations, Part 1." Emission factor is for the phenolic urethane no-bake system.

- 5. The permittee shall maintain the following annual records:
 - a. the annual operating hours of the scrubber system;
 - b. the total amount of acid employed in the scrubber, in gallons;
 - c. the total amount of sand employed for P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023, in tons per year;
 - d. each type of resin and the amounts of each resin, in tons per year, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023; and
 - e. each type of catalyst and the amounts of each catalyst, in tons per year, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023.

6. The permittee shall calculate and document the following annual emissions rates for each calendar year, January 1 - December 31 by using the following equations:

a. Particulate emissions from the scrubber stack:

$$PE \text{ (tons/yr)} = A \times EF \times \text{ton}/2,000 \text{ lbs}$$

Where:

A = Amount of sand used, in tons/year, as recorded in Section C.5.e.

EF = Emissions factor of 0.35 lb PE/ton of sand, taken from Table 2.8-1 of Ohio EPA's RACM guideline.

b. Naphthalene emissions from the scrubber stack:

$$\text{Naphthalene (tons/yr)} = \text{Summation of } [R \times \%wt \times \% \text{ Rel.}] \text{ for each resin containing Naphthalene that was used during the calendar year.}$$

Where:

R = Amount of resin containing Naphthalene, in tons per year

%wt = percent of Naphthalene, by weight, in the resin.

% Rel.= Value representing % Naphthalene released in the Phenolic Urethane Cold Box Process (P001 - P022) and in the Phenolic Urethane No Bake Process (P023), expressed as a decimal in the equation. Value taken from "Form R, Reporting of Binder Chemicals Used in Foundries, Second Edition, 1998." Value for the Phenolic Urethane Cold Box Process (P001 - P022) is 3.25% or 0.0325, and the value for the Phenolic Urethane No Bake Process (P023) is 5.85% or 0.0585.

7. The permit to install for this emissions unit and the other emissions units in this project (P001-P003, P007-P012, P014-P023) was evaluated based on the actual materials (typically coatings and cleanup 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 this emissions unit 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:

Pollutant: Naphthalene

Maximum Hourly Emission Rate: 1.52 lbs/hr *

TLV: 52,430 ug/m³

MAGLC = TLV/42: 1,248.3 ug/m³

Predicted 1-Hour Maximum Ground-Level Concentration: 19.8 ug/m³

* Emission rate is combined naphthalene emissions from P001-P003, P007-P012, P014-P023.

8. 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 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.).

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.

9. 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.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify the following:
 - a. all periods of time when the sulfuric acid scrubber system was not in use while this emissions unit was in operation;
 - b. all periods of time during which the 1) scrubber solution flow rate is below 150 gallons per minute, 2) fluid level in the scrubber solution holding tanks is below 11 inches, and 3) scrubber solution pH is above 4.5;
 - c. all periods of time during which the differential pressure between the inside and outside of the building enclosure was less than 0.01 inch of water;
 - d. all periods of time during which the interlock system for the loading dock doors did not work, or was not in operation; and
 - e. any month during the quarter when the VOC emissions limitation, as calculated in Section C.3.g, was above 55.55 tons per rolling 12-months.

The quarterly deviation reports shall be submitted in accordance with General Term and Condition A.1.c.ii. The written reports shall be submitted quarterly to the Ohio EPA Northeast District Office, i.e., by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters.

If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report which states that no deviations occurred during the quarter.

2. The permittee shall submit annual reports that identify the following:
 - a. the annual operating hours of the scrubber system;
 - b. the total amount of acid employed in the scrubber (in gallons);

- c. the calculated annual particulate emissions rate as recorded in Section C.6.a;
- d. the calculated annual naphthalene emissions rate as recorded in Section C.6.b;
and
- e. the calculated VOC emissions rate as recorded for the month of December per Section C.4.g.

The annual report shall cover each calendar year, January 1 - December 31, and shall be submitted to the Ohio EPA Northeast District Office by January 31 of each year.

E. Testing Requirements

1. Emission Limitation:

Particulate emissions shall not exceed 0.003 pound per hour

Applicable Compliance Method:

If required by Ohio EPA, compliance with the hourly particulate emissions limitation shall be determined in accordance with 40 CFR Part 60, Appendix A, Methods 1 - 5.

2. Emission Limitation:

Visible particulate emissions from the scrubber stack shall not exceed a 10% opacity as a six-minute average

Applicable Compliance Method:

If required by Ohio EPA, compliance with the allowable visible particulate emissions limit shall be determined in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

3. Emission Limitation:

Volatile Organic Compound emissions shall not exceed 0.03 pound per hour

Applicable Compliance Method:

The permittee shall conduct, or have conducted, volatile organic compound mass emission testing at the outlet of the scrubber stack to demonstrate compliance with the combined allowable hourly volatile organic compound emission rates for all emissions units in operation at the time of testing in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 4 and 18, 25 or 25A, as appropriate, or an equivalent method as approved by the Ohio EPA.

4. Emission Limitation:

Naphthalene emissions shall not exceed 0.002 pound per hour

Applicable Compliance Method:

If required by Ohio EPA, compliance with the above limitation shall be demonstrated in accordance with 40 CFR Part 60, Appendix A, Method 18, or an equivalent method as approved by the Ohio EPA.

5. Emission Limitation:

The sulfuric acid packed bed wet scrubber system serving emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, and P022 shall have a control efficiency (i.e., destruction or removal efficiency) which is at least 98% by weight of the catalyst gas emissions (i.e., Dimethylethylamine or DMEA).

Applicable Compliance Method:

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 40 CFR Part 60, Appendix A, Methods 1 through 4 and 18 (for Dimethylethylamine), or an equivalent method as approved by the Ohio EPA.

6. Emission Limitation:

Particulate emissions from the scrubber stack shall not exceed 22.70 tons per year

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.6.a.

7. Emission Limitation:

Volatile Organic Compound emissions from the scrubber stack shall not exceed 55.55 tons per rolling 12-months.

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.4.g.

8. Emission Limitation:

Naphthalene emissions from the scrubber stack shall not exceed 5.59 tons per year

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.6.b.

9. All of the required tests in Sections E.3 and E.5 shall be conducted within 90 days of issuance of this permit. All of the required tests shall also be conducted while emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 are operating at or near the capacity reported for each emissions unit in the PTI application.

No later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA Northeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions units operating parameters, the time(s) and date(s) of the tests, and the person(s) who will be conducting the tests. Failure to submit such notification for review and approval prior to the tests may result in the Ohio EPA Northeast District Office's refusal to accept the results of the emission tests.

Personnel from the Ohio EPA Northeast District Office shall be permitted to witness the tests, examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions units and the testing procedures provide a valid characterization of the emissions from the emissions units and/or the performance of the control equipment.

A comprehensive written report on the results of the emissions tests shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA Northeast District Office within 30 days following completion of the tests. The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA Northeast District Office.

10. The VOC emissions limitation for each emissions unit, except P023, was calculated using the following: reported maximum use capacity for sand in tons per hour, an emissions factor in lb VOC per ton of sand, and an assumption that 50% of the VOCs are emitted at the mixers and 50% at the mold/core stations. The VOC emissions limitation for P023 included an assumption that 100% of the VOCs are emitted at the unit since mixing and mold making are performed at the same unit.

If all emissions units cannot be operated at the same time during the required testing, then compliance with the hourly VOC emissions rate is determined by comparison of the stack emissions result with the combined allowable hourly VOC emissions rates for all mold/core stations in operation at the time of testing multiplied by two. The multiplication by two accounts for the VOC emissions from the mixer. The allowable hourly VOC emissions rate for P023 would not be doubled. The mixer and station(s) must be operating at the same time during the test.

Compliance with the control efficiency requirement (i.e., destruction or removal efficiency of at least 98% by weight of the catalyst gas emissions, Dimethylethylamine or DMEA) is achieved by comparison of the inlet and outlet emissions results.

F. Miscellaneous Requirements

1. The terms and conditions of this permit supercede those contained in PTI # 17-304 issued on 1/24/85.
2. The terms and conditions in Sections A, B, C.1 through C.6, D and E of this permit are federally enforceable.

Humtown Pattern Company

PTI Application: 02-19424

Issued: To be entered upon final issuance

Facility ID: 0215000242

Emissions Unit ID: P009

3. The maximum production rates of 197 pounds sand per hour and 2 pounds Part I resin per hour were used in the calculations to determine the hourly particulate, volatile organic compound and naphthalene emissions rates under OAC rule 3745-31-05(A)(3) for this emissions unit. These production rates are derived from actual production records. The maximum design capacity for this emissions unit is not known.

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. 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.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
P010 - Mold core station No. 10 vented to a sulfuric acid packed bed wet scrubber	OAC rule 3745-31-05(A)(3)	Particulate (PE) emissions shall not exceed 0.01 pound per hour Volatile Organic Compounds (VOC) emissions shall not exceed 0.10 pound per hour Naphthalene emissions shall not exceed 0.004 pound per hour Visible particulate emissions from the scrubber stack shall not exceed a 10% opacity as a six-minute average See Sections A.2.b & c
	OAC rule 3745-31-05(C)	The maximum sand usage for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015 and P016, as measured at mixer #1, shall not exceed 41,602 tons per year. See Sections A.2.a
	OAC rule 3745-17-07(A)(1)	The visible particulate emission limitation specified by this rule is less stringent than the limitation

OAC rule 3745-17-11(B)(1)	established pursuant to OAC rule 3745-31-05(A)(3). The particulate emissions limitation specified 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)	Exempt. See Section A.2.d
OAC rule 3745-21-07(G)(9)(h)	The emission limitation specified by this rule is equivalent to the limitation established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

- 2.a** Emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 are contained in a building. Emissions generated at each emissions unit are vented to a sulfuric acid packed bed wet scrubber. Emissions from the scrubber stack shall not exceed 22.70 tons PE per year, 5.59 tons Naphthalene per year, and 55.55 tons VOC per rolling 12-months.
- 2.b** The building housing emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 shall be maintained in such a manner, i.e., under negative pressure and at a minimum pressure differential that is not less than 0.01 inch of water, as to ensure that all emissions generated within the building are vented to the sulfuric acid packed bed wet scrubber whenever any of the emissions units in the building are in operation.
- 2.c** Emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 are considered part of a phenolic urethane cold box resin binder system. The sulfuric acid packed bed wet scrubber system serving these emissions units shall have a control efficiency (i.e., destruction or removal efficiency) which is at least 98% by weight of the catalyst gas emissions (i.e., Dimethylethylamine or DMEA).
- 2.d** OAC rule 3745-21-07(G)(9)(h) states that the provisions of paragraph (G) of the rule shall not apply to the use of a phenolic urethane cold box resin binder system in foundry core making and mold making operations, provided the catalyst gas emissions are vented to either a sulfuric acid scrubber that is designed and operated to remove at least 98%, by weight, of the catalyst gas

emissions or a control device that is designed and operated with an equivalent removal efficiency for the catalyst gas emissions.

B. Operational Restrictions

1. During the first twelve (12) months of operation under this permit, the maximum sand usage for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015 and P016, as measured at mixer #1, shall not exceed the amounts specified for each month in the following table:

<u>Calendar Month</u>	<u>Cumulative Allowable Amount of Sand Usage, in tons</u>
1	3,467
2	6,934
3	10,401
4	13,868
5	17,335
6	20,802
7	24,269
8	27,736
9	31,203
10	34,670
11	38,137
12	41,602

2. The sulfuric acid scrubber system shall be used while this emissions unit is in operation.
3. The scrubber solution flow rate shall be continuously maintained at a value of not less than 150 gallons per minute at all times while the emissions unit is in operation.
4. The pH of the scrubber solution shall be maintained at or below 4.5.
5. The fluid level in the scrubber solution holding tanks shall be maintained above 11 inches.
6. The building housing emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 shall be maintained under negative pressure, at a minimum pressure differential that is not less than 0.01 inch of water, whenever any of the emissions units within the building are in operation.
7. An interlock system shall be employed at the loading dock doors so that the doors may not open unless a truck is parked at the opening, under normal operating conditions.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall operate and maintain a system to continuously monitor and record hourly the following information:
 - a. the scrubber solution flow rate, in gallons per minute;
 - b. the pH of the scrubber solution; and
 - c. the fluid level in the scrubber solution holding tanks.
2. The permittee shall install, maintain and operate monitoring devices and a recorder which simultaneously measure and record the pressure inside and outside the building enclosure. The monitoring and recording device shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.
3. The permittee shall maintain the following daily record:
 - a. The difference in pressure between the building enclosure and the surrounding area.
 - b. A log or record of downtime for the capture (collection) system, control device, and monitoring equipment when the associated emissions unit was in operation.
4. The permittee shall maintain the following monthly records:
 - a. the total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016 as measured at mixer #1 or P022;
 - b. the total amount of sand, in tons, employed for emissions units P017, P018, P019, and P020 as measured at mixers #2 and #3;
 - c. the total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016, P017, P018, P019, and P020 (a summation of C.4.a and C.4.b);
 - d. the total amount of sand, in tons, employed for emissions unit P023;
 - e. the cumulative, total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016, P017, P018, P019, and P020 over the past 12 months

- f. the cumulative, total amount of sand, in tons, employed for P023 during the past 12 months; and
- g. a calculation of the Volatile Organic Compound emissions from the scrubber stack:

$$\text{VOC (tons per rolling 12-months)} = [(A_1 \times EF_1) + (A_2 \times EF_2)] \times \text{ton}/2,000 \text{ lbs}$$

Where:

- A_1 = Amount of sand used, in tons/past 12-months, as recorded in Section C.4.e.
- EF_1 = Emissions factor of 0.65 lb VOC/ton of sand, taken from the Feb. 16, 1998 Ohio EPA memo regarding "New Emission Factors for Core/Mold making operations, Part 1." Emission factor is for the phenolic urethane cold-box system.
- A_2 = Amount of sand used, in tons/past 12-months, as recorded in Section C.4.f.
- EF_2 = Emissions factor of 1.17 lb VOC/ton of sand, taken from the Feb. 16, 1998 Ohio EPA memo regarding "New Emission Factors for Core/Mold making operations, Part 1." Emission factor is for the phenolic urethane no-bake system.

- 5. The permittee shall maintain the following annual records:
 - a. the annual operating hours of the scrubber system;
 - b. the total amount of acid employed in the scrubber, in gallons;
 - c. the total amount of sand employed for P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023, in tons per year;
 - d. each type of resin and the amounts of each resin, in tons per year, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023; and
 - e. each type of catalyst and the amounts of each catalyst, in tons per year, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023.

6. The permittee shall calculate and document the following annual emissions rates for each calendar year, January 1 - December 31 by using the following equations:

a. Particulate emissions from the scrubber stack:

$$PE \text{ (tons/yr)} = A \times EF \times \text{ton}/2,000 \text{ lbs}$$

Where:

A = Amount of sand used, in tons/year, as recorded in Section C.5.e.

EF = Emissions factor of 0.35 lb PE/ton of sand, taken from Table 2.8-1 of Ohio EPA's RACM guideline.

b. Naphthalene emissions from the scrubber stack:

$$\text{Naphthalene (tons/yr)} = \text{Summation of } [R \times \%wt \times \% \text{ Rel.}] \text{ for each resin containing Naphthalene that was used during the calendar year.}$$

Where:

R = Amount of resin containing Naphthalene, in tons per year

%wt = percent of Naphthalene, by weight, in the resin.

% Rel.= Value representing % Naphthalene released in the Phenolic Urethane Cold Box Process (P001 - P022) and in the Phenolic Urethane No Bake Process (P023), expressed as a decimal in the equation. Value taken from "Form R, Reporting of Binder Chemicals Used in Foundries, Second Edition, 1998." Value for the Phenolic Urethane Cold Box Process (P001 - P022) is 3.25% or 0.0325, and the value for the Phenolic Urethane No Bake Process (P023) is 5.85% or 0.0585.

7. The permit to install for this emissions unit and the other emissions units in this project (P001-P003, P007-P012, P014-P023) was evaluated based on the actual materials (typically coatings and cleanup 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 this emissions unit 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:

Pollutant: Naphthalene

Maximum Hourly Emission Rate: 1.52 lbs/hr *

TLV: 52,430 ug/m³

MAGLC = TLV/42: 1,248.3 ug/m³

Predicted 1-Hour Maximum Ground-Level Concentration: 19.8 ug/m³

* Emission rate is combined naphthalene emissions from P001-P003, P007-P012, P014-P023.

8. 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 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.).

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.

9. 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.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify the following:
 - a. all periods of time when the sulfuric acid scrubber system was not in use while this emissions unit was in operation;
 - b. all periods of time during which the 1) scrubber solution flow rate is below 150 gallons per minute, 2) fluid level in the scrubber solution holding tanks is below 11 inches, and 3) scrubber solution pH is above 4.5;
 - c. all periods of time during which the differential pressure between the inside and outside of the building enclosure was less than 0.01 inch of water;
 - d. all periods of time during which the interlock system for the loading dock doors did not work, or was not in operation; and
 - e. any month during the quarter when the VOC emissions limitation, as calculated in Section C.3.g, was above 55.55 tons per rolling 12-months.

The quarterly deviation reports shall be submitted in accordance with General Term and Condition A.1.c.ii. The written reports shall be submitted quarterly to the Ohio EPA Northeast District Office, i.e., by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters.

If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report which states that no deviations occurred during the quarter.

2. The permittee shall submit annual reports that identify the following:
 - a. the annual operating hours of the scrubber system;
 - b. the total amount of acid employed in the scrubber (in gallons);

- c. the calculated annual particulate emissions rate as recorded in Section C.6.a;
- d. the calculated annual naphthalene emissions rate as recorded in Section C.6.b;
and
- e. the calculated VOC emissions rate as recorded for the month of December per Section C.4.g.

The annual report shall cover each calendar year, January 1 - December 31, and shall be submitted to the Ohio EPA Northeast District Office by January 31 of each year.

E. Testing Requirements

1. Emission Limitation:

Particulate emissions shall not exceed 0.01 pound per hour

Applicable Compliance Method:

If required by Ohio EPA, compliance with the hourly particulate emissions limitation shall be determined in accordance with 40 CFR Part 60, Appendix A, Methods 1 - 5.

2. Emission Limitation:

Visible particulate emissions from the scrubber stack shall not exceed a 10% opacity as a six-minute average

Applicable Compliance Method:

If required by Ohio EPA, compliance with the allowable visible particulate emissions limit shall be determined in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

3. Emission Limitation:

Volatile Organic Compound emissions shall not exceed 0.10 pound per hour

Applicable Compliance Method:

The permittee shall conduct, or have conducted, volatile organic compound mass emission testing at the outlet of the scrubber stack to demonstrate compliance with the combined allowable hourly volatile organic compound emission rates for all emissions units in operation at the time of testing in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 4 and 18, 25 or 25A, as appropriate, or an equivalent method as approved by the Ohio EPA.

4. Emission Limitation:

Naphthalene emissions shall not exceed 0.004 pound per hour

Applicable Compliance Method:

If required by Ohio EPA, compliance with the above limitation shall be demonstrated in accordance with 40 CFR Part 60, Appendix A, Method 18, or an equivalent method as approved by the Ohio EPA.

5. Emission Limitation:

The sulfuric acid packed bed wet scrubber system serving emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, and P022 shall have a control efficiency (i.e., destruction or removal efficiency) which is at least 98% by weight of the catalyst gas emissions (i.e., Dimethylethylamine or DMEA).

Applicable Compliance Method:

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 40 CFR Part 60, Appendix A, Methods 1 through 4 and 18 (for Dimethylethylamine), or an equivalent method as approved by the Ohio EPA.

6. Emission Limitation:

Particulate emissions from the scrubber stack shall not exceed 22.70 tons per year

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.6.a.

7. Emission Limitation:

Volatile Organic Compound emissions from the scrubber stack shall not exceed 55.55 tons per rolling 12-months.

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.4.g.

8. Emission Limitation:

Naphthalene emissions from the scrubber stack shall not exceed 5.59 tons per year

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.6.b.

9. All of the required tests in Sections E.3 and E.5 shall be conducted within 90 days of issuance of this permit. All of the required tests shall also be conducted while emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 are operating at or near the capacity reported for each emissions unit in the PTI application.

No later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA Northeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions units operating parameters, the time(s) and date(s) of the tests, and the person(s) who will be conducting the tests. Failure to submit such notification for review and approval prior to the tests may result in the Ohio EPA Northeast District Office's refusal to accept the results of the emission tests.

Personnel from the Ohio EPA Northeast District Office shall be permitted to witness the tests, examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions units and the testing procedures provide a valid characterization of the emissions from the emissions units and/or the performance of the control equipment.

A comprehensive written report on the results of the emissions tests shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA Northeast District Office within 30 days following completion of the tests. The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA Northeast District Office.

10. The VOC emissions limitation for each emissions unit, except P023, was calculated using the following: reported maximum use capacity for sand in tons per hour, an emissions factor in lb VOC per ton of sand, and an assumption that 50% of the VOCs are emitted at the mixers and 50% at the mold/core stations. The VOC emissions limitation for P023 included an assumption that 100% of the VOCs are emitted at the unit since mixing and mold making are performed at the same unit.

If all emissions units cannot be operated at the same time during the required testing, then compliance with the hourly VOC emissions rate is determined by comparison of the stack emissions result with the combined allowable hourly VOC emissions rates for all mold/core stations in operation at the time of testing multiplied by two. The multiplication by two accounts for the VOC emissions from the mixer. The allowable hourly VOC emissions rate for P023 would not be doubled. The mixer and station(s) must be operating at the same time during the test.

Compliance with the control efficiency requirement (i.e., destruction or removal efficiency of at least 98% by weight of the catalyst gas emissions, Dimethylethylamine or DMEA) is achieved by comparison of the inlet and outlet emissions results.

F. Miscellaneous Requirements

1. The terms and conditions of this permit supercede those contained in PTI # 17-814 issued on 7/25/90.
2. The terms and conditions in Sections A, B, C.1 through C.6, D and E of this permit are federally enforceable.

Humtown Pattern Company

PTI Application: 02-19424

Issued: To be entered upon final issuance

Facility ID: 0215000242

Emissions Unit ID: P010

3. The maximum production rates of 591 pounds sand per hour and 5 pounds Part I resin per hour were used in the calculations to determine the hourly particulate, volatile organic compound and naphthalene emissions rates under OAC rule 3745-31-05(A)(3) for this emissions unit. These production rates are derived from actual production records. The maximum design capacity for this emissions unit is not known.

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. 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.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
P011 - Mold core station No. 11 vented to a sulfuric acid packed bed wet scrubber	OAC rule 3745-31-05(A)(3)	Particulate (PE) emissions shall not exceed 0.01 pound per hour Volatile Organic Compounds (VOC) emissions shall not exceed 0.09 pound per hour Naphthalene emissions shall not exceed 0.003 pound per hour Visible particulate emissions from the scrubber stack shall not exceed a 10% opacity as a six-minute average See Sections A.2.b & c
	OAC rule 3745-31-05(C)	The maximum sand usage for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015 and P016, as measured at mixer #1, shall not exceed 41,602 tons per year. See Sections A.2.a
	OAC rule 3745-17-07(A)(1)	The visible particulate emission limitation specified by this rule is less stringent than the limitation

OAC rule 3745-17-11(B)(1)	established pursuant to OAC rule 3745-31-05(A)(3). The particulate emissions limitation specified 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)	Exempt. See Section A.2.d
OAC rule 3745-21-07(G)(9)(h)	The emission limitation specified by this rule is equivalent to the limitation established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

- 2.a** Emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 are contained in a building. Emissions generated at each emissions unit are vented to a sulfuric acid packed bed wet scrubber. Emissions from the scrubber stack shall not exceed 22.70 tons PE per year, 5.59 tons Naphthalene per year, and 55.55 tons VOC per rolling 12-months.
- 2.b** The building housing emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 shall be maintained in such a manner, i.e., under negative pressure and at a minimum pressure differential that is not less than 0.01 inch of water, as to ensure that all emissions generated within the building are vented to the sulfuric acid packed bed wet scrubber whenever any of the emissions units in the building are in operation.
- 2.c** Emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 are considered part of a phenolic urethane cold box resin binder system. The sulfuric acid packed bed wet scrubber system serving these emissions units shall have a control efficiency (i.e., destruction or removal efficiency) which is at least 98% by weight of the catalyst gas emissions (i.e., Dimethylethylamine or DMEA).
- 2.d** OAC rule 3745-21-07(G)(9)(h) states that the provisions of paragraph (G) of the rule shall not apply to the use of a phenolic urethane cold box resin binder system in foundry core making and mold making operations, provided the catalyst gas emissions are vented to either a sulfuric acid scrubber that is designed and operated to remove at least 98%, by weight, of the catalyst gas

emissions or a control device that is designed and operated with an equivalent removal efficiency for the catalyst gas emissions.

B. Operational Restrictions

1. During the first twelve (12) months of operation under this permit, the maximum sand usage for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015 and P016, as measured at mixer #1, shall not exceed the amounts specified for each month in the following table:

<u>Calendar Month</u>	<u>Cumulative Allowable Amount of Sand Usage, in tons</u>
1	3,467
2	6,934
3	10,401
4	13,868
5	17,335
6	20,802
7	24,269
8	27,736
9	31,203
10	34,670
11	38,137
12	41,602

2. The sulfuric acid scrubber system shall be used while this emissions unit is in operation.
3. The scrubber solution flow rate shall be continuously maintained at a value of not less than 150 gallons per minute at all times while the emissions unit is in operation.
4. The pH of the scrubber solution shall be maintained at or below 4.5.
5. The fluid level in the scrubber solution holding tanks shall be maintained above 11 inches.
6. The building housing emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 shall be maintained under negative pressure, at a minimum pressure differential that is not less than 0.01 inch of water, whenever any of the emissions units within the building are in operation.
7. An interlock system shall be employed at the loading dock doors so that the doors may not open unless a truck is parked at the opening, under normal operating conditions.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall operate and maintain a system to continuously monitor and record hourly the following information:
 - a. the scrubber solution flow rate, in gallons per minute;
 - b. the pH of the scrubber solution; and
 - c. the fluid level in the scrubber solution holding tanks.
2. The permittee shall install, maintain and operate monitoring devices and a recorder which simultaneously measure and record the pressure inside and outside the building enclosure. The monitoring and recording device shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.
3. The permittee shall maintain the following daily record:
 - a. The difference in pressure between the building enclosure and the surrounding area.
 - b. A log or record of downtime for the capture (collection) system, control device, and monitoring equipment when the associated emissions unit was in operation.
4. The permittee shall maintain the following monthly records:
 - a. the total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016 as measured at mixer #1 or P022;
 - b. the total amount of sand, in tons, employed for emissions units P017, P018, P019, and P020 as measured at mixers #2 and #3;
 - c. the total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016, P017, P018, P019, and P020 (a summation of C.4.a and C.4.b);
 - d. the total amount of sand, in tons, employed for emissions unit P023;
 - e. the cumulative, total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016, P017, P018, P019, and P020 over the past 12 months

- f. the cumulative, total amount of sand, in tons, employed for P023 during the past 12 months; and
- g. a calculation of the Volatile Organic Compound emissions from the scrubber stack:

$$\text{VOC (tons per rolling 12-months)} = [(A_1 \times EF_1) + (A_2 \times EF_2)] \times \text{ton}/2,000 \text{ lbs}$$

Where:

- A_1 = Amount of sand used, in tons/past 12-months, as recorded in Section C.4.e.
- EF_1 = Emissions factor of 0.65 lb VOC/ton of sand, taken from the Feb. 16, 1998 Ohio EPA memo regarding "New Emission Factors for Core/Mold making operations, Part 1." Emission factor is for the phenolic urethane cold-box system.
- A_2 = Amount of sand used, in tons/past 12-months, as recorded in Section C.4.f.
- EF_2 = Emissions factor of 1.17 lb VOC/ton of sand, taken from the Feb. 16, 1998 Ohio EPA memo regarding "New Emission Factors for Core/Mold making operations, Part 1." Emission factor is for the phenolic urethane no-bake system.

- 5. The permittee shall maintain the following annual records:
 - a. the annual operating hours of the scrubber system;
 - b. the total amount of acid employed in the scrubber, in gallons;
 - c. the total amount of sand employed for P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023, in tons per year;
 - d. each type of resin and the amounts of each resin, in tons per year, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023; and
 - e. each type of catalyst and the amounts of each catalyst, in tons per year, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023.

6. The permittee shall calculate and document the following annual emissions rates for each calendar year, January 1 - December 31 by using the following equations:

a. Particulate emissions from the scrubber stack:

$$PE \text{ (tons/yr)} = A \times EF \times \text{ton}/2,000 \text{ lbs}$$

Where:

A = Amount of sand used, in tons/year, as recorded in Section C.5.e.

EF = Emissions factor of 0.35 lb PE/ton of sand, taken from Table 2.8-1 of Ohio EPA's RACM guideline.

b. Naphthalene emissions from the scrubber stack:

$$\text{Naphthalene (tons/yr)} = \text{Summation of } [R \times \%wt \times \% \text{ Rel.}] \text{ for each resin containing Naphthalene that was used during the calendar year.}$$

Where:

R = Amount of resin containing Naphthalene, in tons per year

%wt = percent of Naphthalene, by weight, in the resin.

% Rel.= Value representing % Naphthalene released in the Phenolic Urethane Cold Box Process (P001 - P022) and in the Phenolic Urethane No Bake Process (P023), expressed as a decimal in the equation. Value taken from "Form R, Reporting of Binder Chemicals Used in Foundries, Second Edition, 1998." Value for the Phenolic Urethane Cold Box Process (P001 - P022) is 3.25% or 0.0325, and the value for the Phenolic Urethane No Bake Process (P023) is 5.85% or 0.0585.

7. The permit to install for this emissions unit and the other emissions units in this project (P001-P003, P007-P012, P014-P023) was evaluated based on the actual materials (typically coatings and cleanup 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 this emissions unit 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:

Pollutant: Naphthalene

Maximum Hourly Emission Rate: 1.52 lbs/hr *

TLV: 52,430 ug/m³

MAGLC = TLV/42: 1,248.3 ug/m³

Predicted 1-Hour Maximum Ground-Level Concentration: 19.8 ug/m³

* Emission rate is combined naphthalene emissions from P001-P003, P007-P012, P014-P023.

8. 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 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.).

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.

9. 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.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify the following:
 - a. all periods of time when the sulfuric acid scrubber system was not in use while this emissions unit was in operation;
 - b. all periods of time during which the 1) scrubber solution flow rate is below 150 gallons per minute, 2) fluid level in the scrubber solution holding tanks is below 11 inches, and 3) scrubber solution pH is above 4.5;
 - c. all periods of time during which the differential pressure between the inside and outside of the building enclosure was less than 0.01 inch of water;
 - d. all periods of time during which the interlock system for the loading dock doors did not work, or was not in operation; and
 - e. any month during the quarter when the VOC emissions limitation, as calculated in Section C.3.g, was above 55.55 tons per rolling 12-months.

The quarterly deviation reports shall be submitted in accordance with General Term and Condition A.1.c.ii. The written reports shall be submitted quarterly to the Ohio EPA Northeast District Office, i.e., by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters.

If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report which states that no deviations occurred during the quarter.

2. The permittee shall submit annual reports that identify the following:
 - a. the annual operating hours of the scrubber system;
 - b. the total amount of acid employed in the scrubber (in gallons);
 - c. the calculated annual particulate emissions rate as recorded in Section C.6.a;

- d. the calculated annual naphthalene emissions rate as recorded in Section C.6.b; and
- e. the calculated VOC emissions rate as recorded for the month of December per Section C.4.g.

The annual report shall cover each calendar year, January 1 - December 31, and shall be submitted to the Ohio EPA Northeast District Office by January 31 of each year.

E. Testing Requirements

1. Emission Limitation:

Particulate emissions shall not exceed 0.01 pound per hour

Applicable Compliance Method:

If required by Ohio EPA, compliance with the hourly particulate emissions limitation shall be determined in accordance with 40 CFR Part 60, Appendix A, Methods 1 - 5.

2. Emission Limitation:

Visible particulate emissions from the scrubber stack shall not exceed a 10% opacity as a six-minute average

Applicable Compliance Method:

If required by Ohio EPA, compliance with the allowable visible particulate emissions limit shall be determined in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

3. Emission Limitation:

Volatile Organic Compound emissions shall not exceed 0.09 pound per hour

Applicable Compliance Method:

The permittee shall conduct, or have conducted, volatile organic compound mass emission testing at the outlet of the scrubber stack to demonstrate compliance with the combined allowable hourly volatile organic compound emission rates for all emissions units in operation at the time of testing in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 4 and 18, 25 or 25A, as appropriate, or an equivalent method as approved by the Ohio EPA.

4. Emission Limitation:

Naphthalene emissions shall not exceed 0.003 pound per hour

Applicable Compliance Method:

If required by Ohio EPA, compliance with the above limitation shall be demonstrated in accordance with 40 CFR Part 60, Appendix A, Method 18, or an equivalent method as approved by the Ohio EPA.

5. Emission Limitation:

The sulfuric acid packed bed wet scrubber system serving emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, and P022 shall have a control efficiency (i.e., destruction or removal efficiency) which is at least 98% by weight of the catalyst gas emissions (i.e., Dimethylethylamine or DMEA).

Applicable Compliance Method:

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 40 CFR Part 60, Appendix A, Methods 1 through 4 and 18 (for Dimethylethylamine), or an equivalent method as approved by the Ohio EPA.

6. Emission Limitation:

Particulate emissions from the scrubber stack shall not exceed 22.70 tons per year

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.6.a.

7. Emission Limitation:

Volatile Organic Compound emissions from the scrubber stack shall not exceed 55.55 tons per rolling 12-months.

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.4.g.

8. Emission Limitation:

Naphthalene emissions from the scrubber stack shall not exceed 5.59 tons per year

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.6.b.

9. All of the required tests in Sections E.3 and E.5 shall be conducted within 90 days of issuance of this permit. All of the required tests shall also be conducted while emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 are operating at or near the capacity reported for each emissions unit in the PTI application.

No later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA Northeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions units operating parameters, the time(s) and date(s) of the tests, and the person(s) who will be conducting the tests. Failure to submit such notification for review

and approval prior to the tests may result in the Ohio EPA Northeast District Office's refusal to accept the results of the emission tests.

Personnel from the Ohio EPA Northeast District Office shall be permitted to witness the tests, examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions units and the testing procedures provide a valid characterization of the emissions from the emissions units and/or the performance of the control equipment.

A comprehensive written report on the results of the emissions tests shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA Northeast District Office within 30 days following completion of the tests. The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA Northeast District Office.

10. The VOC emissions limitation for each emissions unit, except P023, was calculated using the following: reported maximum use capacity for sand in tons per hour, an emissions factor in lb VOC per ton of sand, and an assumption that 50% of the VOCs are emitted at the mixers and 50% at the mold/core stations. The VOC emissions limitation for P023 included an assumption that 100% of the VOCs are emitted at the unit since mixing and mold making are performed at the same unit.

If all emissions units cannot be operated at the same time during the required testing, then compliance with the hourly VOC emissions rate is determined by comparison of the stack emissions result with the combined allowable hourly VOC emissions rates for all mold/core stations in operation at the time of testing multiplied by two. The multiplication by two accounts for the VOC emissions from the mixer. The allowable hourly VOC emissions rate for P023 would not be doubled. The mixer and station(s) must be operating at the same time during the test.

Compliance with the control efficiency requirement (i.e., destruction or removal efficiency of at least 98% by weight of the catalyst gas emissions, Dimethylethylamine or DMEA) is achieved by comparison of the inlet and outlet emissions results.

F. Miscellaneous Requirements

1. The terms and conditions of this permit supercede those contained in PTI # 17-814 issued on 7/25/90.
2. The terms and conditions in Sections A, B, C.1 through C.6, D and E of this permit are federally enforceable.

Humtown Pattern Company

PTI Application: 02-19424

Issued: To be entered upon final issuance

Facility ID: 0215000242

Emissions Unit ID: P011

3. The maximum production rates of 541 pounds sand per hour and 4 pounds Part I resin per hour were used in the calculations to determine the hourly particulate, volatile organic compound and naphthalene emissions rates under OAC rule 3745-31-05(A)(3) for this emissions unit. These production rates are derived from actual production records. The maximum design capacity for this emissions unit is not known.

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. Applicable Emissions Limitations and/or Control Requirements

- 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.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
P012 - Mold core station No. 12 vented to a sulfuric acid packed bed wet scrubber	OAC rule 3745-31-05(A)(3)	Particulate (PE) emissions shall not exceed 0.01 pound per hour Volatile Organic Compounds (VOC) emissions shall not exceed 0.10 pound per hour Naphthalene emissions shall not exceed 0.004 pound per hour Visible particulate emissions from the scrubber stack shall not exceed a 10% opacity as a six-minute average See Sections A.2.b & c
	OAC rule 3745-31-05(C)	The maximum sand usage for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015 and P016, as measured at mixer #1, shall not exceed 41,602 tons per year. See Sections A.2.a
	OAC rule 3745-17-07(A)(1)	The visible particulate emission limitation specified by this rule is less stringent than the limitation

OAC rule 3745-17-11(B)(1)	established pursuant to OAC rule 3745-31-05(A)(3). The particulate emissions limitation specified 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)	Exempt. See Section A.2.d
OAC rule 3745-21-07(G)(9)(h)	The emission limitation specified by this rule is equivalent to the limitation established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

- 2.a** Emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 are contained in a building. Emissions generated at each emissions unit are vented to a sulfuric acid packed bed wet scrubber. Emissions from the scrubber stack shall not exceed 22.70 tons PE per year, 5.59 tons Naphthalene per year, and 55.55 tons VOC per rolling 12-months.
- 2.b** The building housing emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 shall be maintained in such a manner, i.e., under negative pressure and at a minimum pressure differential that is not less than 0.01 inch of water, as to ensure that all emissions generated within the building are vented to the sulfuric acid packed bed wet scrubber whenever any of the emissions units in the building are in operation.
- 2.c** Emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 are considered part of a phenolic urethane cold box resin binder system. The sulfuric acid packed bed wet scrubber system serving these emissions units shall have a control efficiency (i.e., destruction or removal efficiency) which is at least 98% by weight of the catalyst gas emissions (i.e., Dimethylethylamine or DMEA).
- 2.d** OAC rule 3745-21-07(G)(9)(h) states that the provisions of paragraph (G) of the rule shall not apply to the use of a phenolic urethane cold box resin binder system in foundry core making and mold making operations, provided the catalyst gas emissions are vented to either a sulfuric acid scrubber that is designed and operated to remove at least 98%, by weight, of the catalyst gas

emissions or a control device that is designed and operated with an equivalent removal efficiency for the catalyst gas emissions.

B. Operational Restrictions

1. During the first twelve (12) months of operation under this permit, the maximum sand usage for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015 and P016, as measured at mixer #1, shall not exceed the amounts specified for each month in the following table:

<u>Calendar Month</u>	<u>Cumulative Allowable Amount of Sand Usage, in tons</u>
1	3,467
2	6,934
3	10,401
4	13,868
5	17,335
6	20,802
7	24,269
8	27,736
9	31,203
10	34,670
11	38,137
12	41,602

2. The sulfuric acid scrubber system shall be used while this emissions unit is in operation.
3. The scrubber solution flow rate shall be continuously maintained at a value of not less than 150 gallons per minute at all times while the emissions unit is in operation.
4. The pH of the scrubber solution shall be maintained at or below 4.5.
5. The fluid level in the scrubber solution holding tanks shall be maintained above 11 inches.
6. The building housing emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 shall be maintained under negative pressure, at a minimum pressure differential that is not less than 0.01 inch of water, whenever any of the emissions units within the building are in operation.
7. An interlock system shall be employed at the loading dock doors so that the doors may not open unless a truck is parked at the opening, under normal operating conditions.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall operate and maintain a system to continuously monitor and record hourly the following information:
 - a. the scrubber solution flow rate, in gallons per minute;
 - b. the pH of the scrubber solution; and
 - c. the fluid level in the scrubber solution holding tanks.
2. The permittee shall install, maintain and operate monitoring devices and a recorder which simultaneously measure and record the pressure inside and outside the building enclosure. The monitoring and recording device shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.
3. The permittee shall maintain the following daily record:
 - a. The difference in pressure between the building enclosure and the surrounding area.
 - b. A log or record of downtime for the capture (collection) system, control device, and monitoring equipment when the associated emissions unit was in operation.
4. The permittee shall maintain the following monthly records:
 - a. the total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016 as measured at mixer #1 or P022;
 - b. the total amount of sand, in tons, employed for emissions units P017, P018, P019, and P020 as measured at mixers #2 and #3;
 - c. the total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016, P017, P018, P019, and P020 (a summation of C.4.a and C.4.b);
 - d. the total amount of sand, in tons, employed for emissions unit P023;
 - e. the cumulative, total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016, P017, P018, P019, and P020 over the past 12 months

- f. the cumulative, total amount of sand, in tons, employed for P023 during the past 12 months; and
- g. a calculation of the Volatile Organic Compound emissions from the scrubber stack:

$$\text{VOC (tons per rolling 12-months)} = [(A_1 \times EF_1) + (A_2 \times EF_2)] \times \text{ton}/2,000 \text{ lbs}$$

Where:

A_1 = Amount of sand used, in tons/past 12-months, as recorded in Section C.4.e.

EF_1 = Emissions factor of 0.65 lb VOC/ton of sand, taken from the Feb. 16, 1998 Ohio EPA memo regarding "New Emission Factors for Core/Mold making operations, Part 1." Emission factor is for the phenolic urethane cold-box system.

A_2 = Amount of sand used, in tons/past 12-months, as recorded in Section C.4.f.

EF_2 = Emissions factor of 1.17 lb VOC/ton of sand, taken from the Feb. 16, 1998 Ohio EPA memo regarding "New Emission Factors for Core/Mold making operations, Part 1." Emission factor is for the phenolic urethane no-bake system.

- 5. The permittee shall maintain the following annual records:
 - a. the annual operating hours of the scrubber system;
 - b. the total amount of acid employed in the scrubber, in gallons;
 - c. the total amount of sand employed for P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023, in tons per year;
 - d. each type of resin and the amounts of each resin, in tons per year, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023; and
 - e. each type of catalyst and the amounts of each catalyst, in tons per year, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023.

6. The permittee shall calculate and document the following annual emissions rates for each calendar year, January 1 - December 31 by using the following equations:

- a. Particulate emissions from the scrubber stack:

$$\text{PE (tons/yr)} = A \times \text{EF} \times \text{ton}/2,000 \text{ lbs}$$

Where:

A = Amount of sand used, in tons/year, as recorded in Section C.5.e.

EF = Emissions factor of 0.35 lb PE/ton of sand, taken from Table 2.8-1 of Ohio EPA's RACM guideline.

- b. Naphthalene emissions from the scrubber stack:

$$\text{Naphthalene (tons/yr)} = \text{Summation of } [R \times \% \text{wt} \times \% \text{Rel.}] \text{ for each resin containing Naphthalene that was used during the calendar year.}$$

Where:

R = Amount of resin containing Naphthalene, in tons per year

%wt = percent of Naphthalene, by weight, in the resin.

% Rel.= Value representing % Naphthalene released in the Phenolic Urethane Cold Box Process (P001 - P022) and in the Phenolic Urethane No Bake Process (P023), expressed as a decimal in the equation. Value taken from "Form R, Reporting of Binder Chemicals Used in Foundries, Second Edition, 1998." Value for the Phenolic Urethane Cold Box Process (P001 - P022) is 3.25% or 0.0325, and the value for the Phenolic Urethane No Bake Process (P023) is 5.85% or 0.0585.

7. The permit to install for this emissions unit and the other emissions units in this project (P001-P003, P007-P012, P014-P023) was evaluated based on the actual materials (typically coatings and cleanup 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 this emissions unit 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:

Pollutant: Naphthalene

Maximum Hourly Emission Rate: 1.52 lbs/hr *

TLV: 52,430 ug/m³

MAGLC = TLV/42: 1,248.3 ug/m³

Predicted 1-Hour Maximum Ground-Level Concentration: 19.8 ug/m³

* Emission rate is combined naphthalene emissions from P001-P003, P007-P012, P014-P023.

8. 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 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.).

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.

9. 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.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify the following:
 - a. all periods of time when the sulfuric acid scrubber system was not in use while this emissions unit was in operation;
 - b. all periods of time during which the 1) scrubber solution flow rate is below 150 gallons per minute, 2) fluid level in the scrubber solution holding tanks is below 11 inches, and 3) scrubber solution pH is above 4.5;
 - c. all periods of time during which the differential pressure between the inside and outside of the building enclosure was less than 0.01 inch of water;
 - d. all periods of time during which the interlock system for the loading dock doors did not work, or was not in operation; and
 - e. any month during the quarter when the VOC emissions limitation, as calculated in Section C.3.g, was above 55.55 tons per rolling 12-months.

The quarterly deviation reports shall be submitted in accordance with General Term and Condition A.1.c.ii. The written reports shall be submitted quarterly to the Ohio EPA Northeast District Office, i.e., by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters.

If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report which states that no deviations occurred during the quarter.

2. The permittee shall submit annual reports that identify the following:
 - a. the annual operating hours of the scrubber system;
 - b. the total amount of acid employed in the scrubber (in gallons);
 - c. the calculated annual particulate emissions rate as recorded in Section C.6.a;

- d. the calculated annual naphthalene emissions rate as recorded in Section C.6.b; and
- e. the calculated VOC emissions rate as recorded for the month of December per Section C.4.g.

The annual report shall cover each calendar year, January 1 - December 31, and shall be submitted to the Ohio EPA Northeast District Office by January 31 of each year.

E. Testing Requirements

1. Emission Limitation:

Particulate emissions shall not exceed 0.01 pound per hour

Applicable Compliance Method:

If required by Ohio EPA, compliance with the hourly particulate emissions limitation shall be determined in accordance with 40 CFR Part 60, Appendix A, Methods 1 - 5.

2. Emission Limitation:

Visible particulate emissions from the scrubber stack shall not exceed a 10% opacity as a six-minute average

Applicable Compliance Method:

If required by Ohio EPA, compliance with the allowable visible particulate emissions limit shall be determined in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

3. Emission Limitation:

Volatile Organic Compound emissions shall not exceed 0.10 pound per hour

Applicable Compliance Method:

The permittee shall conduct, or have conducted, volatile organic compound mass emission testing at the outlet of the scrubber stack to demonstrate compliance with the combined allowable hourly volatile organic compound emission rates for all emissions units in operation at the time of testing in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 4 and 18, 25 or 25A, as appropriate, or an equivalent method as approved by the Ohio EPA.

4. Emission Limitation:

Naphthalene emissions shall not exceed 0.004 pound per hour

Applicable Compliance Method:

If required by Ohio EPA, compliance with the above limitation shall be demonstrated in accordance with 40 CFR Part 60, Appendix A, Method 18, or an equivalent method as approved by the Ohio EPA.

5. Emission Limitation:

The sulfuric acid packed bed wet scrubber system serving emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, and P022 shall have a control efficiency (i.e., destruction or removal efficiency) which is at least 98% by weight of the catalyst gas emissions (i.e., Dimethylethylamine or DMEA).

Applicable Compliance Method:

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 40 CFR Part 60, Appendix A, Methods 1 through 4 and 18 (for Dimethylethylamine), or an equivalent method as approved by the Ohio EPA.

6. Emission Limitation:

Particulate emissions from the scrubber stack shall not exceed 22.70 tons per year

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.6.a.

7. Emission Limitation:

Volatile Organic Compound emissions from the scrubber stack shall not exceed 55.55 tons per rolling 12-months.

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.4.g.

8. Emission Limitation:

Naphthalene emissions from the scrubber stack shall not exceed 5.59 tons per year

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.6.b.

9. All of the required tests in Sections E.3 and E.5 shall be conducted within 90 days of issuance of this permit. All of the required tests shall also be conducted while emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 are operating at or near the capacity reported for each emissions unit in the PTI application.

No later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA Northeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions units operating parameters, the time(s) and date(s) of the tests, and the person(s) who will be conducting the tests. Failure to submit such notification for review

and approval prior to the tests may result in the Ohio EPA Northeast District Office's refusal to accept the results of the emission tests.

Personnel from the Ohio EPA Northeast District Office shall be permitted to witness the tests, examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions units and the testing procedures provide a valid characterization of the emissions from the emissions units and/or the performance of the control equipment.

A comprehensive written report on the results of the emissions tests shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA Northeast District Office within 30 days following completion of the tests. The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA Northeast District Office.

10. The VOC emissions limitation for each emissions unit, except P023, was calculated using the following: reported maximum use capacity for sand in tons per hour, an emissions factor in lb VOC per ton of sand, and an assumption that 50% of the VOCs are emitted at the mixers and 50% at the mold/core stations. The VOC emissions limitation for P023 included an assumption that 100% of the VOCs are emitted at the unit since mixing and mold making are performed at the same unit.

If all emissions units cannot be operated at the same time during the required testing, then compliance with the hourly VOC emissions rate is determined by comparison of the stack emissions result with the combined allowable hourly VOC emissions rates for all mold/core stations in operation at the time of testing multiplied by two. The multiplication by two accounts for the VOC emissions from the mixer. The allowable hourly VOC emissions rate for P023 would not be doubled. The mixer and station(s) must be operating at the same time during the test.

Compliance with the control efficiency requirement (i.e., destruction or removal efficiency of at least 98% by weight of the catalyst gas emissions, Dimethylethylamine or DMEA) is achieved by comparison of the inlet and outlet emissions results.

F. Miscellaneous Requirements

1. The terms and conditions of this permit supercede those contained in PTI # 17-304 issued on 1/24/85.
2. The terms and conditions in Sections A, B, C.1 through C.6, D and E of this permit are federally enforceable.

Humtown Pattern Company

PTI Application: 02-19424

Issued: To be entered upon final issuance

Facility ID: 0215000242

Emissions Unit ID: P012

3. The maximum production rates of 591 pounds sand per hour and 5 pounds Part I resin per hour were used in the calculations to determine the hourly particulate, volatile organic compound and naphthalene emissions rates under OAC rule 3745-31-05(A)(3) for this emissions unit. These production rates are derived from actual production records. The maximum design capacity for this emissions unit is not known.

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. Applicable Emissions Limitations and/or Control Requirements

- 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.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
P014 - Mold core station No. 14 vented to a sulfuric acid packed bed wet scrubber	OAC rule 3745-31-05(A)(3)	Particulate (PE) emissions shall not exceed 0.01 pound per hour Volatile Organic Compounds (VOC) emissions shall not exceed 0.10 pound per hour Naphthalene emissions shall not exceed 0.004 pound per hour Visible particulate emissions from the scrubber stack shall not exceed a 10% opacity as a six-minute average See Sections A.2.b & c
	OAC rule 3745-31-05(C)	The maximum sand usage for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015 and P016, as measured at mixer #1, shall not exceed 41,602 tons per year. See Sections A.2.a
	OAC rule 3745-17-07(A)(1)	The visible particulate emission limitation specified by this rule is less stringent than the limitation

<p>OAC rule 3745-17-11(B)(1)</p>	<p>established pursuant to OAC rule 3745-31-05(A)(3).</p> <p>The particulate emissions limitation specified by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).</p>
<p>OAC rule 3745-21-07(G)</p>	<p>Exempt. See Section A.2.d</p>
<p>OAC rule 3745-21-07(G)(9)(h)</p>	<p>The emission limitation specified by this rule is equivalent to the limitation established pursuant to OAC rule 3745-31-05(A)(3).</p>

2. Additional Terms and Conditions

- 2.a** Emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 are contained in a building. Emissions generated at each emissions unit are vented to a sulfuric acid packed bed wet scrubber. Emissions from the scrubber stack shall not exceed 22.70 tons PE per year, 5.59 tons Naphthalene per year, and 55.55 tons VOC per rolling 12-months.
- 2.b** The building housing emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 shall be maintained in such a manner, i.e., under negative pressure and at a minimum pressure differential that is not less than 0.01 inch of water, as to ensure that all emissions generated within the building are vented to the sulfuric acid packed bed wet scrubber whenever any of the emissions units in the building are in operation.
- 2.c** Emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 are considered part of a phenolic urethane cold box resin binder system. The sulfuric acid packed bed wet scrubber system serving these emissions units shall have a control efficiency (i.e., destruction or removal efficiency) which is at least 98% by weight of the catalyst gas emissions (i.e., Dimethylethylamine or DMEA).
- 2.d** OAC rule 3745-21-07(G)(9)(h) states that the provisions of paragraph (G) of the rule shall not apply to the use of a phenolic urethane cold box resin binder system in foundry core making and mold making operations, provided the catalyst gas emissions are vented to either a sulfuric acid scrubber that is designed and operated to remove at least 98%, by weight, of the catalyst gas

emissions or a control device that is designed and operated with an equivalent removal efficiency for the catalyst gas emissions.

B. Operational Restrictions

1. During the first twelve (12) months of operation under this permit, the maximum sand usage for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015 and P016, as measured at mixer #1, shall not exceed the amounts specified for each month in the following table:

<u>Calendar Month</u>	<u>Cumulative Allowable Amount of Sand Usage, in tons</u>
1	3,467
2	6,934
3	10,401
4	13,868
5	17,335
6	20,802
7	24,269
8	27,736
9	31,203
10	34,670
11	38,137
12	41,602

2. The sulfuric acid scrubber system shall be used while this emissions unit is in operation.
3. The scrubber solution flow rate shall be continuously maintained at a value of not less than 150 gallons per minute at all times while the emissions unit is in operation.
4. The pH of the scrubber solution shall be maintained at or below 4.5.
5. The fluid level in the scrubber solution holding tanks shall be maintained above 11 inches.
6. The building housing emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 shall be maintained under negative pressure, at a minimum pressure differential that is not less than 0.01 inch of water, whenever any of the emissions units within the building are in operation.
7. An interlock system shall be employed at the loading dock doors so that the doors may not open unless a truck is parked at the opening, under normal operating conditions.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall operate and maintain a system to continuously monitor and record hourly the following information:
 - a. the scrubber solution flow rate, in gallons per minute;
 - b. the pH of the scrubber solution; and
 - c. the fluid level in the scrubber solution holding tanks.
2. The permittee shall install, maintain and operate monitoring devices and a recorder which simultaneously measure and record the pressure inside and outside the building enclosure. The monitoring and recording device shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.
3. The permittee shall maintain the following daily record:
 - a. The difference in pressure between the building enclosure and the surrounding area.
 - b. A log or record of downtime for the capture (collection) system, control device, and monitoring equipment when the associated emissions unit was in operation.
4. The permittee shall maintain the following monthly records:
 - a. the total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016 as measured at mixer #1 or P022;
 - b. the total amount of sand, in tons, employed for emissions units P017, P018, P019, and P020 as measured at mixers #2 and #3;
 - c. the total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016, P017, P018, P019, and P020 (a summation of C.4.a and C.4.b);
 - d. the total amount of sand, in tons, employed for emissions unit P023;
 - e. the cumulative, total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016, P017, P018, P019, and P020 over the past 12 months

- f. the cumulative, total amount of sand, in tons, employed for P023 during the past 12 months; and
- g. a calculation of the Volatile Organic Compound emissions from the scrubber stack:

$$\text{VOC (tons per rolling 12-months)} = [(A_1 \times EF_1) + (A_2 \times EF_2)] \times \text{ton}/2,000 \text{ lbs}$$

Where:

A_1 = Amount of sand used, in tons/past 12-months, as recorded in Section C.4.e.

EF_1 = Emissions factor of 0.65 lb VOC/ton of sand, taken from the Feb. 16, 1998 Ohio EPA memo regarding "New Emission Factors for Core/Mold making operations, Part 1." Emission factor is for the phenolic urethane cold-box system.

A_2 = Amount of sand used, in tons/past 12-months, as recorded in Section C.4.f.

EF_2 = Emissions factor of 1.17 lb VOC/ton of sand, taken from the Feb. 16, 1998 Ohio EPA memo regarding "New Emission Factors for Core/Mold making operations, Part 1." Emission factor is for the phenolic urethane no-bake system.

- 5. The permittee shall maintain the following annual records:
 - a. the annual operating hours of the scrubber system;
 - b. the total amount of acid employed in the scrubber, in gallons;
 - c. the total amount of sand employed for P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023, in tons per year;
 - d. each type of resin and the amounts of each resin, in tons per year, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023; and
 - e. each type of catalyst and the amounts of each catalyst, in tons per year, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023.

6. The permittee shall calculate and document the following annual emissions rates for each calendar year, January 1 - December 31 by using the following equations:

- a. Particulate emissions from the scrubber stack:

$$\text{PE (tons/yr)} = A \times \text{EF} \times \text{ton}/2,000 \text{ lbs}$$

Where:

A = Amount of sand used, in tons/year, as recorded in Section C.5.e.

EF = Emissions factor of 0.35 lb PE/ton of sand, taken from Table 2.8-1 of Ohio EPA's RACM guideline.

- b. Naphthalene emissions from the scrubber stack:

$$\text{Naphthalene (tons/yr)} = \text{Summation of } [R \times \%wt \times \% \text{ Rel.}] \text{ for each resin containing Naphthalene that was used during the calendar year.}$$

Where:

R = Amount of resin containing Naphthalene, in tons per year

%wt = percent of Naphthalene, by weight, in the resin.

% Rel.= Value representing % Naphthalene released in the Phenolic Urethane Cold Box Process (P001 - P022) and in the Phenolic Urethane No Bake Process (P023), expressed as a decimal in the equation. Value taken from "Form R, Reporting of Binder Chemicals Used in Foundries, Second Edition, 1998." Value for the Phenolic Urethane Cold Box Process (P001 - P022) is 3.25% or 0.0325, and the value for the Phenolic Urethane No Bake Process (P023) is 5.85% or 0.0585.

7. The permit to install for this emissions unit and the other emissions units in this project (P001-P003, P007-P012, P014-P023) was evaluated based on the actual materials (typically coatings and cleanup 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 this emissions unit 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:

Pollutant: Naphthalene

Maximum Hourly Emission Rate: 1.52 lbs/hr *

TLV: 52,430 ug/m³

MAGLC = TLV/42: 1,248.3 ug/m³

Predicted 1-Hour Maximum Ground-Level Concentration: 19.8 ug/m³

* Emission rate is combined naphthalene emissions from P001-P003, P007-P012, P014-P023.

8. 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 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.).

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.

9. 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.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify the following:
 - a. all periods of time when the sulfuric acid scrubber system was not in use while this emissions unit was in operation;
 - b. all periods of time during which the 1) scrubber solution flow rate is below 150 gallons per minute, 2) fluid level in the scrubber solution holding tanks is below 11 inches, and 3) scrubber solution pH is above 4.5;
 - c. all periods of time during which the differential pressure between the inside and outside of the building enclosure was less than 0.01 inch of water;
 - d. all periods of time during which the interlock system for the loading dock doors did not work, or was not in operation; and
 - e. any month during the quarter when the VOC emissions limitation, as calculated in Section C.3.g, was above 55.55 tons per rolling 12-months.

The quarterly deviation reports shall be submitted in accordance with General Term and Condition A.1.c.ii. The written reports shall be submitted quarterly to the Ohio EPA Northeast District Office, i.e., by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters.

If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report which states that no deviations occurred during the quarter.

2. The permittee shall submit annual reports that identify the following:
 - a. the annual operating hours of the scrubber system;
 - b. the total amount of acid employed in the scrubber (in gallons);
 - c. the calculated annual particulate emissions rate as recorded in Section C.6.a;

- d. the calculated annual naphthalene emissions rate as recorded in Section C.6.b; and
- e. the calculated VOC emissions rate as recorded for the month of December per Section C.4.g.

The annual report shall cover each calendar year, January 1 - December 31, and shall be submitted to the Ohio EPA Northeast District Office by January 31 of each year.

E. Testing Requirements

1. Emission Limitation:

Particulate emissions shall not exceed 0.01 pound per hour

Applicable Compliance Method:

If required by Ohio EPA, compliance with the hourly particulate emissions limitation shall be determined in accordance with 40 CFR Part 60, Appendix A, Methods 1 - 5.

2. Emission Limitation:

Visible particulate emissions from the scrubber stack shall not exceed a 10% opacity as a six-minute average

Applicable Compliance Method:

If required by Ohio EPA, compliance with the allowable visible particulate emissions limit shall be determined in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

3. Emission Limitation:

Volatile Organic Compound emissions shall not exceed 0.10 pound per hour

Applicable Compliance Method:

The permittee shall conduct, or have conducted, volatile organic compound mass emission testing at the outlet of the scrubber stack to demonstrate compliance with the combined allowable hourly volatile organic compound emission rates for all emissions units in operation at the time of testing in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 4 and 18, 25 or 25A, as appropriate, or an equivalent method as approved by the Ohio EPA.

4. Emission Limitation:

Naphthalene emissions shall not exceed 0.004 pound per hour

Applicable Compliance Method:

If required by Ohio EPA, compliance with the above limitation shall be demonstrated in accordance with 40 CFR Part 60, Appendix A, Method 18, or an equivalent method as approved by the Ohio EPA.

5. Emission Limitation:

The sulfuric acid packed bed wet scrubber system serving emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, and P022 shall have a control efficiency (i.e., destruction or removal efficiency) which is at least 98% by weight of the catalyst gas emissions (i.e., Dimethylethylamine or DMEA).

Applicable Compliance Method:

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 40 CFR Part 60, Appendix A, Methods 1 through 4 and 18 (for Dimethylethylamine), or an equivalent method as approved by the Ohio EPA.

6. Emission Limitation:

Particulate emissions from the scrubber stack shall not exceed 22.70 tons per year

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.6.a.

7. Emission Limitation:

Volatile Organic Compound emissions from the scrubber stack shall not exceed 55.55 tons per rolling 12-months.

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.4.g.

8. Emission Limitation:

Naphthalene emissions from the scrubber stack shall not exceed 5.59 tons per year

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.6.b.

9. All of the required tests in Sections E.3 and E.5 shall be conducted within 90 days of issuance of this permit. All of the required tests shall also be conducted while emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 are operating at or near the capacity reported for each emissions unit in the PTI application.

No later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA Northeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions units operating parameters, the time(s) and date(s) of the tests, and the person(s) who will be conducting the tests. Failure to submit such notification for review

and approval prior to the tests may result in the Ohio EPA Northeast District Office's refusal to accept the results of the emission tests.

Personnel from the Ohio EPA Northeast District Office shall be permitted to witness the tests, examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions units and the testing procedures provide a valid characterization of the emissions from the emissions units and/or the performance of the control equipment.

A comprehensive written report on the results of the emissions tests shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA Northeast District Office within 30 days following completion of the tests. The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA Northeast District Office.

10. The VOC emissions limitation for each emissions unit, except P023, was calculated using the following: reported maximum use capacity for sand in tons per hour, an emissions factor in lb VOC per ton of sand, and an assumption that 50% of the VOCs are emitted at the mixers and 50% at the mold/core stations. The VOC emissions limitation for P023 included an assumption that 100% of the VOCs are emitted at the unit since mixing and mold making are performed at the same unit.

If all emissions units cannot be operated at the same time during the required testing, then compliance with the hourly VOC emissions rate is determined by comparison of the stack emissions result with the combined allowable hourly VOC emissions rates for all mold/core stations in operation at the time of testing multiplied by two. The multiplication by two accounts for the VOC emissions from the mixer. The allowable hourly VOC emissions rate for P023 would not be doubled. The mixer and station(s) must be operating at the same time during the test.

Compliance with the control efficiency requirement (i.e., destruction or removal efficiency of at least 98% by weight of the catalyst gas emissions, Dimethylethylamine or DMEA) is achieved by comparison of the inlet and outlet emissions results.

F. Miscellaneous Requirements

1. The terms and conditions of this permit supercede those contained in PTI # 17-814 issued on 7/25/90.
2. The terms and conditions in Sections A, B, C.1 through C.6, D and E of this permit are federally enforceable.

Humtown Pattern Company

PTI Application: 02-19424

Issued: To be entered upon final issuance

Facility ID: 0215000242

Emissions Unit ID: P014

3. The maximum production rates of 591 pounds sand per hour and 5 pounds Part I resin per hour were used in the calculations to determine the hourly particulate, volatile organic compound and naphthalene emissions rates under OAC rule 3745-31-05(A)(3) for this emissions unit. These production rates are derived from actual production records. The maximum design capacity for this emissions unit is not known.

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. 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.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
P015 - Mold core station No. 15 vented to a sulfuric acid packed bed wet scrubber	OAC rule 3745-31-05(A)(3)	Particulate (PE) emissions shall not exceed 0.02 pound per hour Volatile Organic Compounds (VOC) emissions shall not exceed 0.19 pound per hour Naphthalene emissions shall not exceed 0.008 pound per hour Visible particulate emissions from the scrubber stack shall not exceed a 10% opacity as a six-minute average See Sections A.2.b & c
	OAC rule 3745-31-05(C)	The maximum sand usage for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015 and P016, as measured at mixer #1, shall not exceed 41,602 tons per year. See Sections A.2.a
	OAC rule 3745-17-07(A)(1)	The visible particulate emission limitation specified by this rule is less stringent than the limitation

<p>OAC rule 3745-17-11(B)(1)</p>	<p>established pursuant to OAC rule 3745-31-05(A)(3).</p> <p>The particulate emissions limitation specified by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).</p>
<p>OAC rule 3745-21-07(G)</p>	<p>Exempt. See Section A.2.d</p>
<p>OAC rule 3745-21-07(G)(9)(h)</p>	<p>The emission limitation specified by this rule is equivalent to the limitation established pursuant to OAC rule 3745-31-05(A)(3).</p>

2. Additional Terms and Conditions

- 2.a** Emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 are contained in a building. Emissions generated at each emissions unit are vented to a sulfuric acid packed bed wet scrubber. Emissions from the scrubber stack shall not exceed 22.70 tons PE per year, 5.59 tons Naphthalene per year, and 55.55 tons VOC per rolling 12-months.
- 2.b** The building housing emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 shall be maintained in such a manner, i.e., under negative pressure and at a minimum pressure differential that is not less than 0.01 inch of water, as to ensure that all emissions generated within the building are vented to the sulfuric acid packed bed wet scrubber whenever any of the emissions units in the building are in operation.
- 2.c** Emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 are considered part of a phenolic urethane cold box resin binder system. The sulfuric acid packed bed wet scrubber system serving these emissions units shall have a control efficiency (i.e., destruction or removal efficiency) which is at least 98% by weight of the catalyst gas emissions (i.e., Dimethylethylamine or DMEA).
- 2.d** OAC rule 3745-21-07(G)(9)(h) states that the provisions of paragraph (G) of the rule shall not apply to the use of a phenolic urethane cold box resin binder system in foundry core making and mold making operations, provided the catalyst gas emissions are vented to either a sulfuric acid scrubber that is designed and operated to remove at least 98%, by weight, of the catalyst gas

emissions or a control device that is designed and operated with an equivalent removal efficiency for the catalyst gas emissions.

B. Operational Restrictions

1. During the first twelve (12) months of operation under this permit, the maximum sand usage for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015 and P016, as measured at mixer #1, shall not exceed the amounts specified for each month in the following table:

<u>Calendar Month</u>	<u>Cumulative Allowable Amount of Sand Usage, in tons</u>
1	3,467
2	6,934
3	10,401
4	13,868
5	17,335
6	20,802
7	24,269
8	27,736
9	31,203
10	34,670
11	38,137
12	41,602

2. The sulfuric acid scrubber system shall be used while this emissions unit is in operation.
3. The scrubber solution flow rate shall be continuously maintained at a value of not less than 150 gallons per minute at all times while the emissions unit is in operation.
4. The pH of the scrubber solution shall be maintained at or below 4.5.
5. The fluid level in the scrubber solution holding tanks shall be maintained above 11 inches.
6. The building housing emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 shall be maintained under negative pressure, at a minimum pressure differential that is not less than 0.01 inch of water, whenever any of the emissions units within the building are in operation.
7. An interlock system shall be employed at the loading dock doors so that the doors may not open unless a truck is parked at the opening, under normal operating conditions.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall operate and maintain a system to continuously monitor and record hourly the following information:
 - a. the scrubber solution flow rate, in gallons per minute;
 - b. the pH of the scrubber solution; and
 - c. the fluid level in the scrubber solution holding tanks.
2. The permittee shall install, maintain and operate monitoring devices and a recorder which simultaneously measure and record the pressure inside and outside the building enclosure. The monitoring and recording device shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.
3. The permittee shall maintain the following daily record:
 - a. The difference in pressure between the building enclosure and the surrounding area.
 - b. A log or record of downtime for the capture (collection) system, control device, and monitoring equipment when the associated emissions unit was in operation.
4. The permittee shall maintain the following monthly records:
 - a. the total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016 as measured at mixer #1 or P022;
 - b. the total amount of sand, in tons, employed for emissions units P017, P018, P019, and P020 as measured at mixers #2 and #3;
 - c. the total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016, P017, P018, P019, and P020 (a summation of C.4.a and C.4.b);
 - d. the total amount of sand, in tons, employed for emissions unit P023;
 - e. the cumulative, total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016, P017, P018, P019, and P020 over the past 12 months

- f. the cumulative, total amount of sand, in tons, employed for P023 during the past 12 months; and
- g. a calculation of the Volatile Organic Compound emissions from the scrubber stack:

$$\text{VOC (tons per rolling 12-months)} = [(A_1 \times EF_1) + (A_2 \times EF_2)] \times \text{ton}/2,000 \text{ lbs}$$

Where:

A_1 = Amount of sand used, in tons/past 12-months, as recorded in Section C.4.e.

EF_1 = Emissions factor of 0.65 lb VOC/ton of sand, taken from the Feb. 16, 1998 Ohio EPA memo regarding "New Emission Factors for Core/Mold making operations, Part 1." Emission factor is for the phenolic urethane cold-box system.

A_2 = Amount of sand used, in tons/past 12-months, as recorded in Section C.4.f.

EF_2 = Emissions factor of 1.17 lb VOC/ton of sand, taken from the Feb. 16, 1998 Ohio EPA memo regarding "New Emission Factors for Core/Mold making operations, Part 1." Emission factor is for the phenolic urethane no-bake system.

- 5. The permittee shall maintain the following annual records:
 - a. the annual operating hours of the scrubber system;
 - b. the total amount of acid employed in the scrubber, in gallons;
 - c. the total amount of sand employed for P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023, in tons per year;
 - d. each type of resin and the amounts of each resin, in tons per year, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023; and
 - e. each type of catalyst and the amounts of each catalyst, in tons per year, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023.

6. The permittee shall calculate and document the following annual emissions rates for each calendar year, January 1 - December 31 by using the following equations:

a. Particulate emissions from the scrubber stack:

$$PE \text{ (tons/yr)} = A \times EF \times \text{ton}/2,000 \text{ lbs}$$

Where:

A = Amount of sand used, in tons/year, as recorded in Section C.5.e.

EF = Emissions factor of 0.35 lb PE/ton of sand, taken from Table 2.8-1 of Ohio EPA's RACM guideline.

b. Naphthalene emissions from the scrubber stack:

$$\text{Naphthalene (tons/yr)} = \text{Summation of } [R \times \%wt \times \% \text{ Rel.}] \text{ for each resin containing Naphthalene that was used during the calendar year.}$$

Where:

R = Amount of resin containing Naphthalene, in tons per year

%wt = percent of Naphthalene, by weight, in the resin.

% Rel.= Value representing % Naphthalene released in the Phenolic Urethane Cold Box Process (P001 - P022) and in the Phenolic Urethane No Bake Process (P023), expressed as a decimal in the equation. Value taken from "Form R, Reporting of Binder Chemicals Used in Foundries, Second Edition, 1998." Value for the Phenolic Urethane Cold Box Process (P001 - P022) is 3.25% or 0.0325, and the value for the Phenolic Urethane No Bake Process (P023) is 5.85% or 0.0585.

7. The permit to install for this emissions unit and the other emissions units in this project (P001-P003, P007-P012, P014-P023) was evaluated based on the actual materials (typically coatings and cleanup 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 this emissions unit 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:

Pollutant: Naphthalene

Maximum Hourly Emission Rate: 1.52 lbs/hr *

TLV: 52,430 ug/m³

MAGLC = TLV/42: 1,248.3 ug/m³

Predicted 1-Hour Maximum Ground-Level Concentration: 19.8 ug/m³

* Emission rate is combined naphthalene emissions from P001-P003, P007-P012, P014-P023.

8. 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 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.).

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.

9. 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.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify the following:
 - a. all periods of time when the sulfuric acid scrubber system was not in use while this emissions unit was in operation;
 - b. all periods of time during which the 1) scrubber solution flow rate is below 150 gallons per minute, 2) fluid level in the scrubber solution holding tanks is below 11 inches, and 3) scrubber solution pH is above 4.5;
 - c. all periods of time during which the differential pressure between the inside and outside of the building enclosure was less than 0.01 inch of water;
 - d. all periods of time during which the interlock system for the loading dock doors did not work, or was not in operation; and
 - e. any month during the quarter when the VOC emissions limitation, as calculated in Section C.3.g, was above 55.55 tons per rolling 12-months.

The quarterly deviation reports shall be submitted in accordance with General Term and Condition A.1.c.ii. The written reports shall be submitted quarterly to the Ohio EPA Northeast District Office, i.e., by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters.

If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report which states that no deviations occurred during the quarter.

2. The permittee shall submit annual reports that identify the following:
 - a. the annual operating hours of the scrubber system;
 - b. the total amount of acid employed in the scrubber (in gallons);
 - c. the calculated annual particulate emissions rate as recorded in Section C.6.a;

- d. the calculated annual naphthalene emissions rate as recorded in Section C.6.b; and
- e. the calculated VOC emissions rate as recorded for the month of December per Section C.4.g.

The annual report shall cover each calendar year, January 1 - December 31, and shall be submitted to the Ohio EPA Northeast District Office by January 31 of each year.

E. Testing Requirements

1. Emission Limitation:

Particulate emissions shall not exceed 0.02 pound per hour

Applicable Compliance Method:

If required by Ohio EPA, compliance with the hourly particulate emissions limitation shall be determined in accordance with 40 CFR Part 60, Appendix A, Methods 1 - 5.

2. Emission Limitation:

Visible particulate emissions from the scrubber stack shall not exceed a 10% opacity as a six-minute average

Applicable Compliance Method:

If required by Ohio EPA, compliance with the allowable visible particulate emissions limit shall be determined in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

3. Emission Limitation:

Volatile Organic Compound emissions shall not exceed 0.19 pound per hour

Applicable Compliance Method:

The permittee shall conduct, or have conducted, volatile organic compound mass emission testing at the outlet of the scrubber stack to demonstrate compliance with the combined allowable hourly volatile organic compound emission rates for all emissions units in operation at the time of testing in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 4 and 18, 25 or 25A, as appropriate, or an equivalent method as approved by the Ohio EPA.

4. Emission Limitation:

Naphthalene emissions shall not exceed 0.008 pound per hour

Applicable Compliance Method:

If required by Ohio EPA, compliance with the above limitation shall be demonstrated in accordance with 40 CFR Part 60, Appendix A, Method 18, or an equivalent method as approved by the Ohio EPA.

5. Emission Limitation:

The sulfuric acid packed bed wet scrubber system serving emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, and P022 shall have a control efficiency (i.e., destruction or removal efficiency) which is at least 98% by weight of the catalyst gas emissions (i.e., Dimethylethylamine or DMEA).

Applicable Compliance Method:

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 40 CFR Part 60, Appendix A, Methods 1 through 4 and 18 (for Dimethylethylamine), or an equivalent method as approved by the Ohio EPA.

6. Emission Limitation:

Particulate emissions from the scrubber stack shall not exceed 22.70 tons per year

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.6.a.

7. Emission Limitation:

Volatile Organic Compound emissions from the scrubber stack shall not exceed 55.55 tons per rolling 12-months.

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.4.g.

8. Emission Limitation:

Naphthalene emissions from the scrubber stack shall not exceed 5.59 tons per year

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.6.b.

9. All of the required tests in Sections E.3 and E.5 shall be conducted within 90 days of issuance of this permit. All of the required tests shall also be conducted while emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 are operating at or near the capacity reported for each emissions unit in the PTI application.

No later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA Northeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions units operating parameters, the time(s) and date(s) of the tests, and the person(s) who will be conducting the tests. Failure to submit such notification for review

and approval prior to the tests may result in the Ohio EPA Northeast District Office's refusal to accept the results of the emission tests.

Personnel from the Ohio EPA Northeast District Office shall be permitted to witness the tests, examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions units and the testing procedures provide a valid characterization of the emissions from the emissions units and/or the performance of the control equipment.

A comprehensive written report on the results of the emissions tests shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA Northeast District Office within 30 days following completion of the tests. The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA Northeast District Office.

10. The VOC emissions limitation for each emissions unit, except P023, was calculated using the following: reported maximum use capacity for sand in tons per hour, an emissions factor in lb VOC per ton of sand, and an assumption that 50% of the VOCs are emitted at the mixers and 50% at the mold/core stations. The VOC emissions limitation for P023 included an assumption that 100% of the VOCs are emitted at the unit since mixing and mold making are performed at the same unit.

If all emissions units cannot be operated at the same time during the required testing, then compliance with the hourly VOC emissions rate is determined by comparison of the stack emissions result with the combined allowable hourly VOC emissions rates for all mold/core stations in operation at the time of testing multiplied by two. The multiplication by two accounts for the VOC emissions from the mixer. The allowable hourly VOC emissions rate for P023 would not be doubled. The mixer and station(s) must be operating at the same time during the test.

Compliance with the control efficiency requirement (i.e., destruction or removal efficiency of at least 98% by weight of the catalyst gas emissions, Dimethylethylamine or DMEA) is achieved by comparison of the inlet and outlet emissions results.

F. Miscellaneous Requirements

1. The terms and conditions of this permit supercede those contained in PTI # 17-1395 issued on 6/28/95.
2. The terms and conditions in Sections A, B, C.1 through C.6, D and E of this permit are federally enforceable.

Humtown Pattern Company

PTI Application: 02-19424

Issued: To be entered upon final issuance

Facility ID: 0215000242

Emissions Unit ID: P015

3. The maximum production rates of 1,181 pounds sand per hour and 10 pounds Part I resin per hour were used in the calculations to determine the hourly particulate, volatile organic compound and naphthalene emissions rates under OAC rule 3745-31-05(A)(3) for this emissions unit. These production rates are derived from actual production records. The maximum design capacity for this emissions unit is not known.

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. Applicable Emissions Limitations and/or Control Requirements

- 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.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
P016 - Mold core station No. 16 vented to a sulfuric acid packed bed wet scrubber	OAC rule 3745-31-05(A)(3)	Particulate (PE) emissions shall not exceed 0.02 pound per hour Volatile Organic Compounds (VOC) emissions shall not exceed 0.19 pound per hour Naphthalene emissions shall not exceed 0.008 pound per hour Visible particulate emissions from the scrubber stack shall not exceed a 10% opacity as a six-minute average
	OAC rule 3745-31-05(C)	See Sections A.2.b & c The maximum sand usage for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015 and P016, as measured at mixer #1, shall not exceed 41,602 tons per year.
	OAC rule 3745-17-07(A)(1)	See Sections A.2.a The visible particulate emission limitation specified by this rule is less stringent than the limitation

<p>OAC rule 3745-17-11(B)(1)</p>	<p>established pursuant to OAC rule 3745-31-05(A)(3).</p> <p>The particulate emissions limitation specified by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).</p>
<p>OAC rule 3745-21-07(G)</p>	<p>Exempt. See Section A.2.d</p>
<p>OAC rule 3745-21-07(G)(9)(h)</p>	<p>The emission limitation specified by this rule is equivalent to the limitation established pursuant to OAC rule 3745-31-05(A)(3).</p>

2. Additional Terms and Conditions

- 2.a** Emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 are contained in a building. Emissions generated at each emissions unit are vented to a sulfuric acid packed bed wet scrubber. Emissions from the scrubber stack shall not exceed 22.70 tons PE per year, 5.59 tons Naphthalene per year, and 55.55 tons VOC per rolling 12-months.
- 2.b** The building housing emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 shall be maintained in such a manner, i.e., under negative pressure and at a minimum pressure differential that is not less than 0.01 inch of water, as to ensure that all emissions generated within the building are vented to the sulfuric acid packed bed wet scrubber whenever any of the emissions units in the building are in operation.
- 2.c** Emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 are considered part of a phenolic urethane cold box resin binder system. The sulfuric acid packed bed wet scrubber system serving these emissions units shall have a control efficiency (i.e., destruction or removal efficiency) which is at least 98% by weight of the catalyst gas emissions (i.e., Dimethylethylamine or DMEA).
- 2.d** OAC rule 3745-21-07(G)(9)(h) states that the provisions of paragraph (G) of the rule shall not apply to the use of a phenolic urethane cold box resin binder system in foundry core making and mold making operations, provided the catalyst gas emissions are vented to either a sulfuric acid scrubber that is designed and operated to remove at least 98%, by weight, of the catalyst gas

emissions or a control device that is designed and operated with an equivalent removal efficiency for the catalyst gas emissions.

B. Operational Restrictions

1. During the first twelve (12) months of operation under this permit, the maximum sand usage for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015 and P016, as measured at mixer #1, shall not exceed the amounts specified for each month in the following table:

<u>Calendar Month</u>	<u>Cumulative Allowable Amount of Sand Usage, in tons</u>
1	3,467
2	6,934
3	10,401
4	13,868
5	17,335
6	20,802
7	24,269
8	27,736
9	31,203
10	34,670
11	38,137
12	41,602

2. The sulfuric acid scrubber system shall be used while this emissions unit is in operation.
3. The scrubber solution flow rate shall be continuously maintained at a value of not less than 150 gallons per minute at all times while the emissions unit is in operation.
4. The pH of the scrubber solution shall be maintained at or below 4.5.
5. The fluid level in the scrubber solution holding tanks shall be maintained above 11 inches.
6. The building housing emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 shall be maintained under negative pressure, at a minimum pressure differential that is not less than 0.01 inch of water, whenever any of the emissions units within the building are in operation.
7. An interlock system shall be employed at the loading dock doors so that the doors may not open unless a truck is parked at the opening, under normal operating conditions.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall operate and maintain a system to continuously monitor and record hourly the following information:
 - a. the scrubber solution flow rate, in gallons per minute;
 - b. the pH of the scrubber solution; and
 - c. the fluid level in the scrubber solution holding tanks.
2. The permittee shall install, maintain and operate monitoring devices and a recorder which simultaneously measure and record the pressure inside and outside the building enclosure. The monitoring and recording device shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.
3. The permittee shall maintain the following daily record:
 - a. The difference in pressure between the building enclosure and the surrounding area.
 - b. A log or record of downtime for the capture (collection) system, control device, and monitoring equipment when the associated emissions unit was in operation.
4. The permittee shall maintain the following monthly records:
 - a. the total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016 as measured at mixer #1 or P022;
 - b. the total amount of sand, in tons, employed for emissions units P017, P018, P019, and P020 as measured at mixers #2 and #3;
 - c. the total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016, P017, P018, P019, and P020 (a summation of C.4.a and C.4.b);
 - d. the total amount of sand, in tons, employed for emissions unit P023;
 - e. the cumulative, total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016, P017, P018, P019, and P020 over the past 12 months

- f. the cumulative, total amount of sand, in tons, employed for P023 during the past 12 months; and
- g. a calculation of the Volatile Organic Compound emissions from the scrubber stack:

$$\text{VOC (tons per rolling 12-months)} = [(A_1 \times EF_1) + (A_2 \times EF_2)] \times \text{ton}/2,000 \text{ lbs}$$

Where:

A_1 = Amount of sand used, in tons/past 12-months, as recorded in Section C.4.e.

EF_1 = Emissions factor of 0.65 lb VOC/ton of sand, taken from the Feb. 16, 1998 Ohio EPA memo regarding "New Emission Factors for Core/Mold making operations, Part 1." Emission factor is for the phenolic urethane cold-box system.

A_2 = Amount of sand used, in tons/past 12-months, as recorded in Section C.4.f.

EF_2 = Emissions factor of 1.17 lb VOC/ton of sand, taken from the Feb. 16, 1998 Ohio EPA memo regarding "New Emission Factors for Core/Mold making operations, Part 1." Emission factor is for the phenolic urethane no-bake system.

- 5. The permittee shall maintain the following annual records:
 - a. the annual operating hours of the scrubber system;
 - b. the total amount of acid employed in the scrubber, in gallons;
 - c. the total amount of sand employed for P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023, in tons per year;
 - d. each type of resin and the amounts of each resin, in tons per year, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023; and
 - e. each type of catalyst and the amounts of each catalyst, in tons per year, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023.

6. The permittee shall calculate and document the following annual emissions rates for each calendar year, January 1 - December 31 by using the following equations:

a. Particulate emissions from the scrubber stack:

$$PE \text{ (tons/yr)} = A \times EF \times \text{ton}/2,000 \text{ lbs}$$

Where:

A = Amount of sand used, in tons/year, as recorded in Section C.5.e.

EF = Emissions factor of 0.35 lb PE/ton of sand, taken from Table 2.8-1 of Ohio EPA's RACM guideline.

b. Naphthalene emissions from the scrubber stack:

$$\text{Naphthalene (tons/yr)} = \text{Summation of } [R \times \%wt \times \% \text{ Rel.}] \text{ for each resin containing Naphthalene that was used during the calendar year.}$$

Where:

R = Amount of resin containing Naphthalene, in tons per year

%wt = percent of Naphthalene, by weight, in the resin.

% Rel.= Value representing % Naphthalene released in the Phenolic Urethane Cold Box Process (P001 - P022) and in the Phenolic Urethane No Bake Process (P023), expressed as a decimal in the equation. Value taken from "Form R, Reporting of Binder Chemicals Used in Foundries, Second Edition, 1998." Value for the Phenolic Urethane Cold Box Process (P001 - P022) is 3.25% or 0.0325, and the value for the Phenolic Urethane No Bake Process (P023) is 5.85% or 0.0585.

7. The permit to install for this emissions unit and the other emissions units in this project (P001-P003, P007-P012, P014-P023) was evaluated based on the actual materials (typically coatings and cleanup 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 this emissions unit 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:

Pollutant: Naphthalene

Maximum Hourly Emission Rate: 1.52 lbs/hr *

TLV: 52,430 ug/m³

MAGLC = TLV/42: 1,248.3 ug/m³

Predicted 1-Hour Maximum Ground-Level Concentration: 19.8 ug/m³

* Emission rate is combined naphthalene emissions from P001-P003, P007-P012, P014-P023.

8. 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 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.).

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.

9. 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.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify the following:
 - a. all periods of time when the sulfuric acid scrubber system was not in use while this emissions unit was in operation;
 - b. all periods of time during which the 1) scrubber solution flow rate is below 150 gallons per minute, 2) fluid level in the scrubber solution holding tanks is below 11 inches, and 3) scrubber solution pH is above 4.5;
 - c. all periods of time during which the differential pressure between the inside and outside of the building enclosure was less than 0.01 inch of water;
 - d. all periods of time during which the interlock system for the loading dock doors did not work, or was not in operation; and
 - e. any month during the quarter when the VOC emissions limitation, as calculated in Section C.3.g, was above 55.55 tons per rolling 12-months.

The quarterly deviation reports shall be submitted in accordance with General Term and Condition A.1.c.ii. The written reports shall be submitted quarterly to the Ohio EPA Northeast District Office, i.e., by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters.

If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report which states that no deviations occurred during the quarter.

2. The permittee shall submit annual reports that identify the following:
 - a. the annual operating hours of the scrubber system;
 - b. the total amount of acid employed in the scrubber (in gallons);
 - c. the calculated annual particulate emissions rate as recorded in Section C.6.a;

- d. the calculated annual naphthalene emissions rate as recorded in Section C.6.b; and
- e. the calculated VOC emissions rate as recorded for the month of December per Section C.4.g.

The annual report shall cover each calendar year, January 1 - December 31, and shall be submitted to the Ohio EPA Northeast District Office by January 31 of each year.

E. Testing Requirements

1. Emission Limitation:

Particulate emissions shall not exceed 0.02 pound per hour

Applicable Compliance Method:

If required by Ohio EPA, compliance with the hourly particulate emissions limitation shall be determined in accordance with 40 CFR Part 60, Appendix A, Methods 1 - 5.

2. Emission Limitation:

Visible particulate emissions from the scrubber stack shall not exceed a 10% opacity as a six-minute average

Applicable Compliance Method:

If required by Ohio EPA, compliance with the allowable visible particulate emissions limit shall be determined in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

3. Emission Limitation:

Volatile Organic Compound emissions shall not exceed 0.19 pound per hour

Applicable Compliance Method:

The permittee shall conduct, or have conducted, volatile organic compound mass emission testing at the outlet of the scrubber stack to demonstrate compliance with the combined allowable hourly volatile organic compound emission rates for all emissions units in operation at the time of testing in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 4 and 18, 25 or 25A, as appropriate, or an equivalent method as approved by the Ohio EPA.

4. Emission Limitation:

Naphthalene emissions shall not exceed 0.008 pound per hour

Applicable Compliance Method:

If required by Ohio EPA, compliance with the above limitation shall be demonstrated in accordance with 40 CFR Part 60, Appendix A, Method 18, or an equivalent method as approved by the Ohio EPA.

5. Emission Limitation:

The sulfuric acid packed bed wet scrubber system serving emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, and P022 shall have a control efficiency (i.e., destruction or removal efficiency) which is at least 98% by weight of the catalyst gas emissions (i.e., Dimethylethylamine or DMEA).

Applicable Compliance Method:

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 40 CFR Part 60, Appendix A, Methods 1 through 4 and 18 (for Dimethylethylamine), or an equivalent method as approved by the Ohio EPA.

6. Emission Limitation:

Particulate emissions from the scrubber stack shall not exceed 22.70 tons per year

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.6.a.

7. Emission Limitation:

Volatile Organic Compound emissions from the scrubber stack shall not exceed 55.55 tons per rolling 12-months.

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.4.g.

8. Emission Limitation:

Naphthalene emissions from the scrubber stack shall not exceed 5.59 tons per year

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.6.b.

9. All of the required tests in Sections E.3 and E.5 shall be conducted within 90 days of issuance of this permit. All of the required tests shall also be conducted while emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 are operating at or near the capacity reported for each emissions unit in the PTI application.

No later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA Northeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions units operating parameters, the time(s) and date(s) of the tests, and the person(s) who will be conducting the tests. Failure to submit such notification for review

and approval prior to the tests may result in the Ohio EPA Northeast District Office's refusal to accept the results of the emission tests.

Personnel from the Ohio EPA Northeast District Office shall be permitted to witness the tests, examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions units and the testing procedures provide a valid characterization of the emissions from the emissions units and/or the performance of the control equipment.

A comprehensive written report on the results of the emissions tests shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA Northeast District Office within 30 days following completion of the tests. The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA Northeast District Office.

10. The VOC emissions limitation for each emissions unit, except P023, was calculated using the following: reported maximum use capacity for sand in tons per hour, an emissions factor in lb VOC per ton of sand, and an assumption that 50% of the VOCs are emitted at the mixers and 50% at the mold/core stations. The VOC emissions limitation for P023 included an assumption that 100% of the VOCs are emitted at the unit since mixing and mold making are performed at the same unit.

If all emissions units cannot be operated at the same time during the required testing, then compliance with the hourly VOC emissions rate is determined by comparison of the stack emissions result with the combined allowable hourly VOC emissions rates for all mold/core stations in operation at the time of testing multiplied by two. The multiplication by two accounts for the VOC emissions from the mixer. The allowable hourly VOC emissions rate for P023 would not be doubled. The mixer and station(s) must be operating at the same time during the test.

Compliance with the control efficiency requirement (i.e., destruction or removal efficiency of at least 98% by weight of the catalyst gas emissions, Dimethylethylamine or DMEA) is achieved by comparison of the inlet and outlet emissions results.

F. Miscellaneous Requirements

1. The terms and conditions of this permit supercede those contained in PTI # 17-1450 issued on 11/15/95.
2. The terms and conditions in Sections A, B, C.1 through C.6, D and E of this permit are federally enforceable.

Humtown Pattern Company

PTI Application: 02-19424

Issued: To be entered upon final issuance

Facility ID: 0215000242

Emissions Unit ID: P016

3. The maximum production rates of 1,181 pounds sand per hour and 10 pounds Part I resin per hour were used in the calculations to determine the hourly particulate, volatile organic compound and naphthalene emissions rates under OAC rule 3745-31-05(A)(3) for this emissions unit. These production rates are derived from actual production records. The maximum design capacity for this emissions unit is not known.

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. Applicable Emissions Limitations and/or Control Requirements

- 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.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
P017 - Mold core station No. 17 vented to a sulfuric acid packed bed wet scrubber	OAC rule 3745-31-05(A)(3)	Particulate (PE) emissions shall not exceed 0.02 pound per hour Volatile Organic Compounds (VOC) emissions shall not exceed 0.19 pound per hour Naphthalene emissions shall not exceed 0.008 pound per hour Visible particulate emissions from the scrubber stack shall not exceed a 10% opacity as a six-minute average See Sections A.2.b & c
	OAC rule 3745-31-05(C)	The maximum sand usage for emissions units P017, P018, P019, and P020, as measured at mixers #2 and #3, shall not exceed 36,213 tons per year. See Sections A.2.a
	OAC rule 3745-17-07(A)(1)	The visible particulate emission limitation specified by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).

OAC rule 3745-17-11(B)(1)

The particulate emissions limitation specified 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)

Exempt. See Section A.2.d

OAC rule 3745-21-07(G)(9)(h)

The emission limitation specified by this rule is equivalent to the limitation established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

- 2.a** Emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 are contained in a building. Emissions generated at each emissions unit are vented to a sulfuric acid packed bed wet scrubber. Emissions from the scrubber stack shall not exceed 22.70 tons PE per year, 5.59 tons Naphthalene per year, and 55.55 tons VOC per rolling 12-months.
- 2.b** The building housing emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 shall be maintained in such a manner, i.e., under negative pressure and at a minimum pressure differential that is not less than 0.01 inch of water, as to ensure that all emissions generated within the building are vented to the sulfuric acid packed bed wet scrubber whenever any of the emissions units in the building are in operation.
- 2.c** Emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 are considered part of a phenolic urethane cold box resin binder system. The sulfuric acid packed bed wet scrubber system serving these emissions units shall have a control efficiency (i.e., destruction or removal efficiency) which is at least 98% by weight of the catalyst gas emissions (i.e., Dimethylethylamine or DMEA).
- 2.d** OAC rule 3745-21-07(G)(9)(h) states that the provisions of paragraph (G) of the rule shall not apply to the use of a phenolic urethane cold box resin binder system in foundry core making and mold making operations, provided the catalyst gas emissions are vented to either a sulfuric acid scrubber that is designed and operated to remove at least 98%, by weight, of the catalyst gas emissions or a control device that is designed and operated with an equivalent removal efficiency for the catalyst gas emissions.

B. Operational Restrictions

1. During the first twelve (12) months of operation under this permit, the maximum sand usage for emissions units P017, P018, P019, P020, as measured at mixers #2 and #3, shall not exceed the amounts specified for each month in the following table:

<u>Calendar Month</u>	<u>Cumulative Allowable Amount of Sand Usage, in tons</u>
1	3,018
2	6,036
3	9,054
4	12,072
5	15,090
6	18,108
7	21,126
8	24,144
9	27,162
10	30,180
11	33,198
12	36,213

2. The sulfuric acid scrubber system shall be used while this emissions unit is in operation.
3. The scrubber solution flow rate shall be continuously maintained at a value of not less than 150 gallons per minute at all times while the emissions unit is in operation.
4. The pH of the scrubber solution shall be maintained at or below 4.5.
5. The fluid level in the scrubber solution holding tanks shall be maintained above 11 inches.
6. The building housing emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 shall be maintained under negative pressure, at a minimum pressure differential that is not less than 0.01 inch of water, whenever any of the emissions units within the building are in operation.
7. An interlock system shall be employed at the loading dock doors so that the doors may not open unless a truck is parked at the opening, under normal operating conditions.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall operate and maintain a system to continuously monitor and record hourly the following information:
 - a. the scrubber solution flow rate, in gallons per minute;

- b. the pH of the scrubber solution; and
 - c. the fluid level in the scrubber solution holding tanks.
 2. The permittee shall install, maintain and operate monitoring devices and a recorder which simultaneously measure and record the pressure inside and outside the building enclosure. The monitoring and recording device shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.
 3. The permittee shall maintain the following daily record:
 - a. The difference in pressure between the building enclosure and the surrounding area.
 - b. A log or record of downtime for the capture (collection) system, control device, and monitoring equipment when the associated emissions unit was in operation.
 4. The permittee shall maintain the following monthly records:
 - a. the total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016 as measured at mixer #1 or P022;
 - b. the total amount of sand, in tons, employed for emissions units P017, P018, P019, and P020 as measured at mixers #2 and #3;
 - c. the total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016, P017, P018, P019, and P020 (a summation of C.4.a and C.4.b);
 - d. the total amount of sand, in tons, employed for emissions unit P023;
 - e. the cumulative, total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016, P017, P018, P019, and P020 over the past 12 months
 - f. the cumulative, total amount of sand, in tons, employed for P023 during the past 12 months; and
 - g. a calculation of the Volatile Organic Compound emissions from the scrubber stack:

$$\text{VOC (tons per rolling 12-months)} = [(A_1 \times EF_1) + (A_2 \times EF_2)] \times \text{ton}/2,000 \text{ lbs}$$

Where:

A_1 = Amount of sand used, in tons/past 12-months, as recorded in Section C.4.e.

EF_1 = Emissions factor of 0.65 lb VOC/ton of sand, taken from the Feb. 16, 1998 Ohio EPA memo regarding "New Emission Factors for Core/Mold making operations, Part 1." Emission factor is for the phenolic urethane cold-box system.

A_2 = Amount of sand used, in tons/past 12-months, as recorded in Section C.4.f.

EF_2 = Emissions factor of 1.17 lb VOC/ton of sand, taken from the Feb. 16, 1998 Ohio EPA memo regarding "New Emission Factors for Core/Mold making operations, Part 1." Emission factor is for the phenolic urethane no-bake system.

5. The permittee shall maintain the following annual records:
- a. the annual operating hours of the scrubber system;
 - b. the total amount of acid employed in the scrubber, in gallons;
 - c. the total amount of sand employed for P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023, in tons per year;
 - d. each type of resin and the amounts of each resin, in tons per year, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023; and
 - e. each type of catalyst and the amounts of each catalyst, in tons per year, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023.

6. The permittee shall calculate and document the following annual emissions rates for each calendar year, January 1 - December 31 by using the following equations:

- a. Particulate emissions from the scrubber stack:

$$PE \text{ (tons/yr)} = A \times EF \times \text{ton}/2,000 \text{ lbs}$$

Where:

A = Amount of sand used, in tons/year, as recorded in Section C.5.e.

EF = Emissions factor of 0.35 lb PE/ton of sand, taken from Table 2.8-1 of Ohio EPA's RACM guideline.

b. Naphthalene emissions from the scrubber stack:

Napthalene (tons/yr) = Summation of [R x %wt x % Rel.] for each resin containing Napthalene that was used during the calendar year.

Where:

R = Amount of resin containing Napthalene, in tons per year

%wt = percent of Napthalene, by weight, in the resin.

% Rel.= Value representing % Napthalene released in the Phenolic Urethane Cold Box Process (P001 - P022) and in the Phenolic Urethane No Bake Process (P023), expressed as a decimal in the equation. Value taken from "Form R, Reporting of Binder Chemicals Used in Foundries, Second Edition, 1998." Value for the Phenolic Urethane Cold Box Process (P001 - P022) is 3.25% or 0.0325, and the value for the Phenolic Urethane No Bake Process (P023) is 5.85% or 0.0585.

7. The permit to install for this emissions unit and the other emissions units in this project (P001-P003, P007-P012, P014-P023) was evaluated based on the actual materials (typically coatings and cleanup 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 this emissions unit 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:

Pollutant: Naphthalene

Maximum Hourly Emission Rate: 1.52 lbs/hr *

TLV: 52,430 ug/m³

MAGLC = TLV/42: 1,248.3 ug/m³

Predicted 1-Hour Maximum Ground-Level Concentration: 19.8 ug/m³

* Emission rate is combined naphthalene emissions from P001-P003, P007-P012, P014-P023.

8. 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 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.).

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.

9. 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.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify the following:
 - a. all periods of time when the sulfuric acid scrubber system was not in use while this emissions unit was in operation;
 - b. all periods of time during which the 1) scrubber solution flow rate is below 150 gallons per minute, 2) fluid level in the scrubber solution holding tanks is below 11 inches, and 3) scrubber solution pH is above 4.5;
 - c. all periods of time during which the differential pressure between the inside and outside of the building enclosure was less than 0.01 inch of water;
 - d. all periods of time during which the interlock system for the loading dock doors did not work, or was not in operation; and
 - e. any month during the quarter when the VOC emissions limitation, as calculated in Section C.3.g, was above 55.55 tons per rolling 12-months.

The quarterly deviation reports shall be submitted in accordance with General Term and Condition A.1.c.ii. The written reports shall be submitted quarterly to the Ohio EPA Northeast District Office, i.e., by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters.

If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report which states that no deviations occurred during the quarter.

2. The permittee shall submit annual reports that identify the following:
 - a. the annual operating hours of the scrubber system;
 - b. the total amount of acid employed in the scrubber (in gallons);
 - c. the calculated annual particulate emissions rate as recorded in Section C.6.a;
 - d. the calculated annual naphthalene emissions rate as recorded in Section C.6.b; and
 - e. the calculated VOC emissions rate as recorded for the month of December per Section C.4.g.

The annual report shall cover each calendar year, January 1 - December 31, and shall be submitted to the Ohio EPA Northeast District Office by January 31 of each year.

E. Testing Requirements

1. Emission Limitation:

Particulate emissions shall not exceed 0.02 pound per hour

Applicable Compliance Method:

If required by Ohio EPA, compliance with the hourly particulate emissions limitation shall be determined in accordance with 40 CFR Part 60, Appendix A, Methods 1 - 5.

2. Emission Limitation:

Visible particulate emissions from the scrubber stack shall not exceed a 10% opacity as a six-minute average

Applicable Compliance Method:

If required by Ohio EPA, compliance with the allowable visible particulate emissions limit shall be determined in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

3. Emission Limitation:

Volatile Organic Compound emissions shall not exceed 0.19 pound per hour

Applicable Compliance Method:

The permittee shall conduct, or have conducted, volatile organic compound mass emission testing at the outlet of the scrubber stack to demonstrate compliance with the combined allowable hourly volatile organic compound emission rates for all emissions units in operation at the time of testing in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 4 and 18, 25 or 25A, as appropriate, or an equivalent method as approved by the Ohio EPA.

4. Emission Limitation:

Naphthalene emissions shall not exceed 0.008 pound per hour

Applicable Compliance Method:

If required by Ohio EPA, compliance with the above limitation shall be demonstrated in accordance with 40 CFR Part 60, Appendix A, Method 18, or an equivalent method as approved by the Ohio EPA.

5. Emission Limitation:

The sulfuric acid packed bed wet scrubber system serving emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, and P022 shall have a control efficiency (i.e., destruction or removal efficiency) which is at least 98% by weight of the catalyst gas emissions (i.e., Dimethylethylamine or DMEA).

Applicable Compliance Method:

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 40 CFR Part 60, Appendix A, Methods 1 through 4 and 18 (for Dimethylethylamine), or an equivalent method as approved by the Ohio EPA.

6. Emission Limitation:

Particulate emissions from the scrubber stack shall not exceed 22.70 tons per year

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.6.a.

7. Emission Limitation:

Volatile Organic Compound emissions from the scrubber stack shall not exceed 55.55 tons per rolling 12-months.

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.4.g.

8. Emission Limitation:

Naphthalene emissions from the scrubber stack shall not exceed 5.59 tons per year

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.6.b.

9. All of the required tests in Sections E.3 and E.5 shall be conducted within 90 days of issuance of this permit. All of the required tests shall also be conducted while emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 are operating at or near the capacity reported for each emissions unit in the PTI application.

No later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA Northeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions units operating parameters, the time(s) and date(s) of the tests, and the person(s) who will be conducting the tests. Failure to submit such notification for review and approval prior to the tests may result in the Ohio EPA Northeast District Office's refusal to accept the results of the emission tests.

Personnel from the Ohio EPA Northeast District Office shall be permitted to witness the tests, examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions units and the testing procedures provide a

valid characterization of the emissions from the emissions units and/or the performance of the control equipment.

A comprehensive written report on the results of the emissions tests shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA Northeast District Office within 30 days following completion of the tests. The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA Northeast District Office.

10. The VOC emissions limitation for each emissions unit, except P023, was calculated using the following: reported maximum use capacity for sand in tons per hour, an emissions factor in lb VOC per ton of sand, and an assumption that 50% of the VOCs are emitted at the mixers and 50% at the mold/core stations. The VOC emissions limitation for P023 included an assumption that 100% of the VOCs are emitted at the unit since mixing and mold making are performed at the same unit.

If all emissions units cannot be operated at the same time during the required testing, then compliance with the hourly VOC emissions rate is determined by comparison of the stack emissions result with the combined allowable hourly VOC emissions rates for all mold/core stations in operation at the time of testing multiplied by two. The multiplication by two accounts for the VOC emissions from the mixer. The allowable hourly VOC emissions rate for P023 would not be doubled. The mixer and station(s) must be operating at the same time during the test.

Compliance with the control efficiency requirement (i.e., destruction or removal efficiency of at least 98% by weight of the catalyst gas emissions, Dimethylethylamine or DMEA) is achieved by comparison of the inlet and outlet emissions results.

F. Miscellaneous Requirements

1. The terms and conditions of this permit supercede those contained in PTI # 02-16560 issued on 10/01/02.
2. The terms and conditions in Sections A, B, C.1 through C.6, D and E of this permit are federally enforceable.
3. The maximum production rates of 1,181 pounds sand per hour and 10 pounds Part I resin per hour were used in the calculations to determine the hourly particulate, volatile organic compound and naphthalene emissions rates under OAC rule 3745-31-05(A)(3) for this emissions unit. These production rates are derived from actual production records. The maximum design capacity for this emissions unit is not known.

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. 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.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
P018 - Mold core station No. 18 vented to a sulfuric acid packed bed wet scrubber	OAC rule 3745-31-05(A)(3)	Particulate (PE) emissions shall not exceed 0.05 pound per hour Volatile Organic Compounds (VOC) emissions shall not exceed 0.45 pound per hour Naphthalene emissions shall not exceed 0.019 pound per hour Visible particulate emissions from the scrubber stack shall not exceed a 10% opacity as a six-minute average See Sections A.2.b & c
	OAC rule 3745-31-05(C)	The maximum sand usage for emissions units P017, P018, P019, and P020, as measured at mixers #2 and #3, shall not exceed 36,213 tons per year. See Sections A.2.a
	OAC rule 3745-17-07(A)(1)	The visible particulate emission limitation specified by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).

OAC rule 3745-17-11(B)(1)

The particulate emissions limitation specified 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)

Exempt. See Section A.2.d

OAC rule 3745-21-07(G)(9)(h)

The emission limitation specified by this rule is equivalent to the limitation established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

- 2.a** Emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 are contained in a building. Emissions generated at each emissions unit are vented to a sulfuric acid packed bed wet scrubber. Emissions from the scrubber stack shall not exceed 22.70 tons PE per year, 5.59 tons Naphthalene per year, and 55.55 tons VOC per rolling 12-months.
- 2.b** The building housing emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 shall be maintained in such a manner, i.e., under negative pressure and at a minimum pressure differential that is not less than 0.01 inch of water, as to ensure that all emissions generated within the building are vented to the sulfuric acid packed bed wet scrubber whenever any of the emissions units in the building are in operation.
- 2.c** Emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 are considered part of a phenolic urethane cold box resin binder system. The sulfuric acid packed bed wet scrubber system serving these emissions units shall have a control efficiency (i.e., destruction or removal efficiency) which is at least 98% by weight of the catalyst gas emissions (i.e., Dimethylethylamine or DMEA).
- 2.d** OAC rule 3745-21-07(G)(9)(h) states that the provisions of paragraph (G) of the rule shall not apply to the use of a phenolic urethane cold box resin binder system in foundry core making and mold making operations, provided the catalyst gas emissions are vented to either a sulfuric acid scrubber that is designed and operated to remove at least 98%, by weight, of the catalyst gas emissions or a control device that is designed and operated with an equivalent removal efficiency for the catalyst gas emissions.

B. Operational Restrictions

1. During the first twelve (12) months of operation under this permit, the maximum sand usage for emissions units P017, P018, P019, P020, as measured at mixers #2 and #3, shall not exceed the amounts specified for each month in the following table:

<u>Calendar Month</u>	<u>Cumulative Allowable Amount of Sand Usage, in tons</u>
1	3,018
2	6,036
3	9,054
4	12,072
5	15,090
6	18,108
7	21,126
8	24,144
9	27,162
10	30,180
11	33,198
12	36,213

2. The sulfuric acid scrubber system shall be used while this emissions unit is in operation.
3. The scrubber solution flow rate shall be continuously maintained at a value of not less than 150 gallons per minute at all times while the emissions unit is in operation.
4. The pH of the scrubber solution shall be maintained at or below 4.5.
5. The fluid level in the scrubber solution holding tanks shall be maintained above 11 inches.
6. The building housing emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 shall be maintained under negative pressure, at a minimum pressure differential that is not less than 0.01 inch of water, whenever any of the emissions units within the building are in operation.
7. An interlock system shall be employed at the loading dock doors so that the doors may not open unless a truck is parked at the opening, under normal operating conditions.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall operate and maintain a system to continuously monitor and record hourly the following information:
 - a. the scrubber solution flow rate, in gallons per minute;

- b. the pH of the scrubber solution; and
 - c. the fluid level in the scrubber solution holding tanks.
2. The permittee shall install, maintain and operate monitoring devices and a recorder which simultaneously measure and record the pressure inside and outside the building enclosure. The monitoring and recording device shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.
 3. The permittee shall maintain the following daily record:
 - a. The difference in pressure between the building enclosure and the surrounding area.
 - b. A log or record of downtime for the capture (collection) system, control device, and monitoring equipment when the associated emissions unit was in operation.
 4. The permittee shall maintain the following monthly records:
 - a. the total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016 as measured at mixer #1 or P022;
 - b. the total amount of sand, in tons, employed for emissions units P017, P018, P019, and P020 as measured at mixers #2 and #3;
 - c. the total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016, P017, P018, P019, and P020 (a summation of C.4.a and C.4.b);
 - d. the total amount of sand, in tons, employed for emissions unit P023;
 - e. the cumulative, total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016, P017, P018, P019, and P020 over the past 12 months
 - f. the cumulative, total amount of sand, in tons, employed for P023 during the past 12 months; and
 - g. a calculation of the Volatile Organic Compound emissions from the scrubber stack:

$$\text{VOC (tons per rolling 12-months)} = [(A_1 \times EF_1) + (A_2 \times EF_2)] \times \text{ton}/2,000 \text{ lbs}$$

Where:

A_1 = Amount of sand used, in tons/past 12-months, as recorded in Section C.4.e.

EF_1 = Emissions factor of 0.65 lb VOC/ton of sand, taken from the Feb. 16, 1998 Ohio EPA memo regarding "New Emission Factors for Core/Mold making operations, Part 1." Emission factor is for the phenolic urethane cold-box system.

A_2 = Amount of sand used, in tons/past 12-months, as recorded in Section C.4.f.

EF_2 = Emissions factor of 1.17 lb VOC/ton of sand, taken from the Feb. 16, 1998 Ohio EPA memo regarding "New Emission Factors for Core/Mold making operations, Part 1." Emission factor is for the phenolic urethane no-bake system.

5. The permittee shall maintain the following annual records:
- a. the annual operating hours of the scrubber system;
 - b. the total amount of acid employed in the scrubber, in gallons;
 - c. the total amount of sand employed for P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023, in tons per year;
 - d. each type of resin and the amounts of each resin, in tons per year, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023; and
 - e. each type of catalyst and the amounts of each catalyst, in tons per year, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023.

6. The permittee shall calculate and document the following annual emissions rates for each calendar year, January 1 - December 31 by using the following equations:

- a. Particulate emissions from the scrubber stack:

$$PE \text{ (tons/yr)} = A \times EF \times \text{ton}/2,000 \text{ lbs}$$

Where:

A = Amount of sand used, in tons/year, as recorded in Section C.5.e.

EF = Emissions factor of 0.35 lb PE/ton of sand, taken from Table 2.8-1 of Ohio EPA's RACM guideline.

b. Naphthalene emissions from the scrubber stack:

Napthalene (tons/yr) = Summation of [R x %wt x % Rel.] for each resin containing Napthalene that was used during the calendar year.

Where:

R = Amount of resin containing Napthalene, in tons per year

%wt = percent of Napthalene, by weight, in the resin.

% Rel.= Value representing % Napthalene released in the Phenolic Urethane Cold Box Process (P001 - P022) and in the Phenolic Urethane No Bake Process (P023), expressed as a decimal in the equation. Value taken from "Form R, Reporting of Binder Chemicals Used in Foundries, Second Edition, 1998." Value for the Phenolic Urethane Cold Box Process (P001 - P022) is 3.25% or 0.0325, and the value for the Phenolic Urethane No Bake Process (P023) is 5.85% or 0.0585.

7. The permit to install for this emissions unit and the other emissions units in this project (P001-P003, P007-P012, P014-P023) was evaluated based on the actual materials (typically coatings and cleanup 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 this emissions unit 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:

Pollutant: Naphthalene

Maximum Hourly Emission Rate: 1.52 lbs/hr *

TLV: 52,430 ug/m³

MAGLC = TLV/42: 1,248.3 ug/m³

Predicted 1-Hour Maximum Ground-Level Concentration: 19.8 ug/m³

* Emission rate is combined naphthalene emissions from P001-P003, P007-P012, P014-P023.

8. 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 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.).

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.

9. 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.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify the following:
 - a. all periods of time when the sulfuric acid scrubber system was not in use while this emissions unit was in operation;
 - b. all periods of time during which the 1) scrubber solution flow rate is below 150 gallons per minute, 2) fluid level in the scrubber solution holding tanks is below 11 inches, and 3) scrubber solution pH is above 4.5;
 - c. all periods of time during which the differential pressure between the inside and outside of the building enclosure was less than 0.01 inch of water;
 - d. all periods of time during which the interlock system for the loading dock doors did not work, or was not in operation; and
 - e. any month during the quarter when the VOC emissions limitation, as calculated in Section C.3.g, was above 55.55 tons per rolling 12-months.

The quarterly deviation reports shall be submitted in accordance with General Term and Condition A.1.c.ii. The written reports shall be submitted quarterly to the Ohio EPA Northeast District Office, i.e., by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters.

If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report which states that no deviations occurred during the quarter.

2. The permittee shall submit annual reports that identify the following:
 - a. the annual operating hours of the scrubber system;
 - b. the total amount of acid employed in the scrubber (in gallons);
 - c. the calculated annual particulate emissions rate as recorded in Section C.6.a;
 - d. the calculated annual naphthalene emissions rate as recorded in Section C.6.b; and
 - e. the calculated VOC emissions rate as recorded for the month of December per Section C.4.g.

The annual report shall cover each calendar year, January 1 - December 31, and shall be submitted to the Ohio EPA Northeast District Office by January 31 of each year.

E. Testing Requirements

1. Emission Limitation:

Particulate emissions shall not exceed 0.05 pound per hour

Applicable Compliance Method:

If required by Ohio EPA, compliance with the hourly particulate emissions limitation shall be determined in accordance with 40 CFR Part 60, Appendix A, Methods 1 - 5.

2. Emission Limitation:

Visible particulate emissions from the scrubber stack shall not exceed a 10% opacity as a six-minute average

Applicable Compliance Method:

If required by Ohio EPA, compliance with the allowable visible particulate emissions limit shall be determined in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

3. Emission Limitation:

Volatile Organic Compound emissions shall not exceed 0.45 pound per hour

Applicable Compliance Method:

The permittee shall conduct, or have conducted, volatile organic compound mass emission testing at the outlet of the scrubber stack to demonstrate compliance with the combined allowable hourly volatile organic compound emission rates for all emissions units in operation at the time of testing in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 4 and 18, 25 or 25A, as appropriate, or an equivalent method as approved by the Ohio EPA.

4. Emission Limitation:

Naphthalene emissions shall not exceed 0.019 pound per hour

Applicable Compliance Method:

If required by Ohio EPA, compliance with the above limitation shall be demonstrated in accordance with 40 CFR Part 60, Appendix A, Method 18, or an equivalent method as approved by the Ohio EPA.

5. Emission Limitation:

The sulfuric acid packed bed wet scrubber system serving emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, and P022 shall have a control efficiency (i.e., destruction or removal efficiency) which is at least 98% by weight of the catalyst gas emissions (i.e., Dimethylethylamine or DMEA).

Applicable Compliance Method:

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 40 CFR Part 60, Appendix A, Methods 1 through 4 and 18 (for Dimethylethylamine), or an equivalent method as approved by the Ohio EPA.

6. Emission Limitation:

Particulate emissions from the scrubber stack shall not exceed 22.70 tons per year

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.6.a.

7. Emission Limitation:

Volatile Organic Compound emissions from the scrubber stack shall not exceed 55.55 tons per rolling 12-months.

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.4.g.

8. Emission Limitation:

Naphthalene emissions from the scrubber stack shall not exceed 5.59 tons per year

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.6.b.

9. All of the required tests in Sections E.3 and E.5 shall be conducted within 90 days of issuance of this permit. All of the required tests shall also be conducted while emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 are operating at or near the capacity reported for each emissions unit in the PTI application.

No later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA Northeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions units operating parameters, the time(s) and date(s) of the tests, and the person(s) who will be conducting the tests. Failure to submit such notification for review and approval prior to the tests may result in the Ohio EPA Northeast District Office's refusal to accept the results of the emission tests.

Personnel from the Ohio EPA Northeast District Office shall be permitted to witness the tests, examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions units and the testing procedures provide a

valid characterization of the emissions from the emissions units and/or the performance of the control equipment.

A comprehensive written report on the results of the emissions tests shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA Northeast District Office within 30 days following completion of the tests. The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA Northeast District Office.

10. The VOC emissions limitation for each emissions unit, except P023, was calculated using the following: reported maximum use capacity for sand in tons per hour, an emissions factor in lb VOC per ton of sand, and an assumption that 50% of the VOCs are emitted at the mixers and 50% at the mold/core stations. The VOC emissions limitation for P023 included an assumption that 100% of the VOCs are emitted at the unit since mixing and mold making are performed at the same unit.

If all emissions units cannot be operated at the same time during the required testing, then compliance with the hourly VOC emissions rate is determined by comparison of the stack emissions result with the combined allowable hourly VOC emissions rates for all mold/core stations in operation at the time of testing multiplied by two. The multiplication by two accounts for the VOC emissions from the mixer. The allowable hourly VOC emissions rate for P023 would not be doubled. The mixer and station(s) must be operating at the same time during the test.

Compliance with the control efficiency requirement (i.e., destruction or removal efficiency of at least 98% by weight of the catalyst gas emissions, Dimethylethylamine or DMEA) is achieved by comparison of the inlet and outlet emissions results.

F. Miscellaneous Requirements

1. The terms and conditions of this permit supercede those contained in PTI # 02-16560 issued on 10/01/02.
2. The terms and conditions in Sections A, B, C.1 through C.6, D and E of this permit are federally enforceable.
3. The maximum production rates of 2,756 pounds sand per hour and 23 pounds Part I resin per hour were used in the calculations to determine the hourly particulate, volatile organic compound and naphthalene emissions rates under OAC rule 3745-31-05(A)(3) for this emissions unit. These production rates are derived from actual production records. The maximum design capacity for this emissions unit is not known.

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. 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.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
P019 - Mold core station No. 19 vented to a sulfuric acid packed bed wet scrubber	OAC rule 3745-31-05(A)(3)	Particulate (PE) emissions shall not exceed 0.04 pound per hour Volatile Organic Compounds (VOC) emissions shall not exceed 0.38 pound per hour Naphthalene emissions shall not exceed 0.015 pound per hour Visible particulate emissions from the scrubber stack shall not exceed a 10% opacity as a six-minute average See Sections A.2.b & c
	OAC rule 3745-31-05(C)	The maximum sand usage for emissions units P017, P018, P019, and P020, as measured at mixers #2 and #3, shall not exceed 36,213 tons per year. See Sections A.2.a
	OAC rule 3745-17-07(A)(1)	The visible particulate emission limitation specified by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).

OAC rule 3745-17-11(B)(1)	The particulate emissions limitation specified 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)	Exempt. See Section A.2.d
OAC rule 3745-21-07(G)(9)(h)	The emission limitation specified by this rule is equivalent to the limitation established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

- 2.a** Emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 are contained in a building. Emissions generated at each emissions unit are vented to a sulfuric acid packed bed wet scrubber. Emissions from the scrubber stack shall not exceed 22.70 tons PE per year, 5.59 tons Naphthalene per year, and 55.55 tons VOC per rolling 12-months.
- 2.b** The building housing emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 shall be maintained in such a manner, i.e., under negative pressure and at a minimum pressure differential that is not less than 0.01 inch of water, as to ensure that all emissions generated within the building are vented to the sulfuric acid packed bed wet scrubber whenever any of the emissions units in the building are in operation.
- 2.c** Emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 are considered part of a phenolic urethane cold box resin binder system. The sulfuric acid packed bed wet scrubber system serving these emissions units shall have a control efficiency (i.e., destruction or removal efficiency) which is at least 98% by weight of the catalyst gas emissions (i.e., Dimethylethylamine or DMEA).
- 2.d** OAC rule 3745-21-07(G)(9)(h) states that the provisions of paragraph (G) of the rule shall not apply to the use of a phenolic urethane cold box resin binder system in foundry core making and mold making operations, provided the catalyst gas emissions are vented to either a sulfuric acid scrubber that is designed and operated to remove at least 98%, by weight, of the catalyst gas emissions or a control device that is designed and operated with an equivalent removal efficiency for the catalyst gas emissions.

Humtown Pattern Company**PTI Application: 02-19424****Issued: To be entered upon final issuance****Facility ID: 0215000242****Emissions Unit ID: P019****B. Operational Restrictions**

1. During the first twelve (12) months of operation under this permit, the maximum sand usage for emissions units P017, P018, P019, P020, as measured at mixers #2 and #3, shall not exceed the amounts specified for each month in the following table:

<u>Calendar Month</u>	<u>Cumulative Allowable Amount of Sand Usage, in tons</u>
1	3,018
2	6,036
3	9,054
4	12,072
5	15,090
6	18,108
7	21,126
8	24,144
9	27,162
10	30,180
11	33,198
12	36,213

2. The sulfuric acid scrubber system shall be used while this emissions unit is in operation.
3. The scrubber solution flow rate shall be continuously maintained at a value of not less than 150 gallons per minute at all times while the emissions unit is in operation.
4. The pH of the scrubber solution shall be maintained at or below 4.5.
5. The fluid level in the scrubber solution holding tanks shall be maintained above 11 inches.
6. The building housing emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 shall be maintained under negative pressure, at a minimum pressure differential that is not less than 0.01 inch of water, whenever any of the emissions units within the building are in operation.
7. An interlock system shall be employed at the loading dock doors so that the doors may not open unless a truck is parked at the opening, under normal operating conditions.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall operate and maintain a system to continuously monitor and record hourly the following information:
 - a. the scrubber solution flow rate, in gallons per minute;

- b. the pH of the scrubber solution; and
 - c. the fluid level in the scrubber solution holding tanks.
 2. The permittee shall install, maintain and operate monitoring devices and a recorder which simultaneously measure and record the pressure inside and outside the building enclosure. The monitoring and recording device shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.
 3. The permittee shall maintain the following daily record:
 - a. The difference in pressure between the building enclosure and the surrounding area.
 - b. A log or record of downtime for the capture (collection) system, control device, and monitoring equipment when the associated emissions unit was in operation.
 4. The permittee shall maintain the following monthly records:
 - a. the total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016 as measured at mixer #1 or P022;
 - b. the total amount of sand, in tons, employed for emissions units P017, P018, P019, and P020 as measured at mixers #2 and #3;
 - c. the total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016, P017, P018, P019, and P020 (a summation of C.4.a and C.4.b);
 - d. the total amount of sand, in tons, employed for emissions unit P023;
 - e. the cumulative, total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016, P017, P018, P019, and P020 over the past 12 months
 - f. the cumulative, total amount of sand, in tons, employed for P023 during the past 12 months; and
 - g. a calculation of the Volatile Organic Compound emissions from the scrubber stack:

$$\text{VOC (tons per rolling 12-months)} = [(A_1 \times EF_1) + (A_2 \times EF_2)] \times \text{ton}/2,000 \text{ lbs}$$

Where:

- A_1 = Amount of sand used, in tons/past 12-months, as recorded in Section C.4.e.
- EF_1 = Emissions factor of 0.65 lb VOC/ton of sand, taken from the Feb. 16, 1998 Ohio EPA memo regarding "New Emission Factors for Core/Mold making operations, Part 1." Emission factor is for the phenolic urethane cold-box system.
- A_2 = Amount of sand used, in tons/past 12-months, as recorded in Section C.4.f.
- EF_2 = Emissions factor of 1.17 lb VOC/ton of sand, taken from the Feb. 16, 1998 Ohio EPA memo regarding "New Emission Factors for Core/Mold making operations, Part 1." Emission factor is for the phenolic urethane no-bake system.

- 5. The permittee shall maintain the following annual records:
 - a. the annual operating hours of the scrubber system;
 - b. the total amount of acid employed in the scrubber, in gallons;
 - c. the total amount of sand employed for P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023, in tons per year;
 - d. each type of resin and the amounts of each resin, in tons per year, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023; and
 - e. each type of catalyst and the amounts of each catalyst, in tons per year, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023.

- 6. The permittee shall calculate and document the following annual emissions rates for each calendar year, January 1 - December 31 by using the following equations:
 - a. Particulate emissions from the scrubber stack:

$$PE \text{ (tons/yr)} = A \times EF \times \text{ton}/2,000 \text{ lbs}$$

Where:

- A = Amount of sand used, in tons/year, as recorded in Section C.5.e.

EF = Emissions factor of 0.35 lb PE/ton of sand, taken from Table 2.8-1 of Ohio EPA's RACM guideline.

b. Naphthalene emissions from the scrubber stack:

Napthalene (tons/yr) = Summation of [R x %wt x % Rel.] for each resin containing Napthalene that was used during the calendar year.

Where:

R = Amount of resin containing Napthalene, in tons per year

%wt = percent of Napthalene, by weight, in the resin.

% Rel.= Value representing % Napthalene released in the Phenolic Urethane Cold Box Process (P001 - P022) and in the Phenolic Urethane No Bake Process (P023), expressed as a decimal in the equation. Value taken from "Form R, Reporting of Binder Chemicals Used in Foundries, Second Edition, 1998." Value for the Phenolic Urethane Cold Box Process (P001 - P022) is 3.25% or 0.0325, and the value for the Phenolic Urethane No Bake Process (P023) is 5.85% or 0.0585.

7. The permit to install for this emissions unit and the other emissions units in this project (P001-P003, P007-P012, P014-P023) was evaluated based on the actual materials (typically coatings and cleanup 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 this emissions unit 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:

Pollutant: Naphthalene

Maximum Hourly Emission Rate: 1.52 lbs/hr *

TLV: 52,430 ug/m³

MAGLC = TLV/42: 1,248.3 ug/m³

Predicted 1-Hour Maximum Ground-Level Concentration: 19.8 ug/m³

* Emission rate is combined naphthalene emissions from P001-P003, P007-P012, P014-P023.

8. 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 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.).

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.

9. 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.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify the following:
 - a. all periods of time when the sulfuric acid scrubber system was not in use while this emissions unit was in operation;
 - b. all periods of time during which the 1) scrubber solution flow rate is below 150 gallons per minute, 2) fluid level in the scrubber solution holding tanks is below 11 inches, and 3) scrubber solution pH is above 4.5;
 - c. all periods of time during which the differential pressure between the inside and outside of the building enclosure was less than 0.01 inch of water;
 - d. all periods of time during which the interlock system for the loading dock doors did not work, or was not in operation; and
 - e. any month during the quarter when the VOC emissions limitation, as calculated in Section C.3.g, was above 55.55 tons per rolling 12-months.

The quarterly deviation reports shall be submitted in accordance with General Term and Condition A.1.c.ii. The written reports shall be submitted quarterly to the Ohio EPA Northeast District Office, i.e., by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters.

If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report which states that no deviations occurred during the quarter.

2. The permittee shall submit annual reports that identify the following:
 - a. the annual operating hours of the scrubber system;
 - b. the total amount of acid employed in the scrubber (in gallons);
 - c. the calculated annual particulate emissions rate as recorded in Section C.6.a;
 - d. the calculated annual naphthalene emissions rate as recorded in Section C.6.b; and
 - e. the calculated VOC emissions rate as recorded for the month of December per Section C.4.g.

The annual report shall cover each calendar year, January 1 - December 31, and shall be submitted to the Ohio EPA Northeast District Office by January 31 of each year.

E. Testing Requirements

1. Emission Limitation:

Particulate emissions shall not exceed 0.04 pound per hour

Applicable Compliance Method:

If required by Ohio EPA, compliance with the hourly particulate emissions limitation shall be determined in accordance with 40 CFR Part 60, Appendix A, Methods 1 - 5.

2. Emission Limitation:

Visible particulate emissions from the scrubber stack shall not exceed a 10% opacity as a six-minute average

Applicable Compliance Method:

If required by Ohio EPA, compliance with the allowable visible particulate emissions limit shall be determined in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

3. Emission Limitation:

Volatile Organic Compound emissions shall not exceed 0.38 pound per hour

Applicable Compliance Method:

The permittee shall conduct, or have conducted, volatile organic compound mass emission testing at the outlet of the scrubber stack to demonstrate compliance with the combined allowable hourly volatile organic compound emission rates for all emissions units in operation at the time of testing in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 4 and 18, 25 or 25A, as appropriate, or an equivalent method as approved by the Ohio EPA.

4. Emission Limitation:

Naphthalene emissions shall not exceed 0.015 pound per hour

Applicable Compliance Method:

If required by Ohio EPA, compliance with the above limitation shall be demonstrated in accordance with 40 CFR Part 60, Appendix A, Method 18, or an equivalent method as approved by the Ohio EPA.

5. Emission Limitation:

The sulfuric acid packed bed wet scrubber system serving emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, and P022 shall have a control efficiency (i.e., destruction or removal efficiency) which is at least 98% by weight of the catalyst gas emissions (i.e., Dimethylethylamine or DMEA).

Applicable Compliance Method:

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 40 CFR Part 60, Appendix A, Methods 1 through 4 and 18 (for Dimethylethylamine), or an equivalent method as approved by the Ohio EPA.

6. Emission Limitation:

Particulate emissions from the scrubber stack shall not exceed 22.70 tons per year

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.6.a.

7. Emission Limitation:

Volatile Organic Compound emissions from the scrubber stack shall not exceed 55.55 tons per rolling 12-months.

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.4.g.

8. Emission Limitation:

Naphthalene emissions from the scrubber stack shall not exceed 5.59 tons per year

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.6.b.

9. All of the required tests in Sections E.3 and E.5 shall be conducted within 90 days of issuance of this permit. All of the required tests shall also be conducted while emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 are operating at or near the capacity reported for each emissions unit in the PTI application.

No later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA Northeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions units operating parameters, the time(s) and date(s) of the tests, and the person(s) who will be conducting the tests. Failure to submit such notification for review and approval prior to the tests may result in the Ohio EPA Northeast District Office's refusal to accept the results of the emission tests.

Personnel from the Ohio EPA Northeast District Office shall be permitted to witness the tests, examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions units and the testing procedures provide a

valid characterization of the emissions from the emissions units and/or the performance of the control equipment.

A comprehensive written report on the results of the emissions tests shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA Northeast District Office within 30 days following completion of the tests. The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA Northeast District Office.

10. The VOC emissions limitation for each emissions unit, except P023, was calculated using the following: reported maximum use capacity for sand in tons per hour, an emissions factor in lb VOC per ton of sand, and an assumption that 50% of the VOCs are emitted at the mixers and 50% at the mold/core stations. The VOC emissions limitation for P023 included an assumption that 100% of the VOCs are emitted at the unit since mixing and mold making are performed at the same unit.

If all emissions units cannot be operated at the same time during the required testing, then compliance with the hourly VOC emissions rate is determined by comparison of the stack emissions result with the combined allowable hourly VOC emissions rates for all mold/core stations in operation at the time of testing multiplied by two. The multiplication by two accounts for the VOC emissions from the mixer. The allowable hourly VOC emissions rate for P023 would not be doubled. The mixer and station(s) must be operating at the same time during the test.

Compliance with the control efficiency requirement (i.e., destruction or removal efficiency of at least 98% by weight of the catalyst gas emissions, Dimethylethylamine or DMEA) is achieved by comparison of the inlet and outlet emissions results.

F. Miscellaneous Requirements

1. The terms and conditions of this permit supercede those contained in PTI # 02-16560 issued on 10/01/02.
2. The terms and conditions in Sections A, B, C.1 through C.6, D and E of this permit are federally enforceable.
3. The maximum production rates of 2,362 pounds sand per hour and 19 pounds Part I resin per hour were used in the calculations to determine the hourly particulate, volatile organic compound and naphthalene emissions rates under OAC rule 3745-31-05(A)(3) for this emissions unit. These production rates are derived from actual production records. The maximum design capacity for this emissions unit is not known.

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. Applicable Emissions Limitations and/or Control Requirements

- 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.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
P020 - Mold core station No. 20 vented to a sulfuric acid packed bed wet scrubber	OAC rule 3745-31-05(A)(3)	Particulate (PE) emissions shall not exceed 0.03 pound per hour Volatile Organic Compounds (VOC) emissions shall not exceed 0.32 pound per hour Naphthalene emissions shall not exceed 0.013 pound per hour Visible particulate emissions from the scrubber stack shall not exceed a 10% opacity as a six-minute average See Sections A.2.b & c
	OAC rule 3745-31-05(C)	The maximum sand usage for emissions units P017, P018, P019, and P020, as measured at mixers #2 and #3, shall not exceed 36,213 tons per year. See Sections A.2.a
	OAC rule 3745-17-07(A)(1)	The visible particulate emission limitation specified by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).

OAC rule 3745-17-11(B)(1)	The particulate emissions limitation specified 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)	Exempt. See Section A.2.d
OAC rule 3745-21-07(G)(9)(h)	The emission limitation specified by this rule is equivalent to the limitation established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

- 2.a** Emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 are contained in a building. Emissions generated at each emissions unit are vented to a sulfuric acid packed bed wet scrubber. Emissions from the scrubber stack shall not exceed 22.70 tons PE per year, 5.59 tons Naphthalene per year, and 55.55 tons VOC per rolling 12-months.
- 2.b** The building housing emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 shall be maintained in such a manner, i.e., under negative pressure and at a minimum pressure differential that is not less than 0.01 inch of water, as to ensure that all emissions generated within the building are vented to the sulfuric acid packed bed wet scrubber whenever any of the emissions units in the building are in operation.
- 2.c** Emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 are considered part of a phenolic urethane cold box resin binder system. The sulfuric acid packed bed wet scrubber system serving these emissions units shall have a control efficiency (i.e., destruction or removal efficiency) which is at least 98% by weight of the catalyst gas emissions (i.e., Dimethylethylamine or DMEA).
- 2.d** OAC rule 3745-21-07(G)(9)(h) states that the provisions of paragraph (G) of the rule shall not apply to the use of a phenolic urethane cold box resin binder system in foundry core making and mold making operations, provided the catalyst gas emissions are vented to either a sulfuric acid scrubber that is designed and operated to remove at least 98%, by weight, of the catalyst gas emissions or a control device that is designed and operated with an equivalent removal efficiency for the catalyst gas emissions.

B. Operational Restrictions

1. During the first twelve (12) months of operation under this permit, the maximum sand usage for emissions units P017, P018, P019, P020, as measured at mixers #2 and #3, shall not exceed the amounts specified for each month in the following table:

<u>Calendar Month</u>	<u>Cumulative Allowable Amount of Sand Usage, in tons</u>
1	3,018
2	6,036
3	9,054
4	12,072
5	15,090
6	18,108
7	21,126
8	24,144
9	27,162
10	30,180
11	33,198
12	36,213

2. The sulfuric acid scrubber system shall be used while this emissions unit is in operation.
3. The scrubber solution flow rate shall be continuously maintained at a value of not less than 150 gallons per minute at all times while the emissions unit is in operation.
4. The pH of the scrubber solution shall be maintained at or below 4.5.
5. The fluid level in the scrubber solution holding tanks shall be maintained above 11 inches.
6. The building housing emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 shall be maintained under negative pressure, at a minimum pressure differential that is not less than 0.01 inch of water, whenever any of the emissions units within the building are in operation.
7. An interlock system shall be employed at the loading dock doors so that the doors may not open unless a truck is parked at the opening, under normal operating conditions.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall operate and maintain a system to continuously monitor and record hourly the following information:
 - a. the scrubber solution flow rate, in gallons per minute;

- b. the pH of the scrubber solution; and
 - c. the fluid level in the scrubber solution holding tanks.
2. The permittee shall install, maintain and operate monitoring devices and a recorder which simultaneously measure and record the pressure inside and outside the building enclosure. The monitoring and recording device shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.
 3. The permittee shall maintain the following daily record:
 - a. The difference in pressure between the building enclosure and the surrounding area.
 - b. A log or record of downtime for the capture (collection) system, control device, and monitoring equipment when the associated emissions unit was in operation.
 4. The permittee shall maintain the following monthly records:
 - a. the total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016 as measured at mixer #1 or P022;
 - b. the total amount of sand, in tons, employed for emissions units P017, P018, P019, and P020 as measured at mixers #2 and #3;
 - c. the total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016, P017, P018, P019, and P020 (a summation of C.4.a and C.4.b);
 - d. the total amount of sand, in tons, employed for emissions unit P023;
 - e. the cumulative, total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016, P017, P018, P019, and P020 over the past 12 months
 - f. the cumulative, total amount of sand, in tons, employed for P023 during the past 12 months; and
 - g. a calculation of the Volatile Organic Compound emissions from the scrubber stack:

$$\text{VOC (tons per rolling 12-months)} = [(A_1 \times EF_1) + (A_2 \times EF_2)] \times \text{ton}/2,000 \text{ lbs}$$

Where:

- A_1 = Amount of sand used, in tons/past 12-months, as recorded in Section C.4.e.
- EF_1 = Emissions factor of 0.65 lb VOC/ton of sand, taken from the Feb. 16, 1998 Ohio EPA memo regarding "New Emission Factors for Core/Mold making operations, Part 1." Emission factor is for the phenolic urethane cold-box system.
- A_2 = Amount of sand used, in tons/past 12-months, as recorded in Section C.4.f.
- EF_2 = Emissions factor of 1.17 lb VOC/ton of sand, taken from the Feb. 16, 1998 Ohio EPA memo regarding "New Emission Factors for Core/Mold making operations, Part 1." Emission factor is for the phenolic urethane no-bake system.

- 5. The permittee shall maintain the following annual records:
 - a. the annual operating hours of the scrubber system;
 - b. the total amount of acid employed in the scrubber, in gallons;
 - c. the total amount of sand employed for P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023, in tons per year;
 - d. each type of resin and the amounts of each resin, in tons per year, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023; and
 - e. each type of catalyst and the amounts of each catalyst, in tons per year, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023.

- 6. The permittee shall calculate and document the following annual emissions rates for each calendar year, January 1 - December 31 by using the following equations:
 - a. Particulate emissions from the scrubber stack:

$$PE \text{ (tons/yr)} = A \times EF \times \text{ton}/2,000 \text{ lbs}$$

Where:

- A = Amount of sand used, in tons/year, as recorded in Section C.5.e.

EF = Emissions factor of 0.35 lb PE/ton of sand, taken from Table 2.8-1 of Ohio EPA's RACM guideline.

b. Naphthalene emissions from the scrubber stack:

Napthalene (tons/yr) = Summation of [R x %wt x % Rel.] for each resin containing Napthalene that was used during the calendar year.

Where:

R = Amount of resin containing Napthalene, in tons per year

%wt = percent of Napthalene, by weight, in the resin.

% Rel.= Value representing % Napthalene released in the Phenolic Urethane Cold Box Process (P001 - P022) and in the Phenolic Urethane No Bake Process (P023), expressed as a decimal in the equation. Value taken from "Form R, Reporting of Binder Chemicals Used in Foundries, Second Edition, 1998." Value for the Phenolic Urethane Cold Box Process (P001 - P022) is 3.25% or 0.0325, and the value for the Phenolic Urethane No Bake Process (P023) is 5.85% or 0.0585.

7. The permit to install for this emissions unit and the other emissions units in this project (P001-P003, P007-P012, P014-P023) was evaluated based on the actual materials (typically coatings and cleanup 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 this emissions unit 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:

Pollutant: Naphthalene

Maximum Hourly Emission Rate: 1.52 lbs/hr *

TLV: 52,430 ug/m³

MAGLC = TLV/42: 1,248.3 ug/m³

Predicted 1-Hour Maximum Ground-Level Concentration: 19.8 ug/m³

* Emission rate is combined naphthalene emissions from P001-P003, P007-P012, P014-P023.

8. 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 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.).

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.

9. 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.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify the following:
 - a. all periods of time when the sulfuric acid scrubber system was not in use while this emissions unit was in operation;
 - b. all periods of time during which the 1) scrubber solution flow rate is below 150 gallons per minute, 2) fluid level in the scrubber solution holding tanks is below 11 inches, and 3) scrubber solution pH is above 4.5;
 - c. all periods of time during which the differential pressure between the inside and outside of the building enclosure was less than 0.01 inch of water;
 - d. all periods of time during which the interlock system for the loading dock doors did not work, or was not in operation; and
 - e. any month during the quarter when the VOC emissions limitation, as calculated in Section C.3.g, was above 55.55 tons per rolling 12-months.

The quarterly deviation reports shall be submitted in accordance with General Term and Condition A.1.c.ii. The written reports shall be submitted quarterly to the Ohio EPA Northeast District Office, i.e., by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters.

If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report which states that no deviations occurred during the quarter.

2. The permittee shall submit annual reports that identify the following:
 - a. the annual operating hours of the scrubber system;
 - b. the total amount of acid employed in the scrubber (in gallons);
 - c. the calculated annual particulate emissions rate as recorded in Section C.6.a;
 - d. the calculated annual naphthalene emissions rate as recorded in Section C.6.b; and
 - e. the calculated VOC emissions rate as recorded for the month of December per Section C.4.g.

The annual report shall cover each calendar year, January 1 - December 31, and shall be submitted to the Ohio EPA Northeast District Office by January 31 of each year.

E. Testing Requirements

1. Emission Limitation:

Particulate emissions shall not exceed 0.03 pound per hour

Applicable Compliance Method:

If required by Ohio EPA, compliance with the hourly particulate emissions limitation shall be determined in accordance with 40 CFR Part 60, Appendix A, Methods 1 - 5.

2. Emission Limitation:

Visible particulate emissions from the scrubber stack shall not exceed a 10% opacity as a six-minute average

Applicable Compliance Method:

If required by Ohio EPA, compliance with the allowable visible particulate emissions limit shall be determined in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

3. Emission Limitation:

Volatile Organic Compound emissions shall not exceed 0.32 pound per hour

Applicable Compliance Method:

The permittee shall conduct, or have conducted, volatile organic compound mass emission testing at the outlet of the scrubber stack to demonstrate compliance with the combined allowable hourly volatile organic compound emission rates for all emissions units in operation at the time of testing in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 4 and 18, 25 or 25A, as appropriate, or an equivalent method as approved by the Ohio EPA.

4. Emission Limitation:

Naphthalene emissions shall not exceed 0.013 pound per hour

Applicable Compliance Method:

If required by Ohio EPA, compliance with the above limitation shall be demonstrated in accordance with 40 CFR Part 60, Appendix A, Method 18, or an equivalent method as approved by the Ohio EPA.

5. Emission Limitation:

The sulfuric acid packed bed wet scrubber system serving emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, and P022 shall have a control efficiency (i.e., destruction or removal efficiency) which is at least 98% by weight of the catalyst gas emissions (i.e., Dimethylethylamine or DMEA).

Applicable Compliance Method:

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 40 CFR Part 60, Appendix A, Methods 1 through 4 and 18 (for Dimethylethylamine), or an equivalent method as approved by the Ohio EPA.

6. Emission Limitation:

Particulate emissions from the scrubber stack shall not exceed 22.70 tons per year

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.6.a.

7. Emission Limitation:

Volatile Organic Compound emissions from the scrubber stack shall not exceed 55.55 tons per rolling 12-months.

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.4.g.

8. Emission Limitation:

Naphthalene emissions from the scrubber stack shall not exceed 5.59 tons per year

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.6.b.

9. All of the required tests in Sections E.3 and E.5 shall be conducted within 90 days of issuance of this permit. All of the required tests shall also be conducted while emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 are operating at or near the capacity reported for each emissions unit in the PTI application.

No later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA Northeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions units operating parameters, the time(s) and date(s) of the tests, and the person(s) who will be conducting the tests. Failure to submit such notification for review and approval prior to the tests may result in the Ohio EPA Northeast District Office's refusal to accept the results of the emission tests.

Personnel from the Ohio EPA Northeast District Office shall be permitted to witness the tests, examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions units and the testing procedures provide a

valid characterization of the emissions from the emissions units and/or the performance of the control equipment.

A comprehensive written report on the results of the emissions tests shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA Northeast District Office within 30 days following completion of the tests. The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA Northeast District Office.

10. The VOC emissions limitation for each emissions unit, except P023, was calculated using the following: reported maximum use capacity for sand in tons per hour, an emissions factor in lb VOC per ton of sand, and an assumption that 50% of the VOCs are emitted at the mixers and 50% at the mold/core stations. The VOC emissions limitation for P023 included an assumption that 100% of the VOCs are emitted at the unit since mixing and mold making are performed at the same unit.

If all emissions units cannot be operated at the same time during the required testing, then compliance with the hourly VOC emissions rate is determined by comparison of the stack emissions result with the combined allowable hourly VOC emissions rates for all mold/core stations in operation at the time of testing multiplied by two. The multiplication by two accounts for the VOC emissions from the mixer. The allowable hourly VOC emissions rate for P023 would not be doubled. The mixer and station(s) must be operating at the same time during the test.

Compliance with the control efficiency requirement (i.e., destruction or removal efficiency of at least 98% by weight of the catalyst gas emissions, Dimethylethylamine or DMEA) is achieved by comparison of the inlet and outlet emissions results.

F. Miscellaneous Requirements

1. The terms and conditions of this permit supercede those contained in PTI # 02-16560 issued on 10/01/02.
2. The terms and conditions in Sections A, B, C.1 through C.6, D and E of this permit are federally enforceable.
3. The maximum production rates of 1,969 pounds sand per hour and 16 pounds Part I resin per hour were used in the calculations to determine the hourly particulate, volatile organic compound and naphthalene emissions rates under OAC rule 3745-31-05(A)(3) for this emissions unit. These production rates are derived from actual production records. The maximum design capacity for this emissions unit is not known.

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. 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.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
P021 - Mixers Nos. 2 and 3	OAC rule 3745-31-05(A)(3)	Particulate (PE) emissions shall not exceed 5.59 pounds per hour Volatile Organic Compounds (VOC) emissions shall not exceed 5.76 pounds per hour Naphthalene emissions shall not exceed 0.24 pound per hour Visible particulate emissions from the scrubber stack shall not exceed a 10% opacity as a six-minute average See Sections A.2.b & c
	OAC rule 3745-31-05(C)	The maximum sand throughput for this emissions unit shall not exceed 36,213 tons per year. See Sections A.2.a
	OAC rule 3745-17-07(A)(1)	The visible particulate emission limitation specified by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).
	OAC rule 3745-17-11(B)(1)	The particulate emissions limitation specified by this rule is

OAC rule 3745-21-07(G)

OAC rule 3745-21-07(G)(9)(h)

less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).

Exempt. See Section A.2.d

The emission limitation specified by this rule is equivalent to the limitation established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

- 2.a** Emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 are contained in a building. Emissions generated at each emissions unit are vented to a sulfuric acid packed bed wet scrubber. Emissions from the scrubber stack shall not exceed 22.70 tons PE per year, 5.59 tons Naphthalene per year, and 55.55 tons VOC per rolling 12-months.
- 2.b** The building housing emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 shall be maintained in such a manner, i.e., under negative pressure and at a minimum pressure differential that is not less than 0.01 inch of water, as to ensure that all emissions generated within the building are vented to the sulfuric acid packed bed wet scrubber whenever any of the emissions units in the building are in operation.
- 2.c** Emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 are considered part of a phenolic urethane cold box resin binder system. The sulfuric acid packed bed wet scrubber system serving these emissions units shall have a control efficiency (i.e., destruction or removal efficiency) which is at least 98% by weight of the catalyst gas emissions (i.e., Dimethylethylamine or DMEA).
- 2.d** OAC rule 3745-21-07(G)(9)(h) states that the provisions of paragraph (G) of the rule shall not apply to the use of a phenolic urethane cold box resin binder system in foundry core making and mold making operations, provided the catalyst gas emissions are vented to either a sulfuric acid scrubber that is designed and operated to remove at least 98%, by weight, of the catalyst gas emissions or a control device that is designed and operated with an equivalent removal efficiency for the catalyst gas emissions.

B. Operational Restrictions

1. During the first twelve (12) months of operation under this permit, the maximum sand throughput for this emissions unit shall not exceed the amounts specified for each month in the following table:

<u>Calendar Month</u>	<u>Cumulative Allowable Amount of Sand Usage, in tons</u>
1	3,018
2	6,036
3	9,054
4	12,072
5	15,090
6	18,108
7	21,126
8	24,144
9	27,162
10	30,180
11	33,198
12	36,213

2. The sulfuric acid scrubber system shall be used while this emissions unit is in operation.
3. The scrubber solution flow rate shall be continuously maintained at a value of not less than 150 gallons per minute at all times while the emissions unit is in operation.
4. The pH of the scrubber solution shall be maintained at or below 4.5.
5. The fluid level in the scrubber solution holding tanks shall be maintained above 11 inches.
6. The building housing emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 shall be maintained under negative pressure, at a minimum pressure differential that is not less than 0.01 inch of water, whenever any of the emissions units within the building are in operation.
7. An interlock system shall be employed at the loading dock doors so that the doors may not open unless a truck is parked at the opening, under normal operating conditions.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall operate and maintain a system to continuously monitor and record hourly the following information:
 - a. the scrubber solution flow rate, in gallons per minute;

- b. the pH of the scrubber solution; and
 - c. the fluid level in the scrubber solution holding tanks.
2. The permittee shall install, maintain and operate monitoring devices and a recorder which simultaneously measure and record the pressure inside and outside the building enclosure. The monitoring and recording device shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.
3. The permittee shall maintain the following daily record:
 - a. The difference in pressure between the building enclosure and the surrounding area.
 - b. A log or record of downtime for the capture (collection) system, control device, and monitoring equipment when the associated emissions unit was in operation.
4. The permittee shall maintain the following monthly records:
 - a. the total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016 as measured at mixer #1 or P022;
 - b. the total amount of sand, in tons, employed for emissions units P017, P018, P019, and P020 as measured at mixers #2 and #3;
 - c. the total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016, P017, P018, P019, and P020 (a summation of C.4.a and C.4.b);
 - d. the total amount of sand, in tons, employed for emissions unit P023;
 - e. the cumulative, total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016, P017, P018, P019, and P020 over the past 12 months
 - f. the cumulative, total amount of sand, in tons, employed for P023 during the past 12 months; and
 - g. a calculation of the Volatile Organic Compound emissions from the scrubber stack:

$$\text{VOC (tons per rolling 12-months)} = [(A_1 \times EF_1) + (A_2 \times EF_2)] \times \text{ton}/2,000 \text{ lbs}$$

Where:

A_1 = Amount of sand used, in tons/past 12-months, as recorded in Section C.4.e.

EF_1 = Emissions factor of 0.65 lb VOC/ton of sand, taken from the Feb. 16, 1998 Ohio EPA memo regarding "New Emission Factors for Core/Mold making operations, Part 1." Emission factor is for the phenolic urethane cold-box system.

A_2 = Amount of sand used, in tons/past 12-months, as recorded in Section C.4.f.

EF_2 = Emissions factor of 1.17 lb VOC/ton of sand, taken from the Feb. 16, 1998 Ohio EPA memo regarding "New Emission Factors for Core/Mold making operations, Part 1." Emission factor is for the phenolic urethane no-bake system.

5. The permittee shall maintain the following annual records:
 - a. the annual operating hours of the scrubber system;
 - b. the total amount of acid employed in the scrubber, in gallons;
 - c. the total amount of sand employed for P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023, in tons per year;
 - d. each type of resin and the amounts of each resin, in tons per year, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023; and
 - e. each type of catalyst and the amounts of each catalyst, in tons per year, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023.

6. The permittee shall calculate and document the following annual emissions rates for each calendar year, January 1 - December 31 by using the following equations:

- a. Particulate emissions from the scrubber stack:

$$PE \text{ (tons/yr)} = A \times EF \times \text{ton}/2,000 \text{ lbs}$$

Where:

A = Amount of sand used, in tons/year, as recorded in Section C.5.e.

Humtown Pattern Company

PTI Application: 02-19424

Issued: To be entered upon final issuance

Facility ID: 0215000242

Emissions Unit ID: P021

EF = Emissions factor of 0.35 lb PE/ton of sand, taken from Table 2.8-1 of Ohio EPA's RACM guideline.

b. Naphthalene emissions from the scrubber stack:

Napthalene (tons/yr) = Summation of [R x %wt x % Rel.] for each resin containing Napthalene that was used during the calendar year.

Where:

R = Amount of resin containing Napthalene, in tons per year

%wt = percent of Napthalene, by weight, in the resin.

% Rel.= Value representing % Napthalene released in the Phenolic Urethane Cold Box Process (P001 - P022) and in the Phenolic Urethane No Bake Process (P023), expressed as a decimal in the equation. Value taken from "Form R, Reporting of Binder Chemicals Used in Foundries, Second Edition, 1998." Value for the Phenolic Urethane Cold Box Process (P001 - P022) is 3.25% or 0.0325, and the value for the Phenolic Urethane No Bake Process (P023) is 5.85% or 0.0585.

7. The permit to install for this emissions unit and the other emissions units in this project (P001-P003, P007-P012, P014-P023) was evaluated based on the actual materials (typically coatings and cleanup 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 this emissions unit 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:

Pollutant: Naphthalene

Maximum Hourly Emission Rate: 1.52 lbs/hr *

TLV: 52,430 ug/m³

MAGLC = TLV/42: 1,248.3 ug/m³

Predicted 1-Hour Maximum Ground-Level Concentration: 19.8 ug/m³

* Emission rate is combined naphthalene emissions from P001-P003, P007-P012, P014-P023.

8. 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 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.).

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.

9. 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.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify the following:
 - a. all periods of time when the sulfuric acid scrubber system was not in use while this emissions unit was in operation;
 - b. all periods of time during which the 1) scrubber solution flow rate is below 150 gallons per minute, 2) fluid level in the scrubber solution holding tanks is below 11 inches, and 3) scrubber solution pH is above 4.5;
 - c. all periods of time during which the differential pressure between the inside and outside of the building enclosure was less than 0.01 inch of water;
 - d. all periods of time during which the interlock system for the loading dock doors did not work, or was not in operation; and
 - e. any month during the quarter when the VOC emissions limitation, as calculated in Section C.3.g, was above 55.55 tons per rolling 12-months.

The quarterly deviation reports shall be submitted in accordance with General Term and Condition A.1.c.ii. The written reports shall be submitted quarterly to the Ohio EPA Northeast District Office, i.e., by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters.

If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report which states that no deviations occurred during the quarter.

2. The permittee shall submit annual reports that identify the following:
 - a. the annual operating hours of the scrubber system;
 - b. the total amount of acid employed in the scrubber (in gallons);
 - c. the calculated annual particulate emissions rate as recorded in Section C.6.a;
 - d. the calculated annual naphthalene emissions rate as recorded in Section C.6.b; and
 - e. the calculated VOC emissions rate as recorded for the month of December per Section C.4.g.

The annual report shall cover each calendar year, January 1 - December 31, and shall be submitted to the Ohio EPA Northeast District Office by January 31 of each year.

E. Testing Requirements

1. Emission Limitation:

Particulate emissions shall not exceed 5.59 pounds per hour

Applicable Compliance Method:

If required by Ohio EPA, compliance with the hourly particulate emissions limitation shall be determined in accordance with 40 CFR Part 60, Appendix A, Methods 1 - 5.

2. Emission Limitation:

Visible particulate emissions from the scrubber stack shall not exceed a 10% opacity as a six-minute average

Applicable Compliance Method:

If required by Ohio EPA, compliance with the allowable visible particulate emissions limit shall be determined in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

3. Emission Limitation:

Volatile Organic Compound emissions shall not exceed 5.76 pounds per hour

Applicable Compliance Method:

The permittee shall conduct, or have conducted, volatile organic compound mass emission testing at the outlet of the scrubber stack to demonstrate compliance with the combined allowable hourly volatile organic compound emission rates for all emissions units in operation at the time of testing in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 4 and 18, 25 or 25A, as appropriate, or an equivalent method as approved by the Ohio EPA.

4. Emission Limitation:

Naphthalene emissions shall not exceed 0.24 pound per hour

Applicable Compliance Method:

If required by Ohio EPA, compliance with the above limitation shall be demonstrated in accordance with 40 CFR Part 60, Appendix A, Method 18, or an equivalent method as approved by the Ohio EPA.

5. Emission Limitation:

The sulfuric acid packed bed wet scrubber system serving emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, and P022 shall have a control efficiency (i.e., destruction or removal efficiency) which is at least 98% by weight of the catalyst gas emissions (i.e., Dimethylethylamine or DMEA).

Applicable Compliance Method:

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 40 CFR Part 60, Appendix A, Methods 1 through 4 and 18 (for Dimethylethylamine), or an equivalent method as approved by the Ohio EPA.

6. Emission Limitation:

Particulate emissions from the scrubber stack shall not exceed 22.70 tons per year

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.6.a.

7. Emission Limitation:

Volatile Organic Compound emissions from the scrubber stack shall not exceed 55.55 tons per rolling 12-months.

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.4.g.

8. Emission Limitation:

Naphthalene emissions from the scrubber stack shall not exceed 5.59 tons per year

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.6.b.

9. All of the required tests in Sections E.3 and E.5 shall be conducted within 90 days of issuance of this permit. All of the required tests shall also be conducted while emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 are operating at or near the capacity reported for each emissions unit in the PTI application.

No later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA Northeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions units operating parameters, the time(s) and date(s) of the tests, and the person(s) who will be conducting the tests. Failure to submit such notification for review and approval prior to the tests may result in the Ohio EPA Northeast District Office's refusal to accept the results of the emission tests.

Personnel from the Ohio EPA Northeast District Office shall be permitted to witness the tests, examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions units and the testing procedures provide a

valid characterization of the emissions from the emissions units and/or the performance of the control equipment.

A comprehensive written report on the results of the emissions tests shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA Northeast District Office within 30 days following completion of the tests. The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA Northeast District Office.

10. The VOC emissions limitation for each emissions unit, except P023, was calculated using the following: reported maximum use capacity for sand in tons per hour, an emissions factor in lb VOC per ton of sand, and an assumption that 50% of the VOCs are emitted at the mixers and 50% at the mold/core stations. The VOC emissions limitation for P023 included an assumption that 100% of the VOCs are emitted at the unit since mixing and mold making are performed at the same unit.

If all emissions units cannot be operated at the same time during the required testing, then compliance with the hourly VOC emissions rate is determined by comparison of the stack emissions result with the combined allowable hourly VOC emissions rates for all mold/core stations in operation at the time of testing multiplied by two. The multiplication by two accounts for the VOC emissions from the mixer. The allowable hourly VOC emissions rate for P023 would not be doubled. The mixer and station(s) must be operating at the same time during the test.

Compliance with the control efficiency requirement (i.e., destruction or removal efficiency of at least 98% by weight of the catalyst gas emissions, Dimethylethylamine or DMEA) is achieved by comparison of the inlet and outlet emissions results.

F. Miscellaneous Requirements

1. The terms and conditions of this permit supercede those contained in PTI # 02-16560 issued on 10/01/02.
2. The terms and conditions in Sections A, B, C.1 through C.6, D and E of this permit are federally enforceable.
3. The maximum production, or design, rates of 35,468 pounds sand per hour and 293 pounds Part I resin per hour were used in the calculations to determine the hourly particulate, volatile organic compound and naphthalene emissions rates under OAC rule 3745-31-05(A)(3) for this emissions unit.
4. The restricted rate of 36,213 tons sand per year and 299 tons Part I resin per year are the respective summations of the maximum production rates of P017, P018, P019 and P020, which are the mold/core stations receiving mixed sand/resin from this emissions unit.

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. Applicable Emissions Limitations and/or Control Requirements

- 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.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
P022 - Mixer No. 1	OAC rule 3745-31-05(A)(3)	Particulate (PE) emissions shall not exceed 2.79 pounds per hour Volatile Organic Compounds (VOC) emissions shall not exceed 2.88 pounds per hour Naphthalene emissions shall not exceed 0.12 pound per hour Visible particulate emissions from the scrubber stack shall not exceed a 10% opacity as a six-minute average See Sections A.2.b & c
	OAC rule 3745-31-05(C)	The maximum sand throughput for this emissions unit shall not exceed 41,602 tons per year. See Sections A.2.a
	OAC rule 3745-17-07(A)(1)	The visible particulate emission limitation specified by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).
	OAC rule 3745-17-11(B)(1)	The particulate emissions limitation specified by this rule is

OAC rule 3745-21-07(G)

OAC rule 3745-21-07(G)(9)(h)

less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).

Exempt. See Section A.2.d

The emission limitation specified by this rule is equivalent to the limitation established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

- 2.a** Emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 are contained in a building. Emissions generated at each emissions unit are vented to a sulfuric acid packed bed wet scrubber. Emissions from the scrubber stack shall not exceed 22.70 tons PE per year, 5.59 tons Naphthalene per year, and 55.55 tons VOC per rolling 12-months.
- 2.b** The building housing emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 shall be maintained in such a manner, i.e., under negative pressure and at a minimum pressure differential that is not less than 0.01 inch of water, as to ensure that all emissions generated within the building are vented to the sulfuric acid packed bed wet scrubber whenever any of the emissions units in the building are in operation.
- 2.c** Emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 are considered part of a phenolic urethane cold box resin binder system. The sulfuric acid packed bed wet scrubber system serving these emissions units shall have a control efficiency (i.e., destruction or removal efficiency) which is at least 98% by weight of the catalyst gas emissions (i.e., Dimethylethylamine or DMEA).
- 2.d** OAC rule 3745-21-07(G)(9)(h) states that the provisions of paragraph (G) of the rule shall not apply to the use of a phenolic urethane cold box resin binder system in foundry core making and mold making operations, provided the catalyst gas emissions are vented to either a sulfuric acid scrubber that is designed and operated to remove at least 98%, by weight, of the catalyst gas emissions or a control device that is designed and operated with an equivalent removal efficiency for the catalyst gas emissions.

B. Operational Restrictions

1. During the first twelve (12) months of operation under this permit, the maximum sand throughput for this emissions unit shall not exceed the amounts specified for each month in the following table:

<u>Calendar Month</u>	<u>Cumulative Allowable Amount of Sand Usage, in tons</u>
1	3,467
2	6,934
3	10,401
4	13,868
5	17,335
6	20,802
7	24,269
8	27,736
9	31,203
10	34,670
11	38,137
12	41,602

2. The sulfuric acid scrubber system shall be used while this emissions unit is in operation.
3. The scrubber solution flow rate shall be continuously maintained at a value of not less than 150 gallons per minute at all times while the emissions unit is in operation.
4. The pH of the scrubber solution shall be maintained at or below 4.5.
5. The fluid level in the scrubber solution holding tanks shall be maintained above 11 inches.
6. The building housing emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 shall be maintained under negative pressure, at a minimum pressure differential that is not less than 0.01 inch of water, whenever any of the emissions units within the building are in operation.
7. An interlock system shall be employed at the loading dock doors so that the doors may not open unless a truck is parked at the opening, under normal operating conditions.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall operate and maintain a system to continuously monitor and record hourly the following information:
 - a. the scrubber solution flow rate, in gallons per minute;

- b. the pH of the scrubber solution; and
 - c. the fluid level in the scrubber solution holding tanks.
 2. The permittee shall install, maintain and operate monitoring devices and a recorder which simultaneously measure and record the pressure inside and outside the building enclosure. The monitoring and recording device shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.
 3. The permittee shall maintain the following daily record:
 - a. The difference in pressure between the building enclosure and the surrounding area.
 - b. A log or record of downtime for the capture (collection) system, control device, and monitoring equipment when the associated emissions unit was in operation.
 4. The permittee shall maintain the following monthly records:
 - a. the total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016 as measured at mixer #1 or P022;
 - b. the total amount of sand, in tons, employed for emissions units P017, P018, P019, and P020 as measured at mixers #2 and #3;
 - c. the total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016, P017, P018, P019, and P020 (a summation of C.4.a and C.4.b);
 - d. the total amount of sand, in tons, employed for emissions unit P023;
 - e. the cumulative, total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016, P017, P018, P019, and P020 over the past 12 months
 - f. the cumulative, total amount of sand, in tons, employed for P023 during the past 12 months; and
 - g. a calculation of the Volatile Organic Compound emissions from the scrubber stack:

$$\text{VOC (tons per rolling 12-months)} = [(A_1 \times EF_1) + (A_2 \times EF_2)] \times \text{ton}/2,000 \text{ lbs}$$

Where:

- A_1 = Amount of sand used, in tons/past 12-months, as recorded in Section C.4.e.
- EF_1 = Emissions factor of 0.65 lb VOC/ton of sand, taken from the Feb. 16, 1998 Ohio EPA memo regarding "New Emission Factors for Core/Mold making operations, Part 1." Emission factor is for the phenolic urethane cold-box system.
- A_2 = Amount of sand used, in tons/past 12-months, as recorded in Section C.4.f.
- EF_2 = Emissions factor of 1.17 lb VOC/ton of sand, taken from the Feb. 16, 1998 Ohio EPA memo regarding "New Emission Factors for Core/Mold making operations, Part 1." Emission factor is for the phenolic urethane no-bake system.

- 5. The permittee shall maintain the following annual records:
 - a. the annual operating hours of the scrubber system;
 - b. the total amount of acid employed in the scrubber, in gallons;
 - c. the total amount of sand employed for P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023, in tons per year;
 - d. each type of resin and the amounts of each resin, in tons per year, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023; and
 - e. each type of catalyst and the amounts of each catalyst, in tons per year, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023.

- 6. The permittee shall calculate and document the following annual emissions rates for each calendar year, January 1 - December 31 by using the following equations:
 - a. Particulate emissions from the scrubber stack:

$$PE \text{ (tons/yr)} = A \times EF \times \text{ton}/2,000 \text{ lbs}$$

Where:

- A = Amount of sand used, in tons/year, as recorded in Section C.5.e.

EF = Emissions factor of 0.35 lb PE/ton of sand, taken from Table 2.8-1 of Ohio EPA's RACM guideline.

b. Naphthalene emissions from the scrubber stack:

Napthalene (tons/yr) = Summation of [R x %wt x % Rel.] for each resin containing Napthalene that was used during the calendar year.

Where:

R = Amount of resin containing Napthalene, in tons per year

%wt = percent of Napthalene, by weight, in the resin.

% Rel.= Value representing % Napthalene released in the Phenolic Urethane Cold Box Process (P001 - P022) and in the Phenolic Urethane No Bake Process (P023), expressed as a decimal in the equation. Value taken from "Form R, Reporting of Binder Chemicals Used in Foundries, Second Edition, 1998." Value for the Phenolic Urethane Cold Box Process (P001 - P022) is 3.25% or 0.0325, and the value for the Phenolic Urethane No Bake Process (P023) is 5.85% or 0.0585.

7. The permit to install for this emissions unit and the other emissions units in this project (P001-P003, P007-P012, P014-P023) was evaluated based on the actual materials (typically coatings and cleanup 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 this emissions unit 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:

Pollutant: Naphthalene

Maximum Hourly Emission Rate: 1.52 lbs/hr *

TLV: 52,430 ug/m³

MAGLC = TLV/42: 1,248.3 ug/m³

Predicted 1-Hour Maximum Ground-Level Concentration: 19.8 ug/m³

* Emission rate is combined naphthalene emissions from P001-P003, P007-P012, P014-P023.

8. 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 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.).

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.

9. 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.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify the following:
 - a. all periods of time when the sulfuric acid scrubber system was not in use while this emissions unit was in operation;
 - b. all periods of time during which the 1) scrubber solution flow rate is below 150 gallons per minute, 2) fluid level in the scrubber solution holding tanks is below 11 inches, and 3) scrubber solution pH is above 4.5;
 - c. all periods of time during which the differential pressure between the inside and outside of the building enclosure was less than 0.01 inch of water;
 - d. all periods of time during which the interlock system for the loading dock doors did not work, or was not in operation; and
 - e. any month during the quarter when the VOC emissions limitation, as calculated in Section C.3.g, was above 55.55 tons per rolling 12-months.

The quarterly deviation reports shall be submitted in accordance with General Term and Condition A.1.c.ii. The written reports shall be submitted quarterly to the Ohio EPA Northeast District Office, i.e., by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters.

If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report which states that no deviations occurred during the quarter.

2. The permittee shall submit annual reports that identify the following:
 - a. the annual operating hours of the scrubber system;
 - b. the total amount of acid employed in the scrubber (in gallons);
 - c. the calculated annual particulate emissions rate as recorded in Section C.6.a;
 - d. the calculated annual naphthalene emissions rate as recorded in Section C.6.b; and
 - e. the calculated VOC emissions rate as recorded for the month of December per Section C.4.g.

The annual report shall cover each calendar year, January 1 - December 31, and shall be submitted to the Ohio EPA Northeast District Office by January 31 of each year.

E. Testing Requirements

1. Emission Limitation:

Particulate emissions shall not exceed 2.79 pounds per hour

Applicable Compliance Method:

If required by Ohio EPA, compliance with the hourly particulate emissions limitation shall be determined in accordance with 40 CFR Part 60, Appendix A, Methods 1 - 5.

2. Emission Limitation:

Visible particulate emissions from the scrubber stack shall not exceed a 10% opacity as a six-minute average

Applicable Compliance Method:

If required by Ohio EPA, compliance with the allowable visible particulate emissions limit shall be determined in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

3. Emission Limitation:

Volatile Organic Compound emissions shall not exceed 2.88 pounds per hour

Applicable Compliance Method:

The permittee shall conduct, or have conducted, volatile organic compound mass emission testing at the outlet of the scrubber stack to demonstrate compliance with the combined allowable hourly volatile organic compound emission rates for all emissions units in operation at the time of testing in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 4 and 18, 25 or 25A, as appropriate, or an equivalent method as approved by the Ohio EPA.

4. Emission Limitation:

Naphthalene emissions shall not exceed 0.12 pound per hour

Applicable Compliance Method:

If required by Ohio EPA, compliance with the above limitation shall be demonstrated in accordance with 40 CFR Part 60, Appendix A, Method 18, or an equivalent method as approved by the Ohio EPA.

5. Emission Limitation:

The sulfuric acid packed bed wet scrubber system serving emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, and P022 shall have a control efficiency (i.e., destruction or removal efficiency) which is at least 98% by weight of the catalyst gas emissions (i.e., Dimethylethylamine or DMEA).

Applicable Compliance Method:

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 40 CFR Part 60, Appendix A, Methods 1 through 4 and 18 (for Dimethylethylamine), or an equivalent method as approved by the Ohio EPA.

6. Emission Limitation:

Particulate emissions from the scrubber stack shall not exceed 22.70 tons per year

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.6.a.

7. Emission Limitation:

Volatile Organic Compound emissions from the scrubber stack shall not exceed 55.55 tons per rolling 12-months.

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.4.g.

8. Emission Limitation:

Naphthalene emissions from the scrubber stack shall not exceed 5.59 tons per year

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.6.b.

9. All of the required tests in Sections E.3 and E.5 shall be conducted within 90 days of issuance of this permit. All of the required tests shall also be conducted while emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 are operating at or near the capacity reported for each emissions unit in the PTI application.

No later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA Northeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions units operating parameters, the time(s) and date(s) of the tests, and the person(s) who will be conducting the tests. Failure to submit such notification for review and approval prior to the tests may result in the Ohio EPA Northeast District Office's refusal to accept the results of the emission tests.

Personnel from the Ohio EPA Northeast District Office shall be permitted to witness the tests, examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions units and the testing procedures provide a

valid characterization of the emissions from the emissions units and/or the performance of the control equipment.

A comprehensive written report on the results of the emissions tests shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA Northeast District Office within 30 days following completion of the tests. The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA Northeast District Office.

10. The VOC emissions limitation for each emissions unit, except P023, was calculated using the following: reported maximum use capacity for sand in tons per hour, an emissions factor in lb VOC per ton of sand, and an assumption that 50% of the VOCs are emitted at the mixers and 50% at the mold/core stations. The VOC emissions limitation for P023 included an assumption that 100% of the VOCs are emitted at the unit since mixing and mold making are performed at the same unit.

If all emissions units cannot be operated at the same time during the required testing, then compliance with the hourly VOC emissions rate is determined by comparison of the stack emissions result with the combined allowable hourly VOC emissions rates for all mold/core stations in operation at the time of testing multiplied by two. The multiplication by two accounts for the VOC emissions from the mixer. The allowable hourly VOC emissions rate for P023 would not be doubled. The mixer and station(s) must be operating at the same time during the test.

Compliance with the control efficiency requirement (i.e., destruction or removal efficiency of at least 98% by weight of the catalyst gas emissions, Dimethylethylamine or DMEA) is achieved by comparison of the inlet and outlet emissions results.

F. Miscellaneous Requirements

1. The terms and conditions in Sections A, B, C.1 through C.6, D and E of this permit are federally enforceable.
2. The maximum production, or design, rates of 17,734 pounds sand per hour and 146 pounds Part I resin per hour and the restricted rates of 41,602 tons sand per year and 343 tons Part I resin per year were used in the calculations to determine the hourly particulate, volatile organic compound and naphthalene emissions rates under OAC rule 3745-31-05(A)(3) for this emissions unit.
3. The restricted rate of 41,602 tons sand per year and 343 tons Part 1 resin per year are the respective summations of maximum production rates of P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015 and P016 which are the mold/core stations receiving mixed sand/resin from this emissions unit.

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. 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.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
P023 - Pep set mixer and Phenolic Urethane No Bake Mold/Core Station	OAC rule 3745-31-05(A)(3)	Particulate (PE) emissions shall not exceed 2.07 pounds per hour Volatile Organic Compounds (VOC) emissions shall not exceed 6.91 pounds per hour Naphthalene emissions shall not exceed 1.04 pounds per hour Visible particulate emissions from the scrubber stack shall not exceed a 10% opacity as a six-minute average See Sections A.2.a, b & c
	OAC rule 3745-17-07(A)(1)	The visible particulate emission limitation specified by this rule is less stringent than the limitation established pursuant to OAC rule 3745-31-05(A)(3).
	OAC rule 3745-17-11(B)(1)	The particulate emissions limitation specified 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)	Exempt. See Section A.2.c

2. Additional Terms and Conditions

- 2.a** Emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 are contained in a building. Emissions generated at each emissions unit are vented to a sulfuric acid packed bed wet scrubber. Emissions from the scrubber stack shall not exceed 22.70 tons PE per year, 5.59 tons Naphthalene per year, and 55.55 tons VOC per rolling 12-months.
- 2.b** The building housing emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 shall be maintained in such a manner, i.e., under negative pressure and at a minimum pressure differential that is not less than 0.01 inch of water, as to ensure that all emissions generated within the building are vented to the sulfuric acid packed bed wet scrubber whenever any of the emissions units in the building are in operation.
- 2.c** OAC rule 3745-21-07(G)(9)(i) states that the provisions of paragraph (G) of the rule shall not apply to the use of a phenolic urethane no bake resin binder system in foundry core making and mold making operations.

B. Operational Restrictions

1. The maximum design capacity of 51,748 tons sand per year for this emissions unit shall not be exceeded.
2. The sulfuric acid scrubber system shall be used while this emissions unit is in operation.
3. The scrubber solution flow rate shall be continuously maintained at a value of not less than 150 gallons per minute at all times while the emissions unit is in operation.
4. The pH of the scrubber solution shall be maintained at or below 4.5.
5. The fluid level in the scrubber solution holding tanks shall be maintained above 11 inches.
6. The building housing emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 shall be maintained under negative pressure, at a minimum pressure differential that is not less than 0.01 inch of water, whenever any of the emissions units within the building are in operation.
7. An interlock system shall be employed at the loading dock doors so that the doors may not open unless a truck is parked at the opening, under normal operating conditions.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall operate and maintain a system to continuously monitor and record hourly the following information:
 - a. the scrubber solution flow rate, in gallons per minute;
 - b. the pH of the scrubber solution; and
 - c. the fluid level in the scrubber solution holding tanks.
2. The permittee shall install, maintain and operate monitoring devices and a recorder which simultaneously measure and record the pressure inside and outside the building enclosure. The monitoring and recording device shall be installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.
3. The permittee shall maintain the following daily record:
 - a. The difference in pressure between the building enclosure and the surrounding area.
 - b. A log or record of downtime for the capture (collection) system, control device, and monitoring equipment when the associated emissions unit was in operation.
4. The permittee shall maintain the following monthly records:
 - a. the total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016 as measured at mixer #1 or P022;
 - b. the total amount of sand, in tons, employed for emissions units P017, P018, P019, and P020 as measured at mixers #2 and #3;
 - c. the total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016, P017, P018, P019, and P020 (a summation of C.4.a and C.4.b);
 - d. the total amount of sand, in tons, employed for emissions unit P023;
 - e. the cumulative, total amount of sand, in tons, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, and P016, P017, P018, P019, and P020 over the past 12 months

- f. the cumulative, total amount of sand, in tons, employed for P023 during the past 12 months; and
- g. a calculation of the Volatile Organic Compound emissions from the scrubber stack:

$$\text{VOC (tons per rolling 12-months)} = [(A_1 \times EF_1) + (A_2 \times EF_2)] \times \text{ton}/2,000 \text{ lbs}$$

Where:

A_1 = Amount of sand used, in tons/past 12-months, as recorded in Section C.4.e.

EF_1 = Emissions factor of 0.65 lb VOC/ton of sand, taken from the Feb. 16, 1998 Ohio EPA memo regarding "New Emission Factors for Core/Mold making operations, Part 1." Emission factor is for the phenolic urethane cold-box system.

A_2 = Amount of sand used, in tons/past 12-months, as recorded in Section C.4.f.

EF_2 = Emissions factor of 1.17 lb VOC/ton of sand, taken from the Feb. 16, 1998 Ohio EPA memo regarding "New Emission Factors for Core/Mold making operations, Part 1." Emission factor is for the phenolic urethane no-bake system.

- 5. The permittee shall maintain the following annual records:
 - a. the annual operating hours of the scrubber system;
 - b. the total amount of acid employed in the scrubber, in gallons;
 - c. the total amount of sand employed for P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023, in tons per year;
 - d. each type of resin and the amounts of each resin, in tons per year, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023; and
 - e. each type of catalyst and the amounts of each catalyst, in tons per year, employed for emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022, and P023.

6. The permittee shall calculate and document the following annual emissions rates for each calendar year, January 1 - December 31 by using the following equations:

a. Particulate emissions from the scrubber stack:

$$PE \text{ (tons/yr)} = A \times EF \times \text{ton}/2,000 \text{ lbs}$$

Where:

A = Amount of sand used, in tons/year, as recorded in Section C.5.e.

EF = Emissions factor of 0.35 lb PE/ton of sand, taken from Table 2.8-1 of Ohio EPA's RACM guideline.

b. Naphthalene emissions from the scrubber stack:

$$\text{Naphthalene (tons/yr)} = \text{Summation of } [R \times \%wt \times \% \text{ Rel.}] \text{ for each resin containing Naphthalene that was used during the calendar year.}$$

Where:

R = Amount of resin containing Naphthalene, in tons per year

%wt = percent of Naphthalene, by weight, in the resin.

% Rel.= Value representing % Naphthalene released in the Phenolic Urethane Cold Box Process (P001 - P022) and in the Phenolic Urethane No Bake Process (P023), expressed as a decimal in the equation. Value taken from "Form R, Reporting of Binder Chemicals Used in Foundries, Second Edition, 1998." Value for the Phenolic Urethane Cold Box Process (P001 - P022) is 3.25% or 0.0325, and the value for the Phenolic Urethane No Bake Process (P023) is 5.85% or 0.0585.

7. The permit to install for this emissions unit and the other emissions units in this project (P001-P003, P007-P012, P014-P023) was evaluated based on the actual materials (typically coatings and cleanup 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 this emissions unit 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:

Pollutant: Naphthalene

Maximum Hourly Emission Rate: 1.52 lbs/hr *

TLV: 52,430 ug/m³

MAGLC = TLV/42: 1,248.3 ug/m³

Predicted 1-Hour Maximum Ground-Level Concentration: 19.8 ug/m³

* Emission rate is combined naphthalene emissions from P001-P003, P007-P012, P014-P023.

8. 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 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.).

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.

9. 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.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify the following:
 - a. all periods of time when the sulfuric acid scrubber system was not in use while this emissions unit was in operation;
 - b. all periods of time during which the 1) scrubber solution flow rate is below 150 gallons per minute, 2) fluid level in the scrubber solution holding tanks is below 11 inches, and 3) scrubber solution pH is above 4.5;
 - c. all periods of time during which the differential pressure between the inside and outside of the building enclosure was less than 0.01 inch of water;
 - d. all periods of time during which the interlock system for the loading dock doors did not work, or was not in operation; and
 - e. any month during the quarter when the VOC emissions limitation, as calculated in Section C.3.g, was above 55.55 tons per rolling 12-months.

The quarterly deviation reports shall be submitted in accordance with General Term and Condition A.1.c.ii. The written reports shall be submitted quarterly to the Ohio EPA Northeast District Office, i.e., by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters.

If no deviations occurred during a calendar quarter, the permittee shall submit a quarterly report which states that no deviations occurred during the quarter.

2. The permittee shall submit annual reports that identify the following:
 - a. the annual operating hours of the scrubber system;
 - b. the total amount of acid employed in the scrubber (in gallons);
 - c. the calculated annual particulate emissions rate as recorded in Section C.6.a;

- d. the calculated annual naphthalene emissions rate as recorded in Section C.6.b; and
- e. the calculated VOC emissions rate as recorded for the month of December per Section C.4.g.

The annual report shall cover each calendar year, January 1 - December 31, and shall be submitted to the Ohio EPA Northeast District Office by January 31 of each year.

E. Testing Requirements

1. Emission Limitation:

Particulate emissions shall not exceed 2.07 pounds per hour

Applicable Compliance Method:

If required by Ohio EPA, compliance with the hourly particulate emissions limitation shall be determined in accordance with 40 CFR Part 60, Appendix A, Methods 1 - 5.

2. Emission Limitation:

Visible particulate emissions from the scrubber stack shall not exceed a 10% opacity as a six-minute average

Applicable Compliance Method:

If required by Ohio EPA, compliance with the allowable visible particulate emissions limit shall be determined in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03(B)(1).

3. Emission Limitation:

Volatile Organic Compound emissions shall not exceed 6.91 pounds per hour

Applicable Compliance Method:

The permittee shall conduct, or have conducted, volatile organic compound mass emission testing at the outlet of the scrubber stack to demonstrate compliance with the combined allowable hourly volatile organic compound emission rates for all emissions units in operation at the time of testing in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 4 and 18, 25 or 25A, as appropriate, or an equivalent method as approved by the Ohio EPA.

4. Emission Limitation:

Naphthalene emissions shall not exceed 1.04 pounds per hour

Applicable Compliance Method:

If required by Ohio EPA, compliance with the above limitation shall be demonstrated in accordance with 40 CFR Part 60, Appendix A, Method 18, or an equivalent method as approved by the Ohio EPA.

Humtown Pattern Company

PTI Application: 02-19424

Issued: To be entered upon final issuance

Facility ID: 0215000242

Emissions Unit ID: P023

5. Emission Limitation:

Particulate emissions from the scrubber stack shall not exceed 22.70 tons per year

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.6.a.

6. Emission Limitation:

Volatile Organic Compound emissions from the scrubber stack shall not exceed 55.55 tons per rolling 12-months.

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.4.g.

7. Emission Limitation:

Naphthalene emissions from the scrubber stack shall not exceed 5.59 tons per year

Applicable Compliance Method:

Compliance with the emissions limitation above shall be determined by the calculation and record keeping in Section C.6.b.

8. All of the required tests in Section E.3 shall be conducted within 90 days of issuance of this permit. All of the required tests shall also be conducted while emissions units P001, P002, P003, P007, P008, P009, P010, P011, P012, P014, P015, P016, P017, P018, P019, P020, P021, P022 and P023 are operating at or near the capacity reported for each emissions unit in the PTI application.

No later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA Northeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions units operating parameters, the time(s) and date(s) of the tests, and the person(s) who will be conducting the tests. Failure to submit such notification for review and approval prior to the tests may result in the Ohio EPA Northeast District Office's refusal to accept the results of the emission tests.

Personnel from the Ohio EPA Northeast District Office shall be permitted to witness the tests, examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions units and the testing procedures provide a valid characterization of the emissions from the emissions units and/or the performance of the control equipment.

A comprehensive written report on the results of the emissions tests shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA Northeast District Office within 30 days following completion of the tests. The permittee

may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA Northeast District Office.

9. The VOC emissions limitation for each emissions unit, except P023, was calculated using the following: reported maximum use capacity for sand in tons per hour, an emissions factor in lb VOC per ton of sand, and an assumption that 50% of the VOCs are emitted at the mixers and 50% at the mold/core stations. The VOC emissions limitation for P023 included an assumption that 100% of the VOCs are emitted at the unit since mixing and mold making are performed at the same unit.

If all emissions units cannot be operated at the same time during the required testing, then compliance with the hourly VOC emissions rate is determined by comparison of the stack emissions result with the combined allowable hourly VOC emissions rates for all mold/core stations in operation at the time of testing multiplied by two. The multiplication by two accounts for the VOC emissions from the mixer. The allowable hourly VOC emissions rate for P023 would not be doubled. The mixer and station(s) must be operating at the same time during the test.

F. Miscellaneous Requirements

1. The terms and conditions in Sections A, B, C.1 through C.4, D and E of this permit are federally enforceable.
2. The maximum production rates of 11,815 pounds sand per hour, 51,748 tons sand per year, 97 pounds Part I resin per hour, and 427 tons Part I resin per year, 80 pounds Part II resin per hour, and 349 tons Part II resin per year, 8 pounds Pepset Catalyst per hour, and 36 tons Pepset Catalyst per year were used in the calculations to determine the allowable emissions rates under OAC rule 3745-31-05(A)(3). These maximum production rates are reported to be based on equipment design.