OhioEPA

John R. Kasich, Governor
Mary Taylor, Lt. Governor
Craig W. Butler, Director

11/18/2014

Certified Mail

No	TOXIC REVIEW
No	PSD
No	SYNTHETIC MINOR TO AVOID MAJOR NSR
No	CEMS
No	MACT/GACT
Yes	NSPS
No	NESHAPS
No	NETTING
No	MAJOR NON-ATTAINMENT
No	MODELING SUBMITTED
No	MAJOR GHG
No	SYNTHETIC MINOR TO AVOID MAJOR GHG

Mr. Dan Call
Ironrock Capital, Inc.
1201 Millerton Road S.E.
Canton, OH 44707

RE: FINALAIR POLLUTION PERMIT-TO-INSTALL
Facility ID: 1576051149
Permit Number: P0109639
Permit Type: Administrative Modification
County: Stark

Dear Permit Holder:

Enclosed please find a final Ohio Environmental Protection Agency (EPA)Air Pollution Permit-to-Install (PTI) which will allow you to install or modify the described emissions unit(s) in a manner indicated in the permit. Because this permit contains several conditions and restrictions, we urge you to read it carefully. Because this permit contains conditions and restrictions, please read it very carefully. In this letter you will find the information on the following topics:

- **How to appeal this permit**
- **How to save money, reduce pollution and reduce energy consumption**
- **How to give us feedback on your permitting experience**
- **How to get an electronic copy of your permit**

How to appeal this permit

The issuance of this PTI is a final action of the Director and may be appealed to the Environmental Review Appeals Commission pursuant to Section 3745.04 of the Ohio Revised Code. The appeal must be in writing and set forth the action complained of and the grounds upon which the appeal is based. The appeal must be filed with the Commission within thirty (30) days after notice of the Director's action. The appeal must be accompanied by a filing fee of $70.00, made payable to "Ohio Treasurer Josh Mandel," which the Commission, in its discretion, may reduce if by affidavit you demonstrate that payment of the full amount of the fee would cause extreme hardship. Notice of the filing of the appeal shall be filed with the Director within three (3) days of filing with the Commission. Ohio EPA requests that a copy of the appeal be served upon the Ohio Attorney General's Office, Environmental Enforcement Section. An appeal may be filed with the Environmental Review Appeals Commission at the following address:

Environmental Review Appeals Commission
77 South High Street, 17th Floor
Columbus, OH 43215

How to save money, reduce pollution and reduce energy consumption

The Ohio EPA is encouraging 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 Compliance Assistance and Pollution Prevention at (614) 644-3469. Additionally, all or a portion of the capital expenditures related to installing air pollution control equipment under this permit may be eligible for financing and State tax exemptions through the Ohio Air Quality Development Authority (OAQDA) under Ohio Revised Code Section 3706. For more information, see the OAQDA website: www.ohioairquality.org/clean_air

How to give us feedback on your permitting experience

Please complete a survey at www.epa.ohio.gov/survey.aspx and give us feedback on your permitting experience. We value your opinion.

How to get an electronic copy of your permit

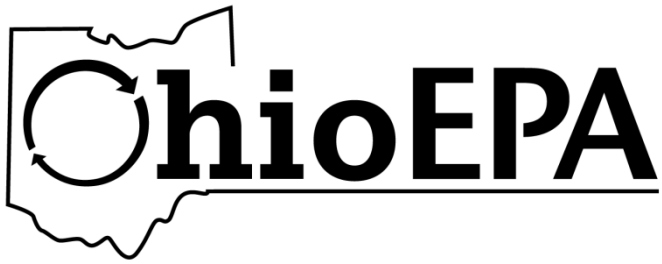
This permit can be accessed electronically via the eBusiness Center: Air Services in Microsoft Word format or in Adobe PDF on the Division of Air Pollution Control (DAPC) Web page, www.epa.ohio.gov/dapc by clicking the "Search for Permits" link under the Permitting topic on the Programs tab.

If you have any questions, please contact Canton City Health Department at (330)489-3385 or the Office of Compliance Assistance and Pollution Prevention at (614) 644-3469.

Sincerely,

Erica R. Engel-Ishida, Manager
Permit Issuance and Data Management Section, DAPC

Cc: U.S. EPA
Canton; Pennsylvania; West Virginia



FINAL

Division of Air Pollution Control
Permit-to-Install
for
Ironrock Capital, Inc.

Facility ID:	1576051149
Permit Number:	P0109639
Permit Type:	Administrative Modification
Issued:	11/18/2014
Effective:	11/18/2014

Division of Air Pollution Control
Permit-to-Install
for
Ironrock Capital, Inc.

Table of Contents

Authorization

Facility ID:	1576051149
Facility Description:	Manufacturer of tiles from clay and shale.
Application Number(s):	M0001584, M0001585, M0001879, M0001880, M0001881, M0001882, M0001883
Permit Number:	P0109639
Permit Description:	Agency-initiated administrative modification to incorporate emissions unit F004 into P011 as all sub-processes involved are part of one continuous process and none can operate independently; includes additional minor changes to the terms and conditions for other emissions units.
Permit Type:	Administrative Modification
Permit Fee:	$0.00
Issue Date:	11/18/2014
Effective Date:	11/18/2014

This document constitutes issuance to:

Ironrock Capital, Inc.
1201 Millerton Road S.E.
Canton, OH 44707

of a Permit-to-Install for the emissions unit(s) identified on the following page.

Ohio Environmental Protection Agency (EPA) District Office or local air agency responsible for processing and administering your permit:

Canton City Health Department
420 Market Avenue
Canton, OH 44702-1544
(330)489-3385

The above named entity is hereby granted a Permit-to-Install for the emissions unit(s) listed in this section 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 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

Craig W. Butler
Director

Authorization (continued)

Permit Number: P0109639
Permit Description: Agency-initiated administrative modification to incorporate emissions unit F004 into P011 as all sub-processes involved are part of one continuous process and none can operate independently; includes additional minor changes to the terms and conditions for other emissions units.

Permits for the following Emissions Unit(s) or groups of Emissions Units are in this document as indicated below:

Emissions Unit ID:	**P011**
Company Equipment ID:	Crushing & storage
Superseded Permit Number:	15-01587
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	**P012**
Company Equipment ID:	Grinding & screening
Superseded Permit Number:	15-01607
General Permit Category and Type:	Not Applicable

Group Name: X002

Emissions Unit ID:	**P004**
Company Equipment ID:	Tunnel kiln #1
Superseded Permit Number:	15-248
General Permit Category andType:	Not Applicable
Emissions Unit ID:	**P005**
Company Equipment ID:	Tunnel kiln #2
Superseded Permit Number:	15-290
General Permit Category andType:	Not Applicable
Emissions Unit ID:	**P006**
Company Equipment ID:	Tunnel kiln #3
Superseded Permit Number:	15-883
General Permit Category andType:	Not Applicable
Emissions Unit ID:	**P014**
Company Equipment ID:	Tunnel kiln #4
Superseded Permit Number:	15-1173
General Permit Category andType:	Not Applicable

A. Standard Terms and Conditions

1. Federally Enforceable Standard Terms and Conditions

a) All Standard Terms and Conditions are federally enforceable, with the exception of those listed below which are enforceable under State law only:

(1) Standard Term and Condition A.2.a), Severability Clause

(2) Standard Term and Condition A.3.c) through A. 3.e)General Requirements

(3) Standard Term and Condition A.6.c) and A. 6.d), Compliance Requirements

(4) Standard Term and Condition A.9., Reporting Requirements

(5) Standard Term and Condition A.10., Applicability

(6) Standard Term and Condition A.11.b) through A.11.e), Construction of New Source(s) and Authorization to Install

(7) Standard Term and Condition A.14., Public Disclosure

(8) Standard Term and Condition A.15., Additional Reporting Requirements When There Are No Deviations of Federally Enforceable Emission Limitations, Operational Restrictions, or Control Device Operating Parameter Limitations

(9) Standard Term and Condition A.16., Fees

(10) Standard Term and Condition A.17., Permit Transfers

2. Severability Clause

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

b) All terms and conditions designated in parts B and C of this permit are federally enforceable as a practical matter, if they are required under the Act, or any of its applicable requirements, including relevant provisions designed to limit the potential to emit of a source, are enforceable by the Administrator of the U.S. EPA and the State and by citizens (to the extent allowed by section 304 of the Act) under the Act. Terms and conditions in parts B and C of this permit shall not be federally enforceable and shall be enforceable under State law only, only if specifically identified in this permit as such.

3. General Requirements

a) Any noncompliance with the federally enforceable terms and conditions of this permit constitutes a violation of the Act, and is grounds for enforcement action or for permit revocation, revocation and re-issuance, or modification.

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

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

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

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

4. Monitoring and Related Record Keeping and Reporting Requirements

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

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

(2) The date(s) analyses were performed.

(3) The company or entity that performed the analyses.

(4) The analytical techniques or methods used.

(5) The results of such analyses.

(6) The operating conditions existing at the time of sampling or measurement.

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

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

(1) Reports of any required monitoring and/or recordkeeping of federally enforceable information shall be submitted to the Canton City Health Department.

(2) Quarterly written reports of (i) any deviations from federally enforceable emissionlimitations, operationalrestrictions, andcontroldeviceoperatingparameterlimitations, excluding deviations resulting from malfunctions reported in accordance with OAC rule 3745-15-06, that have been detected by the testing, monitoring and recordkeeping requirements specified in this permit, (ii) the probable cause of such deviations, and (iii) any corrective actions or preventive measures taken, shall be made to the Canton City Health Department. The written reports shall be submitted (i.e., postmarked) quarterly, by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters. See A.15. below if no deviations occurred during the quarter.

(3) Written reports, which identify any deviations from the federally enforceable monitoring, recordkeeping, andreportingrequirements contained in this permit shall be submitted to the Canton City Health Department every six months, by January 31 and July 31 of each year for the previous six calendar months. If no deviations occurred during a six-month period, the permittee shall submit a semi-annual report, which states that no deviations occurred during that period.

(4) This permit is for an emissions unit located at a Title V facility. Each written report shall be signed by a responsible official certifying that, based on information and belief formed after reasonable inquiry, the statements and information in the report are true, accurate, and complete.

d) The permittee shall report actual emissions pursuant to OAC Chapter 3745-78 for the purpose of collecting Air Pollution Control Fees.

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, i.e., upset, of any emissions units or any associated air pollution control system(s) shall be reported to theCanton City Health Departmentin accordance with paragraph (B) of OAC rule 3745-15-06. (The definition of an upset condition shall be the same as that used in OAC rule 3745-15-06(B)(1) for a malfunction.) The verbal and written reports shall be submitted pursuant to OAC rule 3745-15-06.

Except as provided in that rule, any scheduled maintenance or malfunction necessitating the shutdown or bypassing of any air pollution control system(s) shall be accompanied by the shutdown of the emission unit(s) that is (are) served by such control system(s).

6. Compliance Requirements

a) All applications, notifications or reports required by terms and conditions in this permit to be submitted or "reported in writing" are to be submitted to Ohio EPA through the Ohio EPA's eBusiness Center: Air Services web service ("Air Services"). Ohio EPA will accept hard copy submittals on an as-needed basis if the permittee cannot submit the required documents through the Ohio EPA eBusiness Center. In the event of an alternative hard copy submission in lieu of the eBusiness Center, the post-marked date or the date the document is delivered in person will be recognized as the date submitted. Electronic submission of applications, notifications or reports required to be submitted to Ohio EPA fulfills the requirement to submit the required information to the Director, the appropriate Ohio EPA District Office or contracted

local air agency, and/or any other individual or organization specifically identified as an additional recipient identified in this permit unless otherwise specified. Consistent with OAC rule 3745-15-03, the electronic signature date shall constitute the date that the required application, notification or report is considered to be "submitted". Any document requiring signature may be represented by entry of the personal identification number (PIN) by responsible official as part of the electronic submission process or by the scanned attestation document signed by the Authorized Representative that is attached to the electronically submitted written report.

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

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

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

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

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

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

c) The permittee shall submit progress reports to the Canton City Health Department concerning any schedule of compliance for meeting an applicable requirement. Progress reports shall be submitted semiannually or more frequently if specified in the applicable requirement or by the Director of the Ohio EPA. Progress reports shall contain the following:

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

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

7. Best Available Technology

As specified in OAC Rule 3745-31-05, new sources that must employ Best Available Technology (BAT) shall comply with the Applicable Emission Limitations/Control Measures identified as BAT for each subject emissions unit.

8. 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.

9. Reporting Requirements

The permittee shall submit required reports in the following manner:

a) Reports of any required monitoring and/or recordkeeping of state-only enforceable information shall be submitted to the Canton City Health Department.

b) Except as otherwise may be provided in the terms and conditions for a specific emissions unit, quarterly written reports of (a) any deviations (excursions) from state-only required emission limitations, operational restrictions, and control device operating parameter limitations that have been detected by the testing, monitoring, and recordkeeping requirements specified in this permit, (b) the probable cause of such deviations, and (c) any corrective actions or preventive measures which have been or will be taken, shall be submitted to the Canton City Health Department. 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, 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.)

10. Applicability

This Permit-to-Install is applicable only to the emissions unit(s) identified in the Permit-to-Install. Separate application must be made to the Director for the installation or modification of any other emissions unit(s)not exempt from the requirement to obtain a Permit-to-Install.

11. Construction of New Sources(s) and Authorization to Install

a) This permit does not constitute an assurance that the proposed source will operate in compliance with all Ohio laws and regulations. This permit does not constitute expressed or implied assurance that the proposed facility has been constructed in accordance with the application and terms and conditions of this permit. 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 this permit does not constitute an assurance that the proposed source will operate in compliance with all Ohio laws and regulations. Issuance of this permit 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.

b) If applicable, authorization to install any new emissions unit included in this permit shall terminate within eighteen months of the effective date of the permit if the owner or operator has not undertaken a continuing program of installation or has not entered into a binding contractual obligation to undertake and complete within a reasonable time a continuing program of installation. 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 permittee shows good cause for any such extension.

c) The permittee may notify Ohio EPA of any emissions unit that is permanently shut down (i.e., the emissions unit has been physically removed from service or has been altered in such a way that it can no longer operate without a subsequent "modification" or "installation" as defined in OAC Chapter 3745-31) by submitting a certification from the authorized official that identifies the date on which the emissions unit was permanently shut down. Authorization to operate the affected emissions unit shall cease upon the date certified by the authorized official that the emissions unit was permanently shut down. At a minimum, notification of permanent shut down shall be made or confirmed by marking the affected emissions unit(s) as "permanently shut down" in "Air Services" along with the date the emissions unit(s) was permanently removed and/or disabled. Submitting the facility profile update electronically will constitute notifying the Director of the permanent shutdown of the affected emissions unit(s).

d) The provisions of this permit shall cease to be enforceable for each affected emissions unit after the date on which an emissions unit is permanently shut down (i.e., emissions unit has been physically removed from service or has been altered in such a way that it can no longer operate without a subsequent "modification" or "installation" as defined in OAC Chapter 3745-31). All records relating to any permanently shutdown emissions unit, generated while the emissions unit was in operation, must be maintained in accordance with law. All reports required by this permit must be submitted for any period an affected emissions unit operated prior to permanent shut down. At a minimum, the permit requirements must be evaluated as part of the reporting requirements identified in this permit covering the last period the emissions unit operated.

Unless otherwise exempted,no emissions unit certified by the responsible official as being permanently shut down may resume operation without first applying for and obtaining a permit pursuant to OAC Chapter 3745-31 and OAC Chapter 3745-77 if the restarted operation is subject to one or more applicable requirements.

e) The permittee shall comply with any residual requirements related to this permit, such as the requirement to submit a deviation report, air fee emission report, or other any reporting required by this permit for the period the operating provisions of this permit were enforceable, or as required by regulation or law. All reports shall be submitted in a form and manner prescribed by the Director. All records relating to this permit must be maintained in accordance with law.

12. Permit-To-Operate Application

The permittee is required to apply for a Title V permit pursuant to OAC Chapter 3745-77. The permittee shall submit a complete Title V permit application or a complete Title V permit modification application within twelve (12) months after commencing operation of the emissions units covered by this permit. However, if operation of the proposed new or modified source(s) as authorized by this permit would be prohibited by the terms and conditions of an existing Title V permit, a Title V permit modification of such new or modified source(s) pursuant to OAC rule 3745-77-04(D) and OAC rule 3745-77-08(C)(3)(d)must be obtained beforeoperating the source in a manner that would violate the existing Title V permit requirements.

13. Construction Compliance Certification

The applicant shall identify the following dates in the "Air Services"facility profile for each new emissions unit identified in this permit.

a) Completion of initial installation date shall be enteredupon completion of construction and prior to start-up.

b) Commence operation after installation or latest modification date shall be entered within 90 days after commencing operation of the applicable emissions unit.

14. 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.

15. Additional Reporting Requirements When There Are No Deviations of Federally Enforceable Emission Limitations, Operational Restrictions, or Control Device Operating Parameter Limitations

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 by January 31, April 30, July 31, and October 31 of each year and shall cover the previous calendar quarters.

16. 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 any permit-to-install. The permittee shall pay all applicable permit-to-operate fees within thirty days of the issuance of the invoice.

17. Permit Transfers

Any transferee of this permit shall assume the responsibilities of the prior permit holder. The new owner must update and submit the ownership information via the "Owner/Contact Change" functionality in "Air Services" once the transfer is legally completed.The change must be submitted through "Air Services" within thirty days of the ownership transfer date.

18. Risk Management Plans

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

19. Title IV Provisions

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

B. Facility-Wide Terms and Conditions

1. All the following facility-wide terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only:

   a) B.2. (Definitions, below)

2. Definitions - for the purpose of this permit:

   a) *CCHD-APCD* is an abbreviation for the Canton City Health Department, Air Pollution Control Division. The Air Pollution Control Division may also be referred to as the Canton Local Air Agency.

   b) *Clay* shall refer to a raw material that is blended together with one or more other materials that together comprise the ingredients of a given product manufactured at this facility. The clay and shale used at this facility typically contain small amounts of sulfur and fluorine which contribute to emissions of sulfur dioxide and fluoride/fluoride compounds, respectively.

   c) *Shale* shall refer to a raw material that is blended together with one or more other materials that together comprise the ingredients of a given product manufactured at this facility. The shale and clay used at this facility typically contain small amounts of sulfur and fluorine, which contribute to emissions of sulfur dioxide and fluoride/fluoride compounds, respectively.

   d) *Grog* shall refer to previously-fired or calcined material (e.g., defective product) that may be reprocessed in limited amounts along with raw clay and raw shale for use in products manufactured at this facility.

3. The following emissions units contained in this permit are subject to 40 CFR Part 60, Subpart OOO – Standards of Performance for Nonmetallic Mineral Processing Plants: P011 and P012.

   The complete NSPS requirements, including the NSPS General Provisions, may be accessed via the internet from the Electronic Code of Federal Regulations (e-CFR) website http://ecfr.gpoaccess.gov or by contacting CCHD-APCD.

4. 40 CFR Part 63, Subpart JJJJJ – National Emission Standards for Hazardous Air Pollutants (NESHAPs) for Brick and Structural Clay Products (BSCP) Manufacturing, was vacated by a U.S. Federal Court in 2007, *Sierra Club v. EPA,* 479 F 3d 875 (D.C. Cir 2007). Had Subpart JJJJJ not been vacated, the overall facility would be subject to certain portions because, according to the criteria set forth in paragraphs (a) and (b) of 40 CFR § 63.8385, the facility is a BSCP manufacturing facility that is a major source of HAP emissions (specifically hydrogen fluoride, CAS No. 7664393).

   However, if Subpart JJJJJ had not been vacated, none of the individual emissions units contained in this permit would have been subject to the emission limits from Table 1 of Subpart JJJJJ, because there are no existing large tunnel kilns (design capacity ≥ 10 tph of fired product), and no new or reconstructed small tunnel kilns (design capacity < 10 tph of fired product), where “existing” means that construction began on or before July 22, 2002, and “new or reconstructed” means that construction or reconstruction began after July 22, 2002.

   Because none of the individual emissions units contained in this permit would have been subject to the emission limits from Table 1 of Subpart JJJJJ, had it not been vacated, none of these emissions units (P004, P005, P006, and P014) are required to have case-by-case equivalent emissions limits set by this permit under Section 112(j) of the Clean Air Act.

The NESHAPs for a particular source category represent the Maximum Achievable Control Technology (MACT) for that source category as determined by the U.S. EPA. The complete MACT requirements, including the MACT General Provisions may be accessed via the internet from the Electronic Code of Federal Regulations (e-CFR) website http://ecfr.gpoaccess.gov or by contacting CCHD-APCD.

C. Emissions Unit Terms and Conditions

1. P011, Material receiving, crushing and storage for shale and clay

Operations, Property and/or Equipment Description:

Material receiving via two separate dump truck receiving hoppers with apron feed conveyors for raw shale plus grog and raw clay plus grog, then primary crushing of received materials, then transporting via covered conveyor belts to inside storage bins, with separate, parallel processes for each of the two material categories (shale and clay). Material receiving and processing capacity is 80 tons/hr for each of the two material categories running simultaneously. Emissions are controlled by a three-sided enclosure and water spray during truck dumping (water also wets the materials before crushing), then a common dust collector that exhausts inside a fully enclosed building. Effective with this administrative modification, PTI P0109639, the previously separate EU F004 has been merged into P011.

a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only.

(1) None.

b) Applicable Emissions Limitations and/or Control Requirements

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

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rule 3745-31-05(A)(3) [Best Available Technology (BAT) established in PTI 15-01607 issued 12/02/2005 for F004 and in PTI 15-01587 issued 06/14/2005 for P011. BAT has been combined for F004 and P011 into one and typographical errors corrected in this Administrative Modification PTI P0109639.]	Particulate emissions (PE) shall not exceed 5.00 lb/hr and 3.06 tons/yr. See b)(2)a. and b)(2)b. below. Compliance with this rule also includes compliance with the requirements specified in 40 CFR Part 60, Subpart OOO.
b.	40 CFR Part 60, Subpart OOO (40 CFR 60.670 – 60.676)	See b)(2)b. below.

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
c.	OAC rule 3745-17-07(A) [This rule is cited because it would apply to the outlet of the fabric filter inside the building, which is defined as a "stack" per Engineering Guide No. 75]	The visible particulate emission limitations specified in this rule are less stringent than the visible particulate emission limitations established pursuant to 40 CFR Part 60, Subpart OOO.
d.	OAC rule 3745-17-07(B)(1) [VE of fugitive dust in Appendix A areas]	The visible particulate emission limitations specified in this rule are less stringent than the visible emission limitations established pursuant to OAC rule 3745-31-05(A)(3) and in 40 CFR Part 60, Subpart OOO, as applicable.
e.	OAC rule 3745-17-08(B) [RACM for fugitive dust in Appendix A areas]	The control measures established pursuant to this rule are equal to or less stringent than the control measures established pursuant to OAC rule 3745-31-05(A)(3) and in 40 CFR Part 60, Subpart OOO, as applicable.
f.	OAC rule 3745-17-11(B) [Restrictions on particulate emissions from industrial processes]	The particulate emission limitations specified in this rule are less stringent than the particulate emission limitations established pursuant to OAC rule 3745-31-05(A)(3).

(2) Additional Terms and Conditions

a. The following are additional best available technology (BAT) requirements, including best available control measures:

i. While dumping the raw shale plus grog and the raw clay plus grog into the truck dump receiving hoppers, visible emissions of fugitive dust from the three-sided partial enclosures shall not exceed 10% opacity as a 3-minute average.

ii. The raw shale plus grog and raw clay plus grog truck dump hoppers shall be serviced by water sprays, and all portions of this emissions unit, except for load-in and load-out to the inside storage bins, shall be serviced by a fabric filter that has a collection efficiency, based on good engineering design, that is sufficient to minimize or eliminate visible particulate emissions of fugitive dust at the points of capture. The fabric filter shall be vented inside the building. Any visible particulate emissions from the outlet stack of the fabric filter would become fugitive visible

particulate emissions from openings of the building housing the fabric filter.

iii. Emissions from the processes described in ii., above, shall be vented to the fabric filter, also described in ii., above, at all times the emissions unit is in operation.

iv. The crushing operations and storage operations (including load-in and load-out of the crushed materials using a front-end loader) shall take place within totally enclosed buildings.

v. Any belt conveyors, except for the apron feed conveyors, that are not contained in a fully enclosed building shall be covered.

vi. There shall no vents (defined as having mechanically induced air flow) into the ambient air from the buildings that contain affected facilities.

vii. For the load-in and load-out of stored materials using a front-end loader, the drop height of the front-end loader shall be minimized.

b. The following are the applicable emission limitations from 40 CFR Part 60, Subpart OOO, Standards of Performance for Nonmetallic Mineral Processing Plants. Except for the process of receiving materials into hoppers via truck-dumping (see g)(1) below), this emissions unit is an "affected facility" (as defined in §§60.670 and 60.671) that commenced construction, modification, or reconstruction after August 31, 1983, but before April 22, 2008.

i. For any conveyor belts that are not enclosed within a building, fugitive emissions from any openings in the conveyor belt coverings shall not exceed 10% opacity as a 6-minute average. [Specific reference: §60.672(b)]

ii. Requirements for emissions from affected facilities enclosed in a building: fugitive emissions from building openings shall not exceed 7% opacity as a 6-minute average. [Specific reference: §60.672(e)(1)]

c) Operational Restrictions

(1) The permittee shall be limited to receiving a total of 200,000 tons of raw material plus grog in this emissions unit per calendar year.

d) Monitoring and/or Recordkeeping Requirements

(1) The permittee shall maintain weekly records of the following information:

a. The amount of material unloaded (received) in this emissions unit, in tons, categorized as follows:

i. the amount of raw shale plus grog;

ii. the amount of raw clay plus grog; and

iii. the combined total of raw shale plus grog and raw clay plus grog.

b. The total hours of operation for this emissions unit.

c. The year-to-date total amount of material unloaded (received) in this emissions unit, in tons, shall be updated by adding the weekly value recorded in a.iii., above, to the total for all previous weeks during the current calendar year.

(2) The permittee shall perform weekly visible emissions checks for the equipment and operations listed in a. – c. below when the emissions unit is in operation and when the weather conditions allow:

a. For each receiving hopper, check for any visible particulate emissions of fugitive dust outside the 3-sided enclosure serving this truck dumping operation, when trucks are dumping materials into the hoppers.

b. For the shale interconnecting belt #2 and for the clay interconnecting belt #1 which are totally covered and not enclosed within any building, check for any visible particulate emissions of fugitive dust around the conveyors while the conveyors are transporting material.

c. While any of the following operations, property, and/or equipment that are all enclosed in buildings are in use, check for any visible particulate emissions of fugitive dust escaping from the buildings: the shale crusher, the clay crusher, conveyor belts enclosed in buildings, the material transfer points into the crushed shale and crushed clay storage bins, and load-out from the storage bins using a front-end loader.

d. The presence or absence of any visible emissions observed during any of the weekly checks required in a. – c. above shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

i. the location and color of the emissions;

ii. whether the emissions are representative of normal operations;

iii. if the emissions are not representative of normal operations, the cause of the abnormal emissions;

iv. the total duration of any visible emissions incident; and

v. any corrective actions taken to eliminate the visible emissions.

If visible emissions are present, a visible emissions incident has occurred. The observer does not have to document the exact start and end times for the visible emissions incident under item iv., above, or continue the daily check until the incident has ended. The observer may indicate that the visible emissions incident was continuous during the observation period (or, if known, continuous during the operation of the emissions unit). With respect to the documentation of corrective actions, the observer may indicate that no corrective actions were taken if the

visible emissions were representative of normal operations, or specify the minor corrective actions that were taken to ensure that the emissions unit continued to operate under normal conditions, or specify the corrective actions that were taken to eliminate abnormal visible emissions.

(3) In order to maintain compliance with the applicable emission limitation contained in b)(1), the acceptable range established for the pressure drop across the baghouse is between 1 to 4 inches of water while the emissions unit is in operation.

(4) The permittee shall properly install, operate, and maintain equipment to continuously monitor the pressure drop, in inches of water, across the fabric filter when the controlled emissions unit is in operation, including periods of startup and shutdown. The permittee shall record the pressure drop across the fabric filter on a daily basis. The monitoring equipment shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manual(s), with any modifications deemed necessary by the permittee.

Whenever the monitored value for the pressure drop deviates from the limit or range established in accordance with this permit, the permittee shall promptly investigate the cause of the deviation. The permittee shall maintain records of the following information for each investigation:

a. the date and time the deviation began;

b. the magnitude of the deviation at that time;

c. the date the investigation was conducted;

d. the name(s) of the personnel who conducted the investigation; and

e. the findings and recommendations.

In response to each required investigation to determine the cause of a deviation, the permittee shall take prompt corrective action to bring the operation of the control equipment within the acceptable range specified in this permit, unless the permittee determines that corrective action is not necessary and documents the reasons for that determination and the date and time the deviation ended. The permittee shall maintain records of the following information for each corrective action taken:

f. a description of the corrective action;

g. the date corrective action was completed;

h. the date and time the deviation ended;

i. the total period of time (in minutes) during which there was a deviation;

j. the pressure drop readings immediately after the corrective action was implemented; and

k. the name(s) of the personnel who performed the work.

Investigation and records required by this paragraph do not eliminate the need to comply with the requirements of OAC rule 3745-15-06 if it is determined that a malfunction has occurred.

This range or limit on the pressure drop across the fabric filter is effective for the duration of this permit, unless revisions are requested by the permittee and approved in writing by CCHD-APCD. The permittee may request revisions to the permitted limit or range for the pressure drop based upon information obtained during future testing that demonstrate compliance with the allowable particulate emission rate for the controlled emissions unit(s). In addition, approved revisions to the range or limit will not constitute a relaxation of the monitoring requirements of this permit and may be incorporated into this permit by means of a minor permit modification.

e) Reporting Requirements

(1) Unless other arrangements have been approved by the Director, all notifications and reports shall be submitted through the Ohio EPA's eBusiness Center: Air Services online web portal.

(2) The permittee shall submit quarterly deviation (excursion) reports that identify the following at a minimum:

a. each week during which the total tons of raw material plus grog received, as recorded per term d)(1)c. above, exceeded the operational restriction defined in term c)(1) above. For each such week, the value of the year-to-date total tons of raw material plus grog shall also be reported;

b. any period of time (start time and date, and end time and date) when the emissions unit was in operation and the applicable process emissions were not vented to the fabric filter;

c. each period of time (start time and date, and end time and date) when the pressure drop across the fabric filter was outside the allowable range specified in d)(3) above;

d. each incident of deviation described in c. above where a prompt investigation was not conducted;

e. each incident of deviation described in c. above where prompt corrective action, that would bring the pressure drop into compliance with the acceptable range, was determined to be necessary and was not taken; and

f. each incident of deviation described in c. above where proper records were not maintained for the investigation and/or the corrective action(s), as identified in the monitoring and record keeping requirements of this permit.

The quarterly deviation (excursion) reports shall be submitted in accordance with the reporting requirements of the Standard Terms and Conditions of this permit.

(3) The permittee shall submit semiannual reports that identify the following at a minimum:

a. all days during which any visible particulate emissions were observed at any of the locations identified in d)(2) above; and

b. any corrective actions taken to eliminate the visible particulate emissions.

The semiannual reports shall be submitted along with the semiannual deviation reports required per the reporting requirements of the Standard Terms and Conditions of this permit.

(4) In the annual Fee Emissions Report (FER), the permittee shall report the throughput for this emissions unit as the total amount of material received during the previous calendar year (raw shale plus grog and raw clay plus grog), in tons, based on the recordkeeping required in d)(1)c. above. Also, the total particulate emissions from this emissions unit, in tons, during the previous calendar year shall be reported in the annual FER based on the calculation method shown in f)(1)b. below, but using the actual total amount of material received instead of the operational limit of 200,000 tons per calendar year.

f) Testing Requirements

(1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emission Limitation:

Particulate emissions (PE) shall not exceed 5.00lb/hr.

Applicable Compliance Method:

This emissions limitation was established by calculating the maximum potential-to-emit, with controls, for the following processes combined, all based on the maximum receiving and processing capacity of 80 tons/hr each for the parallel shale and clay processes:

1. Receiving materials via truck dumping.
2. Crushing
3. Load-in to storage bins
4. Load-out from storage bins.

Receiving materials via truck dumping:

An emission factor of 0.04 lb_{PE}/ton dumped was obtained from Table 2.20-1 in Ohio EPA's "RACM Manual Supplement #1," 1983. As a conservative measure, this value was increased by 25% resulting in a 0.05 lb_{PE}/ton emission factor.

Uncontrolled PTE = (2 hoppers) x (80 ton/hr) x (0.05 lb_{PE}/ton) = 8.0 lb_{PE}/hr

There are two egress routes for particulate emissions: fugitive emissions from the openings of the three-sided enclosures (one at the each of the two hoppers), and stack emissions from the outlet of the fabric filter. The controlled PTE for each of these egress routes was calculated as shown below, then the results were added together to obtain the overall PTE after controls for receiving materials via truck dumping.

Openings of three-sided enclosures:

Controlled potential-to-emit of fugitive dust from the opening of the three-side enclosure was calculated based upon an estimated 70% control efficiency for water spray, followed by a 50% capture efficiency for the three-sided enclosure:

$(8.0\ lb_{PE}/hr) \times (1 - 0.70)_{WATER\ SPRAY} = 2.40\ lb_{PE}/hr_{AFTER\ WATER\ SPRAY}$

$(2.40\ lb_{PE}/hr_{AFTER\ WATER\ SPRAY}) \times (1 - 0.50)_{CAPTURE\ BY\ ENCLOSURE} = 1.20\ lb_{PE}/hr_{FUGITIVE\ EMISSIONS}$

Outlet of fabric filter:

The remaining airborne dust that has been captured by the three-sided enclosure is then pulled through the duct system, where it is finally captured by the fabric filter and controlled at 99.5% efficiency:

$(2.40\ lb_{PE}/hr_{AFTER\ WATER\ SPRAY}) - (1.20\ lb_{PE}/hr_{FUGITIVE\ EMISSIONS}) = 1.20\ lb_{PE}/hr_{CAPTURE\ BY\ FABRIC\ FILTER}$

$(1.20\ lb_{PE}/hr_{CAPTURE\ BY\ FABRIC\ FILTER}) \times (1 - 0.995)_{CONTROL\ BY\ FABRIC\ FILTER} = 0.006\ lb_{PE}/hr_{FABRIC\ FILTER\ OUTLET}$

Total Controlled PTE for receiving materials via truck dumping:

$1.20\ lb_{PE}/hr_{FUGITIVE\ EMISSIONS} + 0.006\ lb_{PE}/hr_{FABRIC\ FILTER\ OUTLET} = 1.206 \approx 1.21\ lb_{PE}/hr$

2. Crushing:

The emission factor used was 12 lb_{PE}/ton of material crushed, as found in FIRE 6.25 for SCC 3-05-009-04 (Industrial Processes - Mineral Products - Clay and fly ash sintering - Raw clay/shale crushing/screening). Controlled potential-to-emit was calculated based upon estimated 70% control efficiency for watering, followed by an estimated overall control efficiency of 99.5% for the fabric filter:

Controlled $PTE_{CRUSHING}$ = (2 crushers) x (80 ton/hr) x (12 lb_{PE}/ton) x (1 – 0.70) x (1 – 0.995) = 2.88 lb_{PE}/hr

Note: The watering control measure is due to the spraying that occurs while material is being dumped into the receiving hoppers. Dust is prevented because the material is crushed in a partially wet condition. The crushers are

inside a fully enclosed building, so any dust that is generated is captured and controlled by the fabric filter.

3. Load-in to storage bins:

From Supplement #1 (1983) to the Ohio EPA's Reasonably Available Control Measures (RACM) for Fugitive Dust Sources Manual, Chapter 2.1.2, Aggregate Storage Piles, the emission factor for continuous load-in from a conveyor was calculated in PTI 15-01587 using Equation 2, except that the term for wind speed was omitted based on an assumption that the wind speed would be zero because the operation is performed inside a building (see Note below*).

Equation 2: $EF = (0.0018) \times (S/5) \times (U/5) \div (M/2)^2$

Equation 2 as modified in PTI 15-01587: $EF = (0.0018) \times (S/5)$ ~~$\times (U/5)$~~ $\div (M/2)^2$

where: EF = emission factor in lb_{PE}/ton of material loaded-in
S = silt content, percent by weight
M = moisture content, percent by weight
U = mean wind speed in mph

Applying Equation 2 as modified in PTI 15-01587 using a silt content of 10% and a moisture content of 4%:

$EF_{LOAD\text{-}IN} = (0.0018) \times (10/5) \div (4/2)^2 = 0.0009\ lb_{PE}/ton$

Applying the emission factor to the continuous load-in operation at maximum capacity:

$PTE_{LOAD\text{-}IN} = (2\ crushers) \times (80\ ton/hr) \times (0.0009\ lb_{PE}/ton) = 0.14\ lb_{PE}/hr$

*Note: for a wind speed of zero mph, the equation would result in an emission factor of zero, so the modification used in PTI 15-01587 was erroneous. What was done by omitting the factor (U/5) was to effectively set the value to 1, which would be the result for a mean wind speed of 5 mph (5/5 = 1). The result was a conservatively high value for the emission factor.

4. Load-out from storage bins:

From Supplement #1 (1983) to the Ohio EPA's Reasonably Available Control Measures (RACM) for Fugitive Dust Sources Manual, Chapter 2.1.2, Aggregate Storage Piles, the emission factor for load-out with a front-end loader was calculated in PTI 15-01587 using Equation 6, except that the term for wind speed was omitted based on an assumption that the wind speed would be zero because the operation is performed inside a building (See Note in the Load-in section above*).

Equation 6: $EF = (0.0018) \times (S/5) \times (U/5) \div (M/2)^2 \div (Y/6)$

Equation 6 as modified in PTI 15-01587: EF = (0.0018) x (S/5) ~~x (U/5)~~ ÷ $(M/2)^2$ ÷ (Y/6)

where: EF = emission factor in lb_{PE}/ton of material loaded-in
S = silt content, percent by weight
M = moisture content, percent by weight
U = mean wind speed in mph
Y = effective loader capacity in cubic yards

Applying Equation 6 as modified in PTI 15-01587 using a silt content of 10%, a moisture content of 4% and an effective loader capacity of 1.3 cubic yards:

$EF_{LOAD\text{-}OUT}$ = (0.0018) x (10/5) ÷ $(4/2)^2$ ÷ (1.3/6) = 0.004154 lb_{PE}/ton

Applying the emission factor to the load-out operation at maximum capacity:

$PTE_{LOAD\text{-}OUT}$ = (2 crushers) x (80 ton/hr) x (0.004154 lb_{PE}/ton) = 0.66 lb_{PE}/hr

Total Controlled Potential-to-Emit:

= $PTE_{RECEIVING}$ + $PTE_{CRUSHING}$ + $PTE_{LOAD\text{-}IN}$ + $PTE_{LOAD\text{-}OUT}$

= (1.21 lb_{PE}/hr) + (2.88 lb_{PE}/hr) + (0.14 lb_{PE}/hr) + (0.66 lb_{PE}/hr)

= 4.89 lb_{PE}/hr

The 4.89 lb_{PE}/hr emission, as calculated above, was rounded up to establish the 5.00 lb_{PE}/hr emissions limit.

b. Emission Limitation:

Particulate emissions (PE) shall not exceed 3.06 ton/yr.

Applicable Compliance Method:

This emission limitation was established by calculating the maximum potential-to-emit, with controls, for the following processes combined, all based upon the operational restriction of 200,000 tons of total material received per calendar year:

1. Receiving materials via truck dumping.
2. Crushing
3. Load-in to storage bins
4. Load-out from storage bins.

1. Receiving materials via truck dumping:

An emission factor of 0.04 lb_{PE}/ton dumped was obtained from Table 2.20-1 in Ohio EPA's "RACM Manual Supplement #1," 1983. As a conservative measure, this value was increased by 25%, to 0.05 lb_{PE}/ton.

Uncontrolled PTE = (200,000 ton/yr) x (0.05 lb_{PE}/ton) ÷ (2000 lb/ton) = 5.0 ton_{PE}/yr

There are two egress routes for particulate emissions: fugitive emissions from the openings of the three-sided enclosures (one at the each of the two hoppers), and stack emissions from the outlet of the fabric filter. The controlled PTE for each of these egress routes was calculated as shown below, then the results were added together to obtain the overall PTE after controls for receiving materials via truck dumping.

Openings of three-sided enclosures:

Controlled potential-to-emit of fugitive dust from the opening of the three-side enclosure was calculated based upon an estimated 70% control efficiency for water spray, followed by a 50% capture efficiency for the three-sided enclosure.

(5.0 ton_{PE}/yr) x (1 – 0.70) $_{WATER\ SPRAY}$ = 1.50 $ton_{PE}/yr_{AFTER\ WATER\ SPRAY}$

(1.50 $ton_{PE}/yr_{AFTER\ WATER\ SPRAY}$) x (1 – 0.50) $_{CAPTURE\ BY\ ENCLOSURE}$ = 0.75 $ton_{PE}/yr_{FUGITIVE\ EMISSIONS}$

Outlet of fabric filter:

The remaining airborne dust that has been captured by the three-sided enclosure is then pulled through the duct system, where it is finally captured by the fabric filter and controlled at 99.5% efficiency:

(1.50 $ton_{PE}/yr_{AFTER\ WATER\ SPRAY}$) – (0.75 $ton_{PE}/yr_{\ FUGITIVE\ EMISSIONS}$) = 0.75 $ton_{PE}/yr_{\ CAPTURE\ BY\ FABRIC\ FILTER}$

(0.75 $ton_{PE}/yr_{\ CAPTURE\ BY\ FABRIC\ FILTER}$) x (1 – 0.995) $_{CONTROL\ BY\ FABRIC\ FILTER}$ = 0.004 $ton_{PE}/yr_{FABRIC\ FILTER\ OUTLET}$

Total Annual Controlled PTE for receiving materials via truck dumping:

0.75 $ton_{PE}/yr_{FUGITIVE\ EMISSIONS}$ + 0.004 $ton_{PE}/yr_{\ FABRIC\ FILTER\ OUTLET}$ = 0.754 ≈ 0.75 ton_{PE}/yr

2. Crushing:

The emission factor used was 12 lb_{PE}/ton of material crushed, as found in FIRE 6.25 for SCC 3-05-009-04 (Industrial Processes - Mineral Products - Clay and fly ash sintering - Raw clay/shale crushing/screening). Controlled potential-to-emit was calculated based upon estimated 70% control efficiency for watering, followed by an estimated overall control efficiency of 99.5% for the fabric filter:

Annual Controlled $PTE_{CRUSHING}$ = (200,000 ton/yr) x (12 lb_{PE}/ton) x (1 – 0.70) x (1 – 0.995) ÷ (2000 lb/ton) = 1.80 ton_{PE}/yr

Note: The watering control measure is due to the spraying that occurs while material is being dumped into the receiving hoppers. Dust is prevented because the material is crushed in a partially wet condition. The crushers are inside a fully enclosed building, so any dust that is generated is captured and controlled by the fabric filter

3. Load-in to storage bins:

From Supplement #1 (1983) to the Ohio EPA's Reasonably Available Control Measures (RACM) for Fugitive Dust Sources Manual, Chapter 2.1.2, Aggregate Storage Piles, the emission factor for continuous load-in from a conveyor was calculated in PTI 15-01587 using Equation 2, except that the term for wind speed was omitted based on an assumption that the wind speed would be zero because the operation is performed inside a building (see Note below*).

Equation 2: $EF = (0.0018) \times (S/5) \times (U/5) \div (M/2)^2$

Equation 2 as modified in PTI 15-01587: $EF = (0.0018) \times (S/5) \sout{\times (U/5)} \div (M/2)^2$

where: EF = emission factor in lb_{PE}/ton of material loaded-in

S = silt content, percent by weight

M = moisture content, percent by weight

U = mean wind speed in mph

Applying Equation 2 as modified in PTI 15-01587 using a silt content of 10% and a moisture content of 4%:

$EF_{LOAD\text{-}IN} = (0.0018) \times (10/5) \div (4/2)^2 = 0.0009\ lb_{PE}/ton$

Applying the emission factor to the continuous load-in operation at maximum annual capacity:

$PTE_{LOAD\text{-}IN} = (200{,}000\ ton/yr) \times (0.0009\ lb_{PE}/ton) \div (2000\ lb/ton) = 0.09\ ton_{PE}/yr$

*Note: for a wind speed of zero mph, the equation would result in an emission factor of zero, so the modification used in PTI 15-01587 was erroneous. What was done by omitting the factor (U/5) was to effectively set the value to 1, which would be the result for a mean wind speed of 5 mph (5/5 = 1). The result was a conservatively high value for the emission factor.

4. Load-out from storage bins:

From Supplement #1 (1983) to the Ohio EPA's Reasonably Available Control Measures (RACM) for Fugitive Dust Sources Manual, Chapter 2.1.2, Aggregate Storage Piles, the emission factor for load-out with a front-end loader was calculated in PTI 15-01587 using Equation 6, except that the term for wind speed was omitted based on an assumption that the wind speed

would be zero because the operation is performed inside a building (See Note in the Load-in section above*).

Equation 6: $EF = (0.0018) \times (S/5) \times (U/5) \div (M/2)^2 \div (Y/6)$

Equation 6 as modified in PTI 15-01587: $EF = (0.0018) \times (S/5)$ ~~$\times (U/5)$~~ $\div (M/2)^2 \div (Y/6)$

where: EF = emission factor in lb_{PE}/ton of material loaded-in
S = silt content, percent by weight
M = moisture content, percent by weight
U = mean wind speed in mph
Y = effective loader capacity in cubic yards

Applying Equation 6 as modified in PTI 15-01587 using a silt content of 10%, a moisture content of 4% and an effective loader capacity of 1.3 cubic yards:

$EF_{LOAD\text{-}OUT} = (0.0018) \times (10/5) \div (4/2)^2 \div (1.3/6) = 0.004154\ lb_{PE}/ton$

Applying the emission factor to the load-out operation at maximum annual capacity:

$PTE_{LOAD\text{-}OUT} = (200{,}000\ ton/yr) \times (0.004154\ lb_{PE}/ton) \div (2000\ lb/ton) = 0.42\ ton_{PE}/yr$

Total Controlled Potential-to-Emit:

$= PTE_{RECEIVING} + PTE_{CRUSHING} + PTE_{LOAD\text{-}IN} + PTE_{LOAD\text{-}OUT}$

$= (0.75\ ton_{PE}/yr) + (1.80\ ton_{PE}/yr) + (0.09\ ton_{PE}/yr) + (0.42\ ton_{PE}/yr)$

$= 3.06\ ton_{PE}/yr$

c. Emission Limitation:

During the process of dumping raw materials and/or grog into the truck dump receiving hoppers, visible emissions of fugitive dust from the three-sided partial enclosures shall not exceed 10% opacity as a 3-minute average.

Applicable Compliance Method:

If required, compliance with the visible emissions limitation for fugitive dust from material dumping operations shall be determined through visible emissions observations performed in accordance with the requirements specified in Method 9 of 40 CFR Part 60, Appendix A, with the following modifications as specified in OAC rule 3745-17-03(B)(3):

i. the data reduction and average opacity calculation shall be based upon sets of twelve consecutive visible emissions observations recorded at 15-second intervals [i.e., (12 x 15 sec)/60 = one 3-minute set];

ii. opacity observations shall be made from a position that provides the observer a clear view of the emissions unit and the fugitive dust, with the sun behind the observer;

iii. where possible, visible opacity observations shall be conducted at a position of at least fifteen feet from the source of emissions and the line of sight should be approximately perpendicular to the flow of fugitive dust and to the longer axis of the emissions; and

iv. the visible opacity observations shall be made for the point of highest opacity within the fugitive dust emitted from the source.

Also, the duration of the Method 9 observations must be 15 minutes (five 3-minute averages). Compliance with the applicable fugitive emission limit must be based on the average of five 3-minute averages.

d. Emission Limitation:

For any conveyor belts that are not enclosed within a building, fugitive emissions from any openings in the conveyor belt coverings shall not exceed 10% opacity as a 6-minute average.

Applicable Compliance Method:

If required, compliance shall be determined through visible emissions observations performed in accordance with the requirements specified in Method 9 of 40 CFR Part 60, Appendix A, and the procedures specified in 40 CFR Part 60, Subpart A (General Provisions, §60.11), with the following additions from 40 CFR Part 60, Subpart OOO:

§60.675(c)(1)(i): The minimum distance between the observer and the emission source shall be 15 feet.

§60.675(c)(1)(ii): The observer shall, when possible, select a position that minimizes interference from other fugitive emission sources, but without compromising the required observer position relative to the sun as specified in Method 9.

§60.675(c)(3): The duration of the Method 9 observations must be 30 minutes (five 6-minute averages). Compliance with the applicable fugitive emission limit must be based on the average of five 6-minute averages.

e. Emission Limitation:

For affected facilities enclosed within a building, fugitive emissions from building openings shall not exceed 7% opacity as a 6-minute average.

Applicable Compliance Method:

If required, compliance shall be determined through visible emissions observations performed in accordance with the requirements specified in

Method 9 of 40 CFR Part 60, Appendix A, and the procedures specified in 40 CFR Part 60, Subpart A (General Provisions, §60.11), with the following additions from 40 CFR Part 60, Subpart OOO:

§60.675(c)(1)(i): The minimum distance between the observer and the emission source shall be 15 feet.

§60.675(c)(1)(ii): The observer shall, when possible, select a position that minimizes interference from other fugitive emission sources, but without compromising the required observer position relative to the sun as specified in Method 9.

§60.675(c)(3): The duration of the Method 9 observations must be 30 minutes (five 6-minute averages). Compliance with the applicable fugitive emission limit must be based on the average of five 6-minute averages.

§60.675(d)(2): If the owner or operator of the affected facility has previously conducted an initial Method 22 (40 CFR Part 60, Appendix A) performance test before April 22, 2008 that showed zero emissions from the building openings, then the owner or operator is considered to have demonstrated compliance with the 7% opacity limit from §60.672(e)(1). In this case, further testing shall not be required on a regularly scheduled basis. See f)(2)b.iii., below.

§60.675(d)(2): If the owner or operator of the affected facility has not conducted an initial Method 22 performance test that showed zero emissions from the building openings before April 22, 2008, then the owner or operator must conduct an initial Method 9 performance test as defined in §60.11 (40 CFR Part 60, Subpart A) and according to the procedures described above to show compliance with the 7% opacity limit. Note: For the initial Method 9 test only, §60.11(b) requires the duration of the observations to be a minimum of 3 hours (thirty 6-minute averages). For any subsequent testing required, the duration of the Method 9 observations shall be reduced to 30 minutes (five 6-minute averages).

(2) The permittee shall conduct, or have conducted, emission testing for this emissions unit in accordance with the following requirements:

a. The emission testing shall be conducted according to the timetable established for this emissions unit in the most recent Title V operating permit issued after the effective date of this permit.

b. The emission testing shall be conducted to demonstrate compliance with the following visible particulate limitations and shall employ the test methods as listed here:

i. 10% opacity as a 3-minute average of fugitive dust from the three-sided partial enclosures for the unloading operations at the truck dump

receiving hoppers. Method 9 of 40 CFR Part 60, Appendix A, along with the applicable requirements described in f)(1)c. above.

ii. 10% opacity as a 6-minute average from any openings in conveyor belt coverings for conveyor belts that are not enclosed within a building. Method 9 of 40 CFR Part 60, Appendix A, along with the applicable requirements described in f)(1)d. above.

iii. Only if required (see f)(1)e. above, specifically the requirements from 40 CFR §60.675(d)(2)): 7% opacity as a 6-minute average from building openings for affected facilities enclosed within a building. Method 9 of 40 CFR Part 60, Appendix A, along with the applicable requirements described in f)(1)e. above.

c. Unless otherwise specified or approved by CCHD-APCD, the visible particulate emissions observation(s) shall be conducted while the emissions unit is operating at or near its maximum capacity. To expand upon the previous sentence, the test(s) shall be conducted under those representative conditions that challenge to the fullest extent possible a facility's ability to meet the applicable emissions limits and/or control requirements, unless otherwise specified or approved by CCHD-APCD. Although this generally consists of operating the emissions unit at its maximum material input/production rates and results in the highest emission rate of the tested pollutant, there may be circumstances where a lower emissions loading is deemed the most challenging control scenario. Failure to test under these conditions is justification for not accepting the test results as a demonstration of compliance.

d. The pressure drop at the fabric filter shall be monitored and recorded once at the beginning and once at the end of the Method 9 testing period. Both readings shall be taken while the emissions unit is operating as described in c. above. In terms more specific to the processes for this emissions unit, "beginning...of the testing period" means during the first truck dump, and "end of the testing period" means during the last truck dump.

e. Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to CCHD-APCD. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emission unit operating parameters, the time(s) and date(s) of the testing, and the person(s) who will be conducting the testing. Failure to submit such notification for review and approval prior to the testing may result in CCHD-APCD's refusal to accept the results of the emissions testing.

f. Personnel from CCHD-APCD shall be permitted to witness the testing, examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

g. A comprehensive written report on the results of the emission testing shall be signed by the person or persons responsible for the testing and submitted to CCHD-APCD within 30 days following completion of the testing. The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from CCHD-APCD.

g) Miscellaneous Requirements

(1) Informational Note: the process of receiving materials into hoppers is not subject to 40 CFR Part 60, Subpart OOO, Standards of Performance for Nonmetallic Mineral Processing Plants, because it is categorized as truck dumping, which is not listed among the types of affected facilities in §60.670(a)(1). More specifically, §60.672(d) states that "truck dumping of nonmetallic minerals into any screening operation, feed hopper, or crusher is exempt from the requirements of this section," where "requirements of this section" refers to the emissions limitations in Tables 2 & 3 of Subpart OOO.

2. P012, Grinding and screening

Operations, Property and/or Equipment Description:

Secondary grinding and screening, temporary storage, then transfer via covered conveyor belt to an adjoining building. Emissions are controlled by a dust collector that exhausts inside a fully enclosed building. There are two separate, parallel processes for shale plus grog and clay plus grog, including separate dust collectors.

a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only.

(1) None.

b) Applicable Emissions Limitations and/or Control Requirements

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

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rule 3745-31-05(A)(3) [Best Available Technology (BAT) as established in PTI 15-01607 issued 12/02/2005]	Fugitive particulate emissions (PE) from the totally enclosed buildings shall not exceed 25.0 tons/yr. See b)(2)a. below. Compliance with this rule also includes compliance with the requirements specified in 40 CFR Part 60, Subpart OOO.
b.	40 CFR Part 60, Subpart OOO (40 CFR 60.670 – 60.676)	See b)(2)b. below.
c.	OAC rule 3745-17-07(A) [This rule is cited because it would apply to the outlet of the fabric filter inside the building, which is defined as a "stack" per Engineering Guide No. 75]	The visible particulate emission limitations specified in this rule are less stringent than the visible particulate emission limitations established pursuant to 40 CFR Part 60, Subpart OOO.
d.	OAC rule 3745-17-07(B)(1) [VE of fugitive dust in Appendix A areas]	The visible particulate emission limitations specified in this rule are less stringent than the visible emission limitations established pursuant to 40

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		CFR Part 60, Subpart OOO, as applicable.
e.	OAC rule 3745-17-08(B) [RACM for fugitive dust in Appendix A areas]	The control measures established pursuant to this rule are equal to or less stringent than the control measures established pursuant to OAC rule 3745-31-05(A)(3) and in 40 CFR Part 60, Subpart OOO, as applicable.
f.	OAC rule 3745-17-11(B) [Restrictions on particulate emissions from industrial processes]	The particulate emission limitations specified in this rule are less stringent than the particulate emission limitations established pursuant to OAC rule 3745-31-05(A)(3).

(2) Additional Terms and Conditions

a. The following are additional best available technology (BAT) requirements, including best available control measures:

i. The grinding, screening, and storage operations (including the load-in and load-out of materials using a front-end loader) shall take place within totally enclosed buildings.

ii. The grinding of shale plus grog in the dry grinding pan, screening with 180 square feet of heated vibro screens, the storage of the ground shale plus grog, all conveyors except #6a, #6b, #7, and #22, conveyor transfer points except those associated with the previously listed conveyors, and the $BaCO_3$ feeder shall be serviced by a 28,000 cfm fabric filter DCP012S, which is vented inside the building. The grinding of clay plus grog in the hammer mill grinder, screening with 208 square feet of heated vibro screens, the storing of ground clay plus grog, all conveyors except #1, #2, #3, and #33, conveyor transfer points except those associated with the previously listed conveyors, and the $BaCO_3$ feeder shall be serviced by a 28,000 cfm fabric filter DCP012C, which is vented inside the building. These fabric filters shall have capture efficiencies sufficient to minimize or eliminate visible particulate emissions of fugitive dust at the points of capture to the extent possible with good engineering design.

iii. Emissions from the processes described in ii. above shall be vented to the fabric filters, also described in ii. above, at all times the emissions unit is in operation.

iv. Conveyor belts shall be the only affected facilities which are not enclosed within a building. Any conveyor belts that are not contained in a totally enclosed building shall be covered.

v. For the load-in of crushed materials onto a conveyor belt using a front-end loader, the drop height of the front-end loader shall be minimized.

b. The following are the applicable emission limitations from 40 CFR Part 60, Subpart OOO, Standards of Performance for Nonmetallic Mineral Processing Plants. This emissions unit is an "affected facility" (as defined in §§60.670 and 60.671) that commenced construction, modification, or reconstruction after August 31, 1983, but before April 22, 2008.

i. For any conveyor belts that are not enclosed within a building, fugitive emissions from any openings in the conveyor belt coverings shall not exceed 10% opacity as a 6-minute average. [Specific reference: §60.672(b)]

ii. Requirements for emissions from affected facilities enclosed in a building: fugitive emissions from building openings shall not exceed 7% opacity as a 6-minute average. [Specific reference: §60.672(e)(1)]

c) Operational Restrictions

(1) The permittee shall be limited to grinding and screening a total net amount of 200,000 tons of raw material plus grog in this emissions unit per calendar year.

d) Monitoring and/or Recordkeeping Requirements

(1) The permittee shall maintain weekly records of the following information:

a. The net amount of material processed through this emissions unit (ground and screened, then transferred to production), in tons.

b. The year-to-date total net amount of material processed through this emissions unit (ground and screened, then transferred to production), in tons, shall be updated by adding the weekly value recorded in a. above to the total for all previous weeks during the current calendar year.

(2) The permittee shall perform weekly visible emissions checks for the following equipment and operations listed in a. and b. below when the emissions unit is in operation and when the weather conditions allow:

a. For the interconnecting belt #22 for shale plus grog, and for the interconnecting belt #33 for clay plus grog, which are totally covered and not enclosed within any building, check for any visible particulate emissions of fugitive dust around the conveyors while the conveyors are transporting material.

b. While any of the following operations, property, and/or equipment that are all enclosed in buildings are in use, check for any visible particulate emissions of fugitive dust escaping from the buildings: the shale plus grog dry grinding pan and associated screens, the clay plus grog hammer mill grinder and associated

screens, the $BaCO_3$ feeders, belt conveyors inside buildings, and the storage tanks for ground shale plus grog and for ground clay plus grog with continuous loading by belt conveyors.

c. The presence or absence of any visible emissions observed during any of the weekly checks required in a. and b. above shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:

i. the location and color of the emissions;

ii. whether the emissions are representative of normal operations;

iii. if the emissions are not representative of normal operations, the cause of the abnormal emissions;

iv. the total duration of any visible fugitive emissions incident; and

v. any corrective actions taken to eliminate the visible fugitive emissions.

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

(3) In order to maintain compliance with the applicable emission limitation contained in b)(1), the acceptable range established for the pressure drop across the fabric filters DCP012S and DCP012C servicing this emissions unit is between 3 to 5 inches of water while the emissions unit is in operation.

(4) The permittee shall properly install, operate, and maintain equipment to continuously monitor the pressure drop, in inches of water, across fabric filters DCP012S and DCP012C when the controlled emissions unit is in operation, including periods of startup and shutdown. The permittee shall record the pressure drop across each fabric filter on a daily basis. The monitoring equipment shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manual(s), with any modifications deemed necessary by the permittee.

Whenever the monitored value for the pressure drop deviates from the limit or range established in accordance with this permit, the permittee shall promptly investigate the cause of the deviation. The permittee shall maintain records of the following information for each investigation:

a. the date and time the deviation began;

b. the magnitude of the deviation at that time;

c. the date the investigation was conducted;

d. the name(s) of the personnel who conducted the investigation; and

e. the findings and recommendations.

In response to each required investigation to determine the cause of a deviation, the permittee shall take prompt corrective action to bring the operation of the control equipment within the acceptable range specified in this permit, unless the permittee determines that corrective action is not necessary and documents the reasons for that determination and the date and time the deviation ended. The permittee shall maintain records of the following information for each corrective action taken:

f. a description of the corrective action;

g. the date corrective action was completed;

h. the date and time the deviation ended;

i. the total period of time (in minutes) during which there was a deviation;

j. the pressure drop readings immediately after the corrective action was implemented; and

k. the name(s) of the personnel who performed the work.

Investigation and records required by this paragraph do not eliminate the need to comply with the requirements of OAC rule 3745-15-06 if it is determined that a malfunction has occurred.

This range or limit on the pressure drop across fabric filters DCP012S and DCP012C is effective for the duration of this permit, unless revisions are requested by the permittee and approved in writing by CCHD-APCD. The permittee may request revisions to the permitted limit or range for the pressure drop based upon information obtained during future testing that demonstrate compliance with the allowable particulate emission rate for the controlled emissions unit(s). In addition, approved revisions to the range or limit will not constitute a relaxation of the monitoring requirements of this permit and may be incorporated into this permit by means of a minor permit modification.

e) Reporting Requirements

(1) Unless other arrangements have been approved by the Director, all notifications and reports shall be submitted through the Ohio EPA's eBusiness Center: Air Services online web portal.

(2) The permittee shall submit quarterly deviation (excursion) reports that identify the following at a minimum:

a. any period of time (start time and date, and end time and date) when the total tons of material, as recorded per term d)(1)b., exceeded the operational restriction listed in term c)(1) above.

b. any period of time (start time and date, and end time and date) when the emissions unit was in operation and the process emissions were not vented to fabric filters DCP012S and/or DCP012C as applicable;

c. each period of time (start time and date, and end time and date) when the pressure drop across the fabric filters was outside the allowable range specified in d)(3) above;

d. each incident of deviation described in c. above where a prompt investigation was not conducted;

e. each incident of deviation described in c. above where prompt corrective action, that would bring the pressure drop into compliance with the acceptable range, was determined to be necessary and was not taken; and

f. each incident of deviation described in c. above where proper records were not maintained for the investigation and/or the corrective action(s), as identified in the monitoring and record keeping requirements of this permit.

The quarterly deviation (excursion) reports shall be submitted in accordance with the reporting requirements of the Standard Terms and Conditions of this permit.

(3) The permittee shall submit semiannual reports that identify the following at a minimum:

a. all days during which any visible particulate emissions of fugitive dust were observed at any of the locations identified in d)(2) above; and

b. any corrective actions taken to eliminate the visible particulate emissions.

The semiannual reports shall be submitted along with the semiannual deviation reports required per the reporting requirements of the Standard Terms and Conditions of this permit.

(4) In the annual Fee Emissions Report (FER), the permittee shall report the throughput for this emissions unit as the total net amount of material processed (ground and screened, then transferred to production) during the previous calendar year, in tons, based on the recordkeeping required in d)(1)b. above. Also, the total particulate emissions from this emissions unit, in tons, during the previous calendar year shall be reported in the annual FER based on the calculation method shown in f)(1)a. below, but using the actual total amount of material received instead of the operational limit of 200,000 tons per calendar year.

f) Testing Requirements

(1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emissions Limitation:

Fugitive particulate emissions (PE) from the totally enclosed buildings shall not exceed 25.0 tons/yr.

Applicable Compliance Method:

This emissions limitation was established by calculating the maximum potential-to-emit with controls using the operational restriction of 200,000 tons of material per year processed thru to production and emission factors for 1) grinding, 2) screening and 3) temporary storage. For the grinding and screening operations, the overall throughput was estimated at five times the net amount of material processed per year due to multiple cycling back and regrinding of material that did not pass through the screens during the previous cycle. In other words, the maximum amount of material processed through these operations per year is effectively (5 x 200,000 tons) = 1,000,000 tons per year. So for this reason, the equations shown below for grinding and screening include a factor of 5, while the equation for storage does not.

1. Grinding:

The emission factor used was 76 lb_{PE}/ton of material ground, as found in FIRE 6.25 for SCC 3-05-008-02 (Industrial Processes - Mineral Products - Ceramic clay/tile manufacture - Comminution: crushing, grinding & milling). Uncontrolled potential-to-emit was calculated first as follows:

Uncontrolled $PTE_{GRINDING}$ = (5) x (200,000 ton/yr) x (76.0 lb_{PE}/ton) ÷ (2000 lb/ton) = 38,000 ton_{PE}/yr

Controlled potential-to-emit was then calculated based upon an estimated 90% containment efficiency for the enclosure around the grinding equipment, followed by an estimated 99.5% control efficiency for the fabric filters.

Controlled $PTE_{GRINDING}$ = (38,000 ton_{PE}/yr) x (1 – 0.90) x (1 – 0.995) = 19.0 ton_{PE}/yr

Comments regarding the preceding equation:

(38,000 ton_{PE}/yr) x (90% containment efficiency) = 34,200 ton_{PE}/yr = material that stays within the grinding & screening loop. The balance (38,000 – 34,200 = 3800 ton_{PE}/yr) is captured by the collection system and sent to the fabric filter.

(3800 ton_{PE}/yr) x (1 – 99.5% control efficiency) = 19.0 ton_{PE}/yr emitted from the outlet of the fabric filter into the building. A very conservative assumption was then made that the capture efficiency of the building is 0%, so that all 19 ton/yr can *potentially* become fugitive emissions from openings in the building.

2. Screening:

The emission factor used was 8.5 lb_{PE}/ton of material screened, as found in FIRE 6.25 for SCC 3-05-003-02 (Industrial Processes - Mineral Products - Brick Manufacture - Raw material grinding & screening). Uncontrolled potential-to-emit was calculated first as follows:

Uncontrolled $PTE_{SCREENING}$ = (5) x (200,000 ton/yr) x (8.5 lb_{PE}/ton) ÷ (2000 lb/ton) = 4,250 ton_{PE}/yr

Controlled potential-to-emit was then calculated based upon an estimated 75% containment efficiency for the enclosure around the screening equipment, followed by an estimated 99.5% control efficiency for the fabric filters.

Controlled $PTE_{SCREENING}$ = (4,250 ton_{PE}/yr) x (1 – 0.75) x (1 – 0.995) = 5.31 ton_{PE}/yr

Comments regarding the preceding equation:

(4,250 ton_{PE}/yr) x (75% containment efficiency) = 3,187.5 ton_{PE}/yr = material that stays within the grinding & screening loop. The balance (4,250 – 3,187.5 = 1,062.5 ton_{PE}/yr) is captured by the collection system and sent to the fabric filter.

(1,062.5 ton_{PE}/yr) x (1 – 99.5% control efficiency) = 5.31 ton_{PE}/yr emitted from the outlet of the fabric filter into the building. A very conservative assumption was then made that the capture efficiency of the building is 0%, so that all 5.31 ton/yr can *potentially* become fugitive emissions from openings in the building.

3. Storage:

The finished ground and screened material is temporarily stored in steel vessels with a containment efficiency of 99.999%. Based on the screen size, an average of 35% of the material becomes airborne during storage.

$PTE_{STORAGE}$ = (1) x (200,000 ton/yr) x (0.35) x (1 – 0.99999) = 0.7 ton_{PE}/yr

Comments regarding the preceding equation:

(200,000 ton_{PE}/yr) x (35% airborne) = 70,000 ton_{PE}/yr “uncontrolled emissions” (i.e., 35% is acting like an emission factor in this case).

(70,000 ton_{PE}/yr) x (1 – 99.999% containment efficiency) = 0.7 ton_{PE}/yr emitted from the small openings in the storage vessels. A very conservative assumption was then made that the capture efficiency of the building is 0%, so that all 0.7 ton/yr can *potentially* become fugitive emissions from openings in the building.

Total Controlled Potential-to-Emit:

= $PTE_{GRINDING}$ + $PTE_{SCREENING}$ + $PTE_{STORAGE}$

= (19.0 ton_{PE}/yr) + (5.3 ton_{PE}/yr) + (0.7 ton_{PE}/yr)

= 25.0 ton_{PE}/yr

b. Emissions Limitation:

For any conveyor belts that are not enclosed within a building, fugitive emissions from any openings in the conveyor belt coverings shall not exceed 10% opacity as a 6-minute average.

Applicable Compliance Method:

If required, compliance shall be determined through visible emissions observations performed in accordance with the requirements specified in Method 9 of 40 CFR Part 60, Appendix A, and the procedures specified in 40 CFR Part 60, Subpart A (General Provisions, §60.11), with the following additions from 40 CFR Part 60, Subpart OOO:

§60.675(c)(1)(i): The minimum distance between the observer and the emission source shall be 15 feet.

§60.675(c)(1)(ii): The observer shall, when possible, select a position that minimizes interference from other fugitive emission sources, but without compromising the required observer position relative to the sun as specified in Method 9.

§60.675(c)(3): The duration of the Method 9 observations must be 30 minutes (five 6-minute averages). Compliance with the applicable fugitive emission limit must be based on the average of five 6-minute averages.

c. Emissions Limitation:

For affected facilities enclosed within a building, fugitive emissions from building openings shall not exceed 7% opacity as a 6-minute average.

Applicable Compliance Method:

If required, compliance shall be determined through visible emissions observations performed in accordance with the requirements specified in Method 9 of 40 CFR Part 60, Appendix A, and the procedures specified in 40 CFR Part 60, Subpart A (General Provisions, §60.11), with the following additions from 40 CFR Part 60, Subpart OOO:

§60.675(c)(1)(i): The minimum distance between the observer and the emission source shall be 15 feet.

§60.675(c)(1)(ii): The observer shall, when possible, select a position that minimizes interference from other fugitive emission sources, but without compromising the required observer position relative to the sun as specified in Method 9.

§60.675(c)(3): The duration of the Method 9 observations must be 30 minutes (five 6-minute averages). Compliance with the applicable fugitive emission limit must be based on the average of five 6-minute averages.

§60.675(d)(2): If the owner or operator of the affected facility has previously conducted an initial Method 22 (40 CFR Part 60, Appendix A) performance test before April 22, 2008 that showed zero emissions from the building openings, then the owner or operator is considered to have demonstrated compliance with the 7% opacity limit from §60.672(e)(1). In this case, further testing shall not be required on a regularly scheduled basis. See f)(2)b.ii., below.

§60.675(d)(2): If the owner or operator of the affected facility has not conducted an initial Method 22 performance test that showed zero emissions from the building openings before April 22, 2008, then the owner or operator must conduct an initial Method 9 performance test as defined in §60.11 (40 CFR Part 60, Subpart A) and according to the procedures described above to show compliance with the 7% opacity limit. Note: For the initial Method 9 test only, §60.11(b) requires the duration of the observations to be a minimum of 3 hours (thirty 6-minute averages). For any subsequent testing required, the duration of the Method 9 observations shall be reduced to 30 minutes (five 6-minute averages).

(2) The permittee shall conduct, or have conducted, emissions testing for this emissions unit in accordance with the following requirements:

a. The emission testing shall be conducted according to the timetable established for this emissions unit in the most recent Title V operating permit issued after the effective date of this permit.

b. The emission testing shall be conducted to demonstrate compliance with the following visible particulate limitations, and shall employ the test methods as listed here:

i. 10% opacity as a 6-minute average from any openings in conveyor belt coverings for conveyor belts that are not enclosed within a building. Method 9 of 40 CFR Part 60, Appendix A, along with the applicable requirements described in f)(1)b. above.

ii. Only if required (see f)(1)c. above, specifically the requirements from 40 CFR §60.675(d)(2)): 7% opacity as a 6-minute average from building openings for affected facilities enclosed within a building. Method 9 of 40 CFR Part 60, Appendix A, along with the applicable requirements described in f)(1)c. above.

c. Unless otherwise specified or approved by CCHD-APCD, the visible particulate emissions observation(s) shall be conducted while the emissions unit is operating at or near its maximum capacity. To expand upon the previous sentence, the test(s) shall be conducted under those representative conditions that challenge to the fullest extent possible a facility's ability to meet the applicable emissions limits and/or control requirements, unless otherwise specified or approved by CCHD-APCD. Although this generally consists of operating the emissions unit at its maximum material input/production rates and results in the highest emission rate of the tested pollutant, there may be circumstances where a lower emissions loading is deemed the most challenging control scenario. Failure to test under these conditions is justification for not accepting the test results as a demonstration of compliance.

d. The pressure drop at the fabric filters shall be monitored and recorded once at the beginning and once at the end of the testing period. Both readings shall be taken while the emissions unit is operating as described in c. above.

e. Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to CCHD-APCD. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emission unit operating parameters, the time(s) and date(s) of the testing, and the person(s) who will be conducting the testing. Failure to submit such notification for review and approval prior to the testing may result in CCHD-APCD's refusal to accept the results of the emissions testing.

f. Personnel from CCHD-APCD shall be permitted to witness the testing, examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

g. A comprehensive written report on the results of the emissions testing shall be signed by the person or persons responsible for the testing and submitted to CCHD-APCD within 30 days following completion of the testing. The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from CCHD-APCD.

g) Miscellaneous Requirements

(1) None.

3. Emissions Unit Group X002:

P004, Tunnel Kiln #1
P005, Tunnel Kiln #2
P006, Tunnel Kiln #3
P014, Tunnel Kiln #4

Operations, Property and/or Equipment Description:

The following description applies equally to emissions units P004, P005, P006 and P014: 11.2 mmBtu/hr natural gas fired tunnel kiln, 3.97 ton/hr maximum feed rate, 3.42 ton/hr max production rate, 2200° F max temp. Uncontrolled emissions exhaust to common stack EPX002.

a) The following emissions unit terms and conditions are federally enforceable with the exception of those listed below which are enforceable under state law only.

(1) None.

b) Applicable Emissions Limitations and/or Control Requirements

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

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rule 3745-31-05(A)(3) [Best Available Technology (BAT), as established in PTI 15-1173 issued 07/19/1995 and changed to correct typographical errors in this Administrative Modification PTI P0109639.]	The following emissions limitations shall apply to emissions units P004, P005, P006 and P014 combined:Sulfur dioxide (SO_2) emissions shall not exceed 76.65 lb/hr as a weekly average excluding non-operating periods, 12,877 lb/wk in any 7-day week, and 306.53 tons/yr on a calendar year basis.Fluoride (F^-) emissions shall not exceed 6.5 lb/hr and 28.47 tons/yr.PE/PM emissions (filterable portion only) shall not exceed 21.65 lb/hr and 94.83 tons/yr. See b)(2)a. below. Nitrogen oxides (NOx) emissions shall not exceed 16.06 lb/hr and 70.34 tons/yr. Compliance with this rule also includes compliance with the requirements specified in OAC rule 3745-17-07(A) See b)(2)b. and c)(1)-(3) below

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
b.	OAC rule 3745-17-07(A)	Visible particulate emissions from the common stack serving emissions units P004, P005, P006 and P014 shall not exceed 20 percent opacity, as a six-minute average, except as provided by rule.
c.	OAC rule 3745-17-11(B) [Restrictions on particulate emissions from industrial processes]	The emission limitation specified by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3). See f)(1)f. below
d.	OAC rule 3745-18-06(E)(1) [SO_2 emission limits, general provisions for Cuyahoga, Lake, Stark, Summit, and Trumbull counties]	The emission limitation specified by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3). See f)(1)g. below

(2) Additional Terms and Conditions

a. For the purpose of OAC rule 3745-31-05(A)(3), all particulate emissions (PE/PM) are assumed to be particulate matter equal-to or less than 10 microns in diameter; i.e., PE/PM_{10}.

b. The height of the stack serving these emissions units shall be a minimum of 45 meters from the ground level.

c) Operational Restrictions

(1) The permittee shall burn only natural gas as fuel in emissions units P004, P005, P006 and P014.

(2) The total amount of sulfur in the feed materials used in emissions units P004, P005, P006 and P014 combined shall not exceed 8,472 pounds in any one week. See g)(2) below for an explanation of the calculations used to establish this operational restriction. This restriction shall change if the current sulfur emission factor changes in accordance with g)(1) below.

(3) The total amount of sulfur in the feed materials used in emissions units P004, P005, P006 and P014 combined shall not exceed 100,832 pounds in any one calendar quarter. See g)(2) below for an explanation of the calculations used to establish this operational restriction. This restriction shall change if the current sulfur emission factor changes in accordance with g)(1) below.

d) Monitoring and/or Recordkeeping Requirements

(1) The permittee shall perform checks, at least once every two-week period and within fifteen days of the last check performed, when the emissions unit(s) is(are) in operation, and when weather conditions allow, for any visible particulate emissions from the stack serving these emissions units. 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;

c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;

d. the total duration of any visible emissions incident; and

e. any corrective actions taken to minimize or eliminate the visible emissions.

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

(2) For each day during which the permittee burns a fuel other than natural gas in any of these emissions units, the permittee shall maintain a record of the type and quantity of fuel burned, and in which emissions unit it was burned.

(3) The permittee shall comply with the following daily and weekly monitoring and recordkeeping requirements:

a. The following procedure shall be used to obtain a representative daily composite sample and a representative weekly composite sample of the clay and shale feed materials fed to emissions units P004, P005, P006 and P014:

i. While any of these emissions units are in operation, daily samples shall be taken of the clay and shale materials used in tile production. A daily grab sample of clay shall be taken from the belt conveyor leading from one of the two ground clay storage tanks that feed the conveyor belts feeding the pug mixers. Likewise, a daily grab sample of shale is taken from the belt conveyor leading from one of the two ground shale storage tanks that feed the conveyor belts feeding the pug mixers.

ii. The clay and shale samples described in i. above shall be mixed together in the same proportions, by mass, as the clay and shale that will be used in products fired that day, based on product specifications and the daily production schedule, in order to obtain a representative daily composite sample.

iii. The daily composite sample shall be placed in a composite bottle with lid to produce a weekly composite sample. The weekly composite sample shall be mixed thoroughly so that a sample may be taken from the bottle to represent the entire week's production from these emissions units.

b. The permittee shall maintain the following daily and weekly production records:

i. the actual daily production rate in terms of the number of kiln cars fired, by product code, and the number of hours of operation (time when products were being fired), for each of the emissions units in this group separately;

ii. the total weekly hours of operation (time when products were being fired), for each of the emissions units in this group separately;

iii. the total weekly amount, in tons (dry weight) of feed materials used in all of the emissions units in this group combined.

c. The following procedure shall be used to determine the sulfur content of each weekly composite sample:

i. The weekly composite sample from (3)a.iii. above shall be analyzed utilizing ASTM Test Method D1552 or E350-97 to determine the corrected, weighted-average sulfur content of the feed materials as a mass fraction.

ii. For quality assurance, the permittee shall perform a calibration test before the weekly composite sample is analyzed for sulfur content. Three standard samples with known sulfur concentration shall be analyzed, and the measured +/- differences from each of the known concentrations shall be averaged to obtain a calibration correction factor.

iii. The permittee shall maintain the following weekly records:

(a) the value of the corrected, weighted-average sulfur content determined in c.i. above ($lb_{S\text{-}FEED}/lb_{FEED}$);

(b) the sulfur concentration of the three standard samples used to calibrate the equipment;

(c) the measured +/- difference from the known sulfur concentration for each of the three standard samples; and

(d) the average calibration correction factor.

(4) The permittee shall maintain weekly records of the following information for emissions units P004, P005, P006 and P014 combined:

a. The total amount of sulfur in the feed materials used in the combined emissions units ($lb_{S\text{-}FEED}$/wk), calculated by multiplying the tons of feed material from (3)b.iii. above by 2000 lb/ton, then multiplying by the corrected, weighted-average sulfur content from (3)c. above:

$$(ton_{FEED}/wk) \times (2000\ lb/ton) \times \text{sulfur content } (lb_{S\text{-}FEED}/lb_{FEED}) = lb_{S\text{-}FEED}/wk$$

b. The weekly SO_2 emission rate (lb_{SO2}/wk), calculated by multiplying the weekly amount of sulfur usage in the combined emissions units ($lb_{S\text{-}FEED}$/wk) times the current sulfur emission factor, EF, (see g)(1) below), then multiplying the result by 2.0 based on the ratio of the molecular weight of SO_2 (64) to the molecular weight of S (32).

$$(lb_{S\text{-}FEED}/wk) \times EF(lb_{S\text{-}STACK}/lb_{S\text{-}FEED}) \times (2.0\ lb_{SO2}/lb_{S\text{-}STACK}) = lb_{SO2}/wk$$

c. The average hourly SO_2 emission rate (lb_{SO2}/hr), calculated as the weekly SO_2 emission rate (lb_{SO2}/wk) in the combined emissions units divided by the highest number of weekly hours of operation among any of the four individual emissions units in this group, from the data recorded in (3)b.ii above.

d. The quarter-to-date total amount, in pounds, of sulfur in the feed materials used in the combined emissions units shall be updated by adding the weekly value recorded in a. above ($lb_{S\text{-}FEED}$/wk) to the total for all the previous weeks during the current calendar quarter.

e. The year-to-date total amount, in tons, of sulfur in the feed materials used in the combined emissions units shall be updated by adding the weekly value recorded in a. above ($lb_{S\text{-}FEED}$/wk) to the total for all the previous weeks during the current calendar year, then dividing by 2000 lb/ton.

f. The year-to-date total amount, in tons, of SO_2 emissions from the combined emissions units shall be updated by adding the weekly value recorded in b. above (lb_{SO2}/wk) to the total for all the previous weeks during the current calendar year, then dividing by 2000 lb/ton.

e) Reporting Requirements

(1) Unless other arrangements have been approved by the Director, all notifications and reports shall be submitted through the Ohio EPA's eBusiness Center: Air Services online web portal.

(2) The permittee shall submit quarterly deviation (excursion) reports that identify the following at a minimum:

a. all days during which a fuel other than natural gas was burned in emissions unit P004, P005, P006 or P014, along with the type and quantity of fuel burned, and in which emissions unit it was burned;

b. each week during which the average hourly SO_2 emissions, as calculated in d)(4)c. above for emissions units P004, P005, P006 and P014 combined, exceeded the hourly emissions limit in b)(1)a. above. For each such week, the value of the calculated average hourly SO_2 emissions shall also be reported;

c. each week during which the weekly SO_2 emissions, as calculated in d)(4)b. above for emissions units P004, P005, P006 and P014 combined, exceeded the weekly emissions limit in b)(1)a. above. For each such week, the value of the calculated weekly SO_2 emissions shall also be reported;

d. each week during which the total amount of sulfur in the feed materials used in emissions units P004, P005, P006 and P014 combined, as calculated in d)(4)a. above, exceeded the operational restriction defined in c)(2) above. For each such week, the value of the calculated pounds of sulfur used shall also be reported; and

e. each calendar quarter during which the total amount of sulfur in the feed materials used in emissions units P004, P005, P006 and P014 combined, as calculated in d)(4)d. above, exceeded the operational restriction defined in c)(3) above. For each such quarter, the value of the calculated pounds of sulfur used shall also be reported.

The quarterly deviation (excursion) reports shall be submitted in accordance with the reporting requirements of the Standard Terms and Conditions of this permit.

(3) The permittee shall submit semi-annual reports that identify the following at a minimum:

a. all days during which any visible particulate emissions were observed from the stack serving these emissions units; and

b. any corrective actions taken to minimize or eliminate the visible particulate emissions.

The semiannual reports shall be submitted along with the semiannual deviation reports required per the reporting requirements of the Standard Terms and Conditions of this permit.

(4) In the annual Fee Emissions Report (FER), the permittee shall report the total SO_2 emissions from emissions units P004, P005, P006 and P014 combined, in tons, based upon the recordkeeping from d)(4)f. above for the previous calendar year.

f) Testing Requirements

(1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b) of these terms and conditions shall be determined in accordance with the following methods:

a. Emission Limitations:

Sulfur dioxide (SO_2) emissions shall not exceed 76.65 lb/hr as a weekly average excluding non-operating periods and 12,877 lb/wk in any 7-day week for emissions units P004, P005, P006 and P014 combined.

Applicable Compliance Method:

The 76.65 lb/hrlimit for SO_2 was established as BAT in PTI 15-1173, issued 7/19/1995. PTI 15-1173 was the initial installation permit for P014, and the PTE for this new tunnel kiln was provided by the permittee in the permit application as 14.65 lb/hr based on stack testing conducted 4/14/1994. The additional 14.65 lb/hr for P014 was added to the combined PTE of 62.0 lb/hr established in Chapter 31 modification PTIs 15-248 and 15-290 issued 07/06/1995 for the three existing tunnel kilns (P004, P005 and P006) to give a total PTE of 76.65 lb/hr.

The weekly emissions limit was established by multiplying the maximum hourly limit by 168 hr/wk:

(76.65 lb_{SO2}/hr) × (168 hr/wk) = 12,877 lb_{SO2}/wk

Compliance shall be demonstrated based upon the recordkeeping required in d)(4) above and testing required in term f)(2) below.

b. Emission Limitation:

Sulfur dioxide (SO_2) emissions shall not exceed 306.53 tons/yr on a calendar year basis for emissions units P004, P005, P006 and P014 combined.

Applicable Compliance Method:

The 306.53 ton/yrlimit for SO_2 was established as BAT in PTI 15-1173, issued 7/19/1995. PTI 15-1173 was the initial installation permit for P014, and the annual potential-to-emit (PTE) for this new tunnel kiln was provided by the permittee in the permit application as 61.53 ton/yr based on 14.65 lb/hr (from stack testing conducted 4/14/1994) and an assumption of 50 weeks maximum operation per year*:

$(14.65\ lb_{SO2}/hr)_{P014}$ x (24 hr/day) x (7 day/wk) x (50 wk/yr) ÷ (2000 lb/ton) = 61.53 ton_{SO2}/yr

* The reason for the permittee's assumption of 50 weeks rather than a full year is unknown. When PTE was calculated two years earlier for PTI 15-883 (issued 6/16/1993), it was based on a full 8760 hr/yr of operation. Regardless of the reason, the 50-week assumption for PTI 15-1173 had the effect of a lower emission limit being set than otherwise would have been the case if PTE had been calculated based on the standard full year (8760 hr). Most importantly, the permittee accepted the lower limit.

The additional 61.53 ton/yr for P014 was added to the established annual emissions limit of 245 ton/yr established in Chapter 31 modification PTIs 15-248

and 15-290 issued 07/06/1995 for the three existing tunnel kilns (P004, P005 and P006) combined to give 306.53 ton/yr:

$(245\ ton_{SO2}/yr)_{P004,P005,P006} + (61.53\ ton_{SO2}/yr)_{P014} = 306.53\ ton_{SO2}/yr$

Compliance shall be demonstrated based upon the recordkeeping required in d)(4) above.

c. Emission Limitations:

Fluoride (F^-) emissions shall not exceed 6.5 lb/hr and 28.47 tons/yr for emissions units P004, P005, P006 and P014 combined.

Applicable Compliance Method:

The combined fluoride emissions limits for P004, P005, P006, and P014 were established as BAT in PTI 15-1173. The 6.5 lbs/hr limit was determined by modeling on 02/21/1995 and included in the application for PTI 15-1173.

Compliance with the lbs/hr limit shall be demonstrated based upon the testing required in term f)(2) below.

The annual emissions limit was established by multiplying the maximum hourly limit by 8760 hr/yr, then dividing by 2000 lb/ton:

$(6.5\ lb_F/hr) \times (8760\ hr/yr) \div (2000\ lb/ton) = 28.47\ ton_F/yr$

Compliance with the annual limit may be assumed provided compliance with the hourly limit has been demonstrated based upon data from the most recent emission test that demonstrated that the emissions units were in compliance.

d. Emission Limitations:

Filterable particulate emissions (PE) shall not exceed 21.65 lb/hr and 94.83 tons/yr for emissions units P004, P005, P006 and P014 combined.

Applicable Compliance Method:

The 21.65 lb/hrlimit for PE was established as BAT in PTI 15-1173, issued 7/19/1995. PTI 15-1173 was the initial installation permit for P014, and the PTE for this new tunnel kiln was provided by the permittee in the permit application as 3.65 lb/hr based on stack testing conducted 03/30/1994. The additional 3.65 lb/hr for P014 was added to the combined PTE of 18.0 lb/hr established in Chapter 31 modification PTIs 15-248 and 15-290 issued 07/06/1995 for the three existing tunnel kilns (P004, P005 and P006) to give a total PTE of 21.65 lb/hr.

Compliance with the lbs/hr limit shall be demonstrated based upon the testing required in term f)(2) below.

The annual emissions limit was established by multiplying the maximum hourly limit by 8760 hr/yr, then dividing by 2000 lb/ton:

(21.65 lb_{PE}/hr) × (8760 hr/yr) ÷ (2000 lb/ton) = 94.83 ton_{PE}/yr

Compliance with the annual limit may be assumed provided compliance with the hourly limit has been demonstrated based upon data from the most recent emission test that demonstrated that the emissions units were in compliance.

e. Emission Limitations:

Nitrogen oxides (NOx) emissions shall not exceed 16.06 lb/hr and 70.34 tons/yr for emissions units P004, P005, P006 and P014 combined.

Applicable Compliance Method:

The 16.06 lb/hrlimit for NOx was established as BAT in PTI 15-1173, issued 7/19/1995. PTI 15-1173 was the initial installation permit for P014, and the PTE for this new tunnel kiln was provided by the permittee in the permit application as 3.24 lb/hr based on stack testing conducted 11/17/1993. The additional 3.24 lb/hr for P014 was added to the combined PTE of 12.82 lb/hr established in Chapter 31 modification PTIs 15-248 and 15-290 issued 07/06/1995 for the three existing tunnel kilns (P004, P005 and P006) to give a total PTE of 16.06 lb/hr.

Compliance with the lbs/hr limit shall be demonstrated based upon the testing required in term f)(2) below.

The annual emissions limit was established by multiplying the maximum hourly limit by 8760 hr/yr, then dividing by 2000 lb/ton:

(16.06 lb_{NOx}/hr) × (8760 hr/yr) ÷ (2000 lb/ton) = 70.34 ton_{NOx}/yr

Compliance with the annual limit may be assumed provided compliance with the hourly limit has been demonstrated based upon data from the most recent emission test that demonstrated that the emissions units were in compliance.

f. Emission Limitation:

Visible particulate emissions from the common stack serving emissions units P004, P005, P006 and P014 shall not exceed 20 percent opacity, as a six-minute average, except as provided by rule.

Applicable Compliance Method:

Compliance shall be demonstrated based upon the testing required in term f)(2) below. If requested, ongoing compliance with the stack visible particulate emissions limitation shall be determined in accordance with the procedure specified in OAC rule 3745-17-03(B)(1)(a), which states that "…'USEPA Method 9' shall be employed" (Method 9 of 40 CFR Part 60, Appendix A.)

g. Emission Limitation – for informational purposes only:

The emission limitation specified by OAC rule 3745-17-11, 26.14 lb_{PE}/hr, is less stringent than 21.65 lb_{PE}/hr, the BAT emission limitation established pursuant to OAC rule 3745-31-05(A)(3).

The calculations shown below demonstrate how the emission limitation specified by OAC rule 3745-17-11 was calculated

Applicable Compliance Method:

The following equation from Table 1 in OAC rule 3745-17-11 would be used to establish the permit limit based on the maximum rate of feed material fired (i.e., the effective maximum process weight rate) of 15.88 ton/hrfor emissions units P004, P005, P006 and P014 combined:

$E_{PE} = (4.10)(P)^{0.67}$

where:

E_{PE} = allowable particulate emission rate in lb/hr

P = process weight rate in ton/hr

P = 3.97 ton/hr input for each EU P004, P005, P006 and P014

P_{TOTAL} = (4) x (3.97) = 15.88 ton/hr

$E_{PE} = (4.10)(15.88 \text{ ton/hr})^{0.67} = 26.14 \text{ lb}_{PE}/\text{hr}$

26.14 lb_{PE}/hr> 21.65 lb_{PE}/hr

h. Emission Limitations – for informational purposes only:

The emission limitation specified by OAC rule 3745-18-06(E)(1), 127.5 lb_{SO2}/hr, is less stringent than 76.65 lb_{SO2}/hr, the BAT emission limitation established pursuant to OAC rule 3745-31-05(A)(3).

The calculations shown below demonstrate how the emission limitation specified by OAC rule 3745-18-06(E)(1) was calculated.

Applicable Compliance Methods:

3745-18-06(E)(1) - General emission limit provisions for Cuyahoga, Lake, Stark, Summit and Trumbull counties *"Except as otherwise indicated...in rules 3745-18-07 to 3745-18-94..."* (see 3745-18-82(A)(3) for Stark county emission limits):

$AER = 20\ P^{0.67}$

where,

AER = allowable emission rate in pounds of sulfur dioxide per hour; and

P = process weight rate in tons per hour.

P = (4) x (3.97) = 15.88 ton/hr input for P004, P005, P006 and P014 combined

$(20)(15.88)^{0.67}$= 127.5 lb_{SO2}/hr

127.5 lb_{SO2}/hr> 76.65 lb_{SO2}/hr

Note: OAC rule 3745-18-06(A) exempts fuel burning equipment from OAC rules 3745-18-06(D), (F) and (G) and from rules 3745-18-07 to 3745-18-94 of the Administrative Code during any calendar day in which natural gas is the only fuel burned.

(2) The permittee shall conduct, or have conducted, emission testing for emissions units P004, P005, P006 and P014 (tunnel kilns 1 – 4, respectively) in accordance with the following requirements:

a. The emission testing shall be conducted according to the timetable established for this emissions unit group in the most recent Title V operating permit issued after the effective date of this permit.

b. The emission testing shall be conducted to demonstrate compliance with the allowable hourly mass emission rates for SO_2, fluoride, filterable PE/PM and NOx as specified in b)(1)a. above, and the visible particulate emissions limitation specified in b)(1)b. above.

c. The following test methods shall be employed to demonstrate compliance with the visible particulate emissions limitation and the allowable hourly mass emission rates:

i. for SO_2: Method 6 of 40 CFR Part 60, Appendix A;

ii. for fluoride (total gaseous and particulate fluorides which do not include fluorocarbons): Method 13B of 40 CFR Part 60, Appendix A;

iii. for filterable PE/PM: Method 5 of 40 CFR Part 60, Appendix A;

iv. for NOx: Method 7 of 40 CFR Part 60, Appendix A; and

v. for visible particulate emissions, in accordance with the procedure specified in OAC rule 3745-17-03(B)(1)(a): Method 9 of 40 CFR Part 60, Appendix A.

d. Concurrently with the emission testing, the permittee shall perform the procedures described in g)(1) below for the purpose of calculating a sulfur emission factor. The duration of the testing period associated with data collection required for the purpose of calculating the sulfur emission factor shall be three continuous hours.

e. Unless otherwise specified or approved by CCHD-APCD, the emission testing shall be conducted under one of the following two operating scenarios:

i. while emissions units P004, P005, P006 and P014 are concurrently operating at or near their maximum capacities* for the entire three hours of the test period; or

ii. if business conditions do not support the operation of all four emissions units (kilns) concurrently at or near their maximum capacities, the testing may be conducted while operating two of the emissions units at or near their maximum capacities* for the entire three hours of the test period. Under this option, all emissions results shall be doubled as an acceptable substitute for results that would have been obtained under option i. above.

The two kilns selected to operate under the second scenario shall be chosen such that each is supplied by a different dryer line. Tunnel dryer 1 (P007) supplies tunnel kilns 1 & 2 (P004 & P005), and tunnel dryer 2 (P008) supplies tunnel kilns 3 & 4 (P006 & P014). So either tunnel kiln 1 or 2 (P004 or P005), and either tunnel kiln 3 or 4 (P006 or P014) shall be operated under this scenario.

* The test(s) shall be conducted under those representative conditions that challenge to the fullest extent possible a facility's ability to meet the applicable emissions limits and/or control requirements, unless otherwise specified or approved by CCHD-APCD. Although this generally consists of operating the emissions unit at its maximum material input/production rates and results in the highest emission rate of the tested pollutant, there may be circumstances where a lower emissions loading is deemed the most challenging control scenario. Failure to test under these conditions is justification for not accepting the test results as a demonstration of compliance.

f. The following parameter, at minimum, shall be monitored and recorded during the emission testing: the process weight rate, in pounds per hour, defined as the total dry weight of the incoming (unfired) feed material for all emissions units operating during the test period.

g. Not later than 30 days prior to the proposed test date, the permittee shall submit an "Intent to Test" notification to CCHD-APCD. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, emission unit operating parameters, the time(s) and date(s) of the testing, and the person(s) who will be conducting the testing. Failure to submit such notification for review and approval prior to the testing may result in the CCHD-APCD's refusal to accept the results of the emissions testing.

h. Personnel from CCHD-APCD shall be permitted to witness the testing, 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.

i. A comprehensive written report on the results of the emissions testing, including the records and results for the sulfur emission factor determination (per g)(1) below), shall be signed by the person or persons responsible for the testing and submitted to CCHD-APCD within 30 days following completion of the testing. The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from CCHD-APCD.

g) Miscellaneous Requirements

(1) The following procedure shall be used to calculate a sulfur emission factor (EF), defined as the ratio of the amount of sulfur converted to SO_2 and emitted during firing to the amount of sulfur in the unfired feed material. (The numerical value of this ratio will always be less than 1.00, because not all of the sulfur in the feed material is converted to sulfur dioxide gas during the firing process.) The procedure described below involves the sampling and analysis of the tile before and after firing, and shall be performed during the emission testing required in f)(2) above.

a. The day before the emission testing, the permittee shall collect one piece of unfired tile from each kiln car that will be located in the firing section of each kiln during each hour of the next day's three-hour test period. For each kiln, the set of unfired samples for each hour of the scheduled test period shall be crushed and mixed together. In summary, for each kiln participating in the next day's emission testing, there shall be three separate mixed samples of unfired tile. These samples, which will be used to determine the sulfur content of the unfired feed material (S_{FEED}), could be identified as follows:

$(\text{Kiln X, hr 1})_{FEED}$ $(\text{Kiln Y, hr 1})_{FEED}$ $(\text{Kiln Z, hr 1})_{FEED}$ etc.
$(\text{Kiln X, hr 2})_{FEED}$ $(\text{Kiln Y, hr 2})_{FEED}$ $(\text{Kiln Z, hr 2})_{FEED}$
$(\text{Kiln X, hr 3})_{FEED}$ $(\text{Kiln Y, hr 3})_{FEED}$ $(\text{Kiln Z, hr 3})_{FEED}$

b. The mixed samples of unfired tile (one for each hour for each kiln that will participate in the emission testing) shall be analyzed by the permittee or its contractor for sulfur content as a mass fraction, in units of pounds sulfur per pound of the unfired material (or multiplied by 100 to give percent by weight), using a published method which is suitable for both unfired and fired tile materials.

c. For each hour of the three-hour test period, the sulfur content values obtained in b. above for the unfired feed material shall be averaged among the kilns that participated in the emission testing. The result will be a single value for each hour of the three-hour test period: (S_{FEED}, hr 1), (S_{FEED}, hr 2) and (S_{FEED}, hr 3).

d. After the three-hour test period, the permittee shall collect one piece of fired tile from each kiln car that was located in the firing section of each kiln during each hour of the three-hour test period. For each kiln, the set of fired samples from each hour of the test period shall be crushed and mixed together. In summary, for each kiln that participated in the emission testing, there shall be three separate mixed samples of fired tile. These samples, which will be used to determine the sulfur content of the fired material (S_{FIRED}), could be identified as follows:

$(\text{Kiln X, hr 1})_{FIRED}$ $(\text{Kiln Y, hr 1})_{FIRED}$ $(\text{Kiln Z, hr 1})_{FIRED}$ etc.
$(\text{Kiln X, hr 2})_{FIRED}$ $(\text{Kiln Y, hr 2})_{FIRED}$ $(\text{Kiln Z, hr 2})_{FIRED}$
$(\text{Kiln X, hr 3})_{FIRED}$ $(\text{Kiln Y, hr 3})_{FIRED}$ $(\text{Kiln Z, hr 3})_{FIRED}$

e. The mixed samples of fired tile (one from each hour from each kiln that participated in the emission testing) shall be analyzed by the permittee or its contractor for sulfur content as a mass fraction, in units of pounds sulfur per pound of the fired material (or multiplied by 100 to give percent by weight), using a published method which is suitable for both unfired and fired tile materials.

f. For each hour of the three-hour test period, the sulfur content values obtained in e. above for the fired material shall be averaged among the kilns that participated in the emission testing. The result will be a single value for each hour of the three-hour test period: (S_{FIRED}, hr 1), (S_{FIRED}, hr 2) and (S_{FIRED}, hr 3).

g. The results of the analyses described above for the sulfur content in both the unfired and fired tiles shall be used to calculate a sulfur emission factor (EF_{HOURx}) for each hour of the three-hour test period:

$[(S_{FEED}, \text{hr } 1) - (S_{FIRED}, \text{hr } 1)] / (S_{FEED}, \text{hr } 1) = EF_{HOUR1}$
$[(S_{FEED}, \text{hr } 2) - (S_{FIRED}, \text{hr } 2)] / (S_{FEED}, \text{hr } 2) = EF_{HOUR2}$
$[(S_{FEED}, \text{hr } 3) - (S_{FIRED}, \text{hr } 3)] / (S_{FEED}, \text{hr } 3) = EF_{HOUR3}$

h. The sulfur emission factors calculated in g. above shall then be added together and divided by the 3 to obtain an average overall sulfur emission factor that shall be utilized to represent emissions units P004, P005, P006 and P014.

$(EF_{HOUR1} + EF_{HOUR2} + EF_{HOUR3}) / 3 = EF$

i. The overall sulfur emission factor (EF) calculated above shall be based upon the most recent emission testing. The change from the old sulfur emission factor to the new one shall take effect at the start of the quarter immediately following the quarter in which the emission testing took place and/or results received for the sulfur content tests performed on the unfired and fired tile samples.

j. The permittee shall maintain the records listed below as a summary of the preceding procedure conducted during the emission testing for the purpose of calculating the sulfur emission factor. These records shall be reported as part of the emissions testing report required in f)(2)h above.

i. the calculations from c. above performed to obtain the average sulfur content in the unfired feed material for each hour of the test period;

ii. the calculations from f. above performed to obtain the average sulfur content in the fired material for each hour of the test period;

iii. the calculations from g. above performed to obtain the average sulfur emission factor for each hour of the test period; and

iv. the average overall sulfur emission factor (EF) as calculated in h. above.

(2) The following equation was used to establish the operational restrictions in c)(2) and c(3) above for the allowable amounts of sulfur (pounds per week and pounds per quarter, respectively) in the feed materials used in emissions units P004, P005, P006 and P014 combined.

$S_{FEED} = (SO_2)_{STACK} \times (MW_S/MW_{SO2}) \div (EF)$

where:

S_{FEED} = allowable amount of sulfur in the feed material, in pounds per unit of time

$(SO_2)_{STACK}$ = permit limit for sulfur dioxide emissions, in pounds per unit of time

MW_S = molecular weight of sulfur (32 lb/lbmole)

MW_{SO2} = molecular weight of SO_2 (64 lb/lbmole)

Note: the stoichiometric ratio, (MW_S/MW_{SO2}), can be simplified as (32 lb_S / 64 lb_{SO2})

EF = sulfur emission factor (S_{STACK}/S_{FEED}), established according to the procedure described in g)(1) above. For reference, the value of the sulfur emission factor as of the final issue date of this permit is 0.76 $lb_{S\text{-}STACK}$ / $lb_{S\text{-}FEED}$. This value became effective on 1/1/2006, based upon the results of emission tests conducted 9/28/2005.

As further described in g)(1)(i) above, the value for the sulfur emission factor shall always be based upon the most recent emission testing, and shall be adjusted accordingly without requiring a modification to the Terms and Conditions of this permit.

Example: Using the weekly SO_2 emission limitation of 12,877 lb/wk and the current sulfur emission factor, the resulting value for the allowable pounds of sulfur per week in the feed material was calculated as follows:

$S_{FEED\ PER\ WEEK} = (12{,}877\ lb_{SO2}/wk)_{STACK} \times (32\ lb_S / 64\ lb_{SO2}) \div (0.76\ lb_{S\text{-}STACK} / lb_{S\text{-}FEED}) = 8472\ lb_S/wk$

Example: Using the annual SO_2 emission limitation of 306.53 ton/yr and the current emission factor, the resulting value for the allowable pounds of sulfur per quarter in the feed material was calculated as follows:

$S_{FEED\ PER\ YEAR} = (306.53\ ton_{SO2}/yr)_{STACK} \times (2000\ lb/ton) \times (32\ lb_S / 64\ lb_{SO2}) \div (0.76\ lb_{S\text{-}STACK} / lb_{S\text{-}FEED}) = 403{,}329\ lb_S/yr$

$S_{FEED\ PER\ QUARTER} = (403{,}329\ lb_S/yr) \div (4\ quarters/yr) = 100{,}832\ lb_S/quarter$