



10/7/2014

Ms. Jane Neal
AMG Vanadium, Inc.
60790 Southgate Road
Cambridge, OH 43725

RE: FINALAIR POLLUTION PERMIT-TO-INSTALL
Facility ID: 0630010005
Permit Number: P0110438
Permit Type: Administrative Modification
County: Guernsey

Certified Mail

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

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 Ohio EPA DAPC, Southeast District Office at (740)3858501 or the Office of Compliance Assistance and Pollution Prevention at (614)644-3469.

Sincerely,



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

Cc: U.S. EPA
Ohio EPA-SEDO; Pennsylvania; West Virginia



FINAL

**Division of Air Pollution Control
Permit-to-Install
for
AMG Vanadium, Inc.**

Facility ID:	0630010005
Permit Number:	P0110438
Permit Type:	Administrative Modification
Issued:	10/7/2014
Effective:	10/7/2014



Division of Air Pollution Control
Permit-to-Install
for
AMG Vanadium, Inc.

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Final Permit-to-Install
AMG Vanadium, Inc.
Permit Number: P0110438
Facility ID: 0630010005
Effective Date: 10/7/2014

Authorization

Facility ID: 0630010005
Facility Description: Ferroalloy plant.
Application Number(s): M0001796, M0001802, A0047977, M0002635, M0002636
Permit Number: P0110438
Permit Description: Administrative modification for P014 and P020 to update parametric monitoring requirements, include alternate calculation methodology for SO2 emissions when certified CEMS is unavailable and update the annual reporting requirements and administrative modification for residue crushing equipment RMSB#1 to be combined under P901. Administrative modification will also address DFFOs dated 10/26/2004 regarding P014.
Permit Type: Administrative Modification
Permit Fee: \$750.00
Issue Date: 10/7/2014
Effective Date: 10/7/2014

This document constitutes issuance to:

AMG Vanadium, Inc.
60790 Southgate Road
Cambridge, OH 43725

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

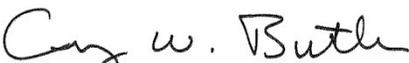
Ohio Environmental Protection Agency (EPA) District Office or local air agency responsible for processing and administering your permit:

Ohio EPA DAPC, Southeast District Office
2195 Front Street
Logan, OH 43138
(740)385-8501

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: P0110438
Permit Description: Administrative modification for P014 and P020 to update parametric monitoring requirements, include alternate calculation methodology for SO2 emissions when certified CEMS is unavailable and update the annual reporting requirements and administrative modification for residue crushing equipment RMSB#1 to be combined under P901. Administrative modification will also address DFFOs dated 10/26/2004 regarding P014.

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

Emissions Unit ID:	P014
Company Equipment ID:	Multiple Hearth Roaster #1
Superseded Permit Number:	06-05869
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P020
Company Equipment ID:	Multiple Hearth Roaster #2
Superseded Permit Number:	P0108340
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P901
Company Equipment ID:	Residue Crushing Equipment - RMSB#1
Superseded Permit Number:	06-2199
General Permit Category and Type:	Not Applicable



Final Permit-to-Install
AMG Vanadium, Inc.
Permit Number: P0110438
Facility ID: 0630010005
Effective Date: 10/7/2014

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 Ohio EPA DAPC, Southeast District Office.



- (2) Quarterly written reports of (i) any deviations from federally enforceable emission limitations, operational restrictions, and control device operating parameter limitations, 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 Ohio EPA DAPC, Southeast District Office. 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, and reporting requirements contained in this permit shall be submitted to the Ohio EPA DAPC, Southeast District Office 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 the Ohio EPA DAPC, Southeast District Office in accordance with paragraph (B) of OAC rule 3745-15-06. (The definition of an upset condition shall be the same as that used in OAC rule 3745-15-06(B)(1) for a malfunction.) The verbal and written reports shall be submitted pursuant to OAC rule 3745-15-06.

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

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 Ohio EPA DAPC, Southeast District Office 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 Ohio EPA DAPC, Southeast District Office.
- 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 Ohio EPA DAPC, Southeast District Office. 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 before operating 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 entered upon 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.



Final Permit-to-Install
AMG Vanadium, Inc.
Permit Number: P0110438
Facility ID: 0630010005
Effective Date: 10/7/2014

B. Facility-Wide Terms and Conditions



Final Permit-to-Install
AMG Vanadium, Inc.
Permit Number: P0110438
Facility ID: 0630010005
Effective Date: 10/7/2014

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) None.



Final Permit-to-Install
AMG Vanadium, Inc.
Permit Number: P0110438
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Effective Date: 10/7/2014

C. Emissions Unit Terms and Conditions



1. P014, Multiple Hearth Roaster #1

Operations, Property and/or Equipment Description:

Multiple Hearth Roaster #1: 80 ton per day natural gas/propane-fired multiple hearth roaster #1 controlled by dry scrubber (96.1% control efficiency for SO₂) and baghouse (99% control efficiency for PE) and associated truck load-out operation controlled with a toritbaghouse (99.9% control for PE)

- 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) d)(4) and d)(5)
- 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
Multiple Hearth Roaster #1		
a.	OAC rule 3745-31-05(A)(3)	Particulate emissions (PE) from the baghouse stack, serving the multiple hearth roaster shall be limited to 0.010 gr/dscf of exhaust gases and no visible emissions. PE shall not exceed 10.5 tons per year. Nitrogen oxides (NO _x) emissions shall not exceed 8.9 lbs/hr and 39.0 TPY. Organic compounds (OC) emissions shall not exceed 8.9 lbs/hr and 39.0 TPY.
b.	OAC rule 3745-17-07(A)	The emission limitation specified by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).
c.	OAC rule 3745-17-11(B)(2)	The emission limitation specified by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).
d.	OAC rule 3745-18-06(E)	The requirements established pursuant to this rule are equivalent to the requirements of OAC rules 3745-31-10 through 20.



	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
e.	40 CFR 52.21 OAC rule 3745-31-10 through 20	Carbon monoxide (CO) emissions shall not exceed 78.0 lbs/hr and 341.7 TPY. Sulfur dioxide (SO ₂) emissions shall not exceed 78.1 lbs/hr and 342.1 TPY.
Multiple Hearth Roaster # 1 Load-Out		
f.	OAC rule 3745-31-05(A)(3)	PE from the toritbaghouse stack serving the truck load-out operations shall not exceed 0.01 lb/hr and 0.01 TPY. No visible emissions of PE from the toritbaghouse stack serving the truck load-out operations.
g.	OAC rule 3745-17-07(A)	The emission limitation established by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).
h.	OAC rule 3745-17-11(B)(2)	The emission limitation established by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).

(2) Additional Terms and Conditions

- a. The permittee shall employ best available control measures on the Multiple Hearth Roaster#1 for the purpose of ensuring compliance with the above-mentioned applicable requirements. In accordance with the permittee's permit application, the permittee shall install and maintain enclosures and vent emissions to a dry scrubber and a baghouse which is capable of meeting the applicable requirements to ensure compliance. Nothing in this paragraph shall prohibit the permittee from employing other control measures to ensure compliance.
- b. Prior to the installation of the continuous SO₂ monitoring system, the permittee shall submit information detailing the proposed location of the sampling site(s) in accordance with the siting requirements in 40 CFR Part 60, Appendix B, Performance Specification 2 for approval by the Ohio EPA, Central Office.
- c. Within 180 days of the effective date of this permit, the permittee shall develop a written quality assurance/quality control plan for the continuous SO₂ monitoring system designed to ensure continuous valid and representative readings of SO₂. The plan shall follow the requirements of 40 CFR Part 60, Appendix F. The quality assurance/quality control plan and a logbook dedicated to the continuous SO₂ monitoring system must be kept on site and available for inspection during regular office hours.



- d. The control equipment specified for this emissions unit is the same control equipment used to control emissions from emissions unit P014. To ensure compliance with the emission limitations in this permit, the permittee is prohibited from operating emissions units P014 and P020 concurrently, except during periods of operational transition between multiple hearth roasters.
- c) Operational Restrictions
- (1) The pressure drop across the baghouse shall be maintained within the range of 2 to 10 inches of water while the emissions unit is in operation.
 - (2) The permittee shall not operate emissions unit P014 above a process weight rate of 80 tons per day.
- d) Monitoring and/or Recordkeeping Requirements
- (1) The permittee shall operate and maintain equipment to continuously monitor and record SO₂ from this emissions unit in units of the applicable standard(s). Such continuous monitoring and recording equipment shall comply with the requirements specified in 40 CFR Part 60.13.

The permittee shall maintain records of all data obtained by the continuous SO₂ monitoring system including, but not limited to, parts per million SO₂ on a fifteen minute average basis, emissions of SO₂ in units of the applicable standard in the appropriate averaging period (e.g., hourly, hourly rolling, 3-hour, daily, 30-day rolling, etc.), results of daily zero/span calibration checks, and magnitude of manual calibration adjustments.

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.
 - (2) The permittee shall perform daily checks, when the emissions unit is in operation and when the weather conditions allow, for any visible particulate emissions from the roaster stack and for any visible emissions of fugitive dust from the egress points (i.e., building windows, doors, roof monitors, etc.) serving this emissions unit. 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 location and 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.

- (3) The permittee shall perform daily checks, when the emissions unit is in operation, for any visible emissions of fugitive dust from the toritbagothouse stack serving the truck load-out operations of this emissions unit. 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. the total duration of any visible emissions incident; and
 - c. any corrective actions taken to eliminate the visible emissions.
- (4) The permittee shall collect and record the following information for each change where air toxic modeling was required pursuant to the Air Toxic Policy:
 - a. Background data that describes the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);
 - b. Documentation of its evaluation and determination that the changed emissions unit still satisfies the Air Toxic Policy; and,
 - c. Where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the Air Toxic Policy for the change.
- (5) This permit allows the use of materials specified by the permittee in the permit to install application for this emissions unit. To fulfill the best available technology requirements of (OAC) rule 3745-31-05 and to ensure compliance with OAC rule 3745-15-07 (Air Pollution Nuisances Prohibited), the emission limitation(s) specified in this permit was (were) established using the Ohio EPA's "Review of New Sources of Air Toxic Emissions" policy ("Air Toxic Policy") and is (are) based on both the materials used and the design parameters of the emissions unit's exhaust system, as specified in the application. The Ohio EPA's "Air Toxic Policy" was applied for each pollutant using the SCREEN 3.0 model and comparing the predicted 1-hour maximum ground-level concentration to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worse case" pollutant(s):

Pollutant: Toluene



TLV (ug/m3): 754,000

Maximum Hourly Emission Rate (lbs/hr): 0.26

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m3): 0.0737

MAGLC (ug/m3): 18,000

Pollutant: Sulfuric Acid

TLV (ug/m3): 1,000

Maximum Hourly Emission Rate (lbs/hr): 0.96

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m3): 2.72

MAGLC (ug/m3): 23.8

Physical changes or changes in the method of operation of the emissions unit that result in changes to the factors affecting the air toxic analysis could result in noncompliance with this permit to install. In order to avoid this noncompliance situation, prior to initiating any changes, permittees are required to conduct an evaluation to determine that the "Air Toxic Policy" is still satisfied. Changes that can affect the "Air Toxic Policy" include, but are not limited to, the following:

- a. Changes in the composition of the materials used, or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value previously modeled;
- b. Changes in the composition of the materials, or use of new materials, that would result in an increase in emissions of any pollutant with a listed TLV that was proposed in the application and modeled; and,
- c. Physical changes to the emissions unit or its exhaust parameters (e.g., increased/decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).

The Ohio EPA will not consider any of the above-mentioned as a "modification" requiring a permit to install, if the following conditions are met:

- d. The change is not otherwise considered a "modification" under OAC Chapter 3745-31;
- e. The permittee can continue to comply with the allowable emission limitations specified in its permit to install; and,
- f. Prior to the change, the applicant conducts an evaluation pursuant to the Air Toxic Policy, determines that the changed emissions unit still satisfies the Air



Toxic Policy, and the permitteemaintains documentation that identifies the change and the results of the application of the AirToxic Policy for the change.

For any change to the emissions unit or its method of operation that either would require an increase inthe emission limitation(s) established by this permit or would otherwise be considered a "modification" asdefined in OAC rule 3745-31-01, the permittee shall obtain a final permit to install prior to the change.

- (6) In the event that the CEMS breaks down in such a manner that a certified CEMS is unobtainable, the permittee shall maintain records of the hourly SO₂ emissions, in pounds per hour, calculated from sulfur content of the feed, determined using a LECO sulfur analyzer which employs a combustion-infrared absorption method, and the catalyst feed rate and as follows:

$$SO_2 \text{ emissions } \left(\frac{lbs}{hr} \right) = \text{sulfur content of feed } (\%) * \text{hourly feed rate } \left(\frac{tons}{hr} \right) * 2,000 \frac{lbs}{ton} * (1 - \text{control efficiency})$$

This requirement does not eliminate the requirement to comply with 40 CFR 52.21 and OAC rules 3745-31-10 through 20.

- (7) The permittee shall record on a daily basis the PWR, in tons per day, of material input into the roaster of emissions unit P014 when it is in operation.

e) Reporting Requirements

- (1) The permittee shall submit quarterly reports which identify each day that the observationsrequired under the monitoring section of this permit were not performed and each day that any correctivemeasures required to be taken pursuant to the monitoring section of this permit were not performed.
- (2) Pursuant to OAC rules 3745-15-04, 3745-35-02, and ORC sections 3704.03(l) and 3704.031 and40 CFR Parts 60.13(h), the permittee shall submit reports within 30 days following the end of eachcalendar quarter to the appropriate Ohio EPA District Office or local air agency documenting the date,commencement and completion times, duration magnitude, reason (if known), and corrective actionstaken (if any), of all instances of SO₂ values in excess of the applicable limits specified in OAC Chapter3745-18, in units of the applicable standard(s). These reports shall also contain the total SO₂ emissionsfor the calendar quarter (in tons).

The permittee shall submit reports within 30 days following the end of each calendar quarter tothe appropriate Ohio EPA District Office or local air agency documenting any continuous SO₂monitoring system downtime while the emissions unit was on line (date, time, duration andreason) along with any corrective action(s) taken. The permittee shall provide the emissions unitoperating time during the reporting period and the date, time, reason and corrective action(s)taken for each time period of emissions unit and control equipment malfunctions. The totaloperating time of the emissions unit and the total operating time of the analyzer while theemissions unit was on line shall also be included in the quarterly report.

If there are no excess emissions during the calendar quarter, the permittee shall submit a statementto that effect along with the emissions unit operating time during the



reporting period and the date, time, reason, and corrective action(s) taken for each time period of emissions unit, control equipment, and/or monitoring system malfunctions. The total operating time of the emissions unit and the total operating time of the analyzer while the emissions unit was on line also shall be included in the quarterly report. These quarterly excess emission reports shall be submitted by January 31, April 30, July 31, and October 31 of each year and shall address the data obtained during the previous calendar quarter.

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.

- (3) The permittee shall submit semiannual written reports that (a) identify all days during which any visible stack particulate emissions were observed from this emissions unit and (b) describe any corrective actions taken to eliminate the visible particulate emissions. These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.
- (4) In the event that the CEMS breaks down in such a manner that a certified CEMS is unobtainable, the permittee shall immediately notify the Ohio EPA. If the CEMS remains uncertified for more than seventy-two hours, the permittee shall provide a written statement to the director within two weeks of the date of the malfunction. The immediate notification and written statement shall include the following:
 - a. Identification and location of such equipment including the OEPA permit number for each contaminant source;
 - b. The estimated or actual duration of the operation of the emissions unit in the absence of a certified CEMS;
 - c. Statements demonstrating that
 - i. Shutdown of source operation, during the period of time in absence of a certified CEMS, will or would have been impossible or impractical;
 - ii. The estimated time period of operation time in the absence of a certified CEMS will be or was reasonable in duration based on installation or repair time, delivery dates, replacement parts, or materials, or current unavailability of essential equipment parts or materials;
 - iii. All actions necessary and required by any applicable preventative maintenance and malfunction abatement plan will be or have been implemented.
- (5) The permittee shall submit written reports that identify days during which the daily PWR of P014 was exceeded within 30 days of the date of the exceedance.

f) Testing Requirements



(1) Compliance with the emissions limitations and/or control requirements specified in b)(1) of these terms and conditions shall be determined in accordance with the following methods:

a. Emission Limitation:

Particulate emissions (PE) shall be limited to 0.010 gr/dscf of exhaust gases and no visible emissions.

Applicable Compliance Method

Compliance shall be determined in accordance with 40 CFR 60 Appendix A, Methods 1 -5 and the procedures specified in OAC rule 3745-17-03(B)(1). Compliance with the novisible emissions limitation shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 22 and the procedures specified in OAC rule 3745-17-03(B)(1),

b. Emission Limitation:

PE shall not exceed 10.5 tons per year.

Applicable Compliance Method

Compliance shall be determined using the following equation:

$(\text{Tested emission rate in grains per dry standard cubic feet}) * 27,841 \text{ dscf/min} * 60 \text{ min/hr} \div 7,000 \text{ gr/lbs} = \text{lb/hr}$

$\text{lb/hr} * (\text{actual hours of operation})\text{hr/yr} * 0.0005 \text{ ton/lb} = \text{tons per year}$

c. Emission Limitation:

Emissions of NO_x shall be limited to 8.9 lbs/hr and 39.0 TPY.

Applicable Compliance Method

Compliance shall be determined by using the emission factor (As supplied by the applicant from the manufacture) of 0.04 lb/min of NO_x and multiplying by 60 min/hr to obtain the hourly emission rate. Compliance with the 10.5 TPY NO_x emission limit shall be determined by a one-time calculation based upon maximum potential hours of operation as detailed in the following equation:

$0.04 \text{ lb/min} * 60 \text{ min/hr} * 8,760 \text{ hrs/yr} * 0.0005 \text{ T/lb} = 10.5 \text{ TPY}$

d. Emission Limitation:

Emissions of organic compounds shall be limited to 8.9 lbs/hr and 39.0 TPY.

Applicable Compliance Method



Compliance with the hourly limit may be determined using the following equation:

$$0.107 \text{ lb of OC/ton of feed} * 4.17 \text{ tons/hr} = 0.45 \text{ lb/hr,}$$

Where,

0.107 lb of OC/ton of feed is derived from samples of the raw material taken by the permittee. If required, compliance with this emission limitation shall be determined in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 4 and 25.

Compliance with the annual limit shall be determined using the following equation:

$$0.45 \text{ lb/hr} * (\text{actual hours of operation}) * 0.0005 \text{ ton/lb} = \text{tpy}$$

- e. Emission Limitation:

Fugitive PE shall not exceed 20 per cent opacity as a three minute average.

Applicable Compliance Method

If required, compliance shall be determined in accordance with 40 CFR 60 Appendix A, Method 9.

- f. Emission Limitation:

Emissions of CO shall be limited to 78.0 lbs/hr and 341.7 TPY.

Applicable Compliance Method

Compliance shall be determined in accordance with 40 CFR 60 Appendix A, Method 10 and the procedures specified in OAC rule 3745-21-03.

Compliance shall be determined by multiplying the hourly emission rate, determined through the performance testing specified above, by 8,760 hr/yr and 0.0005 ton/lb to obtain the tons per year of carbon monoxide.

- g. Emission Limitation:

Emissions of SO₂ shall be limited to 78.1 lbs/hr

Applicable Compliance Method

Compliance shall be determined in accordance with the continuous emissions monitoring found in d)(1). Compliance with the ton per year limitation shall be determined in accordance with the continuous emissions monitoring found in d)(1).

Within 60 days of start-up of the emissions unit, the permittee shall conduct certification tests of the continuous SO₂ monitoring system pursuant to ORC



section 3704.03(I) and 40 CFR Part 60, Appendix B, Performance Specification 2. Personnel from the appropriate Ohio EPA District Office or local air agency shall be notified 30 days prior to initiation of the applicable tests and shall be permitted to examine equipment and witness the certification tests. In accordance with OAC rule 3745-15-04, all copies of the test results shall be submitted to the appropriate Ohio EPA District Office or local air agency and the Ohio EPA, Central Office within 30 days after the test is completed. Certification of the continuous SO₂ monitoring system shall be granted upon determination by the Ohio EPA, Central Office that the system meets all requirements of ORC section 3704.03(I) and 40 CFR Part 60, Appendix B, Performance Specification 2.

h. Emission Limitation:

PE from the stack shall not exceed 0.01 lb/hr and 0.01 TPY.

Applicable Compliance Method

If required, particulate emissions shall be determined according to test Methods 1 - 5, as set forth in the "Appendix on Test Methods" in 40 CFR, Part 60 "Standards of Performance for New Stationary Sources", and the procedures specified in OAC rule 3745 17 03(B)(10). Alternative U.S. EPA-approved test methods may be used with prior approval from Ohio EPA, Southeast District Office.

i. Emission Limitation:

There shall be no visible emissions of PE from the stack.

Applicable Compliance Method

If required, visible particulate emissions shall be determined according to USEPA Method 22.

g) Miscellaneous Requirements

- (1) None.



2. P020, Multiple Hearth Roaster #2

Operations, Property and/or Equipment Description:

Multiple Hearth Roaster #2: 100 ton per day natural gas/propane-fired multiple hearth roaster #2 controlled by dry scrubber (96.1% control efficiency for SO₂) and baghouse (99% control efficiency for PE) and associated truck load-out operation controlled with a toritbaghouse (99.9% control for PE)

- 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) g(1) and g(2)
- 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
Multiple Hearth Roaster #2		
a.	ORC 3704.03(T)	Particulate emissions (PE) shall not exceed 0.010 gr/dscf. Nitrogen oxides (NO _x) emissions shall not exceed 1.04 pound per ton (lbs/ton). See b)(2)e. below. Volatile organic compounds (VOC) emissions shall not exceed 1.99 lbs/ton See b)(2)e. below. The requirements of this rule include compliance with the sulfur dioxide (SO ₂) and carbon monoxide (CO) emissions limitations established pursuant to OAC rule 3745-31-10 through 20.
b.	OAC rule 3745-31-05(A)(3), as effective 11/30/01	PM-10/PM-2.5 shall not exceed 0.007 gr/dscf and 8.4 tons per year (TPY). See b)(2)c. below.
c.	OAC rule 3745-31-05(E), as effective 12/01/06	See b)(2)d. below.
d.	OAC rules 3745-31-10 through 20	SO ₂ emissions shall not exceed 78.1



	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		<p>pounds per hour (lbs/hr) and 633 ppmv, as a 3-hour, rolling average.</p> <p>CO emissions shall not exceed 4.72 lbs/ton.</p> <p>See b)(2)e. below.</p> <p>The requirements of this rule include compliance with the requirements of OAC rule 3745-31-05(D).</p> <p>See b)(2)a., b. and c)(1) below.</p>
e.	OAC rule 3745-31-05(D) (Synthetic minor to avoid PSD modeling)	<p>SO₂ emissions from emissions units P014 and P020, combined, shall not exceed 342.1 tons, as a 12-month, rolling summation.</p> <p>CO emissions from emissions units P014 and P020, combined, shall not exceed 86.2 tons, as a 12-month, rolling summation.</p>
f.	OAC rule 3745-17-07(A)	Visible particulate emissions from the stack serving this emissions unit shall not exceed 20 per cent opacity as a six-minute average, except as provided by rule.
g.	OAC rule 3745-17-11(B)	The emissions limitation specified by this rule is less stringent than the emissions limitation established pursuant to ORC 3704.03(T).
h.	OAC rule 3745-18-06(E)	The emissions limitation specified by this rule is less stringent than the emissions limitation established pursuant to 3745-31-10 through 20.
Multiple Hearth Roaster #2 Load-Out		
i.	OAC rule 3745-31-05(A)(3)	<p>PE from the stack shall not exceed 0.01 lb/hr and 0.01 TPY.</p> <p>No visible emissions of PE from the toritbagogue stack serving the truck load-out operations.</p>
j.	OAC rule 3745-17-07(A)	The emission limitation established by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).



	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
k.	OAC rule 3745-17-11(B)	The emission limitation established by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).

(2) Additional Terms and Conditions

- a. As part of the Best Available Control Technology (BACT) determination for SO₂, the emissions from the multiple hearth roaster shall be vented to an operating circulating dry scrubber and a baghouse. Compliance with the control efficiency requirement shall be demonstrated by compliance with the short term SO₂ emission limit in b)(1)d.
- b. As part of the Best Available Control Technology (BACT) determination for CO, the permittee shall only supply natural gas or propane to the burners of the multiple hearth roaster; and, establish and maintain a plan to ensure that the burners are operated in accordance with good combustion practices as recommended by the burner manufacturer. Compliance with the short term CO emission limits in b)(1)d shall be demonstrated through testing as required in f)(2).
- c. The permittee has satisfied the Best Available Technology (BAT) requirements pursuant to OAC rule 3745-31-05(A)(3), as effective November 30, 2001, in this permit. On December 1, 2006, paragraph (A)(3) of OAC rule 3745-31-05 was revised to conform to ORC changes effective August 3, 2006 (S.B. 265 changes), such that BAT is no longer required by State regulation for NAAQS pollutant emissions less than ten tons per year. However, that rule revision has not yet been approved by U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). Therefore, until the SIP revision occurs and the U.S. EPA approves the revision to OAC rule 3745-31-05, the requirement to satisfy BAT still exists as part of the federally-approved SIP for Ohio. Once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05, then the emission limits/control measures no longer apply.
- d. This rule paragraph applies once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05 as part of the SIP.

PTI P0110438 for this air contaminant source takes into account the following voluntary restriction (including the use of any applicable air pollution control equipment) as proposed by the permittee for the purpose of avoiding Best Available Technology (BAT) requirements under OAC rule 3745-31-05(A)(3):

- i. The use of a baghouse with a control efficiency of 99%; and
- ii. 0.007 gr/dscf and 8.4 TPY of PM-10/PM2.5.



- e. The emission limits established in this permit for CO, VOC and NO_x were based on limited emission factor data from the testing of another similar, but not identical roaster. No other emission factor data was found to be representative of the new roaster. Because of these facts, at the time this permit was written, it is unclear if the emission factors used to establish these limits are appropriate to use to establish limits for the new roaster.

Because of these uncertainties, this permit requires AMG Vanadium to conduct emissions tests for these pollutants (See f)(2) below). Once the emissions tests are complete and the data is verified, AMG Vanadium may request that the director revise these emissions limits taking into account the new data.

- f. The permittee shall maintain a written quality assurance/quality control plan for the continuous SO₂ monitoring system, designed to ensure continuous valid and representative readings of SO₂ emissions in units of the applicable standard(s). The plan shall follow the requirements of 40 CFR Part 60, Appendix F. The quality assurance/quality control plan and a logbook dedicated to the continuous SO₂ monitoring system must be kept on site and available for inspection during regular office hours.
- g. The plan shall include the requirement to conduct quarterly cylinder gas audits or relative accuracy audits as required in 40 CFR Part 60; and to conduct relative accuracy test audits in units of the standard(s), in accordance with and at the frequencies required per 40 CFR Part 60.
- h. The continuous emission monitoring system consists of all the equipment used to acquire data to provide a record of emissions and includes the sample extraction and transport hardware, sample conditioning hardware, analyzers, and data recording/processing hardware and software.
- i. The control equipment specified for this emissions unit is the same control equipment used to control emissions from emissions unit P014. To ensure compliance with the emission limitations in this permit, the permittee is prohibited from operating emissions units P014 and P020 concurrently, except during periods of operational transition between multiple hearth roasters.

c) Operational Restrictions

- (1) The permittee shall supply only natural gas or propane to the burners in this emissions unit.
- (2) In order to comply with the rolling, 12-month limitation for SO₂ and CO, the permittee shall restrict the combined amount of catalyst processed in P014 and P020 to 36,500 tons per rolling, 12-month period. The permittee shall utilize existing catalyst roaster production records to demonstrate compliance with the rolling, 12-month limitation.

d) Monitoring and/or Recordkeeping Requirements

- (1) The permittee shall perform daily checks, when the emissions unit is in operation and when the weather conditions allow, for any visible particulate emissions from the roaster



stack and for any visible emissions of fugitive dust from the egress points (i.e., building windows, doors, roof monitors, etc.) serving this emissions unit. 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 location and 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) The permittee shall perform daily checks, when the emissions unit is in operation, for any visible emissions of fugitive dust from the toritbaghouse stack serving the truck load-out operations of this emissions unit. 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. the total duration of any visible emissions incident; and
 - c. any corrective actions taken to eliminate the visible emissions
- (3) The permittee shall maintain on site, the document(s) of certification received from the U.S. EPA or the Ohio EPA's Central Office documenting that the continuous SO₂ monitoring system has been certified to meet the requirements of 40 CFR Part 60, Appendix B, Performance Specifications 2 and 6. The letter(s)/document(s) of certification shall be made available to the Director (the appropriate Ohio EPA District Office or local air agency) upon request.

Each continuous monitoring system consists of all the equipment used to acquire and record data in units of all applicable standard(s), and includes the sample extraction and transport hardware, sample conditioning hardware, analyzers, and data processing hardware and software.



- (4) The permittee shall operate and maintain equipment to continuously monitor and record SO₂ emissions from this emissions unit in units of the applicable standard(s). The continuous monitoring and recording equipment shall comply with the requirements specified in 40 CFR Part 60.

The permittee shall maintain records of data obtained by the continuous SO₂ monitoring system including, but not limited to:

- a. emissions of SO₂ in parts per million on an instantaneous (one-minute) basis;
 - b. emissions of SO₂ in pounds per hour and in all units of the applicable standard(s) in the appropriate averaging period;
 - c. results of quarterly cylinder gas audits;
 - d. results of daily zero/span calibration checks and the magnitude of manual calibration adjustments;
 - e. results of required relative accuracy test audit(s), including results in units of the applicable standard(s);
 - f. hours of operation of the emissions unit, continuous SO₂ monitoring system, and control equipment;
 - g. the date, time, and hours of operation of the emissions unit without the control equipment and/or the continuous SO₂ monitoring system;
 - h. the date, time, and hours of operation of the emissions unit during any malfunction of the control equipment and/or the continuous SO₂ monitoring system; as well as,
 - i. the reason (if known) and the corrective actions taken (if any) for each such event in (g) and (h).
- (5) The permittee shall maintain monthly records of the following information:
- a. the amount of catalyst processed in P014 and P020, separately;
 - b. the monthly emissions of SO₂ and CO emissions for P014 and P020, separately and combined;
 - c. the rolling, 12-month summation of the amount of catalyst processed in P014 and P020, combined; and
 - d. the rolling, 12-month summation of the SO₂ and CO emissions for P014 and P020, separately and combined.

* The rolling, 12-month summations for CO shall be calculated by using the equation in f)(1)c. The SO₂ rolling, 12-month summation shall be calculated using records required in d)(3).



- (6) In the event that the CEMS breaks down in such a manner that a certified CEMS is unobtainable, the permittee shall maintain records of the hourly SO₂ emissions, in pounds per hour, calculated from sulfur content of the feed, determined using a LECO sulfur analyzer which employs a combustion-infrared absorption method, and the catalyst feed rate and as follows:

$$SO_2 \text{ emissions } \left(\frac{lbs}{hr} \right) = \text{sulfur content of feed} (\%) * \text{hourly feed rate } \left(\frac{tons}{hr} \right) * 2,000 \frac{lbs}{ton} * (1 - \text{control efficiency})$$

This requirement does not eliminate the requirement to comply with 40 CFR 52.21 and OAC rules 3745-31-10 through 20.

e) Reporting Requirements

- (1) The permittee shall notify the Director (the appropriate local air agency or District Office) in writing of any fuel supplied to the burners in this emissions unit other than natural gas or propane.
- (2) The permittee shall comply with the following quarterly reporting requirements for the emissions unit and its continuous SO₂ monitoring system:
- a. Pursuant to the monitoring, record keeping, and reporting requirements for continuous monitoring systems contained in 40 CFR Parts 60.7 and 60.13(h) and the requirements established in this permit, the permittee shall submit reports in the month following the end of each calendar quarter to the appropriate Ohio EPA District Office or local air agency, documenting all instances of SO₂ emissions in excess of any applicable limit specified in this permit, 40 CFR Part 60, OAC Chapter 3745-18, and any other applicable rules or regulations. The report shall document the date, commencement and completion times, duration, and magnitude of each exceedance, as well as the reason (if known) and the corrective actions taken (if any) for each exceedance. Excess emissions shall be reported in units of the applicable standard(s).
 - b. These quarterly reports shall be submitted by January 31, April 30, July 31, and October 31 of each year and shall include the following:
 - i. the facility name and address;
 - ii. the manufacturer and model number of the continuous SO₂ and other associated monitors;
 - iii. a description of any change in the equipment that comprises the continuous emission monitoring system (CEMS), including any change to the hardware, changes to the software that may affect CEMS readings, and/or changes in the location of the CEMS sample probe;
 - iv. the excess emissions report (EER)*, i.e., a summary of any exceedances during the calendar quarter, as specified above;



- v. the total SO₂ emissions for the calendar quarter (tons);
- vi. the total operating time (hours) of the emissions unit;
- vii. the total operating time of the continuous SO₂ monitoring system while the emissions unit was in operation;
- viii. results and dates of quarterly cylinder gas audits;
- ix. unless previously submitted, results and dates of the relative accuracy test audit(s), including results in units of the applicable standard(s), (during appropriate quarter(s));
- x. unless previously submitted, the results of any relative accuracy test audit showing the continuous SO₂ monitor out-of-control and the compliant results following any corrective actions;
- xi. the date, time, and duration of any/each malfunction** of the continuous SO₂ monitoring system, emissions unit, and/or control equipment;
- xii. the date, time, and duration of any downtime** of the continuous SO₂ monitoring system and/or control equipment while the emissions unit was in operation; and
- xiii. the reason (if known) and the corrective actions taken (if any) for each event in (b)(xi) and (xii).

Each report shall address the operations conducted and data obtained during the previous calendar quarter.

* where no excess emissions have occurred or the continuous monitoring system(s) has/have not been inoperative, repaired, or adjusted during the calendar quarter, such information shall be documented in the EER quarterly report

** each downtime and malfunction event shall be reported regardless if there is an exceedance of any applicable limit

- (3) The permittee shall submit semiannual written reports that identify:
 - a. all days during which any visible particulate emissions were observed from the stack serving this emissions unit; and
 - b. any corrective actions taken to minimize or eliminate the visible particulate emissions.

These reports shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) by January 31 and July 31 of each year and shall cover the previous 6-month period.



- (4) The permit shall submit quarterly written reports that identify any exceedance of the following:
- a. the rolling, 12-month catalyst operational restriction;
 - b. the rolling, 12-month emissions limitations for SO₂ and CO.
- (5) In the event that the CEMS breaks down in such a manner that a certified CEMS is unobtainable, the permittee shall immediately notify the Ohio EPA. If the CEMS remains uncertified for more than seventy-two hours, the permittee shall provide a written statement to the director within two weeks of the date of the malfunction. The immediate notification and written statement shall include the following:
- a. Identification and location of such equipment including the OEPA permit number for each contaminant source;
 - b. The estimated or actual duration of the operation of the emissions unit in the absence of a certified CEMS;
 - c. Statements demonstrating that
 - i. Shutdown of source operation, during the period of time in absence of a certified CEMS, will or would have been impossible or impractical;
 - ii. The estimated time period of operation time in the absence of a certified CEMS will be or was reasonable in duration based on installation or repair time, delivery dates, replacement parts, or materials, or current unavailability of essential equipment parts or materials;
 - iii. All actions necessary and required by any applicable preventative maintenance and malfunction abatement plan will be or have been implemented.
- f) Testing Requirements
- (1) Compliance with the Emissions Limitations and/or Control Requirements specified in section b)(1) of these terms and conditions shall be determined in accordance with the following methods:
- a. Emissions Limitation:

PE shall not exceed 0.010 gr/dscf.

Applicable Compliance Methods:

Particulate emissions shall be determined according to test Methods 1 - 5, as set forth in the "Appendix on Test Methods" in 40 CFR, Part 60 "Standards of Performance for New Stationary Sources". Alternative U.S. EPA-approved test methods may be used with prior approval from Ohio EPA, Southeast District Office. See f)(2) below.



b. Emissions Limitation:

NO_x emissions shall not exceed 1.04 lbs/ton.

Applicable Compliance Methods:

Nitrogen oxides emissions shall be determined according to test Methods 1 - 4, and 7 as set forth in the "Appendix on Test Methods" in 40 CFR, Part 60 "Standards of Performance for New Stationary Sources". Alternative U.S. EPA-approved test methods may be used with prior approval from Ohio EPA, Southeast District Office. See f)(2) below.

c. Emissions Limitation:

VOC emissions shall not exceed 1.99 lbs/ton.

Applicable Compliance Methods:

Organic compound emissions shall be determined according to test Methods 1 - 4, and 18, 25, or 25A as set forth in the "Appendix on Test Methods" in 40 CFR, Part 60 "Standards of Performance for New Stationary Sources". Alternative U.S. EPA-approved test methods may be used with prior approval from Ohio EPA, Southeast District Office. See f)(2) below.

d. Emissions Limitations:

PM-10/PM-2.5 shall not exceed 0.007 gr/dscf.

PM-10/PM-2.5 shall not exceed 8.4 tons per year.

Applicable Compliance Methods:

PM-10/PM-2.5 emissions shall be determined according to test Methods 1-4, 201 or 201A, and 202 as set forth in the "Appendix on Test Methods" in 40 CFR, Part 60 "Standards of Performance for New Stationary Sources" and 40 CFR Part 51, Appendix M. Alternative U.S. EPA-approved test methods may be used with prior approval from Ohio EPA, Southeast District Office. See f)(2).

Compliance with the annual emission limitation shall be demonstrated by multiplying the maximum flow rate through the baghouse (in dscfm) by the short term emission rate (in gr/dscf) determined during the most recent stack test, multiplying by 525,600 min/year, and dividing by 7,000gr/lb and 2,000 lbs/ton.

e. Emissions Limitations:

CO emissions shall not exceed 4.72 lbs/ton.

CO emissions from emissions units P014 and P020, combined, shall not exceed 86.2 tons, as a 12-month, rolling summation.



Applicable Compliance Methods:

Carbon monoxide emissions shall be determined according to test Methods 1 - 4, and 10 as set forth in the "Appendix on Test Methods" in 40 CFR, Part 60 "Standards of Performance for New Stationary Sources". Alternative U.S. EPA-approved test methods may be used with prior approval from Ohio EPA, Southeast District Office. See f)(2) below.

Compliance with the 12-month rolling limitation shall be demonstrated by: multiplying the rolling, 12-month summation of the catalyst roasted (in tons) by the short term emission rate determined during the most recent stack test (in lbs/ton) for each of P014 and P020; summing the results for P014 and P020 for each 12-month, rolling period; and dividing the total by 2,000 lbs/ton.

f. Emissions Limitations:

SO₂ emissions shall not exceed 78.1 lbs/hr and 633 ppmv, as a 3-hour, rolling average.

SO₂ emissions from emissions units P014 and P020, combined shall not exceed 342.1 tons, as a 12-month, rolling summation.

Applicable Compliance Methods:

Sulfur dioxide emissions shall be determined according to test Methods 1 - 4, and 6 as set forth in the "Appendix on Test Methods" in 40 CFR, Part 60 "Standards of Performance for New Stationary Sources". Alternative U.S. EPA-approved test methods may be used with prior approval from Ohio EPA, Southeast District Office. See f)(2) below.

Ongoing compliance with the SO₂ emission limitations contained in this permit, 40 CFR Part 60 and any other applicable standard(s) shall be demonstrated through the data collected as required in the Monitoring and Record keeping Section of this permit; and through demonstration of compliance with the quality assurance/quality control plan, which shall meet the testing and recertification requirements of 40 CFR Part 60.

g. Emissions Limitation:

Visible PE from the stack serving this emissions unit shall not exceed 20 per cent opacity as a six-minute average, except as provided by rule.

Applicable Compliance Method:

Compliance with the stack visible particulate emissions limitation shall be determined through visible emissions observations performed in accordance with U.S. EPA Method 9. See f)(2) below.



h. Emissions Limitation:

PE from the stack shall not exceed 0.01 lb/hr and 0.01 TPY.

Applicable Compliance Method

If required, particulate emissions shall be determined according to test Methods 1 - 5, as set forth in the "Appendix on Test Methods" in 40 CFR, Part 60 "Standards of Performance for New Stationary Sources", and the procedures specified in OAC rule 3745 17 03(B)(10). Alternative U.S. EPA-approved test methods may be used with prior approval from Ohio EPA, Southeast District Office.

i. Emissions Limitation:

No visible emissions of PE from the toritbagoose stack serving the truck load-out operations.

Applicable Compliance Method

If required, visible particulate emissions shall be determined according to USEPA Method 22.

(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 within 3 months after achieving the maximum production rate at which the facility will be operated, but no later than 180 days after initial start-up of this emissions unit.
- b. The emission testing shall be conducted to demonstrate compliance with the mass emission limitations for PE, PM-10/PM-2.5, CO, NO_x, VOC and SO₂, and the visible particulate emissions limitation.
- c. The following test method(s) shall be employed to demonstrate compliance with the allowable mass emission rate(s):

For SO₂, Methods 1-4 and 6 or 6C of 40 CFR Part 60, Appendix A;
For PE, Methods 1-5 of 40 CFR Part 60, Appendix A;
For PM-10/PM-2.5, Methods 1-4 of 40 CFR Part 60, Appendix A, and 201 or 201A, and 202 of 40 CFR Part 51, Appendix M;
For CO, Methods 1-4 and Method 10 of 40 CFR Part 60, Appendix A;
For NO_x, Methods 1-4 and Method 7 of 40 CFR Part 60, Appendix A;
For VOC, Methods 1-4 and Method 18, 25, or 25A of 40 CFR Part 60, Appendix A; and,
For visible particulate emissions, Method 9 of 40 CFR Part 60, Appendix A.



Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.

- d. The testing shall be conducted while the emissions unit is operating at or near its maximum capacity, unless otherwise specified or approved by the Ohio EPA, Southeast District Office.
 - e. Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Ohio EPA, Southeast District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Ohio EPA, Southeast District Office refusal to accept the results of the emission test(s).
 - f. Personnel from the Ohio EPA, Southeast District Office shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment
 - g. A comprehensive written report on the results of the emission test(s) shall be signed by the person or persons responsible for the tests and submitted to the Ohio EPA, Southeast District Office within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the Ohio EPA, Southeast District Office.
- (3) Ongoing compliance with the SO₂ emission limitations contained in this permit, 40 CFR Part 60, and any other applicable standard(s) shall be demonstrated through the data collected as required in the Monitoring and Record keeping Section of this permit; and through demonstration of compliance with the quality assurance/quality control plan, which shall meet the testing and recertification requirements of 40 CFR Part 60.
- g) **Miscellaneous Requirements**
- (1) Modeling to demonstrate compliance with, the "Toxic Air Contaminant Statute", ORC 3704.03(F)(4)(b), was not necessary because the emissions units maximum annual emissions for each toxic air contaminant, as defined in OAC rule 3745-114-01, will be less than 1.0 ton per year. OAC Chapter 3745-31 requires permittees to apply for and obtain a new or modified PTI prior to making a "modification" as defined by OAC rule 3745-31-01. The permittee is hereby advised that changes in the composition of the materials, or use of new materials, that would cause the emissions of any toxic air contaminant to increase to above 1.0 ton per year may require the permittee to apply for and obtain a new PTI.
 - (2) The permittee shall not operate emissions unit P014 above a process weight rate of 80 tons per day.



3. P901, Residue Crushing Equipment - RMSB#1

Operations, Property and/or Equipment Description:

Residue Crushing Equipment - RMSB#1: consisting of 1 hopper load-in, 1 weigh hopper, one crusher, and 5 transfer points; controlled by a baghouse with 100% capture and 90% control; installed 9/13/1999

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)	Particulate emissions (PE) shall not exceed 0.79 tons per year. There shall be no visible PE from any stack serving this emissions unit. Best available control measures. See b)(2)a. through c.
b.	OAC rule 3745-17-07(A)	The emissions limitation established pursuant to this rule is less stringent than the emissions limitation established pursuant to OAC rule 3745-31-05(A)(3).
c.	OAC rule 3745-17-11	The emissions limitation established pursuant to this rule is less stringent than the emissions limitation established pursuant to OAC rule 3745-31-05(A)(3).

(2) Additional Terms and Conditions

a. The material handling operations that are covered by this permit and subject to the following requirements are listed below:

Hopper load in

Impact crusher



5 transfer points

Weigh scale hopper load in

- b. The permittee shall employ best available control measures for the above-identified material handling operations for the purpose of ensuring compliance with the above-mentioned applicable requirements. In accordance with the permittee's permit application, the permittee has committed to maintain the material handling operations in a 4 sided enclosure/building vented to a baghouse with 100% capture and 90% control.
- c. Implementation of the above-mentioned control measures in accordance with the terms and conditions of this permit is appropriate and sufficient to satisfy the requirements of OAC rule 3745-31-05(A)(3).

c) Operational Restrictions

- (1) None.

d) Monitoring and/or Recordkeeping Requirements

- (1) The permittee shall perform daily checks, when the emissions unit is in operation and when the weather conditions allow, for any visible particulate emissions from the stack serving this emissions unit. 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.



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 deviation reports shall be submitted in accordance with the reporting requirements of the Standard Terms and Conditions of this permit.

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:

PE shall not exceed 0.79 tons per year.

Applicable Compliance Method:

This emissions limitation was established according to the following calculations:

Transfer Points (uncontrolled): $EF_{PE} = 0.01 \text{ lb/ton (AP-42 11.24-2 (8/82))}$

$(\text{Number of Transfer Points (5)}) * (EF_{PE} (0.01 \text{ lb/ton})) * (\text{maximum hourly throughput (20 tons/hr)}) * (8,760 \text{ hrs/yr}) / (2,000 \text{ lbs/ton}) = 4.38 \text{ tons PE/year}$

Crushing (uncontrolled): $EF_{PE} = 0.02 \text{ lb/ton (AP-42 11.24-2 (8/82))}$

$(\text{Number of Crushers (1)}) * (EF_{PE} (0.02 \text{ lb/ton})) * (\text{maximum hourly throughput (20 tons/hr)}) * (8,760 \text{ hrs/yr}) / (2,000 \text{ lbs/ton}) = 1.752 \text{ tons PE/year}$

Load-in Points (uncontrolled): $EF_{PE} = 0.01 \text{ lb/ton (AP-42 11.24-2 (8/82))}$

$(\text{Number of Load-in Points (2)}) * (EF_{PE} (0.01 \text{ lb/ton})) * (\text{maximum hourly throughput (20 tons/hr)}) * (8,760 \text{ hrs/yr}) / (2,000 \text{ lbs/ton}) = 1.752 \text{ tons PE/year}$

Uncontrolled Total:

$(4.38 \text{ tons/year from transfer points}) + (1.752 \text{ tons/year from crushing}) + (1.752 \text{ tons/year from Load-in points}) = 7.88 \text{ tons/year total (Uncontrolled)}$

Controlled Total:

$(7.88 \text{ tons/year}) * (100\% \text{ capture}) * (1 - 0.90 (90\% \text{ control})) = 0.79 \text{ tons/year.}$

b. Emissions Limitation:

There shall be no visible PE from any stack serving this emissions unit.



Final Permit-to-Install
AMG Vanadium, Inc.
Permit Number: P0110438
Facility ID: 0630010005
Effective Date: 10/7/2014

Applicable Compliance Method:

If required, visible particulate emissions shall be determined according to USEPA Method 22.

g) Miscellaneous Requirements

(1) None.