



State of Ohio Environmental Protection Agency

Street Address:

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

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

Mailing Address:

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

12/30/03

RE: Proposed Title V Chapter 3745-77 Permit

02-43-16-0086

GE Willoughby Quartz Plant

Attn: Genevieve Damico AR-18J
United States Environmental Protection Agency
Region V
77 West Jackson Blvd.
Chicago, IL 60604-3590

Dear Ms. Damico:

The proposed issuance of the Title V permit for GE Willoughby Quartz Plant, has been created in Ohio EPA's State Air Resources System (STARS) on 10/20/03, for review by USEPA. This proposed action is identified in STARS as  3-Title V Proposed Permit T+C covering the facility specific terms and conditions, and  Title V Proposed Permit covering the general terms and conditions. This proposed permit will be processed for issuance as a final action after forty-five (45) days from USEPA's receipt of this certified letter if USEPA does not object to the proposed permit. Please contact me at (614) 644-3631 by the end of the forty-five (45) day review period if you wish to object to the proposed permit.

Very truly yours,

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

cc: Northeast District Office
File, DAPC PMU



State of Ohio Environmental Protection Agency

PROPOSED TITLE V PERMIT

Issue Date: 12/30/03

Effective Date: To be entered upon final issuance

Expiration Date: To be entered upon final issuance

This document constitutes issuance of a Title V permit for Facility ID: 02-43-16-0086 to:
GE Willoughby Quartz Plant
2110 East Aurora Road
Twinsburg, OH 44087

Emissions Unit ID (Company ID)/Emissions Unit Activity Description

Table with 3 columns: Emissions Unit ID (Company ID), Emissions Unit Activity Description, and Emissions Unit Activity Description. Rows include units like B001 (Titusville Boiler #1), P029 (TUMBLER 6), P037 (LD Lathe #22), etc.

You will be contacted approximately eighteen (18) months prior to the expiration date regarding the renewal of this permit. If you are not contacted, please contact the appropriate Ohio EPA District Office or local air agency listed below. This permit and the authorization to operate the air contaminant sources (emissions units) at this facility shall expire at midnight on the expiration date shown above.

Described below is the current Ohio EPA District Office or local air agency that is responsible for processing and administering your Title V permit:

Northeast District Office
(330) 425-9171

OHIO ENVIRONMENTAL PROTECTION AGENCY

Christopher Jones
Director

PART I - GENERAL TERMS AND CONDITIONS

A. State and Federally Enforceable Section

1. 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, i.e., in Section A.III of Part III of this Title V permit, the permittee shall maintain records that include the following, where applicable, for any required monitoring under this permit:

- i. The date, place (as defined in the permit), and time of sampling or measurements.
- ii. The date(s) analyses were performed.
- iii. The company or entity that performed the analyses.
- iv. The analytical techniques or methods used.
- v. The results of such analyses.
- vi. The operating conditions existing at the time of sampling or measurement.
(Authority for term: OAC rule 3745-77-07(A)(3)(b)(i))

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 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.
(Authority for term: OAC rule 3745-77-07(A)(3)(b)(ii))

c. The permittee shall submit required reports in the following manner:

- i. **All reporting required in accordance with OAC rule 3745-77-07(A)(3)(c) for deviations caused by malfunctions shall be submitted in the following manner:**

Any malfunction, as defined in OAC rule 3745-15-06(B)(1), shall be promptly reported to the Ohio EPA in accordance with OAC rule 3745-15-06. In addition, to fulfill the OAC rule 3745-77-07(A)(3)(c) deviation reporting requirements for malfunctions, written reports that identify each malfunction that occurred during each calendar quarter (including each malfunction reported only verbally in accordance with OAC rule 3745-15-06) shall be submitted by January 31, April 30, July 31, and October 31 of each year in accordance with General Term and Condition A.1.c.ii below; and each report shall cover the previous calendar quarter.

In accordance with OAC rule 3745-15-06, a malfunction constitutes a violation of an emission limitation (or control requirement) and, therefore, is a deviation of the federally enforceable permit requirements. Even though verbal notifications and written reports are required for malfunctions pursuant to OAC rule 3745-15-06, the written reports required pursuant to this term must be submitted quarterly to satisfy the prompt reporting provision of OAC rule 3745-77-07(A)(3)(c).

In identifying each deviation caused by a malfunction, the permittee shall specify the emission limitation(s) (or control requirement(s)) for which the deviation occurred, describe each deviation, and provide the magnitude and duration of each deviation. For a specific malfunction, if this information has been provided in a written report that was submitted in accordance with OAC rule 3745-15-06, the permittee may simply reference that written report to identify the deviation. Nevertheless, all malfunctions, including those reported only verbally in accordance with OAC rule 3745-15-06, must be reported in writing on a quarterly basis.

Any scheduled maintenance, as referenced in OAC rule 3745-15-06(A)(1), that results in a deviation from a federally enforceable emission limitation (or control requirement) shall be reported in the same manner as described above for malfunctions.

(Authority for term: OAC rule 3745-77-07(A)(3)(c))

- ii. **Except as may otherwise be provided in the terms and conditions for a specific emissions unit, i.e., in Section A.IV of Part III of this Title V permit or, in some cases, in Part II of this Title V permit, all reporting required in accordance with OAC rule 3745-77-07(A)(3)(c) for deviations of the emission limitations, operational restrictions, and control device operating parameter limitations shall be submitted in the following manner:**

Written reports of (a) any deviations from federally enforceable emission limitations, operational restrictions, and control device operating parameter limitations, (b) the probable cause of such deviations, and (c) any corrective actions or preventive measures taken, shall be promptly made to the appropriate Ohio EPA District Office or local air agency. Except as provided below, the written reports shall be submitted by January 31, April 30, July 31, and October 31 of each year; and each report shall cover the previous calendar quarter.

In identifying each deviation, the permittee shall specify the emission limitation(s), operational restriction(s), and/or control device operating parameter limitation(s) for which the deviation occurred, describe each deviation, and provide the estimated magnitude and duration of each deviation.

These written reports shall satisfy the requirements (in part) of OAC rule 3745-77-07(A)(3)(c) pertaining to the submission of monitoring reports every six months and to the prompt reporting of all deviations. OAC rule 3745-77-07(A)(3)(c) is not fully satisfied until the permittee addresses all other deviations of the federally enforceable requirements specified in the permit.

If an emissions unit has a deviation reporting requirement for a specific emission limitation, operational restriction, or control device operating parameter limitation that is not on a quarterly basis (e.g., within 30 days following the end of the calendar month, or within 30 or 45 days after the exceedance occurs), that deviation reporting requirement overrides the reporting requirements specified in this General Term and Condition for that specific emission limitation, operational restriction, or control device parameter limitation. Following the provisions of that non-quarterly deviation reporting requirement will also satisfy the requirements (in part) of OAC rule 3745-77-07(A)(3)(c) pertaining to the submission of monitoring reports every six months and to the prompt reporting of all deviations, and additional quarterly deviation reports for that specific emission limitation, operational restriction, or control device parameter limitation are not required pursuant to this General Term and Condition.

See B.6 below if no deviations occurred during the quarter.

(Authority for term: OAC rule 3745-77-07(A)(3)(c))

- iii. **All reporting required in accordance with the OAC rule 3745-77-07(A)(3)(c) for other deviations of the federally enforceable permit requirements which are not reported in accordance with General Term and Condition A.1.c.ii above shall be submitted in the following manner:**

Written reports that identify all other deviations of the federally enforceable requirements contained in this permit, including the monitoring, record keeping, and reporting requirements, which are not reported in accordance with General Term and Condition A.1.c.ii above shall be

submitted to the appropriate Ohio EPA District Office or local air agency by January 31 and July 31 of each year; and each report shall cover the previous six calendar months.

In identifying each deviation, the permittee shall specify the federally enforceable requirement for which the deviation occurred, describe each deviation, and provide the magnitude and duration of each deviation.

These semi-annual written reports shall satisfy the reporting requirements of OAC rule 3745-77-07(A)(3)(c) for any deviations from the federally enforceable requirements contained in this permit that are not reported in accordance with General Term and Condition A.1.c.ii above.

If no such deviations occurred during a six-month period, the permittee shall submit a semi-annual report which states that no such deviations occurred during that period.

(Authority for term: OAC rules 3745-77-07(A)(3)(c)(i) and (ii))

- iv. Each written report shall be signed by a responsible official certifying that, "based on information and belief formed after reasonable inquiry, the statements and information in the report (including any written malfunction reports required by OAC rule 3745-15-06 that are referenced in the deviation reports) are true, accurate, and complete."
(Authority for term: OAC rule 3745-77-07(A)(3)(c)(iv))
- v. Reports of any required monitoring and/or record keeping information shall be submitted to the appropriate Ohio EPA District Office or local air agency.
(Authority for term: OAC rule 3745-77-07(A)(3)(c))

2. **Scheduled Maintenance**

Any scheduled maintenance of air pollution control equipment shall be performed in accordance with paragraph (A) of OAC rule 3745-15-06. Except as provided in OAC rule 3745-15-06(A)(3), any scheduled maintenance necessitating the shutdown or bypassing of any air pollution control system(s) shall be accompanied by the shutdown of the emissions unit(s) that is (are) served by such control system(s). Any scheduled maintenance, as defined in OAC rule 3745-15-06(A)(1), that results in a deviation from a federally enforceable emission limitation (or control requirement) shall be reported in the same manner as described for malfunctions in General Term and Condition A.1.c.i above.

(Authority for term: OAC rule 3745-77-07(A)(3)(c))

3. **Risk Management Plans**

If applicable, the permittee shall 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"); and, pursuant to 40 C.F.R. 68.215(a), the permittee shall submit either of the following:

- a. a compliance plan for meeting the requirements of 40 C.F.R. Part 68 by the date specified in 40 C.F.R. 68.10(a) and OAC 3745-104-05(A); or
- b. as part of the compliance certification submitted under 40 C.F.R. 70.6(c)(5), a certification statement that the source is in compliance with all requirements of 40 C.F.R. Part 68 and OAC Chapter 3745-104, including the registration and submission of the risk management plan.

(Authority for term: OAC rule 3745-77-07(A)(4))

4. **Title IV Provisions**

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

(Authority for term: OAC rule 3745-77-07(A)(5))

5. Severability Clause

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

(Authority for term: OAC rule 3745-77-07(A)(6))

6. General Requirements

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

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

c. This permit may be modified, reopened, revoked, or revoked and reissued, for cause, in accordance with A.10 below. The filing of a request by the permittee for a permit modification, revocation and reissuance, or revocation, or of a notification of planned changes or anticipated noncompliance does not stay any term and condition of this permit.

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

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

(Authority for term: OAC rule 3745-77-07(A)(7))

7. Fees

The permittee shall pay fees to the Director of the Ohio EPA in accordance with ORC section 3745.11 and OAC Chapter 3745-78.

(Authority for term: OAC rule 3745-77-07(A)(8))

8. Marketable Permit Programs

No revision of this permit is required under any approved economic incentive, marketable permits, emissions trading, and other similar programs or processes for changes that are provided for in this permit.

(Authority for term: OAC rule 3745-77-07(A)(9))

9. Reasonably Anticipated Operating Scenarios

The permittee is hereby authorized to make changes among operating scenarios authorized in this permit without notice to the Ohio EPA, but, contemporaneous with making a change from one operating scenario to another, the permittee must record in a log at the permitted facility the scenario under which the permittee is operating. The permit shield provided in these general terms and conditions shall apply to all operating scenarios authorized in this permit.

(Authority for term: OAC rule 3745-77-07(A)(10))

10. Reopening for Cause

This Title V permit will be reopened prior to its expiration date under the following conditions:

- a. Additional applicable requirements under the Act become applicable to one or more emissions units covered by this permit, and this permit has a remaining term of three or more years. Such a reopening shall be completed not later than eighteen (18) months after promulgation of the applicable requirement. No such reopening is required if the effective date of the requirement is later than the date on which the permit is due to expire, unless the original permit or any of its terms and conditions has been extended pursuant to paragraph (E)(1) of OAC rule 3745-77-08.
- b. This permit is issued to an affected source under the acid rain program and additional requirements (including excess emissions requirements) become applicable. Upon approval by the Administrator, excess emissions offset plans shall be deemed to be incorporated into the permit, and shall not require a reopening of this permit.
- c. The Director of the Ohio EPA or the Administrator of the U.S. EPA determines that the federally applicable requirements in this permit are based on a material mistake, or that inaccurate statements were made in establishing the emissions standards or other terms and conditions of this permit related to such federally applicable requirements.
- d. The Administrator of the U.S. EPA or the Director of the Ohio EPA determines that this permit must be revised or revoked to assure compliance with the applicable requirements.
(Authority for term: OAC rules 3745-77-07(A)(12) and 3745-77-08(D))

11. Federal and State Enforceability

Only those terms and conditions designated in this permit as federally enforceable, that are required under the Act, or any of its applicable requirements, including relevant provisions designed to limit the potential to emit of a source, are enforceable by the Administrator of the U.S. EPA, the State, and citizens under the Act. All other terms and conditions of this permit shall not be federally enforceable and shall be enforceable under State law only.

(Authority for term: OAC rule 3745-77-07(B))

12. Compliance Requirements

- a. Any document (including reports) required to be submitted and required by a federally applicable requirement in this Title V permit shall include a certification by a responsible official that, based on information and belief formed after reasonable inquiry, the statements in the document are true, accurate, and complete.
- b. Upon presentation of credentials and other documents as may be required by law, the permittee shall allow the Director of the Ohio EPA or an authorized representative of the Director to:
 - i. At reasonable times, enter upon the permittee's premises where a source is located or the emissions-related activity is conducted, or where records must be kept under the conditions of this permit.
 - ii. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit, subject to the protection from disclosure to the public of confidential information consistent with paragraph (E) of OAC rule 3745-77-03.
 - iii. Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit.
 - iv. As authorized by the Act, sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the permit and applicable requirements.

- c. The permittee shall submit progress reports to the appropriate Ohio EPA District Office or local air agency concerning any schedule of compliance for meeting an applicable requirement. Progress reports shall be submitted semiannually, or more frequently if specified in the applicable requirement or by the Director of the Ohio EPA. Progress reports shall contain the following:
 - i. Dates for achieving the activities, milestones, or compliance required in any schedule of compliance, and dates when such activities, milestones, or compliance were achieved.
 - ii. An explanation of why any dates in any schedule of compliance were not or will not be met, and any preventive or corrective measures adopted.
- d. Compliance certifications concerning the terms and conditions contained in this permit that are federally enforceable emission limitations, standards, or work practices, shall be submitted to the Director (the appropriate Ohio EPA District Office or local air agency) and the Administrator of the U.S. EPA in the following manner and with the following content:
 - i. Compliance certifications shall be submitted annually on a calendar year basis. The annual certification shall be submitted on or before April 30th of each year during the permit term.
 - ii. Compliance certifications shall include the following:
 - (a) An identification of each term or condition of this permit that is the basis of the certification.
 - (b) The permittee's current compliance status.
 - (c) Whether compliance was continuous or intermittent.
 - (d) The method(s) used for determining the compliance status of the source currently and over the required reporting period.
 - (e) Such other facts as the Director of the Ohio EPA may require in the permit to determine the compliance status of the source.
 - iii. Compliance certifications shall contain such additional requirements as may be specified pursuant to sections 114(a)(3) and 504(b) of the Act.

(Authority for term: OAC rules 3745-77-07(C)(1),(2),(4) and (5) and ORC section 3704.03(L))

13. Permit Shield

- a. Compliance with the terms and conditions of this permit (including terms and conditions established for alternate operating scenarios, emissions trading, and emissions averaging, but excluding terms and conditions for which the permit shield is expressly prohibited under OAC rule 3745-77-07) shall be deemed compliance with the applicable requirements identified and addressed in this permit as of the date of permit issuance.
- b. This permit shield provision shall apply to any requirement identified in this permit pursuant to OAC rule 3745-77-07(F)(2), as a requirement that does not apply to the source or to one or more emissions units within the source.

(Authority for term: OAC rule 3745-77-07(F))

14. Operational Flexibility

The permittee is authorized to make the changes identified in OAC rule 3745-77-07(H)(1)(a) to (H)(1)(c) within the permitted stationary source without obtaining a permit revision, if such change is not a modification under any provision of Title I of the Act [as defined in OAC rule 3745-77-01(JJ)], and does not result in an exceedance of the emissions allowed under this permit (whether expressed therein as a rate of emissions or in terms of total emissions), and the permittee provides the Administrator of the U.S. EPA and the appropriate Ohio EPA District Office or local air agency with written notification within a minimum of seven days in advance of the proposed changes, unless the change is associated with, or in response to, emergency conditions. If less than seven days notice is provided because of a need to respond more quickly to such emergency conditions, the permittee shall provide notice to the Administrator of the U.S. EPA and the appropriate District Office of the Ohio EPA or local

air agency as soon as possible after learning of the need to make the change. The notification shall contain the items required under OAC rule 3745-77-07(H)(2)(d).
(Authority for term: OAC rules 3745-77-07(H)(1) and (2))

15. Emergencies

The permittee shall have an affirmative defense of emergency to an action brought for noncompliance with technology-based emission limitations if the conditions of OAC rule 3745-77-07(G)(3) are met. This emergency defense provision is in addition to any emergency or upset provision contained in any applicable requirement.
(Authority for term: OAC rule 3745-77-07(G))

16. Off-Permit Changes

The owner or operator of a Title V source may make any change in its operations or emissions at the source that is not specifically addressed or prohibited in the Title V permit, without obtaining an amendment or modification of the permit, provided that the following conditions are met:

- a. The change does not result in conditions that violate any applicable requirements or that violate any existing federally enforceable permit term or condition.
- b. The permittee provides contemporaneous written notice of the change to the Director and the Administrator of the U.S. EPA. Such written notice shall describe each such change, the date of such change, any change in emissions or pollutants emitted, and any federally applicable requirement that would apply as a result of the change.
- c. The change shall not qualify for the permit shield under OAC rule 3745-77-07(F).
- d. The permittee shall keep a record describing all changes made at the source that result in emissions of a regulated air pollutant subject to an applicable requirement, but not otherwise regulated under the permit, and the emissions resulting from those changes.
- e. The change is not subject to any applicable requirement under Title IV of the Act or is not a modification under any provision of Title I of the Act.

Paragraph (I) of rule 3745-77-07 of the Administrative Code applies only to modification or amendment of the permittee's Title V permit. The change made may require a permit to install under Chapter 3745-31 of the Administrative Code if the change constitutes a modification as defined in that Chapter. Nothing in paragraph (I) of rule 3745-77-07 of the Administrative Code shall affect any applicable obligation under Chapter 3745-31 of the Administrative Code.

(Authority for term: OAC rule 3745-77-07(I))

17. Compliance Method Requirements

Nothing in this permit shall alter or affect the ability of any person to establish compliance with, or a violation of, any applicable requirement through the use of credible evidence to the extent authorized by law. Nothing in this permit shall be construed to waive any defenses otherwise available to the permittee, including but not limited to, any challenge to the Credible Evidence Rule (see 62 Fed. Reg. 8314, Feb. 24, 1997), in the context of any future proceeding.
(This term is provided for informational purposes only.)

18. Insignificant Activities

Each insignificant activity that has one or more applicable requirements shall comply with those applicable requirements.
(Authority for term: OAC rule 3745-77-07(A)(1))

19. Permit to Install Requirement

Prior to the “installation” or “modification” of any “air contaminant source,” as those terms are defined in OAC rule 3745-31-01, a permit to install must be obtained from the Ohio EPA pursuant to OAC Chapter 3745-31.
(Authority for term: OAC rule 3745-77-07(A)(1))

20. 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.
(Authority for term: OAC rule 3745-77-07(A)(1))

21. Permanent Shutdown of an Emissions Unit

The permittee may notify Ohio EPA of any emissions unit that is permanently shut down by submitting a certification by the responsible official of the date on which the emissions unit was permanently shut down. Authorization to operate the affected part or activity of the stationary source shall cease upon the date certified by the responsible official that the emissions unit was permanently shut down.

If an emissions unit is permanently shut down (i.e., that 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 and therefore ceases to meet the definition of an “emissions unit” as defined in OAC rule 3745-77-01(O)), rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the date of the certification and submission to Ohio EPA, to meet any monitoring, record keeping, reporting, or testing requirements, applicable to that emissions unit, except for any residual requirements, such as the quarterly deviation reports, semi-annual deviation reports and annual compliance certification covering the period during which the emissions unit last operated. All records relating to the shutdown emissions unit, generated while the emissions unit was in operation, must be maintained in accordance with law.

No emissions unit certified by the responsible official as being permanently shut down may resume operation without first applying for and obtaining a permit to install pursuant to OAC Chapter 3745-31.

B. State Only Enforceable Section

1. Reporting Requirements Related to Monitoring and Record Keeping Requirements

The permittee shall submit required reports in the following manner:

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

2. Records Retention Requirements

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

3. Inspections and Information Requests

The Director of the Ohio EPA, or an authorized representative of the Director, may, subject to the safety requirements of the permittee and without undue delay, enter upon the premises of this source at any reasonable time for purposes of making inspections, conducting tests, examining records or reports pertaining to any emission of air contaminants, and determining compliance with any applicable State air pollution laws and regulations and the terms and conditions of this permit. The permittee shall furnish to the Director of the Ohio EPA, or an authorized representative of the Director, upon receipt of a written request and within a reasonable time, any information that may be requested to determine whether cause exists for modifying, reopening or revoking this permit or to determine compliance with this permit. Upon verbal or written request, the permittee shall also furnish to the Director of the Ohio EPA, or an authorized representative of the Director, copies of records required to be kept by this permit.

4. Scheduled Maintenance/Malfunction Reporting

Any scheduled maintenance of air pollution control equipment shall be performed in accordance with paragraph (A) of OAC rule 3745-15-06. The malfunction of any emissions units or any associated air pollution control system(s) shall be reported to the appropriate Ohio EPA District Office or local air agency in accordance with paragraph (B) of OAC rule 3745-15-06. Except as provided in that rule, any scheduled maintenance or malfunction necessitating the shutdown or bypassing of any air pollution control system(s) shall be accompanied by the shutdown of the emissions unit(s) that is (are) served by such control system(s).

5. Permit Transfers

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

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

If no emission limitation (or control requirement), operational restriction and/or control device parameter limitation 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 by January 31, April 30, July 31, and October 31 of each year; and each report shall cover the previous calendar quarter.

The permittee is not required to submit a quarterly report which states that no deviations occurred during that quarter for the following situations:

- a. where an emissions unit has deviation reporting requirements for a specific emission limitation, operational restriction, or control device parameter limitation that override the deviation reporting requirements specified in General Term and Condition A.1.c.ii;
- b. where an uncontrolled emissions unit has no monitoring, record keeping, or reporting requirements and the emissions unit's applicable emission limitations are established at the potentials to emit; and
- c. where the company's responsible official has certified that an emissions unit has been permanently shut down.

Part II - Specific Facility Terms and Conditions

A. State and Federally Enforceable Section

1. This facility is subject to the applicable requirements specified in OAC Chapter 3745-25. In accordance with Ohio Engineering Guide #64, the emission control action programs, as specified in OAC rule 3745-25-03, shall be developed and submitted within 60 days after receiving notification from the Ohio EPA.
2. All asbestos renovation and demolition activities conducted at this facility shall be performed in accordance with the applicable requirements specified in 40 CFR Part 61 and OAC Chapter 3745-20.

3. FACILITY-WIDE EMISSION LIMITATIONS:

The maximum NO_x emissions for all non-trivial emissions units that emit NO_x at this facility shall not exceed 249.45 tons per year based upon rolling 12-month summations of the emissions. To ensure enforceability during the first 12 calendar months of operation after the effective date of permit to install 02-13174, the facility-wide sum of NO_x emissions from all NO_x emitting emissions units at this facility shall not exceed the following:

| Month | NO _x Emissions (tons) |
|-------|----------------------------------|
| 1 | 80 |
| 1-2 | 95 |
| 1-3 | 110 |
| 1-4 | 125 |
| 1-5 | 140 |
| 1-6 | 155 |
| 1-7 | 169 |
| 1-8 | 184 |
| 1-9 | 199 |
| 1-10 | 214 |
| 1-11 | 229 |
| 1-12 | 249.45 |

After the first 12 calendar months of operation following the effective date of permit to install 02-13174, compliance with the annual NO_x emissions limitation shall be based upon rolling 12-month summations of the NO_x emissions.

4. FACILITY-WIDE MONITORING AND RECORD KEEPING REQUIREMENTS

Each month the permittee shall calculate and record the NO_x emissions and the rolling, 12-month NO_x emissions, as required in permit to install 02-13174, for the following non-trivial emissions units located at this facility. (Non-trivial includes all sources of emissions regardless of size and permit exemption status.)

All NO_x emissions from non-trivial and/or insignificant sources whose potential has been

established, and are not restricted in any way, as described in final permit to install 02-13174, are required to be recorded and summed into the facility wide total NOx emissions.

Emissions Unit Number

| | | |
|------|------|------|
| B001 | Z009 | P030 |
| B002 | Z010 | P031 |
| B004 | Z011 | P032 |
| B008 | Z024 | P033 |
| B010 | Z049 | P038 |
| B015 | Z050 | P039 |
| B016 | Z051 | P040 |
| B011 | Z054 | P041 |
| B012 | Z055 | P042 |
| P001 | Z056 | P043 |
| P022 | Z057 | |
| Z002 | P006 | |
| Z003 | P011 | |
| Z004 | P016 | |
| Z005 | P024 | |
| Z006 | P025 | |
| Z007 | P026 | |
| Z008 | P029 | |

All calculations for these emissions units shall be performed as specified in the calculations provided by the permittee in PTI application 02-13174.

5. FACILITY-WIDE REPORTING REQUIREMENTS

- a. The permittee shall submit quarterly deviation (excursion) reports, as specified in Part I.A.1.c, that identify all exceedances of the following:
 - i. after the first twelve months of operation after the effective date of PTI 02-13174, the rolling, 12-month, facility-wide limitation for NOx emissions; and
 - ii. for the first 12 calendar months of operation after the effective date of PTI 02-13174, the maximum cumulative monthly allowable NOx emissions levels.

The permittee shall also submit annual reports that specify the total NOx emissions from each emissions unit listed in Part II.A.4 of this permit and the total NOx emissions from all of the emissions units combined for the previous calendar year. Each report shall include the calculations for each emissions unit and shall be submitted by April 15, of each year.

6. As of the effective date of this permit, the following rules are not applicable to this facility:

- a. Ohio Administrative Code (OAC) rule 3745-18-06 (C) (General SO2 Emission Limit Provisions): All process equipment at the Willoughby Quartz Plant are exempt because the process weight input rate for each is less than 1,000 lbs/hr.

- b. Environmental Protection Agency Code of Federal Regulations (CFR) rule 40 CFR 60 (All New Source Performance Standards (NSPS)): This facility has no emissions units 21`subject to these regulations.
 - c. Environmental Protection Agency Code of Federal Regulations (CFR) rules 40 CFR 61 and 63 (National Emission Standards for Hazardous Air Pollutants (NESHAPs) and NESHAPs for Source Categories: These rules are not applicable because there are no emissions units at this facility in any of the covered source categories, and the facility is not a "major source" for HAPs.
 - d. Environmental Protection Agency Code of Federal Regulations (CFR) rule 40 CFR 64 (Compliance Assurance Monitoring (CAM)): No emissions units at this facility with emission controls have potential uncontrolled emissions that exceed the applicability thresholds of this rule.
 - e. Environmental Protection Agency Code of Federal Regulations (CFR) rule 40 CFR 72 through 78 (Acid Rain Provisions): There are no subject emissions units at this facility.
 - f. Ohio Administrative Code (OAC) rule 3745-17-09 (Odor and Particulate Matter Emissions from Incinerators): There are no incinerators at this facility.
 - g. Ohio Administrative Code (OAC) Chapter 3745-24 (Emission Statements): Lake County is not listed in 3745-24-02 as nonattainment for ozone.
 - h. Ohio Administrative Code (OAC) Chapter 3745-14 (NOx Budget Trading Program): There are no NOx budget trading units at this facility per 3745-14-01(C)(1).
 - i. Ohio Administrative Code (OAC) Chapter 3745-71 (Lead Emissions): This regulation applies only to a specific facility named in the regulation, which is not this facility.
 - j. Ohio Administrative Code (OAC) rules 3745-17-12, 13 and 14 (Particulate Matter Emissions for Cuyahoga and Jefferson Counties): This facility is not located in either Cuyahoga or Jefferson Counties.
 - k. Ohio Administrative Code (OAC) rule 3745-18-49 (SO2 Emissions in Lake County): This facility is not named in this rule.
 - l. Ohio Administrative Code (OAC) rule 3745-21-11: This facility does not have the potential to emit 100 tons or greater per year of VOC.
7. The following insignificant emissions units are located at this facility:
- B008--Emergency generators #1 and #2
 - B010--Emergency generator #3 (Permit to install 02-7485)
 - B011--North natural gas engine (Permit to install 02-7485)
 - B012--South natural gas engine (Permit to install 02-7485)
 - P001--Powder Prep process including a fourth dryer calciner and sand washing (Permits to Install 02-6199 and 02-8946)

P003--Dry cutting saws 1, 2, and 3 with Carter Day baghouse
P008--Zero Blast-n-Reen sand blaster
P009--Tasc cleaners-aqueous
P011--Tubing furnaces #1-#4 (type B) and #5 and #6 (type I)
P015--8 wet cut saws (Lucalox finishing) (Permit to install 02-894)
P016--Presintering ovens w/fume incinerator (1-4) Harrop combined (Permit to Install 02-1204)
P018--Sand blasters (2) in P-14 room
P020--Electric sand dryers #21-#29 (Permit to install 02-7485)
P021--Magnetic separator #2 (Permit to install 02-7485)
P022--Calciner #6 (natural gas fired) (Permit to install 02-7485)
P023--Vacuum bake ovens #1-#5 (Permit to install 02-7485)
P024--Tubing furnaces #7-#9 (type B) and #100 (Permit to install 02-7485)
Z002--Natural gas calciner # 7
Z003--Natural gas calciner # 8
Z004--Natural gas calciner # 9
Z005--Natural gas calciner # 10
Z006--Natural gas calciner # 11
Z007--Natural gas calciner # 12
Z008--Natural gas calciner # 13
Z009--Natural gas calciner # 14
Z010--Natural gas calciner # 15
Z011--Natural gas calciner # 16
Z012--Magnetic separators numbers 3, 4, and 5
Z013--HFS 5000-gallon steel tank
Z014--HFS storage tank # 1
Z015--HFS storage tank # 2
Z016--HFS storage tank # 3
Z017--HFS storage tank #4
Z018--HF storage tank # 1
Z019--HF storage tank # 2
Z020--HCl storage tank # 1
Z021--HCl storage tank # 2
Z022--Crucible belt grinder
Z023--2-Crucible wet-cutting saws
Z024--Tube drawing furnaces numbers 16-21 (type I)
Z025--Vacuum bake ovens numbers 6-11
Z030--Feedstock saw
Z031--Finishing saw
Z034--Finished stock wash tank containing 5% HF
Z035--Feedstock LD wash tank containing 10% HF
Z036--FAB areas wash tank containing 5% HF
Z037--LD tubes manual cleaning
Z038--CMH saw with dust collector
Z039--Solvent parts cleaner for Lucalox
Z040--Wet cut saws numbers 1-4 and FO saw
Z041--Emergency Generator # 4
Z042--Natural gas engine (southwest)
Z043--Diesel fuel storage tank # 2

Facility Name: GE Willoughby Quartz Plant
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Z044--Lucalox mixer # 2 and extruder # 3
Z046--CB Boiler 1
Z047--CB Boiler 2
Z048--North South Bladders
Z049--Nabertherm Ovens
Z050--Harper Presintering Oven

Each insignificant emissions unit at this facility must comply with all applicable State and federal regulations, and well as any emission limitations and/or control requirements contained within the identified permit to install for the emissions unit. Insignificant emissions units listed above that are not subject to specific permit to install requirements are subject to one or more applicable requirements contained in the SIP-approved versions of OAC Chapters 3745-17, 3745-18, and 3745-21.

B. State Only Enforceable Section

1. The following insignificant emissions units located at this facility are exempt from permit requirements because they are not subject to any applicable requirements or because they meet the "de minimis" criteria established in OAC rule 3745-15-05:

P017--Lucalox spray dryer room with mixer, dryer with baghouse, sifter, and blender

Z032--Crucible Tank-Furnace Body Crucible

Z051--Tubing furnaces 52-54

Z052--Vacuum Bake oven 12-13

Z053--Nabertherm Ovens-Debind Presinter Ceramic Parts

Z054--Harper Electric Presintering Furnace

Z058--Calciners 1-5

Z059--Calciner/Dryer #31

Z060--Electric Static Dryers #1-20

Z061--Magnetic Separator #1

Z062--Upflush drums

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: Titusville Boiler #1 (B001)

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Titusville Boiler #1 (B001)

Activity Description: Boiler with heat input capacity of 10.9 mmBtu/hr

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|--|--|---|
| B001-Titusville natural gas fired boiler (10.9 MMBtu/hr) | OAC rule 3745-31-05(D) PTI #02-13174 (synthetic minor) | The combined NOx emissions from emissions units B001 and B002 shall not exceed 6.1 tons per year based on rolling, 12-month summations. |
| | OAC rule 3745-17-10(B)(1) | Particulate emissions from this boiler shall not exceed 0.020 pound per million Btu of actual heat input. |
| | OAC rule 3745-17-07(A) | Visible particulate emissions from the stack serving this emissions unit shall not exceed twenty percent opacity, as a six- minute average, except as provided by rule. |
| | OAC rule 3745-21-08 | See A.I.2.b. |
| | OAC rule 3745-23-06(B) | See A.I.2.b. |

Emissions Unit: Titusville Boiler #1 (B001)

2. Additional Terms and Conditions

2.a Per OAC rule 3745-18-06(A), this emissions unit is exempt from paragraphs (D), (F), and (G) because the emissions unit only burns natural gas as fuel. OAC rule 3745-18-06 imposes no requirements on fuel burning equipment that burns only natural gas.

2.b The permittee has satisfied the "best available control techniques and operating practices" required pursuant to OAC rule 3745-21-08(B) by complying with all applicable rules.

On November 5, 2002, OAC rule 3745-21-08 was revised to delete paragraph (B); therefore, paragraph (B) is no longer part of the State regulations. However, that rule revision has not yet been submitted to the U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). When the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-21-08, the requirement to satisfy the "best available control techniques and operating practices" will no longer exist as part of the federally-approved SIP for Ohio, and this term and condition will no longer be applicable to this emissions unit.

The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06(B) by complying with all applicable rules.

2.c This emissions unit is capable of burning only natural gas. Any change to an alternate fuel will require the permittee to obtain a permit to install.

II Operational Restrictions

1. The maximum quantity of natural gas burned in emissions units B001 and B002, combined, shall not exceed 122 million standard cubic feet of natural gas per year, based on rolling 12-month summations of the fuel usages. To ensure enforceability of this provision during the first twelve (12) months following the effective date of PTI 02-13174, the permittee shall not exceed the following natural gas usage restrictions:

| CALENDAR MONTHS FOLLOWING PTI EFFECTIVE DATE | ALLOWABLE CUMULATIVE TOTAL VOLUME of NATURAL GAS USAGE (B001 and B002 COMBINED) |
|--|---|
| (months) | (MMscf) |
| 1-1 | 40 |
| 1-2 | 48 |
| 1-3 | 55 |
| 1-4 | 63 |
| 1-5 | 70 |
| 1-6 | 77 |
| 1-7 | 85 |
| 1-8 | 92 |
| 1-9 | 100 |

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: Titusville Boiler #1 (B001)

| | |
|------|-----|
| 1-10 | 107 |
| 1-11 | 115 |
| 1-12 | 122 |

After the first 12 calendar months of operation following the effective date of PTI 02-13174, the permittee shall comply with the annual natural gas usage limitation based on rolling, 12-month summations of the fuel usages.

III Monitoring and/or Recordkeeping

1. By the effective date of this permit, the permittee shall install a natural gas flow meter on the natural gas supply line for this emissions unit to allow for monitoring and recording the natural gas fuel consumption.
2. The permittee shall monitor and record the following information for emissions units B001 and B002 combined, on a monthly basis:
 - a. the total amount of natural gas used;
 - b. the total amount of NO_x emitted per month;
 - c. after the first twelve months of operation following the effective date of PTI 02-13174, the total amount of natural gas used based on a rolling, 12-month summation; and
 - d. after the first twelve months of operation following the effective date of PTI 02-13174, the total amount of NO_x emitted, in tons, based on a rolling, 12-month summations of the monthly emissions.

The NO_x emissions shall be calculated by multiplying the total amount of natural gas used, in mmscf, by 100 lbs of NO_x per mmscf of natural gas, which is the emission factor from Table 1.4-1 of AP-42 (7/98), and dividing by 2000 lbs per ton.

The rolling, 12-month summation of individual NO_x emissions shall be calculated by adding the individual NO_x emissions for the preceding 11 calendar months plus the total NO_x emissions for the current calendar month.

Also, during the first 12 months of operation following the effective date of PTI #02-13174, the permittee shall record the cumulative natural gas usage, in mmscf, for each calendar month.

IV Reporting Requirements

1. All reports or notifications shall be submitted to the Northeast District Office of the Ohio EPA as required in Section A.1.c. of the General Terms and Conditions of this Permit unless otherwise stated.
2. The permittee shall submit quarterly deviation (excursion) reports that identify for emissions units B001 and B002, combined, each record showing an exceedance of:

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: Titusville Boiler #1 (B001)

- a. the rolling, 12-month restriction for fuel usage; and/or
 - b. the rolling 12-month NO_x emission limitation.
3. For the first twelve months after the effective date of permit to install 02-13174, the permittee shall submit quarterly deviation (excursion) reports that identify, for emissions units B001 and B002, combined, all exceedances of the monthly cumulative natural gas usage limitations.

V Testing Requirements

1. Compliance with the emission limitations in Section A.I.1. of these terms and conditions shall be determined in accordance with the following methods:

- 1a. Emission Limitation

Visible particulate emissions from the stack serving this emissions unit shall not exceed twenty percent opacity, as a six-minute average, except as provided by rule.

Applicable Compliance Method

If required by the Ohio EPA, compliance shall be determined through visible particulate emissions observations performed in accordance with Method 9, Visible Determination of the Opacity of Emissions from Stationary Sources, 40 CFR, Part 60, Appendix A, and the procedures specified in OAC rule 3745-17-03(B)(1).

- 1b. Emission Limitation

The emissions shall not exceed 0.020 pound of particulate emissions per mmBtu of actual heat input.

Applicable Compliance Method

For the use of natural gas, compliance shall be determined by dividing the AP-42 (Fifth Edition, Table 1.4-2, 7/98) emission factor for natural gas combustion (1.9 lbs/mm³ ft) by the heating value of natural gas (1050 Btu/cu ft).

If required by the Ohio EPA, the permittee shall determine compliance with this emission limitation in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 5 and the procedures specified in OAC rule 3745-17-03(B)(9).

- 1c. Emission Limitation -

The NO_x emissions shall not exceed 6.1 tons per year for emissions units B001 and B002 combined, based on a rolling 12-month summation of the NO_x emissions.

Applicable Compliance Method:

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: Titusville Boiler #1 (B001)

Compliance with the tons per year limitation shall be determined by the record keeping in Section A.III.2.

Compliance with the pound per hour emission limitation shall be demonstrated by multiplying the maximum hourly heat input capacity of the boiler (10.9 MMBtu/hr) by the emission factor from "Compilation of Air Pollutant Emission Factors", Table 1.4-1 (7/98) for natural gas combustion (100 lbs of NO_x per mmscf), and dividing by the heat content of natural gas (1050 Btu/ft³). If required by the Ohio EPA, the permittee shall demonstrate compliance with this emission limitation in accordance with 40 CFR Part 60 Appendix A, Methods 1-4 and 7.

VI Miscellaneous Requirements

None

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: Titusville Boiler #1 (B001)

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|--|---|---|
| | none | none |

2. Additional Terms and Conditions

None

II Operational Restrictions

None

III Monitoring and/or Recordkeeping

None

IV Reporting Requirements

None

V Testing Requirements

None

VI Miscellaneous Requirements

None

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: Titusville Boiler #2 (B002)

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Titusville Boiler #2 (B002)

Activity Description: Boiler with heat input capacity of 10.9 mmBtu/hr

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|--|--|---|
| B002-Titusville natural gas fired boiler (10.9 MMBtu/hr) | OAC rule 3745-31-05(D) PTI #02-13174 (synthetic minor) | The combined NOx emissions from emissions units B001 and B002 shall not exceed 6.1 tons per year based on rolling, 12-month summations. |
| | OAC rule 3745-17-10(B)(1) | Particulate emissions from this boiler shall not exceed 0.020 pound per million Btu of actual heat input. |
| | OAC rule 3745-17-07(A) | Visible particulate emissions from the stack serving this emissions unit shall not exceed twenty percent opacity, as a six- minute average, except as provided by rule. |
| | OAC rule 3745-21-08 | See A.I.2.b. |
| | OAC rule 3745-23-06(B) | See A.I.2.b. |

2. Additional Terms and Conditions

- 2.a Per OAC rule 3745-18-06(A), this emissions unit is exempt from paragraphs (D), (F), and (G) because the emissions unit only burns natural gas as fuel. OAC rule 3745-18-06 imposes no requirements on fuel burning equipment that burns only natural gas.

Emissions Unit: Titusville Boiler #2 (B002)

- 2.b** The permittee has satisfied the "best available control techniques and operating practices" required pursuant to OAC rule 3745-21-08(B) by complying with all applicable rules.

On November 5, 2002, OAC rule 3745-21-08 was revised to delete paragraph (B); therefore, paragraph (B) is no longer part of the State regulations. However, that rule revision has not yet been submitted to the U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). When the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-21-08, the requirement to satisfy the "best available control techniques and operating practices" will no longer exist as part of the federally-approved SIP for Ohio, and this term and condition will no longer be applicable to this emissions unit.

The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06(B) by complying with all applicable rules.

- 2.c** This emissions unit is capable of burning only natural gas. Any change to an alternate fuel will require the permittee to obtain a permit to install.

II Operational Restrictions

1. The maximum quantity of natural gas burned in emissions units B001 and B002, combined, shall not exceed 122 million standard cubic feet of natural gas per year, based on rolling 12-month summations of the fuel usages. To ensure enforceability of this provision during the first twelve (12) months following the effective date of PTI 02-13174, the permittee shall not exceed the following natural gas usage restrictions:

| CALENDAR MONTHS FOLLOWING PTI EFFECTIVE DATE | ALLOWABLE CUMULATIVE TOTAL VOLUME of NATURAL GAS USAGE (B001 and B002 COMBINED) |
|--|---|
| (months) | (MMscf) |
| 1-1 | 40 |
| 1-2 | 48 |
| 1-3 | 55 |
| 1-4 | 63 |
| 1-5 | 70 |
| 1-6 | 77 |
| 1-7 | 85 |
| 1-8 | 92 |
| 1-9 | 100 |
| 1-10 | 107 |
| 1-11 | 115 |
| 1-12 | 122 |

Emissions Unit: Titusville Boiler #2 (B002)

After the first 12 calendar months of operation following the effective date of PTI 02-13174, the permittee shall comply with the annual natural gas usage limitation based on rolling, 12-month summations of the fuel usages.

III Monitoring and/or Recordkeeping

1. By the effective date of this permit, the permittee shall install a natural gas flow meter on the natural gas supply line for this emissions unit to allow for monitoring and recording the natural gas fuel consumption.
2. The permittee shall monitor and record the following information for emissions units B001 and B002 combined, on a monthly basis:
 - a. the total amount of natural gas used;
 - b. the total amount of NO_x emitted per month;
 - c. after the first twelve months of operation following the effective date of PTI 02-13174, the total amount of natural gas used based on a rolling, 12-month summation; and
 - d. after the first twelve months of operation following the effective date of PTI 02-13174, the total amount of NO_x emitted, in tons, based on a rolling, 12-month summations of the monthly emissions.

The NO_x emissions shall be calculated by multiplying the total amount of natural gas used, in mmscf, by 100 lbs of NO_x per mmscf of natural gas, which is the emission factor from Table 1.4-1 of AP-42 (7/98), and dividing by 2000 lbs per ton.

The rolling, 12-month summation of individual NO_x emissions shall be calculated by adding the individual NO_x emissions for the preceding 11 calendar months plus the total NO_x emissions for the current calendar month.

Also, during the first 12 months of operation following the effective date of PTI #02-13174, the permittee shall record the cumulative natural gas usage, in mmscf, for each calendar month.

IV Reporting Requirements

1. All reports or notifications shall be submitted to the Northeast District Office of the Ohio EPA as required in Section A.1.c. of the General Terms and Conditions of this Permit unless otherwise stated.
2. The permittee shall submit quarterly deviation (excursion) reports that identify for emissions units B001 and B002, combined, each record showing an exceedance of:
 - a. the rolling, 12-month restriction for fuel usage; and/or
 - b. the rolling 12-month NO_x emission limitation.

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Facility ID: 02-43-16-0086

Emissions Unit: Titusville Boiler #2 (B002)

3. For the first 12 months after the effective date of this Permit to Install, the permittee shall submit quarterly deviation (excursion) reports that identify, for emissions units B001 and B002, combined, all exceedances of the monthly cumulative natural gas usage limitations.

V Testing Requirements

1. Compliance with the emission limitations in Section A.I.1. of these terms and conditions shall be determined in accordance with the following methods:

- 1a. Emission Limitation

Visible particulate emissions from the stack serving this emissions unit shall not exceed twenty percent opacity, as a six-minute average, except as provided by rule.

Applicable Compliance Method

If required by the Ohio EPA, compliance shall be determined through visible particulate emissions observations performed in accordance with Method 9, Visible Determination of the Opacity of Emissions from Stationary Sources, 40 CFR, Part 60, Appendix A, and the procedures specified in OAC rule 3745-17-03(B)(1).

- 1b. Emission Limitation

The emissions shall not exceed 0.020 pound of particulate emissions per mmBtu of actual heat input.

Applicable Compliance Method

For the use of natural gas, compliance shall be determined by dividing the AP-42 (Fifth Edition, Table 1.4-2, 7/98) emission factor for natural gas combustion (1.9 lbs/mmCu ft) by the heating value of natural gas (1050 Btu/cu ft).

If required by the Ohio EPA, the permittee shall determine compliance with this emission limitation in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 5 and the procedures specified in OAC rule 3745-17-03(B)(9).

- 1c. Emission Limitation -

The NO_x emissions shall not exceed 6.1 tons per year for emissions units B001 and B002 combined, based on a rolling 12-month summation of the NO_x emissions.

Applicable Compliance Method:

Compliance with the tons per year limitation shall be determined by the record keeping in Section A.III.2.

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: Titusville Boiler #2 (B002)

Compliance with the pound per hour emission limitation shall be demonstrated by multiplying the maximum hourly heat input capacity of the boiler (10.9 MMBtu/hr) by the emission factor from "Compilation of Air Pollutant Emission Factors", Table 1.4-1 (7/98) for natural gas combustion (100 lbs of NO_x per mmscf), and dividing by the heat content of natural gas (1050 Btu/ft³). If required by the Ohio EPA, the permittee shall demonstrate compliance with this emission limitation in accordance with 40 CFR Part 60 Appendix A, Methods 1-4 and 7.

VI Miscellaneous Requirements

None

Emissions Unit: Titusville Boiler #2 (B002)

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|--|---|---|
| | none | none |

2. Additional Terms and Conditions

None

II Operational Restrictions

None

III Monitoring and/or Recordkeeping

None

IV Reporting Requirements

None

V Testing Requirements

None

VI Miscellaneous Requirements

None

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: Crucible Machine #5 (P006)

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Crucible Machine #5 (P006)
Activity Description: Arc Fusion Crucible Machines #5

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|--|--|--|
| Electric Crucible machine # 5, with dust collector, including vacuum pumps, each with a mist eliminator, and the crucible forming enclosure vent, cutting station and cooling table (P006) | OAC rule 3745-31-05(A) and (D) and PTI #02-13174 (synthetic minor) | <p>Nitrogen oxides (NO_x) emissions from this emissions unit shall not exceed 1.36 pounds per hour and 1.0 ton per rolling, 12-month period. (The 1.36 pounds per hour limitation is the potential to emit for this emissions unit; therefore, monitoring, record keeping, and reporting requirements are not needed for this emission limitation.)</p> <p>The total particulate emissions from this emissions unit from the stacks serving this emissions unit, shall not exceed 2.4 tons per year.</p> <p>The requirements of this rule also include compliance with the requirements of OAC rules 3745-17-07(A), 3745-17-11(B), 3745-21-08, and 3745-23-06(B).</p> <p>Visible particulate emissions of fugitive dust from this emissions unit shall not exceed 10 percent opacity, as a 3-minute average.</p> |

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: Crucible Machine #5 (P006)

Reasonably available control measures that are sufficient to minimize or eliminate visible emissions of fugitive dust shall be employed for this emissions unit. (See A.I.2.a.)

OAC rule 3745-17-07(A)

Visible particulate emissions from any stack serving this emissions unit shall not exceed twenty percent opacity, as a six-minute average, except as provided by rule.

OAC rule 3745-17-08(B)

See A.I.2.c.

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

The total particulate emissions, attributable to this emissions unit alone, that are released through stacks or vents, shall not exceed 0.551 pound per hour based on Table I of OAC rule 3745-17-11 and a maximum process weight rate of 100 pounds per hour.

OAC rule 3745-21-08

See A.I.2.b.

OAC rule 3745-23-06(B)

See A.I.2.b.

2. Additional Terms and Conditions

- 2.a** The permittee shall minimize or eliminate visible emissions of fugitive dust through the employment of reasonably available control measures (RACM). These measures shall include, but not be limited to, the following:
- i. the use of adequate hooding or equivalent capture devices for the crucible filling, arc fusion, and crucible cooling operations, for the sand storage and transfer equipment, and for the equipment used to mechanically finish quartz crucibles and tubing including, but not limited to saws, sanders, bevelers, trimmers and grinders; and

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: Crucible Machine #5 (P006)

- ii. all fugitive dust captured shall be vented to the baghouse.

By employing RACM, visible emissions of fugitive dust from any non-stack egress points from the building shall be minimized.

- 2.b The permittee has satisfied the "best available control techniques and operating practices" required pursuant to OAC rule 3745-21-08(B) by committing to comply with the best available technology requirements established pursuant to OAC rule 3745-31-05(A)(3) in Permit to Install 02-13174.

On November 5, 2002, OAC rule 3745-21-08 was revised to delete paragraph (B); therefore, paragraph (B) is no longer part of the State regulations. However, that rule revision has not yet been submitted to the U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). When the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-21-08, the requirement to satisfy the "best available control techniques and operating practices" will no longer exist as part of the federally-approved SIP for Ohio, and this term and condition will no longer be applicable to this emissions unit.

The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06(B) by committing to comply with the best available technology requirements established in Permit to Install 02-13174.

- 2.c This facility is not located in an Appendix A area; therefore, in accordance with OAC rule 3745-17-08(A)(1), OAC rule 3745-17-08(B) is not applicable to this emissions unit.
- 2.d It is the permittee's normal practice to vent all of the NOx emissions from this emissions unit to the stacks; however, it is understood that a small number of molecules of NOx may not be captured and vented to the stacks. The NOx emissions from the cooling of the crucible machines shall be vented to the stacks.

II Operational Restrictions

- 1. The maximum production rate of crucibles of any size, for this emissions unit, based on rolling, 12-month summations of the production rates, shall not exceed 26,667.
- 2. To ensure enforceability of this provision during the first twelve (12) months of operation following the effective date of PTI 02-13174, the permittee shall not exceed the following crucible production restrictions and emission limitations:

| CALENDAR MONTHS FOLLOWING PTI EFFECTIVE DATE | TOTAL CUMULATIVE ALLOWABLE CRUCIBLES PRODUCED (P006 only) |
|--|---|
|--|---|

| | |
|-----|--------|
| 1-1 | 8800 |
| 1-2 | 10,424 |
| 1-3 | 12,048 |

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: Crucible Machine #5 (P006)

| | |
|------|--------|
| 1-4 | 13,673 |
| 1-5 | 15,297 |
| 1-6 | 16,921 |
| 1-7 | 18,546 |
| 1-8 | 20,170 |
| 1-9 | 21,794 |
| 1-10 | 23,419 |
| 1-11 | 25,043 |
| 1-12 | 26,667 |

After the first twelve calendar months of operation following the effective date of PTI 02-13174, compliance with the annual crucible production restriction of 26,667 shall be based upon rolling, twelve-month summations of the crucible production rates.

III Monitoring and/or Recordkeeping

1. The permittee shall perform weekly checks, when any of the equipment comprising this emissions unit is in operation and when the weather conditions allow, for any visible fugitive particulate emissions from the building 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 operation log. If visible emissions are observed, the permittee shall also note the following in the operations log:
 - a. the location(s) and color(s) of the emissions;
 - b. whether the emissions are representative of normal conditions;
 - c. if the emissions are not representative of normal operations, the cause(s) of the abnormal emissions;
 - d. the total duration of any visible emission incident; and
 - e. any corrective actions taken to eliminate the visible emissions.

2. The permittee shall perform daily checks, when any of the equipment comprising this emissions unit is in operation and when the weather conditions allow, for any visible particulate emissions from the stacks (including the baghouse) 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. the total duration of any visible emission incident; and
 - c. any corrective actions taken to eliminate the visible emissions.

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: Crucible Machine #5 (P006)

Notwithstanding the frequency of reporting requirements specified in section A.IV, the permittee may reduce the frequency of visual observations for this emissions unit from daily to weekly readings if the following conditions are met:

- a. for 1 full quarter this emissions unit's visual observations indicate no visible emissions; and
- b. the permittee continues to comply with all the record keeping and monitoring requirements specified in section A.III.2.

The permittee shall revert to daily readings for this emissions unit if any visible emissions are observed. The permittee may again reduce the frequency of visual observations from daily to weekly after obtaining 1 full quarter of observations with no visible emissions for this emissions unit.

3. The permittee shall maintain monthly records of the following for this emissions unit:
 - a. the number of crucibles produced;
 - b. beginning after the first 12 calendar months of operation following the effective date of PTI 02-13174, the rolling, 12-month summation of the crucible production figures;
 - c. the monthly total emissions of NO_x, in tons, calculated in accordance with Section A.III.4.; and
 - d. beginning after the first 12 calendar months of operation following the effective date of PTI 02-13174, the rolling, 12-month summation of the NO_x emissions, in tons.

Also, during the first 12 calendar months of operation after the effective date of PTI 02-13174, the permittee shall record the cumulative crucible production and NO_x emissions for this emissions unit for each calendar month.

4. The permittee shall calculate NO_x emissions in accordance with the following equation:

where: $\text{NO}_x \text{ monthly emissions, in tons,} = \text{number of crucibles} \times 0.075 \text{ lb/unit} \times \frac{1 \text{ ton}}{2000 \text{ lb}}$

The crucible number is the number of crucibles produced by crucible machine #5. The NO_x emission factor of 0.075 lb/unit is based on the 1996 stack tests at the Newark facility.

Monthly NO_x emissions shall be totaled to obtain the rolling and annual emissions.

IV Reporting Requirements

1. The permittee shall submit semiannual written reports that:

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: Crucible Machine #5 (P006)

- a. identify all days during which any visible fugitive particulate emissions were observed from the egress points (i.e., building windows, doors, roof monitors, etc.) serving this emissions unit; and
- b. describe any corrective actions taken to eliminate the visible fugitive particulate emissions.

These reports shall be submitted to the Northeast District Office of the Ohio EPA by January 31 and July 31 of each year and shall cover the previous 6-month period.

2. The permittee shall submit semiannual written reports that:
 - a. identify all days during which any visible particulate emissions were observed from the stacks serving this emissions unit; and
 - b. describe any corrective actions taken to eliminate the visible particulate emissions.
3. The permittee shall submit quarterly deviation (excursion) reports, as specified in Part I.A.1.c. of these terms and conditions, that identify all exceedances of the following:
 - a. after the first 12 months of operation following the effective date of PTI 02-13174, the rolling, 12-month limitation on crucible production;
 - b. after the first 12 months of operation following the effective date of PTI 02-13174, the rolling, 12-month NO_x emission limitation; and
 - c. for the first 12 calendar months of operation following the effective date of PTI 02-13174, the maximum allowable, monthly cumulative crucible production levels.
4. The permittee shall submit annual reports of the following information:
 - a. the annual crucible production rate for this emissions unit; and
 - b. the total annual emissions of NO_x from this emissions unit.

These reports shall be submitted to the Northeast District Office of the Ohio EPA by April 15 of each year and shall cover the previous calendar year.

V Testing Requirements

1. Compliance with the emissions limitations in Section A.I.1. of these terms and conditions shall be determined in accordance with the following methods:
 - 1a. Emission Limitation

Visible particulate emissions from any stack serving this emissions unit shall not exceed twenty percent opacity, as a six-minute average, except as provided by rule.

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: Crucible Machine #5 (P006)

Applicable Compliance Method

If required by Ohio EPA, compliance shall be determined by Method 9, Visible Determination of the Opacity of Emissions from Stationary Sources, 40 CFR Part 60, Appendix A, as specified in OAC rule 3745-17-03(B)(1).

1b. Emission Limitation

Visible particulate emissions of fugitive dust from this emissions unit shall not exceed 10 (ten) percent opacity, as a 3-minute average.

Applicable Compliance Method

If required by Ohio EPA, compliance with the above visible emission limitation shall be determined using Method 9 of 40 CFR, Part 60, Appendix A.

1c. Emission Limitation

The total particulate emissions attributable to this emissions unit alone, that are released through stacks or vents, shall not exceed 0.551 pound per hour, based on Table I of OAC rule 3745-17-11 and based on a maximum process weight (PWR) of 100 pounds per hour, and 2.41 tons per year particulate emissions;

Applicable Compliance Method

Compliance with the particulate limits above, shall be determined in accordance with the following:

If required by Ohio EPA, emission testing shall be performed for each stack and mist eliminator outlet to demonstrate compliance with the allowable hourly mass emission rate.

The following test method(s) and procedures shall be employed to determine compliance with the allowable mass emission rate:

Methods 1-5 of 40 CFR Part 60, Appendix A.

Performance testing shall be conducted in accordance with OAC rule 3745-17-03(B)(10).

Compliance with the allowable annual mass emission rate shall be demonstrated by multiplying the actual hourly emission rate by the actual hours of operation during the year and dividing by 2000.

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: Crucible Machine #5 (P006)

1d. Emission Limitation

- i. The allowable hourly NOx emission rate of 1.36 pounds per hour.
- ii. The allowable rolling, 12-month NOx emission rate of 1.0 ton.

Applicable Compliance Method

If required by Ohio EPA, compliance with the hourly emission rate shall be demonstrated by emission testing using the following test methods:

Methods 1-4 and 7 of 40 CFR Part 60, Appendix A "Determination of Nitrogen Oxides Emissions from Stationary Sources".

The permittee shall calculate the rolling, 12-month NOx emissions in accordance with the equation and record keeping specified in Part A.III.4 of these terms and conditions.

2a. Emission Testing Requirements

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

- i. The emission testing shall be conducted within 12 months after the effective date of PTI 02-13174, and, if required by Ohio EPA, within 12 months prior to permit expiration, depending on how close actual emissions during the initial testing are to the allowable.
- ii. The emission testing shall be conducted for each uncontrolled stack and each mist eliminator outlet and shall be conducted to demonstrate compliance with the allowable hourly mass emission for particulate emissions and the allowable hourly mass emission rate for NOx emissions, where NOx is or could be emitted, and to determine a NOx emission factor for crucible production. For the purposes of emission testing, the crucible forming enclosure vent and vacuum pumps emissions shall be determined and included in the compliance determination.
- iii. The following test method(s) and procedures shall be employed to determine compliance with the allowable mass emission rates for particulate emissions and NOx and to determine the emission factor for NOx:

Methods 1-5 and 7 of 40 CFR Part 60, Appendix A.

- iv. The test shall be conducted while the emissions unit is operating at or near its maximum capacity, unless otherwise specified or approved by the Northeast District Office of the Ohio EPA.

- 2b. Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Northeast District Office of the Ohio EPA and Lake County General Health District. The "Intent to Test" notification shall describe in detail the proposed test

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: Crucible Machine #5 (P006)

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 Northeast District Office's refusal to accept the results of the emission test(s).

- 2c. Personnel from the Northeast District Office of the Ohio EPA and local air agency shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.
- 2d. A comprehensive written report on the results of the emissions test(s) shall be signed by the person or persons responsible for the tests and submitted to the Northeast District Office of the Ohio EPA 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 Northeast District Office of the Ohio EPA.

VI Miscellaneous Requirements

None

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: Crucible Machine #5 (P006)

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|--|---|---|
| | none | none |

2. Additional Terms and Conditions

None

II Operational Restrictions

None

III Monitoring and/or Recordkeeping

None

IV Reporting Requirements

None

V Testing Requirements

None

VI Miscellaneous Requirements

None

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: Sintering Furnace (P016)

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: Sintering Furnace (P016)

Activity Description: incl mat'l makeup, presint ovens, elect sint furnaces, muffle furn, end plug press

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|--|--|---|
| Lucalox presintering operation including mixing and extruding, the Dorst presses, 4 (four) Harrop electric ovens, and 2 (two) associated thermal oxidizers (A serving ovens 1 and 2, and B serving ovens 3 and 4) for the production of pre-sintered ceramic tubing and end plugs (P016) | OAC rule 3745-31-05(A) PTI #02-1204 | The requirements of this rule are equivalent to the requirements of OAC rules 3745-17-07(A), 3745-17-11(B), 3745-21-07(G)(2), 3745-21-08, and 3745-23-06. |
| | OAC rule 3745-17-07(A) | Visible particulate emissions from any stack serving this emissions unit shall not exceed twenty percent opacity, as a six-minute average, except as provided by rule. |
| | OAC rule 3745-17-11(B)(1) | The total particulate emissions shall not exceed 0.551 pound per hour, based on Table I of OAC rule 3745-17-11 at a maximum process weight rate of 100 pounds per hour. |
| | OAC rule 3745-21-07(G)(2) | See A.I.2.b. |
| | OAC rule 3745-21-08 | See A.I.2.a. |
| | OAC rule 3745-23-06 | See A.I.2.a. |

Emissions Unit: Sintering Furnace (P016)

2. Additional Terms and Conditions

- 2.a** The permittee has satisfied the "best available control techniques and operating practices" required pursuant to OAC rule 3745-21-08(B) by complying with all applicable rules.

On November 5, 2002, OAC rule 3745-21-08 was revised to delete paragraph (B); therefore, paragraph (B) is no longer part of the State regulations. However, that rule revision has not yet been submitted to the U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). When the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-21-08, the requirement to satisfy the "best available control techniques and operating practices" will no longer exist as part of the federally-approved SIP for Ohio, and this term and condition will no longer be applicable to this emissions unit.

The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06(B) by complying with all applicable rules.

- 2.b** This emissions unit is exempt from the requirements of this rule because this emissions unit does not employ photochemically reactive materials as defined in OAC rule 3745-21-01(C)(5).

II Operational Restrictions

1. The permittee shall operate the two thermal oxidizers in accordance with the manufacturer's specifications and good engineering practices.

III Monitoring and/or Recordkeeping

1. The permittee shall collect and record the following information for each month for this emissions unit:
 - a. the company identification for each organic compound material employed and each cleanup material; and
 - b. documentation on whether or not each organic compound and cleanup material employed is a photochemically reactive material as defined in OAC rule 3745-21-01(C)(5).
2. The permittee shall perform weekly checks, when any of the equipment comprising this emissions unit is in operation and when the weather conditions allow, for any visible particulate emissions from the stacks 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;

Emissions Unit: Sintering Furnace (P016)

- b. the total duration of any visible emission incident; and
- c. any corrective actions taken to eliminate the visible emissions.

IV Reporting Requirements

- 1. The permittee shall submit quarterly deviation reports that identify each day during which any photochemically reactive material [as defined in OAC rule 3745-21-01(C)(5)] was employed in this emissions unit.
- 2. The permittee shall submit semiannual written reports that:
 - a. identify all days during which any visible particulate emissions were observed from the stacks serving this emissions unit; and
 - b. describe any corrective actions taken to eliminate the visible particulate emissions.

V Testing Requirements

- 1. Compliance with the emissions limitations in Section A.I.1. of these terms and conditions shall be determined in accordance with the following methods:

1a. Emission Limitation

The total particulate emissions from the stacks serving this emissions unit shall not exceed 0.551 pound per hour, based on Table I of OAC rule 3745-17-11 based on a maximum process weight rate (PWR) of 100 pounds per hour.

Applicable Compliance Method

If required by Ohio EPA, the permittee shall demonstrate compliance through emission testing, in accordance with the 40 CFR Part 60, Method 1-5, and the procedures specified in OAC rule 3745-17-03(B)(10).

1b. Emission Limitation

Visible particulate emissions from any stack serving this emissions unit shall not exceed twenty percent opacity, as a six-minute average, except as provided by rule.

Applicable Compliance Method

If required by Ohio EPA, compliance shall be determined by Method 9, Visible Determination of the Opacity of Emissions from Stationary Sources, 40 CFR Part 60, Appendix A, as specified in OAC rule 3745-17-03(B)(1).

VI Miscellaneous Requirements

None

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: Sintering Furnace (P016)

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|--|---|---|
| | none | none |

2. Additional Terms and Conditions

None

II Operational Restrictions

None

III Monitoring and/or Recordkeeping

None

IV Reporting Requirements

None

V Testing Requirements

None

VI Miscellaneous Requirements

None

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: LD Lathes (P025)

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: LD Lathes (P025)

Activity Description: Natural Gas Fired LD Lathe 16 used to resize quartz tubing

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|---|---|--|
| P025 - Large diameter lathe number 16 (natural gas fired) 1.26 MMBTU/hr; H2 pilot | OAC rule 3745-31-05(A) and (D) PTI 02-13174 (synthetic minor) | NOx emissions shall not exceed 15.23 pounds per hour from this emissions unit and 194.1 TPY based on rolling 12-month summations for all production, repair and bench lathes (emissions units P025 and P032-P043), combined. (The 15.23 pounds per hour limitation is the potential to emit for this emissions unit; therefore, monitoring, record keeping, and reporting requirements are not needed for this emission limitation.) The requirements of this rule also include compliance with the requirements of OAC rules 3745-17-07(A), 3745-17-11(B), 3745-18-06, 3745-21-08, and 3745-23-06(B). The total particulate emissions from the stack serving this emissions unit, shall not exceed 2.4 tons per year. |

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: LD Lathes (P025)

| | |
|---------------------------|--|
| OAC rule 3745-17-07(A) | Visible particulate emissions from the stack associated with this emissions unit shall not exceed twenty percent opacity, as a six-minute average, except as provided by rule. |
| OAC rule 3745-17-11(B)(1) | The total particulate emissions from the stack serving this emissions unit, shall not exceed 0.551 pound per hour based on Table I of OAC rule 3745-17-11 (with a maximum process weight rate of 100 pounds per hour). |
| OAC rule 3745-18-06(E) | See A.I.2.a. |
| OAC rule 3745-21-08 | See A.I.2.b. |
| OAC rule 3745-23-06(B) | See A.I.2.b |

2. Additional Terms and Conditions

- 2.a** Because the process weight rate for this individual lathe is less than 1000 lbs per hour, this emissions unit is exempt from the requirements of this rule.
- 2.b** The permittee has satisfied the "best available control techniques and operating practices" required pursuant to OAC rule 3745-21-08(B) by committing to comply with the best available technology requirements established in Permit to Install 02-13174.

On November 5, 2002, OAC rule 3745-21-08 was revised to delete paragraph (B); therefore, paragraph (B) is no longer part of the State regulations. However, that rule revision has not yet been submitted to the U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). When the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-21-08, the requirement to satisfy the "best available control techniques and operating practices" will no longer exist as part of the federally-approved SIP for Ohio, and this term and condition will no longer be applicable to this emissions unit.

The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06(B) by committing to comply with the best available technology requirements established pursuant to OAC rule 3745-31-05(A)(3) in Permit to Install 02-13174.

- 2.c** It is the permittee's normal practice to vent all of the NO_x emissions from this emissions unit to the stack; however, it is understood that a small number of molecules of NO_x may

Emissions Unit: LD Lathes (P025)

not be captured and vented to the stack. The NOx emissions from the cooling of the tubes produced on this lathe shall be vented to the stack.

2.d All particulate emissions from this emissions unit shall be vented to the stack.

2.e This emissions unit is capable of burning only natural gas and hydrogen.

II Operational Restrictions

1. The maximum annual fuel usage for emissions units P025, P032-P042, combined, shall not exceed 30.29 million standard cubic feet of natural gas based on rolling, 12-month summations.
2. To ensure enforceability during the first twelve (12) months of operation following the effective date of PTI 02-13174, the permittee shall not exceed the following natural gas usage levels for all 11 production lathes:

| CALENDAR MONTHS FOLLOWING PTI EFFECTIVE DATE | MAXIMUM ALLOWABLE CUMULATIVE FUEL USAGE |
|--|---|
|--|---|

(mmSCF)
(natural gas)

| | |
|------|-------|
| 1-1 | 10.0 |
| 1-2 | 11.8 |
| 1-3 | 13.6 |
| 1-4 | 15.5 |
| 1-5 | 17.3 |
| 1-6 | 19.1 |
| 1-7 | 21.0 |
| 1-8 | 22.8 |
| 1-9 | 24.6 |
| 1-10 | 26.5 |
| 1-11 | 28.4 |
| 1-12 | 30.29 |

After the first 12 calendar months of operation following the effective date of PTI 02-13174, the permittee shall comply with the annual natural gas usage limitations based on rolling, 12-month summations.

III Monitoring and/or Recordkeeping

1. The permittee shall perform daily checks, when any of the equipment comprising this 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:

Facility Name: GE Willoughby Quartz Plant
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Emissions Unit: LD Lathes (P025)

- a. the color of the emissions;
- b. the total duration of any visible emission incident; and
- c. any corrective actions taken to eliminate the visible emissions.

Notwithstanding the frequency of reporting requirements specified in section A.IV, the permittee may reduce the frequency of visual observations for this emissions unit from daily to weekly readings if the following conditions are met:

- a. for 45 days this emissions unit's visual observations indicate no visible emissions; and
- b. the permittee continues to comply with all the record keeping and monitoring requirements specified in section A.III.1.

The permittee shall revert to daily readings for this emissions unit if any visible emissions are observed. The permittee may again reduce the frequency of visual observations from daily to weekly after obtaining 45 consecutive days of observations with no visible emissions for this emissions unit.

2. The permittee shall maintain monthly records of the following information for emissions units P025 and P032-P042, combined:

- a. the total natural gas usage;
- b. the rolling, 12-month natural gas usage;
- c. the rolling, 12-month NO_x emissions.

Also, during the first 12 calendar months of operation, after the effective date of PTI #02-13174, the permittee shall record the cumulative natural gas usage, for all production lathes (emissions units P025 and P032-P042), combined.

Total NO_x monthly emissions, in tons, resulting from the natural gas usage in all production lathes (16-27), combined, shall be calculated using the following equation:

$$\text{NO}_x, \text{ in tons} = \frac{\text{total natural gas usage (mmscf/month)} \times 12.09 \text{ lbs/mmBtu}}{1050 \text{ mmBtu/mmscf} \times 1 \text{ ton/2000 lbs}}$$

The emission factor for NO_x is based on a 1998 stack test and equals 12.09 lbs/mmBtu.

The natural gas usage is for all LD lathes 16-27, combined.

The heat content of natural gas = 1050 mmBtu/mmscf.

Monthly results shall be summed to obtain the annual and rolling NO_x emissions.

IV Reporting Requirements

1. The permittee shall submit semiannual written reports that:

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: LD Lathes (P025)

- a. identify all days during which any visible particulate emissions were observed from the stack serving this emissions unit; and
- b. describe any corrective actions taken to eliminate the visible particulate emissions.

These reports shall be submitted to the Northeast District Office of the Ohio EPA by January 31 and July 31 of each year and shall cover the previous 6-month period.

2. The permittee shall submit quarterly deviation (excursion) reports that identify all exceedances of the following:
 - a. after the first twelve calendar months of operation following the effective date of PTI 02-13174, the rolling, 12-month limitations for natural gas fuel usage for all production lathes (emissions units P025 and P032-P042), combined; and
 - b. for the first 12 calendar months of operation following the effective date of PTI 02-13174, the monthly allowable cumulative fuel usage for natural gas for all production lathes (emissions units P025 and P032-P042), combined.
3. The permittee shall submit annual reports that specify the total amount of natural gas used and the total amount of NOx emitted from emissions units P025 and P032-P042 for the previous calendar year by April 15 of the following year.

V Testing Requirements

1. Compliance with the emission limitations in Section A.I.1. of these terms and conditions shall be determined in accordance with the following methods:

- 1a. Emission Limitation

Visible particulate emissions from any stack serving this emissions unit shall not exceed twenty percent opacity, as a six- minute average, except as provided by rule.

Applicable Compliance Method

If required by Ohio EPA, compliance shall be determined by Method 9, Visible Determination of the Opacity of Emissions from Stationary Sources, 40 CFR Part 60, Appendix A, as specified in OAC rule 3745-17-03(B)(1).

- 1b. Emission Limitation

0.551 pound per hour and 2.4 tons per year of particulate emissions

Applicable Compliance Method

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: LD Lathes (P025)

If required by Ohio EPA, compliance with the hourly particulate emission limit above shall be determined in accordance with OAC rule 3745-17-03 and Method 5 of 40 CFR Part 60, Appendix A.

Because the annual particulate limit was established by multiplying the short-term limit of 0.551 lb/hr by 8,760 hours of operation per year and dividing by 2000 lbs/ton, compliance with the annual limit is assumed provided that compliance with the hourly limit is maintained.

1c. Emission Limitation

NOx emissions shall not exceed 15.23 pounds per hour from this emissions unit, and 194.1 TPY, based on rolling 12-month summations from all production, repair and bench lathes (emissions units P025, P032-P043, combined).

Applicable Compliance Method

If required by Ohio EPA, compliance with the hourly NOx emission limitation above, shall be determined by using Method 7 of 40 CFR Part 60, Appendix A.

Compliance with monthly, annual and rolling, 12-month NOx emission limitations shall be determined in accordance with the equations and record keeping in Section A.III.2. of these terms and conditions and summed with the total annual and rolling NOx emissions from all production and bench lathes.

2. The permittee shall conduct, or have conducted, emission testing of the mass emission rates for particulate emissions and NOx for this emissions unit in accordance with the following:

- a. The emission testing for NOx and particulate emissions shall be conducted within 12 months after the effective date of Permit to Install 02-13174. Thereafter, emission testing for NOx shall be conducted annually.

If the permittee demonstrates that all 6 production lathes rated at 1.26 MmBtu/hr (emissions units P025, and P032-P036) are essentially identical in operation, size and capacity, configuration and product line, in which case, with approval from the Ohio EPA, the permittee shall test one representative unit, at or near maximum capacity, on an annual basis.

- b. The emission testing shall be conducted to determine compliance with the allowable emission rates for particulate emissions and NOx.
- c. The following test methods from 40 CFR Part 60, Appendix A, shall be employed to determine compliance with the allowable emission rates for particulate and NOx respectively:

Method 5 "Determination of Particulate Emissions from Stationary Sources" and Method 7 "Determination of Nitrogen Oxide Emissions from Stationary Sources and the requirements of OAC rule 3745-31-05.

Facility Name: GE Willoughby Quartz Plant
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Emissions Unit: LD Lathes (P025)

- d. The tests shall be conducted while the emissions unit is operating at or near its maximum capacity, unless otherwise specified by the Northeast District of the Ohio EPA.

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 Northeast District Office and the Lake County General Health District. 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 tests.

Failure to submit such notification for review and approval prior to the tests may result in the Ohio EPA Northeast District Office's refusal to accept the results of the emissions tests.

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

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

VI Miscellaneous Requirements

None

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: LD Lathes (P025)

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|--|---|---|
| | none | none |

2. Additional Terms and Conditions

None

II Operational Restrictions

None

III Monitoring and/or Recordkeeping

None

IV Reporting Requirements

None

V Testing Requirements

None

VI Miscellaneous Requirements

None

Emissions Unit: (P026)

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: (P026)

Activity Description:

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|---|--------------------------------------|---|
| Electric Crucible machine # 6, OAC rule 3745-31-05(A) and (D) equipped with a primary dust PTI #02-13174 collector, and sand feed systems, (synthetic minor) equipped with a primary dust collector, a secondary dust collector, including vacuum pumps, each with a mist eliminator, and the blockhouse vent. (P026) | | <p>Nitrogen oxides (NOx) emissions from this emissions unit shall not exceed 19.48 pounds per hour. The combined NOx emissions from emissions units P026 and P031, shall not exceed 31.8 tons per rolling, 12-month period. (The 19.48 pounds per hour limitation is the potential to emit for this emissions unit; therefore, monitoring, record keeping, and reporting requirements are not needed for this emission limitation.) See A.I.2.e.</p> <p>The total particulate emissions from this emissions unit (P031) alone, that are released through stacks serving this emissions unit, shall not exceed 7.1 tons per year.</p> <p>Visible particulate emissions of fugitive dust from this emissions unit shall not exceed 10 percent opacity, as a 3-minute average.</p> |

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: (P026)

Reasonably available control measures that are sufficient to minimize or eliminate visible emissions of fugitive dust shall be employed for this emissions unit. (See A.I.2.a.)

The requirements of this rule also include compliance with the requirements of OAC rules 3745-17-07(A), 3745-17-11(B), 3745-21-08, and 3745-23-06(B).

OAC rule 3745-17-07(A)

Visible particulate emissions from each stack serving this emissions unit, shall not exceed twenty percent opacity, as a six-minute average, except as provided by rule.

OAC rule 3745-17-08(B)

See A.I.2.c.

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

The total particulate emissions from this emissions unit from all the stacks serving or associated with this emissions unit, shall not exceed 1.62 pounds per hour based on Table I of OAC rule 3745-17-11(with a maximum process weight rate of 500 pounds per hour). See Section A.I.2.f.

OAC rule 3745-21-08

See A.I.2.b

OAC rule 3745-23-06(B)

See A.I.2.b.

2. Additional Terms and Conditions

- 2.a** The permittee shall minimize or eliminate visible emissions of fugitive dust through the employment of reasonably available control measures (RACM). These measures shall include, but not be limited to, the following:
- i. the use of adequate hooding or equivalent capture devices for the crucible filling, arc fusion, and crucible cooling operations, for the sand storage and transfer equipment, and for the equipment used to mechanically finish quartz crucibles and tubing including, but not limited to saws, sanders, bevelers, trimmers and grinders; and

Emissions Unit: (P026)

- ii. all fugitive dust captured shall be vented to the dust collectors.

By employing RACM, visible emissions of fugitive dust from any non-stack egress points from the building shall be minimized.

- 2.b** The permittee has satisfied the "best available control techniques and operating practices" required pursuant to OAC rule 3745-21-08(B) by committing to comply with the best available technology requirements established in Permit to Install 02-13174.

On November 5, 2002, OAC rule 3745-21-08 was revised to delete paragraph (B); therefore, paragraph (B) is no longer part of the State regulations. However, that rule revision has not yet been submitted to the U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). When the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-21-08, the requirement to satisfy the "best available control techniques and operating practices" will no longer exist as part of the federally-approved SIP for Ohio, and this term and condition will no longer be applicable to this emissions unit.

The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06(B) by committing to comply with the best available technology requirements established pursuant to OAC rule 3745-31-05(A)(3) in Permit to Install 02-13174.

- 2.c** This facility is not located in an Appendix A area; therefore, in accordance with OAC rule 3745-17-08(A)(1), OAC rule 3745-17-08(B) is not applicable to this emissions unit.

- 2.d** It is the permittee's normal practice to vent all of the NOx emissions from this emissions unit to the stacks; however, it is understood that a small number of molecules of NOx may not be captured and vented to the stacks. The NOx emissions from the cooling of the crucible machines shall be vented to the stacks.

- 2.e** The maximum rate of NOx emissions from CM6 and CM7 (P026 and P031) combined shall not exceed 31.8 tons per year, based on rolling, 12-month summations of the monthly emissions.

The production rate of variable size crucibles, for both crucible machines numbers 6 and 7, combined (emissions units P026 and P031), shall be restricted such that the sum of the emissions from the production of all sizes of crucibles is less than the allowable NOx emission rate. The emission rate for each size of crucible shall be based on the following equation:

$$[\text{number of crucibles produced of a particular size}] \times [\text{the emission factor for that size from the most recent stack test}] = \text{NOx emissions}$$

The following are the current NOx emission factors provided on page 63 of 59 of the addendum to the PTI application 02-13174 received at Ohio EPA on February 5, 2002:

Facility Name: GE Willoughby Quartz Plant
 Facility ID: 02-43-16-0086

Emissions Unit: (P026)

| | | |
|----------------------------|------|-----------------|
| 12 inch crucibles(510/520) | 0.63 | pound/crucible |
| 12 inch crucibles(530) | 0.98 | pound/crucible |
| 14 inch crucibles(510/520) | 1.65 | pounds/crucible |
| 14 inch crucibles(530) | 2.19 | pounds/crucible |
| 16 inch crucibles(510/520) | 2.57 | pounds/crucible |
| 16 inch crucibles(530) | 2.12 | pounds/crucible |
| 18 inch crucibles | 2.85 | pounds/crucible |

To ensure enforceability of this provision during the first twelve (12) months of operation following the effective date of PTI 02-13174, the permittee shall not exceed the following cumulative NOx emission limitations:

| CALENDAR MONTH(S) FOLLOWING PTI EFFECTIVE DATE | TOTAL ALLOWABLE, CUMULATIVE NOx EMISSIONS (TPY) (P026 & P031, combined) |
|--|---|
| 1-1 | 10.0 |
| 1-2 | 12.0 |
| 1-3 | 14.0 |
| 1-4 | 16.0 |
| 1-5 | 18.0 |
| 1-6 | 20.0 |
| 1-7 | 22.0 |
| 1-8 | 24.0 |
| 1-9 | 26.0 |
| 1-10 | 28.0 |
| 1-11 | 30.0 |
| 1-12 | 31.8 |

After the first twelve calendar months of operation following the effective date of PTI 02-13174, compliance with the NOx combined emissions limitation of 31.8 tons per year, shall be based upon rolling, twelve-month summations of the NOx emission rates.

- 2.f.** The maximum rate of particulate emissions (PE) shall not exceed 1.62 pounds per hour, based on daily emissions and operating hours.

The production rate of the crucibles shall be restricted such that total emissions from all emission points are no greater than the allowable particulate emission rate. For emissions from the blockhouse stack (F), the emission rate for each size of crucible shall be based on the following equation:

$$[\text{number of crucibles produced of a particular size}] \times [\text{the emission factor for that size from the most recent stack test}] = \text{PE}$$

Emissions Unit: (P026)

The following are the current particulate emission factors from the Newark facility from the permit to install application 02-13174 and are from the most recent stack tests as of the effective date of the permit to install :

| | |
|--|----------------------|
| 12 inch and 14 inch crucibles: all types | 0.171 pound/crucible |
| 16 inch crucibles: all types | 0.232 pound/crucible |
| 18 inch crucibles | 0.366 pound/crucible |

PE from the other stacks or vents for this emissions unit shall be assumed equal to the maximum controlled or uncontrolled emissions, based on the application for this Permit to Install, and as shown in Section V.1.c of these terms and conditions.

II Operational Restrictions

1. The pressure drop, for each of the dust collectors, while the emissions unit is in operation, shall be maintained within the range that was established during the most recent emission test that demonstrated the emissions unit was in compliance.

The permittee may petition the Northeast District Office of the Ohio EPA for reestablishment of the pressure drop range at any time provided the permittee can demonstrate that the operating conditions upon which the pressure drop range was previously established are no longer applicable.

This term shall not be effective until 30 days after the permittee receives the final results of the emissions testing required in Section V of this permit.

2. The permittee shall produce only one size (diameter) of crucible each hour. Changeover from production of crucibles of one size to a different size shall be conducted such that production of the second size crucible begins in a different hour than production of the first size ended.
3. Crucible production may be calculated on a daily average basis based on daily production and operating hours; however, crucible production for each hour from this emissions unit shall not exceed the following:

| <u>Crucible Size</u> | <u>Maximum Production</u> (crucibles/hour) |
|--|---|
| 12 inch and 14 inch crucibles: all types | 8.5 * |
| 16 inch crucibles: all types | 6.5* |
| 18 inch crucibles | 4 |

* Production of a crucible may begin in one hour and end in the next hour.

Emissions Unit: (P026)

III Monitoring and/or Recordkeeping

1. The permittee shall perform weekly checks, when any of the equipment comprising this emissions unit is in operation and when the weather conditions allow, for any visible fugitive particulate emissions from the building 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 operation log. If visible emissions are observed, the permittee shall also note the following in the operations log:
 - a. the location(s) and color(s) of the emissions;
 - b. whether the emissions are representative of normal conditions;
 - c. if the emissions are not representative of normal operations, the cause(s) of the abnormal emissions;
 - d. the total duration of any visible emission incident; and
 - e. any corrective actions taken to eliminate the visible emissions.

2. The permittee shall perform daily checks, when any of the equipment comprising this emissions unit is in operation and when the weather conditions allow, for any visible particulate emissions from the stacks 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. the total duration of any visible emission incident; and
 - c. any corrective actions taken to eliminate the visible emissions.

Notwithstanding the frequency of reporting requirements specified in section A.IV, the permittee may reduce the frequency of visual observations for this emissions unit from daily to weekly readings if the following conditions are met:

- a. for 1 full quarter this emissions unit's visual observations indicate no visible emissions; and
- b. the permittee continues to comply with all the record keeping and monitoring requirements specified in section A.III.2.

The permittee shall revert to daily readings for this emissions unit if any visible emissions are observed. The permittee may again reduce the frequency of visual observations from daily to weekly after obtaining 1 full quarter of observations with no visible emissions for this emissions unit.

Emissions Unit: (P026)

3. The permittee shall properly operate and maintain equipment to monitor the pressure drop across each dust collector while the emissions unit is in operation. The monitoring equipment shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manual(s). The permittee shall record the pressure drop across each dust collector on a daily basis.
4. The permittee shall maintain monthly records of the following information for emissions units P026 and P031:
 - a. the number of crucibles of each size produced;
 - b. the NOx emission factor for each size of crucible produced;
 - c. the total NOx emissions from all crucibles produced, in pounds and tons;
 - d. during the first 12 calendar months of operation following the effective date of PTI 02-13174, the cumulative NOx emissions, in tons; and
 - e. beginning after the first 12 calendar months of operation following the effective date of PTI 02-13174, the rolling, 12-month summation of the NOx emissions, in tons.
5. The permittee shall maintain daily records of the following information for this emissions unit:
 - a. the number of crucibles of each size produced;
 - b. the hours of operation; and
 - c. the average hourly particulate emission rate, in pounds per hour.

IV Reporting Requirements

1. The permittee shall submit semiannual written reports that:
 - a. identify all days during which any visible fugitive particulate emissions were observed from the egress points (i.e., building windows, doors, roof monitors, etc.) serving this emissions unit; and
 - b. describe any corrective actions taken to eliminate the visible fugitive particulate emissions.

These reports shall be submitted to the Northeast District Office of the Ohio EPA by January 31 and July 31 of each year and shall cover the previous 6-month period.

2. The permittee shall submit semiannual written reports that:
 - a. identify all days during which any visible particulate emissions were observed from the stacks serving this emissions unit; and

Emissions Unit: (P026)

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

These reports shall be submitted to the Northeast District Office of the Ohio EPA by January 31 and July 31 of each year and shall cover the previous 6-month period.

- 3. The permittee shall submit quarterly pressure drop deviation (excursion) reports that identify all periods of time during which the pressure drop across each of the dust collectors did not comply with the allowable ranges specified in Section A.II.1.
- 4. The permittee shall submit quarterly deviation (excursion) reports that identify all exceedances of the following:
 - a. for the first 12 calendar months of operation following the effective date of PTI 02-13174, the allowable, monthly, cumulative NOx emission limitation for emissions units P026 and P031, combined; and
 - b. after the first 12 calendar months of operation following the effective date of PTI 02-13174, the rolling, 12-month NOx emission limitation for emissions units P026 and P031, combined.
- 5. The permittee shall submit annual reports that summarize the the total annual emissions of NOx from this emissions unit.

These reports shall be submitted to the Northeast District Office of the Ohio EPA by April 15 of each year and shall cover the previous 12-month period.

- 6. The permittee shall submit quarterly deviation (excursion) reports that identify any exceedances of the hourly particulate emission limitation.

V Testing Requirements

- 1. Compliance with the emissions limitations in Section A.I.1. of these terms and conditions shall be determined in accordance with the following methods:

- 1a. Emission Limitation

Visible particulate emissions from each stack serving this emissions unit shall not exceed twenty percent opacity, as a six-minute average, except as provided by rule.

Applicable Compliance Method

If required by Ohio EPA, compliance shall be determined by Method 9, Visible Determination of the Opacity of Emissions from Stationary Sources, 40 CFR Part 60, Appendix A, as specified in OAC rule 3745-17-03(B)(1).

- 1b. Emission Limitation

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: (P026)

Visible particulate emissions of fugitive dust from this emissions unit shall not exceed 10 (ten) percent opacity, as a 3-minute average.

Applicable Compliance Method

If required by Ohio EPA, compliance with the above visible emission limitation shall be determined using Method 9 of 40 CFR, Part 60, Appendix A.

1c. Emission Limitation

The total particulate emissions attributable to this emissions unit, that are released through stacks or vents, shall not exceed 1.62 pounds per hour based on Table I of OAC rule 3745-17-11 and a maximum process weight (PWR) of 500 pounds per hour, and 7.1 tons per year particulate emissions.

Applicable Compliance Method

Compliance with the particulate limits above, shall be determined in accordance with the following:

If required by the Ohio EPA, emission testing shall be performed for each stack and dust collector outlet to demonstrate compliance with the allowable hourly mass emission rate.

The following test method(s) and procedures shall be employed to determine compliance with the allowable mass emission rate:

Methods 1-5 of 40 CFR Part 60, Appendix A.

Performance testing shall be conducted in accordance with OAC rule 3745-17-03(B)(10).

Because the allowable annual mass emission rate was established by multiplying the short-term limit of 1.62 lbs per hour of particulate emissions by 8760 hours of operation per year and dividing by 2000 lbs/ton, compliance with the annual limit is assumed providing that compliance with the short-term limit is maintained.

In addition, compliance with the hourly PE limitation may be determined as follows:

$$\text{pounds per hour PE} = L + F + C + V$$

where:

L = the maximum emissions, in pound per hour, from sand loading into crucible pots
= 498 lbs/hr x 0.116 lb/ton x 0.01 x 1 ton/2000 lbs

F = emissions, in pound per hour, from crucible forming through electric arc fusion,
based on the record keeping in Section III.5 and the following formula:

Facility Name: GE Willoughby Quartz Plant
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Emissions Unit: (P026)

[number of crucibles produced of a particular size] x [the emission factor for that size from the most recent stack test]

C = the maximum emissions, in pound per hour, from crucible cooling after fusion
= 498 lbs/hr x 0.116 lb/ton x 0.01 x 1 ton/2000 lbs

V = the maximum emissions, in pound per hour, from vacuum pumps
= 2 x 0.05 lb/hr

The emission factor of 0.116 lb/ton for sand transfer was derived based on information provided in AP-42, 5th edition, Volume I, Chapter 11, Mineral Products Industry, Table 11.12-2, January 1995.

1d. Emission Limitation

The allowable hourly NO_x emission rate is 19.48 pounds per hour.

Applicable Compliance Method

Compliance with the hourly emission rate shall be demonstrated by the record keeping in A.III.4. and by emission testing using the following test methods:

Methods 1-4 and 7 of 40 CFR Part 60, Appendix A "Determination of Nitrogen Oxides Emissions from Stationary Sources".

1e. Emission Limitation

NO_x emissions from CM6 and CM7 (P026 and P031) combined shall not exceed 31.8 tons per year, based on rolling, 12-month summations of the monthly emissions.

Applicable Compliance Method

Compliance with the above limitation shall be demonstrated by the record keeping in A.III.4 of these terms and conditions.

Compliance with monthly, annual and rolling, 12-month NO_x emission limitations shall be determined in accordance with the equation in Section A.I.2.e. and record keeping in Section A.III.4 of these terms and conditions and results summed with the total annual and rolling NO_x emissions from P026 and P031.

2a. Emission Testing Requirements

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

Emissions Unit: (P026)

- i. The emission testing shall be conducted within 12 months after the effective date of PTI 02-13174 and shall be conducted again within 12 months prior to permit expiration.
 - ii. The emission testing shall be conducted for each uncontrolled stack and each dust collector outlet, including the blockhouse exhaust stack, and shall be conducted to demonstrate compliance with the allowable hourly mass emission rate for particulate emissions, the allowable hourly mass emission rate for NO_x emissions, where NO_x is or could be emitted, and to determine the NO_x emission factors for crucible production. For the purposes of emission testing, the blockhouse vent and vacuum pumps emissions shall be determined and included in the compliance determination.
 - iii. The following test method(s) and procedures shall be employed to determine compliance with the allowable mass emission rates for particulate emissions and NO_x and to determine emission factors for NO_x:

Methods 1-5 and 7 of 40 CFR Part 60, Appendix A.
 - iv. The test shall be conducted while the emissions unit is operating at or near its maximum capacity unless otherwise specified or approved by the Northeast District Office of the Ohio EPA.
- 2b. Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Northeast District Office of the Ohio EPA and Lake County General Health District. 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 Northeast District Office's refusal to accept the results of the emission test(s).
- 2c. Personnel from the Northeast District Office of the Ohio EPA and local air agency shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.
- 2d. A comprehensive written report on the results of the emissions test(s) shall be signed by the person or persons responsible for the tests and submitted to the Northeast District Office of the Ohio EPA 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 Northeast District Office of the Ohio EPA.

VI Miscellaneous Requirements

None

Emissions Unit: (P026)

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|--|---|---|
| | none | none |

2. Additional Terms and Conditions

None

II Operational Restrictions

None

III Monitoring and/or Recordkeeping

None

IV Reporting Requirements

None

V Testing Requirements

None

VI Miscellaneous Requirements

None

Emissions Unit: (P027)

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: (P027)

Activity Description: Tumblers numbers 1-5 to remove sand impurities, equipped with a packed bed scrubber

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|---|--|---|
| Tumblers numbers 1-5 to remove sand impurities, equipped with a packed bed scrubber(See A.I.2.a.) (P027) | OAC rule 3745-31-05(A) PTI # 02-8946 (modification of PTI #02-6199 with tumbler #5 addition); PTI #02-1369 | <p>The requirements of this rule also include compliance with the requirements of OAC rules 3 7 4 5 - 1 7 - 0 7 (A) a n d 3745-17-11(B)(1).</p> <p>There shall be no visible particulate emissions from this emissions unit.</p> <p>Total particulate emissions from P001 and P027, and P029, that is, the six tumblers, combined, shall not exceed 0.030 grain/dscf, 3.84 pounds per hour, and 16.82 tons per year. Particulate emissions shall include HCl and HF acid mist, hydrofluoric silicate acid, and sand.</p> <p>99.3% particulate removal efficiency for the fume scrubber (See A.I.2.a.)</p> <p>The emission limitation specified by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).</p> |
| | OAC rule 3745-17-11(B)(1) | |

Emissions Unit: (P027)

OAC rule 3745-17-07(A)

The opacity limitation specified by this rule is less stringent than the opacity limitation established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

- 2.a P027 includes tumbler numbers 1-5 and P029 includes tumbler 6, all of which are vented to the packed bed scrubber.
- 2.b All particulate emissions from this emissions unit shall be vented to the packed bed scrubber.

II Operational Restrictions

- 1. The permittee shall operate the packed bed scrubber associated with this emissions unit at all times while the emissions unit is in operation such that:
 - a. the minimum scrubber recirculating water flow rate is continually maintained at or above 150 gallons per minute, or above, or the water flow rate during the most recent emission testing that demonstrated that the emissions unit was in compliance; and
 - b. the pH of the scrubber liquor is continually maintained in the range established during the last emissions testing that demonstrated that the emissions unit was in compliance.

The permittee may petition the Northeast District Office of the Ohio EPA for reestablishment of the water flow rate and pH ranges at any time, provided the permittee can demonstrate that the operating conditions upon which these ranges were previously established are no longer appropriate.

III Monitoring and/or Recordkeeping

- 1. The permittee shall perform daily checks, when any of the equipment comprising this emissions unit is in operation and when the weather conditions allow, for any visible particulate emissions from the stacks 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. the total duration of any visible emission incident; and
 - c. any corrective actions taken to eliminate the visible emissions.

Emissions Unit: (P027)

Notwithstanding the frequency of reporting requirements specified in section A.IV, the permittee may reduce the frequency of visual observations for this emissions unit from daily to weekly readings if the following conditions are met:

- a. for 1 full quarter the facility's visual observations indicate no visible emissions; and
- b. the permittee continues to comply with all the record keeping and monitoring requirements specified in section A.III.1.

The permittee shall revert to daily readings if any visible emissions are observed.

2. The permittee shall properly operate and maintain equipment to monitor and continuously record the scrubber recirculating water flow rate and the pH of the scrubber water, while the emissions unit is in operation. The monitoring devices and any recorders shall be calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.

The permittee shall continuously record the following information each day the emissions unit is in operation:

- a. the scrubber recirculating water flow rate, in gallons per minute; and
- b. the pH of the scrubber liquor.

The permittee also shall document each day the operating times for the capture (collection) system, control device, monitoring equipment, and the associated emissions unit.

IV Reporting Requirements

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

These reports shall be submitted to the Northeast District Office of the Ohio EPA by January 31 and July 31 of each year and shall cover the previous 6-month period.

2. The permittee shall submit quarterly deviation (excursion) reports that identify all periods of time during which the following scrubber parameters were not maintained within the required levels:
 - a. the scrubber recirculating water flow rate; and
 - b. the pH of the scrubber water.

Emissions Unit: (P027)

V Testing Requirements

1. Compliance with the emission limitations in Section A.I.1. of these terms and conditions shall be determined in accordance with the following methods:

- 1a. Emission Limitation

Total particulate emissions from emissions units P001, P027 and P029 shall not exceed 0.030 grain/dscf, 3.84 pounds per hour and 16.82 tons per year. Particulate emissions shall include HCl and HF acid mist, hydrofluoric silicate acid and sand.

Applicable Compliance Method

If required by the Ohio EPA, compliance with the hourly particulate emission limit above, shall be determined in accordance with OAC rule 3745-17-03 and Method 5 and Method 26A of 40 CFR Part 60, Appendix A.

Because the annual particulate limit was established by multiplying the short-term limit of 3.84 lbs/hour by 8,760 hours of operation per year and dividing by 2000 lbs/ton, compliance with the annual limit is assumed provided that compliance with the hourly limit is maintained.

- 1b. Emission Limitation

no visible particulate emissions

Applicable Compliance Method

If required by Ohio EPA, compliance with the visible emissions limitation above shall be demonstrated in accordance with 40 CFR Part 60, Appendix A, Method 22. (Although Method 22 applies to fugitive emissions units, the visible/no visible emissions observation technique of Method 22 can be applied to ducted emissions.)

- 1c. The permittee shall conduct, or have conducted, emission testing for this emissions unit in accordance with the following requirements:

- i. The emission testing shall be conducted within 12 months after issuance of this permit and within 12 months of permit expiration.
- ii. The emission testing shall be conducted to determine compliance with the allowable emission rates for particulate emissions including emissions of acid mists, and the uncontrolled mass emission rate.

The following test methods shall be employed: Method 5 and Method 26 of 40 CFR, Part 60, Appendix A.

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Emissions Unit: (P027)

- iii. The test(s) shall be conducted while the equipment are operating at or near their maximum capacities, unless otherwise specified or approved by the Northeast District Office of the Ohio EPA.
- iv. The permittee shall measure and continuously record the pressure drop across the scrubber, in inches of water, the scrubber water flow rate, and the scrubber water pH within the scrubber for this emissions unit during each test run.

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 Northeast District Office and the Lake County General Health District. 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 Northeast District Office's refusal to accept the results of the emissions test(s).

Personnel from the Ohio EPA Northeast District Office and/or Lake County General Health District 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.

A comprehensive written report on the results fo the emissions test(s) shall be signed by the person or persons responsible for the tests and submitted to the Northeast District Office of the Ohio EPA 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 Northeast District Office of the Ohio EPA.

VI Miscellaneous Requirements

None

Emissions Unit: (P027)

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|--|---|---|
| | none | none |

2. Additional Terms and Conditions

None

II Operational Restrictions

None

III Monitoring and/or Recordkeeping

None

IV Reporting Requirements

None

V Testing Requirements

None

VI Miscellaneous Requirements

None

Emissions Unit: (P029)

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: (P029)

Activity Description: Tumbler 6 to remove sand impurities, equipped with a packed bed scrubber

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|--|---|--|
| Tumbler 6 to remove sand impurities, equipped with a packed bed scrubber (See A.I.2.a.) (P029) | OAC rule 3745-31-05(A) PTI # 02-0059 PTI #02-8946 (modification of PTI #02-6199 with tumbler number 5 addition) | The requirements of this rule also include compliance with the requirements of OAC rules 3745-17-07(A) and 3745-17-11(B)(1). There shall be no visible particulate emissions from this emissions unit. Total particulate emissions from P001, P027 and P029, that is the six tumblers combined, shall not exceed 0.030 grains/dscf , 3.84 pounds per hour, and 16.82 tons per year. Particulate emissions shall include HCl and HF acid mist and sand. 99.3% particulate removal efficiency for the fume scrubber (See A.I.2.a.) |
| | OAC rule 3745-17-11(B)(1) | The emission limitation specified by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3). |

Emissions Unit: (P029)

OAC rule 3745-17-07(A)

The opacity limitation specified by this rule is less stringent than the opacity limitation established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

- 2.a P027 includes tumbler numbers 1-5 and P029 includes tumbler 6, all of which are vented to the packed bed scrubber.
- 2.b This fume scrubber also serves the heat removal hoods and the HF acid wash tanks' hoods.
- 2.c All particulate emissions from this emissions unit shall be vented to the packed bed scrubber.

II Operational Restrictions

- 1. The permittee shall operate the packed bed scrubber associated with this emissions unit at all times while the emissions unit is in operation such that:
 - a. the minimum scrubber recirculating water flow rate is continually maintained at or above 150 gallons per minute, or above, or the water flow rate during the most recent emission testing that demonstrated that the emissions unit was in compliance; and
 - b. the pH of the scrubber water is continually maintained in the range established during the last emissions testing that demonstrated that the emissions unit was in compliance.

The permittee may petition the Northeast District Office of the Ohio EPA for reestablishment of the water flow rate and the pH ranges at any time, provided the permittee can demonstrate that the operating conditions upon which these ranges were previously established are no longer appropriate.

III Monitoring and/or Recordkeeping

- 1. The permittee shall perform daily checks, when any of the equipment comprising this emissions unit is in operation and when the weather conditions allow, for any visible particulate emissions from the stacks 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. the total duration of any visible emission incident; and
 - c. any corrective actions taken to eliminate the visible emissions.

Emissions Unit: (P029)

Notwithstanding the frequency of reporting requirements specified in section A.IV, the permittee may reduce the frequency of visual observations for this emissions from daily to weekly readings if the following conditions are met:

- a. for 1 full quarter the facility's visual observations indicate no visible emissions; and
- b. the permittee continues to comply with all the record keeping and monitoring requirements specified in section A.III.1.

The permittee shall revert to daily readings if any visible emissions are observed.

2. The permittee shall properly operate and maintain equipment to monitor and continuously record the scrubber recirculating water flow rate and the pH of the scrubber water, while the emissions unit is in operation. The monitoring devices and any recorders shall be calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.

The permittee shall continuously record the following information each day the emissions unit is in operation:

- a. the scrubber recirculating water flow rate, in gallons per minute; and
- b. the pH of the scrubber liquor.

The permittee also shall document each day the operating times for the capture (collection) system, control device, monitoring equipment, and the associated emissions unit.

IV Reporting Requirements

1. The permittee shall submit semiannual reports that:
 - a. identify all days during which any visible particulate emissions were observed from the stacks serving this emissions unit; and
 - b. describe any corrective actions taken to eliminate the visible particulate emissions.

These reports shall be submitted to the Northeast District Office of the Ohio EPA by January 31 and July 31 of each year and shall cover the previous 6-month period.

2. The permittee shall submit quarterly deviation (excursion) reports that identify all periods of time during which the following scrubber parameters were not maintained within the required levels:
 - a. the scrubber circulating water flow rate; and
 - b. the pH of the scrubber water.

Emissions Unit: (P029)

V Testing Requirements

1. Compliance with the emissions limitations in Section A.I.1. of these terms and conditions shall be determined in accordance with the following methods:

- 1a. Emission Limitation

Total particulate emissions from emissions units P001, P027 and P029 shall not exceed 0.030 grain/dscf, 3.84 pounds per hour and 16.82 tons per year. Particulate emissions shall include HCl and HF acid mist, hydrofluoric silicate acid and sand.

Applicable Compliance Method

If required by the Ohio EPA, compliance with the hourly particulate emission limit above, shall be determined in accordance with OAC rule 3745-17-03 and Method 5 and Method 26A of 40 CFR Part 60, Appendix A.

Because the annual particulate limit was established by multiplying the short-term limit of 3.84 lbs/hour by 8,760 hours of operation per year and dividing by 2000 lbs/hr, compliance with the annual limit is assumed provided that compliance with the hourly limit is maintained.

- 1b. Emission Limitation

no visible emissions

Applicable Compliance Method

Compliance with the visible emissions limitation above shall be demonstrated in accordance with 40 CFR Part 60, Appendix A, Method 22. (Although Method 22 applies to fugitive emissions units, the visible/no visible emissions observation technique of Method 22 can be applied to ducted emissions.)

- 1c. The permittee shall conduct, or have conducted, emission testing for this emissions unit in accordance with the following requirements:

- i. The emission testing shall be conducted within 12 months after issuance of this permit and within 12 months of permit expiration.
- ii. The emission testing shall be conducted to determine compliance with the allowable emission rates for particulate emissions including emissions of acid mists.

The following test methods shall be employed: Method 5 and Method 26 of 40 CFR, Part 60, Appendix A.

- iii. The test(s) shall be conducted while the equipment is operating at or near its maximum capacities, unless otherwise specified or approved by the Northeast District Office of the Ohio EPA.

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Emissions Unit: (P029)

- iv. The permittee shall measure and continuously record the pressure drop across the scrubber, in inches of water, the scrubber water flow rate, and the scrubber water pH within the scrubber for this emissions unit during each test run.

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 Northeast District Office and the Lake County General Health District. 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 Northeast District Office's refusal to accept the results of the emissions test(s).

Personnel from the Ohio EPA Northeast District Office and/or the Lake County Health District 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.

A comprehensive written report on the results of the emissions test(s) shall be signed by the person or persons responsible for the tests and submitted to the Northeast District Office of the Ohio EPA 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 Northeast District Office of the Ohio EPA.

VI Miscellaneous Requirements

None

Emissions Unit: (P029)

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|--|---|---|
| | none | none |

2. Additional Terms and Conditions

None

II Operational Restrictions

None

III Monitoring and/or Recordkeeping

None

IV Reporting Requirements

None

V Testing Requirements

None

VI Miscellaneous Requirements

None

Emissions Unit: (P031)

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: (P031)
Activity Description: Electric Crucible machine # 7

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|--|--|--|
| Electric Crucible machine # 7, equipped with a primary dust collector, and sand feed systems, equipped with a primary dust collector, a secondary dust collector, including vacuum pumps, each with a mist eliminator, and the blockhouse vent. (P031) | OAC rule 3745-31-05(A) and (D) PTI #02-13174 (synthetic minor) | Nitrogen oxides (NO _x) emissions from this emissions unit shall not exceed 19.48 pounds per hour. The combined NO _x emissions from emissions units P026 and P031, shall not exceed 31.8 tons per rolling, 12-month period. (The 19.48 pounds per hour limitation is the potential to emit for this emissions unit; therefore, monitoring, record keeping, and reporting requirements are not needed for this emission limitation.) See A.I.2.d. The total particulate emissions from this emissions unit (P031) alone, that are released through stacks serving this emissions unit, shall not exceed 7.1 tons per year. Visible particulate emissions of fugitive dust from this emissions unit shall not exceed 10 percent opacity, as a 3-minute average. |

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: (P031)

Reasonably available control measures that are sufficient to minimize or eliminate visible emissions of fugitive dust shall be employed for this emissions unit. (See A.I.2.a.)

The requirements of this rule also include compliance with the requirements of OAC rules 3745-17-07(A), 3745-17-11(B), 3745-21-08, and 3745-23-06(B).

OAC rule 3745-17-07(A)

Visible particulate emissions from each stack serving this emissions unit, shall not exceed twenty percent opacity, as a six-minute average, except as provided by rule.

OAC rule 3745-17-08(B)

See A.I.2.c.

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

The total particulate emissions from this emissions unit, from all the stacks serving or associated with this emissions unit, shall not exceed 1.62 pounds per hour based on Table I of OAC rule 3745-17-11(with a maximum process weight rate of 500 pounds per hour). See Section A.I.2.f.

OAC rule 3745-21-08

See A.I.2.b

OAC rule 3745-23-06(B)

See A.I.2.b.

2. Additional Terms and Conditions

- 2.a** The permittee shall minimize or eliminate visible emissions of fugitive dust through the employment of reasonably available control measures (RACM). These measures shall include, but not be limited to, the following:
- i. the use of adequate hooding or equivalent capture devices for the crucible filling, arc fusion, and crucible cooling operations, for the sand storage and transfer equipment, and for the equipment used to mechanically finish quartz crucibles and tubing including, but not limited to saws, sanders, bevelers, trimmers and grinders; and

Emissions Unit: (P031)

- ii. all fugitive dust captured shall be vented to the dust collectors.

By employing RACM, visible emissions of fugitive dust from any non-stack egress points from the building shall be minimized.

- 2.b** The permittee has satisfied the "best available control techniques and operating practices" required pursuant to OAC rule 3745-21-08(B) by committing to comply with the best available technology requirements established in Permit to Install 02-13174.

On November 5, 2002, OAC rule 3745-21-08 was revised to delete paragraph (B); therefore, paragraph (B) is no longer part of the State regulations. However, that rule revision has not yet been submitted to the U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). When the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-21-08, the requirement to satisfy the "best available control techniques and operating practices" will no longer exist as part of the federally-approved SIP for Ohio, and this term and condition will no longer be applicable to this emissions unit.

The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06(B) by committing to comply with the best available technology requirements established pursuant to OAC rule 3745-31-05(A)(3) in Permit to Install 02-13174.

- 2.c** This facility is not located in an Appendix A area; therefore, in accordance with OAC rule 3745-17-08(A)(1), OAC rule 3745-17-08(B) is not applicable to this emissions unit.

- 2.d** It is the permittee's normal practice to vent all of the NO_x emissions from this emissions unit to the stacks; however, it is understood that a small number of molecules of NO_x may not be captured and vented to the stacks. The NO_x emissions from the cooling of the crucible machines shall be vented to the stacks.

- 2.e** The maximum rate of NO_x emissions from CM6 and CM7 (P026 and P031) combined shall not exceed 31.8 tons per year, based on rolling, 12-month summations of the monthly emissions.

The production rate of variable size crucibles, for both crucible machines numbers 6 and 7, combined (emissions units P026 and P031), shall be restricted such that the sum of the emissions from the production of all sizes of crucibles is less than the allowable NO_x emission rate. The emission rate for each size of crucible shall be based on the following equation:

$$[\text{number of crucibles produced of a particular size}] \times [\text{the emission factor for that size from the most recent stack test}] = \text{NO}_x \text{ emissions}$$

The following are the current NO_x emission factors provided on page 63 of 59 of the addendum to the PTI application 02-13174 received at Ohio EPA on February 5, 2002:

Facility Name: GE Willoughby Quartz Plant
 Facility ID: 02-43-16-0086

Emissions Unit: (P031)

| | | |
|----------------------------|------|-----------------|
| 12 inch crucibles(510/520) | 0.63 | pound/crucible |
| 12 inch crucibles(530) | 0.98 | pound/crucible |
| 14 inch crucibles(510/520) | 1.65 | pounds/crucible |
| 14 inch crucibles(530) | 2.19 | pounds/crucible |
| 16 inch crucibles(510/520) | 2.57 | pounds/crucible |
| 16 inch crucibles(530) | 2.12 | pounds/crucible |
| 18 inch crucibles | 2.85 | pounds/crucible |

To ensure enforceability of this provision during the first twelve (12) months of operation following the effective date of PTI 02-13174, the permittee shall not exceed the following cumulative NOx emission limitations:

| CALENDAR MONTH(S) FOLLOWING PTI EFFECTIVE DATE | TOTAL ALLOWABLE, CUMULATIVE NOx EMISSIONS (TPY) (P026 & P031, combined) |
|--|---|
| 1-1 | 10.0 |
| 1-2 | 12.0 |
| 1-3 | 14.0 |
| 1-4 | 16.0 |
| 1-5 | 18.0 |
| 1-6 | 20.0 |
| 1-7 | 22.0 |
| 1-8 | 24.0 |
| 1-9 | 26.0 |
| 1-10 | 28.0 |
| 1-11 | 30.0 |
| 1-12 | 31.8 |

After the first twelve calendar months of operation following the effective date of PTI 02-13174, compliance with the NOx combined emissions limitation of 31.8 tons per year, shall be based upon rolling, twelve-month summations of the NOx emission rates.

2.f The maximum rate of particulate emissions (PE) shall not exceed 1.62 pounds per hour, based on daily emissions and operating hours.

The production rate of the crucibles shall be restricted such that total emissions from all emission points are no greater than the allowable particulate emission rate. For emissions from the blockhouse stack (F), the emission rate for each size of crucible shall be based on the following equation:

$$[\text{number of crucibles produced of a particular size}] \times [\text{the emission factor for that size from the most recent stack test}] = \text{PE}$$

Emissions Unit: (P031)

The following are the current particulate emission factors from the Newark facility from the permit to install application 02-13174 and are from the most recent stack tests as of the effective date of the permit to install:

| | |
|--|----------------------|
| 12 inch and 14 inch crucibles: all types | 0.171 pound/crucible |
| 16 inch crucibles: all types | 0.232 pound/crucible |
| 18 inch crucibles | 0.366 pound/crucible |

PE from the other stacks or vents for this emissions unit shall be assumed equal to the maximum controlled or uncontrolled emissions, based on the application for this Permit to Install, and as shown in Section V.1.c of these terms and conditions.

II Operational Restrictions

1. The pressure drop, for each of the dust collectors, while the emissions unit is in operation, shall be maintained within the range that was established during the most recent emission test that demonstrated the emissions unit was in compliance.

The permittee may petition the Northeast District Office of the Ohio EPA for reestablishment of the pressure drop range at any time provided the permittee can demonstrate that the operating conditions upon which the pressure drop range was previously established are no longer applicable.

This term shall not be effective until 30 days after the permittee receives the final results of the emissions testing required in Section V of this permit.

2. The permittee shall produce only one size (diameter) of crucible each hour. Changeover from production of crucibles of one size to a different size shall be conducted such that production of the second size crucible begins in a different hour than production of the first size ended.
3. Crucible production may be calculated on a daily average basis based on daily production and operating hours; however, crucible production for each hour from this emissions unit shall not exceed the following:

| <u>Crucible Size</u> | <u>Maximum Production</u> (crucibles/hour) |
|--|---|
| 12 inch and 14 inch crucibles: all types | 8.5 * |
| 16 inch crucibles: all types | 6.5* |
| 18 inch crucibles | 4 |

* Production of a crucible may begin in one hour and end in the next hour.

III Monitoring and/or Recordkeeping

1. The permittee shall perform weekly checks, when any of the equipment comprising this emissions unit is in operation and when the weather conditions allow, for any visible fugitive

Emissions Unit: (P031)

particulate emissions from the building 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 operation log. If visible emissions are observed, the permittee shall also note the following in the operations log:

- a. the location(s) and color(s) of the emissions;
 - b. whether the emissions are representative of normal conditions;
 - c. if the emissions are not representative of normal operations, the cause(s) of the abnormal emissions;
 - d. the total duration of any visible emission incident; and
 - e. any corrective actions taken to eliminate the visible emissions.
2. The permittee shall perform daily checks, when any of the equipment comprising this emissions unit is in operation and when the weather conditions allow, for any visible particulate emissions from the stacks 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. the total duration of any visible emission incident; and
 - c. any corrective actions taken to eliminate the visible emissions.

Notwithstanding the frequency of reporting requirements specified in section A.IV, the permittee may reduce the frequency of visual observations for this emissions unit from daily to weekly readings if the following conditions are met:

- a. for 1 full quarter this emissions unit's visual observations indicate no visible emissions; and
- b. the permittee continues to comply with all the record keeping and monitoring requirements specified in section A.III.2.

The permittee shall revert to daily readings for this emissions unit if any visible emissions are observed. The permittee may again reduce the frequency of visual observations from daily to weekly after obtaining 1 full quarter of observations with no visible emissions for this emissions unit.

3. The permittee shall properly operate and maintain equipment to monitor the pressure drop across each dust collector while the emissions unit is in operation. The monitoring equipment shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's

Emissions Unit: (P031)

recommendations, instructions, and operating manual(s). The permittee shall record the pressure drop across each dust collector on a daily basis.

4. The permittee shall maintain monthly records of the following information for emissions units P026 and P031:
 - a. the number of crucibles of each size produced;
 - b. the NO_x emission factor for each size of crucible produced;
 - c. the total NO_x emissions from all crucibles produced, in pounds and tons;
 - d. during the first 12 calendar months of operation following the effective date of PTI 02-13174, the cumulative NO_x emissions, in tons; and
 - e. beginning after the first 12 calendar months of operation following the effective date of PTI 02-13174, the rolling, 12-month summation of the NO_x emissions, in tons.
5. The permittee shall maintain daily records of the following information for this emissions unit:
 - a. the number of crucibles of each size produced;
 - b. the hours of operation; and
 - c. the average hourly particulate emission rate, in pounds per hour.

IV Reporting Requirements

1. The permittee shall submit semiannual written reports that:
 - a. identify all days during which any visible fugitive particulate emissions were observed from the egress points (i.e., building windows, doors, roof monitors, etc.) serving this emissions unit; and
 - b. describe any corrective actions taken to eliminate the visible fugitive particulate emissions.

These reports shall be submitted to the Northeast District Office of the Ohio EPA by January 31 and July 31 of each year and shall cover the previous 6-month period.

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

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These reports shall be submitted to the Northeast District Office of the Ohio EPA by January 31 and July 31 of each year and shall cover the previous 6-month period.

3. The permittee shall submit quarterly pressure drop deviation (excursion) reports that identify all periods of time during which the pressure drop across each of the dust collectors did not comply with the allowable ranges specified in Section A.II.1.
4. The permittee shall submit quarterly deviation (excursion) reports that identify all exceedances of the following:
 - a. for the first 12 calendar months of operation following the effective date of PTI 02-13174, the allowable, monthly, cumulative NOx emission limitation for emissions units P026 and P031, combined; and
 - b. after the first 12 calendar months of operation following the effective date of PTI 02-13174, the rolling, 12-month NOx emission limitation for emissions units P026 and P031, combined.
5. The permittee shall submit annual reports that summarize the the total annual emissions of NOx from this emissions unit.

These reports shall be submitted to the Northeast District Office of the Ohio EPA by April 15 of each year and shall cover the previous 12-month period.

6. The permittee shall submit quarterly deviation (excursion) reports that identify any exceedances of the hourly particulate emission limitation.

V Testing Requirements

1. Compliance with the emissions limitations in Section A.I.1. of these terms and conditions shall be determined in accordance with the following methods:

- 1a. Emission Limitation

Visible particulate emissions from each stack serving this emissions unit shall not exceed twenty percent opacity, as a six-minute average, except as provided by rule.

Applicable Compliance Method

If required by Ohio EPA, compliance shall be determined by Method 9, Visible Determination of the Opacity of Emissions from Stationary Sources, 40 CFR Part 60, Appendix A, as specified in OAC rule 3745-17-03(B)(1).

- 1b. Emission Limitation

Visible particulate emissions of fugitive dust from this emissions unit shall not exceed 10 (ten) percent opacity, as a 3-minute average.

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: (P031)

Applicable Compliance Method

If required by Ohio EPA, compliance with the above visible emission limitation shall be determined using Method 9 of 40 CFR, Part 60, Appendix A.

1c. Emission Limitation

The total particulate emissions attributable to this emissions unit, that are released through stacks or vents, shall not exceed 1.62 pounds per hour based on Table I of OAC rule 3745-17-11 and a maximum process weight (PWR) of 500 pounds per hour, and 7.1 tons per year particulate emissions.

Applicable Compliance Method

Compliance with the particulate limits above, shall be determined in accordance with the following:

If required by the Ohio EPA, emission testing shall be performed for each stack and dust collector outlet to demonstrate compliance with the allowable hourly mass emission rate.

The following test method(s) and procedures shall be employed to determine compliance with the allowable mass emission rate:

Methods 1-5 of 40 CFR Part 60, Appendix A.

Performance testing shall be conducted in accordance with OAC rule 3745-17-03(B)(10).

Because the allowable annual mass emission rate was established by multiplying the short-term limit of 1.62 lbs per hour of particulate emissions by 8760 hours of operation per year and dividing by 2000 lbs/ton, compliance with the annual limit is assumed providing that compliance with the short-term limit is maintained.

In addition, compliance with the hourly PE limitation may be determined as follows:

$$\text{pounds per hour PE} = L + F + C + V$$

where:

L = the maximum emissions, in pound per hour, from sand loading into crucible pots
= 498 lbs/hr x 0.116 lb/ton x 0.01 x 1 ton/2000 lbs

F = emissions, in pound per hour, from crucible forming through electric arc fusion,
based on the record keeping in Section III.5 and the following formula:

[number of crucibles produced of a particular size] x [the emission factor for that size
from the most recent stack test]

Facility Name: GE Willoughby Quartz Plant
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C = the maximum emissions, in pound per hour, from crucible cooling after fusion
= 498 lbs/hr x 0.116 lb/ton x 0.01 x 1 ton/2000 lbs

V = the maximum emissions, in pound per hour, from vacuum pumps
= 2 x 0.05 lb/hr

The emission factor of 0.116 lb/ton for sand transfer was derived based on information provided in AP-42, 5th edition, Volume I, Chapter 11, Mineral Products Industry, Table 11.12-2, January 1995.

1d. Emission Limitation

The allowable hourly NO_x emission rate is 19.48 pounds per hour.

Applicable Compliance Method

Compliance with the hourly emission rate shall be demonstrated by the record keeping in A.III.4. and by emission testing using the following test methods:

Methods 1-4 and 7 of 40 CFR Part 60, Appendix A "Determination of Nitrogen Oxides Emissions from Stationary Sources".

1e. Emission Limitation

NO_x emissions from CM6 and CM7 (P026 and P031) combined shall not exceed 31.8 tons per year, based on rolling, 12-month summations of the monthly emissions.

Applicable Compliance Method

Compliance with the above limitation shall be demonstrated by the record keeping in A.III.4 of these terms and conditions.

Compliance with monthly, annual and rolling, 12-month NO_x emission limitations shall be determined in accordance with the equation in Section A.I.2.e. and record keeping in Section A.III.4 of these terms and conditions and results summed with the total annual and rolling NO_x emissions from P026 and P031.

2a. Emission Testing Requirements

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

- i. The emission testing shall be conducted within 12 months after the effective date of this permit and shall be conducted again within 12 months prior to permit expiration.

Emissions Unit: (P031)

- ii. The emission testing shall be conducted for each uncontrolled stack and each dust collector outlet, including the blockhouse exhaust stack, and shall be conducted to demonstrate compliance with the allowable hourly mass emission rate for particulate emissions, the allowable hourly mass emission rate for NO_x emissions, where NO_x is or could be emitted, and to determine the NO_x emission factors for crucible production. For the purposes of emission testing, the blockhouse vent and vacuum pumps emissions shall be determined and included in the compliance determination.
- iii. The following test method(s) and procedures shall be employed to determine compliance with the allowable mass emission rates for particulate emissions and NO_x and to determine emission factors for NO_x:

Methods 1-5 and 7 of 40 CFR Part 60, Appendix A.

- iv. The test shall be conducted while the emissions unit is operating at or near its maximum capacity unless otherwise specified or approved by the Northeast District Office of the Ohio EPA.
- 2b. Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Northeast District Office of the Ohio EPA and Lake County General Health District. 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 Northeast District Office's refusal to accept the results of the emission test(s).

- 2c. Personnel from the Northeast District Office of the Ohio EPA and local air agency shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.
- 2d. A comprehensive written report on the results of the emissions test(s) shall be signed by the person or persons responsible for the tests and submitted to the Northeast District Office of the Ohio EPA 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 Northeast District Office of the Ohio EPA.

VI Miscellaneous Requirements

None

Emissions Unit: (P031)

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|--|---|---|
| | none | none |

2. Additional Terms and Conditions

None

II Operational Restrictions

None

III Monitoring and/or Recordkeeping

None

IV Reporting Requirements

None

V Testing Requirements

None

VI Miscellaneous Requirements

None

Emissions Unit: (P032)

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: (P032)

Activity Description: Large diameter lathe number 17 (natural gas fired) 1.26 MMBTU/hr; H2 pilot

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|---|---|---|
| P032 - Large diameter lathe number 17 (natural gas fired) 1.26 MMBTU/hr; H2 pilot | OAC rule 3745-31-05(A) and (D) PTI 02-13174 (synthetic minor) | <p>NOx emissions shall not exceed 15.23 pounds per hour from this emissions unit and 194.1 TPY based on rolling 12-month summations for all production, repair and bench lathes (emissions units P025 and P032-P043), combined. (The 15.23 pounds per hour limitation is the potential to emit for this emissions unit; therefore, monitoring, record keeping, and reporting requirements are not needed for this emission limitation.)</p> <p>The requirements of this rule also include compliance with the requirements of OAC rules 3745-17-07(A), 3745-17-11(B), 3745-18-06, 3745-21-08, and 3745-23-06(B).</p> <p>The total particulate emissions from the stack serving this emissions unit, shall not exceed 2.4 tons per year.</p> |

Emissions Unit: (P032)

| | |
|---------------------------|--|
| OAC rule 3745-17-07(A) | Visible particulate emissions from any stack associated with this emissions unit shall not exceed twenty percent opacity, as a six-minute average, except as provided by rule. |
| OAC rule 3745-17-11(B)(1) | The total particulate emissions from the stack serving this emissions unit, shall not exceed 0.551 pound per hour based on Table I of OAC rule 3745-17-11 (with a maximum process weight rate of 100 pounds per hour). |
| OAC rule 3745-18-06(E) | See A.I.2.a. |
| OAC rule 3745-21-08 | See A.I.2.b. |
| OAC rule 3745-23-06(B) | See A.I.2.b. |

2. Additional Terms and Conditions

- 2.a** Because the process weight rate for this individual lathe is less than 1000 lbs per hour, this emissions unit is exempt from the requirements of this rule.
- 2.b** The permittee has satisfied the "best available control techniques and operating practices" required pursuant to OAC rule 3745-21-08(B) by committing to comply with the best available technology requirements established in Permit to Install 02-13174.

On November 5, 2002, OAC rule 3745-21-08 was revised to delete paragraph (B); therefore, paragraph (B) is no longer part of the State regulations. However, that rule revision has not yet been submitted to the U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). When the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-21-08, the requirement to satisfy the "best available control techniques and operating practices" will no longer exist as part of the federally-approved SIP for Ohio, and this term and condition will no longer be applicable to this emissions unit.

The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06(B) by committing to comply with the best available technology requirements established pursuant to OAC rule 3745-31-05(A)(3) in Permit to Install 02-13174.

- 2.c** It is the permittee's normal practice to vent all of the NO_x emissions from this emissions unit to the stack; however, it is understood that a small number of molecules of NO_x may

Emissions Unit: (P032)

not be captured and vented to the stack. The NOx emissions from the cooling of the tubes produced on this lathe shall be vented to the stack.

2.d All particulate emissions from this emissions unit shall be vented to the stack.

2.e This emissions unit is capable of burning only natural gas and hydrogen.

II Operational Restrictions

1. The maximum annual fuel usage for emissions units P025, P032-P042, combined, shall not exceed 30.29 million standard cubic feet of natural gas based on rolling, 12-month summations.
2. To ensure enforceability during the first twelve (12) months of operation following the effective date of PTI 02-13174, the permittee shall not exceed the following natural gas usage levels for all 11 production lathes:

| CALENDAR MONTHS FOLLOWING PTI EFFECTIVE DATE | MAXIMUM ALLOWABLE CUMULATIVE FUEL USAGE |
|--|---|
|--|---|

(mmSCF)
(natural gas)

| | |
|------|-------|
| 1-1 | 10.0 |
| 1-2 | 11.8 |
| 1-3 | 13.6 |
| 1-4 | 15.5 |
| 1-5 | 17.3 |
| 1-6 | 19.1 |
| 1-7 | 21.0 |
| 1-8 | 22.8 |
| 1-9 | 24.6 |
| 1-10 | 26.5 |
| 1-11 | 28.4 |
| 1-12 | 30.29 |

After the first 12 calendar months of operation following the effective date of PTI 02-13174, the permittee shall comply with the annual natural gas usage limitations based on rolling, 12-month summations.

III Monitoring and/or Recordkeeping

1. The permittee shall perform daily checks, when any of the equipment comprising this 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:

Emissions Unit: (P032)

- a. the color of the emissions;
- b. the total duration of any visible emission incident; and
- c. any corrective actions taken to eliminate the visible emissions.

Notwithstanding the frequency of reporting requirements specified in section A.IV, the permittee may reduce the frequency of visual observations for this emissions unit from daily to weekly readings if the following conditions are met:

- a. for 45 days this emissions unit's visual observations indicate no visible emissions; and
- b. the permittee continues to comply with all the record keeping and monitoring requirements specified in section A.III.1.

The permittee shall revert to daily readings for this emissions unit if any visible emissions are observed. The permittee may again reduce the frequency of visual observations from daily to weekly after obtaining 45 consecutive days of observations with no visible emissions for this emissions unit.

2. The permittee shall maintain monthly records of the following information for emissions units P025 and P032-P042, combined:
 - a. the total natural gas usage;
 - b. the rolling, 12-month natural gas usage;
 - c. the rolling, 12-month NO_x emissions.

Also, during the first 12 calendar months of operation, after the effective date of PTI #02-13174, the permittee shall record the cumulative natural gas usage, for all production lathes (emissions units P025 and P032-P042), combined.

Total NO_x monthly emissions, in tons, resulting from the natural gas usage in all production lathes (16-27), combined, shall be calculated using the following equation:

$$\text{NO}_x, \text{ in tons} = \text{total natural gas usage (mmscf/month)} \times 12.09 \text{ lbs/mmBtu} \times \frac{1}{1050 \text{ mmBtu/mmscf}} \times 1 \text{ ton/2000 lbs}$$

The emission factor for NO_x is based on a 1998 stack test and equals 12.09 lbs/mmBtu.

The natural gas usage is for all LD lathes 16-27, combined.

The heat content of natural gas = 1050 mmBtu/mmscf.

Monthly results shall be summed to obtain the annual and rolling NO_x emissions.

IV Reporting Requirements

Emissions Unit: (P032)

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

These reports shall be submitted to the Northeast District Office of the Ohio EPA by January 31 and July 31 of each year and shall cover the previous 6-month period.

2. The permittee shall submit quarterly deviation (excursion) reports that identify all exceedances of the following:
 - a. after the first twelve calendar months of operation following the effective date of PTI 02-13174, the rolling, 12-month limitations for natural gas fuel usage for all production lathes (emissions units P025 and P032-P042), combined; and
 - b. for the first 12 calendar months of operation following the effective date of PTI 02-13174, the monthly allowable cumulative fuel usage for natural gas for all production lathes (emissions units P025 and P032-P042), combined.
3. The permittee shall submit annual reports that specify the total amount of natural gas used and the total amount of NOx emitted from emissions units P025 and P032-P042 for the previous calendar year by April 15 of the following year.

V Testing Requirements

1. Compliance with the emission limitations in Section A.I.1. of these terms and conditions shall be determined in accordance with the following methods:

1a. Emission Limitation

Visible particulate emissions from any stack serving this emissions unit shall not exceed twenty percent opacity, as a six- minute average, except as provided by rule.

Applicable Compliance Method

If required by Ohio EPA, compliance shall be determined by Method 9, Visible Determination of the Opacity of Emissions from Stationary Sources, 40 CFR Part 60, Appendix A, as specified in OAC rule 3745-17-03(B)(1).

1b. Emission Limitation

0.551 pound per hour and 2.4 tons per year of particulate emissions

Applicable Compliance Method

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: (P032)

If required by Ohio EPA, compliance with the hourly particulate emission limit above shall be determined in accordance with OAC rule 3745-17-03 and Method 5 of 40 CFR Part 60, Appendix A.

Because the annual particulate limit was established by multiplying the short-term limit of 0.551 lb/hr by 8,760 hours of operation per year and dividing by 2000 lbs/ton, compliance with the annual limit is assumed provided that compliance with the hourly limit is maintained.

1c. Emission Limitation

NOx emissions shall not exceed 15.23 pounds per hour from this emissions unit, and 194.1 TPY, based on rolling 12-month summations from all production, repair and bench lathes (emissions units P025, P032-P043, combined).

Applicable Compliance Method

If required by Ohio EPA, compliance with the hourly NOx emission limitation above, shall be determined by using Method 7 of 40 CFR Part 60, Appendix A.

Compliance with monthly, annual and rolling, 12-month NOx emission limitations shall be determined in accordance with the equations and record keeping in Section A.III.2. of these terms and conditions and summed with the total annual and rolling NOx emissions from all production and bench lathes.

2. The permittee shall conduct, or have conducted, emission testing of the mass emission rates for particulate emissions and NOx for this emissions unit in accordance with the following:

- a. The emission testing for NOx and particulate emissions shall be conducted within 12 months after the effective date of Permit to Install 02-13174. Thereafter, emission testing for NOx shall be conducted annually.

If the permittee demonstrates that all 6 production lathes rated at 1.26 MmBtu/hr (emissions units P025, and P032-P036) are essentially identical in operation, size and capacity, configuration and product line, in which case, with approval from the Ohio EPA, the permittee shall test one representative unit, at or near maximum capacity, on an annual basis.

- b. The emission testing shall be conducted to determine compliance with the allowable emission rates for particulate emissions and NOx.
- c. The following test methods from 40 CFR Part 60, Appendix A, shall be employed to determine compliance with the allowable emission rates for particulate and NOx respectively:

Method 5 "Determination of Particulate Emissions from Stationary Sources" and Method 7 "Determination of Nitrogen Oxide Emissions from Stationary Sources and the requirements of OAC rule 3745-31-05.

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: (P032)

- d. The tests shall be conducted while the emissions unit is operating at or near its maximum capacity, unless otherwise specified by the Northeast District of the Ohio EPA.

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 Northeast District Office and the Lake County General Health District. 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 tests.

Failure to submit such notification for review and approval prior to the tests may result in the Ohio EPA Northeast District Office's refusal to accept the results of the emissions tests.

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

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

VI Miscellaneous Requirements

None

Emissions Unit: (P032)

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|--|---|---|
| | none | none |

2. Additional Terms and Conditions

None

II Operational Restrictions

None

III Monitoring and/or Recordkeeping

None

IV Reporting Requirements

None

V Testing Requirements

None

VI Miscellaneous Requirements

None

Emissions Unit: (P033)

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: (P033)

Activity Description: Large diameter lathe number 18 (natural gas fired) 1.26 MMBTU/hr; H2 pilot

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|---|---|---|
| P033 - Large diameter lathe number 18 (natural gas fired) 1.26 MMBTU/hr; H2 pilot | OAC rule 3745-31-05(A) and (D) PTI 02-13174 (synthetic minor) | <p>NOx emissions shall not exceed 15.23 pounds per hour from this emissions unit and 194.1 TPY based on rolling 12-month summations for all production, repair and bench lathes (emissions units P025 and P032-P043), combined. (The 15.23 pounds per hour limitation is the potential to emit for this emissions unit; therefore, monitoring, record keeping, and reporting requirements are not needed for this emission limitation.)</p> <p>The requirements of this rule also include compliance with the requirements of OAC rules 3745-17-07(A), 3745-17-11(B), 3745-18-06, 3745-21-08, and 3745-23-06(B).</p> <p>The total particulate emissions from the stack serving this emissions unit, shall not exceed 2.4 tons per year.</p> |

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: (P033)

| | |
|---------------------------|--|
| OAC rule 3745-17-07(A) | Visible particulate emissions from any stack associated with this emissions unit shall not exceed twenty percent opacity, as a six-minute average, except as provided by rule. |
| OAC rule 3745-17-11(B)(1) | The total particulate emissions from the stack serving this emissions unit, shall not exceed 0.551 pound per hour based on Table I of OAC rule 3745-17-11 (with a maximum process weight rate of 100 pounds per hour). |
| OAC rule 3745-18-06(E) | See A.I.2.a. |
| OAC rule 3745-21-08 | See A.I.2.b. |
| OAC rule 3745-23-06(B) | See A.I.2.b. |

2. Additional Terms and Conditions

- 2.a Because the process weight rate for this individual lathe is less than 1000 lbs per hour, this emissions unit is exempt from the requirements of this rule.
- 2.b The permittee has satisfied the "best available control techniques and operating practices" required pursuant to OAC rule 3745-21-08(B) by committing to comply with the best available technology requirements established in Permit to Install 02-13174.

On November 5, 2002, OAC rule 3745-21-08 was revised to delete paragraph (B); therefore, paragraph (B) is no longer part of the State regulations. However, that rule revision has not yet been submitted to the U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). When the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-21-08, the requirement to satisfy the "best available control techniques and operating practices" will no longer exist as part of the federally-approved SIP for Ohio, and this term and condition will no longer be applicable to this emissions unit.

The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06(B) by committing to comply with the best available technology requirements established pursuant to OAC rule 3745-31-05(A)(3) in Permit to Install 02-13174.

- 2.c It is the permittee's normal practice to vent all of the NO_x emissions from this emissions unit to the stack; however, it is understood that a small number of molecules of NO_x may

Emissions Unit: (P033)

not be captured and vented to the stack. The NOx emissions from the cooling of the tubes produced on this lathe shall be vented to the stack.

2.d All particulate emissions from this emissions unit shall be vented to the stack.

2.e This emissions unit is capable of burning only natural gas and hydrogen.

II Operational Restrictions

1. The maximum annual fuel usage for emissions units P025, P032-P042, combined, shall not exceed 30.29 million standard cubic feet of natural gas based on rolling, 12-month summations.
2. To ensure enforceability during the first twelve (12) months of operation following the effective date of PTI 02-13174, the permittee shall not exceed the following natural gas usage levels for all 11 production lathes:

| CALENDAR MONTHS FOLLOWING PTI EFFECTIVE DATE | MAXIMUM ALLOWABLE CUMULATIVE FUEL USAGE |
|--|--|
|--|--|

(mmSCF)
(natural gas)

| | |
|------|-------|
| 1-1 | 10.0 |
| 1-2 | 11.8 |
| 1-3 | 13.6 |
| 1-4 | 15.5 |
| 1-5 | 17.3 |
| 1-6 | 19.1 |
| 1-7 | 21.0 |
| 1-8 | 22.8 |
| 1-9 | 24.6 |
| 1-10 | 26.5 |
| 1-11 | 28.4 |
| 1-12 | 30.29 |

After the first 12 calendar months of operation following the effective date of PTI 02-13174, the permittee shall comply with the annual natural gas usage limitations based on rolling, 12-month summations.

III Monitoring and/or Recordkeeping

1. The permittee shall perform daily checks, when any of the equipment comprising this 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:

Emissions Unit: (P033)

- a. the color of the emissions;
- b. the total duration of any visible emission incident; and
- c. any corrective actions taken to eliminate the visible emissions.

Notwithstanding the frequency of reporting requirements specified in section A.IV, the permittee may reduce the frequency of visual observations for this emissions unit from daily to weekly readings if the following conditions are met:

- a. for 45 days this emissions unit's visual observations indicate no visible emissions; and
- b. the permittee continues to comply with all the record keeping and monitoring requirements specified in section A.III.1.

The permittee shall revert to daily readings for this emissions unit if any visible emissions are observed. The permittee may again reduce the frequency of visual observations from daily to weekly after obtaining 45 consecutive days of observations with no visible emissions for this emissions unit.

2. The permittee shall maintain monthly records of the following information for emissions units P025 and P032-P042, combined:
 - a. the total natural gas usage;
 - b. the rolling, 12-month natural gas usage;
 - c. the rolling, 12-month NO_x emissions.

Also, during the first 12 calendar months of operation, after the effective date of PTI #02-13174, the permittee shall record the cumulative natural gas usage, for all production lathes (emissions units P025 and P032-P042), combined.

Total NO_x monthly emissions, in tons, resulting from the natural gas usage in all production lathes (16-27), combined, shall be calculated using the following equation:

$$\text{NO}_x, \text{ in tons} = \text{total natural gas usage (mmscf/month)} \times 12.09 \text{ lbs/mmBtu} \times \frac{1}{1050 \text{ mmBtu/mmscf}} \times 1 \text{ ton/2000 lbs}$$

The emission factor for NO_x is based on a 1998 stack test and equals 12.09 lbs/mmBtu.

The natural gas usage is for all LD lathes 16-27, combined.

The heat content of natural gas = 1050 mmBtu/mmscf.

Monthly results shall be summed to obtain the annual and rolling NO_x emissions.

IV Reporting Requirements

Emissions Unit: (P033)

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

These reports shall be submitted to the Northeast District Office of the Ohio EPA by January 31 and July 31 of each year and shall cover the previous 6-month period.

2. The permittee shall submit quarterly deviation (excursion) reports that identify all exceedances of the following:
 - a. after the first twelve calendar months of operation following the effective date of PTI 02-13174, the rolling, 12-month limitations for natural gas fuel usage for all production lathes (emissions units P025 and P032-P042), combined; and
 - b. for the first 12 calendar months of operation following the effective date of PTI 02-13174, the monthly allowable cumulative fuel usage for natural gas for all production lathes (emissions unit P025 and P032-P042), combined.
3. The permittee shall submit annual reports that specify the total amount of natural gas used and the total amount of NOx emitted from emissions units P025 and P032-P042 for the previous calendar year by April 15 of the following year.

V Testing Requirements

1. Compliance with the emission limitations in Section A.I.1. of these terms and conditions shall be determined in accordance with the following methods:

1a. Emission Limitation

Visible particulate emissions from any stack serving this emissions unit shall not exceed twenty percent opacity, as a six- minute average, except as provided by rule.

Applicable Compliance Method

If required by Ohio EPA, compliance shall be determined by Method 9, Visible Determination of the Opacity of Emissions from Stationary Sources, 40 CFR Part 60, Appendix A, as specified in OAC rule 3745-17-03(B)(1).

1b. Emission Limitation

0.551 pound per hour and 2.4 tons per year of particulate emissions

Applicable Compliance Method

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: (P033)

If required by Ohio EPA, compliance with the hourly particulate emission limit above shall be determined in accordance with OAC rule 3745-17-03 and Method 5 of 40 CFR Part 60, Appendix A.

Because the annual particulate limit was established by multiplying the short-term limit of 0.551 lb/hr by 8,760 hours of operation per year and dividing by 2000 lbs/ton, compliance with the annual limit is assumed provided that compliance with the hourly limit is maintained.

1c. Emission Limitation

NO_x emissions shall not exceed 15.23 pounds per hour from this emissions unit, and 194.1 TPY, based on rolling 12-month summations from all production, repair and bench lathes (emissions units P025, P032-P043, combined).

Applicable Compliance Method

If required by Ohio EPA, compliance with the hourly NO_x emission limitation above, shall be determined by using Method 7 of 40 CFR Part 60, Appendix A.

Compliance with monthly, annual and rolling, 12-month NO_x emission limitations shall be determined in accordance with the equations and record keeping in Section A.III.2. of these terms and conditions and summed with the total annual and rolling NO_x emissions from all production and bench lathes.

2. The permittee shall conduct, or have conducted, emission testing of the mass emission rates for particulate emissions and NO_x for this emissions unit in accordance with the following:

- a. The emission testing for NO_x and particulate emissions shall be conducted within 12 months after the effective date of Permit to Install 02-13174. Thereafter, emission testing for NO_x shall be conducted annually.

If the permittee demonstrates that all 6 production lathes rated at 1.26 MmBtu/hr (emissions units P025, and P032-P036) are essentially identical in operation, size and capacity, configuration and product line, in which case, with approval from the Ohio EPA, the permittee shall test one representative unit, at or near maximum capacity, on an annual basis.

- b. The emission testing shall be conducted to determine compliance with the allowable emission rates for particulate emissions and NO_x.
- c. The following test methods from 40 CFR Part 60, Appendix A, shall be employed to determine compliance with the allowable emission rates for particulate and NO_x respectively:

Method 5 "Determination of Particulate Emissions from Stationary Sources" and Method 7 "Determination of Nitrogen Oxide Emissions from Stationary Sources and the requirements of OAC rule 3745-31-05.

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: (P033)

- d. The tests shall be conducted while the emissions unit is operating at or near its maximum capacity, unless otherwise specified by the Northeast District of the Ohio EPA.

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 Northeast District Office and the Lake County General Health District. 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 tests.

Failure to submit such notification for review and approval prior to the tests may result in the Ohio EPA Northeast District Office's refusal to accept the results of the emissions tests.

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

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

VI Miscellaneous Requirements

None

Emissions Unit: (P033)

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|--|---|---|
| | none | none |

2. Additional Terms and Conditions

None

II Operational Restrictions

None

III Monitoring and/or Recordkeeping

None

IV Reporting Requirements

None

V Testing Requirements

None

VI Miscellaneous Requirements

None

Emissions Unit: (P034)

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: (P034)

Activity Description: Large diameter lathe number 19 (natural gas fired) 1.26 MMBTU/hr; H2 pilot

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|---|---|---|
| P034 - Large diameter lathe number 19 (natural gas fired) 1.26 MMBTU/hr; H2 pilot | OAC rule 3745-31-05(A) and (D) PTI 02-13174 (synthetic minor) | <p>NOx emissions shall not exceed 15.23 pounds per hour from this emissions unit and 194.1 TPY based on rolling 12-month summations for all production, repair and bench lathes (emissions units P025 and P032-P043), combined. (The 15.23 pounds per hour limitation is the potential to emit for this emissions unit; therefore, monitoring, record keeping, and reporting requirements are not needed for this emission limitation.)</p> <p>The requirements of this rule also include compliance with the requirements of OAC rules 3745-17-07(A), 3745-17-11(B), 3745-18-06, 3745-21-08, and 3745-23-06(B).</p> <p>The total particulate emissions from the stack serving this emissions unit, shall not exceed 2.4 tons per year.</p> |

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| | |
|---------------------------|--|
| OAC rule 3745-17-07(A) | Visible particulate emissions from any stack associated with this emissions unit shall not exceed twenty percent opacity, as a six-minute average, except as provided by rule. |
| OAC rule 3745-17-11(B)(1) | The total particulate emissions from the stack serving this emissions unit, shall not exceed 0.551 pound per hour based on Table I of OAC rule 3745-17-11 (with a maximum process weight rate of 100 pounds per hour). |
| OAC rule 3745-18-06(E) | See A.I.2.a. |
| OAC rule 3745-21-08 | See A.I.2.b. |
| OAC rule 3745-23-06(B) | See A.I.2.b. |

2. Additional Terms and Conditions

- 2.a** Because the process weight rate for this individual lathe is less than 1000 lbs per hour, this emissions unit is exempt from the requirements of this rule.
- 2.b** The permittee has satisfied the "best available control techniques and operating practices" required pursuant to OAC rule 3745-21-08(B) by committing to comply with the best available technology requirements established in Permit to Install 02-13174.

On November 5, 2002, OAC rule 3745-21-08 was revised to delete paragraph (B); therefore, paragraph (B) is no longer part of the State regulations. However, that rule revision has not yet been submitted to the U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). When the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-21-08, the requirement to satisfy the "best available control techniques and operating practices" will no longer exist as part of the federally-approved SIP for Ohio, and this term and condition will no longer be applicable to this emissions unit.

The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06(B) by committing to comply with the best available technology requirements established pursuant to OAC rule 3745-31-05(A)(3) in Permit to Install 02-13174.

- 2.c** It is the permittee's normal practice to vent all of the NO_x emissions from this emissions unit to the stack; however, it is understood that a small number of molecules of NO_x may

Emissions Unit: (P034)

not be captured and vented to the stack. The NOx emissions from the cooling of the tubes produced on this lathe shall be vented to the stack.

2.d All particulate emissions from this emissions unit shall be vented to the stack.

2.e This emissions unit is capable of burning only natural gas and hydrogen.

II Operational Restrictions

1. The maximum annual fuel usage for emissions units P025, P032-P042, combined, shall not exceed 30.29 million standard cubic feet of natural gas based on rolling, 12-month summations.
2. To ensure enforceability during the first twelve (12) months of operation following the effective date of PTI 02-13174, the permittee shall not exceed the following natural gas usage levels for all 11 production lathes:

| CALENDAR MONTHS FOLLOWING PTI EFFECTIVE DATE | MAXIMUM ALLOWABLE CUMULATIVE FUEL USAGE |
|--|--|
|--|--|

(mmSCF)
(natural gas)

| | |
|------|-------|
| 1-1 | 10.0 |
| 1-2 | 11.8 |
| 1-3 | 13.6 |
| 1-4 | 15.5 |
| 1-5 | 17.3 |
| 1-6 | 19.1 |
| 1-7 | 21.0 |
| 1-8 | 22.8 |
| 1-9 | 24.6 |
| 1-10 | 26.5 |
| 1-11 | 28.4 |
| 1-12 | 30.29 |

After the first 12 calendar months of operation following the effective date of PTI 02-13174, the permittee shall comply with the annual natural gas usage limitations based on rolling, 12-month summations.

III Monitoring and/or Recordkeeping

1. The permittee shall perform daily checks, when any of the equipment comprising this 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:

Emissions Unit: (P034)

- a. the color of the emissions;
- b. the total duration of any visible emission incident; and
- c. any corrective actions taken to eliminate the visible emissions.

Notwithstanding the frequency of reporting requirements specified in section A.IV, the permittee may reduce the frequency of visual observations for this emissions unit from daily to weekly readings if the following conditions are met:

- a. for 45 days this emissions unit's visual observations indicate no visible emissions; and
- b. the permittee continues to comply with all the record keeping and monitoring requirements specified in section A.III.1.

The permittee shall revert to daily readings for this emissions unit if any visible emissions are observed. The permittee may again reduce the frequency of visual observations from daily to weekly after obtaining 45 consecutive days of observations with no visible emissions for this emissions unit.

2. The permittee shall maintain monthly records of the following information for emissions units P025 and P032-P042, combined:
 - a. the total natural gas usage;
 - b. the rolling, 12-month natural gas usage;
 - c. the rolling, 12-month NO_x emissions.

Also, during the first 12 calendar months of operation, after the effective date of PTI #02-13174, the permittee shall record the cumulative natural gas usage, for all production lathes (emissions units P025 and P032-P042), combined.

Total NO_x monthly emissions, in tons, resulting from the natural gas usage in all production lathes (16-27), combined, shall be calculated using the following equation:

$$\text{NO}_x, \text{ in tons} = \text{total natural gas usage (mmscf/month)} \times 12.09 \text{ lbs/mmBtu} \times \frac{1}{1050 \text{ mmBtu/mmscf}} \times 1 \text{ ton/2000 lbs}$$

The emission factor for NO_x is based on a 1998 stack test and equals 12.09 lbs/mmBtu.

The natural gas usage is for all LD lathes 16-27, combined.

The heat content of natural gas = 1050 mmBtu/mmscf.

Monthly results shall be summed to obtain the annual and rolling NO_x emissions.

Emissions Unit: (P034)

IV Reporting Requirements

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

These reports shall be submitted to the Northeast District Office of the Ohio EPA by January 31 and July 31 of each year and shall cover the previous 6-month period.

2. The permittee shall submit quarterly deviation (excursion) reports that identify all exceedances of the following:
 - a. after the first twelve calendar months of operation following the effective date of PTI 02-13174, the rolling, 12-month limitations for natural gas fuel usage for all production lathes (emissions units P025 and P032-P042), combined; and
 - b. for the first 12 calendar months of operation following the effective date of PTI 02-13174, the monthly allowable cumulative fuel usage for natural gas for all production lathes (emissions units P025 and P032-P042), combined.
3. The permittee shall submit annual reports that specify the total amount of natural gas used and the total amount of NO_x emitted from emissions units P025 and P032-P042 for the previous calendar year by April 15 of the following year.

V Testing Requirements

1. Compliance with the emission limitations in Section A.I.1. of these terms and conditions shall be determined in accordance with the following methods:

- 1a. Emission Limitation

Visible particulate emissions from any stack serving this emissions unit shall not exceed twenty percent opacity, as a six- minute average, except as provided by rule.

Applicable Compliance Method

If required by Ohio EPA, compliance shall be determined by Method 9, Visible Determination of the Opacity of Emissions from Stationary Sources, 40 CFR Part 60, Appendix A, as specified in OAC rule 3745-17-03(B)(1).

- 1b. Emission Limitation

0.551 pound per hour and 2.4 tons per year of particulate emissions

Emissions Unit: (P034)

Applicable Compliance Method

If required by Ohio EPA, compliance with the hourly particulate emission limit above shall be determined in accordance with OAC rule 3745-17-03 and Method 5 of 40 CFR Part 60, Appendix A.

Because the annual particulate limit was established by multiplying the short-term limit of 0.551 lb/hr by 8,760 hours of operation per year and dividing by 2000 lbs/ton, compliance with the annual limit is assumed provided that compliance with the hourly limit is maintained.

1c. Emission Limitation

NOx emissions shall not exceed 15.23 pounds per hour from this emissions unit, and 194.1 TPY, based on rolling 12-month summations from all production, repair and bench lathes (emissions units P025, P032-P043, combined).

Applicable Compliance Method

If required by Ohio EPA, compliance with the hourly NOx emission limitation above, shall be determined by using Method 7 of 40 CFR Part 60, Appendix A.

Compliance with monthly, annual and rolling, 12-month NOx emission limitations shall be determined in accordance with the equations and record keeping in Section A.III.2. of these terms and conditions and summed with the total annual and rolling NOx emissions from all production and bench lathes.

2. The permittee shall conduct, or have conducted, emission testing of the mass emission rates for particulate emissions and NOx for this emissions unit in accordance with the following:

- a. The emission testing for NOx and particulate emissions shall be conducted within 12 months after the effective date of Permit to Install 02-13174. Thereafter, emission testing for NOx shall be conducted annually.

If the permittee demonstrates that all 6 production lathes rated at 1.26 MmBtu/hr (emissions units P025, and P032-P036) are essentially identical in operation, size and capacity, configuration and product line, in which case, with approval from the Ohio EPA, the permittee shall test one representative unit, at or near maximum capacity, on an annual basis.

If the permittee demonstrates that all 6 production lathes rated at 1.26 MmBtu/hr (emissions units P025, and P032-P036) are essentially identical in operation, size and capacity, configuration and product line, in which case, with approval from the Ohio EPA, the permittee shall test one representative unit, at or near maximum capacity, on an annual basis.

- b. The emission testing shall be conducted to determine compliance with the allowable emission rates for particulate emissions and NOx.

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: (P034)

- c. The following test methods from 40 CFR Part 60, Appendix A, shall be employed to determine compliance with the allowable emission rates for particulate and NOx respectively:

Method 5 "Determination of Particulate Emissions from Stationary Sources" and Method 7 "Determination of Nitrogen Oxide Emissions from Stationary Sources and the requirements of OAC rule 3745-31-05.

- d. The tests shall be conducted while the emissions unit is operating at or near its maximum capacity, unless otherwise specified by the Northeast District of the Ohio EPA.

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 Northeast District Office and the Lake County General Health District. 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 tests.

Failure to submit such notification for review and approval prior to the tests may result in the Ohio EPA Northeast District Office's refusal to accept the results of the emissions tests.

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

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

VI Miscellaneous Requirements

None

Emissions Unit: (P034)

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|--|---|---|
| | none | none |

2. Additional Terms and Conditions

None

II Operational Restrictions

None

III Monitoring and/or Recordkeeping

None

IV Reporting Requirements

None

V Testing Requirements

None

VI Miscellaneous Requirements

None

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: (P035)

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: (P035)

Activity Description: Large diameter lathe number 20 (natural gas fired) 1.26 MMBTU/hr; H2 pilot

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|--|---|---|
| P035- Large diameter lathe number 20 (natural gas fired) 1.26 MMBTU/hr; H2 pilot | OAC rule 3745-31-05(A) and (D) PTI 02-13174 (synthetic minor) | <p>NOx emissions shall not exceed 15.23 pounds per hour from this emissions unit and 194.1 TPY based on rolling 12-month summations for all production, repair and bench lathes (emissions units P025 and P032-P043), combined. (The 15.23 pounds per hour limitation is the potential to emit for this emissions unit; therefore, monitoring, record keeping, and reporting requirements are not needed for this emission limitation.)</p> <p>The requirements of this rule also include compliance with the requirements of OAC rules 3745-17-07(A), 3745-17-11(B), 3745-18-06, 3745-21-08, and 3745-23-06(B).</p> <p>The total particulate emissions from the stack serving this emissions unit, shall not exceed 2.4 tons per year.</p> |

Emissions Unit: (P035)

| | |
|---------------------------|--|
| OAC rule 3745-17-07(A) | Visible particulate emissions from any stack associated with this emissions unit shall not exceed twenty percent opacity, as a six-minute average, except as provided by rule. |
| OAC rule 3745-17-11(B)(1) | The total particulate emissions from the stack serving this emissions unit, shall not exceed 0.551 pound per hour based on Table I of OAC rule 3745-17-11 (with a maximum process weight rate of 100 pounds per hour). |
| OAC rule 3745-18-06(E) | See A.I.2.a. |
| OAC rule 3745-21-08 | See A.I.2.b. |
| OAC rule 3745-23-06(B) | See A.I.2.b. |

2. Additional Terms and Conditions

- 2.a** Because the process weight rate for this individual lathe is less than 1000 lbs per hour, this emissions unit is exempt from the requirements of this rule.
- 2.b** The permittee has satisfied the "best available control techniques and operating practices" required pursuant to OAC rule 3745-21-08(B) by committing to comply with the best available technology requirements established in Permit to Install 02-13174.

On November 5, 2002, OAC rule 3745-21-08 was revised to delete paragraph (B); therefore, paragraph (B) is no longer part of the State regulations. However, that rule revision has not yet been submitted to the U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). When the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-21-08, the requirement to satisfy the "best available control techniques and operating practices" will no longer exist as part of the federally-approved SIP for Ohio, and this term and condition will no longer be applicable to this emissions unit.

The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06(B) by committing to comply with the best available technology requirements established pursuant to OAC rule 3745-31-05(A)(3) in Permit to Install 02-13174.

- 2.c** It is the permittee's normal practice to vent all of the NO_x emissions from this emissions unit to the stack; however, it is understood that a small number of molecules of NO_x may

Emissions Unit: (P035)

not be captured and vented to the stack. The NOx emissions from the cooling of the tubes produced on this lathe shall be vented to the stack.

2.d All particulate emissions from this emissions unit shall be vented to the stack.

2.e This emissions unit is capable of burning only natural gas and hydrogen.

II Operational Restrictions

1. The maximum annual fuel usage for emissions units P025, P032-P042, combined, shall not exceed 30.29 million standard cubic feet of natural gas based on rolling, 12-month summations.
2. To ensure enforceability during the first twelve (12) months of operation following the effective date of PTI 02-13174, the permittee shall not exceed the following natural gas usage levels for all 11 production lathes:

| CALENDAR MONTHS FOLLOWING PTI EFFECTIVE DATE | MAXIMUM ALLOWABLE CUMULATIVE FUEL USAGE |
|--|--|
|--|--|

(mmSCF)
(natural gas)

| | |
|------|-------|
| 1-1 | 10.0 |
| 1-2 | 11.8 |
| 1-3 | 13.6 |
| 1-4 | 15.5 |
| 1-5 | 17.3 |
| 1-6 | 19.1 |
| 1-7 | 21.0 |
| 1-8 | 22.8 |
| 1-9 | 24.6 |
| 1-10 | 26.5 |
| 1-11 | 28.4 |
| 1-12 | 30.29 |

After the first 12 calendar months of operation following the effective date of PTI 02-13174, the permittee shall comply with the annual natural gas usage limitations based on rolling, 12-month summations.

III Monitoring and/or Recordkeeping

1. The permittee shall perform daily checks, when any of the equipment comprising this 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:

Emissions Unit: (P035)

- a. the color of the emissions;
- b. the total duration of any visible emission incident; and
- c. any corrective actions taken to eliminate the visible emissions.

Notwithstanding the frequency of reporting requirements specified in section A.IV, the permittee may reduce the frequency of visual observations for this emissions unit from daily to weekly readings if the following conditions are met:

- a. for 45 days this emissions unit's visual observations indicate no visible emissions; and
- b. the permittee continues to comply with all the record keeping and monitoring requirements specified in section A.III.1.

The permittee shall revert to daily readings for this emissions unit if any visible emissions are observed. The permittee may again reduce the frequency of visual observations from daily to weekly after obtaining 45 consecutive days of observations with no visible emissions for this emissions unit.

2. The permittee shall maintain monthly records of the following information for emissions units P025 and P032-P042, combined:
 - a. the total natural gas usage;
 - b. the rolling, 12-month natural gas usage;
 - c. the rolling, 12-month NO_x emissions.

Also, during the first 12 calendar months of operation, after the effective date of PTI #02-13174, the permittee shall record the cumulative natural gas usage, for all production lathes (emissions units P025 and P032-P042), combined.

Total NO_x monthly emissions, in tons, resulting from the natural gas usage in all production lathes (16-27), combined, shall be calculated using the following equation:

$$\text{NO}_x, \text{ in tons} = \frac{\text{total natural gas usage (mmscf/month)} \times 12.09 \text{ lbs/mmBtu}}{1050 \text{ mmBtu/mmscf} \times 1 \text{ ton/2000 lbs}}$$

The emission factor for NO_x is based on a 1998 stack test and equals 12.09 lbs/mmBtu.
The natural gas usage is for all LD lathes 16-27, combined.
The heat content of natural gas = 1050 mmBtu/mmscf.

Monthly results shall be summed to obtain the annual and rolling NO_x emissions.

IV Reporting Requirements

1. The permittee shall submit semiannual written reports that:

Emissions Unit: (P035)

- a. identify all days during which any visible particulate emissions were observed from the stack serving this emissions unit; and
- b. describe any corrective actions taken to eliminate the visible particulate emissions.

These reports shall be submitted to the Northeast District Office of the Ohio EPA by January 31 and July 31 of each year and shall cover the previous 6-month period.

2. The permittee shall submit quarterly deviation (excursion) reports that identify all exceedances of the following:
 - a. after the first twelve calendar months of operation following the effective date of PTI 02-13174, the rolling, 12-month limitations for natural gas fuel usage for all production lathes (emissions units P025 and P032-P042), combined; and
 - b. for the first 12 calendar months of operation following the effective date of PTI 02-13174, the monthly allowable cumulative fuel usage for natural gas for all production lathes (emissions units P025 and P032-P042), combined.
3. The permittee shall submit annual reports that specify the total amount of natural gas used and the total amount of NOx emitted from emissions units P025 and P032-P042 for the previous calendar year by April 15 of the following year.

V Testing Requirements

1. Compliance with the emission limitations in Section A.I.1. of these terms and conditions shall be determined in accordance with the following methods:

1a. Emission Limitation

Visible particulate emissions from any stack serving this emissions unit shall not exceed twenty percent opacity, as a six- minute average, except as provided by rule.

Applicable Compliance Method

If required by Ohio EPA, compliance shall be determined by Method 9, Visible Determination of the Opacity of Emissions from Stationary Sources, 40 CFR Part 60, Appendix A, as specified in OAC rule 3745-17-03(B)(1).

1b. Emission Limitation

0.551 pound per hour and 2.4 tons per year of particulate emissions

Applicable Compliance Method

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: (P035)

If required by Ohio EPA, compliance with the hourly particulate emission limit above shall be determined in accordance with OAC rule 3745-17-03 and Method 5 of 40 CFR Part 60, Appendix A.

Because the annual particulate limit was established by multiplying the short-term limit of 0.551 lb/hr by 8,760 hours of operation per year and dividing by 2000 lbs/ton, compliance with the annual limit is assumed provided that compliance with the hourly limit is maintained.

1c. Emission Limitation

NO_x emissions shall not exceed 15.23 pounds per hour from this emissions unit, and 194.1 TPY, based on rolling 12-month summations from all production, repair and bench lathes (emissions units P025, P032-P043, combined).

Applicable Compliance Method

If required by Ohio EPA, compliance with the hourly NO_x emission limitation above, shall be determined by using Method 7 of 40 CFR Part 60, Appendix A.

Compliance with monthly, annual and rolling, 12-month NO_x emission limitations shall be determined in accordance with the equations and record keeping in Section A.III.2. of these terms and conditions and summed with the total annual and rolling NO_x emissions from all production and bench lathes.

2. The permittee shall conduct, or have conducted, emission testing of the mass emission rates for particulate emissions and NO_x for this emissions unit in accordance with the following:

- a. The emission testing for NO_x and particulate emissions shall be conducted within 12 months after the effective date of Permit to Install 02-13174. Thereafter, emission testing for NO_x shall be conducted annually.

If the permittee demonstrates that all 6 production lathes rated at 1.26 MmBtu/hr (emissions units P025, and P032-P036) are essentially identical in operation, size and capacity, configuration and product line, in which case, with approval from the Ohio EPA, the permittee shall test one representative unit, at or near maximum capacity, on an annual basis.

- b. The emission testing shall be conducted to determine compliance with the allowable emission rates for particulate emissions and NO_x.
- c. The following test methods from 40 CFR Part 60, Appendix A, shall be employed to determine compliance with the allowable emission rates for particulate and NO_x respectively:

Method 5 "Determination of Particulate Emissions from Stationary Sources" and Method 7 "Determination of Nitrogen Oxide Emissions from Stationary Sources and the requirements of OAC rule 3745-31-05.

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: (P035)

- d. The tests shall be conducted while the emissions unit is operating at or near its maximum capacity, unless otherwise specified by the Northeast District of the Ohio EPA.

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 Northeast District Office and the Lake County General Health District. 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 tests.

Failure to submit such notification for review and approval prior to the tests may result in the Ohio EPA Northeast District Office's refusal to accept the results of the emissions tests.

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

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

VI Miscellaneous Requirements

None

Emissions Unit: (P035)

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|--|---|---|
| | none | none |

2. Additional Terms and Conditions

None

II Operational Restrictions

None

III Monitoring and/or Recordkeeping

None

IV Reporting Requirements

None

V Testing Requirements

None

VI Miscellaneous Requirements

None

Emissions Unit: (P036)

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: (P036)

Activity Description: Large diameter lathe number 21 (natural gas fired) 1.26 MMBTU/hr; H2 pilot

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|--|---|---|
| P036- Large diameter lathe number 21 (natural gas fired) 1.26 MMBTU/hr; H2 pilot | OAC rule 3745-31-05(A) and (D) PTI 02-13174 (synthetic minor) | <p>NOx emissions shall not exceed 15.23 pounds per hour from this emissions unit and 194.1 TPY based on rolling 12-month summations for all production, repair and bench lathes (emissions units P025 and P032-P043), combined. (The 15.23 pounds per hour limitation is the potential to emit for this emissions unit; therefore, monitoring, record keeping, and reporting requirements are not needed for this emission limitation.)</p> <p>The requirements of this rule also include compliance with the requirements of OAC rules 3745-17-07(A), 3745-17-11(B), 3745-18-06, 3745-21-08, and 3745-23-06(B).</p> <p>The total particulate emissions from the stack serving this emissions unit, shall not exceed 2.4 tons per year.</p> |

Emissions Unit: (P036)

| | |
|---------------------------|--|
| OAC rule 3745-17-07(A) | Visible particulate emissions from any stack associated with this emissions unit shall not exceed twenty percent opacity, as a six-minute average, except as provided by rule. |
| OAC rule 3745-17-11(B)(1) | The total particulate emissions from the stack serving this emissions unit, shall not exceed 0.551 pound per hour based on Table I of OAC rule 3745-17-11 (with a maximum process weight rate of 100 pounds per hour). |
| OAC rule 3745-18-06(E) | See A.I.2.a. |
| OAC rule 3745-21-08 | See A.I.2.b. |
| OAC rule 3745-23-06(B) | See A.I.2.b. |

2. Additional Terms and Conditions

- 2.a** Because the process weight rate for this individual lathe is less than 1000 lbs per hour, this emissions unit is exempt from the requirements of this rule.
- 2.b** The permittee has satisfied the "best available control techniques and operating practices" required pursuant to OAC rule 3745-21-08(B) by committing to comply with the best available technology requirements established in Permit to Install 02-13174.

On November 5, 2002, OAC rule 3745-21-08 was revised to delete paragraph (B); therefore, paragraph (B) is no longer part of the State regulations. However, that rule revision has not yet been submitted to the U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). When the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-21-08, the requirement to satisfy the "best available control techniques and operating practices" will no longer exist as part of the federally-approved SIP for Ohio, and this term and condition will no longer be applicable to this emissions unit.

The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06(B) by committing to comply with the best available technology requirements established pursuant to OAC rule 3745-31-05(A)(3) in Permit to Install 02-13174.

- 2.c** It is the permittee's normal practice to vent all of the NOx emissions from this emissions unit to the stack; however, it is understood that a small number of molecules of NOx may

Emissions Unit: (P036)

not be captured and vented to the stack. The NOx emissions from the cooling of the tubes produced on this lathe shall be vented to the stack.

2.d All particulate emissions from this emissions unit shall be vented to the stack.

2.e This emissions unit is capable of burning only natural gas and hydrogen.

II Operational Restrictions

1. The maximum annual fuel usage for emissions units P025, P032-P042, combined, shall not exceed 30.29 million standard cubic feet of natural gas based on rolling, 12-month summations.
2. To ensure enforceability during the first twelve (12) months of operation following the effective date of PTI 02-13174, the permittee shall not exceed the following natural gas usage levels for all 11 production lathes:

| CALENDAR MONTHS FOLLOWING PTI EFFECTIVE DATE | MAXIMUM ALLOWABLE CUMULATIVE FUEL USAGE |
|--|---|
|--|---|

(mmSCF)
(natural gas)

| | |
|------|-------|
| 1-1 | 10.0 |
| 1-2 | 11.8 |
| 1-3 | 13.6 |
| 1-4 | 15.5 |
| 1-5 | 17.3 |
| 1-6 | 19.1 |
| 1-7 | 21.0 |
| 1-8 | 22.8 |
| 1-9 | 24.6 |
| 1-10 | 26.5 |
| 1-11 | 28.4 |
| 1-12 | 30.29 |

After the first 12 calendar months of operation following the effective date of PTI 02-13174, the permittee shall comply with the annual natural gas usage limitations based on rolling, 12-month summations.

III Monitoring and/or Recordkeeping

1. The permittee shall perform daily checks, when any of the equipment comprising this 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:

Emissions Unit: (P036)

- a. the color of the emissions;
- b. the total duration of any visible emission incident; and
- c. any corrective actions taken to eliminate the visible emissions.

Notwithstanding the frequency of reporting requirements specified in section A.IV, the permittee may reduce the frequency of visual observations for this emissions unit from daily to weekly readings if the following conditions are met:

- a. for 45 days this emissions unit's visual observations indicate no visible emissions; and
- b. the permittee continues to comply with all the record keeping and monitoring requirements specified in section A.III.1.

The permittee shall revert to daily readings for this emissions unit if any visible emissions are observed. The permittee may again reduce the frequency of visual observations from daily to weekly after obtaining 45 consecutive days of observations with no visible emissions for this emissions unit.

2. The permittee shall maintain monthly records of the following information for emissions units P025 and P032-P042, combined:
 - a. the total natural gas usage;
 - b. the rolling, 12-month natural gas usage;
 - c. the rolling, 12-month NO_x emissions.

Also, during the first 12 calendar months of operation, after the effective date of PTI #02-13174, the permittee shall record the cumulative natural gas usage, for all production lathes (emissions units P025 and P032-P042), combined.

Total NO_x monthly emissions, in tons, resulting from the natural gas usage in all production lathes (16-27), combined, shall be calculated using the following equation:

$$\text{NO}_x, \text{ in tons} = \text{total natural gas usage (mmscf/month)} \times 12.09 \text{ lbs/mmBtu} \times \frac{1}{1050 \text{ mmBtu/mmscf}} \times 1 \text{ ton/2000 lbs}$$

The emission factor for NO_x is based on a 1998 stack test and equals 12.09 lbs/mmBtu.

The natural gas usage is for all LD lathes 16-27, combined.

The heat content of natural gas = 1050 mmBtu/mmscf.

Monthly results shall be summed to obtain the annual and rolling NO_x emissions.

Emissions Unit: (P036)

IV Reporting Requirements

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

These reports shall be submitted to the Northeast District Office of the Ohio EPA by January 31 and July 31 of each year and shall cover the previous 6-month period.

2. The permittee shall submit quarterly deviation (excursion) reports that identify all exceedances of the following:
 - a. after the first twelve calendar months of operation following the effective date of PTI 02-13174, the rolling, 12-month limitations for natural gas fuel usage for all production lathes (emissions units P025 and P032-P042), combined; and
 - b. for the first 12 calendar months of operation following the effective date of PTI 02-13174, the monthly allowable cumulative fuel usage for natural gas for all production lathes (emissions units P025 and P032-P042), combined.
3. The permittee shall submit annual reports that specify the total amount of natural gas used and the total amount of NO_x emitted from emissions units P025 and P032-P042 for the previous calendar year by April 15 of the following year.

V Testing Requirements

1. Compliance with the emission limitations in Section A.I.1. of these terms and conditions shall be determined in accordance with the following methods:

- 1a. Emission Limitation

Visible particulate emissions from any stack serving this emissions unit shall not exceed twenty percent opacity, as a six- minute average, except as provided by rule.

Applicable Compliance Method

If required by Ohio EPA, compliance shall be determined by Method 9, Visible Determination of the Opacity of Emissions from Stationary Sources, 40 CFR Part 60, Appendix A, as specified in OAC rule 3745-17-03(B)(1).

- 1b. Emission Limitation

0.551 pound per hour and 2.4 tons per year of particulate emissions

Emissions Unit: (P036)

Applicable Compliance Method

If required by Ohio EPA, compliance with the hourly particulate emission limit above shall be determined in accordance with OAC rule 3745-17-03 and Method 5 of 40 CFR Part 60, Appendix A.

Because the annual particulate limit was established by multiplying the short-term limit of 0.551 lb/hr by 8,760 hours of operation per year and dividing by 2000 lbs/ton, compliance with the annual limit is assumed provided that compliance with the hourly limit is maintained.

1c. Emission Limitation

NOx emissions shall not exceed 15.23 pounds per hour from this emissions unit, and 194.1 TPY, based on rolling 12-month summations from all production, repair and bench lathes (emissions units P025, P032-P043, combined).

Applicable Compliance Method

If required by Ohio EPA, compliance with the hourly NOx emission limitation above, shall be determined by using Method 7 of 40 CFR Part 60, Appendix A.

Compliance with monthly, annual and rolling, 12-month NOx emission limitations shall be determined in accordance with the equations and record keeping in Section A.III.2. of these terms and conditions and summed with the total annual and rolling NOx emissions from all production and bench lathes.

2. The permittee shall conduct, or have conducted, emission testing of the mass emission rates for particulate emissions and NOx for this emissions unit in accordance with the following:

- a. The emission testing for NOx and particulate emissions shall be conducted within 12 months after the effective date of Permit to Install 02-13174. Thereafter, emission testing for NOx shall be conducted annually.

If the permittee demonstrates that all 6 production lathes rated at 1.26 MmBtu/hr (emissions units P025, and P032-P036) are essentially identical in operation, size and capacity, configuration and product line, in which case, with approval from the Ohio EPA, the permittee shall test one representative unit, at or near maximum capacity, on an annual basis.

- b. The emission testing shall be conducted to determine compliance with the allowable emission rates for particulate emissions and NOx.
- c. The following test methods from 40 CFR Part 60, Appendix A, shall be employed to determine compliance with the allowable emission rates for particulate and NOx respectively:

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: (P036)

Method 5 "Determination of Particulate Emissions from Stationary Sources" and Method 7 "Determination of Nitrogen Oxide Emissions from Stationary Sources and the requirements of OAC rule 3745-31-05.

- d. The tests shall be conducted while the emissions unit is operating at or near its maximum capacity, unless otherwise specified by the Northeast District of the Ohio EPA.

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 Northeast District Office and the Lake County General Health District. 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 tests.

Failure to submit such notification for review and approval prior to the tests may result in the Ohio EPA Northeast District Office's refusal to accept the results of the emissions tests.

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

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

VI Miscellaneous Requirements

None

Emissions Unit: (P036)

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|--|---|---|
| | none | none |

2. Additional Terms and Conditions

None

II Operational Restrictions

None

III Monitoring and/or Recordkeeping

None

IV Reporting Requirements

None

V Testing Requirements

None

VI Miscellaneous Requirements

None

Emissions Unit: (P037)

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: (P037)

Activity Description:

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|--|---|---|
| P037- Large diameter lathe number 22 (natural gas fired) 1.26 MMBTU/hr; H2 pilot | OAC rule 3745-31-05(A) and (D) PTI 02-13174 (synthetic minor) | <p>NOx emissions shall not exceed 26.72 pounds per hour from this emissions unit and 194.1 TPY based on rolling 12-month summations for all production, repair and bench lathes (emissions units P025 and P032-P043), combined. (The 26.72 pounds per hour limitation is the potential to emit for this emissions unit; therefore, monitoring, record keeping, and reporting requirements are not needed for this emission limitation.)</p> <p>The requirements of this rule also include compliance with the requirements of OAC rules 3745-17-07(A), 3745-17-11(B), 3745-18-06, 3745-21-08, and 3745-23-06(B).</p> <p>The total particulate emissions from the stack serving this emissions unit, shall not exceed 2.4 tons per year.</p> |

Emissions Unit: (P037)

| | |
|---------------------------|--|
| OAC rule 3745-17-07(A) | Visible particulate emissions from any stack associated with this emissions unit shall not exceed twenty percent opacity, as a six-minute average, except as provided by rule. |
| OAC rule 3745-17-11(B)(1) | The total particulate emissions from the stack serving this emissions unit, shall not exceed 0.551 pound per hour based on Table I of OAC rule 3745-17-11 (with a maximum process weight rate of 100 pounds per hour). |
| OAC rule 3745-18-06(E) | See A.I.2.a. |
| OAC rule 3745-21-08 | See A.I.2.b. |
| OAC rule 3745-23-06(B) | See A.I.2.b. |

2. Additional Terms and Conditions

- 2.a** Because the process weight rate for this individual lathe is less than 1000 lbs per hour, this emissions unit is exempt from the requirements of this rule.
- 2.b** The permittee has satisfied the "best available control techniques and operating practices" required pursuant to OAC rule 3745-21-08(B) by committing to comply with the best available technology requirements established in Permit to Install 02-13174.

On November 5, 2002, OAC rule 3745-21-08 was revised to delete paragraph (B); therefore, paragraph (B) is no longer part of the State regulations. However, that rule revision has not yet been submitted to the U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). When the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-21-08, the requirement to satisfy the "best available control techniques and operating practices" will no longer exist as part of the federally-approved SIP for Ohio, and this term and condition will no longer be applicable to this emissions unit.

The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06(B) by committing to comply with the best available technology requirements established pursuant to OAC rule 3745-31-05(A)(3) in Permit to Install 02-13174.

- 2.c** It is the permittee's normal practice to vent all of the NO_x emissions from this emissions unit to the stack; however, it is understood that a small number of molecules of NO_x may

Emissions Unit: (P037)

not be captured and vented to the stack. The NOx emissions from the cooling of the tubes produced on this lathe shall be vented to the stack.

2.d All particulate emissions from this emissions unit shall be vented to the stack.

2.e This emissions unit is capable of burning only natural gas and hydrogen.

II Operational Restrictions

1. The maximum annual fuel usage for emissions units P025, P032-P042, combined, shall not exceed 30.29 million standard cubic feet of natural gas based on rolling, 12-month summations.
2. To ensure enforceability during the first twelve (12) months of operation following the effective date of PTI 02-13174, the permittee shall not exceed the following natural gas usage levels for all 11 production lathes:

| CALENDAR MONTHS FOLLOWING PTI EFFECTIVE DATE | MAXIMUM ALLOWABLE CUMULATIVE FUEL USAGE |
|--|--|
|--|--|

(mmSCF)
(natural gas)

| | |
|------|-------|
| 1-1 | 10.0 |
| 1-2 | 11.8 |
| 1-3 | 13.6 |
| 1-4 | 15.5 |
| 1-5 | 17.3 |
| 1-6 | 19.1 |
| 1-7 | 21.0 |
| 1-8 | 22.8 |
| 1-9 | 24.6 |
| 1-10 | 26.5 |
| 1-11 | 28.4 |
| 1-12 | 30.29 |

After the first 12 calendar months of operation following the effective date of PTI 02-13174, the permittee shall comply with the annual natural gas usage limitations based on rolling, 12-month summations.

III Monitoring and/or Recordkeeping

1. The permittee shall perform daily checks, when any of the equipment comprising this 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:

Emissions Unit: (P037)

- a. the color of the emissions;
- b. the total duration of any visible emission incident; and
- c. any corrective actions taken to eliminate the visible emissions.

Notwithstanding the frequency of reporting requirements specified in section A.IV, the permittee may reduce the frequency of visual observations for this emissions unit from daily to weekly readings if the following conditions are met:

- a. for 45 days this emissions unit's visual observations indicate no visible emissions; and
- b. the permittee continues to comply with all the record keeping and monitoring requirements specified in section A.III.1.

The permittee shall revert to daily readings for this emissions unit if any visible emissions are observed. The permittee may again reduce the frequency of visual observations from daily to weekly after obtaining 45 consecutive days of observations with no visible emissions for this emissions unit.

2. The permittee shall maintain monthly records of the following information for emissions units P025 and P032-P042, combined:
 - a. the total natural gas usage;
 - b. the rolling, 12-month natural gas usage;
 - c. the rolling, 12-month NO_x emissions.

Also, during the first 12 calendar months of operation, after the effective date of PTI #02-13174, the permittee shall record the cumulative natural gas usage, for all production lathes (emissions units P025 and P032-P042), combined.

Total NO_x monthly emissions, in tons, resulting from the natural gas usage in all production lathes (16-27), combined, shall be calculated using the following equation:

$$\text{NO}_x, \text{ in tons} = \text{total natural gas usage (mmscf/month)} \times 12.09 \text{ lbs/mmBtu} \times \frac{1}{1050 \text{ mmBtu/mmscf}} \times 1 \text{ ton/2000 lbs}$$

The emission factor for NO_x is based on a 1998 stack test and equals 12.09 lbs/mmBtu.

The natural gas usage is for all LD lathes 16-27, combined.

The heat content of natural gas = 1050 mmBtu/mmscf.

Monthly results shall be summed to obtain the annual and rolling NO_x emissions.

Emissions Unit: (P037)

IV Reporting Requirements

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

These reports shall be submitted to the Northeast District Office of the Ohio EPA by January 31 and July 31 of each year and shall cover the previous 6-month period.

2. The permittee shall submit quarterly deviation (excursion) reports that identify all exceedances of the following:
 - a. after the first twelve calendar months of operation following the effective date of PTI 02-13174, the rolling, 12-month limitations for natural gas fuel usage for all production lathes (emissions units P025 and P032-P042), combined; and
 - b. for the first 12 calendar months of operation following the effective date of PTI 02-13174, the monthly allowable cumulative fuel usage for natural gas for all production lathes (emissions units P025 and P032-P042), combined.
3. The permittee shall submit annual reports that specify the total amount of natural gas used and the total amount of NO_x emitted from emissions units P025 and P032-P042 for the previous calendar year by April 15 of the following year.

V Testing Requirements

1. Compliance with the emission limitations in Section A.I.1. of these terms and conditions shall be determined in accordance with the following methods:

- 1a. Emission Limitation

Visible particulate emissions from any stack serving this emissions unit shall not exceed twenty percent opacity, as a six- minute average, except as provided by rule.

Applicable Compliance Method

If required by Ohio EPA, compliance shall be determined by Method 9, Visible Determination of the Opacity of Emissions from Stationary Sources, 40 CFR Part 60, Appendix A, as specified in OAC rule 3745-17-03(B)(1).

- 1b. Emission Limitation

0.551 pound per hour and 2.4 tons per year of particulate emissions

Emissions Unit: (P037)

Applicable Compliance Method

If required by Ohio EPA, compliance with the hourly particulate emission limit above shall be determined in accordance with OAC rule 3745-17-03 and Method 5 of 40 CFR Part 60, Appendix A.

Because the annual particulate limit was established by multiplying the short-term limit of 0.551 lb/hr by 8,760 hours of operation per year and dividing by 2000 lbs/ton, compliance with the annual limit is assumed provided that compliance with the hourly limit is maintained.

1c. Emission Limitation

NOx emissions shall not exceed 26.72 pounds per hour from this emissions unit, and 194.1 TPY, based on rolling 12-month summations from all production lathes.

Applicable Compliance Method

If required by Ohio EPA, compliance with the hourly NOx emission limitation above, shall be determined by using Method 7 of 40 CFR Part 60, Appendix A.

Compliance with monthly, annual and rolling, 12-month NOx emission limitations shall be determined in accordance with the equations and record keeping in Section A.III.2. of these terms and conditions and summed with the total annual and rolling NOx emissions from all production and bench lathes.

2. The permittee shall conduct, or have conducted, emission testing of the mass emission rates for particulate emissions and NOx for this emissions unit in accordance with the following:

- a. The emission testing for NOx and particulate emissions shall be conducted within 12 months after the effective date of Permit to Install 02-13174. Thereafter, emission testing for NOx shall be conducted annually.

If the permittee demonstrates that all 6 production lathes rated at 2.21mmBtu/hr (emissions units P037-P042) are essentially identical in operation, size and capacity, configuration and product line, in which case, with approval from the Ohio EPA, the permittee shall test one representative unit, at or near maximum capacity, on an annual basis.

- b. The emission testing shall be conducted to determine compliance with the allowable emission rates for particulate emissions and NOx.
- c. The following test methods from 40 CFR Part 60, Appendix A, shall be employed to determine compliance with the allowable emission rates for particulate and NOx respectively:

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: (P037)

Method 5 "Determination of Particulate Emissions from Stationary Sources" and Method 7 "Determination of Nitrogen Oxide Emissions from Stationary Sources and the requirements of OAC rule 3745-31-05.

- d. The tests shall be conducted while the emissions unit is operating at or near its maximum capacity, unless otherwise specified by the Northeast District of the Ohio EPA.

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 Northeast District Office and the Lake County General Health District. 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 tests.

Failure to submit such notification for review and approval prior to the tests may result in the Ohio EPA Northeast District Office's refusal to accept the results of the emissions tests.

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

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

VI Miscellaneous Requirements

None

Emissions Unit: (P037)

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|--|---|---|
| | none | none |

2. Additional Terms and Conditions

None

II Operational Restrictions

None

III Monitoring and/or Recordkeeping

None

IV Reporting Requirements

None

V Testing Requirements

None

VI Miscellaneous Requirements

None

Emissions Unit: (P038)

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: (P038)

Activity Description: Large diameter lathe number 23 (natural gas fired) 1.26 MMBTU/hr; H2 pilot

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|--|---|---|
| P038- Large diameter lathe number 23 (natural gas fired) 1.26 MMBTU/hr; H2 pilot | OAC rule 3745-31-05(A) and (D) PTI 02-13174 (synthetic minor) | <p>NOx emissions shall not exceed 26.72 pounds per hour from this emissions unit and 194.1 TPY based on rolling 12-month summations for all production, repair and bench lathes (emissions units P025 and P032-P043), combined. (The 26.72 pounds per hour limitation is the potential to emit for this emissions unit; therefore, monitoring, record keeping, and reporting requirements are not needed for this emission limitation.)</p> <p>The requirements of this rule also include compliance with the requirements of OAC rules 3745-17-07(A), 3745-17-11(B), 3745-18-06, 3745-21-08, and 3745-23-06(B).</p> <p>The total particulate emissions from the stack serving this emissions unit, shall not exceed 2.4 tons per year.</p> |

Emissions Unit: (P038)

| | |
|---------------------------|--|
| OAC rule 3745-17-07(A) | Visible particulate emissions from any stack associated with this emissions unit shall not exceed twenty percent opacity, as a six-minute average, except as provided by rule. |
| OAC rule 3745-17-11(B)(1) | The total particulate emissions from the stack serving this emissions unit, shall not exceed 0.551 pound per hour based on Table I of OAC rule 3745-17-11 (with a maximum process weight rate of 100 pounds per hour). |
| OAC rule 3745-18-06(E) | See A.I.2.a. |
| OAC rule 3745-21-08 | See A.I.2.b. |
| OAC rule 3745-23-06(B) | See A.I.2.b. |

2. Additional Terms and Conditions

- 2.a** Because the process weight rate for this individual lathe is less than 1000 lbs per hour, this emissions unit is exempt from the requirements of this rule.
- 2.b** The permittee has satisfied the "best available control techniques and operating practices" required pursuant to OAC rule 3745-21-08(B) by committing to comply with the best available technology requirements established in Permit to Install 02-13174.

On November 5, 2002, OAC rule 3745-21-08 was revised to delete paragraph (B); therefore, paragraph (B) is no longer part of the State regulations. However, that rule revision has not yet been submitted to the U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). When the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-21-08, the requirement to satisfy the "best available control techniques and operating practices" will no longer exist as part of the federally-approved SIP for Ohio, and this term and condition will no longer be applicable to this emissions unit.

The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06(B) by committing to comply with the best available technology requirements established pursuant to OAC rule 3745-31-05(A)(3) in Permit to Install 02-13174.

- 2.c** It is the permittee's normal practice to vent all of the NOx emissions from this emissions unit to the stack; however, it is understood that a small number of molecules of NOx may

Emissions Unit: (P038)

not be captured and vented to the stack. The NOx emissions from the cooling of the tubes produced on this lathe shall be vented to the stack.

2.d All particulate emissions from this emissions unit shall be vented to the stack.

2.e This emissions unit is capable of burning only natural gas and hydrogen.

II Operational Restrictions

1. The maximum annual fuel usage for emissions units P025, P032-P042, combined, shall not exceed 30.29 million standard cubic feet of natural gas based on rolling, 12-month summations.
2. To ensure enforceability during the first twelve (12) months of operation following the effective date of PTI 02-13174, the permittee shall not exceed the following natural gas usage levels for all 11 production lathes:

| CALENDAR MONTHS FOLLOWING PTI EFFECTIVE DATE | MAXIMUM ALLOWABLE CUMULATIVE FUEL USAGE |
|--|--|
|--|--|

(mmSCF)
(natural gas)

| | |
|------|-------|
| 1-1 | 10.0 |
| 1-2 | 11.8 |
| 1-3 | 13.6 |
| 1-4 | 15.5 |
| 1-5 | 17.3 |
| 1-6 | 19.1 |
| 1-7 | 21.0 |
| 1-8 | 22.8 |
| 1-9 | 24.6 |
| 1-10 | 26.5 |
| 1-11 | 28.4 |
| 1-12 | 30.29 |

After the first 12 calendar months of operation following the effective date of PTI 02-13174, the permittee shall comply with the annual natural gas usage limitations based on rolling, 12-month summations.

III Monitoring and/or Recordkeeping

1. The permittee shall perform daily checks, when any of the equipment comprising this 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:

Emissions Unit: (P038)

- a. the color of the emissions;
- b. the total duration of any visible emission incident; and
- c. any corrective actions taken to eliminate the visible emissions.

Notwithstanding the frequency of reporting requirements specified in section A.IV, the permittee may reduce the frequency of visual observations for this emissions unit from daily to weekly readings if the following conditions are met:

- a. for 45 days this emissions unit's visual observations indicate no visible emissions; and
- b. the permittee continues to comply with all the record keeping and monitoring requirements specified in section A.III.1.

The permittee shall revert to daily readings for this emissions unit if any visible emissions are observed. The permittee may again reduce the frequency of visual observations from daily to weekly after obtaining 45 consecutive days of observations with no visible emissions for this emissions unit.

2. The permittee shall maintain monthly records of the following information for emissions units P025 and P032-P042, combined:
 - a. the total natural gas usage;
 - b. the rolling, 12-month natural gas usage;
 - c. the rolling, 12-month NO_x emissions.

Also, during the first 12 calendar months of operation, after the effective date of PTI #02-13174, the permittee shall record the cumulative natural gas usage, for all production lathes (P025 and P032-P042), combined.

Total NO_x monthly emissions, in tons, resulting from the natural gas usage in all production lathes (16-27), combined, shall be calculated using the following equation:

$$\text{NO}_x, \text{ in tons} = \text{total natural gas usage (mmscf/month)} \times 12.09 \text{ lbs/mmBtu} \times \frac{1}{1050 \text{ mmBtu/mmscf}} \times 1 \text{ ton/2000 lbs}$$

The emission factor for NO_x is based on a 1998 stack test and equals 12.09 lbs/mmBtu.

The natural gas usage is for all LD lathes 16-27, combined.

The heat content of natural gas = 1050 mmBtu/mmscf.

Monthly results shall be summed to obtain the annual and rolling NO_x emissions..

Emissions Unit: (P038)

IV Reporting Requirements

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

These reports shall be submitted to the Northeast District Office of the Ohio EPA by January 31 and July 31 of each year and shall cover the previous 6-month period.

2. The permittee shall submit quarterly deviation (excursion) reports that identify all exceedances of the following:
 - a. after the first twelve calendar months of operation following the effective date of PTI 02-13174, the rolling, 12-month limitations for natural gas fuel usage for all production lathes (P025 and P032-P042), combined; and
 - b. for the first 12 calendar months of operation following the effective date of PTI 02-13174, the monthly allowable cumulative fuel usage for natural gas for all production lathes (emissions units P025 and P032-P042), combined.
3. The permittee shall submit annual reports that specify the total amount of natural gas used and the total amount of NO_x emitted from emissions units P025 and P032-P042 for the previous calendar year by April 15 of the following year.

V Testing Requirements

1. Compliance with the emission limitations in Section A.I.1. of these terms and conditions shall be determined in accordance with the following methods:

- 1a. Emission Limitation

Visible particulate emissions from any stack serving this emissions unit shall not exceed twenty percent opacity, as a six- minute average, except as provided by rule.

Applicable Compliance Method

If required by Ohio EPA, compliance shall be determined by Method 9, Visible Determination of the Opacity of Emissions from Stationary Sources, 40 CFR Part 60, Appendix A, as specified in OAC rule 3745-17-03(B)(1).

- 1b. Emission Limitation

0.551 pound per hour and 2.4 tons per year of particulate emissions

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: (P038)

Applicable Compliance Method

If required by Ohio EPA, compliance with the hourly particulate emission limit above shall be determined in accordance with OAC rule 3745-17-03 and Method 5 of 40 CFR Part 60, Appendix A.

Because the annual particulate limit was established by multiplying the short-term limit of 0.551 lb/hr by 8,760 hours of operation per year and dividing by 2000 lbs/ton, compliance with the annual limit is assumed provided that compliance with the hourly limit is maintained.

1c. Emission Limitation

NOx emissions shall not exceed 26.72 pounds per hour from this emissions unit, and 194.1 TPY, based on rolling 12-month summations from all production, repair and bench lathes (emissions units P025, P032-P043, combined)..

Applicable Compliance Method

If required by Ohio EPA, compliance with the hourly NOx emission limitation above, shall be determined by using Method 7 of 40 CFR Part 60, Appendix A.

Compliance with monthly, annual and rolling, 12-month NOx emission limitations shall be determined in accordance with the equations and record keeping in Section A.III.2. of these terms and conditions and summed with the total annual and rolling NOx emissions from all production and bench lathes.

2. The permittee shall conduct, or have conducted, emission testing of the mass emission rates for particulate emissions and NOx for this emissions unit in accordance with the following:

- a. The emission testing for NOx and particulate emissions shall be conducted within 12 months after the effective date of Permit to Install 02-13174. Thereafter, emission testing for NOx shall be conducted annually.

If the permittee demonstrates that all 6 production lathes rated at 2.21mmBtu/hr (emissions units P037-P042) are essentially identical in operation, size and capacity, configuration and product line, in which case, with approval from the Ohio EPA, the permittee shall test one representative unit, at or near maximum capacity, on an annual basis.

- b. The emission testing shall be conducted to determine compliance with the allowable emission rates for particulate emissions and NOx.
- c. The following test methods from 40 CFR Part 60, Appendix A, shall be employed to determine compliance with the allowable emission rates for particulate and NOx respectively:

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: (P038)

Method 5 "Determination of Particulate Emissions from Stationary Sources" and Method 7 "Determination of Nitrogen Oxide Emissions from Stationary Sources and the requirements of OAC rule 3745-31-05.

- d. The tests shall be conducted while the emissions unit is operating at or near its maximum capacity, unless otherwise specified by the Northeast District of the Ohio EPA.

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 Northeast District Office and the Lake County General Health District. 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 tests.

Failure to submit such notification for review and approval prior to the tests may result in the Ohio EPA Northeast District Office's refusal to accept the results of the emissions tests.

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

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

VI Miscellaneous Requirements

None

Emissions Unit: (P038)

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|--|---|---|
| | none | none |

2. Additional Terms and Conditions

None

II Operational Restrictions

None

III Monitoring and/or Recordkeeping

None

IV Reporting Requirements

None

V Testing Requirements

None

VI Miscellaneous Requirements

None

Emissions Unit: (P039)

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: (P039)

Activity Description: Large diameter lathe number 24 (natural gas fired) 1.26 MMBTU/hr; H2 pilot

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|--|---|--|
| P039- Large diameter lathe number 24 (natural gas fired) 1.26 MMBTU/hr; H2 pilot | OAC rule 3745-31-05(A) and (D) PTI 02-13174 (synthetic minor) OAC rule 3745-17-07(A) | NOx emissions shall not exceed 26.72 pounds per hour from this emissions unit and 194.1 TPY based on rolling 12-month summations for all production, repair and bench lathes (emissions units P025 and P032-P043), combined. (The 26.72 pounds per hour limitation is the potential to emit for this emissions unit; therefore, monitoring, record keeping, and reporting requirements are not needed for this emission limitation.) The requirements of this rule also include compliance with the requirements of OAC rules 3745-17-07(A), 3745-17-11(B), 3745-18-06, 3745-21-08, and 3745-23-06(B). The total particulate emissions from the stack serving this emissions unit, shall not exceed 2.4 tons per year. |

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: (P039)

OAC rule 3745-17-11(B)(1) Visible particulate emissions from any stack associated with this emissions unit shall not exceed twenty percent opacity, as a six-minute average, except as provided by rule.

OAC rule 3745-18-06(E) The total particulate emissions from the stack serving this emissions unit, shall not exceed 0.551 pound per hour based on Table I of OAC rule 3745-17-11 (with a maximum process weight rate of 100 pounds per hour).

OAC rule 3745-21-08 See A.I.2.a.

OAC rule 3745-23-06(B) See A.I.2.b.

2. Additional Terms and Conditions

2.a Because the process weight rate for this individual lathe is less than 1000 lbs per hour, this emissions unit is exempt from the requirements of this rule.

2.b The permittee has satisfied the "best available control techniques and operating practices" required pursuant to OAC rule 3745-21-08(B) by committing to comply with the best available technology requirements established in Permit to Install 02-13174.

On November 5, 2002, OAC rule 3745-21-08 was revised to delete paragraph (B); therefore, paragraph (B) is no longer part of the State regulations. However, that rule revision has not yet been submitted to the U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). When the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-21-08, the requirement to satisfy the "best available control techniques and operating practices" will no longer exist as part of the federally-approved SIP for Ohio, and this term and condition will no longer be applicable to this emissions unit.

The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06(B) by committing to comply with the best available technology requirements established pursuant to OAC rule 3745-31-05(A)(3) in Permit to Install 02-13174.

2.c It is the permittee's normal practice to vent all of the NO_x emissions from this emissions unit to the stack; however, it is understood that a small number of molecules of NO_x may not be captured and vented to the stack. The NO_x emissions from the cooling of the tubes produced on this lathe shall be vented to the stack.

Emissions Unit: (P039)

2.d All particulate emissions from this emissions unit shall be vented to the stack.

2.e This emissions unit is capable of burning only natural gas and hydrogen.

II Operational Restrictions

1. The maximum annual fuel usage for emissions units P025, P032-P042, combined, shall not exceed 30.29 million standard cubic feet of natural gas based on rolling, 12-month summations.
2. To ensure enforceability during the first twelve (12) months of operation following the effective date of PTI 02-13174, the permittee shall not exceed the following natural gas usage levels for all 11 production lathes:

| CALENDAR MONTHS FOLLOWING PTI EFFECTIVE DATE | MAXIMUM ALLOWABLE CUMULATIVE FUEL USAGE |
|--|--|
|--|--|

(mmSCF)
(natural gas)

| | |
|------|-------|
| 1-1 | 10.0 |
| 1-2 | 11.8 |
| 1-3 | 13.6 |
| 1-4 | 15.5 |
| 1-5 | 17.3 |
| 1-6 | 19.1 |
| 1-7 | 21.0 |
| 1-8 | 22.8 |
| 1-9 | 24.6 |
| 1-10 | 26.5 |
| 1-11 | 28.4 |
| 1-12 | 30.29 |

After the first 12 calendar months of operation following the effective date of PTI 02-13174, the permittee shall comply with the annual natural gas usage limitations based on rolling, 12-month summations.

III Monitoring and/or Recordkeeping

1. The permittee shall perform daily checks, when any of the equipment comprising this 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;

Emissions Unit: (P039)

- b. the total duration of any visible emission incident; and
- c. any corrective actions taken to eliminate the visible emissions.

Notwithstanding the frequency of reporting requirements specified in section A.IV, the permittee may reduce the frequency of visual observations for this emissions unit from daily to weekly readings if the following conditions are met:

- a. for 45 days this emissions unit's visual observations indicate no visible emissions; and
- b. the permittee continues to comply with all the record keeping and monitoring requirements specified in section A.III.1.

The permittee shall revert to daily readings for this emissions unit if any visible emissions are observed. The permittee may again reduce the frequency of visual observations from daily to weekly after obtaining 45 consecutive days of observations with no visible emissions for this emissions unit.

- 2. The permittee shall maintain monthly records of the following information for emissions units P025 and P032-P042, combined:
 - a. the total natural gas usage;
 - b. the rolling, 12-month natural gas usage;
 - c. the rolling, 12-month NO_x emissions.

Also, during the first 12 calendar months of operation, after the effective date of PTI #02-13174, the permittee shall record the cumulative natural gas usage, for all production lathes (emissions units P025 and P032-P042), combined.

Total NO_x monthly emissions, in tons, resulting from the natural gas usage in all production lathes (16-27), combined, shall be calculated using the following equation:

$$\text{NO}_x, \text{ in tons} = \frac{\text{total natural gas usage (mmscf/month)} \times 12.09 \text{ lbs/mmBtu}}{1050 \text{ mmBtu/mmscf} \times 1 \text{ ton}/2000 \text{ lbs}}$$

The emission factor for NO_x is based on a 1998 stack test and equals 12.09 lbs/mmBtu.

The natural gas usage is for all LD lathes 16-27, combined.

The heat content of natural gas = 1050 mmBtu/mmscf.

Monthly results shall be summed to obtain the annual and rolling NO_x emissions.

IV Reporting Requirements

- 1. The permittee shall submit semiannual written reports that:

Emissions Unit: (P039)

- a. identify all days during which any visible particulate emissions were observed from the stack serving this emissions unit; and
- b. describe any corrective actions taken to eliminate the visible particulate emissions.

These reports shall be submitted to the Northeast District Office of the Ohio EPA by January 31 and July 31 of each year and shall cover the previous 6-month period.

2. The permittee shall submit quarterly deviation (excursion) reports that identify all exceedances of the following:
 - a. after the first twelve calendar months of operation following the effective date of PTI 02-13174, the rolling, 12-month limitations for natural gas fuel usage for all production lathes (emissions units P025 and P032-P042), combined; and
 - b. for the first 12 calendar months of operation following the effective date of PTI 02-13174, the monthly allowable cumulative fuel usage for natural gas for all production lathes (emissions units P025 and P032-P042), combined.
3. The permittee shall submit annual reports that specify the total amount of natural gas used and the total amount of NOx emitted from emissions units P025 and P032-P042 for the previous calendar year by April 15 of the following year.

V Testing Requirements

1. Compliance with the emission limitations in Section A.I.1. of these terms and conditions shall be determined in accordance with the following methods:

- 1a. Emission Limitation

Visible particulate emissions from any stack serving this emissions unit shall not exceed twenty percent opacity, as a six- minute average, except as provided by rule.

Applicable Compliance Method

If required by Ohio EPA, compliance shall be determined by Method 9, Visible Determination of the Opacity of Emissions from Stationary Sources, 40 CFR Part 60, Appendix A, as specified in OAC rule 3745-17-03(B)(1).

- 1b. Emission Limitation

0.551 pound per hour and 2.4 tons per year of particulate emissions

Applicable Compliance Method

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: (P039)

If required by Ohio EPA, compliance with the hourly particulate emission limit above shall be determined in accordance with OAC rule 3745-17-03 and Method 5 of 40 CFR Part 60, Appendix A.

Because the annual particulate limit was established by multiplying the short-term limit of 0.551 lb/hr by 8,760 hours of operation per year and dividing by 2000 lbs/ton, compliance with the annual limit is assumed provided that compliance with the hourly limit is maintained.

1c. Emission Limitation

NOx emissions shall not exceed 26.72 pounds per hour from this emissions unit, and 194.1 TPY, based on rolling 12-month summations from all production, repair and bench lathes (emissions units P025, P032-P043, combined).

Applicable Compliance Method

If required by Ohio EPA, compliance with the hourly NOx emission limitation above, shall be determined by using Method 7 of 40 CFR Part 60, Appendix A.

Compliance with monthly, annual and rolling, 12-month NOx emission limitations shall be determined in accordance with the equations and record keeping in Section A.III.2. of these terms and conditions and summed with the total annual and rolling NOx emissions from all production and bench lathes.

2. The permittee shall conduct, or have conducted, emission testing of the mass emission rates for particulate emissions and NOx for this emissions unit in accordance with the following:

- a. The emission testing for NOx and particulate emissions shall be conducted within 12 months after the effective date of Permit to Install 02-13174. Thereafter, emission testing for NOx shall be conducted annually.

If the permittee demonstrates that all 6 production lathes rated at 2.21mmBtu/hr (emissions units P037-P042) are essentially identical in operation, size and capacity, configuration and product line, in which case, with approval from the Ohio EPA, the permittee shall test one representative unit, at or near maximum capacity, on an annual basis.

- b. The emission testing shall be conducted to determine compliance with the allowable emission rates for particulate emissions and NOx.
- c. The following test methods from 40 CFR Part 60, Appendix A, shall be employed to determine compliance with the allowable emission rates for particulate and NOx respectively:

Method 5 "Determination of Particulate Emissions from Stationary Sources" and Method 7 "Determination of Nitrogen Oxide Emissions from Stationary Sources and the requirements of OAC rule 3745-31-05.

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: (P039)

- d. The tests shall be conducted while the emissions unit is operating at or near its maximum capacity, unless otherwise specified by the Northeast District of the Ohio EPA.

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 Northeast District Office and the Lake County General Health District. 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 tests.

Failure to submit such notification for review and approval prior to the tests may result in the Ohio EPA Northeast District Office's refusal to accept the results of the emissions tests.

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

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

VI Miscellaneous Requirements

None

Emissions Unit: (P039)

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|--|---|---|
| | none | none |

2. Additional Terms and Conditions

None

II Operational Restrictions

None

III Monitoring and/or Recordkeeping

None

IV Reporting Requirements

None

V Testing Requirements

None

VI Miscellaneous Requirements

None

Emissions Unit: (P040)

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: (P040)

Activity Description: Large diameter lathe number 25 (natural gas fired) 1.26 MMBTU/hr; H2 pilot

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|--|---|---|
| P040- Large diameter lathe number 25 (natural gas fired) 1.26 MMBTU/hr; H2 pilot | OAC rule 3745-31-05(A) and (D) PTI 02-13174 (synthetic minor) | <p>NOx emissions shall not exceed 26.72 pounds per hour from this emissions unit and 194.1 TPY based on rolling 12-month summations for all production, repair and bench lathes (emissions units P025 and P032-P043), combined. (The 26.72 pounds per hour limitation is the potential to emit for this emissions unit; therefore, monitoring, record keeping, and reporting requirements are not needed for this emission limitation.)</p> <p>The requirements of this rule also include compliance with the requirements of OAC rules 3745-17-07(A), 3745-17-11(B), 3745-18-06, 3745-21-08, and 3745-23-06(B).</p> <p>The total particulate emissions from the stack serving this emissions unit, shall not exceed 2.4 tons per year.</p> |

Emissions Unit: (P040)

| | |
|---------------------------|--|
| OAC rule 3745-17-07(A) | Visible particulate emissions from any stack associated with this emissions unit shall not exceed twenty percent opacity, as a six-minute average, except as provided by rule. |
| OAC rule 3745-17-11(B)(1) | The total particulate emissions from the stack serving this emissions unit, shall not exceed 0.551 pound per hour based on Table I of OAC rule 3745-17-11 (with a maximum process weight rate of 100 pounds per hour). |
| OAC rule 3745-18-06(E) | See A.I.2.a. |
| OAC rule 3745-21-08 | See A.I.2.b. |
| OAC rule 3745-23-06(B) | See A.I.2.b. |

2. Additional Terms and Conditions

- 2.a** Because the process weight rate for this individual lathe is less than 1000 lbs per hour, this emissions unit is exempt from the requirements of this rule.
- 2.b** The permittee has satisfied the "best available control techniques and operating practices" required pursuant to OAC rule 3745-21-08(B) by committing to comply with the best available technology requirements established in Permit to Install 02-13174.

On November 5, 2002, OAC rule 3745-21-08 was revised to delete paragraph (B); therefore, paragraph (B) is no longer part of the State regulations. However, that rule revision has not yet been submitted to the U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). When the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-21-08, the requirement to satisfy the "best available control techniques and operating practices" will no longer exist as part of the federally-approved SIP for Ohio, and this term and condition will no longer be applicable to this emissions unit.

The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06(B) by committing to comply with the best available technology requirements established pursuant to OAC rule 3745-31-05(A)(3) in Permit to Install 02-13174.

- 2.c** It is the permittee's normal practice to vent all of the NO_x emissions from this emissions unit to the stack; however, it is understood that a small number of molecules of NO_x may

Emissions Unit: (P040)

not be captured and vented to the stack. The NOx emissions from the cooling of the tubes produced on this lathe shall be vented to the stack.

2.d All particulate emissions from this emissions unit shall be vented to the stack.

2.e This emissions unit is capable of burning only natural gas and hydrogen.

II Operational Restrictions

1. The maximum annual fuel usage for emissions units P025, P032-P042, combined, shall not exceed 30.29 million standard cubic feet of natural gas based on rolling, 12-month summations.
2. To ensure enforceability during the first twelve (12) months of operation following the effective date of PTI 02-13174, the permittee shall not exceed the following natural gas usage levels for all 11 production lathes:

| CALENDAR MONTHS FOLLOWING PTI EFFECTIVE DATE | MAXIMUM ALLOWABLE CUMULATIVE FUEL USAGE |
|--|---|
|--|---|

(mmSCF)
(natural gas)

| | |
|------|-------|
| 1-1 | 10.0 |
| 1-2 | 11.8 |
| 1-3 | 13.6 |
| 1-4 | 15.5 |
| 1-5 | 17.3 |
| 1-6 | 19.1 |
| 1-7 | 21.0 |
| 1-8 | 22.8 |
| 1-9 | 24.6 |
| 1-10 | 26.5 |
| 1-11 | 28.4 |
| 1-12 | 30.29 |

After the first 12 calendar months of operation following the effective date of PTI 02-13174, the permittee shall comply with the annual natural gas usage limitations based on rolling, 12-month summations.

III Monitoring and/or Recordkeeping

1. The permittee shall perform daily checks, when any of the equipment comprising this 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:

Emissions Unit: (P040)

- a. the color of the emissions;
- b. the total duration of any visible emission incident; and
- c. any corrective actions taken to eliminate the visible emissions.

Notwithstanding the frequency of reporting requirements specified in section A.IV, the permittee may reduce the frequency of visual observations for this emissions unit from daily to weekly readings if the following conditions are met:

- a. for 45 days this emissions unit's visual observations indicate no visible emissions; and
- b. the permittee continues to comply with all the record keeping and monitoring requirements specified in section A.III.1.

The permittee shall revert to daily readings for this emissions unit if any visible emissions are observed. The permittee may again reduce the frequency of visual observations from daily to weekly after obtaining 45 consecutive days of observations with no visible emissions for this emissions unit.

2. The permittee shall maintain monthly records of the following information for emissions units P025 and P032-P042, combined:
 - a. the total natural gas usage;
 - b. the rolling, 12-month natural gas usage;
 - c. the rolling, 12-month NO_x emissions.

Also, during the first 12 calendar months of operation, after the effective date of PTI #02-13174, the permittee shall record the cumulative natural gas usage, for all production lathes (emissions units P025 and P032-P042), combined.

Total NO_x monthly emissions, in tons, resulting from the natural gas usage in all production lathes (16-27), combined, shall be calculated using the following equation:

$$\text{NO}_x, \text{ in tons} = \text{total natural gas usage (mmscf/month)} \times 12.09 \text{ lbs/mmBtu} \times \frac{1}{1050 \text{ mmBtu/mmscf}} \times 1 \text{ ton/2000 lbs}$$

The emission factor for NO_x is based on a 1998 stack test and equals 12.09 lbs/mmBtu.

The natural gas usage is for all LD lathes 16-27, combined.

The heat content of natural gas = 1050 mmBtu/mmscf.

Monthly results shall be summed to obtain the annual and rolling NO_x emissions.

Emissions Unit: (P040)

IV Reporting Requirements

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

These reports shall be submitted to the Northeast District Office of the Ohio EPA by January 31 and July 31 of each year and shall cover the previous 6-month period.

2. The permittee shall submit quarterly deviation (excursion) reports that identify all exceedances of the following:
 - a. after the first twelve calendar months of operation following the effective date of PTI 02-13174, the rolling, 12-month limitations for natural gas fuel usage for all production lathes (emissions units P025 and P032-P042), combined; and
 - b. for the first 12 calendar months of operation following the effective date of PTI 02-13174, the monthly allowable cumulative fuel usage for natural gas for all production lathes (emissions units P025 and P032-P042), combined.
3. The permittee shall submit annual reports that specify the total amount of natural gas used and the total amount of NO_x emitted from emissions units P025 and P032-P042 for the previous calendar year by April 15 of the following year.

V Testing Requirements

1. Compliance with the emission limitations in Section A.I.1. of these terms and conditions shall be determined in accordance with the following methods:

- 1a. Emission Limitation

Visible particulate emissions from any stack serving this emissions unit shall not exceed twenty percent opacity, as a six- minute average, except as provided by rule.

Applicable Compliance Method

If required by Ohio EPA, compliance shall be determined by Method 9, Visible Determination of the Opacity of Emissions from Stationary Sources, 40 CFR Part 60, Appendix A, as specified in OAC rule 3745-17-03(B)(1).

- 1b. Emission Limitation

0.551 pound per hour and 2.4 tons per year of particulate emissions

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: (P040)

Applicable Compliance Method

If required by Ohio EPA, compliance with the hourly particulate emission limit above shall be determined in accordance with OAC rule 3745-17-03 and Method 5 of 40 CFR Part 60, Appendix A.

Because the annual particulate limit was established by multiplying the short-term limit of 0.551 lb/hr by 8,760 hours of operation per year and dividing by 2000 lbs/ton, compliance with the annual limit is assumed provided that compliance with the hourly limit is maintained.

1c. Emission Limitation

NOx emissions shall not exceed 26.72 pounds per hour from this emissions unit, and 194.1 TPY, based on rolling 12-month summations from all production, repair and bench lathes (emissions units P025, P032-P043, combined).

Applicable Compliance Method

If required by Ohio EPA, compliance with the hourly NOx emission limitation above, shall be determined by using Method 7 of 40 CFR Part 60, Appendix A.

Compliance with monthly, annual and rolling, 12-month NOx emission limitations shall be determined in accordance with the equations and record keeping in Section A.III.2. of these terms and conditions and summed with the total annual and rolling NOx emissions from all production and bench lathes.

2. The permittee shall conduct, or have conducted, emission testing of the mass emission rates for particulate emissions and NOx for this emissions unit in accordance with the following:

- a. The emission testing for NOx and particulate emissions shall be conducted within 12 months after the effective date of Permit to Install 02-13174. Thereafter, emission testing for NOx shall be conducted annually.

If the permittee demonstrates that all 6 production lathes rated at 2.21mmBtu/hr (emissions units P037-P042) are essentially identical in operation, size and capacity, configuration and product line, in which case, with approval from the Ohio EPA, the permittee shall test one representative unit, at or near maximum capacity, on an annual basis.

- b. The emission testing shall be conducted to determine compliance with the allowable emission rates for particulate emissions and NOx.
- c. The following test methods from 40 CFR Part 60, Appendix A, shall be employed to determine compliance with the allowable emission rates for particulate and NOx respectively:

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: (P040)

Method 5 "Determination of Particulate Emissions from Stationary Sources" and Method 7 "Determination of Nitrogen Oxide Emissions from Stationary Sources and the requirements of OAC rule 3745-31-05.

- d. The tests shall be conducted while the emissions unit is operating at or near its maximum capacity, unless otherwise specified by the Northeast District of the Ohio EPA.

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 Northeast District Office and the Lake County General Health District. 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 tests.

Failure to submit such notification for review and approval prior to the tests may result in the Ohio EPA Northeast District Office's refusal to accept the results of the emissions tests.

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

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

VI Miscellaneous Requirements

None

Emissions Unit: (P040)

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|--|---|---|
| | none | none |

2. Additional Terms and Conditions

None

II Operational Restrictions

None

III Monitoring and/or Recordkeeping

None

IV Reporting Requirements

None

V Testing Requirements

None

VI Miscellaneous Requirements

None

Emissions Unit: (P041)

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: (P041)

Activity Description: Large diameter lathe number 26 (natural gas fired) 1.26 MMBTU/hr; H2 pilot

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|--|---|---|
| P041- Large diameter lathe number 26 (natural gas fired) 1.26 MMBTU/hr; H2 pilot | OAC rule 3745-31-05(A) and (D) PTI 02-13174 (synthetic minor) | <p>NOx emissions shall not exceed 26.72 pounds per hour from this emissions unit and 194.1 TPY based on rolling 12-month summations for all production, repair and bench lathes (emissions units P025 and P032-P043), combined. (The 26.72 pounds per hour limitation is the potential to emit for this emissions unit; therefore, monitoring, record keeping, and reporting requirements are not needed for this emission limitation.)</p> <p>The requirements of this rule also include compliance with the requirements of OAC rules 3745-17-07(A), 3745-17-11(B), 3745-18-06, 3745-21-08, and 3745-23-06(B).</p> <p>The total particulate emissions from the stack serving this emissions unit, shall not exceed 2.4 tons per year.</p> |

Emissions Unit: (P041)

| | |
|---------------------------|--|
| OAC rule 3745-17-07(A) | Visible particulate emissions from any stack associated with this emissions unit shall not exceed twenty percent opacity, as a six-minute average, except as provided by rule. |
| OAC rule 3745-17-11(B)(1) | The total particulate emissions from the stack serving this emissions unit, shall not exceed 0.551 pound per hour based on Table I of OAC rule 3745-17-11 (with a maximum process weight rate of 100 pounds per hour). |
| OAC rule 3745-18-06(E) | See A.I.2.a. |
| OAC rule 3745-21-08 | See A.I.2.b. |
| OAC rule 3745-23-06(B) | See A.I.2.b. |

2. Additional Terms and Conditions

- 2.a** Because the process weight rate for this individual lathe is less than 1000 lbs per hour, this emissions unit is exempt from the requirements of this rule.
- 2.b** The permittee has satisfied the "best available control techniques and operating practices" required pursuant to OAC rule 3745-21-08(B) by committing to comply with the best available technology requirements established in Permit to Install 02-13174.

On November 5, 2002, OAC rule 3745-21-08 was revised to delete paragraph (B); therefore, paragraph (B) is no longer part of the State regulations. However, that rule revision has not yet been submitted to the U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). When the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-21-08, the requirement to satisfy the "best available control techniques and operating practices" will no longer exist as part of the federally-approved SIP for Ohio, and this term and condition will no longer be applicable to this emissions unit.

The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06(B) by committing to comply with the best available technology requirements established pursuant to OAC rule 3745-31-05(A)(3) in Permit to Install 02-13174.

- 2.c** It is the permittee's normal practice to vent all of the NO_x emissions from this emissions unit to the stack; however, it is understood that a small number of molecules of NO_x may

Emissions Unit: (P041)

not be captured and vented to the stack. The NOx emissions from the cooling of the tubes produced on this lathe shall be vented to the stack.

2.d All particulate emissions from this emissions unit shall be vented to the stack.

2.e This emissions unit is capable of burning only natural gas and hydrogen.

II Operational Restrictions

1. The maximum annual fuel usage for emissions units P025, P032-P042, combined, shall not exceed 30.29 million standard cubic feet of natural gas based on rolling, 12-month summations.
2. To ensure enforceability during the first twelve (12) months of operation following the effective date of PTI 02-13174, the permittee shall not exceed the following natural gas usage levels for all 11 production lathes:

| CALENDAR MONTHS FOLLOWING PTI EFFECTIVE DATE | MAXIMUM ALLOWABLE CUMULATIVE FUEL USAGE |
|--|--|
|--|--|

(mmSCF)
(natural gas)

| | |
|------|-------|
| 1-1 | 10.0 |
| 1-2 | 11.8 |
| 1-3 | 13.6 |
| 1-4 | 15.5 |
| 1-5 | 17.3 |
| 1-6 | 19.1 |
| 1-7 | 21.0 |
| 1-8 | 22.8 |
| 1-9 | 24.6 |
| 1-10 | 26.5 |
| 1-11 | 28.4 |
| 1-12 | 30.29 |

After the first 12 calendar months of operation following the effective date of PTI 02-13174, the permittee shall comply with the annual natural gas usage limitations based on rolling, 12-month summations.

III Monitoring and/or Recordkeeping

1. The permittee shall perform daily checks, when any of the equipment comprising this 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:

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Emissions Unit: (P041)

- a. the color of the emissions;
- b. the total duration of any visible emission incident; and
- c. any corrective actions taken to eliminate the visible emissions.

Notwithstanding the frequency of reporting requirements specified in section A.IV, the permittee may reduce the frequency of visual observations for this emissions unit from daily to weekly readings if the following conditions are met:

- a. for 45 days this emissions unit's visual observations indicate no visible emissions; and
- b. the permittee continues to comply with all the record keeping and monitoring requirements specified in section A.III.1.

The permittee shall revert to daily readings for this emissions unit if any visible emissions are observed. The permittee may again reduce the frequency of visual observations from daily to weekly after obtaining 45 consecutive days of observations with no visible emissions for this emissions unit.

The permittee shall revert to daily readings if any visible emissions are observed.

2. The permittee shall maintain monthly records of the following information for emissions units P025 and P032-P042, combined:
 - a. the total natural gas usage;
 - b. the rolling, 12-month natural gas usage;
 - c. the rolling, 12-month NO_x emissions.

Also, during the first 12 calendar months of operation, after the effective date of PTI #02-13174, the permittee shall record the cumulative natural gas usage, for all production lathes (emissions units P025 and P032-P042), combined.

Total NO_x monthly emissions, in tons, resulting from the natural gas usage in all production lathes (16-27), combined, shall be calculated using the following equation:

$$\text{NO}_x, \text{ in tons} = \frac{\text{total natural gas usage (mmscf/month)} \times 12.09 \text{ lbs/mmBtu}}{1050 \text{ mmBtu/mmscf} \times 1 \text{ ton/2000 lbs}}$$

The emission factor for NO_x is based on a 1998 stack test and equals 12.09 lbs/mmBtu.
The natural gas usage is for all LD lathes 16-27, combined.
The heat content of natural gas = 1050 mmBtu/mmscf.

Monthly results shall be summed to obtain the annual and rolling NO_x emissions.

Emissions Unit: (P041)

IV Reporting Requirements

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

These reports shall be submitted to the Northeast District Office of the Ohio EPA by January 31 and July 31 of each year and shall cover the previous 6-month period.

2. The permittee shall submit quarterly deviation (excursion) reports that identify all exceedances of the following:
 - a. after the first twelve calendar months of operation following the effective date of PTI 02-13174, the rolling, 12-month limitations for natural gas fuel usage for all production lathes (emissions units P025 and P032-P042), combined; and
 - b. for the first 12 calendar months of operation following the effective date of PTI 02-13174, the monthly allowable cumulative fuel usage for natural gas for all production lathes (emissions units P025 and P032-P042), combined.
3. The permittee shall submit annual reports that specify the total amount of natural gas used and the total amount of NO_x emitted from emissions units P025 and P032-P042 for the previous calendar year by April 15 of the following year.

V Testing Requirements

1. Compliance with the emission limitations in Section A.I.1. of these terms and conditions shall be determined in accordance with the following methods:

- 1a. Emission Limitation

Visible particulate emissions from any stack serving this emissions unit shall not exceed twenty percent opacity, as a six- minute average, except as provided by rule.

Applicable Compliance Method

If required by Ohio EPA, compliance shall be determined by Method 9, Visible Determination of the Opacity of Emissions from Stationary Sources, 40 CFR Part 60, Appendix A, as specified in OAC rule 3745-17-03(B)(1).

- 1b. Emission Limitation

0.551 pound per hour and 2.4 tons per year of particulate emissions

Emissions Unit: (P041)

Applicable Compliance Method

If required by Ohio EPA, compliance with the hourly particulate emission limit above shall be determined in accordance with OAC rule 3745-17-03 and Method 5 of 40 CFR Part 60, Appendix A.

Because the annual particulate limit was established by multiplying the short-term limit of 0.551 lb/hr by 8,760 hours of operation per year and dividing by 2000 lbs/ton, compliance with the annual limit is assumed provided that compliance with the hourly limit is maintained.

1c. Emission Limitation

NOx emissions shall not exceed 26.72 pounds per hour from this emissions unit, and 194.1 TPY, based on rolling 12-month summations from all production lathes (emissions units P025, P032-P043, combined).

Applicable Compliance Method

If required by Ohio EPA, compliance with the hourly NOx emission limitation above, shall be determined by using Method 7 of 40 CFR Part 60, Appendix A.

Compliance with monthly, annual and rolling, 12-month NOx emission limitations shall be determined in accordance with the equations and record keeping in Section A.III.2. of these terms and conditions and summed with the total annual and rolling NOx emissions from all production and bench lathes.

2. The permittee shall conduct, or have conducted, emission testing of the mass emission rates for particulate emissions and NOx for this emissions unit in accordance with the following:

- a. The emission testing for NOx and particulate emissions shall be conducted within 12 months after the effective date of Permit to Install 02-13174. Thereafter, emission testing for NOx shall be conducted annually.

If the permittee demonstrates that all 6 production lathes rated at 2.21mmBtu/hr (emissions units P037-P042) are essentially identical in operation, size and capacity, configuration and product line, in which case, with approval from the Ohio EPA, the permittee shall test one representative unit, at or near maximum capacity, on an annual basis.

- b. The emission testing shall be conducted to determine compliance with the allowable emission rates for particulate emissions and NOx.
- c. The following test methods from 40 CFR Part 60, Appendix A, shall be employed to determine compliance with the allowable emission rates for particulate and NOx respectively:

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: (P041)

Method 5 "Determination of Particulate Emissions from Stationary Sources" and Method 7 "Determination of Nitrogen Oxide Emissions from Stationary Sources and the requirements of OAC rule 3745-31-05.

- d. The tests shall be conducted while the emissions unit is operating at or near its maximum capacity, unless otherwise specified by the Northeast District of the Ohio EPA.

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 Northeast District Office and the Lake County General Health District. 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 tests.

Failure to submit such notification for review and approval prior to the tests may result in the Ohio EPA Northeast District Office's refusal to accept the results of the emissions tests.

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

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

VI Miscellaneous Requirements

None

Emissions Unit: (P041)

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|--|---|---|
| | none | none |

2. Additional Terms and Conditions

None

II Operational Restrictions

None

III Monitoring and/or Recordkeeping

None

IV Reporting Requirements

None

V Testing Requirements

None

VI Miscellaneous Requirements

None

Emissions Unit: (P042)

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: (P042)

Activity Description: Large diameter lathe number 27 (natural gas fired) 1.26 MMBTU/hr; H2 pilot

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|---|--|--|
| <p>P042- Large diameter lathe number 27 (natural gas fired) 1.26 MMBTU/hr; H2 pilot</p> | <p>OAC rule 3745-31-05(A) and (D) PTI 02-13174 (synthetic minor)</p> | <p>NOx emissions shall not exceed 26.72 pounds per hour from this emissions unit and 194.1 TPY based on rolling 12-month summations for all production lathes , repair and bench (emissions units P025 and P032-P043), combined. (The 26.72 pounds per hour limitation is the potential to emit for this emissions unit; therefore, monitoring, record keeping, and reporting requirements are not needed for this emission limitation.)</p> <p>The requirements of this rule also include compliance with the requirements of OAC rules 3745-17-07(A), 3745-17-11(B), 3745-18-06, 3745-21-08, and 3745-23-06(B).</p> <p>The total particulate emissions from the stack serving this emissions unit, shall not exceed 2.4 tons per year.</p> |

Emissions Unit: (P042)

| | |
|---------------------------|--|
| OAC rule 3745-17-07(A) | Visible particulate emissions from any stack associated with this emissions unit shall not exceed twenty percent opacity, as a six-minute average, except as provided by rule. |
| OAC rule 3745-17-11(B)(1) | The total particulate emissions from the stack serving this emissions unit, shall not exceed 0.551 pound per hour based on Table I of OAC rule 3745-17-11 (with a maximum process weight rate of 100 pounds per hour). |
| OAC rule 3745-18-06(E) | See A.I.2.a. |
| OAC rule 3745-21-08 | See A.I.2.b. |
| OAC rule 3745-23-06(B) | See A.I.2.b. |

2. Additional Terms and Conditions

- 2.a** Because the process weight rate for this individual lathe is less than 1000 lbs per hour, this emissions unit is exempt from the requirements of this rule.
- 2.b** The permittee has satisfied the "best available control techniques and operating practices" required pursuant to OAC rule 3745-21-08(B) by committing to comply with the best available technology requirements established in Permit to Install 02-13174.

On November 5, 2002, OAC rule 3745-21-08 was revised to delete paragraph (B); therefore, paragraph (B) is no longer part of the State regulations. However, that rule revision has not yet been submitted to the U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). When the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-21-08, the requirement to satisfy the "best available control techniques and operating practices" will no longer exist as part of the federally-approved SIP for Ohio, and this term and condition will no longer be applicable to this emissions unit.

The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06(B) by committing to comply with the best available technology requirements established pursuant to OAC rule 3745-31-05(A)(3) in Permit to Install 02-13174.

- 2.c** It is the permittee's normal practice to vent all of the NO_x emissions from this emissions unit to the stack; however, it is understood that a small number of molecules of NO_x may

Emissions Unit: (P042)

not be captured and vented to the stack. The NOx emissions from the cooling of the tubes produced on this lathe shall be vented to the stack.

2.d All particulate emissions from this emissions unit shall be vented to the stack.

2.e This emissions unit is capable of burning only natural gas and hydrogen.

II Operational Restrictions

1. The maximum annual fuel usage for emissions units P025, P032-P042, combined, shall not exceed 30.29 million standard cubic feet of natural gas based on rolling, 12-month summations.
2. To ensure enforceability during the first twelve (12) months of operation following the effective date of PTI 02-13174, the permittee shall not exceed the following natural gas usage levels for all 11 production lathes:

| CALENDAR MONTHS FOLLOWING PTI EFFECTIVE DATE | MAXIMUM ALLOWABLE CUMULATIVE FUEL USAGE |
|--|---|
|--|---|

(mmSCF)
(natural gas)

| | |
|------|-------|
| 1-1 | 10.0 |
| 1-2 | 11.8 |
| 1-3 | 13.6 |
| 1-4 | 15.5 |
| 1-5 | 17.3 |
| 1-6 | 19.1 |
| 1-7 | 21.0 |
| 1-8 | 22.8 |
| 1-9 | 24.6 |
| 1-10 | 26.5 |
| 1-11 | 28.4 |
| 1-12 | 30.29 |

After the first 12 calendar months of operation following the effective date of PTI 02-13174, the permittee shall comply with the annual natural gas usage limitations based on rolling, 12-month summations.

III Monitoring and/or Recordkeeping

1. The permittee shall perform daily checks, when any of the equipment comprising this 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:

Emissions Unit: (P042)

- a. the color of the emissions;
- b. the total duration of any visible emission incident; and
- c. any corrective actions taken to eliminate the visible emissions.

Notwithstanding the frequency of reporting requirements specified in section A.IV, the permittee may reduce the frequency of visual observations for this emissions unit from daily to weekly readings if the following conditions are met:

- a. for 45 days this emissions unit's visual observations indicate no visible emissions; and
- b. the permittee continues to comply with all the record keeping and monitoring requirements specified in section A.III.1.

The permittee shall revert to daily readings for this emissions unit if any visible emissions are observed. The permittee may again reduce the frequency of visual observations from daily to weekly after obtaining 45 consecutive days of observations with no visible emissions for this emissions unit.

2. The permittee shall maintain monthly records of the following information for emissions units P025 and P032-P042, combined:
 - a. the total natural gas usage;
 - b. the rolling, 12-month natural gas usage;
 - c. the rolling, 12-month NO_x emissions.

Also, during the first 12 calendar months of operation, after the effective date of PTI #02-13174, the permittee shall record the cumulative natural gas usage, for all production lathes (emissions units P025 and P032-P042), combined.

Total NO_x monthly emissions, in tons, resulting from the natural gas usage in all production lathes (16-27), combined, shall be calculated using the following equation:

$$\text{NO}_x, \text{ in tons} = \text{total natural gas usage (mmscf/month)} \times 12.09 \text{ lbs/mmBtu} \times \frac{1}{1050 \text{ mmBtu/mmscf}} \times 1 \text{ ton/2000 lbs}$$

The emission factor for NO_x is based on a 1998 stack test and equals 12.09 lbs/mmBtu.

The natural gas usage is for all LD lathes 16-27, combined.

The heat content of natural gas = 1050 mmBtu/mmscf.

Monthly results shall be summed to obtain the annual and rolling NO_x emissions.

Emissions Unit: (P042)

IV Reporting Requirements

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

These reports shall be submitted to the Northeast District Office of the Ohio EPA by January 31 and July 31 of each year and shall cover the previous 6-month period.

2. The permittee shall submit quarterly deviation (excursion) reports that identify all exceedances of the following:
 - a. after the first twelve calendar months of operation following the effective date of PTI 02-13174, the rolling, 12-month limitations for natural gas fuel usage for all production lathes (emissions units P025 and P032-P042), combined; and
 - b. for the first 12 calendar months of operation following the effective date of PTI 02-13174, the monthly allowable cumulative fuel usage for natural gas for all production lathes (emissions units P025 and P032-P042), combined.
3. The permittee shall submit annual reports that specify the total amount of natural gas used and the total amount of NO_x emitted from emissions units P025 and P032-P042 for the previous calendar year by April 15 of the following year.

V Testing Requirements

1. Compliance with the emission limitations in Section A.I.1. of these terms and conditions shall be determined in accordance with the following methods:

- 1a. Emission Limitation

Visible particulate emissions from any stack serving this emissions unit shall not exceed twenty percent opacity, as a six- minute average, except as provided by rule.

Applicable Compliance Method

If required by Ohio EPA, compliance shall be determined by Method 9, Visible Determination of the Opacity of Emissions from Stationary Sources, 40 CFR Part 60, Appendix A, as specified in OAC rule 3745-17-03(B)(1).

- 1b. Emission Limitation

0.551 pound per hour and 2.4 tons per year of particulate emissions

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: (P042)

Applicable Compliance Method

If required by Ohio EPA, compliance with the hourly particulate emission limit above shall be determined in accordance with OAC rule 3745-17-03 and Method 5 of 40 CFR Part 60, Appendix A.

Because the annual particulate limit was established by multiplying the short-term limit of 0.551 lb/hr by 8,760 hours of operation per year and dividing by 2000 lbs/ton, compliance with the annual limit is assumed provided that compliance with the hourly limit is maintained.

1c. Emission Limitation

NOx emissions shall not exceed 26.72 pounds per hour from this emissions unit, and 194.1 TPY, based on rolling 12-month summations from all production, repair and bench lathes (emissions units P025, P032-P043, combined).

Applicable Compliance Method

If required by Ohio EPA, compliance with the hourly NOx emission limitation above, shall be determined by using Method 7 of 40 CFR Part 60, Appendix A.

Compliance with monthly, annual and rolling, 12-month NOx emission limitations shall be determined in accordance with the equations and record keeping in Section A.III.2. of these terms and conditions and summed with the total annual and rolling NOx emissions from all production and bench lathes.

2. The permittee shall conduct, or have conducted, emission testing of the mass emission rates for particulate emissions and NOx for this emissions unit in accordance with the following:

- a. The emission testing for NOx and particulate emissions shall be conducted within 12 months after the effective date of Permit to Install 02-13174. Thereafter, emission testing for NOx shall be conducted annually.

If the permittee demonstrates that all 6 production lathes rated at 2.21mmBtu/hr (emissions units P037-P042) are essentially identical in operation, size and capacity, configuration and product line, in which case, with approval from the Ohio EPA, the permittee shall test one representative unit, at or near maximum capacity, on an annual basis.

- b. The emission testing shall be conducted to determine compliance with the allowable emission rates for particulate emissions and NOx.
- c. The following test methods from 40 CFR Part 60, Appendix A, shall be employed to determine compliance with the allowable emission rates for particulate and NOx respectively:

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Method 5 "Determination of Particulate Emissions from Stationary Sources" and Method 7 "Determination of Nitrogen Oxide Emissions from Stationary Sources and the requirements of OAC rule 3745-31-05.

- d. The tests shall be conducted while the emissions unit is operating at or near its maximum capacity, unless otherwise specified by the Northeast District of the Ohio EPA.

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 Northeast District Office and the Lake County General Health District. 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 tests.

Failure to submit such notification for review and approval prior to the tests may result in the Ohio EPA Northeast District Office's refusal to accept the results of the emissions tests.

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

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

VI Miscellaneous Requirements

None

Emissions Unit: (P042)

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|--|---|---|
| | none | none |

2. Additional Terms and Conditions

None

II Operational Restrictions

None

III Monitoring and/or Recordkeeping

None

IV Reporting Requirements

None

V Testing Requirements

None

VI Miscellaneous Requirements

None

Emissions Unit: (P043)

Part III - Terms and Conditions for Emissions Units

Emissions Unit ID: (P043)

Activity Description: P043-Four (4) repair lathes [0.78, 0.58, 0.78 and 0.48 mmBTU/hr each]; and two (2) bench repair lathes (0.02MMBTU/hr each)

A. State and Federally Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|--|--|--|
| P043-Four (4) repair lathes [0.78, 0.58, 0.78 and 0.48 mmBTU/hr each]; and two (2) bench repair lathes (0.02MMBTU/hr each) | OAC rule 3745-31-05(A) and (D) PTI 02-13174 | NOx emissions shall not exceed 10.82 pounds per hour and 0.33 lb/hr from all repair lathes combined and both bench repair lathes, respectively; and 194.1 TPY based on rolling 12-month summations for all production, repair and bench lathes, emissions units P025 and P032-P043, combined. (The 10.82 pounds per hour and the 0.33 lb/hr limitations are the potentials to emit for the components of this emissions unit; therefore, monitoring, record keeping, and reporting requirements are not needed for this emission limitation.) The requirements of this rule also include compliance with the requirements of OAC rules 3745-17-07(A), 3745-17-11(B), 3745-18-06, 3745-21-08, and 3745-23-06(B). |

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: (P043)

The total particulate emissions from all lathes comprising this emissions unit, shall not exceed 1.85 pounds per hour based on Table I of OAC rule 3745-17-11 (with a maximum process weight rate of 600 pounds per hour for all lathes, combined).

The total particulate emissions from all lathes comprising this emissions unit, shall not exceed 8.1 tons per year.

OAC rule 3745-17-07(A)

Visible particulate emissions from any stack associated with this emissions unit shall not exceed twenty percent opacity, as a six-minute average, except as provided by rule.

OAC rule 3745-17-07(B)

Visible particulate fugitive emissions from this emissions unit shall not exceed 20% opacity, as a three minute average.

OAC rule 3745-17-08(B)

See A.I.2.g.

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

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

OAC rule 3745-18-06(E)

See A.I.2.a.

OAC rule 3745-21-08

See A.I.2.b.

OAC rule 3745-23-06(B)

See A.I.2.b.

Emissions Unit: (P043)

2. Additional Terms and Conditions

- 2.a** Because the process weight rate for this individual lathe is less than 1000 lbs per hour, this emissions unit is exempt from the requirements of this rule.
- 2.b** The permittee has satisfied the "best available control techniques and operating practices" required pursuant to OAC rule 3745-21-08(B) by committing to comply with the best available technology requirements established in Permit to Install 02-13174.

On November 5, 2002, OAC rule 3745-21-08 was revised to delete paragraph (B); therefore, paragraph (B) is no longer part of the State regulations. However, that rule revision has not yet been submitted to the U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). When the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-21-08, the requirement to satisfy the "best available control techniques and operating practices" will no longer exist as part of the federally-approved SIP for Ohio, and this term and condition will no longer be applicable to this emissions unit.

The permittee has satisfied the "latest available control techniques and operating practices" required pursuant to OAC rule 3745-23-06(B) by committing to comply with the best available technology requirements established pursuant to OAC rule 3745-31-05(A)(3) in Permit to Install 02-13174.

- 2.c** The four repair lathes that are part of this emissions unit are each vented to a stack, and the remaining 2 bench lathes vent to atmosphere.
- 2.d** It is the permittee's normal practice, for the 4 repair lathes, to vent all of the NOx emissions from this emissions unit to the stack; however, it is understood that a small number of molecules of NOx may not be captured and vented to the stack. The NOx emissions from the cooling of the tubes produced on these lathes shall be vented to the stack.
- 2.e** All particulate emissions from the 4 repair lathes shall be vented to the stack.
- 2.f** This emissions unit is capable of burning only natural gas and hydrogen.
- 2.g** The permittee shall minimize or eliminate visible emissions of fugitive dust through the employment of reasonably available control measures (RACM). These measures shall include, but not be limited to, the following:
- i. the use of adequate hooding or equivalent capture devices for the use of all equipment and operations that comprise the emissions unit.

By employing RACM, visible emissions of fugitive dust from any non-stack egress points from the building shall be minimized.

Emissions Unit: (P043)

II Operational Restrictions

1. The maximum annual fuel usage for emissions units P025, and P032-P043, combined, shall not exceed 1.29 million standard cubic feet of hydrogen, based on rolling, 12-month summations.
2. To ensure enforceability during the first twelve (12) months of operation following the effective date of PTI 02-13174, the permittee shall not exceed the following natural gas and hydrogen usage levels for all the combined equipment described above:

| CALENDAR MONTHS FOLLOWING PTI EFFECTIVE DATE | MAXIMUM ALLOWABLE CUMULATIVE FUEL USAGE (MmSCF) (hydrogen) |
|--|---|
| . | |
| 1-1 | 0.43 |
| 1-2 | 0.50 |
| 1-3 | 0.58 |
| 1-4 | 0.66 |
| 1-5 | 0.74 |
| 1-6 | 0.82 |
| 1-7 | 0.89 |
| 1-8 | 0.97 |
| 1-9 | 1.05 |
| 1-10 | 1.13 |
| 1-11 | 1.21 |
| 1-12 | 1.29 |

After the first 12 calendar months of operation following the effective date of PTI 02-13174, the permittee shall comply with the annual natural gas and hydrogen fuel usage limitations based on rolling, 12-month summations.

III Monitoring and/or Recordkeeping

1. The permittee shall perform daily checks, when any of the equipment comprising this 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. the total duration of any visible emission incident; and
 - c. any corrective actions taken to eliminate the visible emissions.

Notwithstanding the frequency of reporting requirements specified in section A.IV, the permittee may reduce the frequency of visual observations for this emissions from daily to weekly readings if the following conditions are met:

Emissions Unit: (P043)

- a. for 45 days the facility's visual observations indicate no visible emissions; and
- b. the permittee continues to comply with all the record keeping and monitoring requirements specified in section A.III.1.

The permittee shall revert to daily readings for this emissions unit if any visible emissions are observed. The permittee may again reduce the frequency of visual observations from daily to weekly after obtaining 45 consecutive days of observations with no visible emissions from this emissions unit.

2. The permittee shall maintain monthly records of the following information for this emissions unit:
 - a. the hydrogen usage;
 - b. the rolling, 12-month hydrogen usage;
 - c. the rolling 12-month NO_x emissions from this emissions unit;
 - d. the rolling 12-month NO_x emissions from all production lathes (emissions units P025 and P032-P042) combined; and
 - e. the rolling 12-month NO_x emissions from all production lathes, and repair and bench lathes (emissions units P025, P032-P043) combined.

Also, during the first 12 calendar months of operation, after the effective date of PTI 02-13174, the permittee shall record the cumulative hydrogen fuel usage for this emissions unit for each calendar month.

Total NO_x monthly emissions, in tons, resulting from hydrogen usage from the 2 bench and 4 repair lathes, combined, shall be calculated using the following equation:

$$\text{NO}_x, \text{ in tons} = \text{total natural gas usage mmscf/month} \times 8.53 \text{ lbs/mmBtu} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} \times \frac{325 \text{ mmBtu}}{\text{mmscf}}$$

where:

The emission factor for NO_x, based on a 1998 stack test, is 8.53 lbs/mmBtu.

The hydrogen usage is for the 2 bench and 4 repair lathes, combined.

The heat content of hydrogen = 325 mmBtu/mmscf..

Monthly results for the hydrogen usage shall be summed to obtain the annual and rolling NO_x emissions.

IV Reporting Requirements

1. The permittee shall submit semiannual written reports that:

Emissions Unit: (P043)

- a. identify all days during which any visible particulate emissions were observed from the stack serving this emissions unit; and
- b. describe any corrective actions taken to eliminate the visible particulate emissions.

These reports shall be submitted to the Northeast District Office of the Ohio EPA by January 31 and July 31 of each year and shall cover the previous 6-month period.

2. The permittee shall submit quarterly deviation (excursion) reports that identify all exceedances of the following:
 - a. after the first 12 calendar months of operation following the effective date of PTI 02-13174, the rolling, 12-month limitation for hydrogen usage for all repair and bench lathes (P043);
 - b. for the first 12 calendar months of operation following the effective date of PTI 02-13174, the monthly allowable cumulative fuel usage for hydrogen for all repair and bench lathes; (P043).
3. The permittee shall submit annual reports that specify the total amounts of hydrogen and natural gas used and the total amount of NO_x emitted from emissions units P025 and P032-P043 for the previous calendar year by April 15 of the following year.

V Testing Requirements

1. Compliance with the emission limitations in Section A.I.1. of these terms and conditions shall be determined in accordance with the following methods:

- 1a. Emission Limitation

Visible particulate emissions from any stack serving this emissions unit shall not exceed twenty percent opacity, as a six- minute average, except as provided by rule.

Applicable Compliance Method

If required by Ohio EPA, compliance shall be determined by Method 9, Visible Determination of the Opacity of Emissions from Stationary Sources, 40 CFR Part 60, Appendix A, as specified in OAC rule 3745-17-03(B)(1).

- 1b. Emission Limitation

The total particulate emissions from all lathes comprising this emissions unit, shall not exceed 1.85 pounds per hour based on Table I of OAC rule 3745-17-11 (with a maximum process weight rate of 600 pounds per hour for all lathes, combined).

Applicable Compliance Method

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: (P043)

If required by the Ohio EPA, for the repair lathes, compliance with the hourly particulate emission limit above shall be determined in accordance with OAC rule 3745-17-03 and Method 5 of 40 CFR Part 60, Appendix A. If required, for the bench lathes, compliance with the hourly particulate emission limit above shall be determined by material balance or some other method approved by Ohio EPA.

Because the annual particulate limit was established by multiplying the short-term limit of 1.85 lbs/hour by 8760 hours of operation per year and dividing by 2000 lbs/ton, compliance with the annual limit is assumed provided that compliance with the short-term hourly limit is maintained.

1c. Emission Limitation

NOx emissions shall not exceed 10.82 pounds per hour and 0.33 pound per hour from all repair, combined and both bench repair lathes, respectively, from this emissions unit, and 194.1 TPY, based on rolling 12-month summations from all production, repair and bench lathes, (emissions units P025, P032-P043, combined).

Applicable Compliance Method

If required by Ohio EPA, compliance with the hourly NOx emission limitation above, shall be determined by using Method 7 of 40 CFR Part 60, Appendix A.

Compliance with monthly, annual and rolling, 12-month NOx emission limitations shall be determined in accordance with the equations and record keeping in Section A.III.2. of these terms and conditions and summed with the total annual and rolling NOx emissions from all lathes.

2. The permittee shall conduct, or have conducted, emission testing of the mass emission rates for particulate emissions and NOx for this emissions unit in accordance with the following:

- a. The emission testing for NOx and particulate emissions shall be conducted within 12 months following the effective date of this Permit to Install. Thereafter, emission testing for NOx shall be conducted annually.

Since the repair and bench lathes are used only intermittently, the permittee may test the worst case emitting lathe based on, size and capacity, configuration and product line, at or near maximum capacity, on an annual basis with approval from the Ohio EPA, if the permittee demonstrates that it is the largest lathe of all that comprise this emissions unit and, it generates worst case emissions

- b. The emission testing shall be conducted to determine compliance with the allowable emission rates for particulate emissions and NOx.
- c. The following test methods from 40 CFR Part 60, Appendix A, shall be employed to determine compliance with the allowable emission rates for particulate and NOx respectively:

Facility Name: GE Willoughby Quartz Plant
Facility ID: 02-43-16-0086

Emissions Unit: (P043)

Method 5 "Determination of Particulate Emissions from Stationary Sources" and Method 7 "Determination of Nitrogen Oxide Emissions from Stationary Sources and the requirements of OAC rule 3745-31-05.

- d. The tests shall be conducted while the emissions unit is operating at or near its maximum capacity, unless otherwise specified by the Northeast District of the Ohio EPA.

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 Northeast District Office and the Lake County General Health District. 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 tests.

Failure to submit such notification for review and approval prior to the tests may result in the Ohio EPA Northeast District Office's refusal to accept the results of the emissions tests.

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

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

VI Miscellaneous Requirements

None

Emissions Unit: (P043)

B. State Enforceable Section

I. Applicable Emissions Limitations and/or Control Requirements

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

| <u>Operations, Property, and/or Equipment</u> | <u>Applicable Rules/Requirements</u> | <u>Applicable Emissions Limitations/Control Measures</u> |
|--|---|---|
| | none | none |

2. Additional Terms and Conditions

None

II Operational Restrictions

None

III Monitoring and/or Recordkeeping

None

IV Reporting Requirements

None

V Testing Requirements

None

VI Miscellaneous Requirements

None