



State of Ohio Environmental Protection Agency

STREET ADDRESS:

Lazarus Government Center
50 W. Town St., Suite 700
Columbus, Ohio 43215

TELE: (614) 644-3020 FAX: (614) 644-3184
www.epa.state.oh.us

MAILING ADDRESS:

P.O. Box 1049
Columbus, OH 43216-1049

7/23/2008

DAVID LAWRIE
Veitsch-Radex America - Saybrook Plant
4741 KISTER CT
Cleveland, OH 44004

RE: DRAFT AIR POLLUTION PERMIT-TO-INSTALL AND OPERATE
Facility ID: 0204000450
Permit Number: 02-22963
Permit Type: Chapter 31 mod
County: Ashtabula

Certified Mail

Yes	TOXIC REVIEW
No	PSD
Yes	SYNTHETIC MINOR
No	CEMS
No	MACT
No	NSPS
No	NESHAPS
No	NETTING
No	MAJOR NON-ATTAINMENT
Yes	MODELING SUBMITTED

Dear Permit Holder:

A draft of the Ohio Administrative Code (OAC) Chapter 3745-31 Air Pollution Permit-to-Install and Operate for the referenced facility has been issued for the emissions unit(s) listed in the Authorization section of the enclosed draft permit. This draft action is not an authorization to begin construction or modification of your emissions unit(s). The purpose of this draft is to solicit comments on the permit. A public notice will appear in the Ohio EPA Weekly Review and the local newspaper, The Star Beacon. A copy of the public notice and the draft permit are enclosed. This permit has been posted to the Division of Air Pollution Control Web page <http://www.epa.state.oh.us/dapc> in Microsoft Word and Adobe Acrobat format. Comments will be accepted as a marked-up copy of the draft permit or in narrative format. Any comments must be sent to the following:

Andrew Hall
Permit Review/Development Section
Ohio EPA, DAPC
122 South Front Street
Columbus, Ohio 43215

and Ohio EPA DAPC, Northeast District Office
2110 East Aurora Road
Twinsburg, OH 43087

Comments and/or a request for a public hearing will be accepted within 30 days of the date the notice is published in the newspaper. You will be notified in writing if a public hearing is scheduled. A decision on issuing a final permit-to-install and operate will be made after consideration of comments received and oral testimony if a public hearing is conducted. Any permit fee that will be due upon issuance of a final Permit-to-Install and Operate is indicated in the Authorization section. Please do not submit any payment now. If you have any questions, please contact Ohio EPA DAPC, Northeast District Office at (330)425-9171.

Sincerely,

Michael W. Ahern, Manager
Permit Issuance and Data Management Section, DAPC

Cc: U.S. EPA Region 5 *Via E-Mail Notification*
Ohio EPA-NEDO; Pennsylvania; Canada
David Lawrie, Foseco Metallurgical, Inc.

Ted Strickland, Governor
Lee Fisher, Lieutenant Governor
Chris Korleski, Director

PUBLIC NOTICE
Issuance of Draft Air Pollution Permit-To-Install and Operate
Veitsch-Radex America - Saybrook Plant

Issue Date: 7/23/2008
Permit Number: 02-22963
Permit Type: Chapter 31 mod
Permit Description: Chapter 31 modification for P001 and P002 to increase production.
Facility ID: 0204000450
Facility Location: Veitsch-Radex America - Saybrook Plant
4741 Kister Ct,
Ashtabula, OH 44004
Facility Description: Clay Refractory Manufacturing

Chris Korleski, Director of the Ohio Environmental Protection Agency, 50 West Town Street, Columbus Ohio has issued a draft action of an air pollution control, federally enforceable permit-to-install and operate (PTIO) for the facility at the location identified above on the date indicated. Comments concerning this draft action, or a request for a public meeting, must be sent in writing no later than thirty (30) days from the date this notice is published. All comments, questions, requests for permit applications or other pertinent documentation, and correspondence concerning this action must be directed to Edward Fasko at Ohio EPA DAPC, Northeast District Office, 2110 East Aurora Road or (330)425-9171. The permit can be downloaded from the Web page: www.epa.state.oh.us/dapc

SOURCE EVALUATION

Source Description

The Saybrook plant has been classified as a synthetic minor facility through PTI 02-17873, issued on 8/21/03, to limit hazardous air pollutants (HAPs) to below major HAP threshold to exempt the Saybrook Plant from applicability of the maximum achievement control technology (MACT) rule, New Emission Standards for the Refractory Products Manufacturing Industry, 40 CFR Part 63, Subpart SSSSS. The Saybrook plant is also exempt from Title V operating permit requirements since volatile organic compounds (VOCs) and other criteria pollutant emissions are below major source levels.

Ashtabula County is in non-attainment status with the federal ozone standard. The facility is located in Saybrook Township, which is in attainment with the particulate matter with a diameter of up to 2.5 micrometers, PM_{2.5} national standard.

Permit Modification Proposal

Current PTI 02-17873 has hourly and annual limits on specific individual hazardous air pollutants (HAPs) and non-HAP emissions from P001, P002 and P003, combined. The applicant has requested that the modified permit have the proposed, facility-wide limits of 9.0 tons/year for any single HAP and 24.0 tons/year for all HAPs, as rolling 12-month summations. The recommendation will also include facility-wide limits of 99 tons VOC emissions, as a rolling 12-month summation to avoid applicability to Title V operating permit requirements.

An increase in maximum, hourly throughput (production) are proposed for P001 and P002 as well as increases in the allowable emissions limits for nitrogen oxide(s) (NO_x), carbon monoxide (CO) organic compounds (OCs) at each emissions unit. P001 and P002 will be classified as Chap 31 modifications. If the maximum materials throughput(production) hourly rate for P003 will not be changed, and there may be no physical change in operations, P003 may not be classified as an administrative change .

This project will have actual, minor increases of 4.33 tons/yr OC, 3.43 tons/yr VOC, 1.3 tons/year of ethylene glycol emissions (a HAP), 0.94 tons/yr CO and 18.8 tons/yr of ammonia (NH₃) emissions and a decrease of 5.65 tons/yr NO_x emissions. See Attachment 1 – Evaluation of Application for PTI 02-22963 – Comparison of Allowable/Potential Emissions Rates. This is a minor increase in criteria and HAP emissions to a synthetic minor facility. The project is not subject to non-attainment major source federal review.

SPECIFIC EMISSIONS UNIT EVALUATION

(P001) 4.904mmBtu/hr natural gas-fired curing oven for intermediate refractory products with a 3.961 mmBtu/hr natural gas-fired thermal oxidizer (AB1) to control OC emissions.

Description of operations at the cure oven & AB1 thermal oxidizer (P001)

Solid minerals, solid resins are pneumatically added to a closed mixer (P004). Water and polyethylene glycol resin solution are then added to create a mineral slurry, which is dried at the natural gas-fired (0.9 mmBtu/hr) rotary drier at 82°C. (Organic compound (OC) emissions are not emitted at P004.) The drier slurry is pressed into product shapes within vertical molds. The pressed shapes are then held in the staging area.

Pressed shapes are loaded into “cars” to be fired in the 4.904 mmBtu/hr natural gas-fired cure oven (P001) to evaporate the water within the pressed mineral shapes. Batch process time and setup time can have a maximum of 1.5 batches/24-hrs at P001. The cured intermediate product is cooled and held in a staging area.

Resin curing emissions, such as formaldehyde, phenol and ethylene glycol, which are HAPs and VOCs, occur at $\geq 96^{\circ}\text{C}$ with a natural gas-fired thermal oxidizer. It is assumed that all nitrogen in a solid amine compound and a liquid carbonate are converted to ammonia (NH_3). Natural gas combustion product emissions, VOC/OC/HAP cure emissions and ammonia emissions are directed to the 3.961 mmBtu/hr thermal oxidizer (AB1). 100% capture of emissions is assumed since it's a closed, negative pressure system. The oxidizer is assumed to control 98% of OC emissions. No control of NH_3 emissions is assumed since the efficiency is unknown.

Applicable rules & emissions changes at the cure oven & AB1 thermal oxidizer (P001)

If there are no changes to the emissions limit for a pollutant or an associated requirement, then it is in normal font. Inclusion of **new changes are in bold font**. Deletion of OAC rule 3745-31-05(A)(3)(b) – Ohio BAT exemption if potential emissions are less than 10 TPY

Ohio Best Available Technology (BAT) requirements are applicable to Chapter 31 modification emissions units, modified after 8/03/07, for each criteria pollutant that has an increase in potential emissions above the current limit(s). Only CO & OC emissions will have a potential increases above the current allowable emissions, see Attachment 1. **See section A.2.a.**

OAC rule 3745-31-05(A)(3) – the State of Ohio Best Available Technology (BAT) requirements

5% visible particulate emissions (PE), as a 6-min. average. The PE rate shall not exceed 0.5 lb/hr and 2.2 tons/year. The nitrogen oxides (NO_x) emissions shall not exceed 1.0 lb/hr and 4.4 tons/year. The requirements of this rule also include compliance with OAC rule 3745-31-05(C). **See sections A.2.b. and A.2.c.**

P001 is the only point of NH_3 emissions as well as HAP emissions, see “Curing Oven Total Emissions” page in Attachment 2 - FOSECO_Saybrook_Emission_Cals_P001,P002 & P003.xls. Air toxic compound emissions, i.e. ammonia, do not need short term emissions rates, if the potential emissions are less than 80% of the MAGLC, according to SB 265 BAT Q & A, 03/08.

OAC rule 3745-17-07(A)

This state implementation plan (SIP) limit of 20% opacity, as a 6-min. average is less stringent than the limit established pursuant to OAC rule 3745-31-05(A)(3).

OAC rule 3745-17-11(B)

This SIP rule is less stringent than OAC rule 3745-31-05(A)(3) requirements.

According to a 3/03/08 Foseco letter the maximum, hourly throughput/production rate will be increased from the value, noted in the 4/11/03 PTI application. (Raw materials identification and materials throughput weights are confidential data.) According to OAC rule 3745-17-11(A)(4), the weight of natural gas fuel is excluded from the total process weight rate. The allowable emissions (AE) rate per OAC rule 3745-17-11(B) could be:

$\text{AE}_{\text{TABLE 1}} = 9.94 \text{ lbs PE/hr ; or}$

$\text{AE}_{\text{FIG. 2, CURVE P-1}}$ cannot be determined since the maximum, uncontrolled rate of 0.07 lb PE/hr, essentially from natural gas fuel combustion, is less than 10 lbs/hr.

Per OAC rule 3745-17-11(A)(2) the most stringent limit would apply, so that the SIP requirement would be 9.94 lbs PE/hr. The potential, uncontrolled PE rates of 0.07 lb/hr and 0.30 TPY PE, found on the “Curing Oven Total Emissions” page in Attachment 2, will comply with the current BAT limits of 0.5 lb/hr and 2.2 TPY PE. The applicant did not request revised allowable limits. No change in the PE limits may be needed.

OAC rule 3745-21-07(G)(1)

This rescinded SIP rule limited OC emissions from heat curing operations to no more than 3 lbs/hr and 15 lbs/day, and was less stringent than OAC rule 3745-31-05(C) requirements of 1.47 lbs/hr and 6.4 TPY of OC emissions from the P001-P003 group. However, it is not applicable, see the discussion below.

OAC rule 3745-21-07(M)(4)

This rule may be applicable since the input materials do contain liquid organic materials and VOC emissions are generated. The rule limits are 3 lbs/hr and 15 lbs/day of OC emissions; OR control of 90% or more of the carbon compounds whenever incineration is employed. Paragraphs (M)(5)(d) state two exemptions to (M)(4) requirements: (i) volatile content consists only of water and liquid organic material; or (ii) liquid organic material comprises no more than 20%, by volume of said volatile content. The applicant believes that since each liquid organic material does not have a vapor pressure of greater than 1.5 psia, that there are no volatile components and that (M)(4) requirements do not apply.

The application notes a control efficiency of 98% for the thermal oxidizer. It may not be necessary to include a control efficiency requirement for VOC/OC destruction & HAP destruction that is greater than 90% at P001 to maintain synthetic minor status, except for the single HAP of ethylene glycol.

Emissions – Tons/Year	Uncontrolled Emissions vs. Potential, Controlled Emissions					Major Source Threshold
	P001	P002	P003	P001-P003	Facility -wide	
VOC- uncontrolled	240.47	178.56	28.26	447.29	>447.29	100
VOC – 90% control	24.05	17.86	2.83	44.74	>44.74	100
VOC – 98% control	5.02	4.08	0.73	9.83	>9.83	100
Ethylene glycol - uncontrolled	189.75	0.00	0.00	189.75	>189.75	10
Ethylene glycol – 90% control	18.98	0.00	0.00	18.98	>18.98	10
Ethylene glycol – 98% control	3.80	0.00	0.00	3.80	>3.80	10
Combined HAPs – uncontrolled	240.36	0.00	0.00	240.36	>240.36	25
Combined HAPs – 90% control	24.04	0.00	0.00	24.04	>24.04	25
Combined HAPs – 98% control	4.80	0.00	0.00	4.80	>4.80	25

The greatest single HAP emissions, occur as ethylene glycol, which are all emitted at P001. Combined HAP emissions are comprised of ethylene glycol, formaldehyde and phenol and all are emitted at P001.

OAC rule 3745-31-05(C) – voluntary restriction to avoid BAT requirements

The organic compound (OC) emissions shall not exceed 9.9 tons/year. See section A.2.d.

OAC rule 3745-31-05(D) re-numbered OAC rule 3745-31-05(C) – voluntary restriction to avoid MACT requirements and Title V requirements

See section A.2.e. (for voluntary restrictions to limit HAP & VOC emissions to synthetic minor levels).

Section A.2.a.

The Best Available Technology (BAT) requirements under OAC rule 3745-31-05(A)(3) do not apply to the carbon monoxide (CO) emissions from this air contaminant source since the uncontrolled potential to emit for CO is less than 10 tons/yr.....

The potential CO emissions are greater than the current allowable rates, but with the revised BAT requirements, there will be no CO emissions limits.

Section A.2.b.

The potential to emit NO_x, as defined in OAC rule 3745-31-01, for this emissions unit is 0.89 lb/hr and 3.88 tons per year from natural gas fuel combustion. The potential NO_x rates are less than the emissions limits of 1.0 lb/hr and 4.4 tons/year, established pursuant to OAC rule 3745-31-05(A)(3). Therefore, it is not necessary to develop record keeping and/or reporting requirements to ensure compliance with the short term emissions limitations.

Since potential NO_x emissions are not increasing the current BAT limits are still applicable.

Section A.2.c.

The potential to emit PE, as defined in OAC rule 3745-31-01, for this emissions unit is 0.07 lb/hr and 0.30 ton per year from natural gas fuel combustion. The potential PE rates are less than the emissions limits of 0.5 lb/hr and 2.2 tons/year ...

Since potential PE emissions are not increasing the current BAT limits are still applicable.

Section A.2.d.

Permit to Install 02-22963 for this air contaminant source takes into account the following voluntary restriction(s) as proposed by the permittee for the purpose of avoiding Best Available Technology (BAT) requirements under OAC rule 3745-31-05(A)(3): a thermal oxidizer, also known as afterburner no. 1 (AB1), with a minimum control efficiency of 98%, by weight for OC.

OC emissions limit of 9.9 tons/year will be maintained with the use of a control device, as recommended by item no. 15 in the SB 265 BAT Q & A, 03/08 guidance.

Section A.2.e.

Permit to Install 02-22963 for this air contaminant source takes into account the following voluntary restrictions, regarding the emissions units specified in section, as proposed by the permittee for the purpose of avoiding New Emission Standards for the Refractory Products Manufacturing Industry requirements under 40 CFR Part 63, Subpart SSSSS, and as well as avoiding Title V requirements under OAC rules 3745-77-02 through 3745-77-10:

- i. The emissions of each single hazardous air pollutant (HAP) from the emissions units, specified in sections, shall not exceed 9.0 tons/year, based on a rolling 12-month summation, and shall be achieved by employing the operational restrictions,
- ii. The emissions of combined HAPs from the emissions units, specified in sections, shall not exceed 24.0 tons/year, based on a rolling 12-month summation, and shall be achieved by employing the operational restrictions,
- iii. The emissions of volatile organic compounds VOCs from the emissions units, specified in sections F.2. and F.3., shall not exceed 99.0 tons/year, based on a rolling 12-month summation, and shall be achieved by employing the operational restrictions,

The specific HAP compound limits for the P001-P003 group will be replaced by standard language for rolling 12-month limits on any single HAP and combined HAPs from the entire facility to avoid applicability to the New Emission Standards for the Refractory Products Manufacturing Industry, 40 CFR Part 63, Subpart SSSSS. Likewise, VOC emissions will be limited below the major source level of 100 TPY VOC to avoid Title V requirements.

Operational Restrictions

Current term A.II.1. to employ the afterburner (thermal oxidizer) will be updated with a modern version. Current term A.II.2. restricts the average thermal oxidizer temperature, for any 3-hour block of time within 50°F (28°C) of the baseline temperature during the most recent performance test, that demonstrated the emissions unit was in compliance, will be updated with a modern version.

[U.S. EPA Method 25 test, conducted on 11/09/05, on P001 found <0.41 lb OC/hr when average process weight was 1,232 lbs/hr and the average oxidizer (AB1) temperature was 726°C. Minimum afterburner temperature is 698°C. 11/09/05 method 5 test, on P001 yielded <0.052 lb PE/hr.]

(P002) 14.343 mmBtu/hr natural gas-fired kiln no. 1 for refractory products with a 7.171 mmBtu/hr natural gas-fired thermal oxidizer (AB2) to control OC emissions; and

(P003) 4.918 mmBtu/hr natural gas-fired kiln no. 2 for refractory products with a 2.049 mmBtu/hr natural gas-fired thermal oxidizer (AB3) to control OC emissions

Description of operations at kiln no. 1 & AB2 thermal oxidizer (P002); and

Description of operations at kiln no. 2 & AB3 thermal oxidizer (P003);

Cured, intermediate product, made at P001, is either fired at kiln no. 1 (P002) or at kiln no. 2 (P003), depending on the product type. High kiln temperatures initiate a pyrolysis reaction to make a bonded carbon network in the fired product. Batch process time and setup time can have a maximum of (4 batches)/24-hrs at P002. Batch process time and setup time can have a maximum of (3.7 batches)/24-hrs at P003.

Kiln firing emissions are comprised of OC/VOC emissions from resite curing and natural gas combustion product emissions. The OC/VOC emissions, which are non-HAPs, are directed to the 7.171 mmBtu/hr thermal oxidizer (AB2) within P002, or are directed to the 2.049 mmBtu/hr thermal oxidizer (AB3) within P003. 100% capture of emissions is assumed since each emissions unit is a closed, negative pressure system. Each oxidizer is assumed to control 98% of OC emissions.

Applicable rules & emissions changes at the kiln no. 1 & AB2 thermal oxidizer (P002); and

Applicable rules & emissions changes at the kiln no. 2 & AB3 thermal oxidizer (P003)

If there are no changes to the emissions limit for a pollutant or an associated requirement, then it is in normal font. Inclusion of **new changes are in bold font**. Deletion of OAC rule 3745-31-05(A)(3)(b) – Ohio BAT exemption if potential emissions are less than 10 TPY

P002 - CO & NO_x emissions will have a potential, uncontrolled increases above the current allowable emissions, see Attachment 1. **See section A.2.a.**

P003 - CO emissions will have a potential, uncontrolled increase above the current allowable emissions, see Attachment 1. **See section A.2.a.**

OAC rule 3745-31-05(A)(3) – the State of Ohio Best Available Technology (BAT) requirements

P002 - 5% visible particulate emissions (PE), as a 6-min. average. The PE rate shall not exceed 0.5 lb/hr and 2.2 tons/year.....

P003 - 5% visible particulate emissions (PE), as a 6-min. average. The PE rate shall not exceed 0.5 lb/hr and 2.2 tons/year. The nitrogen oxides (NO_x) emissions shall not exceed 2.0 lb/hr and 8.8 tons/year.

Neither P002 nor P003 have HAP emissions. For pollutant emissions estimates at P002 see “Kiln 1 - Total Emissions” page and for emissions estimates at P003 see “Kiln 2 - Total Emissions” page in Attachment 2 - FOSECO_Saybrook_Emission_Cals_P001,P002 & P003.xls .

OAC rule 3745-17-07(A)

P002 & P003 - This state implementation plan (SIP) limit of 20% opacity, as a 6-min. average is less stringent than the limit established pursuant to OAC rule 3745-31-05(A)(3).

OAC rule 3745-17-11(B)

P002 & P003 - This SIP rule is less stringent than OAC rule 3745-31-05(A)(3) requirements.

P002 - According to a 3/03/08 Foseco letter the maximum, hourly throughput/production rate will be increased from the value, noted in the 4/11/03 PTI application. (Raw materials identification and materials throughput weights are confidential data.) According to OAC rule 3745-17-11(A)(4), the weight of natural gas fuel is excluded from the total process weight rate. The allowable emissions (AE) rate per OAC rule 3745-17-11(B) could be:

$AE_{TABLE 1} = 5.38 \text{ lbs PE/hr}$; or

$AE_{FIG. 2, CURVE P-1}$ cannot be determined since the maximum, uncontrolled rate of 0.11 lb PE/hr, essentially from natural gas fuel combustion, is less than 10 lbs/hr.

Per OAC rule 3745-17-11(A)(2) the most stringent limit would apply, so that the SIP requirement would be 5.38 lbs PE/hr for P002. The potential PE rates of 0.16 lb/hr and 0.72 TPY PE, found on the "Kiln 1 Total Emissions" page in Attachment 2, will comply with the current BAT limits of 0.5 lb/hr and 2.2 TPY PE. The applicant did not request revised allowable limits. No change in the PE limits may be needed.

P003 - According to a 3/03/08 Foseco letter there may be no change in the maximum, hourly throughput/production rate from the value, noted in the 4/11/03 PTI application. The potential PE rates of 0.05 lb/hr and 0.23 TPY PE, found on the "Kiln 2 Total Emissions" page in Attachment 2, will comply with the current BAT limits of 0.5 lb/hr and 2.2 TPY PE. The applicant did not request revised allowable limits. No change in the PE limits may be needed.

OAC rule 3745-21-07(G)(1)

P002 & P003 - The citation of this rule should be deleted since the input materials are solid, cured refractory intermediate products and are not liquid organic materials nor are substances containing liquid refractory materials.

OAC rule 3745-31-05(C) – voluntary restriction to avoid BAT requirements

P002 & P003 - **The organic compound (OC) emissions shall not exceed 9.9 tons/year. See section A.2.d.**

OAC rule 3745-31-05(D) re-numbered OAC rule 3745-31-05(C) – voluntary restriction to avoid MACT requirements and Title V requirements

P002 & P003 - **See section A.2.e.** (for voluntary restrictions to limit HAP & VOC emissions to synthetic minor levels).

Section A.2.a.

P002 - **The Best Available Technology (BAT) requirements under OAC rule 3745-31-05(A)(3) do not apply to the carbon monoxide (CO) emissions nor nitrogen oxide (NO_x) emissions**

P003 - **The Best Available Technology (BAT) requirements under OAC rule 3745-31-05(A)(3) do not apply to the carbon monoxide (CO) emissions since the potential, uncontrolled is less than 10 tons/year.....**

The potential emissions are greater than the current allowable rates, but with the revised BAT requirements, there will be no CO emissions limits at P002 nor P003. And there will be no NO_x emissions limits at P002.

Section A.2.b.

P002 - **The potential to emit PE, as defined in OAC rule 3745-31-01, for this emissions unit is 0.16 lb/hr and 0.72 ton per year from natural gas fuel combustion. The potential PE rates are less than the emissions limits of 0.5 lb/hr and 2.2 tons/year ...**

Since potential PE emissions are not increasing the current BAT limits are still applicable.

P003 - The potential to emit NO_x, as defined in OAC rule 3745-31-01, for this emissions unit is 0.70 lb/hr and 3.05 tons per year from natural gas fuel combustion. The potential NO_x rates are less than the emissions limits of 2.0 lbs/hr and 8.8 tons/year, established pursuant to OAC rule 3745-31-05(A)(3). Therefore, it is not necessary to develop record keeping and/or reporting requirements to ensure compliance with the short term emissions limitations. Since potential NO_x emissions are not increasing the current BAT limits are still applicable.

Section A.2.c.

P003 -The potential to emit PE, as defined in OAC rule 3745-31-01, for this emissions unit is 0.07 lb/hr and 0.30 ton per year from natural gas fuel combustion. The potential PE rates are less than the emissions limits of 0.5 lb/hr and 2.2 tons/year ... Since potential PE emissions are not increasing the current BAT limits are still applicable.

Section A.2.c. for P002 and section A.2.d. for P003

P002 & P003 - Permit to Install 02-22963 for this air contaminant source takes into account the following voluntary restriction(s) as proposed by the permittee for the purpose of avoiding Best Available Technology (BAT) requirements under OAC rule 3745-31-05(A)(3): a thermal oxidizer, also known as afterburner no. 1 (AB1), with a minimum control efficiency of 98%, by weight for OC.

OC emissions limit of 9.9 tons/year will be maintained with the use of a control device, as recommended by item no. 15 in the SB 265 BAT Q & A, 03/08 guidance.

Operational Restrictions

P002 & P003 - Current term A.II.1. to employ the afterburner (thermal oxidizer) will be updated with a modern version. Current term A.II.2. restricts the average thermal oxidizer temperature, for any 3-hour block of time within 50°F (28°C) of the baseline temperature during the most recent performance test, that demonstrated the emissions unit was in compliance, will be updated with a modern version.

P002 - U.S. EPA Method 25 test, conducted on 11/10/05, on P002 found <0.30 lb OC/hr when average process weight was 664 lbs/hr and the average oxidizer (AB2) temperature was 776°C. Minimum afterburner temperature is 748°C for P002.

P003 - U.S. EPA Method 25 test, conducted on 11/09/05, on P002 found <0.31 lb OC/hr when average process weight was 482 lbs/hr and the average oxidizer (AB3) temperature was 784°C. Minimum afterburner temperature is 756°C for P003.

Toxic Air Contaminant Analysis for the Project: Modification of P001, P002 & P003

Ammonia, ethylene glycol, formaldehyde and phenol are toxic air contaminants, listed in OAC rule 3745-114-01, that will be emitted from P001 egress. Current potential annual rates in PTI 02-17873 are compared to proposed potential (controlled) annual rates.

Net Changes to Toxic Air Contaminant Emissions						
		PTI 02-17873	Proposed	Net Change		
Toxic Contaminant	CAS #	Tons/Year	Tons/Year	Tons/Year	Lbs/Hour ¹	Grams/Sec
NH ₃ , anhydrous	07664-41-07	17.50	36.30	+18.80	49.50	6.2369
Ethylene glycol	00107-21-1	2.50	3.80	+1.30	5.18	0.6527
Formaldehyde gas	0050-00-00	1.40	0.13	-1.27		
Phenol	0010895-2	0.80	0.89	+0.09		

Note 1 – hourly emissions rate as indicated in “Curing Oven – Resin Curing” page of FOSECO_Saybrook_Emission_Cals_P001,P002 & P003.xls.

Air toxic compound emissions rates that are 1 ton/yr or greater change for a modification project are above the Ohio Modeling Significant Emissions Rate listed in Table 3 of DAPC Engineering Guide

No. 69. Only ammonia and ethylene glycol emissions have potential emissions changes of ≥ 1 TPY and would need to be modeled in a dispersion model.

SCREEN 3 Predicted Air Contaminant Concentrations vs. MAGLC Values		
	NH ₃ , anhydrous	Ethylene glycol
ACGIH	25 ppm, TWA	100 mg/m ³ , STEL
ACGIH, TWA- ug/m ³	(25 ppm, TWA x 17.03 gram/mole)/24.45 x 1000ug/mg 17,413.0	100 mg/m ³ STEL x 1000 ug/mg x 0.737 TWA/STEL 73,700.0
MAGLC _{BATCH} = TWA/10, ug/m ³	1,741.3 ¹	7,370.0 ²
Predicted conc. - ug/m ³	81 meters from egress - 271.5	81 meters from egress - 28.4

Note 1 – See Attachment 3 - Curing Oven Ammonia model results.

Note 2 – See Attachment 4 – Curing Oven Ethylene glycol model results.

For P001, the input values to the SCREEN3 models were based on the proposed potential, hourly rates, considering that P001 is a batch operation. The maximum predicted concentration of each toxic air contaminant is below the maximum acceptable ground level concentration (MAGLC). The environmental impact from this project is not expected to be significant.

Current estimates of formaldehyde emissions show 0.13 tons/year at P001 is below the 1ton/year Δ Ohio Modeling Significant Emissions Rate Δ listed in Table 3 of DAPC Engineering Guide No. 69. Current estimates show 0 tons/year of formaldehyde emissions from P002 & P003 each. The original dispersion model evaluation assumed formaldehyde emissions from P001, P002 & P003 each. This recommendation for PTI 02-22963 will not refer to the former models that had formaldehyde emissions from P001, P002 & P003 each.

G:\DOCUMENTS\PTI\FOSECO_SAYBROOK\pi02.doc saved as J:\DAPC\TRANSFER\DAPC_APPS\ptitracker\working\0222963c1.doc

List of Attachments

- Attachment 1 – Evaluation of Application for PTI 02-22963 – Comparison of Allowable/Potential Emissions Rates, saved as 0222963t.xls and as FOSECO_Saybrook_Emissions_PTI0222963_Project.
- Attachment 2 - FOSECO_Saybrook_Emission_Cals_P001,P002 & P003.xls, saved as 0222963c2.xls.
- Attachment 3 - Curing Oven Ammonia model results, FOSECO_Saybrook_P001_NH3.doc saved as 0222963s1.doc
- Attachment 4 - Curing Oven Ethylene glycol model results, FOSECO_Saybrook_P001_Ethlene_Glycol.pdf saved as 022263s2.pdf.



**State of Ohio Environmental Protection Agency
Division of Air Pollution Control**

DRAFT

**Air Pollution Permit-to-Install and Operate
for
Veitsch-Radex America - Saybrook Plant**

Facility ID: 0204000450
Permit Number: 02-22963
Permit Type: Chapter 31 mod
Issued: 7/23/2008
Effective: To be entered upon final issuance
Expiration: To be entered upon final issuance



Air Pollution Permit-to-Install and Operate
for
Veitsch-Radex America - Saybrook Plant

Table of Contents

Authorization 1

A. Standard Terms and Conditions..... 3

 1. What does this permit-to-install and operate ("PTIO") allow me to do?..... 4

 2. Who is responsible for complying with this permit? 4

 3. What records must I keep under this permit? 4

 4. What are my permit fees and when do I pay them?..... 4

 5. When does my PTIO expire, and when do I need to submit my renewal application? 4

 6. What happens to this permit if my project is delayed or I do not install or modify my source? 5

 7. What reports must I submit under this permit? 5

 8. If I am required to obtain a Title V operating permit in the future, what happens to the operating provisions and PER obligations under this permit? 5

 9. What are my obligations when I perform scheduled maintenance on air pollution control equipment? ... 5

 10. Do I have to report malfunctions of emissions units or air pollution control equipment? If so, how must I report? 6

 11. Can Ohio EPA or my local air agency inspect the facility where the emission unit(s) is/are located? 6

 12. What happens if one or more emissions units operated under this permit is/are shut down permanently? 6

 13. Can I transfer this permit to a new owner or operator? 6

 14. Does compliance with this permit constitute compliance with OAC rule 3745-15-07, "air pollution nuisance"? 7

 15. What happens if a portion of this permit is determined to be invalid? 7

B. Facility-Wide Terms and Conditions..... 8

C. Emissions Unit Terms and Conditions..... 11

 1. P001, Cure Oven 12

 2. P002, Kiln no. 1 24



State of Ohio Environmental Protection Agency
Division of Air Pollution Control

Draft Permit-to-Install and Operate

Permit Number: 02-22963

Facility ID: 0204000450

Effective Date: To be entered upon final issuance

Authorization

Facility ID: 0204000450
Application Number(s): A0001866
Permit Number: 02-22963
Permit Description: Chapter 31 modification for P001 and P002 to increase production.
Permit Type: Chapter 31 mod
Permit Fee: \$600.00 *DO NOT send payment at this time - subject to change before final issuance*
Issue Date: 7/23/2008
Effective Date: To be entered upon final issuance
Expiration Date: To be entered upon final issuance
Permit Evaluation Report (PER) Annual Date: To be entered upon final issuance

This document constitutes issuance to:

Veitsch-Radex America - Saybrook Plant
4741 Kister Ct
Ashtabula, OH 44004

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

Ohio EPA District Office or local air agency responsible for processing and administering your permit:

Ohio EPA DAPC, Northeast District Office
2110 East Aurora Road
Twinsburg, OH 43087
(330)425-9171

The above named entity is hereby granted this Permit-to-Install and Operate for the air contaminant source(s) (emissions unit(s)) listed in this section pursuant to Chapter 3745-31 of the Ohio Administrative Code. Issuance of this permit does not constitute expressed or implied approval or agreement that, if constructed or modified in accordance with the plans included in the application, the described emissions unit(s) will operate in compliance with applicable State and Federal laws and regulations.

This permit is granted subject to the conditions attached hereto.

Ohio Environmental Protection Agency

Chris Korleski
Director



State of Ohio Environmental Protection Agency
Division of Air Pollution Control

Draft Permit-to-Install and Operate

Permit Number: 02-22963

Facility ID: 0204000450

Effective Date: To be entered upon final issuance

Authorization (continued)

Permit Number: 02-22963

Permit Description: Chapter 31 modification for P001 and P002 to increase production.

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

Emissions Unit ID:	P001
Company Equipment ID:	Cure Oven
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P002
Company Equipment ID:	Kiln no. 1
Superseded Permit Number:	
General Permit Category and Type:	Not Applicable



State of Ohio Environmental Protection Agency
Division of Air Pollution Control

Draft Permit-to-Install and Operate

Permit Number: 02-22963

Facility ID: 0204000450

Effective Date: To be entered upon final issuance

A. Standard Terms and Conditions



1. What does this permit-to-install and operate ("PTIO") allow me to do?

This permit allows you to install and operate the emissions unit(s) identified in this PTIO. You must install and operate the unit(s) in accordance with the application you submitted and all the terms and conditions contained in this PTIO, including emission limits and those terms that ensure compliance with the emission limits (for example, operating, recordkeeping and monitoring requirements).

2. Who is responsible for complying with this permit?

The person identified on the "Authorization" page, above, is responsible for complying with this permit until the permit is revoked, terminated, or transferred. "Person" means a person, firm, corporation, association, or partnership. The words "you," "your," or "permittee" refer to the "person" identified on the "Authorization" page above.

The permit applies only to the emissions unit(s) identified in the permit. If you install or modify any other equipment that requires an air permit, you must apply for an additional PTIO(s) for these sources.

3. What records must I keep under this permit?

You must keep all records required by this permit, including monitoring data, test results, strip-chart recordings, calibration data, maintenance records, and any other record required by this permit for five years from the date the record was created. You can keep these records electronically, provided they can be made available to Ohio EPA during an inspection at the facility. Failure to make requested records available to Ohio EPA upon request is a violation of this permit requirement.

4. What are my permit fees and when do I pay them?

There are two fees associated with permitted air contaminant sources in Ohio:

- PTIO fee. This one-time fee is based on a fee schedule in accordance with Ohio Revised Code (ORC) section 3745.11, or based on a time and materials charge for permit application review and permit processing if required by the Director.

You will be sent an invoice for this fee after you receive this PTIO and payment is due within 30 days of the invoice date. You are required to pay the fee for this PTIO even if you do not install or modify your operations as authorized by this permit.

- Annual emissions fee. Ohio EPA will assess a separate fee based on the total annual emissions from your facility. You self-report your emissions in accordance with Ohio Administrative Code (OAC) Chapter 3745-78. This fee assessed is based on a fee schedule in ORC section 3745.11 and funds Ohio EPA's permit compliance oversight activities. For facilities that are permitted as synthetic minor sources, the fee schedule is adjusted annually for inflation. Ohio EPA will notify you when it is time to report your emissions and to pay your annual emission fees.

5. When does my PTIO expire, and when do I need to submit my renewal application?

This permit expires on the date identified at the beginning of this permit document (see "Authorization" page above) and you must submit a renewal application to renew the permit. Ohio EPA will send a renewal notice to you approximately six months prior to the expiration date of this permit. However, it is



very important that you submit a complete renewal permit application (postmarked prior to expiration of this permit) even if you do not receive the renewal notice.

If a complete renewal application is submitted before the expiration date, Ohio EPA considers this a timely application for purposes of ORC section 119.06, and you are authorized to continue operating the emissions unit(s) covered by this permit beyond the expiration date of this permit until final action is taken by Ohio EPA on the renewal application.

6. What happens to this permit if my project is delayed or I do not install or modify my source?

This PTIO expires 18 months after the issue date identified on the "Authorization" page above unless otherwise specified if you have not (1) started constructing the new or modified emission sources identified in this permit, or (2) entered into a binding contract to undertake such construction. This deadline can be extended by up to 12 months, provided you apply to Ohio EPA for this extension within a reasonable time before the 18-month period has ended and you can show good cause for any such extension.

7. What reports must I submit under this permit?

An annual permit evaluation report (PER) is required in addition to any malfunction reporting required by OAC rule 3745-15-06 or other specific rule-based reporting requirement identified in this permit. Your PER due date is identified in the Authorization section of this permit.

8. If I am required to obtain a Title V operating permit in the future, what happens to the operating provisions and PER obligations under this permit?

If you are required to obtain a Title V permit under OAC Chapter 3745-77 in the future, the permit-to-operate portion of this permit will be superseded by the issued Title V permit. From the effective date of the Title V permit forward, this PTIO will effectively become a PTI (permit-to-install) in accordance with OAC rule 3745-31-02(B). The following terms and conditions will no longer be applicable after issuance of the Title V permit: Section B, Term 1.b) and Section C, for each emissions unit, Term a)(2).

The PER requirements in this permit remain effective until the date the Title V permit is issued and is effective, and cease to apply after the effective date of the Title V permit. The final PER obligation will cover operations up to the effective date of the Title V permit and must be submitted on or before the submission deadline identified in this permit on the last day prior to the effective date of the Title V permit.

9. What are my obligations when I perform scheduled maintenance on air pollution control equipment?

You must perform scheduled maintenance of air pollution control equipment in accordance with OAC rule 3745-15-06(A). If scheduled maintenance requires shutting down or bypassing any air pollution control equipment, you must also shut down the emissions unit(s) served by the air pollution control equipment during maintenance, unless the conditions of OAC rule 3745-15-06(A)(3) are met. Any emissions that exceed permitted amount(s) under this permit (unless specifically exempted by rule) must be reported as deviations in the annual permit evaluation report (PER), including nonexempt excess emissions that occur during approved scheduled maintenance.



10. Do I have to report malfunctions of emissions units or air pollution control equipment? If so, how must I report?

If you have a reportable malfunction of any emissions unit(s) or any associated air pollution control system, you must report this to the Ohio EPA DAPC, Northeast District Office in accordance with OAC rule 3745-15-06(B). Malfunctions that must be reported are those that result in emissions that exceed permitted emission levels. It is your responsibility to evaluate control equipment breakdowns and operational upsets to determine if a reportable malfunction has occurred.

If you have a malfunction, but determine that it is not a reportable malfunction under OAC rule 3745-15-06(B), it is recommended that you maintain records associated with control equipment breakdown or process upsets. Although it is not a requirement of this permit, Ohio EPA recommends that you maintain records for non-reportable malfunctions.

11. Can Ohio EPA or my local air agency inspect the facility where the emission unit(s) is/are located?

Yes. Under Ohio law, the Director or his authorized representative may inspect the facility, conduct tests, examine records or reports to determine compliance with air pollution laws and regulations and the terms and conditions of this permit. You must provide, within a reasonable time, any information Ohio EPA requests either verbally or in writing.

12. What happens if one or more emissions units operated under this permit is/are shut down permanently?

Ohio EPA can terminate the permit terms associated with any permanently shut down emissions unit. "Shut down" means the emissions unit has been physically removed from service or has been altered in such a way that it can no longer operate without a subsequent "modification" or "installation" as defined in OAC Chapter 3745-31.

You should notify Ohio EPA of any emissions unit that is permanently shut down by submitting a certification that identifies the date on which the emissions unit was permanently shut down. The certification must be submitted by an authorized official from the facility. You cannot continue to operate an emission unit once the certification has been submitted to Ohio EPA by the authorized official.

You must comply with all recordkeeping and reporting for any permanently shut down emissions unit in accordance with the provisions of the permit, regulations or laws that were enforceable during the period of operation, such as the requirement to submit a PER, air fee emission report, or malfunction report. You must also keep all records relating to any permanently shutdown emissions unit, generated while the emissions unit was in operation, for at least five years from the date the record was generated.

Again, you cannot resume operation of any emissions unit certified by the authorized official as being permanently shut down without first applying for and obtaining a permit pursuant to OAC Chapter 3745-31.

13. Can I transfer this permit to a new owner or operator?

You can transfer this permit to a new owner or operator. If you transfer the permit, you must follow the procedures in OAC Chapter 3745-31, including notifying Ohio EPA or the local air agency of the change in ownership or operator. Any transferee of this permit must assume the responsibilities of the transferor permit holder.



State of Ohio Environmental Protection Agency
Division of Air Pollution Control

Draft Permit-to-Install and Operate

Permit Number: 02-22963

Facility ID: 0204000450

Effective Date: To be entered upon final issuance

14. Does compliance with this permit constitute compliance with OAC rule 3745-15-07, "air pollution nuisance"?

This permit and OAC rule 3745-15-07 prohibit operation of the air contaminant source(s) regulated under this permit in a manner that causes a nuisance. Ohio EPA can require additional controls or modification of the requirements of this permit through enforcement orders or judicial enforcement action if, upon investigation, Ohio EPA determines existing operations are causing a nuisance.

15. What happens if a portion of this permit is determined to be invalid?

If a portion of this permit is determined to be invalid, the remainder of the terms and conditions remain valid and enforceable. The exception is where the enforceability of terms and conditions are dependent on the term or condition that was declared invalid.



State of Ohio Environmental Protection Agency
Division of Air Pollution Control

Draft Permit-to-Install and Operate

Permit Number: 02-22963

Facility ID: 0204000450

Effective Date: To be entered upon final issuance

B. Facility-Wide Terms and Conditions



1. This permit document constitutes a permit-to-install issued in accordance with ORC 3704.03(F) and a permit-to-operate issued in accordance with ORC 3704.03(G).
 - a) For the purpose of a permit-to-install document, the facility-wide terms and conditions identified below are federally enforceable with the exception of those listed below which are enforceable under state law only.
 - (1) None.
 - b) For the purpose of a permit-to-operate document, the facility-wide terms and conditions identified below are enforceable under state law only with the exception of those listed below which are federally enforceable.
 - (1) 2.a) through 2.c).
2. Permit to Install 02-22963 for this air contaminant source takes into account the following voluntary restrictions, regarding the emissions units specified in 3. and 4., as proposed by the permittee for the purpose of avoiding New Emission Standards for the Refractory Products Manufacturing Industry requirements under 40 CFR Part 63, Subpart SSSSS, and as well as avoiding Title V requirements under OAC rules 3745-77-02 through 3745-77-10:
 - a) The emissions of each single hazardous air pollutant (HAP) from the emissions units, specified in 3. and 4., shall not exceed 9.0 tons/year, based on a rolling 12-month summation, and shall be achieved by employing the operational restrictions, specified in C.1.c)(1), C.1.c)(2), C.2.c)(1), C.2.c)(2) within this permit for emissions units P001 and P002, respectively, and C.1.c)(1) and C.1.c)(2) within permit # P0103656 for emissions unit P003.
 - b) The emissions of combined HAPs from the emissions units, specified in 3. and 4., shall not exceed 24.0 tons/year, based on a rolling 12-month summation, and shall be achieved by employing the operational restrictions, specified in C.1.c)(1), C.1.c)(2), C.2.c)(1), C.2.c)(2) within this permit for emissions units P001 and P002, respectively, and C.1.c)(1) and C.1.c)(2) within permit # P0103656 for emissions unit P003.
 - c) The emissions of volatile organic compounds (VOCs) from the emissions units, specified in 3. and 4., shall not exceed 99.0 tons/year, based on a rolling 12-month summation, and shall be achieved by employing the operational restrictions, specified in C.1.c)(1), C.1.c)(2), C.2.c)(1), C.2.c)(2) within this permit for emissions units P001 and P002, respectively, and C.1.c)(1) and C.1.c)(2) within permit # P0103656 for emissions unit P003.
3. Voluntary restrictions to limit potential facility-wide emissions of single HAPs, combined HAPs, and/or VOCs by the use of thermal oxidizers, concern the following emissions units:
 - a) P001 - 4.904 mmBtu/hr natural gas-fired curing oven for intermediate refractory products, with a 3.961 mmBTU/hr natural gas-fired thermal oxidizer (AB1) to control organic compound (OC) emissions;
 - b) P002 - 14.343 mmBtu/hr natural gas-fired kiln no. 1 for refractory products, with a 7.171 mmBTU/hr natural gas-fired thermal oxidizer (AB2) to control organic compound (OC) emissions; and



- c) P003 - 4.918 mmBtu/hr natural gas-fired kiln no. 2 for refractory products, with a 2.049 mmBTU/hr afterburner natural gas-fired thermal oxidizer (AB3) to control organic compound (OC) emissions.
4. The following emissions unit(s) located at this facility, including any de minimis air contaminant sources, as defined in OAC rule 3745-15-05, and any permanent exemption air contaminant sources installed subsequent to the issuance of this permit are subject to the rolling, 12-month emissions limitation(s) on single HAPs, combined HAPs and/or VOCs specified in 2 above, but do not have operational restrictions to use a thermal oxidizer: Curing of glaze and/or cement materials.
5. The permittee shall maintain monthly records of the following information for the emissions units identified in 3.a) through 3.c) and 4.:
- a) the rolling, 12-month single HAP emissions for each HAP, in tons;
 - b) the rolling, 12-month combined HAP emissions, in tons; and
 - c) the rolling, 12-month VOC emissions, in tons.
6. The permittee shall submit quarterly deviation (excursion) reports that include the following information:
- a) each month during which exceedances of the rolling, 12-month emissions limitation(s) on single HAPs, combined HAPs and VOCs from the emissions units specified in 3. and 4. exceeded 9.0 tons/yr of each single HAP, 24.0 tons combined HAPs/yr, and 99.0 tons VOC/yr; and
 - b) for each deviation, the actual rolling, 12-month emissions of single HAPs, combined HAPs and VOCs, in tons.

These quarterly reports shall be submitted (i.e., postmarked) by January 31, April 30, July 31, and October 31 of each year; and each report shall cover the previous calendar quarter.

7. Emission Limitation(s):

9.0 tons/year of each single HAP, based on a rolling 12-month summation of the emissions from the emissions units specified in 3. and 4.

24.0 tons/year of combined HAPs, based on a rolling 12-month summation of the emissions from the emissions units specified in 3. and 4.

99.0 tons/year of VOC, based on a rolling 12-month summation of the emissions from the emissions units specified in 3. and 4.

Applicable Compliance Method: Compliance shall be based upon the following:

For emissions units, specified in 3., that are subject to the voluntary operational restrictions, specified in 2.a) through 2.c), the record keeping requirements in 5.a) through 5.c), which are the maintenance of a rolling, 12-month summation of the specified emissions, for emissions units specified in 3. and 4.

For emissions units, specified in 4., that are not subject to voluntary operational restrictions HAP and VOC emissions may be estimated by using the methods described in AP42, Fifth Edition, Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources or an alternative method(s) as approved by the Ohio EPA.



State of Ohio Environmental Protection Agency
Division of Air Pollution Control

Draft Permit-to-Install and Operate

Permit Number: 02-22963

Facility ID: 0204000450

Effective Date: To be entered upon final issuance

C. Emissions Unit Terms and Conditions



1. P001, Cure Oven

Operations, Property and/or Equipment Description:

4.904 mmBtu/hr natural gas-fired curing oven for intermediate refractory products manufacture with a 3.961 mmBtu/hr natural gas-fired thermal oxidizer (AB1) to control OC emissions. Chapter 31 modification of PTI 02-17873, issued on 8/21/03 and a corrected copy issued on 11/16/04.

a) This permit document constitutes a permit-to-install issued in accordance with ORC 3704.03(F) and a permit-to-operate issued in accordance with ORC 3704.03(G).

(1) For the purpose of a permit-to-install document, the emissions unit terms and conditions identified below are federally enforceable with the exception of those listed below which are enforceable under state law only.

a. d)(5) through d)(7) and e)(3).

(2) For the purpose of a permit-to-operate document, the emissions unit terms and conditions identified below are enforceable under state law only with the exception of those listed below which are federally enforceable.

a. None.

b) **Applicable Emissions Limitations and/or Control Requirements**

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

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rule 3745-31-05(A)(3)(b)	See b)(2)a.
b.	OAC rule 3745-31-05(A)(3)	Visible particulate emissions from any stack shall not exceed 5 percent opacity as a 6-minute average. The particulate emissions (PE) shall not exceed 0.5 lb/hr and 2.2 tons/year. The nitrogen oxides (NO _x) emissions shall not exceed 1.0 lb/hr and 4.4 tons/year. The requirements of this rule also include compliance with OAC rule 3745-31-05(E). See b)(2)b and b)(2)c.
c.	OAC rule 3745-17-07(A)	The visible particulate emission limitation specified by this rule is less stringent than the visible emission limitation established



	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		pursuant to OAC rule 3745-31-05(A)(3).
d.	OAC rule 3745-17-11(B)	The PE limitation specified by this rule is less stringent than the particulate emission limitation established pursuant to OAC rule 3745-31-05(A)(3).
e.	OAC rule 3745-21-07(M)(5)(d)	This emissions unit is not subject to the emissions limit requirements nor the control requirements of OAC rule 3745-21-07(M)(4) since the volatile content of the substance containing liquid organic material does not exceed 20 percent, by volume of said substance.
f.	OAC rule 3745-31-05(E) - voluntary restriction to avoid BAT requirements	The organic compound (OC) emissions shall not exceed 9.9 tons/year. See b)(2)d.
g.	OAC rule 3745-31-05(D) - voluntary restriction to avoid MACT requirements and Title V requirements	See b)(2)a through b)(2)c.

(2) Additional Terms and Conditions

a. The Best Available Technology (BAT) requirements under OAC rule 3745-31-05(A)(3) do not apply to the carbon monoxide (CO) emissions from this air contaminant source since the uncontrolled potential to emit for CO is less than 10 tons/yr. Maximum uncontrolled CO emissions may be estimated by the following methods:

i. Determination of the maximum, uncontrolled, hourly CO emissions:

$$\text{Pollutant(HR)} = (\text{H}_{\text{CURE OVEN}} + \text{H}_{\text{AFTERBURNER}}) / \text{Heat Content} \times \text{EF}$$

where:

Pollutant(HR) = maximum, hourly rate, which is 0.74 lb/hr of CO emissions;

H_{CURE OVEN} = maximum heat input of the cure oven, which is 4.904 mmBtu/hr, as specified in the application for PTI 02-22963;

H_{AFTERBURNER} = maximum heat input of the afterburner (AB1), which is 3.961 mmBtu/hr, as specified in the application for PTI 02-22963;

Heat Content = heat content of fuel, which is 1,000 Btu/cf for natural gas, as specified in the application for PTI 02-22963; and



EF = emissions factor, which is 84 lbs uncontrolled CO/mmcf, from Table 1.4-1 in AP-42, Chap. 1.4 (7/98).

- ii. Determination of the maximum, uncontrolled, annual CO emissions may be based on the following equation:

$$\text{Pollutant(YR)} = \text{Pollutant(HR)} \times (\text{Summation of Hrs/YR}) \times 2000 \text{ lbs/ton}$$

where:

Pollutant(YR) = maximum, annual pollutant emissions, which is 3.26 tons/yr of CO emissions;

Pollutant (HR) = maximum, hourly pollutant emissions, in lbs/hr, as specified in b)(2)a.i; and

Hrs/YR = the maximum annual operating hours, which is 8,760 hrs/yr.

- b. The potential to emit NO_x, as defined in OAC rule 3745-31-01, for this emissions unit is 0.89 lb/hr and 3.88 tons per year from natural gas fuel combustion. The potential NO_x rates are less than the emissions limits of 1.0 lb/hr and 4.4 tons/year, established pursuant to OAC rule 3745-31-05(A)(3). Therefore, it is not necessary to develop record keeping and/or reporting requirements to ensure compliance with the short term emissions limitations.
- c. The potential to emit PE, as defined in OAC rule 3745-31-01, for this emissions unit is 0.07 lb/hr and 0.30 ton per year from natural gas fuel combustion. The potential PE rates are less than the emissions limits of 0.5 lb/hr and 2.2 tons/year, established pursuant to OAC rule 3745-31-05(A)(3). Therefore, it is not necessary to develop record keeping and/or reporting requirements to ensure compliance with these short term emissions limitations.
- d. Permit to Install 02-22963 for this air contaminant source takes into account the following voluntary restriction(s) as proposed by the permittee for the purpose of avoiding Best Available Technology (BAT) requirements under OAC rule 3745-31-05(A)(3): operation of a thermal oxidizer, also known as afterburner no. 1 (AB1), with a minimum control efficiency of 98%, by weight for OC.

c) Operational Restrictions

- (1) All of the OC emissions from this emissions unit shall be vented to the thermal oxidizer, also known as afterburner no. 1 (AB1), when the emissions unit is in operation.
- (2) In order to maintain compliance with the applicable emission limitation(s) contained in this permit, the acceptable average combustion temperature within the thermal oxidizer, for any 3-hour block of time when the emissions unit controlled by the thermal oxidizer is in operation, shall not be more than 50 degrees Fahrenheit below the average temperature measured during the most recent emissions test that demonstrated the emissions unit was in compliance.

d) Monitoring and/or Recordkeeping Requirements



- (1) The permittee shall maintain monthly records of the following information for this emissions unit:
 - a. the weight of all materials processed in each batch, in pounds;
 - b. the individual HAP content for each HAP in each batch, in percent by weight;
 - c. the combined HAP content in each batch, in percent by weight;
 - d. the VOC content of each batch, in percent by weight;
 - e. the OC content of each batch, in percent by weight;
 - f. the natural gas usage, in million cubic feet; and
 - g. an identification of each time period when the emissions unit was in operation and the OC emissions were not vented to the thermal oxidizer.

- (2) The permittee shall properly install, operate, and maintain a continuous temperature monitor and recorder which measures and records the combustion temperature within the thermal oxidizer when the emissions unit(s) is/are in operation. Units shall be in degrees Fahrenheit or Celsius. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within ± 1 percent of the temperature being measured or ± 5 degrees Fahrenheit, whichever is greater. The temperature monitor and recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and the operating manuals. The permittee shall collect and record the following information each day the emissions unit is in operation:
 - a. all 3-hour blocks of time, when the emissions unit(s) controlled by the thermal oxidizer was/were in operation, during which the average combustion temperature within the thermal oxidizer was more than 50 degrees Fahrenheit below the average temperature measured during the most recent emissions test that demonstrated the emission unit was in compliance; and
 - b. a log of the downtime for the capture (collection) system, thermal oxidizer, and monitoring equipment when the associated emissions unit was in operation.

These records shall be maintained at the facility for a period of five years.

- (3) Whenever the monitored average combustion temperature within the thermal oxidizer deviates from the range specified in this permit, the permittee shall promptly investigate the cause of the deviation. The permittee shall maintain records of the following information for each investigation:
 - a. the date and time the deviation began;
 - b. the magnitude of the deviation at that time;
 - c. the date the investigation was conducted;
 - d. the name(s) of the personnel who conducted the investigation; and



- e. the findings and recommendations.

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

- f. a description of the corrective action;
- g. the date corrective action was completed;
- h. the date and time the deviation ended;
- i. the total period of time (in minutes) during which there was a deviation;
- j. the temperature readings immediately after the corrective action was implemented; and
- k. the name(s) of the personnel who performed the work.

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

The temperature range is effective for the duration of this permit, unless revisions are requested by the permittee and approved in writing by the Ohio EPA Northeast District Office. The permittee may request revisions to the permitted temperature range/limit based upon information obtained during future emission tests that demonstrate compliance with the allowable OC emission rate for the controlled emissions unit(s). In addition, approved revisions to the temperature range will not constitute a relaxation of the monitoring requirements of this permit and may be incorporated into this permit by means of an administrative modification.

- (4) The permittee shall perform an inspection of the thermal oxidizer on at least an annual basis. Each inspection shall consist of internal and visual inspections in accordance with the manufacturer's recommendations and shall include a physical inspection of the unit and checks of associated equipment, including but not limited to burners, controls, dampers, valves, and monitoring and recording equipment. Repair and replacement of equipment shall be performed as determined by the inspection. The permittee shall maintain a record of the results of each annual inspection of the thermal oxidizer.
- (5) The permit to install for this emissions unit(s) [P001] was evaluated based on the actual materials and the design parameters of the emissions unit's(s=) exhaust system, as specified by the permittee in the permit application. The "Toxic Air Contaminant Statute", ORC 3704.03(F), was applied to this/these emissions unit(s) for each toxic air contaminant listed in OAC rule 3745-114-01, using data from the permit application; and modeling was performed for each toxic air contaminant(s) emitted at over one ton per year using an air dispersion model such as SCREEN 3.0, AERMOD, or ISCST3, or other Ohio EPA approved model. The predicted 1-hour maximum ground-level concentration result(s) from the approved air dispersion model, was compared to the Maximum



Acceptable Ground-Level Concentration (MAGLC), calculated as described in the Ohio EPA guidance document entitled "Review of New Sources of Air Toxic Emissions, Option A", as follows:

- a. the exposure limit, expressed as a time-weighted average concentration for a conventional 8-hour workday and a 40-hour workweek, for each toxic compound(s) emitted from the emissions unit(s), (as determined from the raw materials processed and/or coatings or other materials applied) has been documented from one of the following sources and in the following order of preference (TLV was and shall be used, if the chemical is listed):
 - i. threshold limit value (TLV) from the American Conference of Governmental Industrial Hygienists= (ACGIH) "Threshold Limit Values for Chemical Substances and Physical Agents Biological Exposure Indices"; or
 - ii. STEL (short term exposure limit) or the ceiling value from the American Conference of Governmental Industrial Hygienists= (ACGIH) "Threshold Limit Values for Chemical Substances and Physical Agents Biological Exposure Indices"; the STEL or ceiling value is multiplied by 0.737 to convert the 15-minute exposure limit to an equivalent 8-hour TLV.
- b. The TLV is divided by ten to adjust the standard from the working population to the general public (TLV/10).
- c. This standard is/was then adjusted to account for the duration of the exposure or the operating hours of the emissions unit(s), i.e., "X" hours per day and "Y" days per week, from that of 8 hours per day and 5 days per week from resin curing. The resulting calculation was (and shall be) used to determine the Maximum Acceptable Ground-Level Concentration (MAGLC):

$$TLV/10 \times 8/X \times 5/Y = MAGLC$$

$$TLV/10 \times 8/8 \times 5/5 = TLV/10 = MAGLC$$

- d. The following summarizes the results of dispersion modeling for the significant toxic contaminants (emitted at 1 or more tons/year) or "worst case" toxic contaminant(s):

Toxic Contaminant: anhydrous ammonia, NH₃

TLV (ug/m³): 17,413

Maximum Hourly Emission Rate (lbs/hr): 49.50

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 271.5

MAGLC (ug/m³): 1,741

Toxic Contaminant: ethylene glycol



TLV ($\mu\text{g}/\text{m}^3$): 73,700

Maximum Hourly Emission Rate (lbs/hr): 5.18

Predicted 1-Hour Maximum Ground-Level Concentration ($\mu\text{g}/\text{m}^3$): 28.4

MAGLC ($\mu\text{g}/\text{m}^3$): 7,370

The permittee, has demonstrated that emissions of ammonia and ethylene glycol, from emissions unit(s) [P001], is calculated to be less than eighty per cent of the maximum acceptable ground level concentration (MAGLC); any new raw material or processing agent shall not be applied without evaluating each component toxic air contaminant in accordance with the "Toxic Air Contaminant Statute", ORC 3704.03(F).

- (6) Prior to making any physical changes to or changes in the method of operation of the emissions unit(s), that could impact the parameters or values that were used in the predicted 1-hour maximum ground-level concentration", the permittee shall re-model the change(s) to demonstrate that the MAGLC has not been exceeded. Changes that can affect the parameters/values used in determining the 1-hour maximum ground-level concentration include, but are not limited to, the following:
- a. changes in the composition of the materials used or the use of new materials, that would result in the emission of a new toxic air contaminant with a lower Threshold Limit Value (TLV) than the lowest TLV previously modeled;
 - b. changes in the composition of the materials, or use of new materials, that would result in an increase in emissions of any toxic air contaminant listed in OAC rule 3745-114-01, that was modeled from the initial (or last) application; and
 - c. physical changes to the emissions unit(s) or its/their exhaust parameters (e.g., increased/ decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).

If the permittee determines that the "Toxic Air Contaminant Statute" will be satisfied for the above changes, the Ohio EPA will not consider the change(s) to be a "modification" under OAC rule 3745-31-01 solely due to a non-restrictive change to a parameter or process operation, where compliance with the "Toxic Air Contaminant Statute", ORC 3704.03(F), has been documented. If the change(s) meet(s) the definition of a "modification" or if a new toxic is emitted, or the modeled toxic(s) is/are expected to exceed the previous modeled level(s), then the permittee shall apply for and obtain a final permit-to-install prior to the change. The Director may consider any significant departure from the operations of the emissions unit, described in the permit-to-install application, as a modification that results in greater emissions than the emissions rate modeled to determine the ground level concentration; and may require the permittee to submit a permit-to-install application for the increased emissions.

- (7) The permittee shall collect, record, and retain the following information for each toxic evaluation conducted to determine compliance with the "Toxic Air Contaminant Statute", ORC 3704.03(F):



- a. a description of the parameters/values used in each compliance demonstration and the parameters or values changed for any re-evaluation of the toxic(s) modeled (the composition of materials, new toxic contaminants emitted, change in stack/exhaust parameters, etc.);
 - b. the Maximum Acceptable Ground-Level Concentration (MAGLC) for each significant toxic contaminant or worst-case contaminant, calculated in accordance with the "Toxic Air Contaminant Statute", ORC 3704.03(F);
 - c. a copy of the computer model run(s), that established the predicted 1-hour maximum ground-level concentration that demonstrated the emissions unit(s) to be in compliance with the "Toxic Air Contaminant Statute", ORC 3704.03(F), initially and for each change that requires re-evaluation of the toxic air contaminant emissions; and
 - d. the documentation of the initial evaluation of compliance with the "Toxic Air Contaminant Statute", ORC 3704.03(F), and documentation of any determination that was conducted to re-evaluate compliance due to a change made to the emissions unit(s) or the materials applied.
- e) Reporting Requirements
- (1) The permittee shall submit deviation (excursion) reports that identify any time periods when the emissions unit was in operation and the OC emissions were not vented to the thermal oxidizer (AB1). Each report shall be submitted within 30 days after the deviation occurs.
 - (2) The permittee shall submit quarterly reports that identify the following information concerning the operation of the thermal oxidizer during the operation of the emissions unit:
 - a. each period of time when the average combustion temperature within the thermal oxidizer was outside of the acceptable range;
 - b. an identification of each incident of deviation described in "a" (above) where a prompt investigation was not conducted;
 - c. an identification of each incident of deviation described in "a" where prompt corrective action, that would bring the temperature into compliance with the acceptable range, was determined to be necessary and was not taken; and
 - d. an identification of each incident of deviation described in "a" where proper records were not maintained for the investigation and/or the corrective action(s).
- These quarterly reports shall be submitted (i.e., postmarked) by January 31, April 30, July 31, and October 31 of each year; and each report shall cover the previous calendar quarter.
- (3) The permittee shall maintain a record of any change made to a parameter or value used in the dispersion model, used to demonstrate compliance with the "Toxic Air Contaminant Statute", ORC 3704.03(F), through the predicted 1-hour maximum ground-



level concentration. The record shall include the date and reason(s) for the change and if the change would increase the ground-level concentration.

f) Testing Requirements

(1) Compliance with the allowable emission limitations and control measures requirements in C.1.b)(1) of these terms and conditions shall be determined in accordance with the following methods:

a. Emission Limitation:

Visible particulate emissions from any stack shall not exceed 5% opacity as a 6-minute average.

Applicable Compliance Method:

Compliance shall be determined through visible emission observations performed in accordance with 40 CFR Part 60 ("Standards of Performance for New Stationary Sources"), Appendix A, U.S. EPA Reference Method 9.

b. Emission Limitation:

The PE rate shall not exceed 0.5 lb/hr.

Applicable Compliance Method:

Compliance may be based on the following equation:

$$PE(HR) = (H_{CURE\ OVEN} + H_{AFTERBURNER})/Heat\ Content \times EF.$$

where:

PE(HR) = maximum, hourly PE rate, which is 0.07 lb/hr;

H_{CURE OVEN} = maximum heat input of the cure oven, which is 4.904 mmBtu/hr, as specified in the application for PTI 02-22963;

H_{AFTERBURNER} = maximum heat input of the afterburner (AB1), which is 3.961 mmBtu/hr, as specified in the application for PTI 02-22963;

Heat Content = heat content of fuel, which is 1,000 Btu/cf for natural gas, as specified in the application for PTI 02-22963; and

EF = emissions factor, which is 7.6 lbs uncontrolled PE/mmcf, from Table 1.4-2 in AP-42, Chap. 1.4 (7/98).

The measured PE rate at this emissions unit was determined to be 0.052 lb/hr via U.S. EPA Methods 1 through 5 tests conducted on November 9, 2005. If required, the permittee shall demonstrate compliance with this emission limitation through emissions tests performed in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 5 or equivalent, alternative method(s), as approved by Ohio EPA.



c. Emission Limitation:

The NO_x emissions shall not exceed 1.0 lb/hr.

Applicable Compliance Method:

Compliance may be based on the following equation:

$$NO_x(HR) = (H_{CURE\ OVEN} + H_{AFTERBURNER})/Heat\ Content \times EF$$

where:

NO_x(HR) = maximum, hourly NO_x rate, which is 0.89 lb/hr; and

EF = emissions factor, which is 100 lbs uncontrolled NO_x/mmcf, from Table 1.4-1 in AP-42, Chap. 1.4 (7/98).

If required, the permittee shall demonstrate compliance with this emission limitation through emissions tests performed in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 4 and 7E or equivalent, alternative method(s), as approved by Ohio EPA.

d. Emission Limitations:

The PE rate shall not exceed 2.2 tons/year.

The NO_x emissions shall not exceed 4.4 tons/year.

Applicable Compliance Method:

Compliance may be based on the following equation:

$$Pollutant(YR) = Pollutant(HR) \times 8,760\ Hrs/YR \times 2000\ lbs/ton.$$

where:

Pollutant(YR) = maximum, annual pollutant emissions, in tons/yr;

Pollutant (HR) = maximum, hourly pollutant emissions, in lbs/hr, as specified in f)(1)b. and f)(1)c; and

8,760 Hrs/YR = the maximum, annual operating hours.

e. Emission Limitation:

The OC emissions shall not exceed 9.9 tons/year.

Applicable Compliance Method(s):

Compliance may be based on the following equation(s):

- i. Determination of the uncontrolled OC pollutant emissions from natural gas fuel combustion:



$$\text{OC Pollutant(MONTH)}_{\text{FUEL}} = \text{NG}_{\text{CURE OVEN} + \text{AFTERBURNER}} \times \text{EF} \times 1 \text{ ton}/2,000 \text{ lbs.}$$

where:

$\text{OC Pollutant(MONTH)}_{\text{FUEL}}$ = actual, monthly uncontrolled OC pollutant emissions, in tons/month;

$\text{NG}_{\text{CURE OVEN} + \text{AFTERBURNER}}$ = actual natural gas fuel usage from the emissions unit, in million cubic feet/month (mmcf/month), as specified in d)(1); and

EF = emissions factor, which is 11 lbs uncontrolled OC/mmcf and 5.5 lbs uncontrolled VOC/mmcf from natural gas fuel combustion, from Table 1.4-2 in AP-42, Chap. 1.4 (7/98).

- ii. Determination of the actual, controlled OC pollutant emissions from resin solution curing:

$$\text{OC Pollutant(MONTH)}_{\text{RESIN CURE}} = W_{\text{MTLS}} \times W_{\text{OC Pollutant}\%} \times (1 - \text{CE}) \times 1 \text{ ton}/2,000 \text{ lbs.}$$

where:

$\text{OC Pollutant(MONTH)}_{\text{RESIN CURE}}$ = actual, controlled OC pollutant emissions from resin curing, in tons/month;

W_{MTLS} = weight of all materials processed, in lbs/month, as specified in d)(1);

$W_{\text{OC Pollutant}\%}$ = weight percentage, as a decimal fraction, of an OC pollutant (single HAP, combined HAPs, VOC or OC), within the total materials weight, as specified in d)(1); and

CE = efficiency of control device, which is 0.98 (98%), as specified in the application for PTI 02-22963.

- iii. Determination of the total OC pollutant emissions:

$$\text{OC Pollutant(MONTH)}_{\text{TOTAL}} = \text{OC Pollutant(MONTH)}_{\text{FUEL}} + \text{OC Pollutant(MONTH)}_{\text{RESIN CURE}}$$

where:

$\text{OC Pollutant(MONTH)}_{\text{TOTAL}}$ = total OC pollutant emissions from the combined operations of fuel combustion and resin curing, in tons/month.

- iv. Determination of the annual OC pollutant emissions:

$$\text{OC Pollutant(YR)} = 12\text{-month summation of } \text{OC Pollutant(MONTH)}_{\text{TOTAL}}$$

(2) U.S. EPA Method 24 (Appendix A to 40 CFR Part 60) or formulation data shall be used to determine the VOC content of production and cleanup materials. The permittee may



State of Ohio Environmental Protection Agency
Division of Air Pollution Control

Draft Permit-to-Install and Operate

Permit Number: 02-22963

Facility ID: 0204000450

Effective Date: To be entered upon final issuance

request to use an alternative method or procedure for the VOC content determination. The Ohio EPA will consider the request, including an evaluation of the applicability, necessity, and validity of the alternative, and may approve the use of the alternative if such approval does not contravene any other applicable requirement.

- (3) U.S. EPA Method 311 (Appendix A to 40 CFR Part 63) or formulation data shall be used to determine the HAP content of production and cleanup materials. The permittee may request to use an alternative method or procedure for the HAP content determination. The Ohio EPA will consider the request, including an evaluation of the applicability, necessity, and validity of the alternative, and may approve the use of the alternative if such approval does not contravene any other applicable requirement.

g) **Miscellaneous Requirements**

- (1) The terms and conditions contained in this permit for this emissions unit shall supersede all the air pollution control requirements for the emissions unit contained in the permit to install 02-17873 issued on 8/21/03 with a corrected copy issued on 11/16/04.



2. P002, Kiln no. 1

Operations, Property and/or Equipment Description:

14.343 mmBtu/hr natural gas-fired kiln no.1 for refractory products manufacture with a 7.171 mmBtu/hr natural gas-fired thermal oxidizer (AB2) to control OC emissions. Chapter 31 modification of PTI 02-17873, issued on 8/21/03 and a corrected copy issued on 11/16/04.

a) This permit document constitutes a permit-to-install issued in accordance with ORC 3704.03(F) and a permit-to-operate issued in accordance with ORC 3704.03(G).

(1) For the purpose of a permit-to-install document, the emissions unit terms and conditions identified below are federally enforceable with the exception of those listed below which are enforceable under state law only.

a. d)(5).

(2) For the purpose of a permit-to-operate document, the emissions unit terms and conditions identified below are enforceable under state law only with the exception of those listed below which are federally enforceable.

a. None.

b) Applicable Emissions Limitations and/or Control Requirements

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

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	OAC rule 3745-31-05(A)(3)(b)	See b)(2)a.
b.	OAC rule 3745-31-05(A)(3)	Visible particulate emissions from any stack shall not exceed 5 percent opacity as a 6-minute average. The particulate emissions (PE) shall not exceed 0.5 lb/hr and 2.2 tons/year. The requirements of this rule also include compliance with OAC rule 3745-31-05(E). See b)(2)b.
c.	OAC rule 3745-17-07(A)	The visible emission limitation specified by this rule is less stringent than the visible emission limitation established pursuant to OAC rule 3745-31-05(A)(3).
d.	OAC rule 3745-17-11(B)	The PE limitation specified by this rule is less stringent than the particulate emission limitation established pursuant



	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		to OAC rule 3745-31-05(A)(3).
e.	OAC rule 3745-31-05(E) - voluntary restriction to avoid BAT requirements	The organic compound (OC) emissions shall not exceed 9.9 tons/year. See b)(2)c.
f.	OAC rule 3745-31-05(D) - voluntary restriction to avoid MACT requirements and Title V requirements	See b)(2)a and b)(2)b.

(2) Additional Terms and Conditions

a. The Best Available Technology (BAT) requirements under OAC rule 3745-31-05(A)(3) do not apply to the carbon monoxide (CO) emissions nor nitrogen oxides (NO_x) emissions from this air contaminant source since the uncontrolled potential to emit for CO and NO_x is less than 10 tons/yr each. Maximum uncontrolled CO and NO_x emissions may be estimated by the following methods:

i. Determination of the maximum, uncontrolled, hourly CO emissions or maximum, uncontrolled, hourly NO_x emissions:

$$\text{Pollutant(HR)} = (\text{H}_{\text{KILN}} + \text{H}_{\text{AFTERBURNER}}) / \text{Heat Content} \times \text{EF}$$

where:

Pollutant(HR) = maximum, hourly rate, which is 1.81 lbs/hr of CO emissions or 2.15 lbs/hr of NO_x emissions;

H_{KILN} = maximum heat input of the cure oven, which is 14.343 mmBtu/hr, as specified in the application for PTI 02-22963;

H_{AFTERBURNER} = maximum heat input of the afterburner (AB2), which is 7.171 mmBtu/hr, as specified in the application for PTI 02-22963;

Heat Content = heat content of fuel, which is 1,000 Btu/cf for natural gas, as specified in the application for PTI 02-22963; and

EF = emissions factor, which is 84 lbs uncontrolled CO/mmcf or 100 lbs uncontrolled NO_x/mmcf, from Table 1.4-1 in AP-42, Chap. 1.4 (7/98).

ii. Determination of the maximum, uncontrolled, annual CO emissions or maximum, uncontrolled, annual NO_x emissions may be based on the following equation:

$$\text{Pollutant(YR)} = \text{Pollutant(HR)} \times (\text{Summation of Hrs/YR}) \times 2000 \text{ lbs/ton}$$

where:



Pollutant(YR) = maximum, annual pollutant emissions, which is 7.92 tons/yr of CO emissions or 9.42 tons/year of NOX emissions;

Pollutant (HR) = maximum, hourly pollutant emissions, in lbs/hr, as specified in b)(2)a.i; and

Hrs/YR = the maximum annual operating hours, which is 8,760 hrs/yr.

- b. The potential to emit PE, as defined in OAC rule 3745-31-01, for this emissions unit is 0.16 lb/hr and 0.72 ton per year from natural gas fuel combustion. The potential PE rates are less than the emissions limits of 0.5 lb/hr and 2.2 tons/year, established pursuant to OAC rule 3745-31-05(A)(3). Therefore, it is not necessary to develop record keeping and/or reporting requirements to ensure compliance with these short term emissions limitations.
- c. Permit to Install 02-22963 for this air contaminant source takes into account the following voluntary restriction(s) as proposed by the permittee for the purpose of avoiding Best Available Technology (BAT) requirements under OAC rule 3745-31-05(A)(3): operation of a thermal oxidizer, also known as afterburner no. 2 (AB2), with a minimum control efficiency of 98%, by weight for OC.

c) Operational Restrictions

- (1) All of the OC emissions from this emissions unit shall be vented to the thermal oxidizer, also known as afterburner no. 2 (AB2), when the emissions unit is in operation.
- (2) In order to maintain compliance with the applicable emission limitation(s) contained in this permit, the acceptable average combustion temperature within the thermal oxidizer, for any 3-hour block of time when the emissions unit controlled by the thermal oxidizer is in operation, shall not be more than 50 degrees Fahrenheit below the average temperature measured during the most recent emissions test that demonstrated the emissions unit was in compliance.

d) Monitoring and/or Recordkeeping Requirements

- (1) The permittee shall maintain monthly records of the following information for this emissions unit:
 - a. the weight of all materials processed in each batch, in pounds;
 - b. the VOC content of each batch, in percent by weight;
 - c. the OC content of each batch, in percent by weight;
 - d. the natural gas usage, in million cubic feet; and
 - e. an identification of each time period when the emissions unit was in operation and the OC emissions were not vented to the thermal oxidizer.
- (2) The permittee shall properly install, operate, and maintain a continuous temperature monitor and recorder which measures and records the combustion temperature within the thermal oxidizer when the emissions unit(s) is/are in operation. Units shall be in degrees Fahrenheit or Celsius. The accuracy for each thermocouple, monitor, and



recorder shall be guaranteed by the manufacturer to be within ± 1 percent of the temperature being measured or ± 5 degrees Fahrenheit, whichever is greater. The temperature monitor and recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and the operating manuals. The permittee shall collect and record the following information each day the emissions unit is in operation:

- a. all 3-hour blocks of time, when the emissions unit(s) controlled by the thermal oxidizer was/were in operation, during which the average combustion temperature within the thermal oxidizer was more than 50 degrees Fahrenheit below the average temperature measured during the most recent emissions test that demonstrated the emission unit was in compliance; and
- b. a log of the downtime for the capture (collection) system, thermal oxidizer, and monitoring equipment when the associated emissions unit was in operation.

These records shall be maintained at the facility for a period of five years.

(3) Whenever the monitored average combustion temperature within the thermal oxidizer deviates from the range specified in this permit, the permittee shall promptly investigate the cause of the deviation. The permittee shall maintain records of the following information for each investigation:

- a. the date and time the deviation began;
- b. the magnitude of the deviation at that time;
- c. the date the investigation was conducted;
- d. the name(s) of the personnel who conducted the investigation; and
- e. the findings and recommendations.

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

- f. a description of the corrective action;
- g. the date corrective action was completed;
- h. the date and time the deviation ended;
- i. the total period of time (in minutes) during which there was a deviation;
- j. the temperature readings immediately after the corrective action was implemented; and
- k. the name(s) of the personnel who performed the work.



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

The temperature range is effective for the duration of this permit, unless revisions are requested by the permittee and approved in writing by the Ohio EPA Northeast District Office. The permittee may request revisions to the permitted temperature range/limit based upon information obtained during future emission tests that demonstrate compliance with the allowable OC emission rate for the controlled emissions unit(s). In addition, approved revisions to the temperature range will not constitute a relaxation of the monitoring requirements of this permit and may be incorporated into this permit by means of an administrative modification.

- (4) The permittee shall perform an inspection of the thermal oxidizer on at least an annual basis. Each inspection shall consist of internal and visual inspections in accordance with the manufacturer's recommendations and shall include a physical inspection of the unit and checks of associated equipment, including but not limited to burners, controls, dampers, valves, and monitoring and recording equipment. Repair and replacement of equipment shall be performed as determined by the inspection. The permittee shall maintain a record of the results of each annual inspection of the thermal oxidizer.
- (5) Modeling to demonstrate compliance with the "Toxic Air Contaminant Statute" in ORC 3704.03(F)(4)(b) was not necessary because the emissions unit=s maximum annual emissions for each toxic air contaminant, as defined in OAC rule 3745-114-01, will be less than 1.0 ton per year. OAC Chapter 3745-31 requires permittees to apply for and obtain a new or modified permit to install prior to making a "modification" as defined by OAC rule 3745-31-01. The permittee is hereby advised that changes in the composition of the materials, or use of new materials, that would cause the emissions of any toxic air contaminant to increase to above 1.0 ton per year may require the permittee to apply for and obtain a new permit to install.

e) Reporting Requirements

- (1) The permittee shall submit deviation (excursion) reports that identify any time periods when the emissions unit was in operation and the OC emissions were not vented to the thermal oxidizer (AB2). Each report shall be submitted within 30 days after the deviation occurs.
- (2) The permittee shall submit quarterly reports that identify the following information concerning the operation of the thermal oxidizer during the operation of the emissions unit:
 - a. each period of time when the average combustion temperature within the thermal oxidizer was outside of the acceptable range;
 - b. an identification of each incident of deviation described in "a" (above) where a prompt investigation was not conducted;
 - c. an identification of each incident of deviation described in "a" where prompt corrective action, that would bring the temperature into compliance with the acceptable range, was determined to be necessary and was not taken; and



- d. an identification of each incident of deviation described in "a" where proper records were not maintained for the investigation and/or the corrective action(s).

These quarterly reports shall be submitted (i.e., postmarked) by January 31, April 30, July 31, and October 31 of each year; and each report shall cover the previous calendar quarter.

f) Testing Requirements

- (1) Compliance with the allowable emission limitations and control measures requirements in C.1.b)(1) of these terms and conditions shall be determined in accordance with the following methods:

- a. Emission Limitation:

Visible particulate emissions from any stack shall not exceed 5% opacity as a 6-minute average.

Applicable Compliance Method:

Compliance shall be determined through visible emission observations performed in accordance with 40 CFR Part 60 ("Standards of Performance for New Stationary Sources"), Appendix A, U.S. EPA Reference Method 9.

- b. Emission Limitation:

The PE rate shall not exceed 0.5 lb/hr.

Applicable Compliance Method:

Compliance may be based on the following equation:

$$PE(HR) = (H_{KILN} + H_{AFTERBURNER})/Heat\ Content \times EF$$

where:

PE(HR) = maximum, hourly PE rate, which is 0.16 lb/hr;

H_{KILN} = maximum heat input of kiln no. 1, which is 14.343 mmBtu/hr, as specified in the application for PTI 02-22963;

H_{AFTERBURNER} = maximum heat input of the afterburner (AB2), which is 7.171 mmBtu/hr, as specified in the application for PTI 02-22963;

Heat Content = heat content of fuel, which is 1,000 Btu/cf for natural gas, as specified in the application for PTI 02-22963; and

EF = emissions factor, which is 7.6 lbs uncontrolled PE/mmcf, from Table 1.4-2 in AP-42, Chap. 1.4 (7/98).

If required, the permittee shall demonstrate compliance with this emission limitation through emissions tests performed in accordance with 40 CFR Part 60,



Appendix A, Methods 1 through 5 or equivalent, alternative method(s), as approved by Ohio EPA.

c. Emission Limitation:

The PE rate shall not exceed 2.2 tons/year.

Applicable Compliance Method:

Compliance may be based on the following equation:

$$\text{Pollutant(YR)} = \text{Pollutant(HR)} \times 8,760 \text{ Hrs/YR} \times 2000 \text{ lbs/ton}$$

where:

Pollutant(YR) = maximum, annual pollutant emissions, in tons/yr;

Pollutant (HR) = maximum, hourly pollutant emissions, in lbs/hr, as specified in f)(1)b; and

8, 760 Hrs/YR = the maximum, annual operating hours.

d. Emission Limitation:

The OC emissions shall not exceed 4.60 tons/year.

Applicable Compliance Method(s):

Compliance may be based on the following equation(s):

i. Determination of the maximum, uncontrolled OC pollutant emissions from natural gas fuel combustion:

$$\text{OC Pollutant(MONTH)}_{\text{FUEL}} = \text{NG}_{\text{KILN} + \text{AFTERBURNER}} \times \text{EF} \times 1 \text{ ton}/2,000 \text{ lbs}$$

where:

OC Pollutant(MONTH)_{FUEL} = actual, monthly uncontrolled OC Pollutant emissions, in tons/month; and

EF = emissions factor, which is 11 lbs uncontrolled OC/mmcf or 5.5 lbs uncontrolled VOC/mmcf from natural gas fuel combustion, from Table 1.4-2 in AP-42, Chap. 1.4 (7/98).

ii. Determination of the actual, controlled OC pollutant emissions from resite firing:

$$\text{OC Pollutant(MONTH)}_{\text{RESITE FIRING}} = W_{\text{MTLS}} \times W_{\text{OC Pollutant}}\% \times \text{EF} \times (1 - \text{CE})$$

where:

OC Pollutant(MONTH)_{RESITE FIRING} = maximum, controlled OC pollutant emissions from resite firing, in lbs/month;



W_{MTLS} = weight of all materials processed, in lbs/month, as specified in d)(1);

$W_{OC\ Pollutant\%}$ = weight percentage, as a decimal fraction, of an OC pollutant (VOC or OC), within the total materials weight, as specified in d)(1);

EF = emissions factor, which is 0.45 lb uncontrolled OC/lb resite from a 55% carbon yield testing on resite as determined via thermogravimetric analysis (TGA); and

CE = efficiency of control device, which is 0.98 (98%), as specified in the application for PTI 02-22963.

iii. Determination of the total OC pollutant emissions:

$$OC\ Pollutant(MONTH)_{TOTAL} = OC\ Pollutant(MONTH)_{FUEL} + OC\ Pollutant(MONTH)_{RESITE\ FIRING}$$

where:

$OC\ Pollutant(MONTH)_{TOTAL}$ = total OC pollutant emissions from the combined operations of fuel combustion and resite firing, in tons/month.

iv. Determination of the annual OC pollutant emissions:

$$OC\ Pollutant(YR) = 12\text{-month summation of } OC\ Pollutant(MONTH)_{TOTAL}$$

- (2) U.S. EPA Method 24 (Appendix A to 40 CFR Part 60) or formulation data shall be used to determine the VOC content of production and cleanup materials. The permittee may request to use an alternative method or procedure for the VOC content determination. The Ohio EPA will consider the request, including an evaluation of the applicability, necessity, and validity of the alternative, and may approve the use of the alternative if such approval does not contravene any other applicable requirement.
- (3) U.S. EPA Method 311 (Appendix A to 40 CFR Part 63) or formulation data shall be used to determine the HAP content of production and cleanup materials. The permittee may request to use an alternative method or procedure for the HAP content determination. The Ohio EPA will consider the request, including an evaluation of the applicability, necessity, and validity of the alternative, and may approve the use of the alternative if such approval does not contravene any other applicable requirement.

g) Miscellaneous Requirements

- (1) The terms and conditions contained in this permit for this emissions unit shall supersede all the air pollution control requirements for the emissions unit contained in the permit to install 02-17873 issued on 8/21/03 with a corrected copy issued on 11/16/04.