



Environmental Protection Agency

John R. Kasich, Governor
Mary Taylor, Lt. Governor
Scott J. Nally, Director

3/28/2012

Bryan Stansloski
NOVA CHEMICALS INC
786 HARDY RD
PAINESVILLE, OH 44077

RE: DRAFT AIR POLLUTION PERMIT-TO-INSTALL AND OPERATE

Facility ID: 0243000012
Permit Number: P0109007
Permit Type: OAC Chapter 3745-31 Modification
County: Lake

Dear Permit Holder:

A draft of the Ohio Administrative Code (OAC) Chapter 3745-31 Air Pollution Permit-to-Install and Operate (PTIO) 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 public comments on the permit. A public notice will appear in the Ohio EPA Weekly Review and the local newspaper, Lake County News-Herald. A copy of the public notice and the draft permit are enclosed. This permit can be accessed electronically on the Division of Air Pollution Control (DAPC) Web page, www.epa.ohio.gov/dapc by clicking the "Issued Air Pollution Control Permits" link. 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 44087

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 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 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

Certified Mail

No	TOXIC REVIEW
No	PSD
No	SYNTHETIC MINOR TO AVOID MAJOR NSR
No	CEMS
No	MACT/GACT
No	NSPS
No	NESHAPS
No	NETTING
No	MAJOR NON-ATTAINMENT
No	MODELING SUBMITTED
Yes	SYNTHETIC MINOR TO AVOID TITLE V
Yes	FEDERALLY ENFORCABLE PTIO (FEPTIO)

Permit Strategy Write-Up

1. Check all that apply:

Synthetic Minor Determination (FEPTIO)

Netting Determination

2. Source Description: (Process Description) The EPS manufacturing process (Dylite), OEPA emission unit number P020, for the production of expandable polystyrene, consists of the following equipment:

raw material storage tanks, 3-EPS reactors, drying equipment, and screens.

Raw material (styrene, etc) is charged to the reactors. Once the polymerization is completed the small permeable spherical beads are impregnated with a blowing agent (pentane). The reactors are vented and the product goes through a series of drying operations, and then screening prior to being packaged and shipped to fabricators who expand the beads by steam injection and then mold them into insulation board for the construction industry or packaging.

Excess pentane emissions are vented to boilers 1 and 2 (B001 and B002) for control. Styrene from the reactors are controlled by carbon columns.

This FEPTIO will allow the “de-bottlenecking” of the EPS production process through the addition of a 3RD screener and other process finishing improvements. This “de-bottlenecking” will result in an increase in annual production cap from 880 batches per year 1200 batches per year. VOC emissions will increase by 3.03 tons per year, while styrene emissions will increase by 0.69 tons per year.

3. Facility Emissions and Attainment Status:

Non-attainment for PM2.5, attainment for all other criteria except for 1-hour NOx and SO2 which are non-designated

4. Source Emissions:

Excess pentane emissions are vented to boilers 1 and 2 (B001 and B002) for control. Styrene from the reactors are controlled by carbon columns. Storage tanks of styrene and the transfer of styrene through pipes, valves, etc are also sources of emissions.

5. Conclusion:

Styrene emissions through the routine use of a leak detection program will be restricted to less than 9.9 tons per year to avoid Title V and Maximum Achievable Control Technology. Once a leak detection program is implemented, according to the SOCMI rule the resultant ppm styrene quantity may be used in a formula to arrive at a lb/hr number as long as leak detection is performed in accordance with Ohio Administrative Code 3745-21-09 (DD).

Please provide additional notes or comments as necessary:

40 CFR Part 63, Subpart VVVVVV GACT (Generally Available Control Technology) Requirements

The Chemical Manufacturing Area Sources (CMAS) GACT (6V) regulates HAP emissions from chemical manufacturing area sources. Pursuant to 40 CFR 63.11494(a)(1), a chemical manufacturing process unit that uses as a feedstock, generates as a byproduct, or produces as a product any of the

HAPs listed in Table 1 of the subpart may be subject to the provisions of this rule. This facility does not use or produce any of the HAPs listed in Table 1, Specified HAPs of this rule. Therefore, this facility is not subject to GACT 6V, since styrene is not on the list of specified HAPs which determines applicable of this GACT.

40 CFR Part 63, Subpart BBBBBBB GACT Requirements

The Chemical Preparations Industry Area Sources (CPIAS) GACT (7B) regulates HAP emissions from chemical preparation industry area sources that have at least one chemical preparation operation in target HAP service. Chemical preparations operation as defined in 40 CFR 63.11588 means the following, in part, :

the collection of mixing, blending, milling, and extruding equipment used to manufacture chemical preparations.

In target HAP service means that equipment in the chemical preparation either contains, contacts, or is in processing target-HAP containing materials.

Target HAP-containing means raw materials, intermediates, or products that contain one or more target HAPs, i.e., chromium manganese and nickel.

This facility has no chemical preparation operations in target-HAP service and therefore not subject to the CPIAS.

Title V program applicability

Styrene emissions through the routine use of a leak detection program will be restricted to less than 9.9 tons per year to avoid Title V and Maximum Achievable Control Technology. Once a leak detection program is implemented, according to the SOCM rule the resultant ppm styrene quantity may be used in a formula to arrive at a lb/hr number as long as leak detection is performed in accordance with Ohio Administrative Code 3745-21-09 (DD).

In addition, monthly quantities of styrene from the reactors via carbon columns will be calculated given the strategy in the permit and storage tank emissions will also be included in the monthly tally resulting in a rolling 12-month summation.

NSPS Subpart VVa, Equipment Leaks of VOC in Synthetic Organic Manufacturing Industry Applicability

Although Styrene is listed as an applicable pollutant in the table in 40 CFR Part 60, Section 60.489. Section 60.481a of 40 CFR Part 60 defines an affected facility as a process unit that produces intermediates or final products, any of the chemicals listed in the table of section 60.489. Since styrene is used as a raw material for polymerization to produce polystyrene and subsequently expandable polystyrene, this process is not subject to the provisions or requirements of this rule.

NSPS Subpart RR, Equipment Leaks of VOC in Synthetic Organic Manufacturing Industry reactor processes Applicability

Although Styrene is listed as an applicable pollutant in the table in 40 CFR Part 60, Section 60.707. Section 60.700a of 40 CFR Part 60 defines an affected facility as a process unit that produces intermediates, products, byproducts or coproducts that are any of the chemicals listed in section 60.707. Since styrene is used as a raw material for polymerization to produce polystyrene and subsequently expandable polystyrene, this process is not subject to the provisions or requirements of this rule.

PSD and NANSR

Chemical process plants are classified as one of the 28 listed source categories listed in OAC rule 3745-31-01 with a 100 ton per year of any criteria pollutant PSD threshold. The 100 tons per year is also a threshold for the applicability of Non-Attainment New Source Review. From Table 1-3 of the application for this Chapter 31 mod, potential VOC emissions before the change and after the change are 68.53 tons per year and 71.55 tons per year. Therefore, this facility is not subject to PSD or NANSR.

NANSR Applicability

The applicability of NANSR is evaluated for proposed modification projects that result in an emission increase of criteria pollutant for which the area is not in attainment with NAAQS. This facility is located in Lake County of Ohio, which is designated non-attainment for PM 2.5 per 40 CFR 81.336.

On May 16, 2008, the U.S. EPA published the final phase II rule for implementing the new standards for PM2.5 within the Federal Register. These standards include a NANSR major source threshold of 100 tpy for PM 2.5 and its precursors.

According to the implementation discussion in 73 FR 28342, the provisions of 40 CFR 51, Appendix S apply in any state that has yet to incorporate the NANSR requirements for PM 2.5 into its State Implementation Plan (SIP). Because OEPA has yet to promulgate NANSR requirements for PM 2.5 into OAC rule 3745-31, all NANSR evaluations in Lake County for PM 2.5 must be conducted according to 40 CFR Part 51, Appendix S. According to 40 CFR Part 51, Appendix S, Paragraph II.A.31 (iii)(b), SO2 is the only identified precursor to PM 2.5 non-attainment areas.

This facility is an existing minor source of PM 2.5 and SO2. Therefore, any modification that in and of itself, exceeds the major source threshold of 100 tpy for PM 2.5 or SO2 would trigger NANSR. As provided in Table 1-3 of the application, the facility-wide PTE for all pollutants is below this threshold. Therefore, the actual baseline emissions are not required to be subtracted to determine NANSR applicability. Thus, this project does not trigger NANSR permitting requirements.

Total Permit Allowable Emissions
Summary (for informational purposes
only):
VOC EMISSIONS DO NOT INCLUDE
STYRENE

VOCs 35.40 Tons per Year

Styrene 9.9 Tons per Year

Based on item #4 of the December 10, 2009 IOC from Mike Hopkins, Case by Case BAT limits, and the table in the document, and since the VOCs in question are not exclusively emitted from a controlled source, then....

ORC rule 3704.03 should be used for the applicable rule citation; and

The allowable facility-wide is determined as follows:

Based on Table 1-3 of the application, total post-project facility-wide PTEs for non styrene VOCs are 32.18

from non-styrene fugitive equipment leaks, and 3.16 tons per year from the packaging blower; then $32.18 + 3.16 = 35.34$ tons of VOCs excluding styrene.

$35.34 \text{ tons/yr} \times 2000 \text{ lbs/ton} \times 1 \text{ yr}/8760 = 8.1 \text{ lbs/hr}$

$8.1 \text{ lbs/hr} \times 3.29 \text{ batches}/24 \text{ hrs} = \underline{57.9 \text{ lbs/batch of VOC minus styrene}}$

Emission Limitation

57.9 pounds per batch of expandable poly-styrene

Applicable Compliance Method

Compliance with the VOC limit of 57.9 lbs/batch of EPS shall be determined by multiplying the potential of VOC minus styrene, facility wide excluding boiler emissions, which are covered in a previous PTI, of 35.34 tons per year times 2000/8760, times 3.29 batches per twenty-four hours.

PUBLIC NOTICE
3/28/2012 Issuance of Draft Air Pollution Permit-To-Install and Operate

NOVA CHEMICALS INC

786 HARDY RD,
Painesville, OH 44077

Lake County

FACILITY DESC.: Plastics Material and Resin Manufacturing

PERMIT #: P0109007

PERMIT TYPE: OAC Chapter 3745-31 Modification

PERMIT DESC: Chapter 31 modification of Expandable Polymerization Process unit (P020)

The Director of the Ohio Environmental Protection Agency issued the draft permit above. The permit and complete instructions for requesting information or submitting comments may be obtained at: <http://epa.ohio.gov/dapc/permitsonline.aspx> by entering the permit # or: Nancy Meli, Ohio EPA DAPC, Northeast District Office, 2110 East Aurora Road, Twinsburg, OH 44087. Ph: (330)425-9171



DRAFT

**Division of Air Pollution Control
Permit-to-Install and Operate
for
NOVA CHEMICALS INC**

Facility ID:	0243000012
Permit Number:	P0109007
Permit Type:	OAC Chapter 3745-31 Modification
Issued:	3/28/2012
Effective:	To be entered upon final issuance
Expiration:	To be entered upon final issuance



Division of Air Pollution Control
Permit-to-Install and Operate
for
NOVA CHEMICALS INC

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Authorization

Facility ID: 0243000012
Application Number(s): A0043047
Permit Number: P0109007
Permit Description: Chapter 31 modification of Expandable Polymerization Process unit (P020)
Permit Type: OAC Chapter 3745-31 Modification
Permit Fee: \$0.00 *DO NOT send payment at this time, subject to change before final issuance*
Issue Date: 3/28/2012
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:

NOVA CHEMICALS INC
786 HARDY RD
Painesville, OH 44077

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 44087
(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

Scott J. Nally
Director



Authorization (continued)

Permit Number: P0109007

Permit Description: Chapter 31 modification of Expandable Polymerization Process unit (P020)

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

Emissions Unit ID:

P020

Company Equipment ID:

Expandable Polystyrene (EPS) Plant

Superseded Permit Number:

02-9757

General Permit Category and Type:

Not Applicable



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. Unless otherwise specified, facilities subject to one or more synthetic minor restrictions must use Ohio EPA's "Air Services" to submit annual emissions associated with this permit requirement. 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 submitting¹ 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 emissions 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.

¹Permittees that use Ohio EPA's "Air Services" can mark the affected emissions unit(s) as "permanently shutdown" in the facility profile along with the date the emissions unit(s) was permanently removed and/or disabled. Submitting the facility profile update will constitute notifying of the permanent shutdown of the affected emissions unit(s).

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.

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.

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) None.

2. 40 CFR Part 63, Subpart VVVVVV GACT (Generally Available Control Technology) Requirements

The Chemical Manufacturing Area Sources (CMAS) GACT regulates HAP emissions from chemical manufacturing area sources. Pursuant to 40 CFR 63.11494(a)(1), a chemical manufacturing process unit that uses as a feedstock, generates as a byproduct, or produces as a product any of the HAPs listed in Table 1 of the subpart may be subject to the provisions of this rule. This facility does not use or produce any of the HAPs listed in Table 1, Specified HAPs of this rule. Therefore, this facility is not subject to GACT 6V, since styrene is not on the list of specified HAPs which determines applicability of this GACT.

3. 40 CFR Part 63, Subpart BBBB BBBB GACT Requirements

The Chemical Preparations Industry Area Sources (CPIAS) GACT regulates HAP emissions from chemical preparation industry area sources that have at least one chemical preparation operation in target HAP service. Chemical preparations operation as defined in 40 CFR 63.11588 means the following, in part:

the collection of mixing, blending, milling, and extruding equipment used to manufacture chemical preparations.

In target HAP service means that equipment in the chemical preparation either contains, contacts, or is in processing target-HAP containing materials.

Target HAP-containing means raw materials, intermediates, or products that contain one or more target HAPs, i.e., chromium manganese and nickel.

This facility has no chemical preparation operations in target-HAP service and therefore not subject to the CPIAS.

C. Emissions Unit Terms and Conditions



1. P020, Expandable Polystyrene (EPS) Plant

Operations, Property and/or Equipment Description:

This is a permit (PTIO) for an Expandable Polymerization Process (EPS) unit (P020) with 2-carbon columns, used individually, for carbon adsorption, for a chapter 31 modification to debottleneck the reactors with restrictions thereby keeping the potential to emit for styrene below major source thresholds for Title V.

Excess pentane emissions are vented to boilers 1 and 2 (B001 and B002) for control. Styrene from the reactors are controlled by carbon columns.

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)(4)

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

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
a.	ORC 3704.03(T)	<p>Volatile organic compound (VOC) emissions shall not exceed 57.9 pounds of VOC (minus styrene) per batch of expandable polystyrene (EPS).</p> <p>See b)(2)(c).</p> <p>BAT for the reactors shall include the use of carbon adsorption columns or equivalent for the control of styrene/VOCs.</p> <p>See b)(2)b.</p>

	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
b.	OAC rule 3745-31-05(D)(1)(b)	The styrene compound HAP emissions from the entire EPS process, including all fugitive leaks, shall not exceed 9.9 tons per year as a rolling, 12-month summation, facility-wide. See b)(2)d.

(2) Additional Terms and Conditions

- a. This is a Chapter 31 modification to PTI 02-9757 for the Expandable Polystyrene process (P020) with the addition of a third screen downstream of the reactors along with additional equipment including centrifuging/dewatering improvement and vacuum system upgrade allowing material to move more quickly resulting in more batches of product per year and more pounds of product per batch.

Increased emissions result from an increased number of batches per day and per year, an increase in fugitive VOC emissions due to additional piping components, and emissions from additional product being packaged.

- b. Best Available Technology (BAT) for this emissions unit includes the restriction of styrene emissions through the use of two carbon columns on the reactor and through the continued implementation and use of their site-specific Leak Detection and Repair (LDAR) Program for fugitive emissions.
- c. This allowable is based on the sum of the potential to emit for pentane, excluding styrene, of the packaging blower and equipment fugitive leaks.

In addition, Pentane (VOC) emissions vented to the boilers are accounted for under PTI 02-22599. PTI 02-22599 has a VOC limit of 33.62 tons per year. While there will be an actual increase in pentane emissions (31.41 tons per year) from the boilers, overall allowable total VOC emissions will not increase.

- d. To ensure federal enforceability during the first 12 calendar months of operation or the first 12 calendar months following the issuance of this Permit to Install and Operate, the permittee shall not exceed the styrene emission levels specified in the following table:

Month(s)	Maximum Allowable *Cumulative **Emissions of Styrene (Tons)
1	7.54

1-2		7.77
1-3		8.00
1-4		8.23
1-5		8.46
1-6		8.69
1-7		8.89
1-8		9.09
1-9		9.29
1-10		9.50
1-11		9.70
1-12		9.90

*Includes styrene emissions from storage tanks and reactors and all fugitive emissions.

The rolling, 12-month summation of styrene emissions, including process emissions, tank emissions, and fugitive emissions shall be calculated using the following formula:

Emissions from the carbon columns = 2.88 lbs/batch. This emission factor is based on the *representative maximum styrene concentration in the column exhaust of 20 ppmv, the calculated vapor density, the maximum number batches per year, and stack exit velocity. Emissions from the styrene storage tanks = 0.07 ton per month (PTE).

*The representative concentration of styrene is the concentration at breakthrough, therefore the maximum concentration, therefore the potential to emit.

Emissions from equipment leaks will utilize the methodologies presented in U.S EPA's *Protocol for Equipment Leak Emission Estimates* published in 1995 such as Tables 2-1, 2-5, 2-9, 2-11, 2-13, 5-1, 5-2, and 5-11 to calculate emissions based on monitoring completed at the facility as appropriate. As actual emissions from equipment leaks are dependent on monitoring data from previous month's data and current month's data and is a variable on a monthly basis, the equipment leak emissions will be calculated on rolling, 12-month basis and not calculated emissions per month.

Rolling, 12-month emissions in tons = $2.88 \text{ lbs/batch} \times (\text{number of batches per rolling, 12-month period}) / (2000 \text{ lbs/ton}) + 0.07 \text{ ton per month (12 months)} + \text{emissions (in tons) from equipment leaks in accordance with the methodologies presented in U.S EPA's } \textit{Protocol for Equipment Leak Emission Estimates}$ published in 1995 to calculate emissions based on monitoring completed at the facility, as appropriate.

After the first 12 calendar months of operation or the first 12 months following the issuance of this PTIO, compliance with the annual emission limitation for styrene shall be based upon a rolling, 12-month summation of the daily emissions in accordance with the record keeping requirements specified in section d)(1) of these terms and conditions.

- e. Styrene is the only HAP employed at this facility. Styrene will be restricted to 9.9 tons per year, through the use of one of two carbon columns and a leak detection program operated in accordance with 40 CFR Part 60, Subpart DDD, which incorporates by reference OAC rule 3745-21-09(DD).
- c) Operational Restrictions
- (1) The permittee shall not operate any or (all) reactor(s) without the proper operation and use of the carbon adsorption columns that do not allow breakthrough of styrene.
- d) Monitoring and/or Recordkeeping Requirements
- (1) The permittee shall record the following information each month for this emissions unit:
 - a. the name and identification number of each batch of expandable polystyrene;
 - b. the number of batches produced per month;
 - c. the emission factor for styrene (2.88 pounds per batch);
 - d. the cumulative amount of styrene emitted to the atmosphere from the reactors/process, in tons/month;
 - e. styrene emission results in parts per million (ppm) of all equipment leak detection, including valves, flanges, pumps etc.,
- Note: Leak detection must be in compliance with the requirements in 40 CFR Part 60, Appendix A, Method 21 and 40 CFR Part 60, Subpart DDD (NSPS);
- f. styrene emission results in pounds per hour and tons per year from all equipment leak detection, including valves, flanges, pumps etc., based on the methodologies presented in Protocol for Equipment Leak Emission Estimates published in 1995 including Tables 2-1, 2-5, 2-9, 2-11, 2-13, 5-1, 5-2, and 5-11, as appropriate to calculate emissions based on monitoring completed at the facility;

- c. any corrective actions that were taken to remedy the deviations (excursions) or prevent future deviations (excursions); and
 - d. the magnitude and duration of each deviation (excursion).
- (2) The permittee shall submit quarterly deviation (excursion) reports for this emissions unit that identify the following information:
- a. all exceedances of the rolling, 12-month styrene emission limitation and, for the first 12 calendar months of operation or the first 12 calendar months following issuance of this permit, all exceedances of the maximum allowable cumulative monthly emission levels of styrene;
 - b. the probable cause of each deviation (excursion);
 - c. any corrective actions that were taken to remedy the deviations (excursions) or prevent future deviations (excursions); and
 - d. the magnitude and duration of each deviation (excursion).

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

- (3) The permittee shall submit quarterly exceedance (excursion) reports for this emissions unit that identify any deviation from the requirement to monitor and record the concentration level of organic compounds in the exhaust vent stream from the carbon adsorption system, daily or at intervals no greater than 20 percent of the carbon replacement interval that is based on operational experience, whichever is greater.

The permittee shall submit quarterly exceedance (excursion) reports for this emissions unit that identify any deviation from the requirement to begin using fresh carbon in the adsorption system, immediately (i.e., within 24 hours of discovery) when carbon breakthrough is indicated and the replacement date of the carbon.

f) Testing Requirements

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

a. Emission Limitation:

The styrene compound HAP emissions from the entire EPS process, including all fugitive leaks, shall not exceed 9.9 tons per year as a rolling, 12-month summation, facility-wide.

Applicable Compliance Method:

To calculate actual/potential emissions of styrene from this facility, the following equation shall be used:

Monthly emissions = summation of daily emissions from the carbon column + daily emissions from storage tank(s) + daily emissions from equipment leaks (in tons).

Emissions from the carbon columns = 2.88 lbs/batch. This emission factor is based on the *representative maximum styrene concentration in the column exhaust of 20 ppmv, the calculated vapor density, the maximum number batches per year, and stack exit velocity. Emissions from the styrene storage tanks = 0.07 ton per month (PTE).

*The representative concentration of styrene is the concentration at breakthrough, therefore the maximum concentration, therefore the potential to emit.

Emissions from the styrene storage tanks = 0.07 ton per month (PTE).

Emissions from equipment leaks = (will be a variable calculation in accordance with the following paragraph):

Emissions from equipment leaks will utilize the methodologies presented in U.S EPA's *Protocol for Equipment Leak Emission Estimates* published in 1995 such as Tables 2-1, 2-5, 2-9, 2-11, 2-13, 5-1, 5-2, and 5-11 to calculate emissions based on monitoring completed at the facility as appropriate. As actual emissions from equipment leaks are dependent on monitoring data from previous month's data and current month's data and is a variable on a monthly basis, the equipment leak emissions will be calculated on rolling, 12-month basis and not calculated emissions per month.

Rolling, 12-month emissions in tons = $2.88 \text{ lb/batch} \times (\text{number of batches per rolling, 12-month period}) / (2000 \text{ lb/ton}) + 0.07 \text{ ton per month (12 months)} + \text{emissions (in tons) from equipment leaks in accordance with the methodologies presented in U.S EPA's } \textit{Protocol for Equipment Leak Emission Estimates}$ published in 1995 to calculate emissions based on monitoring completed at the facility, as appropriate.

b. Emission Limitation:

VOC emissions shall not exceed 57.9 pounds of VOC (minus styrene) per batch of EPS.

Applicable Compliance Method:

Compliance shall be demonstrated by multiplying the potential to emit of VOC not including styrene (35.34 tpy) by 2000 lbs/ton, and dividing by the maximum annual operating hours (8760 hrs/yr) and then dividing by the number of EPS batches per hour (0.14 batches/hr).

g) Miscellaneous Requirements

(1) None.