



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

4/23/2013

Certified Mail

Mr. Brian Purdy
ROHM & HAAS CHEMICALS LLC
10 S ELECTRIC ST
West Alexandria, OH 45381

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

Facility ID : 0868090072
Permit Number: P0109847
Permit Type: OAC Chapter 3745-31 Modification
County: Preble

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

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 Environmental Protection Agency (EPA) Weekly Review and the local newspaper, The Register 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 "Search for Permits" link under the Permitting topic on the Programs tab. 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 Regional Air Pollution Control Agency
117 South Main Street
Dayton, OH 45422-1280

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 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 Regional Air Pollution Control Agency at (937)225-4435.

Sincerely,

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

Cc: U.S. EPA Region 5 Via E-Mail Notification
RAPCA; Indiana; Kentucky

PUBLIC NOTICE
4/23/2013 Issuance of Draft Air Pollution Permit-To-Install and Operate

ROHM & HAAS CHEMICALS LLC

10 S ELECTRIC ST,

WEST ALEXANDRIA, OH 45381

Preble County

FACILITY DESC.: Adhesive Manufacturing

PERMIT #: P0109847

PERMIT TYPE: OAC Chapter 3745-31 Modification

PERMIT DESC: PTIO modification to increase VOC emissions limitations and PTIO renewal for a synthetic minor facility avoiding Title V permitting and major source MACT requirements.

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: Andrew Weisman, Regional Air Pollution Control Agency, 117 South Main Street, Dayton, OH 45422-1280. Ph: (937)225-4435



Permit Strategy Write-Up

1. Check all that apply:

Synthetic Minor Determination

Netting Determination

2. Source Description:

Rohm and Haas Chemicals, LLC, a wholly owned subsidiary of the DOW Chemical Company, (Rohm & Haas) operates an adhesive manufacturing facility in West Alexandria, (Preble County) Ohio. Operations at Rohm & Haas include several kettles, reactors, autoclaves, mixing vessels, dissolving tanks, churns and above ground liquid storage tanks that use or employ volatile organic compounds (VOC) as raw materials. Many of the emissions units that use or employ VOC are equipped with process condensers to recover and minimize solvent losses. In addition Rohm & Haas vents the residual VOC emissions from each emissions unit to either a regenerative thermal oxidizer (RTO) or secondary condenser.

Rohm & Haas has applied for permit modifications and renewal of a federally enforceable permit to install and operate (FEPTIO) to avoid Title V permitting requirements. The following modifications have been requested:

- Increase the rolling 12-month VOC emissions limitations from (as a sum of all sources at the facility) 7.46 tons to 48.8 tons on a rolling 12-month basis.
- Remove the rolling 12-month production limitations from the current FEPTIO.
- Establish rolling 12-month emissions limitations of 9.9 tons for individual hazardous air pollutants (HAP) and 24.9 tons for combined HAPs (these emissions limitations were not needed previously because VOC emissions were limited to less than 10 tons).

3. Facility Emissions and Attainment Status:

Rohm & Haas is located in West Alexandria, Ohio (Preble County) which classified as attainment for all National Ambient Air Quality Standards (NAAQS). The potential uncontrolled VOC emissions from Rohm & Haas are calculated to be 1,530 tons per year. Virtually all of the VOC emissions are from compounds that are also listed as hazardous air pollutants (HAP) in section 112(b) of the Clean Air Act. Therefore, VOC and HAP emissions exceed the major source threshold for Title V permitting.

4. Source Emissions:

The uncontrolled potential VOC emissions consist of 1,525 tons from point sources and 5 tons from fugitive process leaks. All of the VOC emissions from the point sources at Rohm & Haas are vented to either a RTO (for non-halogenated VOC) or a secondary condenser (for halogenated VOC) for destruction or removal. The RTO is capable of a VOC destruction/removal efficiency greater than 97%. The secondary condensers are capable of a VOC removal efficiency greater than 89%. The emissions units, product categories and proposed rolling 12-month VOC and HAP emissions limitations based on use of the RTO and condensers is listed in the following table.



Emissions Unit Identification Numbers	Product Category	Rolling 12-Month VOC Emissions Limitation (tons)	Rolling 12-Month individual HAP Emissions Limitation (tons)	Rolling 12-Month combined HAP Emissions Limitation (tons)
P505, P506, P507, P509, P510, P511, P515, P535	Prepolymer manufacturing	1.40	9.9	24.9
P512, P513, P514	Polyester Solution	9.25		
P051, P052, P053, P524, P529, P532, P537, P538, P539	Thixons	13.5		
P520, P521	Brominated Y-Polymer	19.5		
T008, T009, T010, T011, T012	Liquid Storage Tanks	0.10		

The VOC and HAP emissions from fugitive sources (equipment losses) are not listed in the table above but must be included in the rolling 12-month emissions limitations.

5. Conclusion:

Rohm & Haas will avoid Title V major operating permit requirements by implementing the following measures:

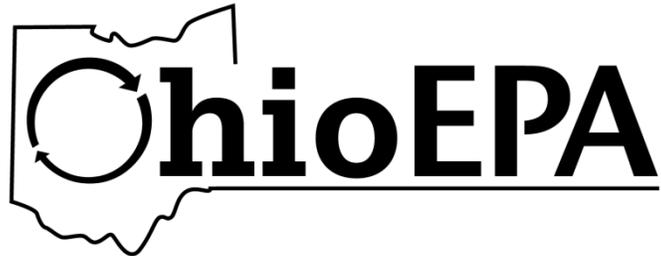
- Directing the non-halogenated VOC emissions from all of the emissions units to a RTO with a destruction and removal efficiency of at least 97%;
- Directing halogenated VOC emissions to secondary condensers with a removal efficiency greater than 89%; and
- Limiting VOC and HAP emissions to the rolling 12-month emissions limitations identified in the table above.

6. Please provide additional notes or comments as necessary:

None

7. Total Permit Allowable Emissions Summary (for informational purposes only):

<u>Pollutant</u>	<u>Tons Per Year</u>
<u>VOC</u>	<u>43.8</u>
<u>Individual HAP</u>	<u>9.9</u>
<u>Combined HAP</u>	<u>24.9</u>



DRAFT

**Division of Air Pollution Control
Permit-to-Install and Operate
for
ROHM & HAAS CHEMICALS LLC**

Facility ID:	0868090072
Permit Number:	P0109847
Permit Type:	OAC Chapter 3745-31 Modification
Issued:	4/23/2013
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
ROHM & HAAS CHEMICALS LLC**

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Draft Permit-to-Install and Operate

ROHM & HAAS CHEMICALS LLC

Permit Number: P0109847

Facility ID: 0868090072

Effective Date: To be entered upon final issuance

Authorization

Facility ID: 0868090072
Application Number(s): A0044100, A0045626
Permit Number: P0109847
Permit Description: PTIO modification to increase VOC emissions limitations and PTIO renewal for a synthetic minor facility avoiding Title V permitting and major source MACT requirements.
Permit Type: OAC Chapter 3745-31 Modification
Permit Fee: \$4,400.00 *DO NOT send payment at this time, subject to change before final issuance*
Issue Date: 4/23/2013
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:

ROHM & HAAS CHEMICALS LLC
10 S ELECTRIC ST
WEST ALEXANDRIA, OH 45381

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

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

Regional Air Pollution Control Agency
117 South Main Street
Dayton, OH 45422-1280
(937)225-4435

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: P0109847
Permit Description: PTIO modification to increase VOC emissions limitations and PTIO renewal for a synthetic minor facility avoiding Title V permitting and major source MACT requirements.

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

Group Name: Brominated Y-Polymer

Emissions Unit ID:	P520
Company Equipment ID:	Reactor R-141
Superseded Permit Number:	08-03851
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P521
Company Equipment ID:	Reactor R-142
Superseded Permit Number:	08-03851
General Permit Category and Type:	Not Applicable

Group Name: Polyester Solution Manufacturing

Emissions Unit ID:	P512
Company Equipment ID:	Resin Dissolving Tank 431
Superseded Permit Number:	08-03851
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P513
Company Equipment ID:	Reactor R-433
Superseded Permit Number:	08-03851
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P514
Company Equipment ID:	Reactor R-432
Superseded Permit Number:	08-03851
General Permit Category and Type:	Not Applicable

Group Name: Prepolymer Manufacturing

Emissions Unit ID:	P505
Company Equipment ID:	Reactor R-420 (Prepolymer Kettle)
Superseded Permit Number:	08-03851
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P506
Company Equipment ID:	Reactor R-421 (Prepolymer Kettle)
Superseded Permit Number:	08-03851
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P507
Company Equipment ID:	Reactor R-422 (Prepolymer Kettle)
Superseded Permit Number:	08-03851
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P509
Company Equipment ID:	Autoclave 424
Superseded Permit Number:	08-03851
General Permit Category and Type:	Not Applicable



Emissions Unit ID:	P510
Company Equipment ID:	Autoclave 425
Superseded Permit Number:	08-03851
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P511
Company Equipment ID:	Autoclave 426
Superseded Permit Number:	08-03851
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P515
Company Equipment ID:	Resin Pelletizer
Superseded Permit Number:	08-03851
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P535
Company Equipment ID:	Recycled Polymer Holding Tank #434
Superseded Permit Number:	08-03851
General Permit Category and Type:	Not Applicable

Group Name: Thixon Manufacturing

Emissions Unit ID:	P051
Company Equipment ID:	TK-1001, R-1002, TK-1003
Superseded Permit Number:	P0107019
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P052
Company Equipment ID:	Closed Reactor/Mixing Vessel No. 1027
Superseded Permit Number:	08-04710
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P053
Company Equipment ID:	Closed Reactor Mixing Vessels 1028 and 1029
Superseded Permit Number:	08-04710
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P524
Company Equipment ID:	Reactor R-145
Superseded Permit Number:	08-03851
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P529
Company Equipment ID:	Mixing Tank 124
Superseded Permit Number:	08-03851
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P532
Company Equipment ID:	Ross Mixer 199
Superseded Permit Number:	08-03851
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P537
Company Equipment ID:	Mixing Tank 125
Superseded Permit Number:	08-03851
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P538
Company Equipment ID:	Mixing Tank 126
Superseded Permit Number:	08-03851
General Permit Category and Type:	Not Applicable
Emissions Unit ID:	P539
Company Equipment ID:	Mixing Tank 127
Superseded Permit Number:	08-03851
General Permit Category and Type:	Not Applicable



Draft Permit-to-Install and Operate

ROHM & HAAS CHEMICALS LLC

Permit Number: P0109847

Facility ID: 0868090072

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. 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 Regional Air Pollution Control Agency 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.

¹ Permittees 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.



Draft Permit-to-Install and Operate
ROHM & HAAS CHEMICALS LLC
Permit Number: P0109847
Facility ID: 0868090072
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) B.5.
 - 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) B.2. through B4 and 6.

2. Synthetic Minor VOC Limitations:

The combined VOC emissions from the product categories identified below shall not exceed the limitations listed in the following table on a rolling 12-month basis:

	Emissions Unit Identification Numbers	Product Category	Rolling 12-Month VOC Emissions Limitation (tons)
a)	P505, P506, P507, P509, P510, P511, P515, P535	Prepolymer manufacturing	1.40
b)	P512, P513, P514	Polyester Solution	9.25
c)	P051, P052, P053, P524, P529, P532, P537, P538, P539	Thixons	13.5
d)	P520, P521	Brominated Y-Polymer	19.5

- e) The permittee shall collect and record the following information each month for each product category listed in the table [2.a) through 2.d)], above:
 - (1) The VOC emission rate for each emissions unit, in tons, (the monthly VOC emissions rates calculated according to Section C. (Emissions Units Terms and Conditions) for each emissions unit, in pounds, divided by 2,000 pounds per ton);
 - (2) The combined VOC emission rate for each product category, in tons, (the sum of the monthly VOC emissions rates for all the emissions units in each product category);
 - (3) The rolling 12-month VOC emissions rate, in tons, for each product category (the sum of the VOC emissions calculated according to e)(2) for the previous 12-months).

These emissions units have been in operation for more than 12 months and, as such, the permittee has existing records to generate the rolling, 12-month emissions rates, upon issuance of this permit.

- f) The permittee shall submit quarterly deviation (excursion) reports, in accordance with the Standard Terms and Conditions of this permit, of the following information:



- (1) An identification of each month during which the rolling, 12-month VOC emissions rate from any product category listed in 2.a) through 2.d) exceeds its rolling 12-month emissions limit and the actual rolling, 12-month VOC emissions rate for that month.

If no deviations (excursions) occurred during a calendar quarter, the permittee shall submit a report that states that no deviations (excursions) occurred during the quarter.

The quarterly reports shall be submitted, electronically through Ohio EPA Air Services, each year by January 31 (covering October to December), April 30 (covering January to March), July 31 (covering April to June), and October 31 (covering July to September), unless an alternative schedule has been established and approved by the Director (the appropriate District Office or local air agency).

3. Synthetic Minor HAP Limitations:

The emissions of hazardous air pollutants (HAPs), as defined in Section 112(b) of Title III of the Clean Air Act, from all the emissions units at this facility, on a rolling 12-month basis, shall not exceed 9.9 tons for any individual HAP and 24.9 tons for any combination of HAPs.

- a) The permittee shall keep records for the entire facility each month of the following information:
 - (1) The identification of each product manufactured;
 - (2) The product category for each batch (prepolymer, polyester solution, thixons or brominated Y-polymer) processed;
 - (3) The identification of each HAP processed.
 - (4) The weight, in tons, of each prepolymer, polyester solution, Thixons or brominated Y-Polymer manufactured;
 - (5) The emissions of each individual HAP, in pounds or tons, (the weight of each prepolymer, polyester solution, Thixons or brominated Y-Polymer from a)(4) multiplied by the individual HAP emissions factor developed by the company in, pounds HAP per ton of product);
 - (6) The emissions , in pounds or tons, of the combined HAPs that were processed (the sum of all the individual HAP emissions from a)(5)).
 - (7) The total facility-wide emissions (and associated calculations) for each individual HAP, in tons, (the sum of the individual HAP emission rates from all the emissions units at the facility calculated according to a)(3) through a)(5) plus 20 pounds (0.01 ton) for each individual HAP emissions from solvent storage tanks and 180 pounds (0.09 ton) for each individual HAP from fugitive process leaks*).

*The emissions rates of 20 pounds (0.01 ton) for each individual HAP emissions from storage tanks and 180 pounds (0.09 ton) for each individual HAP from fugitive process leaks emissions rates were developed to represent potential emissions in lieu of keeping monthly records.



- (8) The total facility-wide emissions (and associated calculations) for combined HAPs, in tons, (the sum of all the combined HAPs emission rates from all the emissions units at the facility calculated according to a)(3) through a)(6)).
 - (9) The rolling 12-month sum of the total individual HAP emissions rates for each HAP from all the emissions units at the facility, in tons (the sum of individual HAP emissions rates calculated according to a)(7) for the previous 12 months).
 - (10) The rolling 12-month sum of the total combined HAP emissions rates from all the emissions units at the facility, in tons, (the sum of combined HAP emissions rates calculated according to a)(8) for the previous 12 months).
- b) The permittee shall submit quarterly deviation (excursion) reports, in accordance with Part I of the Standard Terms and Conditions, of this permit, of the following information:
- (1) An identification of each month during which the rolling, 12-month individual HAP emissions rate (from the facility) exceeded 9.9 tons, and the actual rolling, 12-month sum of each individual HAP emissions rate (from the facility) for each such month.
 - (2) An identification of each month during which the rolling, 12-month combination of all HAP emissions rates (from the facility) exceeded 24.9 tons, and the actual rolling, 12-month sum of the combination of all HAP emissions rates (from the facility) for each such month.
 - (3) If no deviations (excursions) occurred during a calendar quarter, the permittee shall submit a report that states that no deviations (excursions) occurred during the quarter.

The quarterly reports shall be submitted, electronically through Ohio EPA Air Services, each year by January 31 (covering October to December), April 30 (covering January to March), July 31 (covering April to June), and October 31 (covering July to September), unless an alternative schedule has been established and approved by the Director (the appropriate District Office or local air agency).

- c) The permittee shall submit annual reports that summarize the annual emissions of each individual HAP and the combined emissions of all HAPs for the facility. The reports shall be submitted by April 15 of each year. This reporting requirement may be satisfied by including and identifying the specific emission data in the annual Synthetic Minor Title V Fee Emission Report.

4. Regenerative Thermal Oxidizer (RTO) requirements:

All of the VOC emissions from emissions units P051, P052, P053, P505, P506, P507, P509, P510, P511, P512, P513, P514, P515, P524, P529, P532, P535 P537, P538, and P539 shall be vented to the regenerative thermal oxidizer (RTO) when one or more of the emissions units are in operation. The RTO system, shall achieve a minimum VOC destruction/removal efficiency of 97% on a dry weight basis excluding methane.

- a) In order to maintain compliance with the applicable emission limitations contained in this permit, the acceptable average combustion temperature within the RTO, for any 3-hour block of time when the emissions units controlled by the RTO are in operation, shall not be more than 50



degrees Fahrenheit below the average temperature measured during the most recent performance test that demonstrated the emissions units were in compliance.

- b) The permittee shall properly install, operate, and maintain a continuous temperature monitor and recorder that measures and records the combustion temperature within the RTO when the emissions units are in operation, including periods of startup and shutdown. Units shall be in degrees Fahrenheit. 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, with any modifications deemed necessary by the permittee. The permittee shall collect and record the following information each day the emissions unit(s) is/are in operation:
- (1) all 3-hour blocks of time, when the emissions units controlled by the RTO were in operation, during which the average combustion temperature within the RTO was more than 50 degrees Fahrenheit below the average temperature measured during the most recent performance test that demonstrated the emissions units were in compliance; and
 - (2) a log (date and total time) of the downtime or bypass of the capture (collection) system and RTO, and/or downtime of the monitoring equipment, when the associated emissions unit(s) was/were in operation.

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

- c) Whenever the monitored average combustion temperature (as recorded in d)(4)) within the RTO deviates from the range or limit established in accordance with this permit, the permittee shall promptly investigate the cause of the deviation. The permittee shall maintain records of the following information for each investigation:
- (1) the date and time the deviation began;
 - (2) the magnitude of the deviation at that time;
 - (3) the date the investigation was conducted;
 - (4) the name(s) of the personnel who conducted the investigation; and
 - (5) 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:

- (6) a description of the corrective action;
- (7) the date corrective action was completed;



- (8) the date and time the deviation ended;
- (9) the total period of time (in minutes) during which there was a deviation;
- (10) the temperature readings immediately after the corrective action was implemented; and
- (11) 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/limit is effective for the duration of this permit, unless revisions are requested by the permittee and approved in writing by the appropriate Ohio EPA District Office or local air agency. The permittee may request revisions to the permitted temperature range/limit based upon information obtained during future performance tests that demonstrate compliance with the allowable emission rate(s) for the controlled pollutant(s). In addition, approved revisions to the temperature range/limit 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.

- d) The permittee shall submit quarterly deviation (excursion) reports that identify:
- (1) all 3-hour blocks of time (when the emissions unit(s) was/were in operation) during which the average combustion temperature within the RTO was more than 50 degrees Fahrenheit below the average temperature maintained during the most recent performance test that demonstrated the emissions unit(s) was/were in compliance;
 - (2) any records of downtime (date and length of time) for the capture (collection) system, the RTO, and/or the monitoring equipment when the emissions unit(s) was/were in operation;
 - (3) a log of the operating time for the capture system, RTO, monitoring equipment, and the emissions unit(s).
 - (4) any period of time (start time and date, and end time and date) when any of the emissions units were in operation and the process emissions were not vented to the RTO;
 - (5) each incident of deviation described in d)(1) or d)(4) (above) where a prompt investigation was not conducted;
 - (6) each incident of deviation described in d)(1) or d)(4) where prompt corrective action, that would bring the emissions units into compliance and/or the temperature within the RTO into compliance with the acceptable range, was determined to be necessary and was not taken; and
 - (7) each incident of deviation described in d)(1) or d)(4) where proper records were not maintained for the investigation and/or the corrective action(s), as identified in the monitoring and record keeping requirements of this permit.



These quarterly reports shall be submitted by April 30, July 31, October 31, and January 31, and shall cover the records for the previous calendar quarters.

The quarterly reports shall be submitted, electronically through Ohio EPA Air Services, each year by January 31 (covering October to December), April 30 (covering January to March), July 31 (covering April to June), and October 31 (covering July to September), unless an alternative schedule has been established and approved by the Director (the appropriate District Office or local air agency).

- e) The permittee shall conduct, or have conducted, emissions testing for the RTO in accordance with the following requirements:

The emissions testing shall be conducted on a 60 month recurring schedule to measure the VOC destruction efficiency of the RTO. The last emissions test that demonstrated the RTO was in compliance was completed on June 6, 2012.

Method 25 or 25A and/or Method 18 of 40 CFR Part 60, Appendix A, as appropriate, must be employed to demonstrate compliance with the overall control efficiency limitation for VOC. Alternative U.S. EPA approved test methods may be used with prior approval from the appropriate Ohio EPA district office or local air agency.

The control efficiency (i.e., the percent reduction in VOC emissions, by weight, between the inlet and outlet of the control system) shall be determined in accordance with the test methods and procedures specified in OAC rule 3745-21-10.

The test(s) shall be conducted while the emissions units are operating at or near maximum capacity, unless otherwise specified or approved by the appropriate Ohio EPA district office or local air agency.

Not later than 60 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the appropriate Ohio EPA district office or local air agency. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Ohio EPA district office's or local air agency's refusal to accept the results of the emission test(s).

Personnel from the appropriate Ohio EPA district office or local air agency shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

A comprehensive written report on the results of the emissions test(s) shall be signed by the person or persons responsible for the tests and submitted to the appropriate Ohio EPA district office or local air agency within 30 days following completion of the test(s). The permittee may request additional time for the submittal of the written report, where warranted, with prior approval from the appropriate Ohio EPA district office or local air agency.



5. Air Toxics:

The PTIO application for these emissions units, P051, P052, P053, P505, P506, P507, P509, P510, P511, P512, P513, P514, P515, P524, P529, P532, P535, P537, P538, P539, T008, T009, T010, T011, and T012 was evaluated based on the actual materials and the design parameters of the emissions units' exhaust system, as specified by the permittee. 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 SCREEN3, 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):

- (1) 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
- (2) 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., "24" hours per day and "7" days per week, from that of 8 hours per day and 5 days per week. The resulting calculation was (and shall be) used to determine the Maximum Acceptable Ground-Level Concentration (MAGLC):

$$TLV/10 \times 8/X \times 5/Y = 4 TLV/XY = MAGLC$$

d) The following summarizes the results of dispersion modeling for "worst case" toxic contaminant(s):

Toxic Contaminants: (VOC) dimethyl formamide, monochlorobenzene, 1,3-dioxolane, ethylene glycol, perchloroethylene, toluene, methyl isobutyl ketone, methanol, xylene, ethylbenzene.

TLV (mg/m³): 30.0 (dimethyl formamide - worst case)

Maximum Hourly Emission Rate (pounds/hour): 6.78(dimethyl formamide - worst case)

Predicted 1-Hour Maximum Ground-Level Concentration (µg/m³): 192



MAGLC ($\mu\text{g}/\text{m}^3$): 712

Toxic Contaminant: (particulate) zinc oxide

TLV (mg/m^3): 10

Maximum Hourly Emission Rate (pound/hour): 1.05

Predicted 1-Hour Maximum Ground-Level Concentration ($\mu\text{g}/\text{m}^3$): 181

MAGLC ($\mu\text{g}/\text{m}^3$): 238

The permittee, has demonstrated that emissions of dimethyl formamide and zinc oxide, from these emissions units P051, P052, P053, P505, P506, P507, P509, P510, P511, P512, P513, P514, P515, P524, P529, P532, P535 P537, P538, P539, T008, T009, T010, T011, and T012, 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).

- e) 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:
- (1) 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;
 - (2) 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
 - (3) 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", the permittee shall apply for and obtain a final PTIO prior to the change. The Director may consider any significant departure from the operations of the emissions unit, described in the permit application, as a modification that results in greater emissions than the emissions rate modeled to determine the ground level concentration; and he/she may require the permittee to submit a permit application for the increased emissions.

- f) 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):



- (1) 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.);
 - (2) 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);
 - (3) 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
 - (4) 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.
- g) 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.
- h) The permittee shall include any changes made to a parameter or value used in the dispersion model, that was used to demonstrate compliance with the Toxic Air Contaminant Statute, ORC 3704.03(F), through the predicted 1-hour maximum ground-level concentration, in the annual Permit Evaluation Report (PER). If no changes to the emissions, emissions unit(s), or the exhaust stack have been made, then the report shall include a statement to this effect.
6. The Ohio EPA has determined that this facility is subject to the requirements of 40 CFR part 63 Subpart VVVVV, National Emissions Standards for Hazardous Air Pollutants: Area Source Standards for Chemical Manufacturing. Although Ohio EPA has determined that this area source MACT (also known as the GACT) applies, at this time Ohio EPA does not have the authority to enforce this standard. Instead, U.S. EPA has the authority to enforce this standard. Please be advised, that all requirements associated with this rule are in effect and shall be enforced by U.S. EPA.



Draft Permit-to-Install and Operate

ROHM & HAAS CHEMICALS LLC

Permit Number: P0109847

Facility ID: 0868090072

Effective Date: To be entered upon final issuance

C. Emissions Unit Terms and Conditions



1. Product category - Brominated Y-Polymer: Emissions Units P520 and P521

EU ID	Operations, Property and/or Equipment Description
P520	Adhesive Reactor 141 with reflux condenser, solvent receiver, vacuum pump and chilled water and glycol (mixed) condenser
P521	Adhesive Reactor 142 with reflux condenser, solvent receiver, vacuum pump and chilled water and glycol (mixed) condenser and scrubber to remove Hydrogen Bromide (HBr)

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. See d)(8) through d)(11) 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 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)	The volatile organic compound (VOC) emissions from each emissions unit shall not exceed 89.8 pounds per ton of brominated y-polymer product manufactured. Compliance with this rule also includes compliance with OAC rules 3745-31-05(D), and 3745-21-07(M)(1) and (M)(2). See b)(2)a. through b)(2)d.
b.	OAC rule 3745-31-05(D) (Synthetic Minor to avoid Title V and MACT)	See Section B.2. through B.4.b)(2)d. and b)(2)e.
c.	OAC rule 3745-21-07(M)(1) and (M)(2)	The emissions limitations specified by this rule are less stringent than the control



	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		requirement established pursuant to ORC 3704.03(T). See b)(2)d. and b)(2)e.
d.	OAC rule 3745-114 and ORC 3704.03(F)	See d)(8) through d)(11) and e)(3)

(2) Additional Terms and Conditions

- a. All of the VOC emissions from emissions units, P520 and P521, shall be vented to a chilled water and glycol (mixed) condenser. The condenser system, shall achieve a minimum VOC removal efficiency of 89% on a dry weight basis excluding methane.
- b. The 89.8 pounds VOC per ton of product manufacture was developed for PTI purpose to reflect the potential to emit for each of these emissions units, therefore, it is not necessary to develop monitoring and record keeping requirements for this emission limitation.
- c. There are two sets of condensers installed on these emissions units. Each emissions unit has a cold water condenser operated as reflux condensers with the primary purpose of capturing and condensing any solvent (VOC) that is evolved during crucial batch periods and returning it to the reaction. The solvent reflux serves a vital role by controlling such parameters as reaction time and temperature. The reflux condensers predominantly function to regulate and control the physical and chemical reaction that takes place in the affected equipment. In order to ensure that the condensers are operating properly to reflux solvent, the water shall be flowing to each condenser during the full duration of a batch. In addition to the reflux condensers all of the exhaust from the reflux condensers on emissions units P520 and P521 is vented to a chilled water and glycol (mixed) condenser to control VOC emissions.
- d. The combined VOC emissions from emissions units P520 and P521 shall not exceed 19.5 tons on a rolling 12-month basis. All of the VOC emissions from these emissions units shall be vented to a chilled water and glycol (mixed) condenser that meets the operational, monitoring, and record keeping requirements of this permit, when the emissions units are in operation. The chilled water and glycol (mixed) condenser shall achieve a minimum VOC removal efficiency of 89% on a dry weight basis excluding methane.

 The record keeping, reporting and testing requirements necessary to comply with the synthetic minor VOC emissions limitations are identified in Sections B.2. and B.4. of this permit.
- e. The hazardous air pollutant (HAP) emissions from all the emissions units at this facility shall not exceed 9.9 tons for any individual HAP and 24.9 tons for any combination of HAPs on a rolling 12-month basis.



The record keeping, reporting and testing requirements necessary to comply with the synthetic minor HAP emissions limitations are identified in Section B.3. of this permit.

- f. Hydrogen Bromide (HBr) emissions from emissions unit P521 shall be vented to a wet scrubber during the bromination process.

c) Operational Restrictions

- (1) The pH of the scrubber liquor shall be maintained above 7 for the scrubber used to control HBr emissions from emissions unit P521 during the bromination phase of the reaction.
- (2) The temperature of the scrubber liquor used to control HBr emissions from emissions unit P521 shall be maintained below 150 degrees Fahrenheit during the bromination process.

d) Monitoring and/or Record Keeping Requirements

- (1) The permittee shall collect and record the following information each month for these emissions units:
 - a. The name and identification of each brominated product manufactured.
 - b. The weight, in tons, of each brominated product manufactured in each emissions unit.
 - c. The VOC emissions factor for each brominated product manufactured, in pounds of VOC emissions per ton of product manufactured.
 - d. The total VOC emissions for all brominated products manufactured, in tons per month (the sum of d)(1)b x d)(1)c for each resin, adhesive intermediate and adhesive manufactured).
 - e. The rolling, 12-month summation of the monthly VOC emissions from emissions units P520 and P521 (the sum of the monthly emissions rates calculated in d)(1)d. for the previous 12 months for each emissions unit).
- (2) The average temperature of the exhaust gases from the chilled water and glycol (mixed) condenser, for any 3-hour block of time when the emission units controlled by the condenser are in operation, shall not exceed 106 degrees Fahrenheit.
- (3) The permittee shall properly install, operate, and maintain a continuous temperature monitor and recorder that measures and records the temperature, in degrees Fahrenheit, of the exhaust gases from the chilled water and glycol (mixed) condenser when the emissions unit(s) is/are in operation, including periods of startup and shutdown. 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, with any



modifications deemed necessary by the permittee. The permittee shall collect and record the following information each day the emissions units are in operation:

- a. all 3-hour blocks of time, when the emissions units controlled by the chilled water and glycol (mixed) condenser were in operation, during which the average temperature of the exhaust gases from the condenser was more than 106 degrees Fahrenheit; and
 - b. a log or record of operating time for the chilled water and glycol (mixed) condenser, monitoring equipment, and the associated emissions unit.
- (4) Whenever the monitored temperature of the exhaust gases from the chilled water and glycol (mixed) condenser deviates from the limit established in accordance with this permit, the permittee shall promptly investigate the cause of the deviation. The permittee shall maintain records of the following information for each investigation:
- a. the date and time the deviation began;
 - b. the magnitude of the deviation at that time;
 - c. the date the investigation was conducted;
 - d. the name(s) of the personnel who conducted the investigation; and
 - e. the findings and recommendations.

In response to each required investigation to determine the cause of a deviation, the permittee shall take prompt corrective action to bring the operation of the control equipment within the acceptable 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 deviation;
- j. the temperature readings of the exhaust gas from the chilled water and glycol (mixed) condenser 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 exhaust gas temperature limit is effective for the duration of this permit, unless revisions are requested by the permittee and approved in writing by the appropriate Ohio EPA District Office or local air agency. The permittee may request revisions to the permitted exhaust gas temperature limit based upon information obtained during future performance tests that demonstrate compliance with the allowable VOC emission rate for the controlled emissions units. In addition, approved revisions to the exhaust gas temperature limit 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.

- (5) The permittee shall verify and record whether or not water is flowing to each cold water reflux condenser at the beginning and end of each batch.
- (6) The permittee shall operate and maintain a continuous pH and temperature monitor and recorder which measures and records the pH and temperature of the scrubber liquor while the reactions is taking place in emissions unit P521 within the bromination phase. The pH and temperature monitors shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals.
- (7) The permittee shall collect and record the following information for each day emissions unit P521 is operation:
 - a. The pH and temperature of the scrubber liquor during the bromination phase of each reaction conducted on that day.
 - b. A log or record of the operating duration for the scrubber liquor pump and the corresponding batches bromination phase.
- (8) The FEPTIO application for this/these emissions units, P520 and P521, was evaluated based on the actual materials and the design parameters of the emissions units' exhaust system, as specified by the permittee. The "Toxic Air Contaminant Statute", ORC 3704.03(F), was applied to these emissions units 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 using an air dispersion model such as SCREEN3, 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., “12” hours per day and “7” days per week, from that of 8 hours per day and 5 days per week. The resulting calculation was (and shall be) used to determine the Maximum Acceptable Ground-Level Concentration (MAGLC):

$$TLV/10 \times 8/X \times 5/Y = 4 TLV/XY = MAGLC$$

d. The following summarizes the results of dispersion modeling for the significant toxic contaminants or “worst case” toxic contaminant(s):

Toxic Contaminant: perchloroethylene and xylene
TLV (mg/m³): 170(worst case - perchloroethylene)
Maximum Hourly Emission Rate (lbs/hr): 4.49(perchloroethylene)
Predicted 1-Hour Maximum Ground-Level Concentration (µg/m³): 400
MAGLC (µg/m³): 8,074

The permittee, has demonstrated that emissions of perchloroethylene, from emissions units P520 and P521, 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).

(9) 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", ORC 3704.03(F), 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", the permittee shall apply for and obtain a final FEPTIO prior to the change. The Director may consider any significant departure from the operations of the emissions unit, described in the permit application, as a modification that results in greater emissions than the emissions rate modeled to determine the ground level concentration; and he/she may require the permittee to submit a permit application for the increased emissions.

- (10) The permittee shall collect, record, and retain the following information for each toxic evaluation conducted to determine compliance with the "Toxic Air Contaminant Statute":
 - 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.
- (11) 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.



e) Reporting Requirements

- (1) The permittee shall submit quarterly deviation (excursion) reports that identify:
 - a. any batch where water was not continuously flowing through the cold water reflux condenser on each emissions unit;
 - b. each period of time (start time and date, and end time and date) when the average temperature of the exhaust gases from the chilled water and glycol (mixed) condenser exceeded the temperature limit;
 - c. any period of time (start time and date, and end time and date) when the emissions units were in operation and the VOC emissions were not vented to the chilled water and glycol (mixed) condenser;
 - d. the probable cause of each deviation (excursion);
 - e. any corrective actions that were taken to remedy the deviations (excursions) or prevent future deviations (excursions); and
 - f. the magnitude and duration of each deviation (excursion).

If no deviations (excursions) occurred during a calendar quarter, the permittee shall submit a report that states that no deviations (excursions) occurred during the quarter.

The quarterly reports shall be submitted, electronically through Ohio EPA Air Services, each year by January 31 (covering October to December), April 30 (covering January to March), July 31 (covering April to June), and October 31 (covering July to September), unless an alternative schedule has been established and approved by the Director (the appropriate District Office or local air agency).

- (2) The permittee shall submit an annual Permit Evaluation Report (PER) to the Ohio EPA. The PER must be completed electronically and submitted via the Ohio EPA eBusiness Center: Air Services by the due date identified in the Authorization section of this permit. The permit evaluation report shall cover a reporting period of no more than twelve-months for each air contaminant source identified in this permit.

The permittee shall identify in the annual permit evaluation report the following information concerning the operations of the scrubber during the 12-month reporting period for these emissions units. Any batch where:

- a. Water was not flowing through the scrubber on emissions unit P521 during the bromination phase of the reaction;
- b. The pH of the scrubber liquor was greater than 7 for the scrubber on emissions unit P521 during the bromination phase of the reaction;
- c. The temperature of the scrubber liquor on emissions unit P521 was greater than 150 degrees Fahrenheit during the bromination process.



- (3) The permittee shall include in the annual Permit Evaluation Report (PER) any exceedance of the daily limitation on toxic air emissions or any deviation from a restriction on the process or hours of operation, as established by the Director, in order to maintain any toxic air contaminant below its MAGLC. The permittee shall also include in the PER any changes made, during the calendar year, to a parameter or value entered into the dispersion model that was used to maintain compliance with the "Toxic Air Contaminant Statute", ORC 3704.03(F), through the predicted 1-hour maximum ground-level concentration. If no changes to the emissions, emissions unit(s), or the exhaust stack have been made, then the report shall include a statement to this effect.
- f) Testing Requirements
- (1) Compliance with the Emissions Limitations specified in section b) shall be determined in accordance with the following methods:
 - a. Emission Limitation -

The VOC emissions from this emissions unit shall not exceed 89.8 pounds per ton of brominated y-polymer product manufactured.

Applicable Compliance Method -

This VOC emissions limitation was determined by multiplying the emissions factor for uncontrolled non-fugitive VOC emissions by the 89% control efficiency of the chilled water and glycol (mixed) condenser (810 pounds VOC per ton of brominated y-polymer x (1-0.89)) plus fugitive VOC emissions of 0.65 pound VOC per ton of brominated y-polymer product.
 - b. Emission Limitation -

The combined VOC emissions from these emissions units shall not exceed 19.5 tons on a rolling 12-month basis.

Applicable Compliance Method -

Compliance shall be based on the record keeping requirements of d)(1) and the sum of the VOC emissions from emissions units P520 and P521 for the previous 12 months.
- g) Miscellaneous Requirements
- (1) None.



2. Product category -Polyester Solution Manufacturing: P512,P513,P514,

EU ID	Operations, Property and/or Equipment Description
P512	Resin Dissolving Tank 431 with condenser and RTO
P513	Resin Dissolving Tank 433 with condenser and RTO
P514	Resin Dissolving Tank 432 with condenser and RTO

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. None.

(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)	The volatile organic compound (VOC) emissions from each emissions unit shall not exceed 2.30 pounds per ton of polyester solution product manufactured. See b)(2)a., b)(2)b. and b)(2)c.
b.	OAC rule 3745-31-05(A)(3) as effective November 30, 2001	The fugitive particulate emissions from each emissions unit shall not exceed 5.30 tons per year. Visible emissions of fugitive dust from each emissions unit shall not exceed twenty percent opacity as a three-minute average See b)(2)d.



	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
c.	OAC rule 3745-31-05(A)(3)(a)(iii) as effective December 1, 2006	See b)(2)e.
d.	OAC rule 3745-31-05(D) (Synthetic Minor to avoid Title V and MACT)	See Sections B.2. through B.4., b)(2)c. and b)(2)f.
e.	OAC rule 3745-114 and ORC 3704.03(F)	See Section B.5.

(2) Additional Terms and Conditions

- a. The 2.30 pounds VOC per ton of polyester solution product manufactured and 5.30 tons per year of fugitive particulate emissions limitations were developed to reflect the potential to emit for each of these emissions units, therefore, it is not necessary to develop monitoring and record keeping requirements for these emission limitations.
- b. The condensers installed on these emissions units are operated as reflux condensers with the primary purpose of capturing and condensing any solvent (VOC) that is evolved during crucial batch periods and returning it to the reaction. The solvent reflux serves a vital role by controlling such parameters as reaction time and temperature. The reflux condensers predominantly function to regulate and control the physical and chemical reaction that takes place in the affected equipment. In order to ensure that the condensers are operating properly to reflux solvent, the water shall be flowing to each condenser during the full duration of a batch.
- c. The combined VOC emissions from emissions units P512, P513, and P514 shall not exceed 9.25 tons on a rolling 12-month basis. All of the VOC emissions from the emissions units listed above shall be vented to the regenerative thermal oxidizer (RTO) that shall meet the operational, monitoring, and record keeping requirements of this permit, when one or more of the emissions units are in operation. The RTO system, shall achieve a minimum VOC destruction/removal efficiency of 97% on a dry weight basis excluding methane.

The record keeping, reporting and testing requirements necessary to comply with the synthetic minor VOC emissions limitations are identified in Sections B.2., and B.4. of this permit.

- d. The permittee has satisfied the Best Available Technology (BAT) requirements pursuant to Ohio Administrative Code (OAC) paragraph 3745-31-05(A)(3), as effective November 30, 2001, in this permit. On December 1, 2006, paragraph (A)(3) of OAC rule 3745-31-05 was revised to conform to the Ohio Revised Code (ORC) changes effective August 3, 2006 (Senate Bill 265 changes), such that BAT is no longer required by State regulations for National Ambient Air Quality Standards (NAAQS) pollutant(s) less than ten tons per year. However, that rule revision has not yet been approved by U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). Therefore, until the SIP revision occurs and the U.S.



EPA approves the revisions to OAC rule 3745-31-05, the requirement to satisfy BAT still exists as part of the federally-approved SIP for Ohio. Once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05, these emission limitations/control measures no longer apply.

- e. This rule paragraph applies once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05 as part of the State Implementation Plan.

The Best Available Technology (BAT) requirements of OAC rule 3745-31-05)(A)(3) do not apply to these emissions units because the uncontrolled particulate emissions from each of these emissions units is less than 10 tons per year.

- f. The hazardous air pollutant (HAP) emissions from all the emissions units at this facility shall not exceed 9.9 tons for any individual HAP and 24.9 tons for any combination of HAPs on a rolling 12-month basis.

The record keeping, reporting and testing requirements necessary to comply with the synthetic minor HAP emissions limitations are identified in Section B.3. of this permit.

c) Operational Restrictions

- (1) None.

d) Monitoring and/or Record Keeping Requirements

- (1) The permittee shall collect and record the following information each month for these emissions units:
 - a. The name and identification of polyester solution manufactured.
 - b. The weight, in tons, of each polyester solution manufactured in each emissions unit.
 - c. The uncontrolled VOC emissions factor for each polyester solution manufactured, in pounds of VOC emissions per ton of product manufactured.
 - d. The controlled VOC emissions factor for polyester solution manufactured, in pounds of VOC emissions per ton of product manufactured (the uncontrolled VOC emissions factor from d)(1)c multiplied by the control efficiency for the RTO measured during the last performance test that demonstrated compliance).
 - e. The total VOC emissions for all polyester solutions manufactured, in tons per month (the sum of d)(1)b x d)(1)d for each polyester solution manufactured).
 - f. The rolling, 12-month summation of the monthly VOC emissions from emissions units P512, P513 and P514 (the sum of the monthly emissions rates calculated in d)(1)e. for the previous 12 months for each emissions unit).



- (2) The permittee shall verify and record whether or not water is flowing to each condenser at the beginning and end of each batch.
- (3) The permittee shall perform monthly checks, when the emissions unit is in operation, for any visible particulate emissions from the stack and for any visible emissions of fugitive dust from the egress points (i.e., building windows, doors, etc.) serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:
 - a. the color of the emissions;
 - b. whether the emissions are representative of normal operations;
 - c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
 - d. the total duration of any visible emissions incident; and
 - e. any corrective actions taken to minimize or eliminate the visible emissions.

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

e) Reporting Requirements

- (1) The permittee shall submit quarterly deviation (excursion) reports that identify:
 - a. any batch where water was not continuously flowing through the condenser on each unit;

These quarterly reports shall be submitted by April 30, July 31, October 31, and January 31, and shall cover the records for the previous calendar quarters.

The quarterly reports shall be submitted electronically through Ohio EPA Air Services, each year by January 31 (covering October to December), April 30 (covering January to March), July 31 (covering April to June), and October 31 (covering July to September), unless an alternative schedule has been established and approved by the Director (the appropriate District Office or local air agency).

- (2) The permittee shall submit an annual Permit Evaluation Report (PER) to the Ohio EPA. The PER must be completed electronically and submitted via the Ohio EPA eBusiness Center: Air Services by the due date identified in the Authorization section of this permit.



The permit evaluation report shall cover a reporting period of no more than twelve-months for each air contaminant source identified in this permit.

The permittee shall identify the following information in the annual PER in accordance with the monitoring requirements for visible emissions in d)(3):

- a. all days during which any visible emissions of fugitive dust were observed from these emissions units; and
- b. any corrective actions taken to minimize or eliminate the visible emissions of fugitive dust.

f) Testing Requirements

(1) Compliance with the Emissions Limitations specified in b) shall be determined in accordance with the following methods:

a. Emission Limitation -

The VOC emissions from each emissions unit shall not exceed 2.30 pounds per ton of polyester solution product manufactured.

Applicable Compliance Method -

This VOC emissions limitation was determined by multiplying the emissions factor for uncontrolled non-fugitive VOC emissions by the 97% control efficiency of the RTO (67.3 pounds VOC per ton of polyester solution x (1-0.97)) plus fugitive VOC emissions of 0.23 pound VOC per ton of polyester solution.

b. Emission Limitation-

The combined VOC emissions from emissions units P512, P513 and P514 shall not exceed 9.25 tons on a rolling 12-month basis.

Applicable Compliance Method -

Compliance shall be based on the record keeping requirements of d)(1) and the sum of the VOC emissions from emissions units P512, P513 and P514 for the previous 12 months.

c. Emission Limitation -

The particulate emissions from each emissions unit shall not exceed 5.30 tons per year

Applicable Compliance Method -

Compliance with the particulate emissions limitation is based on the maximum annual powdered material process rate of 3,314 tons per year multiplied by the amount of material that becomes airborne during the reactor fill process of 0.16% (U.S. EPA, AP-42, Section 11.12 background document June, 2006).



d. Emission Limitation -

The RTO system, shall achieve a minimum VOC destruction/removal efficiency of 97% on a dry weight basis excluding methane.

Applicable Compliance Method -

Compliance with this emissions limitation shall be determined according to Section B.4. of this permit

e. Emission Limitation -

Visible emissions of fugitive dust from each emissions unit shall not exceed twenty percent opacity as a three-minute average.

Applicable Compliance Method -

If requested, compliance with the visible particulate emissions limitation shall be determined through visible emissions observations performed in accordance with U.S. EPA Reference Method 9 and OAC rule 3745-17-03(B)(1).

g) Miscellaneous Requirements

- (1) None.



3. Product category -Prepolymer Manufacturing: P505, P506, P507, P509, P510, P511, P515 and P535

EU ID	Operations, Property and/or Equipment Description
P505	Prepolymer Kettle 420 with receiver, fabric filter, condenser and RTO
P506	Prepolymer kettle 421 with receiver, fabric filter, condenser and RTO
P507	Prepolymer kettle 422 with receiver, fabric filter, condenser and RTO
P509	Autoclave 424 with receiver, condenser, freeze trap and RTO
P510	Autoclave 425 with receiver, condenser, freeze trap and RTO
P511	Autoclave 426 with receiver, condenser, freeze trap and RTO
P515	Polymer blocks, granules, pellets, pelletizer 401, crystallizer tank 408, pellet dryer 409
P535	Recycled Polymer holding tank 434 and RTO

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. None.

(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>The volatile organic compound (VOC) emissions from each emissions unit shall not exceed 0.6 pound per ton of prepolymer product manufactured.</p> <p>Compliance with this rule also includes compliance with OAC rules 3745-31-05(D), 3745-21-07(M)(1) and (M)(2).</p> <p>See b)(2)a., b)(2)b. and b)(2)c.</p>



	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
b.	OAC rule 3745-31-05(A)(3) as effective November 30, 2001	The particulate emissions from emissions units P505, P506 and P507 shall not exceed 1.39 pounds per hour and 2.03 tons per year. Compliance with this rule also includes compliance with OAC rules 3745-17-07(A) and 3745-17-11(B). See b(2)d.
c.	OAC rule 3745-31-05(A)(3)(a)(iii) as effective December 1, 2006	See b(2)e.
d.	OAC rule 3745-31-05(D) (Synthetic Minor to avoid Title V and MACT)	See Sections B.2. through B.4., b(2)c. and b(2)f.
e.	OAC rule 3745-21-07(M)(1) and (M)(2)	<u>Emissions Units P505, P506, P507, P509, P510, and P511:</u> The emissions limitations specified by this rule are less stringent than the control requirement established pursuant to ORC 3704.03(T). See b(2)g. and b(2)h.
f.	OAC rule 3745-17-07(A)	<u>Emissions Units P505, P506 and P507:</u> Visible particulate emissions from the stacks serving the fabric filters shall not exceed 20 percent opacity as a six-minute average.
g.	OAC rule 3745-17-11(B)	<u>Emissions Units P505, P506 and P507:</u> The particulate emissions from these emissions units shall not exceed 2.78 pounds per hour.
h.	OAC rule 3745-114 and ORC 3704.03(F)	See Sections B.5.

(2) Additional Terms and Conditions

- a. The 0.60 pound VOC per ton of polyester solution product manufactured and 1.39 pounds per hour of particulate emissions limitations were developed for PTI purposes to reflect the potential to emit for each of these emissions units, therefore, it is not necessary to develop monitoring and record keeping requirements for these emission limitations.
- b. The condensers installed on these emissions units are operated as reflux condensers with the primary purpose of capturing and condensing any solvent (VOC) that is evolved during crucial batch periods and returning it to the reaction. The solvent reflux serves a vital role by controlling such parameters as reaction time and temperature. The reflux condensers predominantly function to regulate



and control the physical and chemical reaction that takes place in the affected equipment. In order to ensure that the condensers are operating properly to reflux solvent, the water shall be flowing to each condenser during the full duration of a batch. In addition, the autoclaves (emissions units P509, P510 and P511) are equipped with freeze traps that use liquid nitrogen as coolant to recover any solvents that pass through the reflux condensers for product recovery.

- c. The combined VOC emissions from emissions units P505, 506, P507, P509, P510, P511, P515 and P535 shall not exceed 1.40 tons on a rolling 12-month basis. All of the VOC emissions from the emissions units listed above shall be vented to the regenerative thermal oxidizer (RTO) that shall meet the operational, monitoring, and record keeping requirements of this permit, when one or more of the emissions units are in operation. The RTO system, shall achieve a minimum VOC destruction/removal efficiency of 97% on a dry weight basis excluding methane.

The record keeping, reporting and testing requirements necessary to comply with the synthetic minor VOC emissions limitations are identified in Sections B.2., and B.4., of this permit.

- d. The permittee has satisfied the Best Available Technology (BAT) requirements pursuant to Ohio Administrative Code (OAC) paragraph 3745-31-05(A)(3), as effective November 30, 2001, in this permit. On December 1, 2006, paragraph (A)(3) of OAC rule 3745-31-05 was revised to conform to the Ohio Revised Code (ORC) changes effective August 3, 2006 (Senate Bill 265 changes), such that BAT is no longer required by State regulations for National Ambient Air Quality Standards (NAAQS) pollutant(s) less than ten tons per year. However, that rule revision has not yet been approved by U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). Therefore, until the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-31-05, the requirement to satisfy BAT still exists as part of the federally-approved SIP for Ohio. Once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05, these emission limitations/control measures no longer apply.

- e. This rule paragraph applies once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05 as part of the State Implementation Plan.

The Best Available Technology (BAT) requirements of OAC rule 3745-31-05(A)(3) do not apply to these emissions units because the uncontrolled particulate emissions from each of these emissions units is less than 10 tons per year.

- f. The hazardous air pollutant (HAP) emissions from all the emissions units at this facility shall not exceed 9.9 tons for any individual HAP and 24.9 tons for any combination of HAPs on a rolling 12-month basis.

The record keeping, reporting and testing requirements necessary to comply with the synthetic minor HAP emissions limitations are identified in Section- B.3. of this permit.



- g. All of the organic compound (OC) emissions from emissions units P505, P506, P507, P509, P510 and P511 listed above shall be vented to the RTO that shall meet the operational, monitoring, and record keeping requirements of this permit, when one or more of the emissions units are in operation.
 - h. The OC emissions from emissions units P505, P506, P507, P509, P510 and P511 listed above shall be controlled through the application of a RTO system, operating at a minimum of 97% overall OC destruction/removal efficiency.
- c) Operational Restrictions
- (1) None.
- d) Monitoring and/or Record Keeping Requirements
- (1) The permittee shall collect and record the following information each month for these emissions units:
 - a. The name and identification of each prepolymer manufactured.
 - b. The weight, in tons, of each prepolymer manufactured in each emissions unit.
 - c. The uncontrolled VOC emissions factor for each prepolymer manufactured, in pounds of VOC emissions per ton of product manufactured.
 - d. The controlled VOC emissions factor for each prepolymer manufactured, in pounds of VOC emissions per ton of product manufactured (the uncontrolled VOC emissions factor from d)(1)c multiplied by the control efficiency for the RTO measured during the last performance test that demonstrated compliance).
 - e. The total VOC emissions for all prepolymer, in tons per month (the sum of d)(1)b x d)(1)d for each resin, adhesive intermediate and adhesive manufactured).
 - f. The rolling, 12-month summation of the monthly VOC emissions from emissions units P505, 506, P507, P509, P510, P511, P515 and P535 (the sum of the monthly emissions rates calculated in d)(1)e. for the previous 12 months for each emissions unit).
 - (2) The permittee shall verify and record whether or not water is flowing to each condenser at the beginning and end of each batch.
 - (3) The permittee shall perform monthly checks, when the emissions unit is in operation, for any visible particulate emissions from the stack serving emissions units P505, P506 and P507 and for any visible emissions of fugitive dust from the egress points (i.e., building windows, doors, etc.). The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:
 - a. the color of the emissions;
 - b. whether the emissions are representative of normal operations;



- c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
- d. the total duration of any visible emissions incident; and
- e. any corrective actions taken to minimize or eliminate the visible emissions.

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

e) Reporting Requirements

- (1) The permittee shall submit quarterly deviation (excursion) reports that identify:

- a. any batch where water was not continuously flowing through the condenser on each unit;

These quarterly reports shall be submitted by April 30, July 31, October 31, and January 31, and shall cover the records for the previous calendar quarters.

The quarterly reports shall be submitted, electronically through Ohio EPA Air Services, each year by January 31 (covering October to December), April 30 (covering January to March), July 31 (covering April to June), and October 31 (covering July to September), unless an alternative schedule has been established and approved by the Director (the appropriate District Office or local air agency).

- (2) The permittee shall submit an annual Permit Evaluation Report (PER) to the Ohio EPA. The PER must be completed electronically and submitted via the Ohio EPA eBusiness Center: Air Services by the due date identified in the Authorization section of this permit. The permit evaluation report shall cover a reporting period of no more than twelve-months for each air contaminant source identified in this permit.

The permittee shall identify the following information in the annual PER in accordance with the monitoring requirements for visible emissions in d)(6):

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



f) Testing Requirements

(1) Compliance with the Emissions Limitations specified in b) shall be determined in accordance with the following methods:

a. Emission Limitation-

The VOC emissions from each emissions unit shall not exceed 0.60 pounds per ton of prepolymer product manufactured.

Applicable Compliance Method -

This VOC emissions limitation was determined by multiplying the emissions factor for uncontrolled non-fugitive VOC emissions by the 97% control efficiency of the RTO (12.3 pounds VOC per ton of prepolymer x (1-0.97)) plus fugitive VOC emissions of 0.23 pound VOC per ton of prepolymer solution.

b. Emission Limitation-

The combined VOC emissions from emissions units P505, 506, P507, P509, P510, P511, P515 and P535 shall not exceed 1.40 tons on a rolling 12-month basis.

Applicable Compliance Method -

Compliance shall be based on the record keeping requirements of d)(1) and the sum of the VOC emissions from emissions units P505, 506, P507, P509, P510, P511, P515 and P535 for the previous 12 months.

c. Emission Limitation-

The particulate emissions from each emissions unit shall not exceed 1.39 pounds per hour.

Applicable Compliance Method -

Compliance with the particulate emissions limitation is based on the maximum hourly powdered material process rate of 8,700 pounds per hour multiplied by the amount of material that becomes airborne during the reactor fill process of 0.16% (U.S. EPA, AP-42, Section 11.12 background document June, 2006) multiplied by the 90 percent control efficiency (1-0.90) of the fabric filters on these emissions units.

d. Emission Limitation-

The particulate emissions from each emissions unit shall not exceed 2.03 tons per year.



Applicable Compliance Method -

Compliance with the particulate emissions limitation is based on the maximum annual powdered material process rate of 12,690 tons per year multiplied by the amount of material that becomes airborne during the reactor fill process of 0.16% (U.S. EPA, AP-42, Section 11.12 background document June, 2006) multiplied by the 90 percent control efficiency (1 – 0.90) of the fabric filters on these emissions units.

e. Emission Limitation-

The particulate emissions from each emissions unit shall not exceed 2.78 pounds per hour.

Applicable Compliance Method -

If requested, compliance with the visible particulate emissions limitation shall be determined through visible emissions observations performed in accordance with U.S. EPA Reference Method 5 and OAC rule 3745-17-03(B)(10).

f. Emission Limitation-

The RTO system, shall achieve a minimum VOC destruction/removal efficiency of 97% on a dry weight basis excluding methane.

Applicable Compliance Method -

Compliance with this emissions limitation shall be determined according to Section B.4. of this permit

g. Emission Limitation-

Emissions Units P505, P506 and P507: Visible particulate emissions from the stacks serving the fabric filters shall not exceed twenty percent opacity as a six-minute average.

Applicable Compliance Method -

If requested, compliance with the visible particulate emissions limitation shall be determined through visible emissions observations performed in accordance with U.S. EPA Reference Method 9 and OAC rule 3745-17-03(B)(1).

g) Miscellaneous Requirements

- (1) None.



4. Product category -Thixon Manufacturing: P051, P052, P053, P524, P529, P532, P537, P538, and P539

EU ID	Operations, Property and/or Equipment Description
P051	500 gal. mixing vessel, TK1001 with condenser; 150 gal. emulsifier feed tank, TK1001-2; 1000 gal. stripping vessel R-1002, with condenser; 400 gal. receiver tank, TK1002-1; 750 gal. final mixing tank TK1003 with RTO
P052	Mixing Vessel 1027 with RTO
P053	Mixing Vessels 1028 and 1029 with RTO
P524	Reactor 145 with condenser and RTO
P529	Mixing Vessel 124 receiver common with 125 with condenser and RTO
P532	Ross Mixer/emulsifier 199 with condenser and RTO
P537	Mixing vessel 125 receiver common with 124 with condenser and RTO
P538	Mixing vessel 126 receiver common with 127 with condenser and RTO
P539	Mixing vessel 127 receiver common with 126 with condenser and RTO

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. None.

(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)	The volatile organic compound (VOC) emissions from each emissions unit shall not exceed 8.00 pounds per ton of Thixon product manufactured. Compliance with this rule also includes compliance with OAC rules 3745-31-



	Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
		05(D), 3745-21-07(M)(1). See b)(2)a., b)(2)b. and b)(2)c.
b.	OAC rule 3745-31-05(A)(3) as effective November 30, 2001	The fugitive particulate emissions from each emissions unit shall not exceed 4.56 tons per year. Visible emissions of fugitive dust from each emissions unit shall not exceed twenty percent opacity as a three-minute average See b)(2)d.
c.	OAC rule 3745-31-05(A)(3)(a)(iii) as effective December 1, 2006	See b)(2)e.
d.	OAC rule 3745-31-05(D) (Synthetic Minor to avoid Title V and MACT)	See Sections B.2. through B.4., b)(2)c. and b)(2)f.
e.	OAC rule 3745-21-07(M)(1) and (M)(2)	<u>Emissions Unit P524</u> : The emissions limitations specified by this rule are less stringent than the control requirement established pursuant to ORC 3704.03(T). See b)(2)d. and b)(2)e.
f.	OAC rule 3745-114 and ORC 3704.03(F)	See Section B.5.

(2) Additional Terms and Conditions

- a. The 8.00 pounds VOC per ton of Thixon product manufactured and 4.56 tons per year of particulate emissions limitations were developed for PTI purposes to reflect the potential to emit for each of these emissions units, therefore, it is not necessary to develop monitoring and record keeping requirements for these emission limitations.
- b. The condensers installed on these emissions units are operated as reflux condensers with the primary purpose of capturing and condensing any solvent (VOC) that is evolved during crucial batch periods and returning it to the reaction. The solvent reflux serves a vital role by controlling such parameters as reaction time and temperature. The reflux condensers predominantly function to regulate and control the physical and chemical reaction that takes place in the affected equipment. In order to ensure that the condensers are operating properly to reflux solvent, the water shall be flowing to each condenser during the full duration of a batch.



- c. The combined VOC emissions from emissions units P051, P052, P053, P524, P529, P532, P537, P538, and P539 shall not exceed 13.5 tons on a rolling 12-month basis. All of the VOC emissions from the emissions units listed above shall be vented to the regenerative thermal oxidizer (RTO) that shall meet the operational, monitoring, and record keeping requirements of this permit, when one or more of the emissions units are in operation. The RTO system, shall achieve a minimum VOC destruction/removal efficiency of 97% on a dry weight basis excluding methane.

The record keeping, reporting and testing requirements necessary to comply with the synthetic minor VOC emissions limitations are identified in Sections B.2. and B.4., of this permit.

- d. The permittee has satisfied the Best Available Technology (BAT) requirements pursuant to Ohio Administrative Code (OAC) paragraph 3745-31-05(A)(3), as effective November 30, 2001, in this permit. On December 1, 2006, paragraph (A)(3) of OAC rule 3745-31-05 was revised to conform to the Ohio Revised Code (ORC) changes effective August 3, 2006 (Senate Bill 265 changes), such that BAT is no longer required by State regulations for National Ambient Air Quality Standards (NAAQS) pollutant(s) less than ten tons per year. However, that rule revision has not yet been approved by U.S. EPA as a revision to Ohio's State Implementation Plan (SIP). Therefore, until the SIP revision occurs and the U.S. EPA approves the revisions to OAC rule 3745-31-05, the requirement to satisfy BAT still exists as part of the federally-approved SIP for Ohio. Once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05, these emission limitations/control measures no longer apply.

- e. This rule paragraph applies once U.S. EPA approves the December 1, 2006 version of OAC rule 3745-31-05 as part of the State Implementation Plan.

The Best Available Technology (BAT) requirements of OAC rule 3745-31-05(A)(3) do not apply to these emissions units because the uncontrolled particulate emissions from each of these emissions units is less than 10 tons per year.

- f. The hazardous air pollutant (HAP) emissions from all the emissions units at this facility shall not exceed 9.9 tons for any individual HAP and 24.9 tons for any combination of HAPs on a rolling 12-month basis.

The record keeping, reporting and testing requirements necessary to comply with the synthetic minor HAP emissions limitations are identified in Section B.3 of this permit.

- g. All of the organic compound (OC) emissions from the emissions unit P524 shall be vented to the RTO that shall meet the operational, monitoring, and record keeping requirements of this permit, when one or more of the emissions units are in operation.



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

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

e) Reporting Requirements

- (1) The permittee shall submit quarterly summaries of the following records:

- a. any batch where water was not continuously flowing through the condenser on each unit;

These quarterly reports shall be submitted by April 30, July 31, October 31, and January 31, and shall cover the records for the previous calendar quarters.

The quarterly reports shall be submitted, electronically through Ohio EPA Air Services, each year by January 31 (covering October to December), April 30 (covering January to March), July 31 (covering April to June), and October 31 (covering July to September), unless an alternative schedule has been established and approved by the Director (the appropriate District Office or local air agency).

- (2) The permittee shall submit an annual Permit Evaluation Report (PER) to the Ohio EPA. The PER must be completed electronically and submitted via the Ohio EPA eBusiness Center: Air Services by the due date identified in the Authorization section of this permit. The permit evaluation report shall cover a reporting period of no more than twelve-months for each air contaminant source identified in this permit.

The permittee shall identify the following information in the annual PER in accordance with the monitoring requirements for visible emissions in d)(6):

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

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 VOC emissions from each emissions unit shall not exceed 8.00 pounds per ton of Thixon product manufactured.

Applicable Compliance Method -

This VOC emissions limitation was determined by multiplying the emissions factor for uncontrolled non-fugitive VOC emissions by the 97% control efficiency of the RTO (242 pounds VOC per ton of polyester solution x (1-0.97)) plus fugitive VOC emissions of 0.65 pound VOC per ton of Thixon product.

b. Emission Limitation-

The combined VOC emissions from emissions units P051, P052, P053, P524, P529, P532, P537, P538 and P539 shall not exceed 13.5 tons on a rolling 12-month basis.

Applicable Compliance Method -

Compliance shall be based on the record keeping requirements of d)(1) and the sum of the VOC emissions from emissions units P051, P052, P053, P524, P529, P532, P537, P538 and P539 for the previous 12 months.

c. Emission Limitation-

The fugitive particulate emissions from each emissions unit shall not exceed 4.56 tons per year

Applicable Compliance Method -

Compliance with the particulate emissions limitation is based on the maximum annual powdered material process rate of 2,851 tons per year multiplied by the amount of material that becomes airborne during the reactor fill process of 0.16% (U.S. EPA, AP-42, Section 11.12 background document June, 2006).

d. Emission Limitation-

The RTO system, shall achieve a minimum VOC destruction/removal efficiency of 97% on a dry weight basis excluding methane.

Applicable Compliance Method -

Compliance with this emissions limitation shall be determined according to Section B.4. of this permit

e. Emission Limitation-

Visible particulate emissions from shall not exceed twenty percent opacity as a three-minute average.



Draft Permit-to-Install and Operate

ROHM & HAAS CHEMICALS LLC

Permit Number: P0109847

Facility ID: 0868090072

Effective Date: To be entered upon final issuance

Applicable Compliance Method -

If requested, compliance with the visible particulate emissions limitation shall be determined through visible emissions observations performed in accordance with U.S. EPA Reference Method 9 and OAC rule 3745-17-03(B)(1).

g) Miscellaneous Requirements

- (1) None.