



State of Ohio Environmental Protection Agency

Street Address:

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P.O. Box 1049
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RE: FINAL PERMIT TO INSTALL MODIFICATION

CERTIFIED MAIL

FRANKLIN COUNTY

Application No: 01-12038

Fac ID: 0125040070

DATE: 6/19/2007

Franklin International Inc
Bill Heck
2020 Bruck St
Columbus, OH 43207

	TOXIC REVIEW
	PSD
Y	SYNTHETIC MINOR
	CEMS
	MACT
	NSPS
	NESHAPS
	NETTING
	MAJOR NON-ATTAINMENT
	MODELING SUBMITTED
	GASOLINE DISPENSING FACILITY

Enclosed Please find a modification to the Ohio EPA Permit To Install referenced above which will modify the terms and conditions.

You are hereby notified that this action of the Director is final and may be appealed to the Environmental Review Appeals Commission pursuant to Section 3745.04 of the Ohio Revised Code. The appeal must be in writing and set forth the action complained of and the grounds upon which the appeal is based. The appeal must be filed with the Commission within thirty (30) days after notice of the Director's action. The appeal must be accompanied by a filing fee of \$70.00 which the Commission, in its discretion, may reduce if by affidavit you demonstrate that payment of the full amount of the fee would cause extreme hardship. Notice of the filing of the appeal shall be filed with the Director within three (3) days of filing with the Commission. Ohio EPA requests that a copy of the appeal be served upon the Ohio Attorney General's Office, Environmental Enforcement Section. An appeal may be filed with the Environmental Review Appeals Commission at the following address:

Environmental Review Appeals Commission
309 South Fourth Street, Room 222
Columbus, OH 43215

Sincerely,

Michael W. Sturm |

Michael W. Ahern, Manager
Permit Issuance and Data Management Section
Division of Air Pollution Control

CC: USEPA

CDO



FINAL ADMINISTRATIVE MODIFICATION OF PERMIT TO INSTALL 01-12038

Application Number: 01-12038

Facility ID: 0125040070

Permit Fee: **\$875**

Name of Facility: Franklin International Inc

Person to Contact: Bill Heck

Address: 2020 Bruck St
Columbus, OH 43207

Location of proposed air contaminant source(s) [emissions unit(s)]:

**2020 Bruck St
Columbus, Ohio**

Description of proposed emissions unit(s):

Reactor 3.

The above named entity is hereby granted a modification to the permit to install described above pursuant to Chapter 3745-31 of the Ohio Administrative Code. Issuance of this modification does not constitute expressed or implied approval or agreement that, if constructed or modified in accordance with the plans included in the application, the above described source(s) of environmental pollutants will operate in compliance with applicable State and Federal laws and regulations, and does not constitute expressed or implied assurance that if constructed or modified in accordance with those plans included in the application, the above described source(s) of pollutants will be granted the necessary operating permits.

This permit is granted subject to the conditions attached hereto.

Ohio Environmental Protection Agency

Chris Korleski
Director

Part I - GENERAL TERMS AND CONDITIONS

A. Permit to Install General Terms and Conditions

1. Compliance Requirements

The emissions unit(s) identified in this Permit to Install shall remain in full compliance with all applicable State laws and regulations and the terms and conditions of this permit.

2. Reporting Requirements

The permittee shall submit required reports in the following manner:

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

3. Records Retention Requirements

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

4. Inspections and Information Requests

The Director of the Ohio EPA, or an authorized representative of the Director, may, subject to the safety requirements of the permittee and without undue delay, enter upon the premises of this source at any reasonable time for purposes of making inspections, conducting tests, examining records or reports pertaining to any emission of air

contaminants, and determining compliance with any applicable State air pollution laws and regulations and the terms and conditions of this permit. The permittee shall furnish to the Director of the Ohio EPA, or an authorized representative of the Director, upon receipt of a written request and within a reasonable time, any information that may be requested to determine whether cause exists for modifying, reopening or revoking this permit or to determine compliance with this permit. Upon verbal or written request, the permittee shall also furnish to the Director of the Ohio EPA, or an authorized representative of the Director, copies of records required to be kept by this permit.

5. Scheduled Maintenance/Malfunction Reporting

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

6. Permit Transfers

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

7. Air Pollution Nuisance

The air contaminants emitted by the emissions units covered by this permit shall not cause a public nuisance, in violation of OAC rule 3745-15-07.

8. Termination of Permit to Install

This Permit to Install shall terminate within eighteen months of the effective date of the Permit to Install if the owner or operator has not undertaken a continuing program of installation or modification or has not entered into a binding contractual obligation to undertake and complete within a reasonable time a continuing program of installation or modification. This deadline may be extended by up to 12 months if application is made to the Director within a reasonable time before the termination date and the party shows good cause for any such extension.

9. Construction of New Sources(s)

The proposed emissions unit(s) shall be constructed in strict accordance with the plans and application submitted for this permit to the Director of the Ohio Environmental

Protection Agency. There may be no deviation from the approved plans without the express, written approval of the Agency. Any deviations from the approved plans or the above conditions may lead to such sanctions and penalties as provided under Ohio law. Approval of these plans does not constitute an assurance that the proposed facilities will operate in compliance with all Ohio laws and regulations. Additional facilities shall be installed upon orders of the Ohio Environmental Protection Agency if the proposed sources cannot meet the requirements of this permit or cannot meet applicable standards.

If the construction of the proposed emissions unit(s) has already begun or has been completed prior to the date the Director of the Environmental Protection Agency approves the permit application and plans, the approval does not constitute expressed or implied assurance that the proposed facility has been constructed in accordance with the approved plans. The action of beginning and/or completing construction prior to obtaining the Director's approval constitutes a violation of OAC rule 3745-31-02. Furthermore, issuance of the Permit to Install does not constitute an assurance that the proposed source will operate in compliance with all Ohio laws and regulations. Approval of the plans in any case is not to be construed as an approval of the facility as constructed and/or completed. Moreover, issuance of the Permit to Install is not to be construed as a waiver of any rights that the Ohio Environmental Protection Agency (or other persons) may have against the applicant for starting construction prior to the effective date of the permit. Additional facilities shall be installed upon orders of the Ohio Environmental Protection Agency if the proposed facilities cannot meet the requirements of this permit or cannot meet applicable standards.

10. Public Disclosure

The facility is hereby notified that this permit, and all agency records concerning the operation of this permitted source, are subject to public disclosure in accordance with OAC rule 3745-49-03.

11. Applicability

This Permit To Install is applicable only to the emissions unit(s) identified in the Permit To Install. Separate Permit To Install for the installation or modification of any other emissions unit(s) are required for any emissions unit for which a Permit To Install is required.

12. Best Available Technology

As specified in OAC Rule 3745-31-05, all new sources must employ Best Available Technology (BAT). Compliance with the terms and conditions of this permit will fulfill this requirement.

13. Source Operation and Operating Permit Requirements After Completion of Construction

This facility is permitted to operate each source described by this Permit to Install for a period of up to one year from the date the source commenced operation. This permission to operate is granted only if the facility complies with all requirements contained in this permit and all applicable air pollution laws, regulations, and policies. Pursuant to OAC Chapter 3745-35, the permittee shall submit a complete operating permit application within ninety (90) days after commencing operation of the emissions unit(s) covered by this permit.

14. Construction Compliance Certification

The applicant shall provide Ohio EPA with a written certification (see enclosed form) that the facility has been constructed in accordance with the Permit to Install application and the terms and conditions of the Permit to Install. The certification shall be provided to Ohio EPA upon completion of construction but prior to startup of the source.

15. Fees

The permittee shall pay fees to the Director of the Ohio EPA in accordance with ORC section 3745.11 and OAC Chapter 3745-78. The permittee shall pay all applicable Permit to Install fees within 30 days after the issuance of this Permit to Install.

B. Permit to Install Summary of Allowable Emissions

The following information summarizes the total allowable emissions, by pollutant, based on the individual allowable emissions of each air contaminant source identified in this permit.

SUMMARY (for informational purposes only)
TOTAL PERMIT TO INSTALL ALLOWABLE EMISSIONS

<u>Pollutant</u>	<u>Tons Per Year</u>
OC	99.9
Individual HAP	9.9
Total HAPs	24.9

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. Applicable Emissions Limitations and/or Control Requirements

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

Operations, Property, and/or Equipment - (P103) - Continuous Reactor System w/alcohol cook, weigh tanks and 2 pre-emulsion tanks vented to water-cooled condensers and 2 reactor pots vented to condensers

Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
OAC rule 3745-31-05(A)(3)	<p>Organic compound (OC) emissions shall not exceed 6.5 lbs/hr and 32.3 lbs/day.</p> <p>There shall be no visible emissions of fugitive dust from any building opening or outside vent associated with this emission unit, during the addition of solids to the pre-emulsion tank.</p> <p>See sections A.2.a, B.1, B.2 and B.3 below.</p> <p>The requirements of this rule also include compliance with the requirements of OAC rule 3745-31-05(C).</p>
OAC rule 3745-21-07(G)(2)	The emission limitation specified by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).
OAC rule 3745-17-08(B)	<p>The emission limitation specified by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).</p> <p>See sections A.2.b and A.2.c below.</p>
OAC rule 3745-17-07(B)	The emission limitations specified by this rule is equivalent to or less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).
OAC rule 3745-35-07(B) (synthetic minor to avoid Title V and MACT requirements)	<p>Organic compound (OC) emissions from this emissions unit shall not exceed 6.0 tons per rolling, 12-month period.</p> <p>See sections A.2.d and B.5 below.</p>

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Franklin International Inc

PTI Application: 01-12038

Modification Issued: 6/19/2007

Facility ID: 012504007

Emissions Unit ID: P103

2. Additional Terms and Conditions

- 2.a** The condensers on the pre-emulsion tank and reactor for this emissions unit shall be operated and maintained as required by this permit.
- 2.b** The permittee shall employ best available control measures to eliminate visible emissions of fugitive dust while handling or charging dry raw materials into the pre-emulsion tanks and by immediately closing the lid after batch material addition.
- 2.c** For purposes of verifying compliance with the visible emission limitation for fugitive dust, the visible emissions shall be observed at the closest egress points to the pre-emulsion tank(s), from the building housing this emissions unit; and records shall be maintained as specified in Section C.6. These egress points shall include, but not be limited to: reactor room exhaust vents, doorways, and windows.
- 2.d** The permittee shall maintain the chilled water and/or refrigerated condensers on the pre-emulsion tanks for emissions unit in accordance with federally enforceable restrictions in this permit.

Facility-wide emissions shall not exceed 99.9 tons of OC, 9.9 tons of individual hazardous air pollutant (IHAP) emissions and 24.9 tons of total combined hazardous air pollutant (TCHAP) emissions per rolling, 12-month period.

Facility-wide emissions shall include the following emission units: P002, P003, P004, P005, P006, P007, P020, P021, P022, P023, P024, P026, P027, P028, P029, P030, P031, P039, P040, P041, P103, P106, P107, P113, P114, P115, P116, P124, P125, P127 and all emissions units that are exempt or permit by rule (OAC rule 3745-31-03), and de minimis (OAC rule 3745-15-05).

Therefore, the provisions for Title V permitting and the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Miscellaneous Organic Chemical Manufacturing in 40 CFR Part 63 Subpart FFFF and for the Miscellaneous Coating Manufacturing in 40 CFR Part 63 Subpart HHHHH will not be applicable.

¹A listing of the HAPs can be found in Section 112(b) of the Clean Air Act or can be obtained by contacting your Ohio EPA field office or local air agency contact.

B. Operational Restrictions

- 1.** The maximum temperature of the exhaust gases from the reactor's condenser shall not exceed 42 degrees Celsius during any hour in which the average temperature is 35

degrees Celsius or above, if the condenser is used to demonstrate compliance with allowable OC emission limitations. If these conditions are exceeded, the control efficiency shall be calculated for the batch and the record of representative emissions maintained for the product batch shall not be used.

2. The maximum temperature of the chilled water and or refrigerant entering the condenser serving the pre-emulsion tank(s) shall not exceed 17 degrees Celsius at any time, or that temperature established during the most recent emissions test that demonstrated that the condenser achieved a 75% reduction of OC emissions vented to it, if a pre-emulsion tank's condenser is used to demonstrate compliance with allowable OC limitations. This temperature shall be monitored at the point the chilled water enters the building containing the reactor. If this temperature is exceeded, the control efficiency shall be calculated for the batch and the record of representative emissions maintained for the product batch shall not be used.
3. The pressure setting of the conservation vent, if used on the pre-emulsion tank vent, shall be set by the manufacturer at a minimum of 2 inches of water, and the permittee shall perform annual inspections to ensure that the vents are clean and unobstructed.
4. The permittee shall maintain an emergency containment system capable of preventing the release of any liquid or solid materials from this emissions unit.
5. The operational restriction on the facility-wide potential to emit for IHAP, TCHAP and OC that establish federally enforceable limitations for emission units P103, P106, P107, P113, P114, P115, P116, P124, P125, and P127 are as follows:
 - a. the permittee shall equip each pre-emulsion tank with a hatch cover that must be closed at all times when the unit is in operation, except for solids addition and/or material sampling. The captured OC emissions shall be vented to a refrigerated condenser to achieve a minimum 75% reduction of OC emissions; and
 - b. the permittee shall equip each reactor with a tightly fitting cover that must be closed at all times when the unit is in operation except for non-solvent material addition and/or material sampling. The captured OC emissions shall be vented to a reflux condenser that achieves a minimum 90% reduction of OC emissions.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following information for each day for each batch of product processed in this emissions unit:
 - a. the company name, code, and/or identification number for each batch of product processed; the date of production; and the number of batches of each product processed;

- b. the amount, in pounds, of each organic material added to pre-emulsion tank(s) and the reactor(this may be maintained on the batch sheet);
- c. the highest operating temperature reached during the batch run;
- d. the start and stop time for each batch run, recorded on each batch sheet, from which the duration of each batch run (hrs/batch) and the total hours of operation for this emissions unit (hrs/day) can be determined;
- e. if emissions from any product batch are calculated using conservatively estimated and/or worst-case variables* for an individual product, product type, or product group**, the following information may be maintained on file in the facility records to document such product batch's emissions, in lieu of maintaining daily emission calculations for each individual batch:
 - i. the company name, code, and/or identification number for each individual product and each product group (if used), for which conservatively estimated and/or worst-case emission calculations shall be documented; and to be used to identify the products and product groups maintained in these records;
 - ii. a record of the mole fraction of each organic chemical contained in each product processed and in each representative batch product group, if used (which shall demonstrate that each organic chemical contained in a product batch is less than or equal to the mole fraction of the same organic chemical in the representative product group);
 - iii. records to document the value of each conservatively estimated and/or worst-case variable for each product or product group;
 - iv. the uncontrolled and controlled (if applicable) emission calculations for each product and product group (if used), in which the conservatively estimated and/or worst-case variables (as documented in Section C.1.e.iii) are applied and calculated as required in Sections E.1 and E.2 (if controlled) for each organic chemical component at each method of loss (pounds of each organic chemical component/batch);
 - v. the product batch's and product batch group's (if used) total uncontrolled and controlled (if applicable) OC emissions, which shall equal the sum of all of the organic chemical components' emissions calculated in Section C.1.e.iv, for this emissions unit or an emissions unit with a greater volume; and

- vi. a record of the maximum number of batches of each product or product group that could be processed in any day without exceeding the limitations contained in this permit;

(These records of conservatively estimated and/or worst-case variables and emissions may be updated by the permittee as new products are formulated or may be developed to include existing products and/or new product groups.)

- f. the actual number of batches of each product processed each day;
- g. if not documented as required in Section C.1.e for any product, the calculated mole fraction of each organic chemical component in each product batch;
- h. if the condenser was operating properly throughout the batch run and if emissions are not documented for the product or product group, per Section C.1.e, a record of the conservative average operating temperature of each such product batch made in the reactor, to be used as the vapor inlet temperature; and a record of the conservative average temperature of the exhaust gases from the condenser serving the reactor, to be used as the vapor outlet temperature in the control efficiency calculation (Section E.2);
- i. the highest temperature of the refrigerated coolant entering the condenser serving the pre-emulsion tank(s), as documented by the continuous temperature monitor; this temperature is monitored at the point the chilled water enters the building containing the reactor;
- j. if the temperature of the chilled water and or refrigerant entering the pre-emulsion tank's condenser does not exceeds 5 degrees Celsius, a batch emission rate (see table below) in lbs of vinyl acetate from the pre-emulsion tank condenser (from emission test data) may be applied in the calculation of emissions contributed to the reactor system by the pre-emulsion tank. This calculation and record may also be maintained in the facility records, as required in Section C.4.e, and may be adjusted upward depending in the recorded highest temperature of the refrigerated coolant temperature entering the condenser serving the reactor pre-emulsion tank;

Average Condenser Temperature (C)	Emission (vinyl acetate lbs/batch)
-2.5	0.759
-1	1.09
0	1.31
1	1.53
2	1.8
3	2.02
4	2.24

- k. in the event the reactor contents are heated up to and/or above a component chemical's boiling point, a record of these emissions (lbs/batch), calculated as required in Section E.1.vi, which may also be documented for each product that is normally made at these higher temperatures, as required in Section C.1.e;
- l. the total controlled (if condensers fully operational) and uncontrolled OC emissions (lbs/batch), and the emission calculations for each organic chemical component in each batch (other than the emissions calculated and recorded in (k) above) that was not processed under normal operating parameters (of temperature, pressure, or mole fraction of a component) due to mistakes made in the batch recipe formulation, operation of the unit, malfunction of the condenser(s), or other changes made to the normal operating parameters that would affect the emission rate for a specific product batch; and
- m. the total actual or conservatively estimated/worst-case OC emissions (lbs/batch) and the emission calculations for each organic chemical component in each batch processed in this emissions unit, for which a record of the calculations documenting the conservatively estimated and/or worst-case emissions of the product batch or product batch group, representing the product, are not maintained as in Section C.1.e.

* Conservatively estimated and/or worst case variable conditions (of temperatures, pressures, and volume of vapor space) and equivalent or worst-case concentrations, applied in Section E.1, which result in conservative/worst-case emissions for the batch, may be maintained in a single record (rather than maintained daily) for each product or product group to which they could be applied (see Section C.2).

** Products may be grouped by similar product types (same chemical components and having similar concentrations) for hourly and daily emission estimates, if the variables of temperature, pressure, volume of vapor head space, and concentration (mole fraction), applied in the equations found in Sections E.1 and E.2 calculated at each method of loss, are conservative and/or worst-case for each variable. If the reactor condenser is used to demonstrate compliance, the control efficiency shall be calculated as required in Section E.2, and shall be dependent on the conservative average vapor inlet and outlet temperatures of the condenser. Products may also be grouped by the seasons of the year, in order to segregate and lessen the effects of average temperatures. The highest concentrations of the organic chemical components, represented in the product group, shall be used in the calculations of daily emissions, unless products are calculated individually.

- 2. At the end of each calendar month the permittee shall calculate and record the following information for each day of the preceding month:

- a. the total number of batches of each individual adhesive polymer, or other product (identified as required in Section C.1.a) processed in this emissions unit during the calendar quarter, for each day of operation;
- b. an identification of how the emissions were calculated for each day, showing each batch or all batches calculated using one of the following methods:
 - i. product batches are representative of normal operations and the estimated emissions are calculated by using existing documented, conservative and/or worst-case variables for each product batch or product batch group, and records maintained per Section C.1.e;
 - ii. product batch(s) is/are individually calculated because an existing record, maintained as required in Section C.1.e, does not exist;
 - iii. product batch(s) deviate(s) from normal operating parameters and is/are individually calculated, including adjustments to the efficiency due to condenser temperature deviations; and/or
 - iv. product batch(s) is/are made without the condenser control or during a malfunction of the condenser and the control efficiency is not applied (and/or as in "i", these uncontrolled emissions are maintained as per Section C.1.e);
- c. the total actual (controlled* and/or uncontrolled) OC and HAP emissions for each day of operation (lbs/day), from all product batches produced each day, calculated as specified in Section E.1 for uncontrolled emissions and as specified in Section E.2 for the control efficiency, and calculated using one of the following methods:
 - i. the sum of the actual OC and HAP emissions calculated from all batches run for each day of operation; or
 - ii. the sum of the actual OC and HAP emissions from all batches run each day, calculated by multiplying the conservatively calculated or worst-case emissions for one batch of each product or product group times the number of batches of each product run, and adding the resultant OC and HAP emissions for all products made in this emissions unit each day, including those calculated individually for abnormal operations (Sections C.1.k and C.1.l) or for new products; and
- d. the average hourly OC emissions from this emissions unit for each day of operation during the calendar quarter, calculated by dividing the emissions recorded in Section C.2.c, by the total hours of operation for each day (calculated from Section C.1.d).

* The controlled emissions from each batch produced under normal operating conditions shall be calculated by multiplying the uncontrolled emissions for each organic chemical component of the product batch or product batch group, calculated per Section E.1, times the percent control efficiency calculated per Section E.2, and subtracting the result (representing the condensed volatile component) from the total uncontrolled emissions of each organic chemical component. The calculated controlled emissions of each organic chemical component shall be added to get the total OC/batch. The controlled and uncontrolled emissions, in pounds/batch, maintained as per Section C.1.e for each product or product batch group, may be added for each day to satisfy this requirement.

3. If the reactor's condenser is used to demonstrate compliance, the permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the temperature of the exhaust gases from the condenser serving the reactor, when the emissions unit is in operation. Units shall be in degrees Celsius. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within + or - 1 percent of the temperature being measured or + or - 2.8 degrees Celsius, whichever is greater. The temperature monitor and recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals.

The permittee shall collect and maintain the following information each day for each batch:

- a. the computer record of the continuous temperature monitor, which shall document the average temperature of the exhaust gases from the condenser serving the reactor, during each one-hour period of operation when the maximum temperature exceeded 42 degrees Celsius;
 - b. a record (continuous temperature monitoring graph or equivalent) of the operating time for the reactor and its associated condenser, temperature control device, and monitoring equipment for each product batch; and
 - c. for any batch in which the peak temperature of the exhaust gases from the condenser serving the reactor exceeded 42 degrees Celsius in any hour in which the average temperature was 35 degrees Celsius or above, a record of the adjusted control efficiency calculated as required in Section E.2.
4. If the pre-emulsion tanks' condenser are used to demonstrate compliance, the permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the temperature of the chilled water entering the condenser serving the pre-emulsion tank(s) when the emissions unit is in operation. Units shall be in degrees Celsius. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within + or - 1 percent of the temperature being measured or + or - 2.8 degrees Celsius, whichever is greater. The

temperature monitor and recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals, and may be monitored at the point the chilled water enters the building containing the reactor.

The permittee shall collect and maintain the following information each day for each batch:

- a. the computer record of the continuous temperature monitor which shall document the peak temperature of the chilled water entering the condenser serving the pre-emulsion tank(s);
- b. a record (continuous temperature monitoring graph or equivalent) of the operating time for the pre-emulsion tank(s) and its/their associated condenser, temperature control device, and monitoring equipment for each product batch*; and
- c. for any batch in which the peak temperature of the chilled-water entering the condenser serving the pre-emulsion tank(s) exceeded 17 degrees Celsius at any time or that temperature established during the most recent emissions test that demonstrated that the condenser effectively limited OC emissions, a record of the adjusted control efficiency calculated as required in Section E.2.

* If the pre-emulsion tank(s) has/have operated in association with the reactor in the production of any batch, and during the same period of time, the log for the reactor may so indicate this, to alleviate the second record for the pre-emulsion tank(s).

5. The permittee shall maintain the following monthly records on-site to document compliance with the OC emission limitation for this emissions unit and the restrictions of OC, IHAP, and TCHAP for emission units P002, P003, P004, P005, P006, P007, P020, P021, P022, P023, P024, P026, P027, P028, P029, P030, P031, P039, P040, P041, P103, P106, P107, P113, P114, P115, P116, P124, P125 and P127 any permit exempt and de minimis emissions units:
 - a. the calculated OC emissions for the current month, in pounds or tons, for each the above emissions units;
 - b. the rolling, 12-month summation of OC emissions (i.e., the OC emissions from the current month added to the summation of the OC emissions from the previous 11 months) for all the above emissions units;
 - c. the calculated IHAP emissions for the current month, in pounds or tons, for each the above emissions units;

- d. the calculated TCHAP emissions for the current month, in pounds or tons, for each the above emissions units;
 - e. the rolling 12-month summation of IHAP emissions (i.e., the IHAP emissions from the current month added to the summation of the IHAP emissions from the previous 11 months) for all the above emissions units; and
 - f. the rolling 12-month summation of TCHAP emissions (i.e., the TCHAP emissions from the current month added to the summation of the TCHAP emissions from the previous 11 months) for all the above emissions units.
6. The permittee shall perform weekly checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions of fugitive dust from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:
- a. the location and color of the emissions;
 - b. whether the emissions are representative of normal operations;
 - c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
 - d. the total duration of any visible emission incident; and
 - e. any corrective actions taken to eliminate the visible emissions.

One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that include the following information:
 - a. an identification of each day during which the average hourly organic compound emissions exceeded 6.5 pounds per hour and the actual hourly organic compound emissions for each such day; and
 - b. an identification of each day during which the organic compound emissions exceeded 32.3 pounds per day and the actual organic compound emissions for each such day.
2. For any batch in which the reactor's condenser is used to demonstrate compliance, the permittee shall submit quarterly temperature deviation (excursion) reports that identify any time during which the maximum temperature of the exhaust gases from the condenser serving the reactor exceeded 42 degrees Celsius during any hour in which the average temperature was 35 degrees Celsius or above, and for which the control

efficiency and estimated emissions were not adjusted for the temperature deviation from normal conditions.

3. For any batch in which the pre-emulsion tank's(s') condenser(s) is/are used to demonstrate compliance, the permittee shall submit quarterly temperature deviation (excursion) reports that identify all periods of time during which the maximum temperature of the chilled water entering the condenser serving the pre-emulsion tank(s) (or chilled water entering the building containing the reactor) exceeded 17 degrees Celsius, and for which the control efficiency and estimated emissions were not adjusted for the temperature deviation from normal conditions.
4. The permittee shall submit quarterly deviation (excursion) reports for deviations (excursions) associated with exceedances of the facility-wide operational restrictions and emission limitations:
 - a. as determined by recordkeeping in section C.5, above, for the rolling 12-month summation of IHAP, TCHAP and OC emissions; and
 - b. as determined by recordkeeping in section C.4, above, for the operational restriction on the pre-emulsion tank chilled water or refrigerated condenser.

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

5. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions of fugitive dust were observed from the egress points (i.e., building windows, doors, roof monitors, reactor room exhaust vents, etc.) serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Director (the Ohio EPA Central District Office) by January 31 and July 31 of each year and shall cover the previous 6-month period.

E. Testing Requirements

1. Compliance with the emission limitations in Section A.1 of the terms and conditions of this permit shall be determined in accordance with the following methods:
 - a. Emission Limitation:
OC emissions from this emissions unit shall not exceed 6.5 lbs/hr and/or 32.3 lbs/day.

Applicable Compliance Method:

Compliance with the hourly emission limitation was demonstrated during emission testing in November 2004 and 2005 for vinyl acetate production. If required, the permittee shall demonstrate compliance with this emission

limitation through emission tests performed in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 4 and 18. Compliance with the daily OC emission limitations shall be demonstrated based on the record keeping requirements in sections C.1 and C.2.

Emissions from each batch shall be calculated as follows:

If the reactor contents are heated up to and/or above the boiling point of the chemical with the lowest boiling point in the batch, the ideal gas law no longer applies. In this case, emissions shall be calculated using an emission factor of 1.27 pounds of OC per hour, derived from the stack test conducted on 5/12/94, for Reactor 9 (P107), in which the batch exceeded this temperature. This emission factor shall be multiplied by the time (hours) the chemical was above its boiling point to calculate the pounds of the lower boiling point chemical emitted during this time period. To calculate emissions for chemicals with higher boiling points than the batch temperature during this period of time, the emissions calculated using the emission factor above (lbs) shall be multiplied by the ratio of the weight (lbs) of each higher boiling point chemical, to the weight of the lower boiling point chemical in the batch. Each fraction of the higher boiling point chemicals' emissions, calculated in this way, shall be added to the emissions calculated for the chemical that's boiling point was exceeded, to document a conservative estimate of OC emissions for the time period operating under these conditions.

The total uncontrolled OC emission rate from each method of loss for each batch shall be calculated as: $(A.V.1.b.iii + A.V.1.b.iv + A.V.1.b.v + A.V.1.b.vi)$ summed for all volatile components) = total pounds OC emitted per batch

Alternative methods to the emission calculations above may be used with prior approval from the Ohio EPA, Central District Office.

For the purpose of calculating annual emissions, the control efficiency for each product or product type made during the year may be calculated by using the average temperatures from the four calendar quarters or the average of all batches made during the year of record; or may be calculated using the average temperatures by season, if batch records are so segregated; or may be calculated by using worst-case temperatures, causing the highest emissions. The average temperatures shall be derived from the records of each product batch (to derive the inlet vapor temperature), and from the continuous temperature monitor installed after the reactor, prior to the chiller (to derive the outlet vapor temperature), and the efficiency calculated as per the method above.

b. Emission Limitations

The facility-wide individual and combined HAP emissions shall not exceed 9.9 tons and 24.9 tons per rolling, 12-month period, respectively.

Applicable Compliance Method:
Compliance with the facility-wide HAP emission limitations shall be demonstrated by the record keeping requirements specified in section C.5 above.

- c. Emission Limitation:
The facility-wide OC emissions shall not exceed 99.9 tons per rolling, 12-month period.

Applicable Compliance Method:
Compliance with the facility-wide OC emission limitation shall be demonstrated by the record keeping requirements specified in section C.5 above.

- d. Emission Limitation:
OC emissions from this emissions unit shall not exceed 6.0 tons per rolling, 12-month period

Applicable Compliance Method:
Compliance with the annual OC emission limitation for this emissions unit shall be demonstrated based on the record keeping requirements in section C.5.

- e. Emission Limitation:
There shall be no visible emissions of fugitive dust from any building opening or outside vent associated with this emission unit, during the addition of solids to the pre-emulsion tank.

Applicable Compliance Method:
If required, compliance shall be determined through visible emission observations performed in accordance with 40 CFR Part 60, Appendix A, Method 22 and the procedures specified in OAC rule 3745-17-03(B)(4).

F. Miscellaneous Requirements

1. The terms and conditions of this PTI A.1 through E.1 are federally enforceable.

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. Applicable Emissions Limitations and/or Control Requirements

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

Operations, Property, and/or Equipment - (P113) - Reactor 4 System w/pre-emulsion tank venting to a water-cooled condenser and w/reactor venting to reflux condenser

Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
OAC rule 3745-31-05(A)(3)	<p>Organic compound (OC) emissions shall not exceed 6.5 lbs/hr and 32.3 lbs/day.</p> <p>There shall be no visible emissions of fugitive dust from any building opening or outside vent associated with this emission unit, during the addition of solids to the pre-emulsion tank.</p> <p>See sections A.2.a, B.1, B.2 and B.3 below.</p> <p>The requirements of this rule also include compliance with the requirements of OAC rules 3745-21-07(G)(2), OAC rule 3745-17-08(B) and 3745-35-07(B).</p>
OAC rule 3745-21-07(G)(2)	The emission limitation specified by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).
OAC rule 3745-17-08(B)	<p>The emission limitation specified by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).</p> <p>See sections A.2.b and A.2.c below.</p>
OAC rule 3745-17-07(B)	The emission limitations specified by this rule is equivalent to or less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).
OAC rule 3745-35-07(B) (synthetic minor to avoid Title V and MACT requirements)	<p>Organic compound (OC) emissions from this emissions unit shall not exceed 6.0 tons per rolling, 12-month period.</p> <p>See sections A.2.d and B.5 below.</p>

2. Additional Terms and Conditions

- 2.a** The condensers on the pre-emulsion tank and reactor for this emissions unit shall be operated and maintained as required by this permit.
- 2.b** The permittee shall employ best available control measures to eliminate visible emissions of fugitive dust while handling or charging dry raw materials into the pre-emulsion tanks and by immediately closing the lid after batch material addition.
- 2.c** For purposes of verifying compliance with the visible emission limitation for fugitive dust, the visible emissions shall be observed at the closest egress points to the pre-emulsion tank(s), from the building housing this emissions unit; and records shall be maintained as specified in Section C.6. These egress points shall include, but not be limited to: reactor room exhaust vents, doorways, and windows.
- 2.d** The permittee shall maintain the chilled water and/or refrigerated condensers on the pre-emulsion tanks for emissions unit in accordance with federally enforceable restrictions in this permit.

Facility-wide emissions shall not exceed 99.9 tons of OC, 9.9 tons of individual hazardous air pollutant (IHAP) emissions and 24.9 tons of total combined hazardous air pollutant (TCHAP) emissions per rolling, 12-month period.

Facility-wide emissions shall include the following emission units: P002, P003, P004, P005, P006, P007, P020, P021, P022, P023, P024, P026, P027, P028, P029, P030, P031, P039, P040, P041, P103, P106, P107, P113, P114, P115, P116, P124, P125, P127 and all emissions units that are exempt or permit by rule (OAC rule 3745-31-03), and de minimis (OAC rule 3745-15-05).

Therefore, the provisions for Title V permitting and the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Miscellaneous Organic Chemical Manufacturing in 40 CFR Part 63 Subpart FFFF and for the Miscellaneous Coating Manufacturing in 40 CFR Part 63 Subpart HHHHH will not be applicable.

¹A listing of the HAPs can be found in Section 112(b) of the Clean Air Act or can be obtained by contacting your Ohio EPA field office or local air agency contact.

B. Operational Restrictions

- 1.** The maximum temperature of the exhaust gases from the reactor's condenser shall not exceed 42 degrees Celsius during any hour in which the average temperature is 35

degrees Celsius or above, if the condenser is used to demonstrate compliance with allowable OC emission limitations. If these conditions are exceeded, the control efficiency shall be calculated for the batch and the record of representative emissions maintained for the product batch shall not be used.

2. The maximum temperature of the chilled water and or refrigerant entering the condenser serving the pre-emulsion tank(s) shall not exceed 17 degrees Celsius at any time, or that temperature established during the most recent emissions test that demonstrated that the condenser achieved a 75% reduction of OC emissions vented to it, if a pre-emulsion tank's condenser is used to demonstrate compliance with allowable OC limitations. This temperature shall be monitored at the point the chilled water enters the building containing the reactor. If this temperature is exceeded, the control efficiency shall be calculated for the batch and the record of representative emissions maintained for the product batch shall not be used.
3. The pressure setting of the conservation vent, if used on the pre-emulsion tank vent, shall be set by the manufacturer at a minimum of 2 inches of water, and the permittee shall perform annual inspections to ensure that the vents are clean and unobstructed.
4. The permittee shall maintain an emergency containment system capable of preventing the release of any liquid or solid materials from this emissions unit.
5. The operational restriction on the facility-wide potential to emit for IHAP, TCHAP and OC that establish federally enforceable limitations for emission units P103, P106, P107, P113, P114, P115, P116, P124, P125, and P127 are as follows:
 - a. the permittee shall equip each pre-emulsion tank with a hatch cover that must be closed at all times when the unit is in operation, except for solids addition and/or material sampling. The captured OC emissions shall be vented to a refrigerated condenser to achieve a minimum 75% reduction of OC emissions; and
 - b. the permittee shall equip each reactor with a tightly fitting cover that must be closed at all times when the unit is in operation except for non-solvent material addition and/or material sampling. The captured OC emissions shall be vented to a reflux condenser that achieves a minimum 90% reduction of OC emissions.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following information for each day for each batch of product processed in this emissions unit:
 - a. the company name, code, and/or identification number for each batch of product processed; the date of production; and the number of batches of each product processed;

- b. the amount, in pounds, of each organic material added to pre-emulsion tank(s) and the reactor(this may be maintained on the batch sheet);
- c. the highest operating temperature reached during the batch run;
- d. the start and stop time for each batch run, recorded on each batch sheet, from which the duration of each batch run (hrs/batch) and the total hours of operation for this emissions unit (hrs/day) can be determined;
- e. if emissions from any product batch are calculated using conservatively estimated and/or worst-case variables* for an individual product, product type, or product group**, the following information may be maintained on file in the facility records to document such product batch's emissions, in lieu of maintaining daily emission calculations for each individual batch:
 - i. the company name, code, and/or identification number for each individual product and each product group (if used), for which conservatively estimated and/or worst-case emission calculations shall be documented; and to be used to identify the products and product groups maintained in these records;
 - ii. a record of the mole fraction of each organic chemical contained in each product processed and in each representative batch product group, if used (which shall demonstrate that each organic chemical contained in a product batch is less than or equal to the mole fraction of the same organic chemical in the representative product group);
 - iii. records to document the value of each conservatively estimated and/or worst-case variable for each product or product group;
 - iv. the uncontrolled and controlled (if applicable) emission calculations for each product and product group (if used), in which the conservatively estimated and/or worst-case variables (as documented in Section C.1.e.iii) are applied and calculated as required in Sections E.1 and E.2 (if controlled) for each organic chemical component at each method of loss (pounds of each organic chemical component/batch);
 - v. the product batch's and product batch group's (if used) total uncontrolled and controlled (if applicable) OC emissions, which shall equal the sum of all of the organic chemical components' emissions calculated in Section C.1.e.iv, for this emissions unit or an emissions unit with a greater volume; and

- vi. a record of the maximum number of batches of each product or product group that could be processed in any day without exceeding the limitations contained in this permit;

(These records of conservatively estimated and/or worst-case variables and emissions may be updated by the permittee as new products are formulated or may be developed to include existing products and/or new product groups.)

- f. the actual number of batches of each product processed each day;
- g. if not documented as required in Section C.1.e for any product, the calculated mole fraction of each organic chemical component in each product batch;
- h. if the condenser was operating properly throughout the batch run and if emissions are not documented for the product or product group, per Section C.1.e, a record of the conservative average operating temperature of each such product batch made in the reactor, to be used as the vapor inlet temperature; and a record of the conservative average temperature of the exhaust gases from the condenser serving the reactor, to be used as the vapor outlet temperature in the control efficiency calculation (Section E.2);
- i. the highest temperature of the refrigerated coolant entering the condenser serving the pre-emulsion tank(s), as documented by the continuous temperature monitor; this temperature is monitored at the point the chilled water enters the building containing the reactor;
- j. if the temperature of the chilled water and or refrigerant entering the pre-emulsion tank's condenser does not exceeds 5 degrees Celsius, a batch emission rate (see table below) in lbs of vinyl acetate from the pre-emulsion tank condenser (from emission test data) may be applied in the calculation of emissions contributed to the reactor system by the pre-emulsion tank. This calculation and record may also be maintained in the facility records, as required in Section C.4.e, and may be adjusted upward depending in the recorded highest temperature of the refrigerated coolant temperature entering the condenser serving the reactor pre-emulsion tank;

Average Condenser Temperature (C)	Emission (vinyl acetate lbs/batch)
-2.5	0.759
-1	1.09
0	1.31
1	1.53
2	1.8
3	2.02
4	2.24

5

2.52

- K. in the event the reactor contents are heated up to and/or above a component chemical's boiling point, a record of these emissions (lbs/batch), calculated as required in Section E.1.vi, which may also be documented for each product that is normally made at these higher temperatures, as required in Section C.1.e;
- l. the total controlled (if condensers fully operational) and uncontrolled OC emissions (lbs/batch), and the emission calculations for each organic chemical component in each batch (other than the emissions calculated and recorded in (k) above) that was not processed under normal operating parameters (of temperature, pressure, or mole fraction of a component) due to mistakes made in the batch recipe formulation, operation of the unit, malfunction of the condenser(s), or other changes made to the normal operating parameters that would affect the emission rate for a specific product batch; and
- m. the total actual or conservatively estimated/worst-case OC emissions (lbs/batch) and the emission calculations for each organic chemical component in each batch processed in this emissions unit, for which a record of the calculations documenting the conservatively estimated and/or worst-case emissions of the product batch or product batch group, representing the product, are not maintained as in Section C.1.e.

* Conservatively estimated and/or worst case variable conditions (of temperatures, pressures, and volume of vapor space) and equivalent or worst-case concentrations, applied in Section E.1, which result in conservative/worst-case emissions for the batch, may be maintained in a single record (rather than maintained daily) for each product or product group to which they could be applied (see Section C.2).

** Products may be grouped by similar product types (same chemical components and having similar concentrations) for hourly and daily emission estimates, if the variables of temperature, pressure, volume of vapor head space, and concentration (mole fraction), applied in the equations found in Sections E.1 and E.2 calculated at each method of loss, are conservative and/or worst-case for each variable. If the reactor condenser is used to demonstrate compliance, the control efficiency shall be calculated as required in Section E.2, and shall be dependent on the conservative average vapor inlet and outlet temperatures of the condenser. Products may also be grouped by the seasons of the year, in order to segregate and lessen the effects of average temperatures. The highest concentrations of the organic chemical components, represented in the product group, shall be used in the calculations of daily emissions, unless products are calculated individually.

2. At the end of each calendar month the permittee shall calculate and record the following information for each day of the preceding month:

- a. the total number of batches of each individual adhesive polymer, or other product (identified as required in Section C.1.a) processed in this emissions unit during the calendar quarter, for each day of operation;
- b. an identification of how the emissions were calculated for each day, showing each batch or all batches calculated using one of the following methods:
 - i. product batches are representative of normal operations and the estimated emissions are calculated by using existing documented, conservative and/or worst-case variables for each product batch or product batch group, and records maintained per Section C.1.e;
 - ii. product batch(s) is/are individually calculated because an existing record, maintained as required in Section C.1.e, does not exist;
 - iii. product batch(s) deviate(s) from normal operating parameters and is/are individually calculated, including adjustments to the efficiency due to condenser temperature deviations; and/or
 - iv. product batch(s) is/are made without the condenser control or during a malfunction of the condenser and the control efficiency is not applied (and/or as in "i", these uncontrolled emissions are maintained as per Section C.1.e);
- c. the total actual (controlled* and/or uncontrolled) OC and HAP emissions for each day of operation (lbs/day), from all product batches produced each day, calculated as specified in Section E.1 for uncontrolled emissions and as specified in Section E.2 for the control efficiency, and calculated using one of the following methods:
 - i. the sum of the actual OC and HAP emissions calculated from all batches run for each day of operation; or
 - ii. the sum of the actual OC and HAP emissions from all batches run each day, calculated by multiplying the conservatively calculated or worst-case emissions for one batch of each product or product group times the number of batches of each product run, and adding the resultant OC and HAP emissions for all products made in this emissions unit each day, including those calculated individually for abnormal operations (Sections C.1.k and C.1.l) or for new products; and
- d. the average hourly OC emissions from this emissions unit for each day of operation during the calendar quarter, calculated by dividing the emissions recorded in Section C.2.c, by the total hours of operation for each day (calculated from Section C.1.d).

* The controlled emissions from each batch produced under normal operating conditions shall be calculated by multiplying the uncontrolled emissions for each organic chemical component of the product batch or product batch group, calculated per Section E.1, times the percent control efficiency calculated per Section E.2, and subtracting the result (representing the condensed volatile component) from the total uncontrolled emissions of each organic chemical component. The calculated controlled emissions of each organic chemical component shall be added to get the total OC/batch. The controlled and uncontrolled emissions, in pounds/batch, maintained as per Section C.1.e for each product or product batch group, may be added for each day to satisfy this requirement.

3. If the reactor's condenser is used to demonstrate compliance, the permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the temperature of the exhaust gases from the condenser serving the reactor, when the emissions unit is in operation. Units shall be in degrees Celsius. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within + or - 1 percent of the temperature being measured or + or - 2.8 degrees Celsius, whichever is greater. The temperature monitor and recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals.

The permittee shall collect and maintain the following information each day for each batch:

- a. the computer record of the continuous temperature monitor, which shall document the average temperature of the exhaust gases from the condenser serving the reactor, during each one-hour period of operation when the maximum temperature exceeded 42 degrees Celsius;
 - b. a record (continuous temperature monitoring graph or equivalent) of the operating time for the reactor and its associated condenser, temperature control device, and monitoring equipment for each product batch; and
 - c. for any batch in which the peak temperature of the exhaust gases from the condenser serving the reactor exceeded 42 degrees Celsius in any hour in which the average temperature was 35 degrees Celsius or above, a record of the adjusted control efficiency calculated as required in Section E.2.
4. If the pre-emulsion tanks' condenser are used to demonstrate compliance, the permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the temperature of the chilled water entering the condenser serving the pre-emulsion tank(s) when the emissions unit is in operation. Units shall be in degrees Celsius. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within + or - 1 percent of the temperature being measured or + or - 2.8 degrees Celsius, whichever is greater. The

temperature monitor and recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals, and may be monitored at the point the chilled water enters the building containing the reactor.

The permittee shall collect and maintain the following information each day for each batch:

- a. the computer record of the continuous temperature monitor which shall document the peak temperature of the chilled water entering the condenser serving the pre-emulsion tank(s);
- b. a record (continuous temperature monitoring graph or equivalent) of the operating time for the pre-emulsion tank(s) and its/their associated condenser, temperature control device, and monitoring equipment for each product batch*; and
- c. for any batch in which the peak temperature of the chilled-water entering the condenser serving the pre-emulsion tank(s) exceeded 17 degrees Celsius at any time or that temperature established during the most recent emissions test that demonstrated that the condenser effectively limited OC emissions, a record of the adjusted control efficiency calculated as required in Section E.2.

* If the pre-emulsion tank(s) has/have operated in association with the reactor in the production of any batch, and during the same period of time, the log for the reactor may so indicate this, to alleviate the second record for the pre-emulsion tank(s).

5. The permittee shall maintain the following monthly records on-site to document compliance with the OC emission limitation for this emissions unit and the restrictions of OC, IHAP, and TCHAP for emission units P002, P003, P004, P005, P006, P007, P020, P021, P022, P023, P024, P026, P027, P028, P029, P030, P031, P039, P040, P041, P103, P106, P107, P113, P114, P115, P116, P124, P125 and P127 any permit exempt and de minimis emissions units:
 - a. the calculated OC emissions for the current month, in pounds or tons, for each the above emissions units;
 - b. the rolling, 12-month summation of OC emissions (i.e., the OC emissions from the current month added to the summation of the OC emissions from the previous 11 months) for all the above emissions units;
 - c. the calculated IHAP emissions for the current month, in pounds or tons, for each the above emissions units;

- d. the calculated TCHAP emissions for the current month, in pounds or tons, for each the above emissions units;
 - e. the rolling 12-month summation of IHAP emissions (i.e., the IHAP emissions from the current month added to the summation of the IHAP emissions from the previous 11 months) for all the above emissions units; and
 - f. the rolling 12-month summation of TCHAP emissions (i.e., the TCHAP emissions from the current month added to the summation of the TCHAP emissions from the previous 11 months) for all the above emissions units.
6. The permittee shall perform weekly checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions of fugitive dust from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:
- a. the location and color of the emissions;
 - b. whether the emissions are representative of normal operations;
 - c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
 - d. the total duration of any visible emission incident; and
 - e. any corrective actions taken to eliminate the visible emissions.

One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

D. Reporting Requirements

- 1. The permittee shall submit quarterly deviation (excursion) reports that include the following information:
 - a. an identification of each day during which the average hourly organic compound emissions exceeded 6.5 pounds per hour and the actual hourly organic compound emissions for each such day; and
 - b. an identification of each day during which the organic compound emissions exceeded 32.3 pounds per day and the actual organic compound emissions for each such day.
- 2. For any batch in which the reactor's condenser is used to demonstrate compliance, the permittee shall submit quarterly temperature deviation (excursion) reports that identify any time during which the maximum temperature of the exhaust gases from the condenser serving the reactor exceeded 42 degrees Celsius during any hour in which the average temperature was 35 degrees Celsius or above, and for which the control

efficiency and estimated emissions were not adjusted for the temperature deviation from normal conditions.

3. For any batch in which the pre-emulsion tank's(s') condenser(s) is/are used to demonstrate compliance, the permittee shall submit quarterly temperature deviation (excursion) reports that identify all periods of time during which the maximum temperature of the chilled water entering the condenser serving the pre-emulsion tank(s) (or chilled water entering the building containing the reactor) exceeded 17 degrees Celsius, and for which the control efficiency and estimated emissions were not adjusted for the temperature deviation from normal conditions.
4. The permittee shall submit quarterly deviation (excursion) reports for deviations (excursions) associated with exceedances of the facility-wide operational restrictions and emission limitations:
 - a. as determined by recordkeeping in section C.5, above, for the rolling 12-month summation of IHAP, TCHAP and OC emissions; and
 - b. as determined by recordkeeping in section C.4, above, for the operational restriction on the pre-emulsion tank chilled water or refrigerated condenser.

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

5. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions of fugitive dust were observed from the egress points (i.e., building windows, doors, roof monitors, reactor room exhaust vents, etc.) serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Director (the Ohio EPA Central District Office) by January 31 and July 31 of each year and shall cover the previous 6-month period.

E. Testing Requirements

1. Compliance with the emission limitations in Section A.1 of the terms and conditions of this permit shall be determined in accordance with the following methods:
 - a. Emission Limitation:
OC emissions from this emissions unit shall not exceed 6.5 lbs/hr and/or 32.3 lbs/day.

Applicable Compliance Method:

Compliance with the hourly emission limitation was demonstrated during emission testing in November 2004 and 2005 for vinyl acetate production. If required, the permittee shall demonstrate compliance with this emission

limitation through emission tests performed in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 4 and 18. Compliance with the daily OC emission limitations shall be demonstrated based on the record keeping requirements in sections C.1 and C.2.

Emissions from each batch shall be calculated as follows:

If the reactor contents are heated up to and/or above the boiling point of the chemical with the lowest boiling point in the batch, the ideal gas law no longer applies. In this case, emissions shall be calculated using an emission factor of 1.27 pounds of OC per hour, derived from the stack test conducted on 5/12/94, for Reactor 9 (P107), in which the batch exceeded this temperature. This emission factor shall be multiplied by the time (hours) the chemical was above its boiling point to calculate the pounds of the lower boiling point chemical emitted during this time period. To calculate emissions for chemicals with higher boiling points than the batch temperature during this period of time, the emissions calculated using the emission factor above (lbs) shall be multiplied by the ratio of the weight (lbs) of each higher boiling point chemical, to the weight of the lower boiling point chemical in the batch. Each fraction of the higher boiling point chemicals' emissions, calculated in this way, shall be added to the emissions calculated for the chemical that's boiling point was exceeded, to document a conservative estimate of OC emissions for the time period operating under these conditions.

The total uncontrolled OC emission rate from each method of loss for each batch shall be calculated as: $(A.V.1.b.iii + A.V.1.b.iv + A.V.1.b.v + A.V.1.b.vi)$ summed for all volatile components) = total pounds OC emitted per batch

Alternative methods to the emission calculations above may be used with prior approval from the Ohio EPA, Central District Office.

For the purpose of calculating annual emissions, the control efficiency for each product or product type made during the year may be calculated by using the average temperatures from the four calendar quarters or the average of all batches made during the year of record; or may be calculated using the average temperatures by season, if batch records are so segregated; or may be calculated by using worst-case temperatures, causing the highest emissions. The average temperatures shall be derived from the records of each product batch (to derive the inlet vapor temperature), and from the continuous temperature monitor installed after the reactor, prior to the chiller (to derive the outlet vapor temperature), and the efficiency calculated as per the method above.

b. Emission Limitations

The facility-wide individual and combined HAP emissions shall not exceed 9.9 tons and 24.9 tons per rolling, 12-month period, respectively.

Applicable Compliance Method:
Compliance with the facility-wide HAP emission limitations shall be demonstrated by the record keeping requirements specified in section C.5 above.

- c. Emission Limitation:
The facility-wide OC emissions shall not exceed 99.9 tons per rolling, 12-month period.

Applicable Compliance Method:
Compliance with the facility-wide OC emission limitation shall be demonstrated by the record keeping requirements specified in section C.5 above.

- d. Emission Limitation:
OC emissions from this emissions unit shall not exceed 6.0 tons per rolling, 12-month period

Applicable Compliance Method:
Compliance with the annual OC emission limitation for this emissions unit shall be demonstrated based on the record keeping requirements in section C.5.

- e. Emission Limitation:
There shall be no visible emissions of fugitive dust from any building opening or outside vent associated with this emission unit, during the addition of solids to the pre-emulsion tank.

Applicable Compliance Method:
If required, compliance shall be determined through visible emission observations performed in accordance with 40 CFR Part 60, Appendix A, Method 22 and the procedures specified in OAC rule 3745-17-03(B)(4).

F. Miscellaneous Requirements

1. The terms and conditions of this PTI A.1 through E.1 are federally enforceable.

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)

A. Applicable Emissions Limitations and/or Control Requirements

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

Operations, Property, and/or Equipment - (P114) - Reactor 5 System w/pre-emulsion tank venting to condenser and conservation vent and w/reactor venting to reflux condenser

Applicable Rules/Requirements	Applicable Emissions Limitations/Control Measures
OAC rule 3745-31-05(A)(3)	<p>Organic compound (OC) emissions shall not exceed 6.5 lbs/hr and 32.3 lbs/day.</p> <p>There shall be no visible emissions of fugitive dust from any building opening or outside vent associated with this emission unit, during the addition of solids to the pre-emulsion tank.</p> <p>See sections A.2.a, B.1, B.2 and B.3 below.</p> <p>The requirements of this rule also include compliance with the requirements of OAC rule 3745-35-07(B).</p>
OAC rule 3745-21-07(G)(2)	The emission limitation specified by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).
OAC rule 3745-17-08(B)	<p>The emission limitation specified by this rule is less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).</p> <p>See sections A.2.b and A.2.c below.</p>
OAC rule 3745-17-07(B)	The emission limitations specified by this rule is equivalent to or less stringent than the emission limitation established pursuant to OAC rule 3745-31-05(A)(3).
OAC rule 3745-35-07(B) (synthetic minor to avoid Title V and MACT requirements)	<p>Organic compound (OC) emissions from this emissions unit shall not exceed 6.0 tons per rolling, 12-month period.</p> <p>See sections A.2.d and B.5 below.</p>

2. Additional Terms and Conditions

- 2.a** The condensers on the pre-emulsion tank and reactor for this emissions unit shall be operated and maintained as required by this permit.
- 2.b** The permittee shall employ best available control measures to eliminate visible emissions of fugitive dust while handling or charging dry raw materials into the pre-emulsion tanks and by immediately closing the lid after batch material addition.
- 2.c** For purposes of verifying compliance with the visible emission limitation for fugitive dust, the visible emissions shall be observed at the closest egress points to the pre-emulsion tank(s), from the building housing this emissions unit; and records shall be maintained as specified in Section C.6. These egress points shall include, but not be limited to: reactor room exhaust vents, doorways, and windows.
- 2.d** The permittee shall maintain the chilled water and/or refrigerated condensers on the pre-emulsion tanks for emissions unit in accordance with federally enforceable restrictions in this permit.

Facility-wide emissions shall not exceed 99.9 tons of OC, 9.9 tons of individual hazardous air pollutant (IHAP) emissions and 24.9 tons of total combined hazardous air pollutant (TCHAP) emissions per rolling, 12-month period.

Facility-wide emissions shall include the following emission units: P002, P003, P004, P005, P006, P007, P020, P021, P022, P023, P024, P026, P027, P028, P029, P030, P031, P039, P040, P041, P103, P106, P107, P113, P114, P115, P116, P124, P125, P127 and all emissions units that are exempt or permit by rule (OAC rule 3745-31-03), and de minimis (OAC rule 3745-15-05).

Therefore, the provisions for Title V permitting and the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Miscellaneous Organic Chemical Manufacturing in 40 CFR Part 63 Subpart FFFF and for the Miscellaneous Coating Manufacturing in 40 CFR Part 63 Subpart HHHHH will not be applicable.

¹A listing of the HAPs can be found in Section 112(b) of the Clean Air Act or can be obtained by contacting your Ohio EPA field office or local air agency contact.

B. Operational Restrictions

- 1.** The maximum temperature of the exhaust gases from the reactor's condenser shall not exceed 42 degrees Celsius during any hour in which the average temperature is 35

degrees Celsius or above, if the condenser is used to demonstrate compliance with allowable OC emission limitations. If these conditions are exceeded, the control efficiency shall be calculated for the batch and the record of representative emissions maintained for the product batch shall not be used.

2. The maximum temperature of the chilled water and or refrigerant entering the condenser serving the pre-emulsion tank(s) shall not exceed 17 degrees Celsius at any time, or that temperature established during the most recent emissions test that demonstrated that the condenser achieved a 75% reduction of OC emissions vented to it, if a pre-emulsion tank's condenser is used to demonstrate compliance with allowable OC limitations. This temperature shall be monitored at the point the chilled water enters the building containing the reactor. If this temperature is exceeded, the control efficiency shall be calculated for the batch and the record of representative emissions maintained for the product batch shall not be used.
3. The pressure setting of the conservation vent, if used on the pre-emulsion tank vent, shall be set by the manufacturer at a minimum of 2 inches of water, and the permittee shall perform annual inspections to ensure that the vents are clean and unobstructed.
4. The permittee shall maintain an emergency containment system capable of preventing the release of any liquid or solid materials from this emissions unit.
5. The operational restriction on the facility-wide potential to emit for IHAP, TCHAP and OC that establish federally enforceable limitations for emission units P103, P106, P107, P113, P114, P115, P116, P124, P125, and P127 are as follows:
 - a. the permittee shall equip each pre-emulsion tank with a hatch cover that must be closed at all times when the unit is in operation, except for solids addition and/or material sampling. The captured OC emissions shall be vented to a refrigerated condenser to achieve a minimum 75% reduction of OC emissions; and
 - b. the permittee shall equip each reactor with a tightly fitting cover that must be closed at all times when the unit is in operation except for non-solvent material addition and/or material sampling. The captured OC emissions shall be vented to a reflux condenser that achieves a minimum 90% reduction of OC emissions.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall collect and record the following information for each day for each batch of product processed in this emissions unit:
 - a. the company name, code, and/or identification number for each batch of product processed; the date of production; and the number of batches of each product processed;

- b. the amount, in pounds, of each organic material added to pre-emulsion tank(s) and the reactor(this may be maintained on the batch sheet);
- c. the highest operating temperature reached during the batch run;
- d. the start and stop time for each batch run, recorded on each batch sheet, from which the duration of each batch run (hrs/batch) and the total hours of operation for this emissions unit (hrs/day) can be determined;
- e. if emissions from any product batch are calculated using conservatively estimated and/or worst-case variables* for an individual product, product type, or product group**, the following information may be maintained on file in the facility records to document such product batch's emissions, in lieu of maintaining daily emission calculations for each individual batch:
 - i. the company name, code, and/or identification number for each individual product and each product group (if used), for which conservatively estimated and/or worst-case emission calculations shall be documented; and to be used to identify the products and product groups maintained in these records;
 - ii. a record of the mole fraction of each organic chemical contained in each product processed and in each representative batch product group, if used (which shall demonstrate that each organic chemical contained in a product batch is less than or equal to the mole fraction of the same organic chemical in the representative product group);
 - iii. records to document the value of each conservatively estimated and/or worst-case variable for each product or product group;
 - iv. the uncontrolled and controlled (if applicable) emission calculations for each product and product group (if used), in which the conservatively estimated and/or worst-case variables (as documented in Section C.1.e.iii) are applied and calculated as required in Sections E.1 and E.2 (if controlled) for each organic chemical component at each method of loss (pounds of each organic chemical component/batch);
 - v. the product batch's and product batch group's (if used) total uncontrolled and controlled (if applicable) OC emissions, which shall equal the sum of all of the organic chemical components' emissions calculated in Section C.1.e.iv, for this emissions unit or an emissions unit with a greater volume; and

- vi. a record of the maximum number of batches of each product or product group that could be processed in any day without exceeding the limitations contained in this permit;

(These records of conservatively estimated and/or worst-case variables and emissions may be updated by the permittee as new products are formulated or may be developed to include existing products and/or new product groups.)

- f. the actual number of batches of each product processed each day;
- g. if not documented as required in Section C.1.e for any product, the calculated mole fraction of each organic chemical component in each product batch;
- h. if the condenser was operating properly throughout the batch run and if emissions are not documented for the product or product group, per Section C.1.e, a record of the conservative average operating temperature of each such product batch made in the reactor, to be used as the vapor inlet temperature; and a record of the conservative average temperature of the exhaust gases from the condenser serving the reactor, to be used as the vapor outlet temperature in the control efficiency calculation (Section E.2);
- i. the highest temperature of the refrigerated coolant entering the condenser serving the pre-emulsion tank(s), as documented by the continuous temperature monitor; this temperature is monitored at the point the chilled water enters the building containing the reactor;
- j. if the temperature of the chilled water and or refrigerant entering the pre-emulsion tank's condenser does not exceeds 5 degrees Celsius, a batch emission rate (see table below) in lbs of vinyl acetate from the pre-emulsion tank condenser (from emission test data) may be applied in the calculation of emissions contributed to the reactor system by the pre-emulsion tank. This calculation and record may also be maintained in the facility records, as required in Section C.4.e, and may be adjusted upward depending in the recorded highest temperature of the refrigerated coolant temperature entering the condenser serving the reactor pre-emulsion tank;

Average Condenser Temperature (C)	Emission (vinyl acetate lbs/batch)
-2.5	0.759
-1	1.09
0	1.31
1	1.53
2	1.8
3	2.02
4	2.24

5

2.52

- k. in the event the reactor contents are heated up to and/or above a component chemical's boiling point, a record of these emissions (lbs/batch), calculated as required in Section E.1.vi, which may also be documented for each product that is normally made at these higher temperatures, as required in Section C.1.e;
- l. the total controlled (if condensers fully operational) and uncontrolled OC emissions (lbs/batch), and the emission calculations for each organic chemical component in each batch (other than the emissions calculated and recorded in (k) above) that was not processed under normal operating parameters (of temperature, pressure, or mole fraction of a component) due to mistakes made in the batch recipe formulation, operation of the unit, malfunction of the condenser(s), or other changes made to the normal operating parameters that would affect the emission rate for a specific product batch; and
- m. the total actual or conservatively estimated/worst-case OC emissions (lbs/batch) and the emission calculations for each organic chemical component in each batch processed in this emissions unit, for which a record of the calculations documenting the conservatively estimated and/or worst-case emissions of the product batch or product batch group, representing the product, are not maintained as in Section C.1.e.

* Conservatively estimated and/or worst case variable conditions (of temperatures, pressures, and volume of vapor space) and equivalent or worst-case concentrations, applied in Section E.1, which result in conservative/worst-case emissions for the batch, may be maintained in a single record (rather than maintained daily) for each product or product group to which they could be applied (see Section C.2).

** Products may be grouped by similar product types (same chemical components and having similar concentrations) for hourly and daily emission estimates, if the variables of temperature, pressure, volume of vapor head space, and concentration (mole fraction), applied in the equations found in Sections E.1 and E.2 calculated at each method of loss, are conservative and/or worst-case for each variable. If the reactor condenser is used to demonstrate compliance, the control efficiency shall be calculated as required in Section E.2, and shall be dependent on the conservative average vapor inlet and outlet temperatures of the condenser. Products may also be grouped by the seasons of the year, in order to segregate and lessen the effects of average temperatures. The highest concentrations of the organic chemical components, represented in the product group, shall be used in the calculations of daily emissions, unless products are calculated individually.

- 2. At the end of each calendar month the permittee shall calculate and record the following information for each day of the preceding month:

- a. the total number of batches of each individual adhesive polymer, or other product (identified as required in Section C.1.a) processed in this emissions unit during the calendar quarter, for each day of operation;
- b. an identification of how the emissions were calculated for each day, showing each batch or all batches calculated using one of the following methods:
 - i. product batches are representative of normal operations and the estimated emissions are calculated by using existing documented, conservative and/or worst-case variables for each product batch or product batch group, and records maintained per Section C.1.e;
 - ii. product batch(s) is/are individually calculated because an existing record, maintained as required in Section C.1.e, does not exist;
 - iii. product batch(s) deviate(s) from normal operating parameters and is/are individually calculated, including adjustments to the efficiency due to condenser temperature deviations; and/or
 - iv. product batch(s) is/are made without the condenser control or during a malfunction of the condenser and the control efficiency is not applied (and/or as in "i", these uncontrolled emissions are maintained as per Section C.1.e);
- c. the total actual (controlled* and/or uncontrolled) OC and HAP emissions for each day of operation (lbs/day), from all product batches produced each day, calculated as specified in Section E.1 for uncontrolled emissions and as specified in Section E.2 for the control efficiency, and calculated using one of the following methods:
 - i. the sum of the actual OC and HAP emissions calculated from all batches run for each day of operation; or
 - ii. the sum of the actual OC and HAP emissions from all batches run each day, calculated by multiplying the conservatively calculated or worst-case emissions for one batch of each product or product group times the number of batches of each product run, and adding the resultant OC and HAP emissions for all products made in this emissions unit each day, including those calculated individually for abnormal operations (Sections C.1.k and C.1.l) or for new products; and
- d. the average hourly OC emissions from this emissions unit for each day of operation during the calendar quarter, calculated by dividing the emissions recorded in Section C.2.c, by the total hours of operation for each day (calculated from Section C.1.d).

* The controlled emissions from each batch produced under normal operating conditions shall be calculated by multiplying the uncontrolled emissions for each organic chemical component of the product batch or product batch group, calculated per Section E.1, times the percent control efficiency calculated per Section E.2, and subtracting the result (representing the condensed volatile component) from the total uncontrolled emissions of each organic chemical component. The calculated controlled emissions of each organic chemical component shall be added to get the total OC/batch. The controlled and uncontrolled emissions, in pounds/batch, maintained as per Section C.1.e for each product or product batch group, may be added for each day to satisfy this requirement.

3. If the reactor's condenser is used to demonstrate compliance, the permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the temperature of the exhaust gases from the condenser serving the reactor, when the emissions unit is in operation. Units shall be in degrees Celsius. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within + or - 1 percent of the temperature being measured or + or - 2.8 degrees Celsius, whichever is greater. The temperature monitor and recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals.

The permittee shall collect and maintain the following information each day for each batch:

- a. the computer record of the continuous temperature monitor, which shall document the average temperature of the exhaust gases from the condenser serving the reactor, during each one-hour period of operation when the maximum temperature exceeded 42 degrees Celsius;
 - b. a record (continuous temperature monitoring graph or equivalent) of the operating time for the reactor and its associated condenser, temperature control device, and monitoring equipment for each product batch; and
 - c. for any batch in which the peak temperature of the exhaust gases from the condenser serving the reactor exceeded 42 degrees Celsius in any hour in which the average temperature was 35 degrees Celsius or above, a record of the adjusted control efficiency calculated as required in Section E.2.
4. If the pre-emulsion tanks' condenser are used to demonstrate compliance, the permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the temperature of the chilled water entering the condenser serving the pre-emulsion tank(s) when the emissions unit is in operation. Units shall be in degrees Celsius. The accuracy for each thermocouple, monitor, and recorder shall be guaranteed by the manufacturer to be within + or - 1 percent of the temperature being measured or + or - 2.8 degrees Celsius, whichever is greater. The

temperature monitor and recorder shall be installed, calibrated, operated, and maintained in accordance with the manufacturer's recommendations, instructions, and operating manuals, and may be monitored at the point the chilled water enters the building containing the reactor.

The permittee shall collect and maintain the following information each day for each batch:

- a. the computer record of the continuous temperature monitor which shall document the peak temperature of the chilled water entering the condenser serving the pre-emulsion tank(s);
- b. a record (continuous temperature monitoring graph or equivalent) of the operating time for the pre-emulsion tank(s) and its/their associated condenser, temperature control device, and monitoring equipment for each product batch*;
and
- c. for any batch in which the peak temperature of the chilled-water entering the condenser serving the pre-emulsion tank(s) exceeded 17 degrees Celsius at any time or that temperature established during the most recent emissions test that demonstrated that the condenser effectively limited OC emissions, a record of the adjusted control efficiency calculated as required in Section E.2.

* If the pre-emulsion tank(s) has/have operated in association with the reactor in the production of any batch, and during the same period of time, the log for the reactor may so indicate this, to alleviate the second record for the pre-emulsion tank(s).

5. The permittee shall maintain the following monthly records on-site to document compliance with the OC emission limitation for this emissions unit and the restrictions of OC, IHAP, and TCHAP for emission units P002, P003, P004, P005, P006, P007, P020, P021, P022, P023, P024, P026, P027, P028, P029, P030, P031, P039, P040, P041, P103, P106, P107, P113, P114, P115, P116, P124, P125 and P127 any permit exempt and de minimis emissions units:
 - a. the calculated OC emissions for the current month, in pounds or tons, for each the above emissions units;
 - b. the rolling, 12-month summation of OC emissions (i.e., the OC emissions from the current month added to the summation of the OC emissions from the previous 11 months) for all the above emissions units;
 - c. the calculated IHAP emissions for the current month, in pounds or tons, for each the above emissions units;

- d. the calculated TCHAP emissions for the current month, in pounds or tons, for each the above emissions units;
 - e. the rolling 12-month summation of IHAP emissions (i.e., the IHAP emissions from the current month added to the summation of the IHAP emissions from the previous 11 months) for all the above emissions units; and
 - f. the rolling 12-month summation of TCHAP emissions (i.e., the TCHAP emissions from the current month added to the summation of the TCHAP emissions from the previous 11 months) for all the above emissions units.
6. The permittee shall perform weekly checks, when the emissions unit is in operation and when the weather conditions allow, for any visible emissions of fugitive dust from the egress points (i.e., building windows, doors, roof monitors, mixer room exhaust vents, etc.) serving this emissions unit. The presence or absence of any visible emissions shall be noted in an operations log. If visible emissions are observed, the permittee shall also note the following in the operations log:
- a. the location and color of the emissions;
 - b. whether the emissions are representative of normal operations;
 - c. if the emissions are not representative of normal operations, the cause of the abnormal emissions;
 - d. the total duration of any visible emission incident; and
 - e. any corrective actions taken to eliminate the visible emissions.

One log per area may be used in place of individual logs for each emissions unit, as long as one log contains records for all such emissions units.

D. Reporting Requirements

- 1. The permittee shall submit quarterly deviation (excursion) reports that include the following information:
 - a. an identification of each day during which the average hourly organic compound emissions exceeded 6.5 pounds per hour and the actual hourly organic compound emissions for each such day; and
 - b. an identification of each day during which the organic compound emissions exceeded 32.3 pounds per day and the actual organic compound emissions for each such day.
- 2. For any batch in which the reactor's condenser is used to demonstrate compliance, the permittee shall submit quarterly temperature deviation (excursion) reports that identify any time during which the maximum temperature of the exhaust gases from the condenser serving the reactor exceeded 42 degrees Celsius during any hour in which the average temperature was 35 degrees Celsius or above, and for which the control

efficiency and estimated emissions were not adjusted for the temperature deviation from normal conditions.

3. For any batch in which the pre-emulsion tank's(s') condenser(s) is/are used to demonstrate compliance, the permittee shall submit quarterly temperature deviation (excursion) reports that identify all periods of time during which the maximum temperature of the chilled water entering the condenser serving the pre-emulsion tank(s) (or chilled water entering the building containing the reactor) exceeded 17 degrees Celsius, and for which the control efficiency and estimated emissions were not adjusted for the temperature deviation from normal conditions.
4. The permittee shall submit quarterly deviation (excursion) reports for deviations (excursions) associated with exceedances of the facility-wide operational restrictions and emission limitations:
 - a. as determined by recordkeeping in section C.5, above, for the rolling 12-month summation of IHAP, TCHAP and OC emissions; and
 - b. as determined by recordkeeping in section C.4, above, for the operational restriction on the pre-emulsion tank chilled water or refrigerated condenser.

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

5. The permittee shall submit semiannual written reports that (a) identify all days during which any visible emissions of fugitive dust were observed from the egress points (i.e., building windows, doors, roof monitors, reactor room exhaust vents, etc.) serving this emissions unit and (b) describe any corrective actions taken to eliminate the visible emissions. These reports shall be submitted to the Director (the Ohio EPA Central District Office) by January 31 and July 31 of each year and shall cover the previous 6-month period.

E. Testing Requirements

1. Compliance with the emission limitations in Section A.1 of the terms and conditions of this permit shall be determined in accordance with the following methods:
 - a. Emission Limitation:
OC emissions from this emissions unit shall not exceed 6.5 lbs/hr and/or 32.3 lbs/day.

Applicable Compliance Method:

Compliance with the hourly emission limitation was demonstrated during emission testing in November 2004 and 2005 for vinyl acetate production. If required, the permittee shall demonstrate compliance with this emission

limitation through emission tests performed in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 4 and 18. Compliance with the daily OC emission limitations shall be demonstrated based on the record keeping requirements in sections C.1 and C.2.

Emissions from each batch shall be calculated as follows:

If the reactor contents are heated up to and/or above the boiling point of the chemical with the lowest boiling point in the batch, the ideal gas law no longer applies. In this case, emissions shall be calculated using an emission factor of 1.27 pounds of OC per hour, derived from the stack test conducted on 5/12/94, for Reactor 9 (P107), in which the batch exceeded this temperature. This emission factor shall be multiplied by the time (hours) the chemical was above its boiling point to calculate the pounds of the lower boiling point chemical emitted during this time period. To calculate emissions for chemicals with higher boiling points than the batch temperature during this period of time, the emissions calculated using the emission factor above (lbs) shall be multiplied by the ratio of the weight (lbs) of each higher boiling point chemical, to the weight of the lower boiling point chemical in the batch. Each fraction of the higher boiling point chemicals' emissions, calculated in this way, shall be added to the emissions calculated for the chemical that's boiling point was exceeded, to document a conservative estimate of OC emissions for the time period operating under these conditions.

The total uncontrolled OC emission rate from each method of loss for each batch shall be calculated as: $(A.V.1.b.iii + A.V.1.b.iv + A.V.1.b.v + A.V.1.b.vi)$ summed for all volatile components) = total pounds OC emitted per batch

Alternative methods to the emission calculations above may be used with prior approval from the Ohio EPA, Central District Office.

For the purpose of calculating annual emissions, the control efficiency for each product or product type made during the year may be calculated by using the average temperatures from the four calendar quarters or the average of all batches made during the year of record; or may be calculated using the average temperatures by season, if batch records are so segregated; or may be calculated by using worst-case temperatures, causing the highest emissions. The average temperatures shall be derived from the records of each product batch (to derive the inlet vapor temperature), and from the continuous temperature monitor installed after the reactor, prior to the chiller (to derive the outlet vapor temperature), and the efficiency calculated as per the method above.

b. Emission Limitations

The facility-wide individual and combined HAP emissions shall not exceed 9.9 tons and 24.9 tons per rolling, 12-month period, respectively.

Applicable Compliance Method:
Compliance with the facility-wide HAP emission limitations shall be demonstrated by the record keeping requirements specified in section C.5 above.

- c. Emission Limitation:
The facility-wide OC emissions shall not exceed 99.9 tons per rolling, 12-month period.

Applicable Compliance Method:
Compliance with the facility-wide OC emission limitation shall be demonstrated by the record keeping requirements specified in section C.5 above.

- d. Emission Limitation:
OC emissions from this emissions unit shall not exceed 6.0 tons per rolling, 12-month period

Applicable Compliance Method:
Compliance with the annual OC emission limitation for this emissions unit shall be demonstrated based on the record keeping requirements in section C.5.

- e. Emission Limitation:
There shall be no visible emissions of fugitive dust from any building opening or outside vent associated with this emission unit, during the addition of solids to the pre-emulsion tank.

Applicable Compliance Method:
If required, compliance shall be determined through visible emission observations performed in accordance with 40 CFR Part 60, Appendix A, Method 22 and the procedures specified in OAC rule 3745-17-03(B)(4).

F. Miscellaneous Requirements

1. The terms and conditions of this PTI A.1 through E.1 are federally enforceable.