

Facility ID: 0125040070 Issuance type: Final State Permit To Operate

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In addition to the terms and conditions, hyperlinks have been inserted into the document so you may more readily access the section of the document you wish to review.

Finally, the term language under "Part II" and before "A. Applicable Emissions Limitations..." has been added to aid in document conversion, and was not part of the original issued permit.

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THIS IS NOT AN OFFICIAL VERSION OF THE PERMIT. SEE PAGE 1 FOR ADDITIONAL INFORMATION

Facility ID: 0125040070 Emissions Unit ID: P103 Issuance type: Final State Permit To Operate

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Part II - Special Terms and Conditions

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

1. For the purpose of a permit-to-install document, the emissions unit terms and conditions identified below are federally enforceable with the exception of those listed below which are enforceable under state law only.
 - (a) None.
2. For the purpose of a permit-to-operate document, the emissions unit terms and conditions identified below are enforceable under state law only with the exception of those listed below which are federally enforceable.
 - (a) None.

A. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(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 employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
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	OAC rule 3745-31-05(A)(3) (PTI 01-12038)	Organic compound (OC) emissions shall not exceed 6.5 lbs/hr and 32.3 lbs/day. See sections A.2.a, B.1, B.2 and B.3 below.
	OAC rule 3745-21-07(G)(2)	The requirements of this rule also include compliance with the requirements of OAC rule 3745-35-07(B). 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 3745-35-07(B) (synthetic minor to avoid Title V and MACT requirements)	Organic compound (OC) emissions from this emissions unit shall not exceed 6.0 tons per rolling, 12-month period. See sections A.2.b and B.5 below.

2. Additional Terms and Conditions

- (a) The chilled water and/or refrigerated condensers on the pre-emulsion tank and reactor for this emissions unit shall be operated and maintained in accordance with federally enforceable restrictions as required by 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 be determined from a summation of monthly emissions from 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 50% 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 condenser to achieve a minimum 50% 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 Record Keeping 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. the actual number of batches of each product processed each day; if the temperature of the chilled water and or refrigerant entering the condensers does not exceed operational restrictions in B.1 and B.2 above, an average hourly emission rate of 0.175 lb vinyl acetate from the Continuous Reactor (from a January 13, 1993 letter citing November 23, 1992 emission test data) may be applied in the calculation of vinyl acetate emissions.
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 product (identified as required in Section C.1.a) processed in this emissions unit during 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 ;
 - c. the total actual OC and HAP emissions for each day of operation (lbs/day), from all product batches produced each day 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 or for new products;
 - d. the OC emissions from this emissions unit for each month of operation calculated by summing the emissions recorded in Section C.2.c.
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.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that include the following information:
 - a. an identification of 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, for any batch in which the reactor's condenser is used to demonstrate compliance; and
 - b. an identification of 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, for any batch in which the reactor's condenser is used to demonstrate compliance. 1
2. 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.

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:

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 worst-case emission testing in November 1992 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 using the emission factor of 0.175 lb/hr multiplied times the batch time in hours.

The total uncontrolled OC emission rate from each method of loss for each batch shall be 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.

Emissions Limitation:

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.

Emissions 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.

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.

F. Miscellaneous Requirements

- 1. The terms and conditions in sections A.1 through E.1 are federally enforceable.

THIS IS NOT AN OFFICIAL VERSION OF THE PERMIT. SEE PAGE 1 FOR ADDITIONAL INFORMATION

Facility ID: 0125040070 Emissions Unit ID: P113 Issuance type: Final State Permit To Operate

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Part II - Special Terms and Conditions

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

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

- (a) None.

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

- (a) None.

A. Applicable Emissions Limitations and/or Control Requirements

- 1. The specific operation(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 employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
Reactor 4 System w/alcohol cook tank,	OAC rule 3745-31-05(A)(3)	Organic compound (OC) emissions shall not exceed

weight tanks, pre-emulsion tank w/condenser (PTI 01-12038) and conservation vent and reactor w/reflux condenser

6.5 lbs/hr and 32.3 lbs/day.

See sections A.2.a, B.1, B.2, B.3, and B.4 below.

The requirements of this rule also include compliance with the requirements of OAC rules 3745-21-07(G)(2) and 3745-35-07(B).

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 3745-35-07(B) (synthetic minor to avoid Title V and MACT requirements)

Organic compound (OC) emissions from this emissions unit shall not exceed 6.0 tons per rolling, 12-month period.

See sections A.2.b and B.5 below.

2. Additional Terms and Conditions

- (a) The chilled water and/or refrigerated condensers on the pre-emulsion tank and reactor for this emissions unit shall be operated and maintained in accordance with federally enforceable restrictions as required by 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 be determined from a summation of monthly emissions from 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 50% 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 50% 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 Record Keeping 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. the actual number of batches of each product processed each day; if the temperature of the chilled water and/or refrigerant entering the pre-emulsion tank's condenser does not exceed 5 degrees Celsius, a batch emission rate (see table below) in lbs of vinyl acetate/VOC 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 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 Emission | |
|----------------------------|---------------------------|
| Temp (C) | (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 |
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 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:
- 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;
 - product batch(s) is/are individually calculated because an existing record, maintained as required in Section C.1.e, does not exist;
 - 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
 - product batch(s) is/are made without the condenser control or during a malfunction of the condenser and the control efficiency is not applied ;
 - the total actual 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, and calculated using one of the following methods:
 - the sum of the actual OC and HAP emissions calculated from all batches run for each day of operation; or
 - 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 or for new products; and
- d. the OC emissions from this emissions unit for each month of operation, calculated by summing the emissions recorded in Section C.2.c, for each day .
- * The controlled emissions from each batch produced under normal operating conditions shall be calculated by multiplying the emissions for each product batch or product batch group, calculated per Section E.1. The calculated controlled emissions of each organic chemical component shall be added to get the total OC/batch. The controlled 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:
- 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;
 - 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
 - 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.
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.

* 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.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that include the following information:
 - a. an identification of 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, for any batch in which the reactor's condenser is used to demonstrate compliance; and
 - b. an identification of 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, for any batch in which the pre-emulsion tank's (s) condenser(s) is/are used to demonstrate compliance.
2. 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.

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:
Emissions 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 using an emission factor of 0.17 pound of vinyl acetate/OC per hour from the reactor condenser vent multiplied times the hours of operation, derived from the stack test

conducted on 11/16/04, for Reactor 9 (P107) The total uncontrolled OC emission rate from each method of loss for each batch shall be 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.

Emissions Limitation:

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.

Emissions 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.

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.

F. Miscellaneous Requirements

1. The terms and conditions in sections A.1 through E.1 are federally enforceable.

THIS IS NOT AN OFFICIAL VERSION OF THE PERMIT. SEE PAGE 1 FOR ADDITIONAL INFORMATION

Facility ID: 0125040070 Emissions Unit ID: P114 Issuance type: Final State Permit To Operate

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Part II - Special Terms and Conditions

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

1. For the purpose of a permit-to-install document, the emissions unit terms and conditions identified below are federally enforceable with the exception of those listed below which are enforceable under state law only.
 - (a) None.
2. For the purpose of a permit-to-operate document, the emissions unit terms and conditions identified below are enforceable under state law only with the exception of those listed below which are federally enforceable.
 - (a) None.

A. Applicable Emissions Limitations and/or Control Requirements

1. The specific operation(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 employed. Additional applicable emissions limitations and/or control measures (if any) may be specified in narrative form following the table.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	<u>Applicable Emissions Limitations/Control Measures</u>
Reactor 5 System w/alcohol cook tank, weight tanks, pre-emulsion tank w/condenser and conservation vent and reactor w/reflux condenser	OAC rule 3745-31-05(A)(3) (PTI 01-12038)	Organic compound (OC) emissions shall not exceed 6.5 lbs/hr and 32.3 lbs/day. See sections A.2.a, B.1, B.2, B.3, and B.4 below.
	OAC rule 3745-21-07(G)(2)	The requirements of this rule also include compliance with the requirements of OAC rules 3745-21-07(G)(2) and 3745-35-07(B). 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 3745-35-07(B) (synthetic minor to avoid Title V and MACT requirements)	Organic compound (OC) emissions from this emissions unit shall not exceed 6.0 tons per rolling, 12-month period. See sections A.2.b and B.5 below.

2. Additional Terms and Conditions

- (a) The chilled water and/or refrigerated condensers on the pre-emulsion tank and reactor for this emissions unit shall be operated and maintained in accordance with federally enforceable restrictions as required by 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 be determined from a summation of monthly emissions from 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 50% 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 50% 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 Record Keeping 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. the actual number of batches of each product processed each day; if the temperature of the chilled water and or refrigerant entering the pre-emulsion tank's condenser does not exceed 5 degrees Celsius, a batch emission rate (see table below) in lbs of vinyl acetate/VOC 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 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 Emission
Temp (C) (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

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 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 ;
 - c. the total actual 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, 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 or for new products; and
- d. the OC emissions from this emissions unit for each month of operation, calculated by summing the emissions recorded in Section C.2.c, for each day .

* The controlled emissions from each batch produced under normal operating conditions shall be calculated by multiplying the emissions for each product batch or product batch group, calculated per Section E.1. The calculated controlled emissions of each organic chemical component shall be added to get the total OC/batch. The controlled 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.
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.

* 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.
- D. Reporting Requirements**
1. The permittee shall submit quarterly deviation (excursion) reports that include the following information:
 - a. an identification of 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, for any batch in which the reactor's condenser is used to demonstrate compliance; and
 - b. an identification of 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, for any batch in which the pre-emulsion tank's (s') condenser(s) is/are used to demonstrate compliance.
 2. 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.
- 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:
Emissions 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 using an emission factor of 0.17 pound of vinyl acetate/OC per hour from the reactor condenser vent multiplied times the hours of operation, derived from the stack test conducted on 11/16/04, for Reactor 9 (P107) The total uncontrolled OC emission rate from each method of loss for each batch shall be 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.
Emissions Limitation:
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.
Emissions 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.
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.

F. **Miscellaneous Requirements**

1. The terms and conditions in sections A.1 through E.1 are federally enforceable.