



State of Ohio Environmental Protection Agency

**RE: FINAL PERMIT TO INSTALL
LICKING COUNTY**

CERTIFIED MAIL

Street Address:

122 S. Front Street

Lazarus Gov. Center TELE: (614) 644-3020 FAX: (614) 644-2329

Mailing Address:

Lazarus Gov. Center
P.O. Box 1049

Application No: 01-08649

DATE: 12/5/2002

Bayer Corporation Polymers Division
Tim Troutman
1111 O Neill Drive SE
Hebron, OH 43025

Enclosed please find an Ohio EPA Permit to Install which will allow you to install the described source(s) in a manner indicated in the permit. Because this permit contains several conditions and restrictions, I urge you to read it carefully.

The Ohio EPA is urging companies to investigate pollution prevention and energy conservation. Not only will this reduce pollution and energy consumption, but it can also save you money. If you would like to learn ways you can save money while protecting the environment, please contact our Office of Pollution Prevention at (614) 644-3469.

You are hereby notified that this action by the Director is final and may be appealed to the Ohio Environmental Review Appeals Commission pursuant to Chapter 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. It must be filed within thirty (30) days after the notice of the Directors action. A copy of the appeal must be served on the Director of the Ohio Environmental Protection Agency within three (3) days of filing with the Commission. An appeal may be filed with the Environmental Review Appeals Commission at the following address:

Environmental Review Appeals Commission
236 East Town Street, Room 300
Columbus, Ohio 43215

Very truly yours,

Michael W. Ahern, Supervisor
Field Operations and Permit Section
Division of Air Pollution Control

cc: USEPA

CDO



STATE OF OHIO ENVIRONMENTAL PROTECTION AGENCY

**Permit To Install
Terms and Conditions**

**Issue Date: 12/5/2002
Effective Date: 12/5/2002**

FINAL PERMIT TO INSTALL 01-08649

Application Number: 01-08649
APS Premise Number: 0145020221
Permit Fee: **\$0**
Name of Facility: Bayer Corporation Polymers Division
Person to Contact: Tim Troutman
Address: 1111 O Neill Drive SE
Hebron, OH 43025

Location of proposed air contaminant source(s) [emissions unit(s)]:
**1111 O'Neill Drive SE
Hebron, Ohio**

Description of proposed emissions unit(s):
Thermoplastic compounding.

The above named entity is hereby granted a Permit to Install for the above described emissions unit(s) pursuant to Chapter 3745-31 of the Ohio Administrative Code. Issuance of this permit does not constitute expressed or implied approval or agreement that, if constructed or modified in accordance with the plans included in the application, the above described emissions unit(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 and specifications, the above described emissions unit(s) of pollutants will be granted the necessary permits to operate (air) or NPDES permits as applicable.

This permit is granted subject to the conditions attached hereto.

Ohio Environmental Protection Agency

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 Related to Monitoring and Recordkeeping 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 quarterly, i.e., 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 application must be made to the Director for the installation or modification of any other emissions unit(s).

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.

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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>
VOC	99.9
MEK	9.9
1,3 Butadiene	9.9
Acrylonitrile	9.9
Styrene	9.9
Chlorobenzene	9.9
HCl	2.0
NOx	20.0
PE	0.1

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Bayer Corporation Polymers Division

PTI Application: 01-09640

Issued

Facility ID: 0145020221

Emissions Unit ID: P022

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

A. Applicable Emissions Limitations and/or Control Requirements

1. 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.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>
P022 - thermoplastic compounding extruder line no.1 with thermal oxidizer and acid gas scrubber (Terms in this permit supercede those identified in PTI 01-08258 issued 03/15/01)	OAC rule 3745-31-05 (A)(3) OAC rule 3745-21-07 (G)

OAC rule 3745-35-07 (D)

OAC rule 3745-17-07 (A)(1)

OAC rule 3745-17-11 (B)

Applicable Emissions
Limitations/Control Measures

VOC emissions shall not exceed
3.92 lbs/hr and 17.2 tons/yr.

Styrene emissions shall not exceed
0.61 lb/hr and 2.7 tons/yr.

Visible particulate emissions shall
not exceed 10% opacity, as a 6-
minute average.

The requirements of this rule also
include compliance with the
requirements of OAC rule
3745-35-07 (D).

See II.A.c-e below.

See II.A.2.a-b and II.B.5 below.

The emission limitation specified in
this rule is less stringent than the
emission limitations established
pursuant to OAC rule 3745-31-
05(A)(3).

The emission limitation specified in
this rule is less stringent than the
emission limitations established
pursuant to OAC rule 3745-31-
05(A)(3).

The emission limitation specified in
this rule is less stringent than the
emission limitations established
pursuant to OAC rule 3745-31-
05(A)(3).

2. Additional Terms and Conditions

- 2.a** Facility wide emissions shall not exceed the following limitations during any rolling, 12-month period: 9.9 ton methyl ethyl ketone (MEK), 9.9 ton 1,3-Butadiene, 9.9 ton Acrylonitrile, 9.9 tons Styrene, 9.9 tons Chlorobenzene, 24.9 tons of combined HAPs and 99.9 tons of VOC.
- 2.b** Emissions from this emission unit shall be vented to a recuperative thermal oxidizer (RTO) followed by an acid gas scrubber (AGS).
- 2.c** The combined emissions from all extruder lines shall not exceed 0.016 lb particulate emissions (PE)/hr and 0.1 ton PE/yr. In addition, the facility wide emissions shall not exceed 2.0 tons hydrochloric acid (HCl) and 20.0 tons nitrogen oxides (NOx)/yr.
- 2.d** The emission unit's 3.92 lbs VOC/hr, 17.24 tons VOC/yr, 0.61 lb Styrene/hr and 2.7 tons Styrene/yr emission limitations are based on the emission unit's potential to emit vented through the above referenced control equipment. Therefore, only the monitoring, record keeping or reporting requirements of the control equipment are necessary to ensure compliance with these emission limitations.
- 2.e** The 0.016 lb PE/hr, 0.1 ton PE/yr, 2.0 tons HCl and 20.0 tons NOx/yr emission limitations for all extruder lines combined are based on the potential to emit vented through the above referenced control equipment. Therefore, only the monitoring, record keeping or reporting requirements of the control equipment are necessary to ensure compliance with these emission limitations.

B. Operational Restrictions

- 1. The average combustion temperature within the thermal incinerator, for any 3-hour block of time when the emissions unit is in operation, shall not be less than 1500 degrees Fahrenheit.
- 2. The pressure drop across the scrubber shall be continuously maintained within the range of 0.5-3.0 inches of liquid at all times while the emissions unit is in operation.
- 3. The scrubber liquid flow rate shall be continuously maintained within the range of 85-350 gallons per minute at all times while the emissions unit is in operation.

4. The pH of the scrubber liquor shall be maintained within the range of 7.5 to 9.0.
5. The permittee shall capture at least 85% of the emissions from this emissions unit and vent them to the RTO followed by the AGS.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the combustion temperature within the thermal oxidizer when the emissions unit is in operation. Units shall be in degrees Fahrenheit. The monitoring and recording devices shall be capable of accurately measuring the desired parameter. The temperature monitor and recorder shall be calibrated, operated and maintained in accordance with the manufacturer's recommendations, with any modifications deemed necessary by the permittee.

The permittee shall collect and record all 3-hour blocks of time during which the combustion temperature within the thermal oxidizer, when the emissions unit was in operation, dropped below 1500 degrees Fahrenheit.

2. The permittee shall properly operate and maintain equipment to continuously monitor the static pressure drop across the scrubber and the scrubber liquid flow rate while the emissions unit is in operation. The monitoring devices and any recorders shall be calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.

The permittee shall collect and record the following information:

- a. the pressure drop across the scrubber, in inches of water on an hourly basis; and
 - b. the scrubber liquid flow rate, in gallons per minute on an hourly basis.
3. The permittee shall properly operate and maintain equipment to continuously monitor and record the pH of the scrubber liquor while the emissions unit is in operation. The pH 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 record the pH of the scrubber liquor, on a continuous basis.

4. The permittee shall maintain a log of the downtime for the capture (collection) system, all control devices, and all monitoring equipment, when the associated emissions unit was in operation.
5. The permittee shall maintain monthly records of the following information:

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- a. the production rate of each product produced by each extruder;

- b. a record identifying whether each extruder has fugitive emissions (units with a water bath) or no fugitive emissions (Gala) at the die face;
- c. the emission rate of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, and VOC in pounds, from each extruder.

The emission rate shall be quantified by summing the emission rate from each extruder. Extruders with only stack emissions shall be determined by multiplying the production rate by the appropriate stack emission factor* by the control efficiency (1.0 - 0.99) established during the most recent stack test (test, 04/22/02). Extruders with both fugitive and stack emissions shall be determined by summing the stack and fugitive emissions. Stack emissions shall be determined by multiplying the production rate by the appropriate stack emission factor* by the control efficiency (1.0 - 0.99) established during the most recent stack test (test, 04/22/02). Fugitive emissions shall be determined by multiplying the production rate by the appropriate fugitive emission factor*.

* Permittee shall use the following worst case emission factors unless product specific emission factors are available and approved by the Central District Office:

MEK = 0.127 lb/1000 lb product; stack
 MEK = 0.0224 lb/1000 lb product; fugitive
 1,3 Butadiene = 0.083 lb/1000 lb product; stack
 1,3 Butadiene = 0.0146 lb/1000 lb product; fugitive
 Acrylonitrile = 0.247 lb/1000 lb product; stack
 Acrylonitrile = 0.0436 lb/1000 lb product; fugitive
 Styrene = 1.097 lb/1000 lb product; stack
 Styrene = 0.1935 lb/1000 lb product; fugitive
 Chlorobenzene = 0.213 lb/1000 product; stack
 Chlorobenzene = 0.0376 lb/1000 lb product; fugitive
 VOC = 1.787 lb/1000 product; stack
 VOC = 1.29 lb/1000 lb product; fugitive

- d. the facility-wide emission rate of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, and VOC in pounds; and
 - e. the rolling, 12-month summation of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene and VOC.
6. The permit to install for emission units P022 thru P030 was evaluated based on the actual materials and the design parameters of the emission unit and facility's exhaust system, as specified by the permittee in the permit to install application. The Ohio EPA's "Review of New Sources of

Emissions Unit ID: **P022**

Air Toxic Emissions" policy ("Air Toxic Policy") was applied for each pollutant emitted by emissions units P022 thru P031 using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutant(s):

Pollutant: Styrene

TLV (mg/m³): 85

Maximum Hourly Emission Rate (lbs/hr): 2.6

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 111.5MAGLC (ug/m³): 2024

Physical changes to or changes in the method of operation of the emissions unit or facility exhaust after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be satisfied. If, upon evaluation, the permittee determines that the "Air Toxic Policy" will not be satisfied, the permittee will not make the change. Changes that can affect the parameters used in applying the "Air Toxic Policy" include the following:

- a. changes in the composition of or use of materials used, or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value previously modeled;
 - b. changes in the composition of the materials, or use of new materials, that would result in an increase in emissions of any pollutant with a listed TLV that was proposed in the application and modeled; and
 - c. physical changes to the emissions unit or the facility exhaust parameters (e.g., increased/decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).
7. If the permittee determines that the "Air Toxic Policy" will be satisfied for the above changes, the Ohio EPA will not consider the change(s) to be a "modification" under OAC rule 3745-31-01(VV)(1)(a)(ii), and a modification of the existing permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition (other than (VV)(1)(a)(ii)), then the permittee shall obtain a final permit to install prior to the change.

The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy:"

- a. a description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);
- b. documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and
- c. where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify the following:
 - a. all 3-hour blocks of time during which the average combustion temperature within the thermal oxidizer does not comply with the temperature limitation specified above;
 - b. all periods of time during which the following scrubber parameters were not maintained at or above the required levels:
 - i. the static pressure drop across the scrubber; and
 - ii. the scrubber liquid flow rate.
 - c. pH deviation (excursion) reports that identify all periods of time during which the scrubber liquor pH did not comply with the pH requirements specified above.

The permittee shall also submit quarterly summaries which include a log of the downtime for the capture (collection) system, control device, and monitoring equipment, when the associated emissions unit was in operation.

2. The permittee shall submit deviation (excursion) reports which identify all exceedances of the rolling, 12-month summation of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, combined HAPs, and VOC limitations.
3. All reports are due by the date described in Part 1 - General Terms and Conditions of this permit under section (A)(1).

E. Testing Requirements

1. Compliance with the emission limitations in Section A.I. of these terms and conditions shall be determined in accordance with the following methods:

- a. **Emission Limitation:**
VOC emissions shall not exceed 3.92 lb/hr.

Applicable Compliance Method:

Compliance may be demonstrated by summing the stack and fugitive emissions. The stack emissions shall be determined by multiplying the emission unit's maximum capacity of 3000 lbs product/hr by the stack emission factor of 1.787 lbs VOC/1000 lbs product (Testing

08/14/00 thru 08/16/00) by the destruction efficiency of the thermal oxidizer (1.0-0.99). The fugitive emissions shall be determined by multiplying the emission unit's maximum capacity of 3000 lbs product/hr by the fugitive emission factor of 1.29 lbs VOC/1000 lbs of product (Testing 08/14/00 thru 08/16/00).

- b. Emission Limitation:
VOC emissions shall not exceed 17.2 ton/yr.

Applicable Compliance Method:

Compliance may be demonstrated by multiplying the pound per hour emission rate by 8760 hrs/yr and dividing by 2000 lbs/ton.

- c. Emission Limitation:
Styrene emissions shall not exceed 0.61 lb/hr.

Applicable Compliance Method:

Compliance may be demonstrated by summing the stack and fugitive emissions. The stack emissions shall be determined by multiplying the emission unit's maximum capacity of 3000 lbs product/hr by the stack emission factor of 1.097 lbs Styrene/1000 lbs product (Testing 08/14/00) by the destruction efficiency of the thermal oxidizer (1.0-0.99). The fugitive emissions shall be determined by multiplying the emission unit's maximum capacity of 3000 lbs product/hr by the fugitive emission factor of 0.1935 lbs Styrene/1000 lbs of product (Testing 08/14/00).

- d. Emission Limitation:
Styrene emissions shall not exceed 2.7 tons/yr.

Applicable Compliance Method:

Compliance shall be demonstrated by multiplying the pound per hour emission rate by 8760 hrs/yr and dividing by 2000 lbs/ton.

- e. Emission Limitation:
Visible particulate emissions shall not exceed 10% opacity, as a 6-minute average.

Applicable Compliance Method:

If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03 (B)(1).

- f. Emission Limitation:

Facility wide emissions of MEK shall not exceed 9.9 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.

- g. Emission Limitation:
Facility wide emissions of 1,3-Butadiene shall not exceed 9.9 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.

- h. Emission Limitation:
Facility wide emissions of Acrylonitrile shall not exceed 9.9 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.

- i. Emission Limitation:
Facility wide emissions of Styrene shall not exceed 9.9 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.

- j. Emission Limitation:
Facility wide emissions of Chlorobenzene shall not exceed 9.9 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.

- k. Emission Limitation:
Facility wide emissions of combined HAPs shall not exceed 24.9 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.

- l. Emission Limitation:

Bayer Corporation Polymers Division

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Facility ID: 0145020221

Emissions Unit ID: **P022**

The combined emissions from all extruder lines of PE shall not exceed 0.016 lb PE/hr.

Applicable Compliance Method:

Compliance may be demonstrated by multiplying the emission factor of 0.0076 lb PE/mmBTU (AP-42, 1.4-2, 7/98) by the thermal oxidizer's capacity of 2.12 mmBTU/hr.

- m. Emission Limitation:
The combined emissions from all extruder lines of PE shall not exceed 0.1 ton per year.

Applicable Compliance Method:

Compliance may be demonstrated by multiplying the emission factor of 0.0076 lb PM/mmBTU (AP-42, 1.4-2, 7/98) by the thermal oxidizer's capacity of 2.12 mmBTU/hr, then multiplying by 8760 hrs/yr and dividing by 2000 lbs/ton.

- n. Emission Limitation:
 Facility wide emissions of HCl shall not exceed 2.0 tons per year.

Applicable Compliance Method:

Compliance shall be demonstrated by summing the results of the equation referenced below with the previous 11 calendar months. The equation shall be performed on a monthly basis for each product's emissions of Chlorobenzene.

$$(MP)(EF_{MCB})(DE_{MCB})(\text{lbs HCl Produced/lbs MCB Destroyed}) + PE = ER$$

Where:

MP = Monthly production volume, (lbs)
 EF_{MCB} = Chlorobenzene emission factor, (lbs MCB/ 1000 lbs of product)
 DE_{MCB} = (1.0-0.99)
 lbs HCl Produced/lbs MCB Destroyed = stoichiometric ratio (36.4/112.6)
 MCB = Chlorobenzene
 HCl = Hydrochloric Acid
 PE = Emission total for the previous 11 months (tons per month)
 ER = lbs HCl/month

- o. Emission Limitation:
 Facility wide emissions of NO_x shall not exceed 20.0 tons per year.

Applicable Compliance Method:

Compliance shall be demonstrated by summing the results of the equation referenced below with the previous 11 calendar month's emission totals. The equation shall be performed on a monthly basis for each product's emissions of Acrylonitrile and for the combustion of natural gas.

$$(EF_{ngc})(NG) + (MP)(EF_{AN})(DE_{AN})(\text{lbs NO formed/lbs AN destroyed}) + SC = ER$$

Where:

EF_{ngc} = 0.1 lbs NO_x/MMBtu of Natural gas, (AP-42, 1.4-5, 7/98)
 NG = Natural gas consumption, (mmBTU/month)
 MP = Monthly production volume, (lbs)

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EF_{AN} = Acrylonitrile emission factor, (lbs AN/1000 lbs product)

DE_{AN} = (1.0-0.99)

lbs NO formed/lbs AN destroyed = stoichiometric ratio, (30.0/53.1)

AN = Acrylonitrile
NO = Nitrogen Oxide
SC = Screw cleaner emissions
ER = lbs NO_x/month

2. The permittee shall conduct, or have conducted, emission testing on the outlet of the Acid Gas Scrubber in accordance with the following requirements:
 - a. The emission testing shall be conducted within 60 days of a written request from the Ohio EPA.
 - b. The emission testing shall be conducted to determine the control efficiency of the RTO and AGS. If required, the permittee shall conduct emission testing on specific products to confirm the emission factors used to determine the uncontrolled mass rate of emissions for MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, HCl, NO_x, and VOC.
 - c. The following test methods shall be employed to demonstrate compliance with the allowable mass emission rates: 40 CFR Part 60, Appendix A Method 18, 24, 24A, 25A, 26, 26A, 305, or 311. (whichever is applicable to pollutant being tested). Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.
 - d. The tests shall be conducted while the emissions units are operating under standard conditions unless otherwise specified or approved by the Central District Office.
3. The permittee shall conduct, or have conducted, capture efficiency testing on each non-Gala extrusion line in accordance with the following requirements:
 - a. The emission testing shall be conducted within 90 days of written notification from the Central District Office.
 - b. The emission testing shall be conducted to determine the capture efficiency of specified extrusion line(s).
 - c. The following test methods shall be employed to demonstrate compliance with the allowable mass emission rates: 40 CFR Part 60, Appendix A Method 204D. Alternative U.S. EPA approved test methods or modifications to Method 204D may be used with prior approval from the Central District Office.
 - d. The tests shall be conducted while the emissions unit(s) are operating under standard conditions unless otherwise specified or approved by the Central District Office.

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4. Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Central District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and

date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Central District Office's refusal to accept the results of the emission test(s).

Personnel from the Central District Office shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

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

F. Miscellaneous Requirements

1. The Ohio EPA reserves the right to update the emissions factors used to estimate the uncontrolled/ controlled VOC, NO_x, HAP and combined HAPs emissions at the facility.

Upon written notification from the Ohio EPA concerning the identification and availability of updated and more representative VOC/NO_x/HAP/HAPs emission factors (from compliance demonstrations), the permittee may be required to reevaluate the estimated emissions for each emissions unit and facility-wide using the updated emission factors. Should the updated emission factors indicate an increase in estimated VOC, NO_x, HAP or HAPs ton per year emissions which exceed 20% of the major source thresholds, the permittee shall submit the following (one copy to the Central District Office):

- a. Revised Emission Factors:
Within forty five (45) days of compliance demonstrations and/or a study which indicates the greater emission factors, the permittee shall submit updated VOC/NO_x/HAP/HAPs emissions estimates (maximum rate in lbs/hour and tons/year) for each emission unit covered under this permit and the facility, using the updated emission factors.
- b. New PTI or Modification To Existing PTI:(only applicable to facilities which exceed OAC rule 3745-31-05 (A)(3) limitations as a result of increased VOC/NO_x/HAP/HAPs emissions from the use of the updated emission factors)
 - i. Within thirty (30) days of submittal of the revised estimated emissions (item a above), the permittee shall submit a revised "potential to emit" and "actual

emissions" determination for the facility to the Ohio EPA, DAPC, Engineering Section and Central District Office.

- ii. If necessary, within forty five (45) days of submittal of the revised emission estimates, the permittee shall submit an application for a PTI modification.
- c. "New" Title V facilities (only applicable to facilities which become subject to Title V permitting requirements (OAC Chapter 3745-77) as a result of increased VOC/NO_x/HAP/HAPs emissions from the use of the updated emission factors)
- i. Within thirty (30) days of submittal of the revised estimated emissions (item a above), the permittee shall submit a revised "potential to emit" and "actual emissions" determination for the facility to the Ohio EPA, DAPC, Engineering Section and Central District Office.
 - ii. If necessary, within 120 days of submittal of the revised emissions estimates (item a), the permittee shall submit a complete Title V permit application, federally enforceable state operating permit application, or permit to install application.
- d. Emissions Fee Report (for facilities subject to the Title V regulations):
- Within ninety (90) days of submittal of the revised estimated emissions, the permittee shall submit a Fee Emission Report to the Ohio EPA , in accordance with OAC Chapter 3745-78 and Ohio EPA Engineering Guide #61, for the most recent completed calendar year in which the facility would be classified as a "major" under the Ohio Title V regulations.

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

A. Applicable Emissions Limitations and/or Control Requirements

1. 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.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	
P023 - thermoplastic compounding extruder line no.2 with thermal oxidizer and acid gas scrubber (Terms in this permit supercede those identified in PTI 01-08258 issued 03/15/01)	OAC rule 3745-31-05 (A)(3)	OAC rule 3745-21-07 (G)
	OAC rule 3745-35-07 (D)	
	OAC rule 3745-17-07 (A)(1)	
	OAC rule 3745-17-11 (B)	

Applicable Emissions
Limitations/Control Measures

VOC emissions shall not exceed
0.02 lb/hr and 0.1 ton/yr.

Styrene emissions shall not exceed
0.01 lb/hr and 0.06 tons/yr.

Visible particulate emissions shall
not exceed 10% opacity, as a 6-
minute average.

The requirements of this rule also
include compliance with the
requirements of OAC rule
3745-35-07 (D).

See II.A.c-e below.

See II.A.2.a-b and II.B.5 below.

The emission limitation specified in
this rule is less stringent than the
emission limitations established
pursuant to OAC rule 3745-31-
05(A)(3).

The emission limitation specified in
this rule is less stringent than the
emission limitations established
pursuant to OAC rule 3745-31-
05(A)(3).

The emission limitation specified in
this rule is less stringent than the
emission limitations established
pursuant to OAC rule 3745-31-
05(A)(3).

2. Additional Terms and Conditions

- 2.a** Facility wide emissions shall not exceed the following limitations during any rolling, 12-month period: 9.9 ton methyl ethyl ketone (MEK), 9.9 ton 1,3-Butadiene, 9.9 ton Acrylonitrile, 9.9 tons Styrene, 9.9 tons Chlorobenzene, 24.9 tons of combined HAPs and 99.9 tons of VOC.
- 2.b** Emissions from this emission unit shall be vented to a recuperative thermal oxidizer (RTO) followed by an acid gas scrubber (AGS).
- 2.c** The combined emissions from all extruder lines shall not exceed 0.016 lb particulate emissions (PE)/hr and 0.1 ton PE/yr. In addition, the facility wide emissions shall not exceed 2.0 tons hydrochloric acid (HCl) and 20.0 tons nitrogen oxides (NOx)/yr.
- 2.d** The emission unit's 0.02 lb VOC/hr, 0.1 ton VOC/yr, 0.01 lb Styrene/hr and 0.06 ton Styrene/yr emission limitations are based on the emission unit's potential to emit vented through the above referenced control equipment. Therefore, only the monitoring, record keeping or reporting requirements of the control equipment are necessary to ensure compliance with these emission limitations.
- 2.e** The 0.016 lb PE/hr, 0.1 ton PE/yr, 2.0 tons HCl and 20.0 tons NOx/yr emission limitations for all extruder lines combined are based on the potential to emit vented through the above referenced control equipment. Therefore, only the monitoring, record keeping or reporting requirements of the control equipment are necessary to ensure compliance with these emission limitations.

B. Operational Restrictions

- 1. The average combustion temperature within the thermal incinerator, for any 3-hour block of time when the emissions unit is in operation, shall not be less than 1500 degrees Fahrenheit.
- 2. The pressure drop across the scrubber shall be continuously maintained within the range of 0.5-3.0 inches of liquid at all times while the emissions unit is in operation.
- 3. The scrubber liquid flow rate shall be continuously maintained within the range of 85-350 gallons per minute at all times while the emissions unit is in operation.

4. The pH of the scrubber liquor shall be maintained within the range of 7.5 to 9.0.
5. The permittee shall capture 100% of the emissions from this emissions unit and vent them to the RTO followed by the AGS.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the combustion temperature within the thermal oxidizer when the emissions unit is in operation. Units shall be in degrees Fahrenheit. The monitoring and recording devices shall be capable of accurately measuring the desired parameter. The temperature monitor and recorder shall be calibrated, operated and maintained in accordance with the manufacturer's recommendations, with any modifications deemed necessary by the permittee.

The permittee shall collect and record all 3-hour blocks of time during which the combustion temperature within the thermal oxidizer, when the emissions unit was in operation, dropped below 1500 degrees Fahrenheit.

2. The permittee shall properly operate and maintain equipment to continuously monitor the static pressure drop across the scrubber and the scrubber liquid flow rate while the emissions unit is in operation. The monitoring devices and any recorders shall be calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.

The permittee shall collect and record the following information:

- a. the pressure drop across the scrubber, in inches of water on an hourly basis; and
 - b. the scrubber liquid flow rate, in gallons per minute on an hourly basis.
3. The permittee shall properly operate and maintain equipment to continuously monitor and record the pH of the scrubber liquor while the emissions unit is in operation. The pH 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 record the pH of the scrubber liquor, on a continuous basis.

4. The permittee shall maintain a log of the downtime for the capture (collection) system, all control devices, and all monitoring equipment, when the associated emissions unit was in operation.
5. The permittee shall maintain monthly records of the following information:

- a. the production rate of each product produced by each extruder;

- b. a record identifying whether each extruder has fugitive emissions (units with a water bath) or no fugitive emissions (Gala) at the die face;
- c. the emission rate of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, and VOC in pounds, from each extruder.

The emission rate shall be quantified by summing the emission rate from each extruder. Extruders with only stack emissions shall be determined by multiplying the production rate by the appropriate stack emission factor* by the control efficiency (1.0 - 0.99) established during the most recent stack test (test, 04/22/02). Extruders with both fugitive and stack emissions shall be determined by summing the stack and fugitive emissions. Stack emissions shall be determined by multiplying the production rate by the appropriate stack emission factor* by the control efficiency (1.0 - 0.99) established during the most recent stack test (test, 04/22/02). Fugitive emissions shall be determined by multiplying the production rate by the appropriate fugitive emission factor*.

* Permittee shall use the following worst case emission factors unless product specific emission factors are available and approved by the Central District Office:

MEK = 0.127 lb/1000 lb product; stack
 MEK = 0.0224 lb/1000 lb product; fugitive
 1,3 Butadiene = 0.083 lb/1000 lb product; stack
 1,3 Butadiene = 0.0146 lb/1000 lb product; fugitive
 Acrylonitrile = 0.247 lb/1000 lb product; stack
 Acrylonitrile = 0.0436 lb/1000 lb product; fugitive
 Styrene = 1.097 lb/1000 lb product; stack
 Styrene = 0.1935 lb/1000 lb product; fugitive
 Chlorobenzene = 0.213 lb/1000 product; stack
 Chlorobenzene = 0.0376 lb/1000 lb product; fugitive
 VOC = 1.787 lb/1000 product; stack
 VOC = 1.29 lb/1000 lb product; fugitive

- d. the facility-wide emission rate of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, and VOC in pounds; and
 - e. the rolling, 12-month summation of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene and VOC.
6. The permit to install for emission units P022 thru P030 was evaluated based on the actual materials and the design parameters of the emission unit and facility's exhaust system, as specified by the permittee in the permit to install application. The Ohio EPA's "Review of New Sources of

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Emissions Unit ID: **P023**

Air Toxic Emissions" policy ("Air Toxic Policy") was applied for each pollutant emitted by emissions units P022 thru P031 using data from the permit to install application and the SCREEN 3.0 model (or

other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutant(s):

Pollutant: Styrene

TLV (mg/m³): 85

Maximum Hourly Emission Rate (lbs/hr): 2.6

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 111.5

MAGLC (ug/m³): 2024

Physical changes to or changes in the method of operation of the emissions unit or facility exhaust after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be satisfied. If, upon evaluation, the permittee determines that the "Air Toxic Policy" will not be satisfied, the permittee will not make the change. Changes that can affect the parameters used in applying the "Air Toxic Policy" include the following:

- a. changes in the composition of or use of materials used, or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value previously modeled;
 - b. changes in the composition of the materials, or use of new materials, that would result in an increase in emissions of any pollutant with a listed TLV that was proposed in the application and modeled; and
 - c. physical changes to the emissions unit or the facility exhaust parameters (e.g., increased/decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).
7. If the permittee determines that the "Air Toxic Policy" will be satisfied for the above changes, the Ohio EPA will not consider the change(s) to be a "modification" under OAC rule 3745-31-01(VV)(1)(a)(ii), and a modification of the existing permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition (other than (VV)(1)(a)(ii)), then the permittee shall obtain a final permit to install prior to the change.

The permittee shall collect, record, and retain the following information when it conducts

evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy:"

- a. a description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);
- b. documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and
- c. where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify the following:
 - a. all 3-hour blocks of time during which the average combustion temperature within the thermal oxidizer does not comply with the temperature limitation specified above;
 - b. all periods of time during which the following scrubber parameters were not maintained at or above the required levels:
 - i. the static pressure drop across the scrubber; and
 - ii. the scrubber liquid flow rate.
 - c. pH deviation (excursion) reports that identify all periods of time during which the scrubber liquor pH did not comply with the pH requirements specified above.

The permittee shall also submit quarterly summaries which include a log of the downtime for the capture (collection) system, control device, and monitoring equipment, when the associated emissions unit was in operation.

2. The permittee shall submit deviation (excursion) reports which identify all exceedances of the rolling, 12-month summation of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, combined HAPs, and VOC limitations.
3. All reports are due by the date described in Part 1 - General Terms and Conditions of this permit under section (A)(1).

E. Testing Requirements

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Emissions Unit ID: **P023**

1. Compliance with the emission limitations in Section A.I. of these terms and conditions shall be determined in accordance with the following methods:
 - a. Emission Limitation:
VOC emissions shall not exceed 0.02 lb/hr.

Applicable Compliance Method:

Compliance may be demonstrated by multiplying the emission unit's maximum capacity of 1200 lbs product/hr by the stack emission factor of 1.787 lbs VOC/1000 lbs product (Testing 08/14/00 thru 08/16/00) by the destruction efficiency of the thermal oxidizer (1.0-0.99).

- b. Emission Limitation:
VOC emissions shall not exceed 0.1 ton/yr.

Applicable Compliance Method:

Compliance may be demonstrated by multiplying the pound per hour emission rate by 8760 hrs/yr and dividing by 2000 lbs/ton.

- c. Emission Limitation:
Styrene emissions shall not exceed 0.01 lb/hr.

Applicable Compliance Method:

Compliance may be demonstrated by multiplying the emission unit's maximum capacity of 1200 lbs product/hr by the stack emission factor of 1.097 lbs Styrene/1000 lbs product (Testing 08/14/00) by the destruction efficiency of the thermal oxidizer (1.0-0.99).

- d. Emission Limitation:
Styrene emissions shall not exceed 0.06 ton/yr.

Applicable Compliance Method:

Compliance shall be demonstrated by multiplying the pound per hour emission rate by 8760 hrs/yr and dividing by 2000 lbs/ton.

- e. Emission Limitation:
Visible particulate emissions shall not exceed 10% opacity, as a 6-minute average.

Applicable Compliance Method:

If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03 (B)(1).

- f. Emission Limitation:
Facility wide emissions of MEK shall not exceed 9.9 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.

- g. Emission Limitation:
Facility wide emissions of 1,3-Butadiene shall not exceed 9.9 tons per rolling, 12-month period.

Applicable Compliance Method:
Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.

- h. Emission Limitation:
Facility wide emissions of Acrylonitrile shall not exceed 9.9 tons per rolling, 12-month period.

Applicable Compliance Method:
Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.

- i. Emission Limitation:
Facility wide emissions of Styrene shall not exceed 9.9 tons per rolling, 12-month period.

Applicable Compliance Method:
Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.

- j. Emission Limitation:
Facility wide emissions of Chlorobenzene shall not exceed 9.9 tons per rolling, 12-month period.

Applicable Compliance Method:
Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.

- k. Emission Limitation:
Facility wide emissions of combined HAPs shall not exceed 24.9 tons per rolling, 12-month period.

Applicable Compliance Method:
Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.

- l. Emission Limitation:
The combined emissions from all extruder lines of PE shall not exceed 0.016 lb PE/hr.

Applicable Compliance Method:

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Compliance may be demonstrated by multiplying the emission factor of 0.0076 lb PE/mmBTU (AP-42, 1.4-2, 7/98) by the thermal oxidizer's capacity of 2.12 mmBTU/hr.

- m. Emission Limitation:
The combined emissions from all extruder lines of PE shall not exceed 0.1 ton per year.

Applicable Compliance Method:

Compliance may be demonstrated by multiplying the emission factor of 0.0076 lb PM/mmBTU (AP-42, 1.4-2, 7/98) by the thermal oxidizer's capacity of 2.12 mmBTU/hr, then multiplying by 8760 hrs/yr and dividing by 2000 lbs/ton.

- n. Emission Limitation:
Facility wide emissions of HCl shall not exceed 2.0 tons per year.

Applicable Compliance Method:

Compliance shall be demonstrated by summing the results of the equation referenced below with the previous 11 calendar months. The equation shall be performed on a monthly basis for each product's emissions of Chlorobenzene.

$$(MP)(EF_{\text{MCB}})(DE_{\text{MCB}})(\text{lbs HCl Produced/lbs MCB Destroyed}) + PE = ER$$

Where:

MP =	Monthly production volume, (lbs)
EF _{MCB} =	Chlorobenzene emission factor, (lbs MCB/ 1000 lbs of product)
DE _{MCB} =	(1.0-0.99)
lbs HCl Produced/lbs MCB Destroyed =	stoichiometric ratio (36.4/112.6)
MCB =	Chlorobenzene
HCl =	Hydrochloric Acid
PE =	Emission total for the previous 11 months (tons per month)
ER =	lbs HCl/month

- o. Emission Limitation:
Facility wide emissions of NO_x shall not exceed 20.0 tons per year.

Applicable Compliance Method:

Compliance shall be demonstrated by summing the results of the equation referenced below with the previous 11 calendar month's emission totals. The equation shall be performed on a monthly basis for each product's emissions of Acrylonitrile and for the combustion of natural gas.

$$(EF_{\text{ngc}})(\text{NG}) + (MP)(EF_{\text{AN}})(DE_{\text{AN}})(\text{lbs NO formed/lbs AN destroyed}) + SC = ER$$

Where:

$EF_{ngc} = 0.1$ lbs NO_x/MMBtu of Natural gas, (AP-42, 1.4-5, 7/98)

NG = Natural gas consumption, (mmBTU/month)

MP = Monthly production volume, (lbs)

$EF_{AN} =$ Acrylonitrile emission factor, (lbs AN/1000 lbs product)

$DE_{AN} = (1.0-0.99)$

lbs NO formed/lbs AN destroyed = stoichiometric ratio, (30.0/53.1)

AN = Acrylonitrile

NO = Nitrogen Oxide

SC = Screw cleaner emissions

ER = lbs NO_x/month

2. The permittee shall conduct, or have conducted, emission testing on the outlet of the Acid Gas Scrubber in accordance with the following requirements:
 - a. The emission testing shall be conducted within 60 days of a written request from the Ohio EPA.
 - b. The emission testing shall be conducted to determine the control efficiency of the RTO and AGS. If required, the permittee shall conduct emission testing on specific products to confirm the emission factors used to determine the uncontrolled mass rate of emissions for MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, HCl, NO_x, and VOC.
 - c. The following test methods shall be employed to demonstrate compliance with the allowable mass emission rates: 40 CFR Part 60, Appendix A Method 18, 24, 24A, 25A, 26, 26A, 305, or 311. (whichever is applicable to pollutant being tested). Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.
 - d. The tests shall be conducted while the emissions units are operating under standard conditions unless otherwise specified or approved by the Central District Office.
3. The permittee shall conduct, or have conducted, capture efficiency testing on each non-Gala extrusion line in accordance with the following requirements:
 - a. The emission testing shall be conducted within 90 days of written notification from the Central District Office.
 - b. The emission testing shall be conducted to determine the capture efficiency of specified extrusion line(s).
 - c. The following test methods shall be employed to demonstrate compliance with the allowable mass emission rates: 40 CFR Part 60, Appendix A Method 204D. Alternative U.S. EPA approved test methods or modifications to Method 204D may be used with prior approval from the Central District Office.
 - d. The tests shall be conducted while the emissions unit(s) are operating under standard conditions unless otherwise specified or approved by the Central District Office.
4. Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Central District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to

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Emissions Unit ID: **P023**

submit such notification for review and approval prior to the test(s) may result in the Central District Office's refusal to accept the results of the emission test(s).

Personnel from the Central District Office shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

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

F. Miscellaneous Requirements

1. The Ohio EPA reserves the right to update the emissions factors used to estimate the uncontrolled/ controlled VOC, NO_x, HAP and combined HAPs emissions at the facility.

Upon written notification from the Ohio EPA concerning the identification and availability of updated and more representative VOC/NO_x/HAP/HAPs emission factors (from compliance demonstrations), the permittee may be required to reevaluate the estimated emissions for each emissions unit and facility-wide using the updated emission factors. Should the updated emission factors indicate an increase in estimated VOC, NO_x, HAP or HAPs ton per year emissions which exceed 20% of the major source thresholds, the permittee shall submit the following (one copy to the Central District Office):

- a. Revised Emission Factors:
Within forty five (45) days of compliance demonstrations and/or a study which indicates the greater emission factors, the permittee shall submit updated VOC/NO_x/HAP/HAPs emissions estimates (maximum rate in lbs/hour and tons/year) for each emission unit covered under this permit and the facility, using the updated emission factors.
- b. New PTI or Modification To Existing PTI:(only applicable to facilities which exceed OAC rule 3745-31-05 (A)(3) limitations as a result of increased VOC/NO_x/HAP/HAPs emissions from the use of the updated emission factors)
 - i. Within thirty (30) days of submittal of the revised estimated emissions (item a above), the permittee shall submit a revised "potential to emit" and "actual emissions" determination for the facility to the Ohio EPA, DAPC, Engineering Section and Central District Office.
 - ii. If necessary, within forty five (45) days of submittal of the revised emission

estimates, the permittee shall submit an application for a PTI modification.

- c. "New" Title V facilities (only applicable to facilities which become subject to Title V permitting requirements (OAC Chapter 3745-77) as a result of increased VOC/NO_x/HAP/HAPs emissions from the use of the updated emission factors)
- i. Within thirty (30) days of submittal of the revised estimated emissions (item a above), the permittee shall submit a revised "potential to emit" and "actual emissions" determination for the facility to the Ohio EPA, DAPC, Engineering Section and Central District Office.
 - ii. If necessary, within 120 days of submittal of the revised emissions estimates (item a), the permittee shall submit a complete Title V permit application, federally enforceable state operating permit application, or permit to install application.
- d. Emissions Fee Report (for facilities subject to the Title V regulations):
- Within ninety (90) days of submittal of the revised estimated emissions, the permittee shall submit a Fee Emission Report to the Ohio EPA , in accordance with OAC Chapter 3745-78 and Ohio EPA Engineering Guide #61, for the most recent completed calendar year in which the facility would be classified as a "major" under the Ohio Title V regulations.

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

A. Applicable Emissions Limitations and/or Control Requirements

1. 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.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	
P024 - thermoplastic compounding extruder line no.3 with thermal oxidizer and acid gas scrubber (Terms in this permit supercede those identified in PTI 01-08258 issued 03/15/01)	OAC rule 3745-31-05 (A)(3)	OAC rule 3745-21-07 (G)
	OAC rule 3745-35-07 (D)	
	OAC rule 3745-17-07 (A)(1)	
	OAC rule 3745-17-11 (B)	

Applicable Emissions
Limitations/Control Measures

VOC emissions shall not exceed
1.31 lbs/hr and 5.7 tons/yr.

Styrene emissions shall not exceed
0.20 lb/hr and 0.9 ton/yr.

Visible particulate emissions shall
not exceed 10% opacity, as a 6-
minute average.

The requirements of this rule also
include compliance with the
requirements of OAC rule
3745-35-07 (D).

See II.A.c-e below.

See II.A.2.a-b and II.B.5 below.

The emission limitation specified in
this rule is less stringent than the
emission limitations established
pursuant to OAC rule 3745-31-
05(A)(3).

The emission limitation specified in
this rule is less stringent than the
emission limitations established
pursuant to OAC rule 3745-31-
05(A)(3).

The emission limitation specified in
this rule is less stringent than the
emission limitations established
pursuant to OAC rule 3745-31-
05(A)(3).

2. Additional Terms and Conditions

- 2.a** Facility wide emissions shall not exceed the following limitations during any rolling, 12-month period: 9.9 ton methyl ethyl ketone (MEK), 9.9 ton 1,3-Butadiene, 9.9 ton Acrylonitrile, 9.9 tons Styrene, 9.9 tons Chlorobenzene, 24.9 tons of combined HAPs and 99.9 tons of VOC.
- 2.b** Emissions from this emission unit shall be vented to a recuperative thermal oxidizer (RTO) followed by an acid gas scrubber (AGS).
- 2.c** The combined emissions from all extruder lines shall not exceed 0.016 lb particulate emissions (PE)/hr and 0.1 ton PE/yr. In addition, the facility wide emissions shall not exceed 2.0 tons hydrochloric acid (HCl) and 20.0 tons nitrogen oxides (NOx)/yr.
- 2.d** The emission unit's 1.31 lbsVOC/hr, 5.7 tonsVOC/yr, 0.20 lb Styrene/hr and 0.9 ton Styrene/yr emission limitations are based on the emission unit's potential to emit vented through the above referenced control equipment. Therefore, only the monitoring, record keeping or reporting requirements of the control equipment are necessary to ensure compliance with these emission limitations.
- 2.e** The 0.016 lb PE/hr, 0.1 ton PE/yr, 2.0 tons HCl and 20.0 tons NOx/yr emission limitations for all extruder lines combined are based on the potential to emit vented through the above referenced control equipment. Therefore, only the monitoring, record keeping or reporting requirements of the control equipment are necessary to ensure compliance with these emission limitations.

B. Operational Restrictions

- 1. The average combustion temperature within the thermal incinerator, for any 3-hour block of time when the emissions unit is in operation, shall not be less than 1500 degrees Fahrenheit.
- 2. The pressure drop across the scrubber shall be continuously maintained within the range of 0.5-3.0 inches of liquid at all times while the emissions unit is in operation.
- 3. The scrubber liquid flow rate shall be continuously maintained within the range of 85-350 gallons per minute at all times while the emissions unit is in operation.

4. The pH of the scrubber liquor shall be maintained within the range of 7.5 to 9.0.
5. The permittee shall capture at least 85% of the emissions from this emissions unit and vent them to the RTO followed by the AGS.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the combustion temperature within the thermal oxidizer when the emissions unit is in operation. Units shall be in degrees Fahrenheit. The monitoring and recording devices shall be capable of accurately measuring the desired parameter. The temperature monitor and recorder shall be calibrated, operated and maintained in accordance with the manufacturer's recommendations, with any modifications deemed necessary by the permittee.

The permittee shall collect and record all 3-hour blocks of time during which the combustion temperature within the thermal oxidizer, when the emissions unit was in operation, dropped below 1500 degrees Fahrenheit.

2. The permittee shall properly operate and maintain equipment to continuously monitor the static pressure drop across the scrubber and the scrubber liquid flow rate while the emissions unit is in operation. The monitoring devices and any recorders shall be calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.

The permittee shall collect and record the following information:

- a. the pressure drop across the scrubber, in inches of water on an hourly basis; and
 - b. the scrubber liquid flow rate, in gallons per minute on an hourly basis.
3. The permittee shall properly operate and maintain equipment to continuously monitor and record the pH of the scrubber liquor while the emissions unit is in operation. The pH 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 record the pH of the scrubber liquor, on a continuous basis.

4. The permittee shall maintain a log of the downtime for the capture (collection) system, all control devices, and all monitoring equipment, when the associated emissions unit was in operation.
5. The permittee shall maintain monthly records of the following information:

- a. the production rate of each product produced by each extruder;

- b. a record identifying whether each extruder has fugitive emissions (units with a water bath) or no fugitive emissions (Gala) at the die face;
- c. the emission rate of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, and VOC in pounds, from each extruder.

The emission rate shall be quantified by summing the emission rate from each extruder. Extruders with only stack emissions shall be determined by multiplying the production rate by the appropriate stack emission factor* by the control efficiency (1.0 - 0.99) established during the most recent stack test (test, 04/22/02). Extruders with both fugitive and stack emissions shall be determined by summing the stack and fugitive emissions. Stack emissions shall be determined by multiplying the production rate by the appropriate stack emission factor* by the control efficiency (1.0 - 0.99) established during the most recent stack test (test, 04/22/02). Fugitive emissions shall be determined by multiplying the production rate by the appropriate fugitive emission factor*.

* Permittee shall use the following worst case emission factors unless product specific emission factors are available and approved by the Central District Office:

MEK = 0.127 lb/1000 lb product; stack
 MEK = 0.0224 lb/1000 lb product; fugitive
 1,3 Butadiene = 0.083 lb/1000 lb product; stack
 1,3 Butadiene = 0.0146 lb/1000 lb product; fugitive
 Acrylonitrile = 0.247 lb/1000 lb product; stack
 Acrylonitrile = 0.0436 lb/1000 lb product; fugitive
 Styrene = 1.097 lb/1000 lb product; stack
 Styrene = 0.1935 lb/1000 lb product; fugitive
 Chlorobenzene = 0.213 lb/1000 product; stack
 Chlorobenzene = 0.0376 lb/1000 lb product; fugitive
 VOC = 1.787 lb/1000 product; stack
 VOC = 1.29 lb/1000 lb product; fugitive

- d. the facility-wide emission rate of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, and VOC in pounds; and
 - e. the rolling, 12-month summation of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene and VOC.
6. The permit to install for emission units P022 thru P030 was evaluated based on the actual materials and the design parameters of the emission unit and facility's exhaust system, as specified by the permittee in the permit to install application. The Ohio EPA's "Review of New Sources of

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Air Toxic Emissions" policy ("Air Toxic Policy") was applied for each pollutant emitted by emissions units P022 thru P031 using data from the permit to install application and the SCREEN 3.0 model (or

other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutant(s):

Pollutant: Styrene

TLV (mg/m³): 85

Maximum Hourly Emission Rate (lbs/hr): 2.6

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 111.5

MAGLC (ug/m³): 2024

Physical changes to or changes in the method of operation of the emissions unit or facility exhaust after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be satisfied. If, upon evaluation, the permittee determines that the "Air Toxic Policy" will not be satisfied, the permittee will not make the change. Changes that can affect the parameters used in applying the "Air Toxic Policy" include the following:

- a. changes in the composition of or use of materials used, or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value previously modeled;
 - b. changes in the composition of the materials, or use of new materials, that would result in an increase in emissions of any pollutant with a listed TLV that was proposed in the application and modeled; and
 - c. physical changes to the emissions unit or the facility exhaust parameters (e.g., increased/decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).
7. If the permittee determines that the "Air Toxic Policy" will be satisfied for the above changes, the Ohio EPA will not consider the change(s) to be a "modification" under OAC rule 3745-31-01(VV)(1)(a)(ii), and a modification of the existing permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition (other than (VV)(1)(a)(ii)), then the permittee shall obtain a final permit to install prior to the change.

The permittee shall collect, record, and retain the following information when it conducts

evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy:"

- a. a description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);

- b. documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and
- c. where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify the following:
 - a. all 3-hour blocks of time during which the average combustion temperature within the thermal oxidizer does not comply with the temperature limitation specified above;
 - b. all periods of time during which the following scrubber parameters were not maintained at or above the required levels:
 - i. the static pressure drop across the scrubber; and
 - ii. the scrubber liquid flow rate.
 - c. pH deviation (excursion) reports that identify all periods of time during which the scrubber liquor pH did not comply with the pH requirements specified above.

The permittee shall also submit quarterly summaries which include a log of the downtime for the capture (collection) system, control device, and monitoring equipment, when the associated emissions unit was in operation.

2. The permittee shall submit deviation (excursion) reports which identify all exceedances of the rolling, 12-month summation of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, combined HAPs, and VOC limitations.
3. All reports are due by the date described in Part 1 - General Terms and Conditions of this permit under section (A)(1).

E. Testing Requirements

1. Compliance with the emission limitations in Section A.I. of these terms and conditions shall be determined in accordance with the following methods:
 - a. Emission Limitation:

VOC emissions shall not exceed 1.31 lbs/hr.

Applicable Compliance Method:

Compliance may be demonstrated by summing the stack and fugitive emissions. The stack emissions shall be determined by multiplying the emission unit's maximum capacity of 1000 lbs product/hr by the stack emission factor of 1.787 lbs VOC/1000 lbs product (Testing 08/14/00 thru 08/16/00) by the destruction efficiency of the thermal oxidizer (1.0-0.99). The fugitive emissions shall be determined by multiplying the emission unit's maximum capacity of 1000 lbs product/hr by the fugitive emission factor of 1.29 lbs VOC/1000 lbs of product (Testing 08/14/00 thru 08/16/00).

- b. **Emission Limitation:**
VOC emissions shall not exceed 5.7 tons/yr.

Applicable Compliance Method:

Compliance may be demonstrated by multiplying the pound per hour emission rate by 8760 hrs/yr and dividing by 2000 lbs/ton.

- c. **Emission Limitation:**
Styrene emissions shall not exceed 0.20 lb/hr.

Applicable Compliance Method:

Compliance may be demonstrated by summing the stack and fugitive emissions. The stack emissions shall be determined by multiplying the emission unit's maximum capacity of 1000 lbs product/hr by the stack emission factor of 1.097 lbs Styrene/1000 lbs product (Testing 08/14/00) by the destruction efficiency of the thermal oxidizer (1.0-0.99). The fugitive emissions shall be determined by multiplying the emission unit's maximum capacity of 1000 lbs product/hr by the fugitive emission factor of 0.1935 lbs Styrene/1000 lbs of product (Testing 08/14/00).

- d. **Emission Limitation:**
Styrene emissions shall not exceed 0.9 ton/yr.

Applicable Compliance Method:

Compliance shall be demonstrated by multiplying the pound per hour emission rate by 8760 hrs/yr and dividing by 2000 lbs/ton.

- e. **Emission Limitation:**
Visible particulate emissions shall not exceed 10% opacity, as a 6-minute average.

Applicable Compliance Method:

If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03 (B)(1).

- f. Emission Limitation:
Facility wide emissions of MEK shall not exceed 9.9 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.

- g. Emission Limitation:
Facility wide emissions of 1,3-Butadiene shall not exceed 9.9 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.

- h. Emission Limitation:
Facility wide emissions of Acrylonitrile shall not exceed 9.9 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.

- i. Emission Limitation:
Facility wide emissions of Styrene shall not exceed 9.9 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.

- j. Emission Limitation:
Facility wide emissions of Chlorobenzene shall not exceed 9.9 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.

- k. Emission Limitation:
Facility wide emissions of combined HAPs shall not exceed 24.9 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.

- l. Emission Limitation:
The combined emissions from all extruder lines of PE shall not exceed 0.016 lb PE/hr.

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Applicable Compliance Method:

Compliance may be demonstrated by multiplying the emission factor of 0.0076 lb PE/mmBTU (AP-42, 1.4-2, 7/98) by the thermal oxidizer's capacity of 2.12 mmBTU/hr.

- m. Emission Limitation:
 The combined emissions from all extruder lines of PE shall not exceed 0.1 ton per year.

Applicable Compliance Method:

Compliance may be demonstrated by multiplying the emission factor of 0.0076 lb PM/mmBTU (AP-42, 1.4-2, 7/98) by the thermal oxidizer's capacity of 2.12 mmBTU/hr, then multiplying by 8760 hrs/yr and dividing by 2000 lbs/ton.

- n. Emission Limitation:
 Facility wide emissions of HCl shall not exceed 2.0 tons per year.

Applicable Compliance Method:

Compliance shall be demonstrated by summing the results of the equation referenced below with the previous 11 calendar months. The equation shall be performed on a monthly basis for each product's emissions of Chlorobenzene.

$$(MP)(EF_{\text{MCB}})(DE_{\text{MCB}})(\text{lbs HCl Produced/lbs MCB Destroyed}) + PE = ER$$

Where:

MP =	Monthly production volume, (lbs)
EF _{MCB} =	Chlorobenzene emission factor, (lbs MCB/ 1000 lbs of product)
DE _{MCB} =	(1.0-0.99)
lbs HCl Produced/lbs MCB Destroyed =	stoichiometric ratio (36.4/112.6)
MCB =	Chlorobenzene
HCl =	Hydrochloric Acid
PE =	Emission total for the previous 11 months (tons per month)
ER =	lbs HCl/month

- o. Emission Limitation:
 Facility wide emissions of NO_x shall not exceed 20.0 tons per year.

Applicable Compliance Method:

Compliance shall be demonstrated by summing the results of the equation referenced below with the previous 11 calendar month's emission totals. The equation shall be performed on a monthly basis for each product's emissions of Acrylonitrile and for the combustion of natural gas.

$$(EF_{\text{ngc}})(\text{NG}) + (MP)(EF_{\text{AN}})(DE_{\text{AN}})(\text{lbs NO formed/lbs AN destroyed}) + SC = ER$$

Where:

$EF_{ngc} = 0.1$ lbs NO_x/MMBtu of Natural gas, (AP-42, 1.4-5, 7/98)
NG = Natural gas consumption, (mmBTU/month)
MP = Monthly production volume, (lbs)
 $EF_{AN} =$ Acrylonitrile emission factor, (lbs AN/1000 lbs product)
 $DE_{AN} = (1.0-0.99)$
lbs NO formed/lbs AN destroyed = stoichiometric ratio, (30.0/53.1)
AN = Acrylonitrile
NO = Nitrogen Oxide
SC = Screw cleaner emissions
ER = lbs NO_x/month

2. The permittee shall conduct, or have conducted, emission testing on the outlet of the Acid Gas Scrubber in accordance with the following requirements:
 - a. The emission testing shall be conducted within 60 days of a written request from the Ohio EPA.
 - b. The emission testing shall be conducted to determine the control efficiency of the RTO and AGS. If required, the permittee shall conduct emission testing on specific products to confirm the emission factors used to determine the uncontrolled mass rate of emissions for MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, HCl, NO_x, and VOC.
 - c. The following test methods shall be employed to demonstrate compliance with the allowable mass emission rates: 40 CFR Part 60, Appendix A Method 18, 24, 24A, 25A, 26, 26A, 305, or 311. (whichever is applicable to pollutant being tested). Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.
 - d. The tests shall be conducted while the emissions units are operating under standard conditions unless otherwise specified or approved by the Central District Office.
3. The permittee shall conduct, or have conducted, capture efficiency testing on each non-Gala extrusion line in accordance with the following requirements:
 - a. The emission testing shall be conducted within 90 days of written notification from the Central District Office.
 - b. The emission testing shall be conducted to determine the capture efficiency of specified extrusion line(s).
 - c. The following test methods shall be employed to demonstrate compliance with the

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allowable mass emission rates: 40 CFR Part 60, Appendix A Method 204D. Alternative U.S. EPA approved test methods or modifications to Method 204D may be used with prior approval from the Central District Office.

- d. The tests shall be conducted while the emissions unit(s) are operating under standard conditions unless otherwise specified or approved by the Central District Office.

4. Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Central District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Central District Office's refusal to accept the results of the emission test(s).

Personnel from the Central District Office shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

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

F. Miscellaneous Requirements

1. The Ohio EPA reserves the right to update the emissions factors used to estimate the uncontrolled/ controlled VOC, NO_x, HAP and combined HAPs emissions at the facility.

Upon written notification from the Ohio EPA concerning the identification and availability of updated and more representative VOC/NO_x/HAP/HAPs emission factors (from compliance demonstrations), the permittee may be required to reevaluate the estimated emissions for each emissions unit and facility-wide using the updated emission factors. Should the updated emission factors indicate an increase in estimated VOC, NO_x, HAP or HAPs ton per year emissions which exceed 20% of the major source thresholds, the permittee shall submit the following (one copy to the Central District Office):

- a. Revised Emission Factors:
Within forty five (45) days of compliance demonstrations and/or a study which indicates the greater emission factors, the permittee shall submit updated VOC/NO_x/HAP/HAPs emissions estimates (maximum rate in lbs/hour and tons/year) for each emission unit covered under this permit and the facility, using the updated emission factors.
- b. New PTI or Modification To Existing PTI:(only applicable to facilities which exceed OAC rule 3745-31-05 (A)(3) limitations as a result of increased VOC/NO_x/HAP/HAPs emissions from the use of the updated emission factors)

- i. Within thirty (30) days of submittal of the revised estimated emissions (item a above), the permittee shall submit a revised "potential to emit" and "actual emissions" determination for the facility to the Ohio EPA, DAPC, Engineering Section and Central District Office.
 - ii. If necessary, within forty five (45) days of submittal of the revised emission estimates, the permittee shall submit an application for a PTI modification.
- c. "New" Title V facilities (only applicable to facilities which become subject to Title V permitting requirements (OAC Chapter 3745-77) as a result of increased VOC/NOx/HAP/HAPs emissions from the use of the updated emission factors)
- i. Within thirty (30) days of submittal of the revised estimated emissions (item a above), the permittee shall submit a revised "potential to emit" and "actual emissions" determination for the facility to the Ohio EPA, DAPC, Engineering Section and Central District Office.
 - ii. If necessary, within 120 days of submittal of the revised emissions estimates (item a), the permittee shall submit a complete Title V permit application, federally enforceable state operating permit application, or permit to install application.
- d. Emissions Fee Report (for facilities subject to the Title V regulations):
- Within ninety (90) days of submittal of the revised estimated emissions, the permittee shall submit a Fee Emission Report to the Ohio EPA , in accordance with OAC Chapter 3745-78 and Ohio EPA Engineering Guide #61, for the most recent completed calendar year in which the facility would be classified as a "major" under the Ohio Title V regulations.

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.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	
P026 - thermoplastic compounding extruder line no.5 with thermal oxidizer and acid gas scrubber (Terms in this permit supercede those identified in PTI 01-08258 issued 03/15/01)	OAC rule 3745-31-05 (A)(3)	OAC rule 3745-21-07 (G)
	OAC rule 3745-35-07 (D)	
	OAC rule 3745-17-07 (A)(1)	
	OAC rule 3745-17-11 (B)	

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Applicable Emissions
Limitations/Control Measures

VOC emissions shall not exceed
0.33 lb/hr and 1.4 ton/yr.

Styrene emissions shall not exceed
0.05 lb/hr and 0.22 ton/yr.

Visible particulate emissions shall
not exceed 10% opacity, as a 6-
minute average.

The requirements of this rule also
include compliance with the
requirements of OAC rule
3745-35-07 (D).

See II.A.c-e below.

See II.A.2.a-b and II.B.5 below.

The emission limitation specified in
this rule is less stringent than the
emission limitations established
pursuant to OAC rule 3745-31-
05(A)(3).

The emission limitation specified in
this rule is less stringent than the
emission limitations established
pursuant to OAC rule 3745-31-
05(A)(3).

The emission limitation specified in
this rule is less stringent than the
emission limitations established
pursuant to OAC rule 3745-31-
05(A)(3).

2. Additional Terms and Conditions

- 2.a** Facility wide emissions shall not exceed the following limitations during any rolling, 12-month period: 9.9 ton methyl ethyl ketone (MEK), 9.9 ton 1,3-Butadiene, 9.9 ton Acrylonitrile, 9.9 tons Styrene, 9.9 tons Chlorobenzene, 24.9 tons of combined HAPs and 99.9 tons of VOC.
- 2.b** Emissions from this emission unit shall be vented to a recuperative thermal oxidizer (RTO) followed by an acid gas scrubber (AGS).
- 2.c** The combined emissions from all extruder lines shall not exceed 0.016 lb particulate emissions (PE)/hr and 0.1 ton PE/yr. In addition, the facility wide emissions shall not exceed 2.0 tons hydrochloric acid (HCl) and 20.0 tons nitrogen oxides (NOx)/yr.
- 2.d** The emission unit's 0.33 lb VOC/hr, 1.4 tons VOC/yr, 0.05 lb Styrene/hr and 0.22 ton Styrene/yr emission limitations are based on the emission unit's potential to emit vented through the above referenced control equipment. Therefore, only the monitoring, record keeping or reporting requirements of the control equipment are necessary to ensure compliance with these emission limitations.
- 2.e** The 0.016 lb PE/hr, 0.1 ton PE/yr, 2.0 tons HCl and 20.0 tons NOx/yr emission limitations for all extruder lines combined are based on the potential to emit vented through the above referenced control equipment. Therefore, only the monitoring, record keeping or reporting requirements of the control equipment are necessary to ensure compliance with these emission limitations.

B. Operational Restrictions

- 1. The average combustion temperature within the thermal incinerator, for any 3-hour block of time when the emissions unit is in operation, shall not be less than 1500 degrees Fahrenheit.
- 2. The pressure drop across the scrubber shall be continuously maintained within the range of 0.5-3.0 inches of liquid at all times while the emissions unit is in operation.
- 3. The scrubber liquid flow rate shall be continuously maintained within the range of 85-350 gallons per minute at all times while the emissions unit is in operation.

4. The pH of the scrubber liquor shall be maintained within the range of 7.5 to 9.0.
5. The permittee shall capture at least 85% of the emissions from this emissions unit and vent them to the RTO followed by the AGS.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the combustion temperature within the thermal oxidizer when the emissions unit is in operation. Units shall be in degrees Fahrenheit. The monitoring and recording devices shall be capable of accurately measuring the desired parameter. The temperature monitor and recorder shall be calibrated, operated and maintained in accordance with the manufacturer's recommendations, with any modifications deemed necessary by the permittee.

The permittee shall collect and record all 3-hour blocks of time during which the combustion temperature within the thermal oxidizer, when the emissions unit was in operation, dropped below 1500 degrees Fahrenheit.

2. The permittee shall properly operate and maintain equipment to continuously monitor the static pressure drop across the scrubber and the scrubber liquid flow rate while the emissions unit is in operation. The monitoring devices and any recorders shall be calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.

The permittee shall collect and record the following information:

- a. the pressure drop across the scrubber, in inches of water on an hourly basis; and
 - b. the scrubber liquid flow rate, in gallons per minute on an hourly basis.
3. The permittee shall properly operate and maintain equipment to continuously monitor and record the pH of the scrubber liquor while the emissions unit is in operation. The pH 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 record the pH of the scrubber liquor, on a continuous basis.

4. The permittee shall maintain a log of the downtime for the capture (collection) system, all control devices, and all monitoring equipment, when the associated emissions unit was in operation.
5. The permittee shall maintain monthly records of the following information:

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- a. the production rate of each product produced by each extruder;

- b. a record identifying whether each extruder has fugitive emissions (units with a water bath) or no fugitive emissions (Gala) at the die face;
- c. the emission rate of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, and VOC in pounds, from each extruder.

The emission rate shall be quantified by summing the emission rate from each extruder. Extruders with only stack emissions shall be determined by multiplying the production rate by the appropriate stack emission factor* by the control efficiency (1.0 - 0.99) established during the most recent stack test (test, 04/22/02). Extruders with both fugitive and stack emissions shall be determined by summing the stack and fugitive emissions. Stack emissions shall be determined by multiplying the production rate by the appropriate stack emission factor* by the control efficiency (1.0 - 0.99) established during the most recent stack test (test, 04/22/02). Fugitive emissions shall be determined by multiplying the production rate by the appropriate fugitive emission factor*.

* Permittee shall use the following worst case emission factors unless product specific emission factors are available and approved by the Central District Office:

MEK = 0.127 lb/1000 lb product; stack
 MEK = 0.0224 lb/1000 lb product; fugitive
 1,3 Butadiene = 0.083 lb/1000 lb product; stack
 1,3 Butadiene = 0.0146 lb/1000 lb product; fugitive
 Acrylonitrile = 0.247 lb/1000 lb product; stack
 Acrylonitrile = 0.0436 lb/1000 lb product; fugitive
 Styrene = 1.097 lb/1000 lb product; stack
 Styrene = 0.1935 lb/1000 lb product; fugitive
 Chlorobenzene = 0.213 lb/1000 product; stack
 Chlorobenzene = 0.0376 lb/1000 lb product; fugitive
 VOC = 1.787 lb/1000 product; stack
 VOC = 1.29 lb/1000 lb product; fugitive

- d. the facility-wide emission rate of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, and VOC in pounds; and
 - e. the rolling, 12-month summation of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene and VOC.
6. The permit to install for emission units P022 thru P030 was evaluated based on the actual materials and the design parameters of the emission unit and facility's exhaust system, as specified by the permittee in the permit to install application. The Ohio EPA's "Review of New Sources of

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PTI Application: 01-09640

Issued

Facility ID: 0145020221

Emissions Unit ID: **P026**

Air Toxic Emissions" policy ("Air Toxic Policy") was applied for each pollutant emitted by emissions units P022 thru P031 using data from the permit to install application and the SCREEN 3.0 model (or

other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutant(s):

Pollutant: Styrene

TLV (mg/m³): 85

Maximum Hourly Emission Rate (lbs/hr): 2.6

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 111.5

MAGLC (ug/m³): 2024

Physical changes to or changes in the method of operation of the emissions unit or facility exhaust after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be satisfied. If, upon evaluation, the permittee determines that the "Air Toxic Policy" will not be satisfied, the permittee will not make the change. Changes that can affect the parameters used in applying the "Air Toxic Policy" include the following:

- a. changes in the composition of or use of materials used, or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value previously modeled;
 - b. changes in the composition of the materials, or use of new materials, that would result in an increase in emissions of any pollutant with a listed TLV that was proposed in the application and modeled; and
 - c. physical changes to the emissions unit or the facility exhaust parameters (e.g., increased/decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).
7. If the permittee determines that the "Air Toxic Policy" will be satisfied for the above changes, the Ohio EPA will not consider the change(s) to be a "modification" under OAC rule 3745-31-01(VV)(1)(a)(ii), and a modification of the existing permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition (other than (VV)(1)(a)(ii)), then the permittee shall obtain a final permit to install prior to the change.

The permittee shall collect, record, and retain the following information when it conducts

evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy:"

- a. a description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);
- b. documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and
- c. where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify the following:
 - a. all 3-hour blocks of time during which the average combustion temperature within the thermal oxidizer does not comply with the temperature limitation specified above;
 - b. all periods of time during which the following scrubber parameters were not maintained at or above the required levels:
 - i. the static pressure drop across the scrubber; and
 - ii. the scrubber liquid flow rate.
 - c. pH deviation (excursion) reports that identify all periods of time during which the scrubber liquor pH did not comply with the pH requirements specified above.

The permittee shall also submit quarterly summaries which include a log of the downtime for the capture (collection) system, control device, and monitoring equipment, when the associated emissions unit was in operation.

2. The permittee shall submit deviation (excursion) reports which identify all exceedances of the rolling, 12-month summation of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, combined HAPs, and VOC limitations.
3. All reports are due by the date described in Part 1 - General Terms and Conditions of this permit under section (A)(1).

E. Testing Requirements

1. Compliance with the emission limitations in Section A.I. of these terms and conditions shall be determined in accordance with the following methods:
 - a. Emission Limitation:
VOC emissions shall not exceed 0.33 lb/hr.

Applicable Compliance Method:
Compliance may be demonstrated by summing the stack and fugitive emissions. The stack emissions shall be determined by multiplying the emission unit's maximum capacity of 250 lbs product/hr by the stack emission factor of 1.787 lbs VOC/1000 lbs product (Testing 08/14/00 thru 08/16/00) by the destruction efficiency of the thermal oxidizer (1.0-0.99). The fugitive emissions shall be determined by multiplying the emission unit's maximum capacity of 250 lbs product/hr by the fugitive emission factor of 1.29 lbs VOC/1000 lbs of product (Testing 08/14/00 thru 08/16/00).
 - b. Emission Limitation:
VOC emissions shall not exceed 1.4 tons/yr.

Applicable Compliance Method:
Compliance may be demonstrated by multiplying the pound per hour emission rate by 8760 hrs/yr and dividing by 2000 lbs/ton.
 - c. Emission Limitation:
Styrene emissions shall not exceed 0.05 lb/hr.

Applicable Compliance Method:
Compliance may be demonstrated by summing the stack and fugitive emissions. The stack emissions shall be determined by multiplying the emission unit's maximum capacity of 250 lbs product/hr by the stack emission factor of 1.097 lbs Styrene/1000 lbs product (Testing 08/14/00) by the destruction efficiency of the thermal oxidizer (1.0-0.99). The fugitive emissions shall be determined by multiplying the emission unit's maximum capacity of 250 lbs product/hr by the fugitive emission factor of 0.1935 lbs Styrene/1000 lbs of product (Testing 08/14/00).
 - d. Emission Limitation:
Styrene emissions shall not exceed 0.22 ton/yr.

Applicable Compliance Method:
Compliance shall be demonstrated by multiplying the pound per hour emission rate by 8760 hrs/yr and dividing by 2000 lbs/ton.

- e. Emission Limitation:
Visible particulate emissions shall not exceed 10% opacity, as a 6-minute average.
- Applicable Compliance Method:
If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03 (B)(1).
- f. Emission Limitation:
Facility wide emissions of MEK shall not exceed 9.9 tons per rolling, 12-month period.
- Applicable Compliance Method:
Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.
- g. Emission Limitation:
Facility wide emissions of 1,3-Butadiene shall not exceed 9.9 tons per rolling, 12-month period.
- Applicable Compliance Method:
Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.
- h. Emission Limitation:
Facility wide emissions of Acrylonitrile shall not exceed 9.9 tons per rolling, 12-month period.
- Applicable Compliance Method:
Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.
- i. Emission Limitation:
Facility wide emissions of Styrene shall not exceed 9.9 tons per rolling, 12-month period.
- Applicable Compliance Method:
Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.
- j. Emission Limitation:
Facility wide emissions of Chlorobenzene shall not exceed 9.9 tons per rolling, 12-month period.
- Applicable Compliance Method:

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Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.

- k. Emission Limitation:
Facility wide emissions of combined HAPs shall not exceed 24.9 tons per rolling, 12-month period.

Applicable Compliance Method:
Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.

- l. Emission Limitation:
The combined emissions from all extruder lines of PE shall not exceed 0.016 lb PE/hr.

Applicable Compliance Method:
Compliance may be demonstrated by multiplying the emission factor of 0.0076 lb PE/mmBTU (AP-42, 1.4-2, 7/98) by the thermal oxidizer's capacity of 2.12 mmBTU/hr.

- m. Emission Limitation:
The combined emissions from all extruder lines of PE shall not exceed 0.1 ton per year.

Applicable Compliance Method:

Compliance may be demonstrated by multiplying the emission factor of 0.0076 lb PM/mmBTU (AP-42, 1.4-2, 7/98) by the thermal oxidizer's capacity of 2.12 mmBTU/hr, then multiplying by 8760 hrs/yr and dividing by 2000 lbs/ton.

- n. Emission Limitation:
 Facility wide emissions of HCl shall not exceed 2.0 tons per year.

Applicable Compliance Method:

Compliance shall be demonstrated by summing the results of the equation referenced below with the previous 11 calendar months. The equation shall be performed on a monthly basis for each product's emissions of Chlorobenzene.

$$(MP)(EF_{MCB})(DE_{MCB})(\text{lbs HCl Produced/lbs MCB Destroyed}) + PE = ER$$

Where:

MP = Monthly production volume, (lbs)
 EF_{MCB} = Chlorobenzene emission factor, (lbs MCB/ 1000 lbs of product)
 DE_{MCB} = (1.0-0.99)
 lbs HCl Produced/lbs MCB Destroyed = stoichiometric ratio (36.4/112.6)
 MCB = Chlorobenzene
 HCl = Hydrochloric Acid
 PE = Emission total for the previous 11 months (tons per month)
 ER = lbs HCl/month

- o. Emission Limitation:
 Facility wide emissions of NO_x shall not exceed 20.0 tons per year.

Applicable Compliance Method:

Compliance shall be demonstrated by summing the results of the equation referenced below with the previous 11 calendar month's emission totals. The equation shall be performed on a monthly basis for each product's emissions of Acrylonitrile and for the combustion of natural gas.

$$(EF_{ngc})(NG) + (MP)(EF_{AN})(DE_{AN})(\text{lbs NO formed/lbs AN destroyed}) + SC = ER$$

Where:

EF_{ngc} = 0.1 lbs NO_x/MMBtu of Natural gas, (AP-42, 1.4-5, 7/98)
 NG = Natural gas consumption, (mmBTU/month)
 MP = Monthly production volume, (lbs)

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EF_{AN} = Acrylonitrile emission factor, (lbs AN/1000 lbs product)

DE_{AN} = (1.0-0.99)

lbs NO formed/lbs AN destroyed = stoichiometric ratio, (30.0/53.1)

AN = Acrylonitrile
NO = Nitrogen Oxide
SC = Screw cleaner emissions
ER = lbs NO_x/month

2. The permittee shall conduct, or have conducted, emission testing on the outlet of the Acid Gas Scrubber in accordance with the following requirements:
 - a. The emission testing shall be conducted within 60 days of a written request from the Ohio EPA.
 - b. The emission testing shall be conducted to determine the control efficiency of the RTO and AGS. If required, the permittee shall conduct emission testing on specific products to confirm the emission factors used to determine the uncontrolled mass rate of emissions for MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, HCl, NO_x, and VOC.
 - c. The following test methods shall be employed to demonstrate compliance with the allowable mass emission rates: 40 CFR Part 60, Appendix A Method 18, 24, 24A, 25A, 26, 26A, 305, or 311. (whichever is applicable to pollutant being tested). Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.
 - d. The tests shall be conducted while the emissions units are operating under standard conditions unless otherwise specified or approved by the Central District Office.
3. The permittee shall conduct, or have conducted, capture efficiency testing on each non-Gala extrusion line in accordance with the following requirements:
 - a. The emission testing shall be conducted within 90 days of written notification from the Central District Office.
 - b. The emission testing shall be conducted to determine the capture efficiency of specified extrusion line(s).
 - c. The following test methods shall be employed to demonstrate compliance with the allowable mass emission rates: 40 CFR Part 60, Appendix A Method 204D. Alternative U.S. EPA approved test methods or modifications to Method 204D may be used with prior approval from the Central District Office.
 - d. The tests shall be conducted while the emissions unit(s) are operating under standard conditions unless otherwise specified or approved by the Central District Office.

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4. Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Central District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Central District Office's refusal to accept the results of the emission test(s).

Personnel from the Central District Office shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

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

F. Miscellaneous Requirements

1. The Ohio EPA reserves the right to update the emissions factors used to estimate the uncontrolled/ controlled VOC, NO_x, HAP and combined HAPs emissions at the facility.

Upon written notification from the Ohio EPA concerning the identification and availability of updated and more representative VOC/NO_x/HAP/HAPs emission factors (from compliance demonstrations), the permittee may be required to reevaluate the estimated emissions for each emissions unit and facility-wide using the updated emission factors. Should the updated emission factors indicate an increase in estimated VOC, NO_x, HAP or HAPs ton per year emissions which exceed 20% of the major source thresholds, the permittee shall submit the following (one copy to the Central District Office):

- a. Revised Emission Factors:
Within forty five (45) days of compliance demonstrations and/or a study which indicates the greater emission factors, the permittee shall submit updated VOC/NO_x/HAP/HAPs emissions estimates (maximum rate in lbs/hour and tons/year) for each emission unit covered under this permit and the facility, using the updated emission factors.
- b. New PTI or Modification To Existing PTI:(only applicable to facilities which exceed OAC rule 3745-31-05 (A)(3) limitations as a result of increased VOC/NO_x/HAP/HAPs

emissions from the use of the updated emission factors)

- i. Within thirty (30) days of submittal of the revised estimated emissions (item a above), the permittee shall submit a revised "potential to emit" and "actual emissions" determination for the facility to the Ohio EPA, DAPC, Engineering Section and Central District Office.
 - ii. If necessary, within forty five (45) days of submittal of the revised emission estimates, the permittee shall submit an application for a PTI modification.
- c. "New" Title V facilities (only applicable to facilities which become subject to Title V permitting requirements (OAC Chapter 3745-77) as a result of increased VOC/NO_x/HAP/HAPs emissions from the use of the updated emission factors)
- i. Within thirty (30) days of submittal of the revised estimated emissions (item a above), the permittee shall submit a revised "potential to emit" and "actual emissions" determination for the facility to the Ohio EPA, DAPC, Engineering Section and Central District Office.
 - ii. If necessary, within 120 days of submittal of the revised emissions estimates (item a), the permittee shall submit a complete Title V permit application, federally enforceable state operating permit application, or permit to install application.
- d. Emissions Fee Report (for facilities subject to the Title V regulations):

Within ninety (90) days of submittal of the revised estimated emissions, the permittee shall submit a Fee Emission Report to the Ohio EPA , in accordance with OAC Chapter 3745-78 and Ohio EPA Engineering Guide #61, for the most recent completed calendar year in which the facility would be classified as a "major" under the Ohio Title V regulations.

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

A. Applicable Emissions Limitations and/or Control Requirements

1. 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.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	
P027 - thermoplastic compounding extruder line no.6 with thermal oxidizer and acid gas scrubber (Terms in this permit supercede those identified in PTI 01-08258 issued 03/15/01)	OAC rule 3745-31-05 (A)(3)	OAC rule 3745-21-07 (G)
	OAC rule 3745-35-07 (D)	
	OAC rule 3745-17-07 (A)(1)	
	OAC rule 3745-17-11 (B)	

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Applicable Emissions
Limitations/Control Measures

VOC emissions shall not exceed
0.09 lb/hr and 0.4 ton/yr.

Styrene emissions shall not exceed
0.05 lb/hr and 0.2 ton/yr.

Visible particulate emissions shall
not exceed 10% opacity, as a 6-
minute average.

The requirements of this rule also
include compliance with the
requirements of OAC rule
3745-35-07 (D).

See II.A.c-e below.

See II.A.2.a-b and II.B.5 below.

The emission limitation specified in
this rule is less stringent than the
emission limitations established
pursuant to OAC rule 3745-31-
05(A)(3).

The emission limitation specified in
this rule is less stringent than the
emission limitations established
pursuant to OAC rule 3745-31-
05(A)(3).

The emission limitation specified in
this rule is less stringent than the
emission limitations established
pursuant to OAC rule 3745-31-
05(A)(3).

2. Additional Terms and Conditions

- 2.a** Facility wide emissions shall not exceed the following limitations during any rolling, 12-month period: 9.9 ton methyl ethyl ketone (MEK), 9.9 ton 1,3-Butadiene, 9.9 ton Acrylonitrile, 9.9 tons Styrene, 9.9 tons Chlorobenzene, 24.9 tons of combined HAPs and 99.9 tons of VOC.
- 2.b** Emissions from this emission unit shall be vented to a recuperative thermal oxidizer (RTO) followed by an acid gas scrubber (AGS).
- 2.c** The combined emissions from all extruder lines shall not exceed 0.016 lb particulate emissions (PE)/hr and 0.1 ton PE/yr. In addition, the facility wide emissions shall not exceed 2.0 tons hydrochloric acid (HCl) and 20.0 tons nitrogen oxides (NOx)/yr.
- 2.d** The emission unit's 0.09 lb VOC/hr, 0.4 ton VOC/yr, 0.05 lb Styrene/hr and 0.2 ton Styrene/yr emission limitations are based on the emission unit's potential to emit vented through the above referenced control equipment. Therefore, only the monitoring, record keeping or reporting requirements of the control equipment are necessary to ensure compliance with these emission limitations.
- 2.e** The 0.016 lb PE/hr, 0.1 ton PE/yr, 2.0 tons HCl and 20.0 tons NOx/yr emission limitations for all extruder lines combined are based on the potential to emit vented through the above referenced control equipment. Therefore, only the monitoring, record keeping or reporting requirements of the control equipment are necessary to ensure compliance with these emission limitations.

B. Operational Restrictions

- 1. The average combustion temperature within the thermal incinerator, for any 3-hour block of time when the emissions unit is in operation, shall not be less than 1500 degrees Fahrenheit.
- 2. The pressure drop across the scrubber shall be continuously maintained within the range of 0.5-3.0 inches of liquid at all times while the emissions unit is in operation.
- 3. The scrubber liquid flow rate shall be continuously maintained within the range of 85-350 gallons per minute at all times while the emissions unit is in operation.

4. The pH of the scrubber liquor shall be maintained within the range of 7.5 to 9.0.
5. The permittee shall capture 100% of the emissions from this emissions unit and vent them to the RTO followed by the AGS.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the combustion temperature within the thermal oxidizer when the emissions unit is in operation. Units shall be in degrees Fahrenheit. The monitoring and recording devices shall be capable of accurately measuring the desired parameter. The temperature monitor and recorder shall be calibrated, operated and maintained in accordance with the manufacturer's recommendations, with any modifications deemed necessary by the permittee.

The permittee shall collect and record all 3-hour blocks of time during which the combustion temperature within the thermal oxidizer, when the emissions unit was in operation, dropped below 1500 degrees Fahrenheit.

2. The permittee shall properly operate and maintain equipment to continuously monitor the static pressure drop across the scrubber and the scrubber liquid flow rate while the emissions unit is in operation. The monitoring devices and any recorders shall be calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.

The permittee shall collect and record the following information:

- a. the pressure drop across the scrubber, in inches of water on an hourly basis; and
 - b. the scrubber liquid flow rate, in gallons per minute on an hourly basis.
3. The permittee shall properly operate and maintain equipment to continuously monitor and record the pH of the scrubber liquor while the emissions unit is in operation. The pH 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 record the pH of the scrubber liquor, on a continuous basis.

4. The permittee shall maintain a log of the downtime for the capture (collection) system, all control devices, and all monitoring equipment, when the associated emissions unit was in operation.
5. The permittee shall maintain monthly records of the following information:

- a. the production rate of each product produced by each extruder;
- b. a record identifying whether each extruder has fugitive emissions (units with a water bath) or no fugitive emissions (Gala) at the die face;
- c. the emission rate of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, and VOC in pounds, from each extruder.

The emission rate shall be quantified by summing the emission rate from each extruder. Extruders with only stack emissions shall be determined by multiplying the production rate by the appropriate stack emission factor* by the control efficiency (1.0 - 0.99) established during the most recent stack test (test, 04/22/02). Extruders with both fugitive and stack emissions shall be determined by summing the stack and fugitive emissions. Stack emissions shall be determined by multiplying the production rate by the appropriate stack emission factor* by the control efficiency (1.0 - 0.99) established during the most recent stack test (test, 04/22/02). Fugitive emissions shall be determined by multiplying the production rate by the appropriate fugitive emission factor*.

* Permittee shall use the following worst case emission factors unless product specific emission factors are available and approved by the Central District Office:

MEK = 0.127 lb/1000 lb product; stack
 MEK = 0.0224 lb/1000 lb product; fugitive
 1,3 Butadiene = 0.083 lb/1000 lb product; stack
 1,3 Butadiene = 0.0146 lb/1000 lb product; fugitive
 Acrylonitrile = 0.247 lb/1000 lb product; stack
 Acrylonitrile = 0.0436 lb/1000 lb product; fugitive
 Styrene = 1.097 lb/1000 lb product; stack
 Styrene = 0.1935 lb/1000 lb product; fugitive
 Chlorobenzene = 0.213 lb/1000 product; stack
 Chlorobenzene = 0.0376 lb/1000 lb product; fugitive
 VOC = 1.787 lb/1000 product; stack
 VOC = 1.29 lb/1000 lb product; fugitive

- d. the facility-wide emission rate of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, and VOC in pounds; and
 - e. the rolling, 12-month summation of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene and VOC.
6. The permit to install for emission units P022 thru P030 was evaluated based on the actual

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materials and the design parameters of the emission unit and facility's exhaust system, as specified by the permittee in the permit to install application. The Ohio EPA's "Review of New Sources of Air Toxic Emissions" policy ("Air Toxic Policy") was applied for each pollutant emitted by emissions units P022 thru P031 using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutant(s):

Pollutant: Styrene

TLV (mg/m³): 85

Maximum Hourly Emission Rate (lbs/hr): 2.6

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 111.5MAGLC (ug/m³): 2024

Physical changes to or changes in the method of operation of the emissions unit or facility exhaust after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be satisfied. If, upon evaluation, the permittee determines that the "Air Toxic Policy" will not be satisfied, the permittee will not make the change. Changes that can affect the parameters used in applying the "Air Toxic Policy" include the following:

- a. changes in the composition of or use of materials used, or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value previously modeled;
 - b. changes in the composition of the materials, or use of new materials, that would result in an increase in emissions of any pollutant with a listed TLV that was proposed in the application and modeled; and
 - c. physical changes to the emissions unit or the facility exhaust parameters (e.g., increased/decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).
7. If the permittee determines that the "Air Toxic Policy" will be satisfied for the above changes, the Ohio EPA will not consider the change(s) to be a "modification" under OAC rule 3745-31-01(VV)(1)(a)(ii), and a modification of the existing permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition (other than (VV)(1)(a)(ii)), then the permittee shall obtain a final permit to install prior

to the change.

The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy:"

- a. a description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);
- b. documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and
- c. where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify the following:
 - a. all 3-hour blocks of time during which the average combustion temperature within the thermal oxidizer does not comply with the temperature limitation specified above;
 - b. all periods of time during which the following scrubber parameters were not maintained at or above the required levels:
 - i. the static pressure drop across the scrubber; and
 - ii. the scrubber liquid flow rate.
 - c. pH deviation (excursion) reports that identify all periods of time during which the scrubber liquor pH did not comply with the pH requirements specified above.

The permittee shall also submit quarterly summaries which include a log of the downtime for the capture (collection) system, control device, and monitoring equipment, when the associated emissions unit was in operation.

2. The permittee shall submit deviation (excursion) reports which identify all exceedances of the rolling, 12-month summation of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, combined HAPs, and VOC limitations.
3. All reports are due by the date described in Part 1 - General Terms and Conditions of this permit

under section (A)(1).

E. Testing Requirements

1. Compliance with the emission limitations in Section A.I. of these terms and conditions shall be determined in accordance with the following methods:
 - a. Emission Limitation:
VOC emissions shall not exceed 0.09 lb/hr.

Applicable Compliance Method:
Compliance may be demonstrated by multiplying the emission unit's maximum capacity of 5000 lbs product/hr by the stack emission factor of 1.787 lbs VOC/1000 lbs product (Testing 08/14/00 thru 08/16/00) by the destruction efficiency of the thermal oxidizer (1.0-0.99).
 - b. Emission Limitation:
VOC emissions shall not exceed 0.4 ton/yr.

Applicable Compliance Method:
Compliance may be demonstrated by multiplying the pound per hour emission rate by 8760 hrs/yr and dividing by 2000 lbs/ton.
 - c. Emission Limitation:
Styrene emissions shall not exceed 0.05 lb/hr.

Applicable Compliance Method:
Compliance may be demonstrated by multiplying the emission unit's maximum capacity of 5000 lbs product/hr by the stack emission factor of 1.097 lbs Styrene/1000 lbs product (Testing 08/14/00) by the destruction efficiency of the thermal oxidizer (1.0-0.99).
 - d. Emission Limitation:
Styrene emissions shall not exceed 0.2 ton/yr.

Applicable Compliance Method:
Compliance shall be demonstrated by multiplying the pound per hour emission rate by 8760 hrs/yr and dividing by 2000 lbs/ton.
 - e. Emission Limitation:
Visible particulate emissions shall not exceed 10% opacity, as a 6-minute average.

Applicable Compliance Method:

If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03 (B)(1).

- f. Emission Limitation:
Facility wide emissions of MEK shall not exceed 9.9 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.

- g. Emission Limitation:
Facility wide emissions of 1,3-Butadiene shall not exceed 9.9 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.

- h. Emission Limitation:
Facility wide emissions of Acrylonitrile shall not exceed 9.9 tons per rolling, 12-month period.
- Applicable Compliance Method:
Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.
- i. Emission Limitation:
Facility wide emissions of Styrene shall not exceed 9.9 tons per rolling, 12-month period.
- Applicable Compliance Method:
Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.
- j. Emission Limitation:
Facility wide emissions of Chlorobenzene shall not exceed 9.9 tons per rolling, 12-month period.
- Applicable Compliance Method:
Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.
- k. Emission Limitation:
Facility wide emissions of combined HAPs shall not exceed 24.9 tons per rolling, 12-month period.
- Applicable Compliance Method:
Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.
- l. Emission Limitation:
The combined emissions from all extruder lines of PE shall not exceed 0.016 lb PE/hr.
- Applicable Compliance Method:
Compliance may be demonstrated by multiplying the emission factor of 0.0076 lb PE/mmBTU (AP-42, 1.4-2, 7/98) by the thermal oxidizer's capacity of 2.12 mmBTU/hr.
- m. Emission Limitation:
The combined emissions from all extruder lines of PE shall not exceed 0.1 ton per year.
- Applicable Compliance Method:
Compliance may be demonstrated by multiplying the emission factor of 0.0076 lb PM/mmBTU (AP-42, 1.4-2, 7/98) by the thermal oxidizer's capacity of 2.12 mmBTU/hr,

then multiplying by 8760 hrs/yr and dividing by 2000 lbs/ton.

- n. Emission Limitation:
Facility wide emissions of HCl shall not exceed 2.0 tons per year.

Applicable Compliance Method:

Compliance shall be demonstrated by summing the results of the equation referenced below with the previous 11 calendar months. The equation shall be performed on a monthly basis for each product's emissions of Chlorobenzene.

$$(MP)(EF_{MCB})(DE_{MCB})(\text{lbs HCl Produced/lbs MCB Destroyed}) + PE = ER$$

Where:

MP = Monthly production volume, (lbs)
 EF_{MCB} = Chlorobenzene emission factor, (lbs MCB/ 1000 lbs of product)
 DE_{MCB} = (1.0-0.99)
lbs HCl Produced/lbs MCB Destroyed = stoichiometric ratio (36.4/112.6)
MCB = Chlorobenzene
HCl = Hydrochloric Acid
PE = Emission total for the previous 11 months (tons per month)
ER = lbs HCl/month

- o. Emission Limitation:
Facility wide emissions of NO_x shall not exceed 20.0 tons per year.

Applicable Compliance Method:

Compliance shall be demonstrated by summing the results of the equation referenced below with the previous 11 calendar month's emission totals. The equation shall be performed on a monthly basis for each product's emissions of Acrylonitrile and for the combustion of natural gas.

$$(EF_{ngc})(NG) + (MP)(EF_{AN})(DE_{AN})(\text{lbs NO formed/lbs AN destroyed}) + SC = ER$$

Where:

EF_{ngc} = 0.1 lbs NO_x/MMBtu of Natural gas, (AP-42, 1.4-5, 7/98)
NG = Natural gas consumption, (mmBTU/month)
MP = Monthly production volume, (lbs)
 EF_{AN} = Acrylonitrile emission factor, (lbs AN/1000 lbs product)
 DE_{AN} = (1.0-0.99)
lbs NO formed/lbs AN destroyed = stoichiometric ratio, (30.0/53.1)
AN = Acrylonitrile

NO = Nitrogen Oxide
SC = Screw cleaner emissions
ER = lbs NOx/month

2. The permittee shall conduct, or have conducted, emission testing on the outlet of the Acid Gas Scrubber in accordance with the following requirements:
 - a. The emission testing shall be conducted within 60 days of a written request from the Ohio EPA.
 - b. The emission testing shall be conducted to determine the control efficiency of the RTO and AGS. If required, the permittee shall conduct emission testing on specific products to confirm the emission factors used to determine the uncontrolled mass rate of emissions for MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, HCl, NO_x, and VOC.
 - c. The following test methods shall be employed to demonstrate compliance with the allowable mass emission rates: 40 CFR Part 60, Appendix A Method 18, 24, 24A, 25A, 26, 26A, 305, or 311. (whichever is applicable to pollutant being tested). Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.
 - d. The tests shall be conducted while the emissions units are operating under standard conditions unless otherwise specified or approved by the Central District Office.

3. The permittee shall conduct, or have conducted, capture efficiency testing on each non-Gala extrusion line in accordance with the following requirements:
 - a. The emission testing shall be conducted within 90 days of written notification from the Central District Office.
 - b. The emission testing shall be conducted to determine the capture efficiency of specified extrusion line(s).
 - c. The following test methods shall be employed to demonstrate compliance with the allowable mass emission rates: 40 CFR Part 60, Appendix A Method 204D. Alternative U.S. EPA approved test methods or modifications to Method 204D may be used with prior approval from the Central District Office.
 - d. The tests shall be conducted while the emissions unit(s) are operating under standard conditions unless otherwise specified or approved by the Central District Office.

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4. Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Central District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Central District Office's refusal to accept the results of the emission test(s).

Personnel from the Central District Office shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

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

F. Miscellaneous Requirements

1. The Ohio EPA reserves the right to update the emissions factors used to estimate the uncontrolled/ controlled VOC, NO_x, HAP and combined HAPs emissions at the facility.

Upon written notification from the Ohio EPA concerning the identification and availability of updated and more representative VOC/NO_x/HAP/HAPs emission factors (from compliance demonstrations), the permittee may be required to reevaluate the estimated emissions for each emissions unit and facility-wide using the updated emission factors. Should the updated emission factors indicate an increase in estimated VOC, NO_x, HAP or HAPs ton per year emissions which exceed 20% of the major source thresholds, the permittee shall submit the following (one copy to the Central District Office):

- a. Revised Emission Factors:
Within forty five (45) days of compliance demonstrations and/or a study which indicates the greater emission factors, the permittee shall submit updated VOC/NO_x/HAP/HAPs emissions estimates (maximum rate in lbs/hour and tons/year) for each emission unit covered under this permit and the facility, using the updated emission factors.
- b. New PTI or Modification To Existing PTI:(only applicable to facilities which exceed OAC rule 3745-31-05 (A)(3) limitations as a result of increased VOC/NO_x/HAP/HAPs emissions from the use of the updated emission factors)

- i. Within thirty (30) days of submittal of the revised estimated emissions (item a above), the permittee shall submit a revised "potential to emit" and "actual emissions" determination for the facility to the Ohio EPA, DAPC, Engineering Section and Central District Office.
 - ii. If necessary, within forty five (45) days of submittal of the revised emission estimates, the permittee shall submit an application for a PTI modification.
- c. "New" Title V facilities (only applicable to facilities which become subject to Title V permitting requirements (OAC Chapter 3745-77) as a result of increased VOC/NOx/HAP/HAPs emissions from the use of the updated emission factors)
- i. Within thirty (30) days of submittal of the revised estimated emissions (item a above), the permittee shall submit a revised "potential to emit" and "actual emissions" determination for the facility to the Ohio EPA, DAPC, Engineering Section and Central District Office.
 - ii. If necessary, within 120 days of submittal of the revised emissions estimates (item a), the permittee shall submit a complete Title V permit application, federally enforceable state operating permit application, or permit to install application.
- d. Emissions Fee Report (for facilities subject to the Title V regulations):
- Within ninety (90) days of submittal of the revised estimated emissions, the permittee shall submit a Fee Emission Report to the Ohio EPA , in accordance with OAC Chapter 3745-78 and Ohio EPA Engineering Guide #61, for the most recent completed calendar year in which the facility would be classified as a "major" under the Ohio Title V regulations.

PART II - SPECIAL TERMS AND CONDITIONS FOR SPECIFIC EMISSIONS UNIT(S)**A. Applicable Emissions Limitations and/or Control Requirements**

1. 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.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	
P028 - thermoplastic compounding extruder line no.7 with thermal oxidizer and acid gas scrubber (Terms in this permit supercede those identified in PTI 01-08258 issued 03/15/01)	OAC rule 3745-31-05 (A)(3)	OAC rule 3745-21-07 (G)
	OAC rule 3745-35-07 (D)	
	OAC rule 3745-17-07 (A)(1)	
	OAC rule 3745-17-11 (B)	

Applicable Emissions
Limitations/Control Measures

VOC emissions shall not exceed
9.16 lbs/hr and 40.1 tons/yr.

Styrene emissions shall not exceed
1.43 lbs/hr and 6.3 tons/yr.

Visible particulate emissions shall
not exceed 10% opacity, as a 6-
minute average.

The requirements of this rule also
include compliance with the
requirements of OAC rule
3745-35-07 (D).

See II.A.c-e below.

See II.A.2.a-b and II.B.5 below.

The emission limitation specified in
this rule is less stringent than the
emission limitations established
pursuant to OAC rule 3745-31-
05(A)(3).

The emission limitation specified in
this rule is less stringent than the
emission limitations established
pursuant to OAC rule 3745-31-
05(A)(3).

The emission limitation specified in
this rule is less stringent than the
emission limitations established
pursuant to OAC rule 3745-31-
05(A)(3).

2. Additional Terms and Conditions

- 2.a** Facility wide emissions shall not exceed the following limitations during any rolling, 12-month period: 9.9 ton methyl ethyl ketone (MEK), 9.9 ton 1,3-Butadiene, 9.9 ton Acrylonitrile, 9.9 tons Styrene, 9.9 tons Chlorobenzene, 24.9 tons of combined HAPs and 99.9 tons of VOC.
- 2.b** Emissions from this emission unit shall be vented to a recuperative thermal oxidizer (RTO) followed by an acid gas scrubber (AGS).
- 2.c** The combined emissions from all extruder lines shall not exceed 0.016 lb particulate emissions (PE)/hr and 0.1 ton PE/yr. In addition, the facility wide emissions shall not exceed 2.0 tons hydrochloric acid (HCl) and 20.0 tons nitrogen oxides (NOx)/yr.
- 2.d** The emission unit's 9.16 lbs VOC/hr, 40.1 tons VOC/yr, 1.43 lbs Styrene/hr and 6.3 tons Styrene/yr emission limitations are based on the emission unit's potential to emit vented through the above referenced control equipment. Therefore, only the monitoring, record keeping or reporting requirements of the control equipment are necessary to ensure compliance with these emission limitations.
- 2.e** The 0.016 lb PE/hr, 0.1 ton PE/yr, 2.0 tons HCl and 20.0 tons NOx/yr emission limitations for all extruder lines combined are based on the potential to emit vented through the above referenced control equipment. Therefore, only the monitoring, record keeping or reporting requirements of the control equipment are necessary to ensure compliance with these emission limitations.

B. Operational Restrictions

- 1. The average combustion temperature within the thermal incinerator, for any 3-hour block of time when the emissions unit is in operation, shall not be less than 1500 degrees Fahrenheit.
- 2. The pressure drop across the scrubber shall be continuously maintained within the range of 0.5-3.0 inches of liquid at all times while the emissions unit is in operation.
- 3. The scrubber liquid flow rate shall be continuously maintained within the range of 85-350 gallons per minute at all times while the emissions unit is in operation.
- 4. The pH of the scrubber liquor shall be maintained within the range of 7.5 to 9.0.
- 5. The permittee shall capture at least 85% of the emissions from this emissions unit and vent them

to the RTO followed by the AGS.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the combustion temperature within the thermal oxidizer when the emissions unit is in operation. Units shall be in degrees Fahrenheit. The monitoring and recording devices shall be capable of accurately measuring the desired parameter. The temperature monitor and recorder shall be calibrated, operated and maintained in accordance with the manufacturer's recommendations, with any modifications deemed necessary by the permittee.

The permittee shall collect and record all 3-hour blocks of time during which the combustion temperature within the thermal oxidizer, when the emissions unit was in operation, dropped below 1500 degrees Fahrenheit.

2. The permittee shall properly operate and maintain equipment to continuously monitor the static pressure drop across the scrubber and the scrubber liquid flow rate while the emissions unit is in operation. The monitoring devices and any recorders shall be calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.

The permittee shall collect and record the following information:

- a. the pressure drop across the scrubber, in inches of water on an hourly basis; and
 - b. the scrubber liquid flow rate, in gallons per minute on an hourly basis.
3. The permittee shall properly operate and maintain equipment to continuously monitor and record the pH of the scrubber liquor while the emissions unit is in operation. The pH 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 record the pH of the scrubber liquor, on a continuous basis.

4. The permittee shall maintain a log of the downtime for the capture (collection) system, all control devices, and all monitoring equipment, when the associated emissions unit was in operation.
5. The permittee shall maintain monthly records of the following information:
 - a. the production rate of each product produced by each extruder;
 - b. a record identifying whether each extruder has fugitive emissions (units with a water bath)

or no fugitive emissions (Gala) at the die face;

- c. the emission rate of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, and VOC in pounds, from each extruder.

The emission rate shall be quantified by summing the emission rate from each extruder. Extruders with only stack emissions shall be determined by multiplying the production rate by the appropriate stack emission factor* by the control efficiency (1.0 - 0.99) established during the most recent stack test (test, 04/22/02). Extruders with both fugitive and stack emissions shall be determined by summing the stack and fugitive emissions. Stack emissions shall be determined by multiplying the production rate by the appropriate stack emission factor* by the control efficiency (1.0 - 0.99) established during the most recent stack test (test, 04/22/02). Fugitive emissions shall be determined by multiplying the production rate by the appropriate fugitive emission factor*.

* Permittee shall use the following worst case emission factors unless product specific emission factors are available and approved by the Central District Office:

MEK = 0.127 lb/1000 lb product; stack
 MEK = 0.0224 lb/1000 lb product; fugitive
 1,3 Butadiene = 0.083 lb/1000 lb product; stack
 1,3 Butadiene = 0.0146 lb/1000 lb product; fugitive
 Acrylonitrile = 0.247 lb/1000 lb product; stack
 Acrylonitrile = 0.0436 lb/1000 lb product; fugitive
 Styrene = 1.097 lb/1000 lb product; stack
 Styrene = 0.1935 lb/1000 lb product; fugitive
 Chlorobenzene = 0.213 lb/1000 product; stack
 Chlorobenzene = 0.0376 lb/1000 lb product; fugitive
 VOC = 1.787 lb/1000 product; stack
 VOC = 1.29 lb/1000 lb product; fugitive

- d. the facility-wide emission rate of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, and VOC in pounds; and
- e. the rolling, 12-month summation of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene and VOC.
6. The permit to install for emission units P022 thru P030 was evaluated based on the actual materials and the design parameters of the emission unit and facility's exhaust system, as specified by the permittee in the permit to install application. The Ohio EPA's "Review of New Sources of Air Toxic Emissions" policy ("Air Toxic Policy") was applied for each pollutant emitted by

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emissions units P022 thru P031 using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutant(s):

Pollutant: Styrene

TLV (mg/m³): 85

Maximum Hourly Emission Rate (lbs/hr): 2.6

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 111.5

MAGLC (ug/m³): 2024

Physical changes to or changes in the method of operation of the emissions unit or facility exhaust after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be satisfied. If, upon evaluation, the permittee determines that the "Air Toxic Policy" will not be satisfied, the permittee will not make the change. Changes that can affect the parameters used in applying the "Air Toxic Policy" include the following:

- a. changes in the composition of or use of materials used, or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value previously modeled;
 - b. changes in the composition of the materials, or use of new materials, that would result in an increase in emissions of any pollutant with a listed TLV that was proposed in the application and modeled; and
 - c. physical changes to the emissions unit or the facility exhaust parameters (e.g., increased/decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).
7. If the permittee determines that the "Air Toxic Policy" will be satisfied for the above changes, the Ohio EPA will not consider the change(s) to be a "modification" under OAC rule 3745-31-01(VV)(1)(a)(ii), and a modification of the existing permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition (other than (VV)(1)(a)(ii)), then the permittee shall obtain a final permit to install prior to the change.

The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy:"

- a. a description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);

- b. documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and
- c. where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify the following:
 - a. all 3-hour blocks of time during which the average combustion temperature within the thermal oxidizer does not comply with the temperature limitation specified above;
 - b. all periods of time during which the following scrubber parameters were not maintained at or above the required levels:
 - i. the static pressure drop across the scrubber; and
 - ii. the scrubber liquid flow rate.
 - c. pH deviation (excursion) reports that identify all periods of time during which the scrubber liquor pH did not comply with the pH requirements specified above.

The permittee shall also submit quarterly summaries which include a log of the downtime for the capture (collection) system, control device, and monitoring equipment, when the associated emissions unit was in operation.

2. The permittee shall submit deviation (excursion) reports which identify all exceedances of the rolling, 12-month summation of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, combined HAPs, and VOC limitations.
3. All reports are due by the date described in Part 1 - General Terms and Conditions of this permit under section (A)(1).

E. Testing Requirements

1. Compliance with the emission limitations in Section A.I. of these terms and conditions shall be determined in accordance with the following methods:
 - a. Emission Limitation:

VOC emissions shall not exceed 9.16 lbs/hr.

Applicable Compliance Method:

Compliance may be demonstrated by summing the stack and fugitive emissions. The stack emissions shall be determined by multiplying the emission unit's maximum capacity of 7000 lbs product/hr by the stack emission factor of 1.787 lbs VOC/1000 lbs product (Testing 08/14/00 thru 08/16/00) by the destruction efficiency of the thermal oxidizer (1.0-0.99). The fugitive emissions shall be determined by multiplying the emission unit's maximum capacity of 7000 lbs product/hr by the fugitive emission factor of 1.29 lbs VOC/1000 lbs of product (Testing 08/14/00 thru 08/16/00).

- b. **Emission Limitation:**
VOC emissions shall not exceed 40.1 tons/yr.

Applicable Compliance Method:

Compliance may be demonstrated by multiplying the pound per hour emission rate by 8760 hrs/yr and dividing by 2000 lbs/ton.

- c. **Emission Limitation:**
Styrene emissions shall not exceed 1.43 lbs/hr.

Applicable Compliance Method:

Compliance may be demonstrated by summing the stack and fugitive emissions. The stack emissions shall be determined by multiplying the emission unit's maximum capacity of 7000 lbs product/hr by the stack emission factor of 1.097 lbs Styrene/1000 lbs product (Testing 08/14/00) by the destruction efficiency of the thermal oxidizer (1.0-0.99). The fugitive emissions shall be determined by multiplying the emission unit's maximum capacity of 7000 lbs product/hr by the fugitive emission factor of 0.1935 lbs Styrene/1000 lbs of product (Testing 08/14/00).

- d. **Emission Limitation:**
Styrene emissions shall not exceed 6.3 tons/yr.

Applicable Compliance Method:

Compliance shall be demonstrated by multiplying the pound per hour emission rate by 8760 hrs/yr and dividing by 2000 lbs/ton.

- e. **Emission Limitation:**
Visible particulate emissions shall not exceed 10% opacity, as a 6-minute average.

Applicable Compliance Method:

If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03 (B)(1).

- f. Emission Limitation:
Facility wide emissions of MEK shall not exceed 9.9 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.

- g. Emission Limitation:
Facility wide emissions of 1,3-Butadiene shall not exceed 9.9 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.

- h. Emission Limitation:
Facility wide emissions of Acrylonitrile shall not exceed 9.9 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.

- i. Emission Limitation:
Facility wide emissions of Styrene shall not exceed 9.9 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.

- j. Emission Limitation:
Facility wide emissions of Chlorobenzene shall not exceed 9.9 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.

- k. Emission Limitation:
Facility wide emissions of combined HAPs shall not exceed 24.9 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.

- l. Emission Limitation:
The combined emissions from all extruder lines of PE shall not exceed 0.016 lb PE/hr.

Applicable Compliance Method:

Compliance may be demonstrated by multiplying the emission factor of 0.0076 lb PE/mmBTU (AP-42, 1.4-2, 7/98) by the thermal oxidizer's capacity of 2.12 mmBTU/hr.

- m. Emission Limitation:
The combined emissions from all extruder lines of PE shall not exceed 0.1 ton per year.

Applicable Compliance Method:

Compliance may be demonstrated by multiplying the emission factor of 0.0076 lb PM/mmBTU (AP-42, 1.4-2, 7/98) by the thermal oxidizer's capacity of 2.12 mmBTU/hr, then multiplying by 8760 hrs/yr and dividing by 2000 lbs/ton.

n. Emission Limitation:

Facility wide emissions of HCl shall not exceed 2.0 tons per year.

Applicable Compliance Method:

Compliance shall be demonstrated by summing the results of the equation referenced below with the previous 11 calendar months. The equation shall be performed on a monthly basis for each product's emissions of Chlorobenzene.

$$(MP)(EF_{\text{MCB}})(DE_{\text{MCB}})(\text{lbs HCl Produced/lbs MCB Destroyed}) + PE = ER$$

Where:

MP =	Monthly production volume, (lbs)
EF _{MCB} =	Chlorobenzene emission factor, (lbs MCB/ 1000 lbs of product)
DE _{MCB} =	(1.0-0.99)
lbs HCl Produced/lbs MCB Destroyed =	stoichiometric ratio (36.4/112.6)
MCB =	Chlorobenzene
HCl =	Hydrochloric Acid
PE =	Emission total for the previous 11 months (tons per month)
ER =	lbs HCl/month

o. Emission Limitation:

Facility wide emissions of NO_x shall not exceed 20.0 tons per year.

Applicable Compliance Method:

Compliance shall be demonstrated by summing the results of the equation referenced below with the previous 11 calendar month's emission totals. The equation shall be performed on a monthly basis for each product's emissions of Acrylonitrile and for the combustion of natural gas.

$$(EF_{\text{ngc}})(\text{NG}) + (MP)(EF_{\text{AN}})(DE_{\text{AN}})(\text{lbs NO formed/lbs AN destroyed}) + SC = ER$$

Where:

EF _{ngc} =	0.1 lbs NO _x /MMBtu of Natural gas, (AP-42, 1.4-5, 7/98)
NG =	Natural gas consumption, (mmBTU/month)
MP =	Monthly production volume, (lbs)
EF _{AN} =	Acrylonitrile emission factor, (lbs AN/1000 lbs product)

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$DE_{AN} = (1.0 - 0.99)$

lbs NO formed/lbs AN destroyed = stoichiometric ratio, (30.0/53.1)

AN = Acrylonitrile

NO = Nitrogen Oxide

SC = Screw cleaner emissions

ER = lbs NO_x/month

2. The permittee shall conduct, or have conducted, emission testing on the outlet of the Acid Gas Scrubber in accordance with the following requirements:
 - a. The emission testing shall be conducted within 60 days of a written request from the Ohio EPA.
 - b. The emission testing shall be conducted to determine the control efficiency of the RTO and AGS. If required, the permittee shall conduct emission testing on specific products to confirm the emission factors used to determine the uncontrolled mass rate of emissions for MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, HCl, NO_x, and VOC.
 - c. The following test methods shall be employed to demonstrate compliance with the allowable mass emission rates: 40 CFR Part 60, Appendix A Method 18, 24, 24A, 25A, 26, 26A, 305, or 311. (whichever is applicable to pollutant being tested). Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.
 - d. The tests shall be conducted while the emissions units are operating under standard conditions unless otherwise specified or approved by the Central District Office.
3. The permittee shall conduct, or have conducted, capture efficiency testing on each non-Gala extrusion line in accordance with the following requirements:
 - a. The emission testing shall be conducted within 90 days of written notification from the Central District Office.
 - b. The emission testing shall be conducted to determine the capture efficiency of specified extrusion line(s).
 - c. The following test methods shall be employed to demonstrate compliance with the allowable mass emission rates: 40 CFR Part 60, Appendix A Method 204D. Alternative U.S. EPA approved test methods or modifications to Method 204D may be used with prior approval from the Central District Office.
 - d. The tests shall be conducted while the emissions unit(s) are operating under standard conditions unless otherwise specified or approved by the Central District Office.
4. Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Central District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to

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submit such notification for review and approval prior to the test(s) may result in the Central District Office's refusal to accept the results of the emission test(s).

Personnel from the Central District Office shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

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

F. Miscellaneous Requirements

1. The Ohio EPA reserves the right to update the emissions factors used to estimate the uncontrolled/ controlled VOC, NO_x, HAP and combined HAPs emissions at the facility.

Upon written notification from the Ohio EPA concerning the identification and availability of updated and more representative VOC/NO_x/HAP/HAPs emission factors (from compliance demonstrations), the permittee may be required to reevaluate the estimated emissions for each emissions unit and facility-wide using the updated emission factors. Should the updated emission factors indicate an increase in estimated VOC, NO_x, HAP or HAPs ton per year emissions which exceed 20% of the major source thresholds, the permittee shall submit the following (one copy to the Central District Office):

- a. Revised Emission Factors:
Within forty five (45) days of compliance demonstrations and/or a study which indicates the greater emission factors, the permittee shall submit updated VOC/NO_x/HAP/HAPs emissions estimates (maximum rate in lbs/hour and tons/year) for each emission unit covered under this permit and the facility, using the updated emission factors.
- b. New PTI or Modification To Existing PTI:(only applicable to facilities which exceed OAC rule 3745-31-05 (A)(3) limitations as a result of increased VOC/NO_x/HAP/HAPs emissions from the use of the updated emission factors)
 - i. Within thirty (30) days of submittal of the revised estimated emissions (item a above), the permittee shall submit a revised "potential to emit" and "actual emissions" determination for the facility to the Ohio EPA, DAPC, Engineering Section and Central District Office.
 - ii. If necessary, within forty five (45) days of submittal of the revised emission

estimates, the permittee shall submit an application for a PTI modification.

- c. "New" Title V facilities (only applicable to facilities which become subject to Title V permitting requirements (OAC Chapter 3745-77) as a result of increased VOC/NO_x/HAP/HAPs emissions from the use of the updated emission factors)
- i. Within thirty (30) days of submittal of the revised estimated emissions (item a above), the permittee shall submit a revised "potential to emit" and "actual emissions" determination for the facility to the Ohio EPA, DAPC, Engineering Section and Central District Office.
 - ii. If necessary, within 120 days of submittal of the revised emissions estimates (item a), the permittee shall submit a complete Title V permit application, federally enforceable state operating permit application, or permit to install application.
- d. Emissions Fee Report (for facilities subject to the Title V regulations):
- Within ninety (90) days of submittal of the revised estimated emissions, the permittee shall submit a Fee Emission Report to the Ohio EPA , in accordance with OAC Chapter 3745-78 and Ohio EPA Engineering Guide #61, for the most recent completed calendar year in which the facility would be classified as a "major" under the Ohio Title V regulations.

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Applicable Emissions
Limitations/Control Measures

VOC emissions shall not exceed
0.14 lb/hr and 0.63 ton/yr.

Styrene emissions shall not exceed
0.09 lb/hr and 0.38 ton/yr.

Visible particulate emissions shall
not exceed 10% opacity, as a 6-
minute average.

The requirements of this rule also
include compliance with the
requirements of OAC rule
3745-35-07 (D).

See II.A.c-e below.

See II.A.2.a-b and II.B.5 below.

The emission limitation specified in
this rule is less stringent than the
emission limitations established
pursuant to OAC rule 3745-31-
05(A)(3).

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05(A)(3).

The emission limitation specified in
this rule is less stringent than the
emission limitations established
pursuant to OAC rule 3745-31-
05(A)(3).

2. Additional Terms and Conditions

- 2.a** Facility wide emissions shall not exceed the following limitations during any rolling, 12-month period: 9.9 ton methyl ethyl ketone (MEK), 9.9 ton 1,3-Butadiene, 9.9 ton Acrylonitrile, 9.9 tons Styrene, 9.9 tons Chlorobenzene, 24.9 tons of combined HAPs and 99.9 tons of VOC.
- 2.b** Emissions from this emission unit shall be vented to a recuperative thermal oxidizer (RTO) followed by an acid gas scrubber (AGS).
- 2.c** The combined emissions from all extruder lines shall not exceed 0.016 lb particulate emissions (PE)/hr and 0.1 ton PE/yr. In addition, the facility wide emissions shall not exceed 2.0 tons hydrochloric acid (HCl) and 20.0 tons nitrogen oxides (NOx)/yr.
- 2.d** The emission unit's 0.14 lb VOC/hr, 0.63 ton VOC/yr, 0.09 lb Styrene/hr and 0.38 ton Styrene/yr emission limitations are based on the emission unit's potential to emit vented through the above referenced control equipment. Therefore, only the monitoring, record keeping or reporting requirements of the control equipment are necessary to ensure compliance with these emission limitations.
- 2.e** The 0.016 lb PE/hr, 0.1 ton PE/yr, 2.0 tons HCl and 20.0 tons NOx/yr emission limitations for all extruder lines combined are based on the potential to emit vented through the above referenced control equipment. Therefore, only the monitoring, record keeping or reporting requirements of the control equipment are necessary to ensure compliance with these emission limitations.

B. Operational Restrictions

1. The average combustion temperature within the thermal incinerator, for any 3-hour block of time when the emissions unit is in operation, shall not be less than 1500 degrees Fahrenheit.
2. The pressure drop across the scrubber shall be continuously maintained within the range of 0.5-3.0 inches of liquid at all times while the emissions unit is in operation.
3. The scrubber liquid flow rate shall be continuously maintained within the range of 85-350 gallons per minute at all times while the emissions unit is in operation.
4. The pH of the scrubber liquor shall be maintained within the range of 7.5 to 9.0.
5. The permittee shall capture 100% of the emissions from this emissions unit and vent them to the

RTO followed by the AGS.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the combustion temperature within the thermal oxidizer when the emissions unit is in operation. Units shall be in degrees Fahrenheit. The monitoring and recording devices shall be capable of accurately measuring the desired parameter. The temperature monitor and recorder shall be calibrated, operated and maintained in accordance with the manufacturer's recommendations, with any modifications deemed necessary by the permittee.

The permittee shall collect and record all 3-hour blocks of time during which the combustion temperature within the thermal oxidizer, when the emissions unit was in operation, dropped below 1500 degrees Fahrenheit.

2. The permittee shall properly operate and maintain equipment to continuously monitor the static pressure drop across the scrubber and the scrubber liquid flow rate while the emissions unit is in operation. The monitoring devices and any recorders shall be calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.

The permittee shall collect and record the following information:

- a. the pressure drop across the scrubber, in inches of water on an hourly basis; and
 - b. the scrubber liquid flow rate, in gallons per minute on an hourly basis.
3. The permittee shall properly operate and maintain equipment to continuously monitor and record the pH of the scrubber liquor while the emissions unit is in operation. The pH 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 record the pH of the scrubber liquor, on a continuous basis.

4. The permittee shall maintain a log of the downtime for the capture (collection) system, all control devices, and all monitoring equipment, when the associated emissions unit was in operation.
5. The permittee shall maintain monthly records of the following information:
 - a. the production rate of each product produced by each extruder;
 - b. a record identifying whether each extruder has fugitive emissions (units with a water bath)

or no fugitive emissions (Gala) at the die face;

- c. the emission rate of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, and VOC in pounds, from each extruder.

The emission rate shall be quantified by summing the emission rate from each extruder. Extruders with only stack emissions shall be determined by multiplying the production rate by the appropriate stack emission factor* by the control efficiency (1.0 - 0.99) established during the most recent stack test (test, 04/22/02). Extruders with both fugitive and stack emissions shall be determined by summing the stack and fugitive emissions. Stack emissions shall be determined by multiplying the production rate by the appropriate stack emission factor* by the control efficiency (1.0 - 0.99) established during the most recent stack test (test, 04/22/02). Fugitive emissions shall be determined by multiplying the production rate by the appropriate fugitive emission factor*.

* Permittee shall use the following worst case emission factors unless product specific emission factors are available and approved by the Central District Office:

MEK = 0.127 lb/1000 lb product; stack
MEK = 0.0224 lb/1000 lb product; fugitive
1,3 Butadiene = 0.083 lb/1000 lb product; stack
1,3 Butadiene = 0.0146 lb/1000 lb product; fugitive
Acrylonitrile = 0.247 lb/1000 lb product; stack
Acrylonitrile = 0.0436 lb/1000 lb product; fugitive
Styrene = 1.097 lb/1000 lb product; stack
Styrene = 0.1935 lb/1000 lb product; fugitive
Chlorobenzene = 0.213 lb/1000 product; stack
Chlorobenzene = 0.0376 lb/1000 lb product; fugitive
VOC = 1.787 lb/1000 product; stack
VOC = 1.29 lb/1000 lb product; fugitive

- d. the facility-wide emission rate of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, and VOC in pounds; and
- e. the rolling, 12-month summation of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene and VOC.
6. The permit to install for emission units P022 thru P030 was evaluated based on the actual materials and the design parameters of the emission unit and facility's exhaust system, as specified by the permittee in the permit to install application. The Ohio EPA's "Review of New Sources of Air Toxic Emissions" policy ("Air Toxic Policy") was applied for each pollutant emitted by

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emissions units P022 thru P031 using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutant(s):

Pollutant: Styrene

TLV (mg/m³): 85

Maximum Hourly Emission Rate (lbs/hr): 2.6

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 111.5

MAGLC (ug/m³): 2024

Physical changes to or changes in the method of operation of the emissions unit or facility exhaust after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be satisfied. If, upon evaluation, the permittee determines that the "Air Toxic Policy" will not be satisfied, the permittee will not make the change. Changes that can affect the parameters used in applying the "Air Toxic Policy" include the following:

- a. changes in the composition of or use of materials used, or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value previously modeled;
 - b. changes in the composition of the materials, or use of new materials, that would result in an increase in emissions of any pollutant with a listed TLV that was proposed in the application and modeled; and
 - c. physical changes to the emissions unit or the facility exhaust parameters (e.g., increased/decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).
7. If the permittee determines that the "Air Toxic Policy" will be satisfied for the above changes, the Ohio EPA will not consider the change(s) to be a "modification" under OAC rule 3745-31-01(VV)(1)(a)(ii), and a modification of the existing permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition (other than (VV)(1)(a)(ii)), then the permittee shall obtain a final permit to install prior to the change.

The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy:"

- a. a description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);

- b. documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and
- c. where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify the following:
 - a. all 3-hour blocks of time during which the average combustion temperature within the thermal oxidizer does not comply with the temperature limitation specified above;
 - b. all periods of time during which the following scrubber parameters were not maintained at or above the required levels:
 - i. the static pressure drop across the scrubber; and
 - ii. the scrubber liquid flow rate.
 - c. pH deviation (excursion) reports that identify all periods of time during which the scrubber liquor pH did not comply with the pH requirements specified above.

The permittee shall also submit quarterly summaries which include a log of the downtime for the capture (collection) system, control device, and monitoring equipment, when the associated emissions unit was in operation.

2. The permittee shall submit deviation (excursion) reports which identify all exceedances of the rolling, 12-month summation of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, combined HAPs, and VOC limitations.
3. All reports are due by the date described in Part 1 - General Terms and Conditions of this permit under section (A)(1).

E. Testing Requirements

1. Compliance with the emission limitations in Section A.I. of these terms and conditions shall be determined in accordance with the following methods:
 - a. Emission Limitation:

VOC emissions shall not exceed 0.14 lb/hr.

Applicable Compliance Method:

Compliance may be demonstrated by multiplying the emission unit's maximum capacity of 8000 lbs product/hr by the stack emission factor of 1.787 lbs VOC/1000 lbs product (Testing 08/14/00 thru 08/16/00) by the destruction efficiency of the thermal oxidizer (1.0-0.99).

- b. Emission Limitation:
VOC emissions shall not exceed 0.63 ton/yr.

Applicable Compliance Method:

Compliance may be demonstrated by multiplying the pound per hour emission rate by 8760 hrs/yr and dividing by 2000 lbs/ton.

- c. Emission Limitation:
Styrene emissions shall not exceed 0.09 lb/hr.

Applicable Compliance Method:

Compliance may be demonstrated by multiplying the emission unit's maximum capacity of 8000 lbs product/hr by the stack emission factor of 1.097 lbs Styrene/1000 lbs product (Testing 08/14/00) by the destruction efficiency of the thermal oxidizer (1.0-0.99).

- d. Emission Limitation:
Styrene emissions shall not exceed 0.38 ton/yr.

Applicable Compliance Method:

Compliance shall be demonstrated by multiplying the pound per hour emission rate by 8760 hrs/yr and dividing by 2000 lbs/ton.

- e. Emission Limitation:
Visible particulate emissions shall not exceed 10% opacity, as a 6-minute average.

Applicable Compliance Method:

If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03 (B)(1).

- f. Emission Limitation:
Facility wide emissions of MEK shall not exceed 9.9 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.

- g. Emission Limitation:
Facility wide emissions of 1,3-Butadiene shall not exceed 9.9 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.

- h. Emission Limitation:
Facility wide emissions of Acrylonitrile shall not exceed 9.9 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.

- i. Emission Limitation:
Facility wide emissions of Styrene shall not exceed 9.9 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.

- j. Emission Limitation:
Facility wide emissions of Chlorobenzene shall not exceed 9.9 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.

- k. Emission Limitation:
Facility wide emissions of combined HAPs shall not exceed 24.9 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.

- l. Emission Limitation:
The combined emissions from all extruder lines of PE shall not exceed 0.016 lb PE/hr.

Applicable Compliance Method:

Compliance may be demonstrated by multiplying the emission factor of 0.0076 lb PE/mmBTU (AP-42, 1.4-2, 7/98) by the thermal oxidizer's capacity of 2.12 mmBTU/hr.

- m. Emission Limitation:
The combined emissions from all extruder lines of PE shall not exceed 0.1 ton per year.

Applicable Compliance Method:

Compliance may be demonstrated by multiplying the emission factor of 0.0076 lb PM/mmBTU (AP-42, 1.4-2, 7/98) by the thermal oxidizer's capacity of 2.12 mmBTU/hr, then multiplying by 8760 hrs/yr and dividing by 2000 lbs/ton.

- n. Emission Limitation:
Facility wide emissions of HCl shall not exceed 2.0 tons per year.

Applicable Compliance Method:

Compliance shall be demonstrated by summing the results of the equation referenced below with the previous 11 calendar months. The equation shall be performed on a monthly basis for each product's emissions of Chlorobenzene.

$$(MP)(EF_{\text{MCB}})(DE_{\text{MCB}})(\text{lbs HCl Produced/lbs MCB Destroyed}) + PE = ER$$

Where:

MP =	Monthly production volume, (lbs)
EF _{MCB} =	Chlorobenzene emission factor, (lbs MCB/ 1000 lbs of product)
DE _{MCB} =	(1.0-0.99)
lbs HCl Produced/lbs MCB Destroyed =	stoichiometric ratio (36.4/112.6)
MCB =	Chlorobenzene
HCl =	Hydrochloric Acid
PE =	Emission total for the previous 11 months (tons per month)
ER =	lbs HCl/month

o. Emission Limitation:

Facility wide emissions of NO_x shall not exceed 20.0 tons per year.

Applicable Compliance Method:

Compliance shall be demonstrated by summing the results of the equation referenced below with the previous 11 calendar month's emission totals. The equation shall be performed on a monthly basis for each product's emissions of Acrylonitrile and for the combustion of natural gas.

$$(EF_{\text{ngc}})(\text{NG}) + (MP)(EF_{\text{AN}})(DE_{\text{AN}})(\text{lbs NO formed/lbs AN destroyed}) + SC = ER$$

Where:

EF _{ngc} =	0.1 lbs NO _x /MMBtu of Natural gas, (AP-42, 1.4-5, 7/98)
NG =	Natural gas consumption, (mmBTU/month)
MP =	Monthly production volume, (lbs)
EF _{AN} =	Acrylonitrile emission factor, (lbs AN/1000 lbs product)
DE _{AN} =	(1.0-0.99)
lbs NO formed/lbs AN destroyed =	stoichiometric ratio, (30.0/53.1)
AN =	Acrylonitrile
NO =	Nitrogen Oxide
SC =	Screw cleaner emissions
ER =	lbs NO _x /month

2. The permittee shall conduct, or have conducted, emission testing on the outlet of the Acid Gas Scrubber in accordance with the following requirements:
 - a. The emission testing shall be conducted within 60 days of a written request from the Ohio EPA.
 - b. The emission testing shall be conducted to determine the control efficiency of the RTO and AGS. If required, the permittee shall conduct emission testing on specific products to confirm the emission factors used to determine the uncontrolled mass rate of emissions for MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, HCl, NO_x, and VOC.
 - c. The following test methods shall be employed to demonstrate compliance with the allowable mass emission rates: 40 CFR Part 60, Appendix A Method 18, 24, 24A, 25A, 26, 26A, 305, or 311. (whichever is applicable to pollutant being tested). Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.
 - d. The tests shall be conducted while the emissions units are operating under standard conditions unless otherwise specified or approved by the Central District Office.
3. The permittee shall conduct, or have conducted, capture efficiency testing on each non-Gala extrusion line in accordance with the following requirements:
 - a. The emission testing shall be conducted within 90 days of written notification from the Central District Office.
 - b. The emission testing shall be conducted to determine the capture efficiency of specified extrusion line(s).
 - c. The following test methods shall be employed to demonstrate compliance with the allowable mass emission rates: 40 CFR Part 60, Appendix A Method 204D. Alternative U.S. EPA approved test methods or modifications to Method 204D may be used with prior approval from the Central District Office.
 - d. The tests shall be conducted while the emissions unit(s) are operating under standard conditions unless otherwise specified or approved by the Central District Office.
4. Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Central District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to

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submit such notification for review and approval prior to the test(s) may result in the Central District Office's refusal to accept the results of the emission test(s).

Personnel from the Central District Office shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

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

F. Miscellaneous Requirements

1. The Ohio EPA reserves the right to update the emissions factors used to estimate the uncontrolled/ controlled VOC, NO_x, HAP and combined HAPs emissions at the facility.

Upon written notification from the Ohio EPA concerning the identification and availability of updated and more representative VOC/NO_x/HAP/HAPs emission factors (from compliance demonstrations), the permittee may be required to reevaluate the estimated emissions for each emissions unit and facility-wide using the updated emission factors. Should the updated emission factors indicate an increase in estimated VOC, NO_x, HAP or HAPs ton per year emissions which exceed 20% of the major source thresholds, the permittee shall submit the following (one copy to the Central District Office):

- a. Revised Emission Factors:
Within forty five (45) days of compliance demonstrations and/or a study which indicates the greater emission factors, the permittee shall submit updated VOC/NO_x/HAP/HAPs emissions estimates (maximum rate in lbs/hour and tons/year) for each emission unit covered under this permit and the facility, using the updated emission factors.
- b. New PTI or Modification To Existing PTI:(only applicable to facilities which exceed OAC rule 3745-31-05 (A)(3) limitations as a result of increased VOC/NO_x/HAP/HAPs emissions from the use of the updated emission factors)
 - i. Within thirty (30) days of submittal of the revised estimated emissions (item a above), the permittee shall submit a revised "potential to emit" and "actual emissions" determination for the facility to the Ohio EPA, DAPC, Engineering Section and Central District Office.
 - ii. If necessary, within forty five (45) days of submittal of the revised emission estimates, the permittee shall submit an application for a PTI modification.
- c. "New" Title V facilities (only applicable to facilities which become subject to Title V permitting requirements (OAC Chapter 3745-77) as a result of increased VOC/NO_x/HAP/HAPs emissions from the use of the updated emission factors)
 - i. Within thirty (30) days of submittal of the revised estimated emissions (item a above), the permittee shall submit a revised "potential to emit" and "actual emissions" determination for the facility to the Ohio EPA, DAPC, Engineering Section and Central District Office.

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- ii. If necessary, within 120 days of submittal of the revised emissions estimates (item a), the permittee shall submit a complete Title V permit application, federally enforceable state operating permit application, or permit to install application.

d. Emissions Fee Report (for facilities subject to the Title V regulations):

Within ninety (90) days of submittal of the revised estimated emissions, the permittee shall submit a Fee Emission Report to the Ohio EPA , in accordance with OAC Chapter 3745-78 and Ohio EPA Engineering Guide #61, for the most recent completed calendar year in which the facility would be classified as a "major" under the Ohio Title V regulations.

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

A. Applicable Emissions Limitations and/or Control Requirements

1. 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.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	
P030 - thermoplastic compounding extruder line no.9 with thermal oxidizer and acid gas scrubber (Terms in this permit supercede those identified in PTI 01-08258 issued 03/15/01)	OAC rule 3745-31-05 (A)(3)	OAC rule 3745-21-07 (G)
	OAC rule 3745-35-07 (D)	
	OAC rule 3745-17-07 (A)(1)	
	OAC rule 3745-17-11 (B)	

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Applicable Emissions
Limitations/Control Measures

VOC emissions shall not exceed
0.21 lb/hr and 0.9 ton/yr.

Styrene emissions shall not exceed
0.13 lb/hr and 0.6 ton/yr.

Visible particulate emissions shall
not exceed 10% opacity, as a 6-
minute average.

The requirements of this rule also
include compliance with the
requirements of OAC rule
3745-35-07 (D).

See II.A.c-e below.

See II.A.2.a-b and II.B.5 below.

The emission limitation specified in
this rule is less stringent than the
emission limitations established
pursuant to OAC rule 3745-31-
05(A)(3).

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emission limitations established
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05(A)(3).

The emission limitation specified in
this rule is less stringent than the
emission limitations established
pursuant to OAC rule 3745-31-
05(A)(3).

2. Additional Terms and Conditions

- 2.a** Facility wide emissions shall not exceed the following limitations during any rolling, 12-month period: 9.9 ton methyl ethyl ketone (MEK), 9.9 ton 1,3-Butadiene, 9.9 ton Acrylonitrile, 9.9 tons Styrene, 9.9 tons Chlorobenzene, 24.9 tons of combined HAPs and 99.9 tons of VOC.
- 2.b** Emissions from this emission unit shall be vented to a recuperative thermal oxidizer (RTO) followed by an acid gas scrubber (AGS).
- 2.c** The combined emissions from all extruder lines shall not exceed 0.016 lb particulate emissions (PE)/hr and 0.1 ton PE/yr. In addition, the facility wide emissions shall not exceed 2.0 tons hydrochloric acid (HCl) and 20.0 tons nitrogen oxides (NOx)/yr.
- 2.d** The emission unit's 0.21 lb VOC/hr, 0.9 ton VOC/yr, 0.13 lb Styrene/hr and 0.6 ton Styrene/yr emission limitations are based on the emission unit's potential to emit vented through the above referenced control equipment. Therefore, only the monitoring, record keeping or reporting requirements of the control equipment are necessary to ensure compliance with these emission limitations.
- 2.e** The 0.016 lb PE/hr, 0.1 ton PE/yr, 2.0 tons HCl and 20.0 tons NOx/yr emission limitations for all extruder lines combined are based on the potential to emit vented through the above referenced control equipment. Therefore, only the monitoring, record keeping or reporting requirements of the control equipment are necessary to ensure compliance with these emission limitations.

B. Operational Restrictions

- 1. The average combustion temperature within the thermal incinerator, for any 3-hour block of time when the emissions unit is in operation, shall not be less than 1500 degrees Fahrenheit.
- 2. The pressure drop across the scrubber shall be continuously maintained within the range of 0.5-3.0 inches of liquid at all times while the emissions unit is in operation.
- 3. The scrubber liquid flow rate shall be continuously maintained within the range of 85-350 gallons per minute at all times while the emissions unit is in operation.
- 4. The pH of the scrubber liquor shall be maintained within the range of 7.5 to 9.0.
- 5. The permittee shall capture 100% of the emissions from this emissions unit and vent them to the

RTO followed by the AGS.

C. Monitoring and/or Recordkeeping Requirements

1. The permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the combustion temperature within the thermal oxidizer when the emissions unit is in operation. Units shall be in degrees Fahrenheit. The monitoring and recording devices shall be capable of accurately measuring the desired parameter. The temperature monitor and recorder shall be calibrated, operated and maintained in accordance with the manufacturer's recommendations, with any modifications deemed necessary by the permittee.

The permittee shall collect and record all 3-hour blocks of time during which the combustion temperature within the thermal oxidizer, when the emissions unit was in operation, dropped below 1500 degrees Fahrenheit.

2. The permittee shall properly operate and maintain equipment to continuously monitor the static pressure drop across the scrubber and the scrubber liquid flow rate while the emissions unit is in operation. The monitoring devices and any recorders shall be calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.

The permittee shall collect and record the following information:

- a. the pressure drop across the scrubber, in inches of water on an hourly basis; and
 - b. the scrubber liquid flow rate, in gallons per minute on an hourly basis.
3. The permittee shall properly operate and maintain equipment to continuously monitor and record the pH of the scrubber liquor while the emissions unit is in operation. The pH 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 record the pH of the scrubber liquor, on a continuous basis.

4. The permittee shall maintain a log of the downtime for the capture (collection) system, all control devices, and all monitoring equipment, when the associated emissions unit was in operation.
5. The permittee shall maintain monthly records of the following information:
 - a. the production rate of each product produced by each extruder;
 - b. a record identifying whether each extruder has fugitive emissions (units with a water bath)

or no fugitive emissions (Gala) at the die face;

- c. the emission rate of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, and VOC in pounds, from each extruder.

The emission rate shall be quantified by summing the emission rate from each extruder. Extruders with only stack emissions shall be determined by multiplying the production rate by the appropriate stack emission factor* by the control efficiency (1.0 - 0.99) established during the most recent stack test (test, 04/22/02). Extruders with both fugitive and stack emissions shall be determined by summing the stack and fugitive emissions. Stack emissions shall be determined by multiplying the production rate by the appropriate stack emission factor* by the control efficiency (1.0 - 0.99) established during the most recent stack test (test, 04/22/02). Fugitive emissions shall be determined by multiplying the production rate by the appropriate fugitive emission factor*.

* Permittee shall use the following worst case emission factors unless product specific emission factors are available and approved by the Central District Office:

MEK = 0.127 lb/1000 lb product; stack
 MEK = 0.0224 lb/1000 lb product; fugitive
 1,3 Butadiene = 0.083 lb/1000 lb product; stack
 1,3 Butadiene = 0.0146 lb/1000 lb product; fugitive
 Acrylonitrile = 0.247 lb/1000 lb product; stack
 Acrylonitrile = 0.0436 lb/1000 lb product; fugitive
 Styrene = 1.097 lb/1000 lb product; stack
 Styrene = 0.1935 lb/1000 lb product; fugitive
 Chlorobenzene = 0.213 lb/1000 product; stack
 Chlorobenzene = 0.0376 lb/1000 lb product; fugitive
 VOC = 1.787 lb/1000 product; stack
 VOC = 1.29 lb/1000 lb product; fugitive

- d. the facility-wide emission rate of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, and VOC in pounds; and
- e. the rolling, 12-month summation of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene and VOC.
6. The permit to install for emission units P022 thru P030 was evaluated based on the actual materials and the design parameters of the emission unit and facility's exhaust system, as specified by the permittee in the permit to install application. The Ohio EPA's "Review of New Sources of Air Toxic Emissions" policy ("Air Toxic Policy") was applied for each pollutant emitted by

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emissions units P022 thru P031 using data from the permit to install application and the SCREEN 3.0 model (or other Ohio EPA approved model). The predicted 1-hour maximum ground-level concentration from the use of the SCREEN 3.0 model was compared to the Maximum Acceptable Ground-Level Concentration (MAGLC). The following summarizes the results of the modeling for the "worst case" pollutant(s):

Pollutant: Styrene

TLV (mg/m³): 85

Maximum Hourly Emission Rate (lbs/hr): 2.6

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 111.5

MAGLC (ug/m³): 2024

Physical changes to or changes in the method of operation of the emissions unit or facility exhaust after its installation or modification could affect the parameters used to determine whether or not the "Air Toxic Policy" is satisfied. Consequently, prior to making a change that could impact such parameters, the permittee shall conduct an evaluation to determine that the "Air Toxic Policy" will still be still satisfied. If, upon evaluation, the permittee determines that the "Air Toxic Policy" will not be satisfied, the permittee will not make the change. Changes that can affect the parameters used in applying the "Air Toxic Policy" include the following:

- a. changes in the composition of or use of materials used, or the use of new materials, that would result in the emission of a compound with a lower Threshold Limit Value (TLV), as indicated in the most recent version of the handbook entitled "American Conference of Governmental Industrial Hygienists (ACGIH)," than the lowest TLV value previously modeled;
 - b. changes in the composition of the materials, or use of new materials, that would result in an increase in emissions of any pollutant with a listed TLV that was proposed in the application and modeled; and
 - c. physical changes to the emissions unit or the facility exhaust parameters (e.g., increased/decreased exhaust flow, changes in stack height, changes in stack diameter, etc.).
7. If the permittee determines that the "Air Toxic Policy" will be satisfied for the above changes, the Ohio EPA will not consider the change(s) to be a "modification" under OAC rule 3745-31-01(VV)(1)(a)(ii), and a modification of the existing permit to install will not be required. If the change(s) is (are) defined as a modification under other provisions of the modification definition (other than (VV)(1)(a)(ii)), then the permittee shall obtain a final permit to install prior to the change.

The permittee shall collect, record, and retain the following information when it conducts evaluations to determine that the changed emissions unit will still satisfy the "Air Toxic Policy:"

- a. a description of the parameters changed (composition of materials, new pollutants emitted, change in stack/exhaust parameters, etc.);

- b. documentation of its evaluation and determination that the changed emissions unit still satisfies the "Air Toxic Policy"; and
- c. where computer modeling is performed, a copy of the resulting computer model runs that show the results of the application of the "Air Toxic Policy" for the change.

D. Reporting Requirements

1. The permittee shall submit quarterly deviation (excursion) reports that identify the following:
 - a. all 3-hour blocks of time during which the average combustion temperature within the thermal oxidizer does not comply with the temperature limitation specified above;
 - b. all periods of time during which the following scrubber parameters were not maintained at or above the required levels:
 - i. the static pressure drop across the scrubber; and
 - ii. the scrubber liquid flow rate.
 - c. pH deviation (excursion) reports that identify all periods of time during which the scrubber liquor pH did not comply with the pH requirements specified above.

The permittee shall also submit quarterly summaries which include a log of the downtime for the capture (collection) system, control device, and monitoring equipment, when the associated emissions unit was in operation.

2. The permittee shall submit deviation (excursion) reports which identify all exceedances of the rolling, 12-month summation of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, combined HAPs, and VOC limitations.
3. All reports are due by the date described in Part 1 - General Terms and Conditions of this permit under section (A)(1).

E. Testing Requirements

1. Compliance with the emission limitations in Section A.I. of these terms and conditions shall be determined in accordance with the following methods:
 - a. Emission Limitation:

VOC emissions shall not exceed 0.21 lb/hr.

Applicable Compliance Method:

Compliance may be demonstrated by multiplying the emission unit's maximum capacity of 12,000 lbs product/hr by the stack emission factor of 1.787 lbs VOC/1000 lbs product (Testing 08/14/00 thru 08/16/00) by the destruction efficiency of the thermal oxidizer (1.0-0.99).

- b. Emission Limitation:
VOC emissions shall not exceed 0.9 ton/yr.

Applicable Compliance Method:

Compliance may be demonstrated by multiplying the pound per hour emission rate by 8760 hrs/yr and dividing by 2000 lbs/ton.

- c. Emission Limitation:
Styrene emissions shall not exceed 0.13 lb/hr.

Applicable Compliance Method:

Compliance may be demonstrated by multiplying the emission unit's maximum capacity of 12,000 lbs product/hr by the stack emission factor of 1.097 lbs Styrene/1000 lbs product (Testing 08/14/00) by the destruction efficiency of the thermal oxidizer (1.0-0.99).

- d. Emission Limitation:
Styrene emissions shall not exceed 0.6 ton/yr.

Applicable Compliance Method:

Compliance shall be demonstrated by multiplying the pound per hour emission rate by 8760 hrs/yr and dividing by 2000 lbs/ton.

- e. Emission Limitation:
Visible particulate emissions shall not exceed 10% opacity, as a 6-minute average.

Applicable Compliance Method:

If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03 (B)(1).

- f. Emission Limitation:
Facility wide emissions of MEK shall not exceed 9.9 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.

- g. Emission Limitation:
Facility wide emissions of 1,3-Butadiene shall not exceed 9.9 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.

- h. Emission Limitation:
Facility wide emissions of Acrylonitrile shall not exceed 9.9 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.

- i. Emission Limitation:
Facility wide emissions of Styrene shall not exceed 9.9 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.

- j. Emission Limitation:
Facility wide emissions of Chlorobenzene shall not exceed 9.9 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.

- k. Emission Limitation:
Facility wide emissions of combined HAPs shall not exceed 24.9 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the recordkeeping found in Part II.C.5 above.

- l. Emission Limitation:
The combined emissions from all extruder lines of PE shall not exceed 0.016 lb PE/hr.

Applicable Compliance Method:

Compliance may be demonstrated by multiplying the emission factor of 0.0076 lb PE/mmBTU (AP-42, 1.4-2, 7/98) by the thermal oxidizer's capacity of 2.12 mmBTU/hr.

m. Emission Limitation:

The combined emissions from all extruder lines of PE shall not exceed 0.1 ton per year.

Applicable Compliance Method:

Compliance may be demonstrated by multiplying the emission factor of 0.0076 lb PM/mmBTU (AP-42, 1.4-2, 7/98) by the thermal oxidizer's capacity of 2.12 mmBTU/hr, then multiplying by 8760 hrs/yr and dividing by 2000 lbs/ton.

n. Emission Limitation:

Facility wide emissions of HCl shall not exceed 2.0 tons per year.

Applicable Compliance Method:

Compliance shall be demonstrated by summing the results of the equation referenced below with the previous 11 calendar months. The equation shall be performed on a monthly basis for each product's emissions of Chlorobenzene.

$$(MP)(EF_{\text{MCB}})(DE_{\text{MCB}})(\text{lbs HCl Produced/lbs MCB Destroyed}) + PE = ER$$

Where:

MP =	Monthly production volume, (lbs)
EF _{MCB} =	Chlorobenzene emission factor, (lbs MCB/ 1000 lbs of product)
DE _{MCB} =	(1.0-0.99)
lbs HCl Produced/lbs MCB Destroyed =	stoichiometric ratio (36.4/112.6)
MCB =	Chlorobenzene
HCl =	Hydrochloric Acid
PE =	Emission total for the previous 11 months (tons per month)
ER =	lbs HCl/month

o. Emission Limitation:

Facility wide emissions of NOx shall not exceed 20.0 tons per year.

Applicable Compliance Method:

Compliance shall be demonstrated by summing the results of the equation referenced below with the previous 11 calendar month's emission totals. The equation shall be performed on a monthly basis for each product's emissions of Acrylonitrile and for the combustion of natural gas.

$$(EF_{ngc})(NG) + (MP)(EF_{AN})(DE_{AN})(\text{lbs NO formed/lbs AN destroyed}) + SC = ER$$

Where:

EF_{ngc} = 0.1 lbs NO_x/MMBtu of Natural gas, (AP-42, 1.4-5, 7/98)

NG = Natural gas consumption, (mmBTU/month)

MP = Monthly production volume, (lbs)

EF_{AN} = Acrylonitrile emission factor, (lbs AN/1000 lbs product)

DE_{AN} = (1.0-0.99)

lbs NO formed/lbs AN destroyed = stoichiometric ratio, (30.0/53.1)

AN = Acrylonitrile

NO = Nitrogen Oxide

SC = Screw cleaner emissions

ER = lbs NO_x/month

2. The permittee shall conduct, or have conducted, emission testing on the outlet of the Acid Gas Scrubber in accordance with the following requirements:
 - a. The emission testing shall be conducted within 60 days of a written request from the Ohio EPA.
 - b. The emission testing shall be conducted to determine the control efficiency of the RTO and AGS. If required, the permittee shall conduct emission testing on specific products to confirm the emission factors used to determine the uncontrolled mass rate of emissions for MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, HCl, NO_x, and VOC.
 - c. The following test methods shall be employed to demonstrate compliance with the allowable mass emission rates: 40 CFR Part 60, Appendix A Method 18, 24, 24A, 25A, 26, 26A, 305, or 311. (whichever is applicable to pollutant being tested). Alternative U.S. EPA approved test methods may be used with prior approval from the Ohio EPA.
 - d. The tests shall be conducted while the emissions units are operating under standard conditions unless otherwise specified or approved by the Central District Office.

3. The permittee shall conduct, or have conducted, capture efficiency testing on each non-Gala extrusion line in accordance with the following requirements:
 - a. The emission testing shall be conducted within 90 days of written notification from the Central District Office.
 - b. The emission testing shall be conducted to determine the capture efficiency of specified

extrusion line(s).

- c. The following test methods shall be employed to demonstrate compliance with the allowable mass emission rates: 40 CFR Part 60, Appendix A Method 204D. Alternative U.S. EPA approved test methods or modifications to Method 204D may be used with prior approval from the Central District Office.
 - d. The tests shall be conducted while the emissions unit(s) are operating under standard conditions unless otherwise specified or approved by the Central District Office.
4. Not later than 30 days prior to the proposed test date(s), the permittee shall submit an "Intent to Test" notification to the Central District Office. The "Intent to Test" notification shall describe in detail the proposed test methods and procedures, the emissions unit operating parameters, the time(s) and date(s) of the test(s), and the person(s) who will be conducting the test(s). Failure to submit such notification for review and approval prior to the test(s) may result in the Central District Office's refusal to accept the results of the emission test(s).

Personnel from the Central District Office shall be permitted to witness the test(s), examine the testing equipment, and acquire data and information necessary to ensure that the operation of the emissions unit and the testing procedures provide a valid characterization of the emissions from the emissions unit and/or the performance of the control equipment.

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

F. Miscellaneous Requirements

1. The Ohio EPA reserves the right to update the emissions factors used to estimate the uncontrolled/ controlled VOC, NO_x, HAP and combined HAPs emissions at the facility.

Upon written notification from the Ohio EPA concerning the identification and availability of updated and more representative VOC/NO_x/HAP/HAPs emission factors (from compliance demonstrations), the permittee may be required to reevaluate the estimated emissions for each emissions unit and facility-wide using the updated emission factors. Should the updated emission factors indicate an increase in estimated VOC, NO_x, HAP or HAPs ton per year emissions which exceed 20% of the major source thresholds, the permittee shall submit the following (one copy to the Central District Office):

- a. Revised Emission Factors:
Within forty five (45) days of compliance demonstrations and/or a study which indicates the greater emission factors, the permittee shall submit updated VOC/NO_x/HAP/HAPs emissions estimates (maximum rate in lbs/hour and tons/year) for each emission unit covered under this permit and the facility, using the updated emission factors.
- b. New PTI or Modification To Existing PTI:(only applicable to facilities which exceed OAC rule 3745-31-05 (A)(3) limitations as a result of increased VOC/NO_x/HAP/HAPs emissions from the use of the updated emission factors)
 - i. Within thirty (30) days of submittal of the revised estimated emissions (item a above), the permittee shall submit a revised "potential to emit" and "actual emissions" determination for the facility to the Ohio EPA, DAPC, Engineering Section and Central District Office.
 - ii. If necessary, within forty five (45) days of submittal of the revised emission estimates, the permittee shall submit an application for a PTI modification.
- c. "New" Title V facilities (only applicable to facilities which become subject to Title V permitting requirements (OAC Chapter 3745-77) as a result of increased VOC/NO_x/HAP/HAPs emissions from the use of the updated emission factors)
 - i. Within thirty (30) days of submittal of the revised estimated emissions (item a above), the permittee shall submit a revised "potential to emit" and "actual emissions" determination for the facility to the Ohio EPA, DAPC, Engineering Section and Central District Office.
 - ii. If necessary, within 120 days of submittal of the revised emissions estimates (item

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a), the permittee shall submit a complete Title V permit application, federally enforceable state operating permit application, or permit to install application.

d. Emissions Fee Report (for facilities subject to the Title V regulations):

Within ninety (90) days of submittal of the revised estimated emissions, the permittee shall submit a Fee Emission Report to the Ohio EPA , in accordance with OAC Chapter 3745-78 and Ohio EPA Engineering Guide #61, for the most recent completed calendar year in which the facility would be classified as a "major" under the Ohio Title V regulations.

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

A. Applicable Emissions Limitations and/or Control Requirements

- 1. 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.

<u>Operations, Property, and/or Equipment</u>	<u>Applicable Rules/Requirements</u>	
P031 - thermoplastic compounding extruder screw cleaner furnace (Terms in this permit supercede those identified in PTI 01-08258 issued 03/15/01)	OAC rule 3745-31-05 (A)(3)	OAC rule 3745-21-07 (G)
	OAC rule 3745-17-07 (A)(1)	
	OAC rule 3745-17-11 (B)	

Applicable Emissions
Limitations/Control Measures

VOC emissions shall not exceed 0.04 lb/hr and 0.2 ton/yr.

Particulate emissions (PE) shall not exceed 0.27 lb/hr and 1.2 tons/yr.

Visible particulate emissions shall not exceed 10% opacity, as a 6-minute average.

The requirements of this rule also include compliance with the requirements of OAC rule 3745-35-07 (D).

See II.A.a-b below.

The emission limitation specified in this rule is less stringent than the emission limitations established pursuant to OAC rule 3745-31-05(A)(3).

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The emission limitation specified in this rule is less stringent than the emission limitations established pursuant to OAC rule 3745-31-05(A)(3).

2. Additional Terms and Conditions

- 2.a** Emissions from this emission unit shall be vented to the secondary furnace chamber.
- 2.b** The emission unit's 0.04 lb VOC/hr, 0.2 ton VOC/yr, 0.27 lb PE/hr and 1.2 tons PE/yr emission limitations are based on the emission unit's potential to emit vented through the secondary furnace chamber. Therefore, only the monitoring, record keeping or reporting requirements of the secondary chamber are necessary to ensure compliance with these emission limitations.

B. Operational Restrictions

- 1. The combustion temperature within the secondary chamber when the emissions unit is in operation, shall not be less than 1400 degrees Fahrenheit.

C. Monitoring and/or Recordkeeping Requirements

- 1. The permittee shall operate and maintain a continuous temperature monitor and recorder which measures and records the combustion temperature within the secondary chamber when the emissions unit is in operation. Units shall be in degrees Fahrenheit. The monitoring and recording devices shall be capable of accurately measuring the desired parameter. The temperature monitor and recorder shall be calibrated, operated and maintained in accordance with the manufacturer's recommendations, with any modifications deemed necessary by the permittee.

The permittee shall collect and record all times during which the combustion temperature within the secondary chamber, when the emissions unit was in operation, dropped below 1400 degrees Fahrenheit.

D. Reporting Requirements

- 1. The permittee shall submit quarterly deviation (excursion) reports that identify all times during which the secondary chamber temperature does not comply with the temperature limitation specified above and the emissions unit is in operation.

All reports are due by the dates described in Part 1 - General Terms and Conditions of this permit under section (A)(1).

E. Testing Requirements

- 1. Compliance with the emission limitations in Section A.I. of these terms and conditions shall be determined in accordance with the following methods:

- a. Emission Limitation:
VOC emissions shall not exceed 0.04 lb/hr.
- Applicable Compliance Method:
Compliance may be demonstrated through the manufacturer's emission factor of 0.04 lb/hr (PTI application, 08/07/02).
- 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.
- b. Emission Limitation:
VOC emissions shall not exceed 0.2 ton/yr.
- Applicable Compliance Method:
Compliance may be demonstrated by multiplying the pound per hour emission rate by 8760 hrs/yr and dividing by 2000 lbs/ton.
- c. Emission Limitation:
PE emissions shall not exceed 0.27 lb/hr.
- Applicable Compliance Method:
Compliance may be demonstrated through the manufacturer's emission factor of 0.27 lb/hr (PTI application, 08/07/02).
- 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 5.
- d. Emission Limitation:
PE emissions shall not exceed 1.2 tons/yr.
- Applicable Compliance Method:
Compliance shall be demonstrated by multiplying the pound per hour emission rate by 8760 hrs/yr and dividing by 2000 lbs/ton.
- e. Emission Limitation:
Visible particulate emissions shall not exceed 10% opacity, as a 6-minute average.

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Applicable Compliance Method:

If required, compliance shall be determined through visible emissions observations performed in accordance with 40 CFR Part 60, Appendix A, Method 9 and the procedures specified in OAC rule 3745-17-03 (B)(1).

F. Miscellaneous Requirements

None