

Synthetic Minor Determination and/or **Netting Determination**

Permit To Install 01-08258

Bayer Corporation Polymers Division

A. Source Description

The Bayer Corporation plant at Hebron, Ohio serves a broad cross-section of the plastics industry by compounding thermoplastic resins. Basic resins are received at the plant and undergo one or more fundamental compounding steps. The resins may be blended with other resins, may have pigments added to alter the color, may have structural fillers added to change the physical properties or may have more than one of these compounding steps performed.

The basic manufacturing technology used is high temperature extrusion. In this process, the basis resins and any additives are blended, mixed, heated in the extrusion equipment and forced through the extrusion dies. At the die face, hooding is used to capture the emissions while a vacuum system is used to remove the majority of volatile materials including water, several VOCs and HAPs from the extruder and send the air pollutants through the central air pollution control system.

Each of the nine extruder lines are affected by the facility wide federally enforceable restrictions. Without the federally enforceable limitations, the facility has a potential to emit greater than the Title V thresholds for HAP, HAPs and VOC.

B. Facility Emissions and Attainment Status

The emission units which the federally enforceable restrictions will affect include each of the nine extruder lines (P022-P030). Without the federally enforceable limitations, the facility has a potential to emit greater than the Title V thresholds for HAP, HAPs and VOC. Specifically:

<u>Pollutant</u>	Facility-wide PTE	
	<u>Pre-synthetic minor</u>	<u>Post-synthetic</u>
Styrene	187.9	2.0
Acrylonitrile	30.0	2.0
1,3-Butadiene	14.2	2.0
Monochlorobenzene	36.5	2.0
MEK	21.8	2.0
Combined HAPs	290.4	5.0
VOC	306.0	20.0

C. Source Emissions

The facility will be limited to 2.0 tons per year for each HAP, 5 tons per year for combined HAPs and 20.0 tons per year for VOC. The facility is unable to institute production or

hourly restrictions to achieve these emission levels because the facility operates on a per batch basis. Therefore, each batch may be different from the previous batch and therefore, the emission may change. With the operational, record keeping, reporting, and testing requirements within this permit, the facility will be calculating their emissions on a daily basis and summing these emissions towards the facilities monthly rolling, 12-month limits.

D. Conclusion

Bayer has the potential to emit Styrene, Acrylonitrile, 1,3 Butadiene, Monochlorobenzene, MEK, combined HAPs and VOC greater than Title V thresholds. With the emission restrictions found in this permit, the emissions are limited to less than 20% of the thresholds. Compliance with each rolling, 12-month emission limitation will be demonstrated through daily record keeping, along with reporting and testing requirements.



State of Ohio Environmental Protection Agency

Street Address:

Mailing Address:

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

Lazarus Gov.
Center

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

CERTIFIED MAIL

Application No: 01-08258

DATE: 2/6/2001

Bayer Corporation Polymers Division
Buck Steorts
1111 O Neill Drive SE
Hebron, OH 43025

You are hereby notified that the Ohio Environmental Protection Agency has made a draft action recommending that the Director issue a Permit to Install for the air contaminant source(s) [emissions unit(s)] shown on the enclosed draft permit. This draft action is not an authorization to begin construction or modification of your emissions unit(s). The purpose of this draft is to solicit public comments on the proposed installation. A public notice concerning the draft permit will appear in the Ohio EPA Weekly Review and the newspaper in the county where the facility will be located. Public comments will be accepted by the field office within 30 days of the date of publication in the newspaper. Any comments you have on the draft permit should be directed to the appropriate field office within the comment period. A copy of your comments should also be mailed to Robert Hodanbosi, Division of Air Pollution Control, Ohio EPA, P.O. Box 1049, Columbus, OH, 43266-0149.

A Permit to Install may be issued in proposed or final form based on the draft action, any written public comments received within 30 days of the public notice, or record of a public meeting if one is held. You will be notified in writing of a scheduled public meeting. Upon issuance of a final Permit to Install a fee of **\$4200** will be due. Please do not submit any payment now.

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. If you have any questions about this draft permit, please contact the field office where you submitted your application, or Mike Ahern, Field Operations & Permit Section at (614) 644-3631.

Very truly yours,

Thomas G. Rigo, Manager
Field Operations and Permit Section
Division of Air Pollution Control

CC: USEPA

CDO



**Permit To Install
Terms and Conditions**

**Issue Date: To be entered upon final issuance
Effective Date: To be entered upon final issuance**

DRAFT PERMIT TO INSTALL 01-08258

Application Number: 01-08258
APS Premise Number: 0145020221
Permit Fee: **To be entered upon final issuance**
Name of Facility: Bayer Corporation Polymers Division
Person to Contact: Buck Steorts
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 are inadequate 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 prove to be inadequate 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

- a. If the permittee is required to apply for a Title V permit pursuant to OAC Chapter 3745-77, the permittee shall submit a complete Title V permit application or a complete Title V permit modification application within twelve (12) months after commencing operation of the emissions units covered by this permit. However, if the proposed new or modified source(s) would be prohibited by the terms and conditions of an existing Title V permit, a Title V permit modification must be obtained before the operation of such new

or modified source(s) pursuant to OAC rule 3745-77-04(D) and OAC rule 3745-77-08(C)(3)(d).

- b. If the permittee is required to apply for permit(s) pursuant to OAC Chapter 3745-35, the source(s) identified in this Permit To Install is (are) permitted to operate for a period of up to one year from the date the source(s) commenced operation. 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 thirty (30) days after commencing operation of the source(s) covered by this permit.

14. Construction Compliance Certification

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

15. Fees

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

B. Permit to Install Summary of Allowable Emissions

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

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

<u>Pollutant</u>	<u>Tons Per Year</u>
PM	0.2
CO	0.7
VOC	20.0
NOx	20.0
MEK	2.0
1,3 Butadiene	2.0
Acrylonitrile	2.0
Chlorobenzene	2.0
Styrene	2.0
HAPs	5.0

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>	OAC rule 3745-21-07 (G)
P022 - Thermoplastic compounding extruder line #1 with condenser, thermal oxidizer and acid gas scrubber	OAC rule 3745-31-05 (A)(3)	
		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 0.23 lb/hr and 1.0 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.6 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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2. Additional Terms and Conditions

- 2.a** Facility wide emissions shall not exceed the following limitations during any rolling, 12-month period following installation of the recuperative thermal oxidizer (RTO) and

Emissions Unit ID: **P022**

acid gas scrubber (AGS): 2.0 ton methyl ethyl ketone (MEK), 2.0 ton 1,3-Butadiene, 2.0 ton Acrylonitrile, 2.0 tons Styrene, 2.0 tons Chlorobenzene and 20.0 tons of volatile organic compounds (VOC). In addition, the facility wide emissions of combined hazardous air pollutants (HAPs) shall not exceed 5.0 tons per rolling, 12-month period.

- 2.b** Emissions from this emission unit shall be vented to a RTO followed by an AGS.
- 2.c** The total emissions from all extruder lines shall not exceed 0.031 lb particulate matter (PM)/hr and 0.13 lb PM per rolling, 12-month period. In addition, the facility wide emissions shall not exceed 2.0 tons hydrochloric acid (HCl) and 20.0 tons nitrogen oxides (NOx) per rolling 12-month summation.
- 2.d** The emission unit's short and long term VOC 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 combined PM short and long term emission limitations from all extruders 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 1-3 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.

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5. The permittee shall capture at least 80% of the emissions from this emissions unit until the modifications specified in the permit application submitted 9/13/00 are completed. After which, the permittee shall capture 100% of the emissions from this emission unit and vent them to the recuperative thermal oxidizer followed by the acid gas scrubber.
6. The maximum emission rate for this facility shall not exceed 2.0 tons of MEK, 1,3-Butadiene, Acrylonitrile, Styrene or Chlorobenzene, 20.0 tons VOC, and 5 tons of combined HAPs based upon a rolling 12-month period.

To ensure enforceability during the first 12 calendar months of operation following installation of the RTO and AGS, the permittee shall not exceed the emission limits specified in the following table:

Maximum Allowable Cumulative Emissions (Tons)

Month(s)	MEK	1,3 Butadiene	Acrylonitrile	Chlorobenzene	Styrene	Total HAPs	VOC
1	0.1667	0.1667	0.1667	0.1667	0.1667	0.4167	1.667
1-2	0.3333	0.3333	0.3333	0.3333	0.3333	0.8333	3.333
1-3	0.5000	0.5000	0.5000	0.5000	0.5000	1.2500	5.000
1-4	0.6667	0.6667	0.6667	0.6667	0.6667	1.6667	6.667
1-5	0.8333	0.8333	0.8333	0.8333	0.8333	2.0833	8.333
1-6	1.0000	1.0000	1.0000	1.0000	1.0000	2.5000	10.000
1-7	1.1667	1.1667	1.1667	1.1667	1.1667	2.9167	11.667
1-8	1.3333	1.3333	1.3333	1.3333	1.3333	3.3333	13.333
1-9	1.5000	1.5000	1.5000	1.5000	1.5000	3.7500	15.000
1-10	1.6667	1.6667	1.6667	1.6667	1.6667	4.1667	16.667
1-11	1.8333	1.8333	1.8333	1.8333	1.8333	4.5833	18.333
1-12	2.0000	2.0000	2.0000	2.0000	2.0000	5.0000	20.000

After the first 12 calendar months of operation following installation of the RTO and AGS, compliance with the emission limitations shall be based upon a rolling, 12-month summation of the emission rates.

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 incinerator 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 installed, 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 the following information for each day:

- a. all 3-hour blocks of time during which the combustion temperature within the thermal incinerator, when the emissions unit was in operation, dropped below 1500 degrees Fahrenheit; and
 - b. 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 properly install, 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 installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.

The permittee shall collect and record the following information each day:

- a. the pressure drop across the scrubber, in inches of water on an hourly basis;
 - b. the scrubber liquid flow rate, in gallons per minute on an hourly basis; and
 - c. a log of the downtime for the capture (collection) system, control device, and monitoring equipment, when the associated emissions unit was in operation.
3. The permittee shall properly install, 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 following information each day:

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Emissions Unit ID: **P022**

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- a. the pH of the scrubber liquor, on a continuous basis; and
 - b. a log of the downtime for the capture (collection) system, control device, and monitoring equipment, when the associated emissions unit was in operation.
4. The permittee shall maintain daily production records (throughput) of each product produced in this emission unit, in pounds.
 5. The permittee shall maintain monthly records of the following information:
 - a. the production of each product produced in this emissions unit;
 - b. the facility-wide emission rate of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, HCl and NOx in pounds; and
 - c. the rolling, 12-month summation of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, HCl and NOx.
 6. The permit to install for emission units P022 thru P031 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 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: MEK

TLV (mg/m³): 590

Maximum Hourly Emission Rate (lbs/hr): 0.0125

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 4.29

MAGLC (ug/m³): 14,048

Pollutant: 1,3 Butadiene

TLV (mg/m³): 4.4

Maximum Hourly Emission Rate (lbs/hr): 0.005

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 1.72

MAGLC (ug/m³): 105

Pollutant: Acrylonitrile

TLV (mg/m3): 4.3

Maximum Hourly Emission Rate (lbs/hr): 0.0138

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m3): 4.74

MAGLC (ug/m3): 102

Pollutant: Styrene

TLV (mg/m3): 85

Maximum Hourly Emission Rate (lbs/hr): 0.0625

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m3): 21.45

MAGLC (ug/m3): 2024

Pollutant: Chlorobenzene

TLV (mg/m3): 46

Maximum Hourly Emission Rate (lbs/hr): 0.0125

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m3): 4.29

MAGLC (ug/m3): 1095

Pollutant: Hydrochloric Acid

TLV (mg/m3): 5.5

Maximum Hourly Emission Rate (lbs/hr): 0.46

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m3): 19.22

MAGLC (ug/m3): 131

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

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- 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.).

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.);

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

- 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, HCl and NOx. These 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 0.23 lb/hr.

Applicable Compliance Method:

As a result of complying with the operational restrictions through the required monitoring, recordkeeping and reporting, compliance shall be demonstrated by summing the fugitive and captured emissions. The captured emissions shall be quantified by multiplying the emission factor of 1.787 lb/1000 lb of product (Testing, 8/14/00 thru 8/16/00) by the maximum throughput of 3000 lb of product /hr by the control efficiency of the RTO. The fugitive emissions shall be quantified by the following equation:

$$\text{Fug} = \text{DFE} \times (1 - \text{CapE}) / \text{TM}$$

DFE = Die face emissions = $[\text{FH}/\text{FT} \times (\text{EF} \times \text{MP} \times \text{CE})]/\text{CapE}$

CapE = 80% (Capture efficiency test, 12/8/00)

FH = flow rate through the hood = (hood cross sectional area, 0.146 x 1.5 ft.)(face velocity, 800 ft/min.).

FT = total flow measured at the thermal oxidizer.

EF = Emission factor, (lbs pollutant/1000 lbs product).

MP = Monthly productions volume, (lbs).

CE = RTO Control efficiency (1-destruction efficiency) for specific compound demonstrated during the emission testing specified in Part II.E.2. Until the testing is conducted, manufacturer's specified control efficiencies shall be used.

TM = Total hours per month the emission unit operated.

- b. Emission Limitation:
VOC emissions shall not exceed 1.0 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.

- c. Emission Limitation:
Facility wide emissions of MEK shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by summing the results of the equation referenced below with the previous 11 months for each pollutant. The equation shall be performed on a monthly basis for each product's respective emissions of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene and VOC.

$$\{[(\text{EF})(\text{MP})(1 - \text{CE}) + \text{Fug}](2000 \text{ lbs/ton})\} + \text{Exs} = \text{ER}$$

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Where:

EF* = Emission factor, (lbs pollutant/1000 lbs product);

MP = Monthly productions volume, (lbs)

CE = Control efficiency; demonstrated for each specific compound during the emission testing specified in Part II.E.2 Until the testing is conducted, manufacturer's specified control efficiencies shall be used.

Fug = $DFE \times (1 - CapE)$

$DFE = \text{Die face emissions} = [FH/FT \times (EF \times MP \times CE)] / CapE$
 CapE = 80% (Capture efficiency test, 12/8/00)

FH = flow rate through the hood = (hood cross sectional area, 0.146 x 1.5 ft.)(face velocity, 800 ft/min.)

FT = total flow measured at the thermal oxidizer (cu.ft/min)

Exs= The summed total emissions from the other extruders

PE = Emission total for the previous 11 months (tons per month).

ER = emission rate, (tons per rolling, 12 month period)

* 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

1,3 Butadiene = 0.083 lb/1000 lb product

Acrylonitrile = 0.247 lb/1000 lb product

Styrene = 1.097 lb/1000 lb product

Chlorobenzene = 0.213 lb/1000 product

VOC = 1.787 lb/1000 product

- d. Emission Limitation:
 Facility wide emissions of 1,3-Butadiene shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the calculation found in Part II.E.1.c above.

- e. Emission Limitation:
 Facility wide emissions of Acrylonitrile shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the calculation found in Part II.E.1.c above.

- f. Emission Limitation:
Facility wide emissions of Styrene shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:
Compliance shall be demonstrated by the calculation found in Part II.E.1.c above.
- g. Emission Limitation:
Facility wide emissions of Chlorobenzene shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:
Compliance shall be demonstrated by the calculation found in Part II.E.1.c above.
- h. Emission Limitation:
Facility wide emissions of HCl shall not exceed 2.0 tons per rolling, 12-month period.

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Applicable Compliance Method:

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

$$(MP)(EF_{\text{MCB}})(DE_{\text{MCB}})(\text{lbs HCl Produced/lbs MCB Destroyed})(1-CE) + PE = ER$$

Where:

- MP = Monthly production volume, (lbs)
 EF_{MCB} = Chlorobenzene emission factor, (lbs MCB/ 1000 lbs of product)
 DE_{MCB} = Chlorobenzene destruction efficiency demonstrated during the emission testing specified in Part II.E.2 Until the testing is conducted, an engineering estimate of the control efficiency shall be used.
 lbs HCl Produced/lbs MCB Destroyed = stoichiometric ratio (36.4/112.6)
 ER = lbs HCl/month
 MCB = Chlorobenzene
 HCl = Hydrochloric Acid
 PE = Emission total for the previous 11 months (tons per month).

- i. Emission Limitation:
 Facility wide emissions of NO_x shall not exceed 20.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by summing the results of the equation referenced below with the previous 11 month's emission totals. The equation shall be performed on a monthly basis for each product's respective 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:

- MP = Monthly production volume, (lbs)
 EF_{ngc} = 0.1 lbs NO_x/MMBtu of Natural gas, (AP-42, 1.4-5, 7/98)
 NG = Natural gas consumption, (mmBTU/month)
 EF_{AN} = Acrylonitrile emission factor, (lbs AN/1000 lbs product)
 DE_{AN} = Acrylonitrile destruction efficiency demonstrated during the emission testing specified in Part II.E.2 Until the testing is conducted, an engineering estimate of the control efficiency shall be used.
 lbs NO formed/lbs AN destroyed = stoichiometric ratio, (30.0/53.1)

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

- j. 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).
- k. Emission Limitation:
Facility wide emissions of PM shall not exceed 0.031 lb/hr.
- Applicable Compliance Method:
Compliance shall be demonstrated by multiplying the emission factor of 0.0076 lb PM/mmBTU (AP-42, 1.4-2, 7/98) by the thermal oxidation unit's capacity of 2.12 mmBTU/hr.
- l. Emission Limitation:
Facility wide emissions of PM shall not exceed 0.13 tons per year.
- Applicable Compliance Method:
Compliance shall be demonstrated by multiplying the emission factor of 0.0076 lb PM/mmBTU (AP-42, 1.4-2, 7/98) by the thermal oxidation unit's capacity of 2.12 mmBTU/hr, then multiplying by 8760 hrs/yr and dividing by 2000 lbs/ton.
- m. Emission Limitation:
Facility wide emissions of combined HAPs shall not exceed 5.0 tons per rolling, 12-month period.
- Applicable Compliance Method:
Compliance shall be demonstrated by using the calculation found in Part II.E.1.c above and summing the total monthly HAP emissions to the previous 11 month's totals.
- n. Emission Limitation:
Facility wide emissions of VOC shall not exceed 20.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by using the calculation found in Part II.E.1.c above and summing the total monthly VOC emissions of each extrusion line to the previous 11 month total emissions.

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 startup of the RTO and Acid Gas Scrubber.
 - b. The emission testing shall be conducted to determine the control efficiency of the RTO and AGS on MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, HCl, NO_x, and VOC. 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 the die face hood on a representative extrusion line.
 - 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 units 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.

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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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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>	OAC rule 3745-21-07 (G)
P023 - Thermoplastic compounding extruder line #2 with condenser, thermal oxidizer and acid gas scrubber	OAC rule 3745-31-05 (A)(3)	
	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 0.02 lb/hr and 0.1 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.6 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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2. Additional Terms and Conditions

2.a Facility wide emissions shall not exceed the following limitations during any rolling,

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12-month period following installation of the recuperative thermal oxidizer (RTO) and acid gas scrubber (AGS): 2.0 ton methyl ethyl ketone (MEK), 2.0 ton 1,3-Butadiene, 2.0 ton Acrylonitrile, 2.0 tons Styrene, 2.0 tons Chlorobenzene and 20.0 tons of volatile organic compounds (VOC). In addition, the facility wide emissions of combined hazardous air pollutants (HAPs) shall not exceed 5.0 tons per rolling, 12-month period.

- 2.b** Emissions from this emission unit shall be vented to a RTO followed by an AGS.
- 2.c** The total emissions from all extruder lines shall not exceed 0.031 lb particulate matter (PM)/hr and 0.13 lb PM per rolling, 12-month period. In addition, the facility wide emissions shall not exceed 2.0 tons hydrochloric acid (HCl) and 20.0 tons nitrogen oxides (NOx) per rolling 12-month summation.
- 2.d** The emission unit's short and long term VOC 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 combined PM short and long term emission limitations from all extruders 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 1-3 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 emission unit and vent them to the recuperative thermal oxidizer followed by the acid gas scrubber.
6. The maximum emission rate for this facility shall not exceed 2.0 tons of MEK, 1,3-Butadiene,

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Acrylonitrile, Styrene or Chlorobenzene, 20.0 tons VOC, and 5 tons of combined HAPs based upon a rolling 12-month period.

To ensure enforceability during the first 12 calendar months of operation following installation of the RTO and AGS, the permittee shall not exceed the emission limits specified in the following table:

Maximum Allowable Cumulative Emissions (Tons)

Month(s)	MEK	1,3 Butadiene	Acrylonitrile	Chlorobenzene	Styrene	Total HAPs	VOC
1	0.1667	0.1667	0.1667	0.1667	0.1667	0.4167	1.667
1-2	0.3333	0.3333	0.3333	0.3333	0.3333	0.8333	3.333
1-3	0.5000	0.5000	0.5000	0.5000	0.5000	1.2500	5.000
1-4	0.6667	0.6667	0.6667	0.6667	0.6667	1.6667	6.667
1-5	0.8333	0.8333	0.8333	0.8333	0.8333	2.0833	8.333
1-6	1.0000	1.0000	1.0000	1.0000	1.0000	2.5000	10.000
1-7	1.1667	1.1667	1.1667	1.1667	1.1667	2.9167	11.667
1-8	1.3333	1.3333	1.3333	1.3333	1.3333	3.3333	13.333
1-9	1.5000	1.5000	1.5000	1.5000	1.5000	3.7500	15.000
1-10	1.6667	1.6667	1.6667	1.6667	1.6667	4.1667	16.667
1-11	1.8333	1.8333	1.8333	1.8333	1.8333	4.5833	18.333
1-12	2.0000	2.0000	2.0000	2.0000	2.0000	5.0000	20.000

After the first 12 calendar months of operation following installation of the RTO and AGS, compliance with the emission limitations shall be based upon a rolling, 12-month summation of the emission rates.

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 incinerator 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 installed, 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 the following information for each day:

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- a. all 3-hour blocks of time during which the combustion temperature within the thermal incinerator, when the emissions unit was in operation, dropped below 1500 degrees Fahrenheit; and
 - b. 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 properly install, 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 installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.

The permittee shall collect and record the following information each day:

- a. the pressure drop across the scrubber, in inches of water on an hourly basis;
 - b. the scrubber liquid flow rate, in gallons per minute on an hourly basis; and
 - c. a log of the downtime for the capture (collection) system, control device, and monitoring equipment, when the associated emissions unit was in operation.
3. The permittee shall properly install, 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 following information each day:

- a. the pH of the scrubber liquor, on a continuous basis; and
 - b. a log of the downtime for the capture (collection) system, control device, and monitoring equipment, when the associated emissions unit was in operation.
4. The permittee shall maintain daily production records (throughput) of each product produced in this emission unit, in pounds.
5. The permittee shall maintain monthly records of the following information:

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- a. the production of each product produced in this emissions unit;
- b. the facility-wide emission rate of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, HCl and NOx in pounds; and

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- c. the rolling, 12-month summation of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, HCl and NOx.
6. The permit to install for emission units P022 thru P031 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 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: MEK

TLV (mg/m³): 590

Maximum Hourly Emission Rate (lbs/hr): 0.0125

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 4.29

MAGLC (ug/m³): 14,048

Pollutant: 1,3 Butadiene

TLV (mg/m³): 4.4

Maximum Hourly Emission Rate (lbs/hr): 0.005

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 1.72

MAGLC (ug/m³): 105

Pollutant: Acrylonitrile

TLV (mg/m³): 4.3

Maximum Hourly Emission Rate (lbs/hr): 0.0138

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 4.74

MAGLC (ug/m³): 102

Pollutant: Styrene

TLV (mg/m³): 85

Maximum Hourly Emission Rate (lbs/hr): 0.0625

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 21.45

MAGLC (ug/m³): 2024

Pollutant: Chlorobenzene

TLV (mg/m³): 46

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Maximum Hourly Emission Rate (lbs/hr): 0.0125

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m3): 4.29

MAGLC (ug/m3): 1095

Pollutant: Hydrochloric Acid

TLV (mg/m3): 5.5

Maximum Hourly Emission Rate (lbs/hr): 0.46

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m3): 19.22

MAGLC (ug/m3): 131

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.).

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

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, HCl and NOx. These 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 0.02 lb/hr.

Applicable Compliance Method:

As a result of complying with the operational restrictions through the required monitoring, recordkeeping and reporting, compliance shall be demonstrated by multiplying the emission factor of 1.787 lb/1000 lb of product (Testing, 8/14/00 thru 8/16/00) by the

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maximum throughput of 1200 lb of product /hr by the control efficiency of the RTO.

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

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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.

c. Emission Limitation:

Facility wide emissions of MEK shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by summing the results of the equation referenced below with the previous 11 months for each pollutant. The equation shall be performed on a monthly basis for each product's respective emissions of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene and VOC.

$$\{[(EF)(MP)(1-CE) + Fug](2000 \text{ lbs/ton})\} + Exs = ER$$

Where:

EF* = Emission factor, (lbs pollutant/1000 lbs product);

MP = Monthly productions volume, (lbs)

CE = Control efficiency; demonstrated for each specific compound during the emission testing specified in Part II.E.2 Until the testing is conducted, manufacturer's specified control efficiencies shall be used.

Fug = DFE x (1-CapE)

DFE = Die face emissions = $[FH/FT \times (EF \times MP \times CE)]/CapE$

CapE = 80% (Capture efficiency test, 12/8/00)

FH = flow rate through the hood = (hood cross sectional area, 0.146 x 1.5 ft.)(face velocity, 800 ft/min.)

FT = total flow measured at the thermal oxidizer (cu.ft/min)

Exs= The summed total emissions from the other extruders

PE = Emission total for the previous 11 months (tons per month).

ER = emission rate, (tons per rolling, 12 month period)

* 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

1,3 Butadiene = 0.083 lb/1000 lb product

Acrylonitrile = 0.247 lb/1000 lb product

Styrene = 1.097 lb/1000 lb product

Chlorobenzene = 0.213 lb/1000 product

VOC = 1.787 lb/1000 product

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- d. Emission Limitation:
Facility wide emissions of 1,3-Butadiene shall not exceed 2.0 tons per rolling, 12-month period.

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Applicable Compliance Method:

Compliance shall be demonstrated by the calculation found in Part II.E.1.c above.

- e. Emission Limitation:
Facility wide emissions of Acrylonitrile shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the calculation found in Part II.E.1.c above.

- f. Emission Limitation:
Facility wide emissions of Styrene shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the calculation found in Part II.E.1.c above.

- g. Emission Limitation:
Facility wide emissions of Chlorobenzene shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the calculation found in Part II.E.1.c above.

- h. Emission Limitation:
Facility wide emissions of HCl shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:

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

$$(MP)(EF_{MCB})(DE_{MCB})(\text{lbs HCl Produced}/\text{lbs MCB Destroyed})(1-CE) + PE = ER$$

Where:

- MP = Monthly production volume, (lbs)
- EF_{MCB} = Chlorobenzene emission factor, (lbs MCB/ 1000 lbs of product)
- DE_{MCB} = Chlorobenzene destruction efficiency demonstrated during the emission testing specified in Part II.E.2. Until the testing is conducted, an engineering estimate of the control efficiency shall be used.

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lbs HCl Produced/lbs MCB Destroyed = stoichiometric ratio (36.4/112.6)

ER = lbs HCl/month

MCB = Chlorobenzene

HCl = Hydrochloric Acid

PE = Emission total for the previous 11 months (tons per month).

- i. Emission Limitation:
Facility wide emissions of NO_x shall not exceed 20.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by summing the results of the equation referenced below with the previous 11 month's emission totals. The equation shall be performed on a monthly basis for each product's respective 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:

MP = Monthly production volume, (lbs)

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

NG = Natural gas consumption, (mmBTU/month)

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

DE_{AN} = Acrylonitrile destruction efficiency demonstrated during the emission testing specified in Part II.E.2 Until the testing is conducted, an engineering estimate of the control efficiency shall be used.

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

ER = lbs NO_x/month

AN = Acrylonitrile

NO = Nitrogen Oxide

SC = Screw cleaner emissions.

- j. 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).

- k. Emission Limitation:

Facility wide emissions of PM shall not exceed 0.031 lb/hr.

Applicable Compliance Method:

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

1. **Emission Limitation:**
Facility wide emissions of PM shall not exceed 0.13 tons per year.

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Applicable Compliance Method:

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

- m. Emission Limitation:
Facility wide emissions of combined HAPs shall not exceed 5.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by using the calculation found in Part II.E.1.c above and summing the total monthly HAP emissions to the previous 11 month's totals.

- n. Emission Limitation:
Facility wide emissions of VOC shall not exceed 20.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by using the calculation found in Part II.E.1.c above and summing the total monthly VOC emissions of each extrusion line to the previous 11 month total emissions.

- 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 startup of the RTO and Acid Gas Scrubber.
 - b. The emission testing shall be conducted to determine the control efficiency of the RTO and AGS on MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, HCl, NOx, and VOC. 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, NOx, 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

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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:

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- 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 the die face hood on a representative extrusion line.
 - 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 units 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, NOx, 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/NOx/HAP/HAPs emission factors (from compliance

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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):

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- 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

- 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>	<u>Applicable Emissions Limitations/Control Measures</u>
P024 - Thermoplastic compounding extruder line #3 with condenser, thermal oxidizer and acid gas scrubber	OAC rule 3745-31-05 (A)(3)	VOC emissions shall not exceed 0.12 lb/hr and 0.5 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.
	OAC rule 3745-35-07 (D)	See II.A.2.a-b and II.B.6 below.
	OAC rule 3745-17-07 (A)(1)	The emission limitation specified in this rule is less stringent than the emission limitations established pursuant to OAC rule 3745-31-05(A)(3).
	OAC rule 3745-17-11 (B)	The emission limitation specified in this rule is less stringent than the emission limitations established pursuant to OAC rule 3745-31-05(A)(3).
	OAC rule 3745-21-07 (G)	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 following installation of the recuperative thermal oxidizer (RTO) and acid gas scrubber (AGS): 2.0 ton methyl ethyl ketone (MEK), 2.0 ton 1,3-Butadiene, 2.0 ton Acrylonitrile, 2.0 tons Styrene, 2.0 tons Chlorobenzene and 20.0 tons of volatile organic compounds (VOC). In addition, the facility wide emissions of combined hazardous air pollutants (HAPs) shall not exceed 5.0 tons per rolling, 12-month period.
- 2.b** Emissions from this emission unit shall be vented to a RTO followed by an AGS.
- 2.c** The total emissions from all extruder lines shall not exceed 0.031 lb particulate matter (PM)/hr and 0.13 lb PM per rolling, 12-month period. In addition, the facility wide emissions shall not exceed 2.0 tons hydrochloric acid (HCl) and 20.0 tons nitrogen oxides (NOx) per rolling 12-month summation.
- 2.d** The emission unit's short and long term VOC 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 combined PM short and long term emission limitations from all extruders 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 1-3 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.

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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 95% of the emissions from this emission unit and vent them to the recuperative thermal oxidizer followed by the acid gas scrubber.
6. The maximum emission rate for this facility shall not exceed 2.0 tons of MEK, 1,3-Butadiene, Acrylonitrile, Styrene or Chlorobenzene, 20.0 tons VOC, and 5 tons of combined HAPs based upon a rolling 12-month period.

To ensure enforceability during the first 12 calendar months of operation following installation of the RTO and AGS, the permittee shall not exceed the emission limits specified in the following table:

Maximum Allowable Cumulative Emissions (Tons)

Month(s)	MEK	1,3 Butadiene	Acrylonitrile	Chlorobenzene	Styrene	Total HAPs	VOC
1	0.1667	0.1667	0.1667	0.1667	0.1667	0.4167	1.667
1-2	0.3333	0.3333	0.3333	0.3333	0.3333	0.8333	3.333
1-3	0.5000	0.5000	0.5000	0.5000	0.5000	1.2500	5.000
1-4	0.6667	0.6667	0.6667	0.6667	0.6667	1.6667	6.667
1-5	0.8333	0.8333	0.8333	0.8333	0.8333	2.0833	8.333
1-6	1.0000	1.0000	1.0000	1.0000	1.0000	2.5000	10.000
1-7	1.1667	1.1667	1.1667	1.1667	1.1667	2.9167	11.667
1-8	1.3333	1.3333	1.3333	1.3333	1.3333	3.3333	13.333
1-9	1.5000	1.5000	1.5000	1.5000	1.5000	3.7500	15.000
1-10	1.6667	1.6667	1.6667	1.6667	1.6667	4.1667	16.667
1-11	1.8333	1.8333	1.8333	1.8333	1.8333	4.5833	18.333
1-12	2.0000	2.0000	2.0000	2.0000	2.0000	5.0000	20.000

After the first 12 calendar months of operation following installation of the RTO and AGS, compliance with the emission limitations shall be based upon a rolling, 12-month summation of the emission rates.

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 incinerator when the emissions unit is in operation. Units shall be in degrees Fahrenheit. The monitoring and recording

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devices shall be capable of accurately measuring the desired parameter. The temperature monitor and recorder shall be installed, 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 the following information for each day:

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- a. all 3-hour blocks of time during which the combustion temperature within the thermal incinerator, when the emissions unit was in operation, dropped below 1500 degrees Fahrenheit; and
 - b. 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 properly install, 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 installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.

The permittee shall collect and record the following information each day:

- a. the pressure drop across the scrubber, in inches of water on an hourly basis;
 - b. the scrubber liquid flow rate, in gallons per minute on an hourly basis; and
 - c. a log of the downtime for the capture (collection) system, control device, and monitoring equipment, when the associated emissions unit was in operation.
3. The permittee shall properly install, 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 following information each day:

- a. the pH of the scrubber liquor, on a continuous basis; and
 - b. a log of the downtime for the capture (collection) system, control device, and monitoring equipment, when the associated emissions unit was in operation.
4. The permittee shall maintain daily production records (throughput) of each product produced in this emission unit, in pounds.
5. The permittee shall maintain monthly records of the following information:

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- a. the production of each product produced in this emissions unit;
- b. the facility-wide emission rate of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, HCl and NOx in pounds; and

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- c. the rolling, 12-month summation of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, HCl and NOx.
6. The permit to install for emission units P022 thru P031 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 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: MEK

TLV (mg/m³): 590

Maximum Hourly Emission Rate (lbs/hr): 0.0125

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 4.29

MAGLC (ug/m³): 14,048

Pollutant: 1,3 Butadiene

TLV (mg/m³): 4.4

Maximum Hourly Emission Rate (lbs/hr): 0.005

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 1.72

MAGLC (ug/m³): 105

Pollutant: Acrylonitrile

TLV (mg/m³): 4.3

Maximum Hourly Emission Rate (lbs/hr): 0.0138

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 4.74

MAGLC (ug/m³): 102

Pollutant: Styrene

TLV (mg/m³): 85

Maximum Hourly Emission Rate (lbs/hr): 0.0625

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 21.45

MAGLC (ug/m³): 2024

Pollutant: Chlorobenzene

TLV (mg/m³): 46

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Maximum Hourly Emission Rate (lbs/hr): 0.0125

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m3): 4.29

MAGLC (ug/m3): 1095

Pollutant: Hydrochloric Acid

TLV (mg/m3): 5.5

Maximum Hourly Emission Rate (lbs/hr): 0.46

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m3): 19.22

MAGLC (ug/m3): 131

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.).

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

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, HCl and NOx. These 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 0.12 lb/hr.

Applicable Compliance Method:

As a result of complying with the operational restrictions through the required monitoring, recordkeeping and reporting, compliance shall be demonstrated by summing the fugitive and captured emissions. The captured emissions shall be quantified by multiplying the emission factor of 1.787 lb/1000 lb of product (Testing, 8/14/00 thru 8/16/00) by the

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maximum throughput of 1000 lb of product /hr by the control efficiency of the RTO. The fugitive emissions shall be quantified by the following equation:

$$\text{Fug} = \text{DFE} \times (1 - \text{CapE}) / \text{TM}$$

DFE = Die face emissions = $[\text{FH}/\text{FT} \times (\text{EF} \times \text{MP} \times \text{CE})]/\text{CapE}$

CapE = 95% (Capture efficiency test, 12/8/00)

FH = flow rate through the hood = (hood cross sectional area, 0.125 x 1.33 ft.)(face velocity, 2500 ft/min.).

FT = total flow measured at the thermal oxidizer.

EF = Emission factor, (lbs pollutant/1000 lbs product).

MP = Monthly productions volume, (lbs).

CE = RTO Control efficiency (1-destruction efficiency) for specific compound demonstrated during the emission testing specified in Part II.E.2. Until the testing is conducted, manufacturer's specified control efficiencies shall be used.

TM = Total hours per month the emission unit operated.

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

- c. Emission Limitation:
Facility wide emissions of MEK shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by summing the results of the equation referenced below with the previous 11 months for each pollutant. The equation shall be performed on a monthly basis for each product's respective emissions of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene and VOC.

$$\{[(\text{EF})(\text{MP})(1 - \text{CE}) + \text{Fug}](2000 \text{ lbs/ton})\} + \text{Exs} = \text{ER}$$

Where:

EF* = Emission factor, (lbs pollutant/1000 lbs product);

MP = Monthly productions volume, (lbs)

CE = Control efficiency; demonstrated for each specific compound during the emission testing specified in Part II.E.2 Until the testing is conducted,

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manufacturer's specified control efficiencies shall be used.

$$\text{Fug} = \text{DFE} \times (1 - \text{CapE})$$

$$\text{DFE} = \text{Die face emissions} = [\text{FH}/\text{FT} \times (\text{EF} \times \text{MP} \times \text{CE})]/\text{CapE}$$

$$\text{CapE} = 80\% \text{ (Capture efficiency test, 12/8/00)}$$

$$\text{FH} = \text{flow rate through the hood} = (\text{hood cross sectional area, } 0.146 \times 1.5 \text{ ft.})(\text{face velocity, } 800 \text{ ft./min.})$$

$$\text{FT} = \text{total flow measured at the thermal oxidizer (cu.ft/min)}$$

Exs= The summed total emissions from the other extruders

PE = Emission total for the previous 11 months (tons per month).

ER = emission rate, (tons per rolling, 12 month period)

* 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

1,3 Butadiene = 0.083 lb/1000 lb product

Acrylonitrile = 0.247 lb/1000 lb product

Styrene = 1.097 lb/1000 lb product

Chlorobenzene = 0.213 lb/1000 product

VOC = 1.787 lb/1000 product

- d. Emission Limitation:
Facility wide emissions of 1,3-Butadiene shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the calculation found in Part II.E.1.c above.

- e. Emission Limitation:
Facility wide emissions of Acrylonitrile shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the calculation found in Part II.E.1.c above.

- f. Emission Limitation:
Facility wide emissions of Styrene shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the calculation found in Part II.E.1.c above.

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- g. Emission Limitation:
Facility wide emissions of Chlorobenzene shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the calculation found in Part II.E.1.c above.

- h. Emission Limitation:
Facility wide emissions of HCl shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:

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

$$(MP)(EF_{MCB})(DE_{MCB})(\text{lbs HCl Produced/lbs MCB Destroyed})(1-CE) + PE = ER$$

Where:

MP = Monthly production volume, (lbs)

EF_{MCB} = Chlorobenzene emission factor, (lbs MCB/ 1000 lbs of product)

DE_{MCB} = Chlorobenzene destruction efficiency demonstrated during the emission testing specified in Part II.E.2. Until the testing is conducted, an engineering estimate of the control efficiency shall be used.

lbs HCl Produced/lbs MCB Destroyed = stoichiometric ratio (36.4/112.6)

ER = lbs HCl/month

MCB = Chlorobenzene

HCl = Hydrochloric Acid

PE = Emission total for the previous 11 months (tons per month).

- i. Emission Limitation:
Facility wide emissions of NOx shall not exceed 20.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by summing the results of the equation referenced below with the previous 11 month's emission totals. The equation shall be performed on a monthly basis for each product's respective 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:

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- MP = Monthly production volume, (lbs)
- $EF_{ngc} = 0.1$ lbs NO_x/MMBtu of Natural gas, (AP-42, 1.4-5, 7/98)
- NG = Natural gas consumption, (mmBTU/month)
- $EF_{AN} =$ Acrylonitrile emission factor, (lbs AN/1000 lbs product)
- $DE_{AN} =$ Acrylonitrile destruction efficiency demonstrated during the emission testing specified in Part II.E.2 Until the testing is conducted, an engineering estimate of the control efficiency shall be used.
- lbs NO formed/lbs AN destroyed = stoichiometric ratio, (30.0/53.1)
- ER = lbs NO_x/month
- AN = Acrylonitrile
- NO = Nitrogen Oxide
- SC = Screw cleaner emissions.

- j. 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).

- k. Emission Limitation:
Facility wide emissions of PM shall not exceed 0.031 lb/hr.

Applicable Compliance Method:

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

- l. Emission Limitation:
Facility wide emissions of PM shall not exceed 0.13 tons per year.

Applicable Compliance Method:

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

- m. Emission Limitation:
Facility wide emissions of combined HAPs shall not exceed 5.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by using the calculation found in Part II.E.1.c above and summing the total monthly HAP emissions to the previous 11 month's totals.

n. **Emission Limitation:**

Facility wide emissions of VOC shall not exceed 20.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by using the calculation found in Part II.E.1.c above and summing the total monthly VOC emissions of each extrusion line to the previous 11 month total emissions.

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 startup of the RTO and Acid Gas Scrubber.
 - b. The emission testing shall be conducted to determine the control efficiency of the RTO and AGS on MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, HCl, NO_x, and VOC. 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 the die face hood on a representative extrusion line.

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- 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 units 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 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):

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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>	
P025 - Thermoplastic compounding extruder line #4 with condenser, thermal oxidizer and acid gas scrubber	OAC rule 3745-31-05 (A)(3)	OAC rule 3745-17-11 (B)
		OAC rule 3745-21-07 (G)
	OAC rule 3745-35-07 (D)	
	OAC rule 3745-17-07 (A)(1)	

Applicable Emissions
Limitations/Control Measures

VOC emissions shall not exceed 0.52 lb/hr and 2.3 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.6 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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2. Additional Terms and Conditions

- 2.a** Facility wide emissions shall not exceed the following limitations during any rolling, 12-month period following installation of the recuperative thermal oxidizer (RTO) and acid gas scrubber (AGS): 2.0 ton methyl ethyl ketone (MEK), 2.0 ton 1,3-Butadiene, 2.0

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ton Acrylonitrile, 2.0 tons Styrene, 2.0 tons Chlorobenzene and 20.0 tons of volatile organic compounds (VOC). In addition, the facility wide emissions of combined hazardous air pollutants (HAPs) shall not exceed 5.0 tons per rolling, 12-month period.

- 2.b** Emissions from this emission unit shall be vented to a RTO followed by an AGS.
- 2.c** The total emissions from all extruder lines shall not exceed 0.031 lb particulate matter (PM)/hr and 0.13 lb PM per rolling, 12-month period. In addition, the facility wide emissions shall not exceed 2.0 tons hydrochloric acid (HCl) and 20.0 tons nitrogen oxides (NOx) per rolling 12-month summation.
- 2.d** The emission unit's short and long term VOC 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 combined PM short and long term emission limitations from all extruders 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 1-3 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 80% of the emissions from this emissions unit until the modifications specified in the permit application submitted 9/13/00 are completed. After which, the permittee shall capture 100% of the emissions from this emission unit and vent them to the recuperative thermal oxidizer followed by the acid gas scrubber.

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- The maximum emission rate for this facility shall not exceed 2.0 tons of MEK, 1,3-Butadiene, Acrylonitrile, Styrene or Chlorobenzene, 20.0 tons VOC, and 5 tons of combined HAPs based upon a rolling 12-month period.

To ensure enforceability during the first 12 calendar months of operation following installation of the RTO and AGS, the permittee shall not exceed the emission limits specified in the following table:

Maximum Allowable Cumulative Emissions (Tons)

Month(s)	MEK	1,3 Butadiene	Acrylonitrile	Chlorobenzene	Styrene	Total HAPs	VOC
1	0.1667	0.1667	0.1667	0.1667	0.1667	0.4167	1.667
1-2	0.3333	0.3333	0.3333	0.3333	0.3333	0.8333	3.333
1-3	0.5000	0.5000	0.5000	0.5000	0.5000	1.2500	5.000
1-4	0.6667	0.6667	0.6667	0.6667	0.6667	1.6667	6.667
1-5	0.8333	0.8333	0.8333	0.8333	0.8333	2.0833	8.333
1-6	1.0000	1.0000	1.0000	1.0000	1.0000	2.5000	10.000
1-7	1.1667	1.1667	1.1667	1.1667	1.1667	2.9167	11.667
1-8	1.3333	1.3333	1.3333	1.3333	1.3333	3.3333	13.333
1-9	1.5000	1.5000	1.5000	1.5000	1.5000	3.7500	15.000
1-10	1.6667	1.6667	1.6667	1.6667	1.6667	4.1667	16.667
1-11	1.8333	1.8333	1.8333	1.8333	1.8333	4.5833	18.333
1-12	2.0000	2.0000	2.0000	2.0000	2.0000	5.0000	20.000

After the first 12 calendar months of operation following installation of the RTO and AGS, compliance with the emission limitations shall be based upon a rolling, 12-month summation of the emission rates.

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 incinerator 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 installed, 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 the following information for each day:

- a. all 3-hour blocks of time during which the combustion temperature within the thermal incinerator, when the emissions unit was in operation, dropped below 1500 degrees Fahrenheit; and
 - b. 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 properly install, 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 installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.

The permittee shall collect and record the following information each day:

- a. the pressure drop across the scrubber, in inches of water on an hourly basis;
 - b. the scrubber liquid flow rate, in gallons per minute on an hourly basis; and
 - c. a log of the downtime for the capture (collection) system, control device, and monitoring equipment, when the associated emissions unit was in operation.
3. The permittee shall properly install, 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 following information each day:

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- a. the pH of the scrubber liquor, on a continuous basis; and
 - b. a log of the downtime for the capture (collection) system, control device, and monitoring equipment, when the associated emissions unit was in operation.
4. The permittee shall maintain daily production records (throughput) of each product produced in this emission unit, in pounds.
 5. The permittee shall maintain monthly records of the following information:
 - a. the production of each product produced in this emissions unit;
 - b. the facility-wide emission rate of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, HCl and NOx in pounds; and
 - c. the rolling, 12-month summation of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, HCl and NOx.
 6. The permit to install for emission units P022 thru P031 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 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: MEK

TLV (mg/m³): 590

Maximum Hourly Emission Rate (lbs/hr): 0.0125

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 4.29

MAGLC (ug/m³): 14,048

Pollutant: 1,3 Butadiene

TLV (mg/m³): 4.4

Maximum Hourly Emission Rate (lbs/hr): 0.005

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 1.72

MAGLC (ug/m³): 105

Pollutant: Acrylonitrile

TLV (mg/m3): 4.3

Maximum Hourly Emission Rate (lbs/hr): 0.0138

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m3): 4.74

MAGLC (ug/m3): 102

Pollutant: Styrene

TLV (mg/m3): 85

Maximum Hourly Emission Rate (lbs/hr): 0.0625

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m3): 21.45

MAGLC (ug/m3): 2024

Pollutant: Chlorobenzene

TLV (mg/m3): 46

Maximum Hourly Emission Rate (lbs/hr): 0.0125

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m3): 4.29

MAGLC (ug/m3): 1095

Pollutant: Hydrochloric Acid

TLV (mg/m3): 5.5

Maximum Hourly Emission Rate (lbs/hr): 0.46

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m3): 19.22

MAGLC (ug/m3): 131

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

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- 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.).

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.);

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

- 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, HCl and NOx. These 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 0.52 lb/hr.

Applicable Compliance Method:

As a result of complying with the operational restrictions through the required monitoring, recordkeeping and reporting, compliance shall be demonstrated by summing the fugitive and captured emissions. The captured emissions shall be quantified by multiplying the emission factor of 1.787 lb/1000 lb of product (Testing, 8/14/00 thru 8/16/00) by the maximum throughput of 5000 lb of product /hr by the control efficiency of the RTO. The fugitive emissions shall be quantified by the following equation:

$$\text{Fug} = \text{DFE} \times (1 - \text{CapE}) / \text{TM}$$

$$\text{DFE} = \text{Die face emissions} = [\text{FH}/\text{FT} \times (\text{EF} \times \text{MP} \times \text{CE})]/\text{CapE}$$

$$\text{CapE} = 80\% \text{ (Capture efficiency test, 12/8/00)}$$

$$\text{FH} = \text{flow rate through the hood} = (\text{hood cross sectional area, } 0.83 \times 0.72 \text{ ft.})(\text{face velocity, } 750 \text{ ft/min.}).$$

$$\text{FT} = \text{total flow measured at the thermal oxidizer.}$$

$$\text{EF} = \text{Emission factor, (lbs pollutant/1000 lbs product).}$$

$$\text{MP} = \text{Monthly productions volume, (lbs).}$$

$$\text{CE} = \text{RTO Control efficiency (1-destruction efficiency) for specific compound demonstrated during the emission testing specified in Part II.E.2. Until the testing is conducted, manufacturer's specified control efficiencies shall be used.}$$

$$\text{TM} = \text{Total hours per month the emission unit operated.}$$

- b. **Emission Limitation:**
VOC emissions shall not exceed 2.3 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.

- c. **Emission Limitation:**
Facility wide emissions of MEK shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by summing the results of the equation referenced below with the previous 11 months for each pollutant. The equation shall be performed on a monthly basis for each product's respective emissions of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene and VOC.

$$\{[(\text{EF})(\text{MP})(1 - \text{CE}) + \text{Fug}](2000 \text{ lbs/ton})\} + \text{Exs} = \text{ER}$$

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Where:

EF* = Emission factor, (lbs pollutant/1000 lbs product);

MP = Monthly productions volume, (lbs)

CE = Control efficiency; demonstrated for each specific compound during the emission testing specified in Part II.E.2 Until the testing is conducted, manufacturer's specified control efficiencies shall be used.

Fug = $DFE \times (1 - CapE)$

$DFE = \text{Die face emissions} = [FH/FT \times (EF \times MP \times CE)]/CapE$

CapE = 80% (Capture efficiency test, 12/8/00)

FH = flow rate through the hood = (hood cross sectional area, 0.146 x 1.5 ft.)(face velocity, 800 ft/min.)

FT = total flow measured at the thermal oxidizer (cu.ft/min)

Exs= The summed total emissions from the other extruders

PE = Emission total for the previous 11 months (tons per month).

ER = emission rate, (tons per rolling, 12 month period)

* 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

1,3 Butadiene = 0.083 lb/1000 lb product

Acrylonitrile = 0.247 lb/1000 lb product

Styrene = 1.097 lb/1000 lb product

Chlorobenzene = 0.213 lb/1000 product

VOC = 1.787 lb/1000 product

- d. Emission Limitation:
Facility wide emissions of 1,3-Butadiene shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the calculation found in Part II.E.1.c above.

- e. Emission Limitation:
Facility wide emissions of Acrylonitrile shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the calculation found in Part II.E.1.c above.

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f. Emission Limitation:
Facility wide emissions of Styrene shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:
Compliance shall be demonstrated by the calculation found in Part II.E.1.c above.

g. Emission Limitation:
Facility wide emissions of Chlorobenzene shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:
Compliance shall be demonstrated by the calculation found in Part II.E.1.c above.

h. Emission Limitation:
Facility wide emissions of HCl shall not exceed 2.0 tons per rolling, 12-month period.

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

$$(MP)(EF_{MCB})(DE_{MCB})(\text{lbs HCl Produced}/\text{lbs MCB Destroyed})(1-CE) + PE = ER$$

Where:

- MP = Monthly production volume, (lbs)
- EF_{MCB} = Chlorobenzene emission factor, (lbs MCB/ 1000 lbs of product)
- DE_{MCB} = Chlorobenzene destruction efficiency demonstrated during the emission testing specified in Part II.E.2. Until the testing is conducted, an engineering estimate of the control efficiency shall be used.
- lbs HCl Produced/lbs MCB Destroyed = stoichiometric ratio (36.4/112.6)
- ER = lbs HCl/month
- MCB = Chlorobenzene
- HCl = Hydrochloric Acid
- PE = Emission total for the previous 11 months (tons per month).

i. Emission Limitation:
Facility wide emissions of NOx shall not exceed 20.0 tons per rolling, 12-month period.

Applicable Compliance Method:
Compliance shall be demonstrated by summing the results of the equation referenced

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below with the previous 11 month's emission totals. The equation shall be performed on a monthly basis for each product's respective 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:

MP = Monthly production volume, (lbs)

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

NG = Natural gas consumption, (mmBTU/month)

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

DE_{AN} = Acrylonitrile destruction efficiency demonstrated during the emission testing specified in Part II.E.2. Until the testing is conducted, an engineering estimate of the control efficiency shall be used.

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

ER = lbs NO_x/month

AN = Acrylonitrile

NO = Nitrogen Oxide

SC = Screw cleaner emissions.

- j. 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).

- k. Emission Limitation:
Facility wide emissions of PM shall not exceed 0.031 lb/hr.

Applicable Compliance Method:

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

- l. Emission Limitation:
Facility wide emissions of PM shall not exceed 0.13 tons per year.

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Applicable Compliance Method:

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

m. Emission Limitation:

Facility wide emissions of combined HAPs shall not exceed 5.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by using the calculation found in Part II.E.1.c above and summing the total monthly HAP emissions to the previous 11 month's totals.

n. Emission Limitation:

Facility wide emissions of VOC shall not exceed 20.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by using the calculation found in Part II.E.1.c above and summing the total monthly VOC emissions of each extrusion line to the previous 11 month total emissions.

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 startup of the RTO and Acid Gas Scrubber.

b. The emission testing shall be conducted to determine the control efficiency of the RTO and AGS on MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, HCl, NOx, and VOC. 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, NOx, 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 the die face hood on a representative extrusion line.
 - 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 units 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.

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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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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>	OAC rule 3745-21-07 (G)
P026 - Thermoplastic compounding extruder line #5 with condenser, thermal oxidizer and acid gas scrubber	OAC rule 3745-31-05 (A)(3)	
	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 1.37 lb/hr and 6.0 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.6 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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2. Additional Terms and Conditions

2.a Facility wide emissions shall not exceed the following limitations during any rolling,

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12-month period following installation of the recuperative thermal oxidizer (RTO) and acid gas scrubber (AGS): 2.0 ton methyl ethyl ketone (MEK), 2.0 ton 1,3-Butadiene, 2.0 ton Acrylonitrile, 2.0 tons Styrene, 2.0 tons Chlorobenzene and 20.0 tons of volatile organic compounds (VOC). In addition, the facility wide emissions of combined hazardous air pollutants (HAPs) shall not exceed 5.0 tons per rolling, 12-month period.

- 2.b** Emissions from this emission unit shall be vented to a RTO followed by an AGS.
- 2.c** The total emissions from all extruder lines shall not exceed 0.031 lb particulate matter (PM)/hr and 0.13 lb PM per rolling, 12-month period. In addition, the facility wide emissions shall not exceed 2.0 tons hydrochloric acid (HCl) and 20.0 tons nitrogen oxides (NOx) per rolling 12-month summation.
- 2.d** The emission unit's short and long term VOC 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 combined PM short and long term emission limitations from all extruders 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 1-3 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 80% of the emissions from this emissions unit and vent them to the recuperative thermal oxidizer followed by the acid gas scrubber.
6. The maximum emission rate for this facility shall not exceed 2.0 tons of MEK, 1,3-Butadiene, Acrylonitrile, Styrene or Chlorobenzene, 20.0 tons VOC, and 5 tons of combined HAPs based

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upon a rolling 12-month period.

To ensure enforceability during the first 12 calendar months of operation following installation of the RTO and AGS, the permittee shall not exceed the emission limits specified in the following table:

Maximum Allowable Cumulative Emissions (Tons)

Month(s)	MEK	1,3 Butadiene	Acrylonitrile	Chlorobenzene	Styrene	Total HAPs	VOC
1	0.1667	0.1667	0.1667	0.1667	0.1667	0.4167	1.667
1-2	0.3333	0.3333	0.3333	0.3333	0.3333	0.8333	3.333
1-3	0.5000	0.5000	0.5000	0.5000	0.5000	1.2500	5.000
1-4	0.6667	0.6667	0.6667	0.6667	0.6667	1.6667	6.667
1-5	0.8333	0.8333	0.8333	0.8333	0.8333	2.0833	8.333
1-6	1.0000	1.0000	1.0000	1.0000	1.0000	2.5000	10.000
1-7	1.1667	1.1667	1.1667	1.1667	1.1667	2.9167	11.667
1-8	1.3333	1.3333	1.3333	1.3333	1.3333	3.3333	13.333
1-9	1.5000	1.5000	1.5000	1.5000	1.5000	3.7500	15.000
1-10	1.6667	1.6667	1.6667	1.6667	1.6667	4.1667	16.667
1-11	1.8333	1.8333	1.8333	1.8333	1.8333	4.5833	18.333
1-12	2.0000	2.0000	2.0000	2.0000	2.0000	5.0000	20.000

After the first 12 calendar months of operation following installation of the RTO and AGS, compliance with the emission limitations shall be based upon a rolling, 12-month summation of the emission rates.

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 incinerator 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 installed, 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 the following information for each day:

- a. all 3-hour blocks of time during which the combustion temperature within the thermal incinerator, when the emissions unit was in operation, dropped below 1500 degrees Fahrenheit; and
 - b. 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 properly install, 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 installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.

The permittee shall collect and record the following information each day:

- a. the pressure drop across the scrubber, in inches of water on an hourly basis;
 - b. the scrubber liquid flow rate, in gallons per minute on an hourly basis; and
 - c. a log of the downtime for the capture (collection) system, control device, and monitoring equipment, when the associated emissions unit was in operation.
3. The permittee shall properly install, 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 following information each day:

- a. the pH of the scrubber liquor, on a continuous basis; and
 - b. a log of the downtime for the capture (collection) system, control device, and monitoring equipment, when the associated emissions unit was in operation.
4. The permittee shall maintain daily production records (throughput) of each product produced in this emission unit, in pounds.
5. The permittee shall maintain monthly records of the following information:
- a. the production of each product produced in this emissions unit;

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- b. the facility-wide emission rate of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, HCl and NOx in pounds; and
 - c. the rolling, 12-month summation of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, HCl and NOx.
6. The permit to install for emission units P022 thru P031 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 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: MEK

TLV (mg/m³): 590

Maximum Hourly Emission Rate (lbs/hr): 0.0125

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 4.29

MAGLC (ug/m³): 14,048

Pollutant: 1,3 Butadiene

TLV (mg/m³): 4.4

Maximum Hourly Emission Rate (lbs/hr): 0.005

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 1.72

MAGLC (ug/m³): 105

Pollutant: Acrylonitrile

TLV (mg/m³): 4.3

Maximum Hourly Emission Rate (lbs/hr): 0.0138

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 4.74

MAGLC (ug/m³): 102

Pollutant: Styrene

TLV (mg/m³): 85

Maximum Hourly Emission Rate (lbs/hr): 0.0625

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 21.45

MAGLC (ug/m3): 2024

Pollutant: Chlorobenzene

TLV (mg/m3): 46

Maximum Hourly Emission Rate (lbs/hr): 0.0125

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m3): 4.29

MAGLC (ug/m3): 1095

Pollutant: Hydrochloric Acid

TLV (mg/m3): 5.5

Maximum Hourly Emission Rate (lbs/hr): 0.46

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m3): 19.22

MAGLC (ug/m3): 131

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.).

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.

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

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, HCl and NOx. These 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 1.37 lb/hr.

Applicable Compliance Method:

As a result of complying with the operational restrictions through the required monitoring, recordkeeping and reporting, compliance shall be demonstrated by summing the fugitive and captured emissions. The captured emissions shall be quantified by multiplying the

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emission factor of 1.787 lb/1000 lb of product (Testing, 8/14/00 thru 8/16/00) by the maximum throughput of 250 lb of product /hr by the control efficiency of the RTO. The fugitive emissions shall be quantified by the following equation:

$$\text{Fug} = \text{DFE} \times (1 - \text{CapE}) / \text{TM}$$

$$\text{DFE} = \text{Die face emissions} = [\text{FH}/\text{FT} \times (\text{EF} \times \text{MP} \times \text{CE})]/\text{CapE}$$

$$\text{CapE} = 80\% \text{ (Capture efficiency test, 12/8/00)}$$

$$\text{FH} = \text{flow rate through the hood} = (\text{hood cross sectional area, } 0.96 \text{ sq.ft.}) \times (\text{face velocity, } 1500 \text{ ft/min.})$$

$$\text{FT} = \text{total flow measured at the thermal oxidizer.}$$

$$\text{EF} = \text{Emission factor, (lbs pollutant/1000 lbs product).}$$

$$\text{MP} = \text{Monthly productions volume, (lbs).}$$

$$\text{CE} = \text{RTO Control efficiency (1-destruction efficiency) for specific compound demonstrated during the emission testing specified in Part II.E.2. Until the testing is conducted, manufacturer's specified control efficiencies shall be used.}$$

$$\text{TM} = \text{Total hours per month the emission unit operated.}$$

- b. Emission Limitation:
VOC emissions shall not exceed 6.0 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.

- c. Emission Limitation:
Facility wide emissions of MEK shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by summing the results of the equation referenced below with the previous 11 months for each pollutant. The equation shall be performed on a monthly basis for each product's respective emissions of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene and VOC.

$$\{[(\text{EF})(\text{MP})(1 - \text{CE}) + \text{Fug}](2000 \text{ lbs/ton})\} + \text{Exs} = \text{ER}$$

Where:

$$\text{EF*} = \text{Emission factor, (lbs pollutant/1000 lbs product);}$$

$$\text{MP} = \text{Monthly productions volume, (lbs)}$$

$$\text{CE} = \text{Control efficiency; demonstrated for each specific compound during the emission testing specified in Part II.E.2 Until the testing is conducted,}$$

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manufacturer's specified control efficiencies shall be used.

$$Fug = DFE \times (1 - CapE)$$

$$DFE = \text{Die face emissions} = [FH/FT \times (EF \times MP \times CE)]/CapE$$

$$CapE = 80\% \text{ (Capture efficiency test, 12/8/00)}$$

$$FH = \text{flow rate through the hood} = (\text{hood cross sectional area, } 0.146 \times 1.5 \text{ ft.})(\text{face velocity, } 800 \text{ ft/min.})$$

$$FT = \text{total flow measured at the thermal oxidizer (cu.ft/min)}$$

Exs= The summed total emissions from the other extruders

PE = Emission total for the previous 11 months (tons per month).

ER = emission rate, (tons per rolling, 12 month period)

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

$$MEK = 0.127 \text{ lb/1000 lb product}$$

$$1,3 \text{ Butadiene} = 0.083 \text{ lb/1000 lb product}$$

$$\text{Acrylonitrile} = 0.247 \text{ lb/1000 lb product}$$

$$\text{Styrene} = 1.097 \text{ lb/1000 lb product}$$

$$\text{Chlorobenzene} = 0.213 \text{ lb/1000 product}$$

$$VOC = 1.787 \text{ lb/1000 product}$$

- d. Emission Limitation:
Facility wide emissions of 1,3-Butadiene shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the calculation found in Part II.E.1.c above.

- e. Emission Limitation:
Facility wide emissions of Acrylonitrile shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the calculation found in Part II.E.1.c above.

- f. Emission Limitation:
Facility wide emissions of Styrene shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the calculation found in Part II.E.1.c above.

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- g. Emission Limitation:
Facility wide emissions of Chlorobenzene shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the calculation found in Part II.E.1.c above.

- h. Emission Limitation:
Facility wide emissions of HCl shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:

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

$$(MP)(EF_{MCB})(DE_{MCB})(\text{lbs HCl Produced/lbs MCB Destroyed})(1-CE) + PE = ER$$

Where:

MP = Monthly production volume, (lbs)

EF_{MCB} = Chlorobenzene emission factor, (lbs MCB/ 1000 lbs of product)

DE_{MCB} = Chlorobenzene destruction efficiency demonstrated during the emission testing specified in Part II.E.2. Until the testing is conducted, an engineering estimate of the control efficiency shall be used.

lbs HCl Produced/lbs MCB Destroyed = stoichiometric ratio (36.4/112.6)

ER = lbs HCl/month

MCB = Chlorobenzene

HCl = Hydrochloric Acid

PE = Emission total for the previous 11 months (tons per month).

- i. Emission Limitation:
Facility wide emissions of NOx shall not exceed 20.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by summing the results of the equation referenced below with the previous 11 month's emission totals. The equation shall be performed on a monthly basis for each product's respective 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:

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MP = Monthly production volume, (lbs)

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

NG = Natural gas consumption, (mmBTU/month)

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

DE_{AN} = Acrylonitrile destruction efficiency demonstrated during the emission testing specified in Part II.E.2. Until the testing is conducted, an engineering estimate of the control efficiency shall be used.

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

ER = lbs NO_x/month

AN = Acrylonitrile

NO = Nitrogen Oxide

SC = Screw cleaner emissions.

- j. 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).

- k. Emission Limitation:
Facility wide emissions of PM shall not exceed 0.031 lb/hr.

Applicable Compliance Method:

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

- l. Emission Limitation:
Facility wide emissions of PM shall not exceed 0.13 tons per year.

Applicable Compliance Method:

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

- m. Emission Limitation:
Facility wide emissions of combined HAPs shall not exceed 5.0 tons per rolling, 12-month period.

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Applicable Compliance Method:

Compliance shall be demonstrated by using the calculation found in Part II.E.1.c above and summing the total monthly HAP emissions to the previous 11 month's totals.

n. Emission Limitation:

Facility wide emissions of VOC shall not exceed 20.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by using the calculation found in Part II.E.1.c above and summing the total monthly VOC emissions of each extrusion line to the previous 11 month total emissions.

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 startup of the RTO and Acid Gas Scrubber.
 - b. The emission testing shall be conducted to determine the control efficiency of the RTO and AGS on MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, HCl, NOx, and VOC. 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, NOx, 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 the die face

hood on a representative extrusion line.

- 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 units 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 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>	<u>Applicable Emissions Limitations/Control Measures</u>
P027 - Thermoplastic compounding extruder line #6 with condenser, thermal oxidizer and acid gas scrubber	OAC rule 3745-31-05 (A)(3)	VOC emissions shall not exceed 0.48 lb/hr and 2.1 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.
	OAC rule 3745-35-07 (D)	See II.A.2.a-b and II.B.6 below.
	OAC rule 3745-17-07 (A)(1)	The emission limitation specified in this rule is less stringent than the emission limitations established pursuant to OAC rule 3745-31-05(A)(3).
	OAC rule 3745-17-11 (B)	The emission limitation specified in this rule is less stringent than the emission limitations established pursuant to OAC rule 3745-31-05(A)(3).
	OAC rule 3745-21-07 (G)	The emission limitation specified in

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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 following installation of the recuperative thermal oxidizer (RTO) and acid gas scrubber (AGS): 2.0 ton methyl ethyl ketone (MEK), 2.0 ton 1,3-Butadiene, 2.0 ton Acrylonitrile, 2.0 tons Styrene, 2.0 tons Chlorobenzene and 20.0 tons of volatile organic compounds (VOC). In addition, the facility wide emissions of combined hazardous air pollutants (HAPs) shall not exceed 5.0 tons per rolling, 12-month period.
- 2.b Emissions from this emission unit shall be vented to a RTO followed by an AGS.
- 2.c The total emissions from all extruder lines shall not exceed 0.031 lb particulate matter (PM)/hr and 0.13 lb PM per rolling, 12-month period. In addition, the facility wide emissions shall not exceed 2.0 tons hydrochloric acid (HCl) and 20.0 tons nitrogen oxides (NOx) per rolling 12-month summation.
- 2.d The emission unit's short and long term VOC 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 combined PM short and long term emission limitations from all extruders 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 1-3 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 95% of the emissions from this emissions unit and vent them to the recuperative thermal oxidizer followed by the acid gas scrubber.
6. The maximum emission rate for this facility shall not exceed 2.0 tons of MEK, 1,3-Butadiene, Acrylonitrile, Styrene or Chlorobenzene, 20.0 tons VOC, and 5 tons of combined HAPs based upon a rolling 12-month period.

To ensure enforceability during the first 12 calendar months of operation following installation of the RTO and AGS, the permittee shall not exceed the emission limits specified in the following table:

Maximum Allowable Cumulative Emissions (Tons)

Month(s)	MEK	1,3 Butadiene	Acrylonitrile	Chlorobenzene	Styrene	Total HAPs	VOC
1	0.1667	0.1667	0.1667	0.1667	0.1667	0.4167	1.667
1-2	0.3333	0.3333	0.3333	0.3333	0.3333	0.8333	3.333
1-3	0.5000	0.5000	0.5000	0.5000	0.5000	1.2500	5.000
1-4	0.6667	0.6667	0.6667	0.6667	0.6667	1.6667	6.667
1-5	0.8333	0.8333	0.8333	0.8333	0.8333	2.0833	8.333
1-6	1.0000	1.0000	1.0000	1.0000	1.0000	2.5000	10.000
1-7	1.1667	1.1667	1.1667	1.1667	1.1667	2.9167	11.667
1-8	1.3333	1.3333	1.3333	1.3333	1.3333	3.3333	13.333
1-9	1.5000	1.5000	1.5000	1.5000	1.5000	3.7500	15.000
1-10	1.6667	1.6667	1.6667	1.6667	1.6667	4.1667	16.667
1-11	1.8333	1.8333	1.8333	1.8333	1.8333	4.5833	18.333
1-12	2.0000	2.0000	2.0000	2.0000	2.0000	5.0000	20.000

After the first 12 calendar months of operation following installation of the RTO and AGS, compliance with the emission limitations shall be based upon a rolling, 12-month summation of the emission rates.

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 incinerator when the emissions unit is in operation. Units shall be in degrees Fahrenheit. The monitoring and recording

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devices shall be capable of accurately measuring the desired parameter. The temperature monitor and recorder shall be installed, 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 the following information for each day:

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- a. all 3-hour blocks of time during which the combustion temperature within the thermal incinerator, when the emissions unit was in operation, dropped below 1500 degrees Fahrenheit; and
 - b. 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 properly install, 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 installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.

The permittee shall collect and record the following information each day:

- a. the pressure drop across the scrubber, in inches of water on an hourly basis;
 - b. the scrubber liquid flow rate, in gallons per minute on an hourly basis; and
 - c. a log of the downtime for the capture (collection) system, control device, and monitoring equipment, when the associated emissions unit was in operation.
3. The permittee shall properly install, 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 following information each day:

- a. the pH of the scrubber liquor, on a continuous basis; and
 - b. a log of the downtime for the capture (collection) system, control device, and monitoring equipment, when the associated emissions unit was in operation.
4. The permittee shall maintain daily production records (throughput) of each product produced in this emission unit, in pounds.
5. The permittee shall maintain monthly records of the following information:

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- a. the production of each product produced in this emissions unit;
- b. the facility-wide emission rate of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, HCl and NOx in pounds; and

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- c. the rolling, 12-month summation of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, HCl and NOx.
6. The permit to install for emission units P022 thru P031 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 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: MEK

TLV (mg/m³): 590

Maximum Hourly Emission Rate (lbs/hr): 0.0125

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 4.29

MAGLC (ug/m³): 14,048

Pollutant: 1,3 Butadiene

TLV (mg/m³): 4.4

Maximum Hourly Emission Rate (lbs/hr): 0.005

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 1.72

MAGLC (ug/m³): 105

Pollutant: Acrylonitrile

TLV (mg/m³): 4.3

Maximum Hourly Emission Rate (lbs/hr): 0.0138

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 4.74

MAGLC (ug/m³): 102

Pollutant: Styrene

TLV (mg/m³): 85

Maximum Hourly Emission Rate (lbs/hr): 0.0625

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 21.45

MAGLC (ug/m³): 2024

Pollutant: Chlorobenzene

TLV (mg/m³): 46

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Maximum Hourly Emission Rate (lbs/hr): 0.0125

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m3): 4.29

MAGLC (ug/m3): 1095

Pollutant: Hydrochloric Acid

TLV (mg/m3): 5.5

Maximum Hourly Emission Rate (lbs/hr): 0.46

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m3): 19.22

MAGLC (ug/m3): 131

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.).

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

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, HCl and NOx. These 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 0.48 lb/hr.

Applicable Compliance Method:

As a result of complying with the operational restrictions through the required monitoring, recordkeeping and reporting, compliance shall be demonstrated by summing the fugitive and captured emissions. The captured emissions shall be quantified by multiplying the

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emission factor of 1.787 lb/1000 lb of product (Testing, 8/14/00 thru 8/16/00) by the maximum throughput of 5000 lb of product /hr by the control efficiency of the RTO. The fugitive emissions shall be quantified by the following equation:

$$\text{Fug} = \text{DFE} \times (1 - \text{CapE}) / \text{TM}$$

$$\text{DFE} = \text{Die face emissions} = [\text{FH}/\text{FT} \times (\text{EF} \times \text{MP} \times \text{CE})]/\text{CapE}$$

$$\text{CapE} = 80\% \text{ (Capture efficiency test, 12/8/00)}$$

$$\text{FH} = \text{flow rate through the hood} = (\text{hood cross sectional area, } 0.146 \times 1.42 \text{ ft.}) \times (\text{face velocity, } 2000 \text{ ft/min.})$$

$$\text{FT} = \text{total flow measured at the thermal oxidizer.}$$

$$\text{EF} = \text{Emission factor, (lbs pollutant/1000 lbs product).}$$

$$\text{MP} = \text{Monthly productions volume, (lbs).}$$

$$\text{CE} = \text{RTO Control efficiency (1-destruction efficiency) for specific compound demonstrated during the emission testing specified in Part II.E.2. Until the testing is conducted, manufacturer's specified control efficiencies shall be used.}$$

$$\text{TM} = \text{Total hours per month the emission unit operated.}$$

- b. Emission Limitation:
VOC emissions shall not exceed 2.1 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.

- c. Emission Limitation:
Facility wide emissions of MEK shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by summing the results of the equation referenced below with the previous 11 months for each pollutant. The equation shall be performed on a monthly basis for each product's respective emissions of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene and VOC.

$$\{[(\text{EF})(\text{MP})(1 - \text{CE}) + \text{Fug}](2000 \text{ lbs/ton})\} + \text{Exs} = \text{ER}$$

Where:

$$\text{EF} = \text{Emission factor, (lbs pollutant/1000 lbs product);}$$

$$\text{MP} = \text{Monthly productions volume, (lbs)}$$

$$\text{CE} = \text{Control efficiency; demonstrated for each specific compound during the}$$

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emission testing specified in Part II.E.2 Until the testing is conducted, manufacturer's specified control efficiencies shall be used.

$$\text{Fug} = \text{DFE} \times (1 - \text{CapE})$$

$$\text{DFE} = \text{Die face emissions} = [\text{FH}/\text{FT} \times (\text{EF} \times \text{MP} \times \text{CE})]/\text{CapE}$$

$$\text{CapE} = 80\% \text{ (Capture efficiency test, 12/8/00)}$$

$$\text{FH} = \text{flow rate through the hood} = (\text{hood cross sectional area, } 0.146 \times 1.5 \text{ ft.}) \times (\text{face velocity, } 800 \text{ ft/min.})$$

$$\text{FT} = \text{total flow measured at the thermal oxidizer (cu.ft/min)}$$

Exs= The summed total emissions from the other extruders

PE = Emission total for the previous 11 months (tons per month).

ER = emission rate, (tons per rolling, 12 month period)

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

$$\text{MEK} = 0.127 \text{ lb/1000 lb product}$$

$$1,3 \text{ Butadiene} = 0.083 \text{ lb/1000 lb product}$$

$$\text{Acrylonitrile} = 0.247 \text{ lb/1000 lb product}$$

$$\text{Styrene} = 1.097 \text{ lb/1000 lb product}$$

$$\text{Chlorobenzene} = 0.213 \text{ lb/1000 product}$$

$$\text{VOC} = 1.787 \text{ lb/1000 product}$$

- d. Emission Limitation:
Facility wide emissions of 1,3-Butadiene shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the calculation found in Part II.E.1.c above.

- e. Emission Limitation:
Facility wide emissions of Acrylonitrile shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the calculation found in Part II.E.1.c above.

- f. Emission Limitation:
Facility wide emissions of Styrene shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the calculation found in Part II.E.1.c above.

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- g. Emission Limitation:
Facility wide emissions of Chlorobenzene shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:
Compliance shall be demonstrated by the calculation found in Part II.E.1.c above.

- h. Emission Limitation:
Facility wide emissions of HCl shall not exceed 2.0 tons per rolling, 12-month period.

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

$$(MP)(EF_{MCB})(DE_{MCB})(\text{lbs HCl Produced/lbs MCB Destroyed})(1-CE) + PE = ER$$

Where:

MP = Monthly production volume, (lbs)
EF_{MCB} = Chlorobenzene emission factor, (lbs MCB/ 1000 lbs of product)
DE_{MCB} = Chlorobenzene destruction efficiency demonstrated during the emission testing specified in Part II.E.2. Until the testing is conducted, an engineering estimate of the control efficiency shall be used.
lbs HCl Produced/lbs MCB Destroyed = stoichiometric ratio (36.4/112.6)
ER = lbs HCl/month
MCB = Chlorobenzene
HCl = Hydrochloric Acid
PE = Emission total for the previous 11 months (tons per month).

- i. Emission Limitation:
Facility wide emissions of NOx shall not exceed 20.0 tons per rolling, 12-month period.

Applicable Compliance Method:
Compliance shall be demonstrated by summing the results of the equation referenced below with the previous 11 month's emission totals. The equation shall be performed on a monthly basis for each product's respective 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:

MP = Monthly production volume, (lbs)

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

NG = Natural gas consumption, (mmBTU/month)

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

DE_{AN} = Acrylonitrile destruction efficiency demonstrated during the emission testing specified in Part II.E.2 Until the testing is conducted, an engineering estimate of the control efficiency shall be used.

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

ER = lbs NO_x/month

AN = Acrylonitrile

NO = Nitrogen Oxide

SC = Screw cleaner emissions.

- j. 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).

- k. Emission Limitation:
Facility wide emissions of PM shall not exceed 0.031 lb/hr.

Applicable Compliance Method:

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

- l. Emission Limitation:
Facility wide emissions of PM shall not exceed 0.13 tons per year.

Applicable Compliance Method:

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

- m. Emission Limitation:
Facility wide emissions of combined HAPs shall not exceed 5.0 tons per rolling, 12-month period.

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Applicable Compliance Method:

Compliance shall be demonstrated by using the calculation found in Part II.E.1.c above and summing the total monthly HAP emissions to the previous 11 month's totals.

n. Emission Limitation:

Facility wide emissions of VOC shall not exceed 20.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by using the calculation found in Part II.E.1.c above and summing the total monthly VOC emissions of each extrusion line to the previous 11 month total emissions.

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 startup of the RTO and Acid Gas Scrubber.
 - b. The emission testing shall be conducted to determine the control efficiency of the RTO and AGS on MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, HCl, NOx, and VOC. 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, NOx, 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 the die face

hood on a representative extrusion line.

- 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 units 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):

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- 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

- 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>	<u>Applicable Emissions Limitations/Control Measures</u>
P028 - Thermoplastic compounding extruder line #7 with condenser, thermal oxidizer and acid gas scrubber	OAC rule 3745-31-05 (A)(3)	VOC emissions shall not exceed 0.47 lb/hr and 2.1 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.
	OAC rule 3745-35-07 (D)	See II.A.2.a-b and II.B.6 below.
	OAC rule 3745-17-07 (A)(1)	The emission limitation specified in this rule is less stringent than the emission limitations established pursuant to OAC rule 3745-31-05(A)(3).
	OAC rule 3745-17-11 (B)	The emission limitation specified in this rule is less stringent than the emission limitations established pursuant to OAC rule 3745-31-05(A)(3).
	OAC rule 3745-21-07 (G)	The emission limitation specified in

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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 following installation of the recuperative thermal oxidizer (RTO) and acid gas scrubber (AGS): 2.0 ton methyl ethyl ketone (MEK), 2.0 ton 1,3-Butadiene, 2.0 ton Acrylonitrile, 2.0 tons Styrene, 2.0 tons Chlorobenzene and 20.0 tons of volatile organic compounds (VOC). In addition, the facility wide emissions of combined hazardous air pollutants (HAPs) shall not exceed 5.0 tons per rolling, 12-month period.
- 2.b** Emissions from this emission unit shall be vented to a RTO followed by an AGS.
- 2.c** The total emissions from all extruder lines shall not exceed 0.031 lb particulate matter (PM)/hr and 0.13 lb PM per rolling, 12-month period. In addition, the facility wide emissions shall not exceed 2.0 tons hydrochloric acid (HCl) and 20.0 tons nitrogen oxides (NOx) per rolling 12-month summation.
- 2.d** The emission unit's short and long term VOC 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 combined PM short and long term emission limitations from all extruders 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 1-3 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 95% of the emissions from this emissions unit and vent them to the recuperative thermal oxidizer followed by the acid gas scrubber.
6. The maximum emission rate for this facility shall not exceed 2.0 tons of MEK, 1,3-Butadiene, Acrylonitrile, Styrene or Chlorobenzene, 20.0 tons VOC, and 5 tons of combined HAPs based upon a rolling 12-month period.

To ensure enforceability during the first 12 calendar months of operation following installation of the RTO and AGS, the permittee shall not exceed the emission limits specified in the following table:

Maximum Allowable Cumulative Emissions (Tons)

Month(s)	MEK	1,3 Butadiene	Acrylonitrile	Chlorobenzene	Styrene	Total HAPs	VOC
1	0.1667	0.1667	0.1667	0.1667	0.1667	0.4167	1.667
1-2	0.3333	0.3333	0.3333	0.3333	0.3333	0.8333	3.333
1-3	0.5000	0.5000	0.5000	0.5000	0.5000	1.2500	5.000
1-4	0.6667	0.6667	0.6667	0.6667	0.6667	1.6667	6.667
1-5	0.8333	0.8333	0.8333	0.8333	0.8333	2.0833	8.333
1-6	1.0000	1.0000	1.0000	1.0000	1.0000	2.5000	10.000
1-7	1.1667	1.1667	1.1667	1.1667	1.1667	2.9167	11.667
1-8	1.3333	1.3333	1.3333	1.3333	1.3333	3.3333	13.333
1-9	1.5000	1.5000	1.5000	1.5000	1.5000	3.7500	15.000
1-10	1.6667	1.6667	1.6667	1.6667	1.6667	4.1667	16.667
1-11	1.8333	1.8333	1.8333	1.8333	1.8333	4.5833	18.333
1-12	2.0000	2.0000	2.0000	2.0000	2.0000	5.0000	20.000

After the first 12 calendar months of operation following installation of the RTO and AGS, compliance with the emission limitations shall be based upon a rolling, 12-month summation of the emission rates.

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 incinerator when the emissions unit is in operation. Units shall be in degrees Fahrenheit. The monitoring and recording

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devices shall be capable of accurately measuring the desired parameter. The temperature monitor and recorder shall be installed, 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 the following information for each day:

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- a. all 3-hour blocks of time during which the combustion temperature within the thermal incinerator, when the emissions unit was in operation, dropped below 1500 degrees Fahrenheit; and
 - b. 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 properly install, 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 installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.

The permittee shall collect and record the following information each day:

- a. the pressure drop across the scrubber, in inches of water on an hourly basis;
 - b. the scrubber liquid flow rate, in gallons per minute on an hourly basis; and
 - c. a log of the downtime for the capture (collection) system, control device, and monitoring equipment, when the associated emissions unit was in operation.
3. The permittee shall properly install, 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 following information each day:

- a. the pH of the scrubber liquor, on a continuous basis; and
 - b. a log of the downtime for the capture (collection) system, control device, and monitoring equipment, when the associated emissions unit was in operation.
4. The permittee shall maintain daily production records (throughput) of each product produced in this emission unit, in pounds.
5. The permittee shall maintain monthly records of the following information:

- a. the production of each product produced in this emissions unit;
 - b. the facility-wide emission rate of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, HCl and NOx in pounds; and
 - c. the rolling, 12-month summation of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, HCl and NOx.
6. The permit to install for emission units P022 thru P031 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 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: MEK

TLV (mg/m3): 590

Maximum Hourly Emission Rate (lbs/hr): 0.0125

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m3): 4.29

MAGLC (ug/m3): 14,048

Pollutant: 1,3 Butadiene

TLV (mg/m3): 4.4

Maximum Hourly Emission Rate (lbs/hr): 0.005

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m3): 1.72

MAGLC (ug/m3): 105

Pollutant: Acrylonitrile

TLV (mg/m3): 4.3

Maximum Hourly Emission Rate (lbs/hr): 0.0138

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m3): 4.74

MAGLC (ug/m3): 102

Pollutant: Styrene

TLV (mg/m3): 85

Maximum Hourly Emission Rate (lbs/hr): 0.0625

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m3): 21.45

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MAGLC (ug/m3): 2024

Pollutant: Chlorobenzene

TLV (mg/m3): 46

Maximum Hourly Emission Rate (lbs/hr): 0.0125

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m3): 4.29

MAGLC (ug/m3): 1095

Pollutant: Hydrochloric Acid

TLV (mg/m3): 5.5

Maximum Hourly Emission Rate (lbs/hr): 0.46

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m3): 19.22

MAGLC (ug/m3): 131

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.).

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

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

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, HCl and NOx. These 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 0.47 lb/hr.

Applicable Compliance Method:

As a result of complying with the operational restrictions through the required monitoring, recordkeeping and reporting, compliance shall be demonstrated by summing the fugitive and captured emissions. The captured emissions shall be quantified by multiplying the emission factor of 1.787 lb/1000 lb of product (Testing, 8/14/00 thru 8/16/00) by the maximum throughput of 7000 lb of product /hr by the control efficiency of the RTO. The fugitive emissions shall be quantified by the following equation:

$$\text{Fug} = \text{DFE} \times (1 - \text{CapE}) / \text{TM}$$

$$\text{DFE} = \text{Die face emissions} = [\text{FH}/\text{FT} \times (\text{EF} \times \text{MP} \times \text{CE})]/\text{CapE}$$

$$\text{CapE} = 80\% \text{ (Capture efficiency test, 12/8/00)}$$

$$\text{FH} = \text{flow rate through the hood} = (\text{hood cross sectional area, } 0.146 \times 1.5 \text{ ft.}) \times (\text{face velocity, } 1700 \text{ ft/min.})$$

$$\text{FT} = \text{total flow measured at the thermal oxidizer.}$$

$$\text{EF} = \text{Emission factor, (lbs pollutant/1000 lbs product).}$$

$$\text{MP} = \text{Monthly productions volume, (lbs).}$$

$$\text{CE} = \text{RTO Control efficiency (1-destruction efficiency) for specific compound demonstrated during the emission testing specified in Part II.E.2. Until the testing is conducted, manufacturer's specified control efficiencies shall be used.}$$

$$\text{TM} = \text{Total hours per month the emission unit operated.}$$

- b. Emission Limitation:
VOC emissions shall not exceed 2.1 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.

- c. Emission Limitation:
Facility wide emissions of MEK shall not exceed 2.0 tons per rolling, 12-month period.

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Applicable Compliance Method:

Compliance shall be demonstrated by summing the results of the equation referenced below with the previous 11 months for each pollutant. The equation shall be performed on a monthly basis for each product's respective emissions of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene and VOC.

$$\{[(EF)(MP)(1-CE) + Fug](2000 \text{ lbs/ton})\} + Exs = ER$$

Where:

EF* = Emission factor, (lbs pollutant/1000 lbs product);

MP = Monthly productions volume, (lbs)

CE = Control efficiency; demonstrated for each specific compound during the emission testing specified in Part II.E.2. Until the testing is conducted, manufacturer's specified control efficiencies shall be used.

Fug = DFE x (1-CapE)

DFE = Die face emissions = [FH/FT x (EF x MP x CE)]/CapE

CapE = 80% (Capture efficiency test, 12/8/00)

FH = flow rate through the hood = (hood cross sectional area, 0.146 x 1.5 ft.)(face velocity, 800 ft/min.)

FT = total flow measured at the thermal oxidizer (cu.ft/min)

Exs= The summed total emissions from the other extruders

PE = Emission total for the previous 11 months (tons per month).

ER = emission rate, (tons per rolling, 12 month period)

* 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

1,3 Butadiene = 0.083 lb/1000 lb product

Acrylonitrile = 0.247 lb/1000 lb product

Styrene = 1.097 lb/1000 lb product

Chlorobenzene = 0.213 lb/1000 product

VOC = 1.787 lb/1000 product

d. Emission Limitation:

Facility wide emissions of 1,3-Butadiene shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the calculation found in Part II.E.1.c above.

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- e. Emission Limitation:
Facility wide emissions of Acrylonitrile shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:
Compliance shall be demonstrated by the calculation found in Part II.E.1.c above.

- f. Emission Limitation:
Facility wide emissions of Styrene shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:
Compliance shall be demonstrated by the calculation found in Part II.E.1.c above.

- g. Emission Limitation:
Facility wide emissions of Chlorobenzene shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:
Compliance shall be demonstrated by the calculation found in Part II.E.1.c above.

- h. Emission Limitation:
Facility wide emissions of HCl shall not exceed 2.0 tons per rolling, 12-month period.

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

$$(MP)(EF_{MCB})(DE_{MCB})(\text{lbs HCl Produced}/\text{lbs MCB Destroyed})(1-CE) + PE = ER$$

Where:

- MP = Monthly production volume, (lbs)
- EF_{MCB} = Chlorobenzene emission factor, (lbs MCB/ 1000 lbs of product)
- DE_{MCB} = Chlorobenzene destruction efficiency demonstrated during the emission testing specified in Part II.E.2. Until the testing is conducted, an engineering estimate of the control efficiency shall be used.
- lbs HCl Produced/lbs MCB Destroyed = stoichiometric ratio (36.4/112.6)
- ER = lbs HCl/month
- MCB = Chlorobenzene
- HCl = Hydrochloric Acid
- PE = Emission total for the previous 11 months (tons per month).

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- i. Emission Limitation:
Facility wide emissions of NO_x shall not exceed 20.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by summing the results of the equation referenced below with the previous 11 month's emission totals. The equation shall be performed on a monthly basis for each product's respective 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:

MP = Monthly production volume, (lbs)

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

NG = Natural gas consumption, (mmBTU/month)

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

DE_{AN} = Acrylonitrile destruction efficiency demonstrated during the emission testing specified in Part II.E.2 Until the testing is conducted, an engineering estimate of the control efficiency shall be used.

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

ER = lbs NO_x/month

AN = Acrylonitrile

NO = Nitrogen Oxide

SC = Screw cleaner emissions.

- j. 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).

- k. Emission Limitation:
Facility wide emissions of PM shall not exceed 0.031 lb/hr.

Applicable Compliance Method:

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

- l. **Emission Limitation:**
Facility wide emissions of PM shall not exceed 0.13 tons per year.

Applicable Compliance Method:

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

- m. **Emission Limitation:**
Facility wide emissions of combined HAPs shall not exceed 5.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by using the calculation found in Part II.E.1.c above and summing the total monthly HAP emissions to the previous 11 month's totals.

- n. **Emission Limitation:**
Facility wide emissions of VOC shall not exceed 20.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by using the calculation found in Part II.E.1.c above and summing the total monthly VOC emissions of each extrusion line to the previous 11 month total emissions.

- 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 startup of the RTO and Acid Gas Scrubber.
 - b. The emission testing shall be conducted to determine the control efficiency of the RTO and AGS on MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, HCl, NOx, and VOC. 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, NOx, and VOC.

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- 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 the die face hood on a representative extrusion line.
 - 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 units 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

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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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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>	OAC rule 3745-21-07 (G)
P029 - Thermoplastic compounding extruder line #8 with condenser, thermal oxidizer and acid gas scrubber	OAC rule 3745-31-05 (A)(3)	
	OAC rule 3745-35-07 (D)	
	OAC rule 3745-17-07 (A)(1)	
	OAC rule 3745-17-11 (B)	

Issue

Applicable Emissions
Limitations/Control Measures

VOC emissions shall not exceed 0.14 lb/hr and 0.4 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.6 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** Facility wide emissions shall not exceed the following limitations during any rolling, 12-month period following installation of the recuperative thermal oxidizer (RTO) and acid gas scrubber (AGS): 2.0 ton methyl ethyl ketone (MEK), 2.0 ton 1,3-Butadiene, 2.0

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ton Acrylonitrile, 2.0 tons Styrene, 2.0 tons Chlorobenzene and 20.0 tons of volatile organic compounds (VOC). In addition, the facility wide emissions of combined hazardous air pollutants (HAPs) shall not exceed 5.0 tons per rolling, 12-month period.

- 2.b** Emissions from this emission unit shall be vented to a RTO followed by an AGS.
- 2.c** The total emissions from all extruder lines shall not exceed 0.031 lb particulate matter (PM)/hr and 0.13 lb PM per rolling, 12-month period. In addition, the facility wide emissions shall not exceed 2.0 tons hydrochloric acid (HCl) and 20.0 tons nitrogen oxides (NOx) per rolling 12-month summation.
- 2.d** The emission unit's short and long term VOC 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 combined PM short and long term emission limitations from all extruders 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 1-3 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 emission unit and vent them to the recuperative thermal oxidizer followed by the acid gas scrubber.
6. The maximum emission rate for this facility shall not exceed 2.0 tons of MEK, 1,3-Butadiene, Acrylonitrile, Styrene or Chlorobenzene, 20.0 tons VOC, and 5 tons of combined HAPs based upon a rolling 12-month period.

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To ensure enforceability during the first 12 calendar months of operation following installation of the RTO and AGS, the permittee shall not exceed the emission limits specified in the following table:

Maximum Allowable Cumulative Emissions (Tons)

Month(s)	MEK	1,3 Butadiene	Acrylonitrile	Chlorobenzene	Styrene	Total HAPs	VOC
1	0.1667	0.1667	0.1667	0.1667	0.1667	0.4167	1.667
1-2	0.3333	0.3333	0.3333	0.3333	0.3333	0.8333	3.333
1-3	0.5000	0.5000	0.5000	0.5000	0.5000	1.2500	5.000
1-4	0.6667	0.6667	0.6667	0.6667	0.6667	1.6667	6.667
1-5	0.8333	0.8333	0.8333	0.8333	0.8333	2.0833	8.333
1-6	1.0000	1.0000	1.0000	1.0000	1.0000	2.5000	10.000
1-7	1.1667	1.1667	1.1667	1.1667	1.1667	2.9167	11.667
1-8	1.3333	1.3333	1.3333	1.3333	1.3333	3.3333	13.333
1-9	1.5000	1.5000	1.5000	1.5000	1.5000	3.7500	15.000
1-10	1.6667	1.6667	1.6667	1.6667	1.6667	4.1667	16.667
1-11	1.8333	1.8333	1.8333	1.8333	1.8333	4.5833	18.333
1-12	2.0000	2.0000	2.0000	2.0000	2.0000	5.0000	20.000

After the first 12 calendar months of operation following installation of the RTO and AGS, compliance with the emission limitations shall be based upon a rolling, 12-month summation of the emission rates.

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 incinerator 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 installed, 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 the following information for each day:

- a. all 3-hour blocks of time during which the combustion temperature within the thermal incinerator, when the emissions unit was in operation, dropped below 1500 degrees Fahrenheit; and
 - b. 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 properly install, 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 installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.

The permittee shall collect and record the following information each day:

- a. the pressure drop across the scrubber, in inches of water on an hourly basis;
 - b. the scrubber liquid flow rate, in gallons per minute on an hourly basis; and
 - c. a log of the downtime for the capture (collection) system, control device, and monitoring equipment, when the associated emissions unit was in operation.
3. The permittee shall properly install, 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 following information each day:

- a. the pH of the scrubber liquor, on a continuous basis; and
 - b. a log of the downtime for the capture (collection) system, control device, and monitoring equipment, when the associated emissions unit was in operation.
4. The permittee shall maintain daily production records (throughput) of each product produced in this emission unit, in pounds.
5. The permittee shall maintain monthly records of the following information:
- a. the production of each product produced in this emissions unit;

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- b. the facility-wide emission rate of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, HCl and NOx in pounds; and
 - c. the rolling, 12-month summation of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, HCl and NOx.
6. The permit to install for emission units P022 thru P031 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 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: MEK

TLV (mg/m³): 590

Maximum Hourly Emission Rate (lbs/hr): 0.0125

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 4.29

MAGLC (ug/m³): 14,048

Pollutant: 1,3 Butadiene

TLV (mg/m³): 4.4

Maximum Hourly Emission Rate (lbs/hr): 0.005

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 1.72

MAGLC (ug/m³): 105

Pollutant: Acrylonitrile

TLV (mg/m³): 4.3

Maximum Hourly Emission Rate (lbs/hr): 0.0138

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 4.74

MAGLC (ug/m³): 102

Pollutant: Styrene

TLV (mg/m³): 85

Maximum Hourly Emission Rate (lbs/hr): 0.0625

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 21.45

MAGLC (ug/m3): 2024

Pollutant: Chlorobenzene

TLV (mg/m3): 46

Maximum Hourly Emission Rate (lbs/hr): 0.0125

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m3): 4.29

MAGLC (ug/m3): 1095

Pollutant: Hydrochloric Acid

TLV (mg/m3): 5.5

Maximum Hourly Emission Rate (lbs/hr): 0.46

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m3): 19.22

MAGLC (ug/m3): 131

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.).

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.

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

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, HCl and NOx. These 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:

As a result of complying with the operational restrictions through the required monitoring, recordkeeping and reporting, compliance shall be demonstrated by multiplying the emission factor of 1.787 lb/1000 lb of product (Testing, 8/14/00 thru 8/16/00) by the maximum throughput of 8000 lb of product /hr by the control efficiency of the RTO.

- b. Emission Limitation:
VOC emissions shall not exceed 0.4 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.

- c. Emission Limitation:
Facility wide emissions of MEK shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by summing the results of the equation referenced below with the previous 11 months for each pollutant. The equation shall be performed on a monthly basis for each product's respective emissions of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene and VOC.

$$\{[(EF)(MP)(1-CE) + Fug](2000 \text{ lbs/ton})\} + Exs = ER$$

Where:

EF* = Emission factor, (lbs pollutant/1000 lbs product);

MP = Monthly productions volume, (lbs)

CE = Control efficiency; demonstrated for each specific compound during the emission testing specified in Part II.E.2 Until the testing is conducted, manufacturer's specified control efficiencies shall be used.

Fug = DFE x (1-CapE)

DFE = Die face emissions = [FH/FT x (EF x MP x CE)]/CapE

CapE = 80% (Capture efficiency test, 12/8/00)

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FH = flow rate through the hood = (hood cross sectional area, 0.146 x1.5 ft.)(face velocity, 800 ft/min.)

FT = total flow measured at the thermal oxidizer (cu.ft/min)

Exs= The summed total emissions from the other extruders

PE = Emission total for the previous 11 months (tons per month).

ER = emission rate, (tons per rolling, 12 month period)

* 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

1,3 Butadiene = 0.083 lb/1000 lb product

Acrylonitrile = 0.247 lb/1000 lb product

Styrene = 1.097 lb/1000 lb product

Chlorobenzene = 0.213 lb/1000 product

VOC = 1.787 lb/1000 product

- d. Emission Limitation:
Facility wide emissions of 1,3-Butadiene shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the calculation found in Part II.E.1.c above.

- e. Emission Limitation:
Facility wide emissions of Acrylonitrile shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the calculation found in Part II.E.1.c above.

- f. Emission Limitation:
Facility wide emissions of Styrene shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the calculation found in Part II.E.1.c above.

- g. Emission Limitation:
Facility wide emissions of Chlorobenzene shall not exceed 2.0 tons per rolling, 12-month period.

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Applicable Compliance Method:

Compliance shall be demonstrated by the calculation found in Part II.E.1.c above.

h. Emission Limitation:

Facility wide emissions of HCl shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:

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

$$(MP)(EF_{MCB})(DE_{MCB})(\text{lbs HCl Produced/lbs MCB Destroyed})(1-CE) + PE = ER$$

Where:

MP = Monthly production volume, (lbs)

EF_{MCB} = Chlorobenzene emission factor, (lbs MCB/ 1000 lbs of product)

DE_{MCB} = Chlorobenzene destruction efficiency demonstrated during the emission testing specified in Part II.E.2. Until the testing is conducted, an engineering estimate of the control efficiency shall be used.

lbs HCl Produced/lbs MCB Destroyed = stoichiometric ratio (36.4/112.6)

ER = lbs HCl/month

MCB = Chlorobenzene

HCl = Hydrochloric Acid

PE = Emission total for the previous 11 months (tons per month).

i. Emission Limitation:

Facility wide emissions of NO_x shall not exceed 20.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by summing the results of the equation referenced below with the previous 11 month's emission totals. The equation shall be performed on a monthly basis for each product's respective 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:

MP = Monthly production volume, (lbs)

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

NG = Natural gas consumption, (mmBTU/month)

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

DE_{AN} = Acrylonitrile destruction efficiency demonstrated during the emission testing specified in Part II.E.2. Until the testing is conducted, an engineering estimate of the control efficiency shall be used.

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

ER = lbs NO_x/month

AN = Acrylonitrile

NO = Nitrogen Oxide

SC = Screw cleaner emissions.

- j. 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).

- k. Emission Limitation:
Facility wide emissions of PM shall not exceed 0.031 lb/hr.

Applicable Compliance Method:

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

- l. Emission Limitation:
Facility wide emissions of PM shall not exceed 0.13 tons per year.

Applicable Compliance Method:

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

- m. Emission Limitation:
Facility wide emissions of combined HAPs shall not exceed 5.0 tons per rolling, 12-month period.

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Applicable Compliance Method:

Compliance shall be demonstrated by using the calculation found in Part II.E.1.c above and summing the total monthly HAP emissions to the previous 11 month's totals.

n. Emission Limitation:

Facility wide emissions of VOC shall not exceed 20.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by using the calculation found in Part II.E.1.c above and summing the total monthly VOC emissions of each extrusion line to the previous 11 month total emissions.

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 startup of the RTO and Acid Gas Scrubber.
 - b. The emission testing shall be conducted to determine the control efficiency of the RTO and AGS on MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, HCl, NOx, and VOC. 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, NOx, 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 the die face

hood on a representative extrusion line.

- 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 units 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):

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- 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

- 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>	<u>Applicable Emissions Limitations/Control Measures</u>
P030 - Thermoplastic compounding extruder line #9 with condenser, thermal oxidizer and acid gas scrubber	OAC rule 3745-31-05 (A)(3)	VOC emissions shall not exceed 0.21 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.
	OAC rule 3745-35-07 (D)	See II.A.2.a-b and II.B.6 below.
	OAC rule 3745-17-07 (A)(1)	The emission limitation specified in this rule is less stringent than the emission limitations established pursuant to OAC rule 3745-31-05(A)(3).
	OAC rule 3745-17-11 (B)	The emission limitation specified in this rule is less stringent than the emission limitations established pursuant to OAC rule 3745-31-05(A)(3).
	OAC rule 3745-21-07 (G)	The emission limitation specified in

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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 following installation of the recuperative thermal oxidizer (RTO) and acid gas scrubber (AGS): 2.0 ton methyl ethyl ketone (MEK), 2.0 ton 1,3-Butadiene, 2.0 ton Acrylonitrile, 2.0 tons Styrene, 2.0 tons Chlorobenzene and 20.0 tons of volatile organic compounds (VOC). In addition, the facility wide emissions of combined hazardous air pollutants (HAPs) shall not exceed 5.0 tons per rolling, 12-month period.
- 2.b Emissions from this emission unit shall be vented to a RTO followed by an AGS.
- 2.c The total emissions from all extruder lines shall not exceed 0.031 lb particulate matter (PM)/hr and 0.13 lb PM per rolling, 12-month period. In addition, the facility wide emissions shall not exceed 2.0 tons hydrochloric acid (HCl) and 20.0 tons nitrogen oxides (NOx) per rolling 12-month summation.
- 2.d The emission unit's short and long term VOC 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 combined PM short and long term emission limitations from all extruders 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 1-3 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 emission unit and vent them to the recuperative thermal oxidizer followed by the acid gas scrubber.
6. The maximum emission rate for this facility shall not exceed 2.0 tons of MEK, 1,3-Butadiene, Acrylonitrile, Styrene or Chlorobenzene, 20.0 tons VOC, and 5 tons of combined HAPs based upon a rolling 12-month period.

To ensure enforceability during the first 12 calendar months of operation following installation of the RTO and AGS, the permittee shall not exceed the emission limits specified in the following table:

Maximum Allowable Cumulative Emissions (Tons)

Month(s)	MEK	1,3 Butadiene	Acrylonitrile	Chlorobenzene	Styrene	Total HAPs	VOC
1	0.1667	0.1667	0.1667	0.1667	0.1667	0.4167	1.667
1-2	0.3333	0.3333	0.3333	0.3333	0.3333	0.8333	3.333
1-3	0.5000	0.5000	0.5000	0.5000	0.5000	1.2500	5.000
1-4	0.6667	0.6667	0.6667	0.6667	0.6667	1.6667	6.667
1-5	0.8333	0.8333	0.8333	0.8333	0.8333	2.0833	8.333
1-6	1.0000	1.0000	1.0000	1.0000	1.0000	2.5000	10.000
1-7	1.1667	1.1667	1.1667	1.1667	1.1667	2.9167	11.667
1-8	1.3333	1.3333	1.3333	1.3333	1.3333	3.3333	13.333
1-9	1.5000	1.5000	1.5000	1.5000	1.5000	3.7500	15.000
1-10	1.6667	1.6667	1.6667	1.6667	1.6667	4.1667	16.667
1-11	1.8333	1.8333	1.8333	1.8333	1.8333	4.5833	18.333
1-12	2.0000	2.0000	2.0000	2.0000	2.0000	5.0000	20.000

After the first 12 calendar months of operation following installation of the RTO and AGS, compliance with the emission limitations shall be based upon a rolling, 12-month summation of the emission rates.

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 incinerator when the emissions unit is in operation. Units shall be in degrees Fahrenheit. The monitoring and recording

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devices shall be capable of accurately measuring the desired parameter. The temperature monitor and recorder shall be installed, 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 the following information for each day:

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- a. all 3-hour blocks of time during which the combustion temperature within the thermal incinerator, when the emissions unit was in operation, dropped below 1500 degrees Fahrenheit; and
 - b. 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 properly install, 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 installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.

The permittee shall collect and record the following information each day:

- a. the pressure drop across the scrubber, in inches of water on an hourly basis;
 - b. the scrubber liquid flow rate, in gallons per minute on an hourly basis; and
 - c. a log of the downtime for the capture (collection) system, control device, and monitoring equipment, when the associated emissions unit was in operation.
3. The permittee shall properly install, 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 following information each day:

- a. the pH of the scrubber liquor, on a continuous basis; and
 - b. a log of the downtime for the capture (collection) system, control device, and monitoring equipment, when the associated emissions unit was in operation.
4. The permittee shall maintain daily production records (throughput) of each product produced in this emission unit, in pounds.
5. The permittee shall maintain monthly records of the following information:

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- a. the production of each product produced in this emissions unit;
- b. the facility-wide emission rate of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, HCl and NOx in pounds; and

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- c. the rolling, 12-month summation of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, HCl and NOx.
6. The permit to install for emission units P022 thru P031 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 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: MEK

TLV (mg/m³): 590

Maximum Hourly Emission Rate (lbs/hr): 0.0125

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 4.29

MAGLC (ug/m³): 14,048

Pollutant: 1,3 Butadiene

TLV (mg/m³): 4.4

Maximum Hourly Emission Rate (lbs/hr): 0.005

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 1.72

MAGLC (ug/m³): 105

Pollutant: Acrylonitrile

TLV (mg/m³): 4.3

Maximum Hourly Emission Rate (lbs/hr): 0.0138

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 4.74

MAGLC (ug/m³): 102

Pollutant: Styrene

TLV (mg/m³): 85

Maximum Hourly Emission Rate (lbs/hr): 0.0625

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m³): 21.45

MAGLC (ug/m³): 2024

Pollutant: Chlorobenzene

TLV (mg/m³): 46

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Maximum Hourly Emission Rate (lbs/hr): 0.0125

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m3): 4.29

MAGLC (ug/m3): 1095

Pollutant: Hydrochloric Acid

TLV (mg/m3): 5.5

Maximum Hourly Emission Rate (lbs/hr): 0.46

Predicted 1-Hour Maximum Ground-Level Concentration (ug/m3): 19.22

MAGLC (ug/m3): 131

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.).

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

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, HCl and NOx. These 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:

As a result of complying with the operational restrictions through the required monitoring, recordkeeping and reporting, compliance shall be demonstrated by multiplying the emission factor of 1.787 lb/1000 lb of product (Testing, 8/14/00 thru 8/16/00) by the

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maximum throughput of 12,000 lb of product /hr by the control efficiency of the RTO.

- b. Emission Limitation:
VOC emissions shall not exceed 0.6 ton/yr.

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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.

c. Emission Limitation:

Facility wide emissions of MEK shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by summing the results of the equation referenced below with the previous 11 months for each pollutant. The equation shall be performed on a monthly basis for each product's respective emissions of MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene and VOC.

$$\{[(EF)(MP)(1-CE) + Fug](2000 \text{ lbs/ton})\} + Exs = ER$$

Where:

EF* = Emission factor, (lbs pollutant/1000 lbs product);

MP = Monthly productions volume, (lbs)

CE = Control efficiency; demonstrated for each specific compound during the emission testing specified in Part II.E.2 Until the testing is conducted, manufacturer's specified control efficiencies shall be used.

Fug = DFE x (1-CapE)

DFE = Die face emissions = $[FH/FT \times (EF \times MP \times CE)]/CapE$

CapE = 80% (Capture efficiency test, 12/8/00)

FH = flow rate through the hood = (hood cross sectional area, 0.146 x 1.5 ft.)(face velocity, 800 ft/min.)

FT = total flow measured at the thermal oxidizer (cu.ft/min)

Exs= The summed total emissions from the other extruders

PE = Emission total for the previous 11 months (tons per month).

ER = emission rate, (tons per rolling, 12 month period)

* 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

1,3 Butadiene = 0.083 lb/1000 lb product

Acrylonitrile = 0.247 lb/1000 lb product

Styrene = 1.097 lb/1000 lb product

Chlorobenzene = 0.213 lb/1000 product

VOC = 1.787 lb/1000 product

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- d. Emission Limitation:
Facility wide emissions of 1,3-Butadiene shall not exceed 2.0 tons per rolling, 12-month period.

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Applicable Compliance Method:

Compliance shall be demonstrated by the calculation found in Part II.E.1.c above.

- e. Emission Limitation:
Facility wide emissions of Acrylonitrile shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the calculation found in Part II.E.1.c above.

- f. Emission Limitation:
Facility wide emissions of Styrene shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the calculation found in Part II.E.1.c above.

- g. Emission Limitation:
Facility wide emissions of Chlorobenzene shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by the calculation found in Part II.E.1.c above.

- h. Emission Limitation:
Facility wide emissions of HCl shall not exceed 2.0 tons per rolling, 12-month period.

Applicable Compliance Method:

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

$$(MP)(EF_{MCB})(DE_{MCB})(\text{lbs HCl Produced}/\text{lbs MCB Destroyed})(1-CE) + PE = ER$$

Where:

- MP = Monthly production volume, (lbs)
- EF_{MCB} = Chlorobenzene emission factor, (lbs MCB/ 1000 lbs of product)
- DE_{MCB} = Chlorobenzene destruction efficiency demonstrated during the emission testing specified in Part II.E.2. Until the testing is conducted, an engineering estimate of the control efficiency shall be used.

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lbs HCl Produced/lbs MCB Destroyed = stoichiometric ratio (36.4/112.6)

ER = lbs HCl/month

MCB = Chlorobenzene

HCl = Hydrochloric Acid

PE = Emission total for the previous 11 months (tons per month).

- i. Emission Limitation:
Facility wide emissions of NO_x shall not exceed 20.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by summing the results of the equation referenced below with the previous 11 month's emission totals. The equation shall be performed on a monthly basis for each product's respective 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:

MP = Monthly production volume, (lbs)

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

NG = Natural gas consumption, (mmBTU/month)

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

DE_{AN} = Acrylonitrile destruction efficiency demonstrated during the emission testing specified in Part II.E.2 Until the testing is conducted, an engineering estimate of the control efficiency shall be used.

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

ER = lbs NO_x/month

AN = Acrylonitrile

NO = Nitrogen Oxide

SC = Screw cleaner emissions.

- j. 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).

- k. Emission Limitation:

Facility wide emissions of PM shall not exceed 0.031 lb/hr.

Applicable Compliance Method:

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

1. **Emission Limitation:**
Facility wide emissions of PM shall not exceed 0.13 tons per year.

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Applicable Compliance Method:

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

m. Emission Limitation:

Facility wide emissions of combined HAPs shall not exceed 5.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by using the calculation found in Part II.E.1.c above and summing the total monthly HAP emissions to the previous 11 month's totals.

n. Emission Limitation:

Facility wide emissions of VOC shall not exceed 20.0 tons per rolling, 12-month period.

Applicable Compliance Method:

Compliance shall be demonstrated by using the calculation found in Part II.E.1.c above and summing the total monthly VOC emissions of each extrusion line to the previous 11 month total emissions.

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 startup of the RTO and Acid Gas Scrubber.

b. The emission testing shall be conducted to determine the control efficiency of the RTO and AGS on MEK, 1,3-Butadiene, Acrylonitrile, Styrene, Chlorobenzene, HCl, NOx, and VOC. 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, NOx, 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

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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:

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- 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 the die face hood on a representative extrusion line.
 - 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 units 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 Volatile Organic Compounds (VOC), Nitrogen Oxides (NOx), single Hazardous Air Pollutant (HAP) and combined Hazardous Air Pollutant (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):

Baye

PTI

Emissions Unit ID: **P030**

Issued: To be entered upon final issuance

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.

Baye

PTI /

Emissions Unit ID: P031

Issued: To be entered upon final issuance

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>	OAC rule 3745-17-11 (B)
P031 - Thermoplastic compounding extruder cleaner with thermal pyrolysis furnace, thermal oxidizer and acid gas scrubber	OAC rule 3745-31-05 (A)(3)	
	OAC rule 3745-17-07 (A)(1)	

Issue

Applicable Emissions
Limitations/Control Measures

NOx emissions shall not exceed 0.06 pound per hour and 0.3 ton per year.

Volatile organic compound emissions shall not exceed 0.04 pound per hour and 0.2 ton per year.

Particulate emissions shall not exceed 0.27pound per hour and 1.2 tons per year.

Carbon monoxide emissions shall not exceed 0.10 pound per hour and 0.5 tons per year.

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

See II.A.2.a-c 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).

2. Additional Terms and Conditions

- 2.a** Facility wide emissions shall not exceed 20.0 tons nitrogen oxides (NOx) per rolling, 12-month period.

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- 2.b** Emissions from this emission unit shall be vented to a recuperative thermal oxidizer (RTO) followed by an acid gas scrubber.
- 2.c** The emission unit's short and long term volatile organic compound (VOC) emission limitations are based on the emission unit's potential to emit vented through the above referenced control equipment. Therefore, no monitoring, record keeping or reporting requirements 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 1-3 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 burn only natural gas in this emissions unit.

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 incinerator 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 installed, 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 the following information for each day:

- a. All 3-hour blocks of time during which the combustion temperature within the thermal incinerator, when the emissions unit was in operation, dropped below 1500 degrees Fahrenheit.
- b. A log of the downtime for the capture (collection) system, control device, and monitoring

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equipment, when the associated emissions unit was in operation.

2. The permittee shall properly install, 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 installed, calibrated, operated and maintained in accordance with the manufacturer's recommendations, instructions and operating manuals.

The permittee shall collect and record the following information each day:

- a. The pressure drop across the scrubber, in inches of water on an hourly basis.
 - b. The scrubber liquid flow rate, in gallons per minute on an hourly basis.
 - c. A log of the downtime for the capture (collection) system, control device, and monitoring equipment, when the associated emissions unit was in operation.
3. The permittee shall properly install, 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 following information each day:

- a. The pH of the scrubber liquor, on a continuous basis.
 - b. A log of the downtime for the capture (collection) system, control device, and monitoring equipment, when the associated emissions unit was in operation.
4. For each day during which the permittee burns a fuel other than natural gas, the permittee shall maintain a record of the type and quantity of fuel burned in this emissions unit.

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 incinerator 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 control device, and monitoring equipment, when the associated emissions unit was in operation. These reports are due by the date described in Part 1 - General Terms and Conditions of this permit under section (A)(1).

2. The permittee shall submit deviation (excursion) reports which identify all exceedances of the rolling, 12-month summation of NOx. These reports are due by the date described in Part 1 - General Terms and Conditions of this permit under section (A)(1).
3. The permittee shall submit deviation (excursion) reports that identify each day when a fuel other than natural gas was burned in this emissions unit. Each report shall be submitted within 30 days after the deviation occurs

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:
NOx emissions shall not exceed 0.06 pound per hour and 0.3 ton per year.

Applicable Compliance Method:

Compliance shall be demonstrated by multiplying the emission factor of 0.06 pound NOx per hour by 8760 hours per year and dividing by 2000 pounds per ton.

- b. Emission Limitation:
Volatile organic compound emissions shall not exceed 0.04 pound per hour and 0.2 ton per year.

Applicable Compliance Method:

Compliance shall be demonstrated by multiplying the emission factor of 0.04 pound VOC

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PTI /

Emissions Unit ID: **P031**

Issued: To be entered upon final issuance

per hour by 8760 hours per year and dividing by 2000 pounds per ton.

- c. Emission Limitation:
Particulate emissions shall not exceed 0.27pound per hour and 1.2 tons per year.

Applicable Compliance Method:

Compliance shall be demonstrated by multiplying the emission factor of 0.27 pound PM per hour by 8760 hours per year and dividing by 2000 pounds per ton.

- d. Emission Limitation:
Carbon monoxide emissions shall not exceed 0.10 pound per hour and 0.5 tons per year.

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Issued: To be entered upon final issuance

Emissions Unit ID: **P031**

Applicable Compliance Method:

Compliance shall be demonstrated by multiplying the emission factor of 0.10 pound CO per hour by 8760 hours per year and dividing by 2000 pounds per 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. Miscellaneous Requirements

None

Baye

PTI

Emissions Unit ID: P032

Issued: To be entered upon final issuance

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>	<u>Applicable Emissions Limitations/Control Measures</u>
P032 - Two (2) 6500 cubic foot volume storage silos holding thermoplastic pellet feedstock	OAC rule 3745-31-05 (A)(3)	Particulate emissions shall not exceed 0.11 tons per year.
	OAC rule 3745-17-07 (A)(1)	The requirements of this rule also include compliance with the requirements of OAC rule 3745-17-07 (A)(1). See Part II.A.2.a below.
		Visible particulate emissions shall not exceed 20% opacity, as a six minute average, except as provided by rule.

2. Additional Terms and Conditions

- 2.a The emission unit's long term PM emission limitations are based on the emission unit's potential to emit vented through the above referenced control equipment. Therefore, no monitoring, record keeping or reporting requirements are necessary to ensure compliance with this emission limitation.

B. Operational Restrictions

None

C. Monitoring and/or Recordkeeping Requirements

None

D. Reporting Requirements

None

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:
Particulate emissions shall not exceed 0.11 tons per year.

Applicable Compliance Method:

Compliance shall be demonstrated by multiplying the maximum throughput of 17,500 tons per year per silo by the percent of material transferred that is released (0.00031%)(testing 6/95) by the number of silos (2).

- b. Emission Limitation:
Visible particulate emissions shall not exceed 20% opacity, as a 6-minute average, except as provided by rule.

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

NEW SC

PTI Num

FACILITY

Emissions Unit ID: **P032**

FACILITY DESCRIPTION Thermoplastic compounding. CITY/TWP Hebron

SIC CODE 3087 SCC CODE 30800901 EMISSIONS UNIT ID P022

EMISSIONS UNIT DESCRIPTION Thermoplastic compounding extruder line #1 with condenser, thermal oxidizer and acid gas scrubber

DATE INSTALLED 01/79

EMISSIONS: (Click on bubble help for Air Quality Descriptions)

Pollutants	Air Quality Description	Actual Emissions Rate		PTI Allowable	
		Short Term Rate	Tons Per Year	Short Term Rate	Tons Per Year
Particulate Matter					
PM ₁₀					
Sulfur Dioxide					
Organic Compounds		0.23	1	0.23	1
Nitrogen Oxides					
Carbon Monoxide					
Lead					
Other: Air Toxics					

APPLICABLE FEDERAL RULES:

NSPS? NESHAP? PSD? OFFSET POLICY?

WHAT IS THE BAT DETERMINATION, AND WHAT IS THE BASIS FOR THE DETERMINATION?
See additional terms and conditions.

IS THIS SOURCE SUBJECT TO THE AIR TOXICS POLICY? _____

OPTIONAL: WHAT IS THE CAPITAL COST OF CONTROL EQUIPMENT? \$ _____

TOXIC AIR CONTAMINANTS

Ohio EPA's air toxics policy applies to contaminants for which the American Conference of Governmental Industrial Hygienists (ACGIH) has a listed threshold limit value.

AIR TOXICS MODELING PERFORMED*? x YES _____ NO

IDENTIFY THE AIR CONTAMINANTS: MEK, Styrene, Acrylonitrile, 1,3 Butadiene and Chlorobenzene

NEW SOURCE REVIEW FORM B

PTI Number: 01-08258

Facility ID: 0145020221

FACILITY NAME Bayer Corporation Polymers Division

FACILITY DESCRIPTION Thermoplastic compounding.

CITY/TWP Hebron

Emissions Unit ID: **P032**SIC CODE 3087SCC CODE 30800901EMISSIONS UNIT ID P023

EMISSIONS UNIT DESCRIPTION Thermoplastic compounding extruder line #2 with condenser, thermal oxidizer and acid gas scrubber

DATE INSTALLED 01/79

EMISSIONS: (Click on bubble help for Air Quality Descriptions)

Pollutants	Air Quality Description	Actual Emissions Rate		PTI Allowable	
		Short Term Rate	Tons Per Year	Short Term Rate	Tons Per Year
Particulate Matter					
PM ₁₀					
Sulfur Dioxide					
Organic Compounds		0.02	0.1	0.02	0.1
Nitrogen Oxides					
Carbon Monoxide					
Lead					
Other: Air Toxics					

APPLICABLE FEDERAL RULES:

NSPS?

NESHAP?

PSD?

OFFSET POLICY?

WHAT IS THE BAT DETERMINATION, AND WHAT IS THE BASIS FOR THE DETERMINATION?

See additional terms and conditionsIS THIS SOURCE SUBJECT TO THE AIR TOXICS POLICY? yes

OPTIONAL: WHAT IS THE CAPITAL COST OF CONTROL EQUIPMENT?

\$

TOXIC AIR CONTAMINANTS

Ohio EPA's air toxics policy applies to contaminants for which the American Conference of Governmental Industrial Hygienists (ACGIH) has a listed threshold limit value.

AIR TOXICS MODELING PERFORMED*?

x

YES

 NOIDENTIFY THE AIR CONTAMINANTS: MEK, Styrene, Acrylonitrile, 1,3 Butadiene and Chlorobenzene

NEW SC

PTI Num

FACILITY

Emissions Unit ID: **P032**

FACILITY DESCRIPTION Thermoplastic compounding. CITY/TWP Hebron

SIC CODE 3087 SCC CODE 30800901 EMISSIONS UNIT ID P024

EMISSIONS UNIT DESCRIPTION Thermoplastic compounding extruder line #3 with condenser, electrostatic precipitator (ESP), thermal oxidizer and acid gas scrubber

DATE INSTALLED 10/85

EMISSIONS: (Click on bubble help for Air Quality Descriptions)

Pollutants	Air Quality Description	Actual Emissions Rate		PTI Allowable	
		Short Term Rate	Tons Per Year	Short Term Rate	Tons Per Year
Particulate Matter					
PM ₁₀					
Sulfur Dioxide					
Organic Compounds		0.12	0.5	0.12	0.5
Nitrogen Oxides					
Carbon Monoxide					
Lead					
Other: Air Toxics					

NSPS? NESHAP? PSD? APPLICABLE FEDERAL RULES: OFFSET POLICY?

WHAT IS THE BAT DETERMINATION, AND WHAT IS THE BASIS FOR THE DETERMINATION?
See additional terms and conditions.

IS THIS SOURCE SUBJECT TO THE AIR TOXICS POLICY? yes
OPTIONAL: WHAT IS THE CAPITAL COST OF CONTROL EQUIPMENT? \$ _____

TOXIC AIR CONTAMINANTS

Ohio EPA's air toxics policy applies to contaminants for which the American Conference of Governmental Industrial Hygienists (ACGIH) has a listed threshold limit value.

AIR TOXICS MODELING PERFORMED*? x YES _____ NO _____

IDENTIFY THE AIR CONTAMINANTS: MEK, Styrene, Acrylonitrile, 1,3 Butadiene and Chlorobenzene

NEW SOURCE REVIEW FORM B

PTI Number: 01-08258

Facility ID: 0145020221

FACILITY NAME Bayer Corporation Polymers Division

FACILITY DESCRIPTION Thermoplastic compounding.

CITY/TWP Hebron

Emissions Unit ID: **P032**

SIC CODE 3087

SCC CODE 30800901

EMISSIONS UNIT ID P025

EMISSIONS UNIT DESCRIPTION Thermoplastic compounding extruder line #4 with condenser, electrostatic precipitator (ESP), thermal oxidizer and acid gas scrubber

DATE INSTALLED 3/86

EMISSIONS: (Click on bubble help for Air Quality Descriptions)

Pollutants	Air Quality Description	Actual Emissions Rate		PTI Allowable	
		Short Term Rate	Tons Per Year	Short Term Rate	Tons Per Year
Particulate Matter					
PM ₁₀					
Sulfur Dioxide					
Organic Compounds		0.52	2.3	0.52	2.3
Nitrogen Oxides					
Carbon Monoxide					
Lead					
Other: Air Toxics					

APPLICABLE FEDERAL RULES:

NSPS?

NESHAP?

PSD?

OFFSET POLICY?

WHAT IS THE BAT DETERMINATION, AND WHAT IS THE BASIS FOR THE DETERMINATION?

See additional terms and conditionsIS THIS SOURCE SUBJECT TO THE AIR TOXICS POLICY? yes

OPTIONAL: WHAT IS THE CAPITAL COST OF CONTROL EQUIPMENT?

\$

TOXIC AIR CONTAMINANTS

Ohio EPA's air toxics policy applies to contaminants for which the American Conference of Governmental Industrial Hygienists (ACGIH) has a listed threshold limit value.

AIR TOXICS MODELING PERFORMED*?

x

YES

 NOIDENTIFY THE AIR CONTAMINANTS: MEK, Styrene, Acrylonitrile, 1,3 Butadiene and Chlorobenzene

NEW SOURCE REVIEW FORM B

PTI Number: 01-08258

Facility ID: 0145020221

FACILITY NAME Bayer Corporation Polymers Division

FACILITY DESCRIPTION Thermoplastic compounding.

CITY/TWP Hebron

Emissions Unit ID: **P032**

SIC CODE 3087

SCC CODE 30800901

EMISSIONS UNIT ID P026

EMISSIONS UNIT DESCRIPTION Thermoplastic compounding extruder line #5 with condenser, electrostatic precipitator (ESP), thermal oxidizer and acid gas scrubber

DATE INSTALLED 10/90

EMISSIONS: (Click on bubble help for Air Quality Descriptions)

Pollutants	Air Quality Description	Actual Emissions Rate		PTI Allowable	
		Short Term Rate	Tons Per Year	Short Term Rate	Tons Per Year
Particulate Matter					
PM ₁₀					
Sulfur Dioxide					
Organic Compounds		1.37	6	1.37	6
Nitrogen Oxides					
Carbon Monoxide					
Lead					
Other: Air Toxics					

APPLICABLE FEDERAL RULES:

NSPS?

NESHAP?

PSD?

OFFSET POLICY?

WHAT IS THE BAT DETERMINATION, AND WHAT IS THE BASIS FOR THE DETERMINATION?

See additional terms and conditionsIS THIS SOURCE SUBJECT TO THE AIR TOXICS POLICY? yes

OPTIONAL: WHAT IS THE CAPITAL COST OF CONTROL EQUIPMENT?

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TOXIC AIR CONTAMINANTS

Ohio EPA's air toxics policy applies to contaminants for which the American Conference of Governmental Industrial Hygienists (ACGIH) has a listed threshold limit value.

AIR TOXICS MODELING PERFORMED*?

x

YES

 NOIDENTIFY THE AIR CONTAMINANTS: MEK, Styrene, Acrylonitrile, 1,3 Butadiene and Chlorobenzene

NEW SC

PTI Num

FACILITY

Emissions Unit ID: **P032**

FACILITY DESCRIPTION Thermoplastic compounding. CITY/TWP Hebron

SIC CODE 3087 SCC CODE 30800901 EMISSIONS UNIT ID P027

EMISSIONS UNIT DESCRIPTION Thermoplastic compounding extruder line #6 with condenser, thermal oxidizer and acid gas scrubber

DATE INSTALLED 2/94

EMISSIONS: (Click on bubble help for Air Quality Descriptions)

Pollutants	Air Quality Description	Actual Emissions Rate		PTI Allowable	
		Short Term Rate	Tons Per Year	Short Term Rate	Tons Per Year
Particulate Matter					
PM ₁₀					
Sulfur Dioxide					
Organic Compounds		0.48	2.1	0.48	2.1
Nitrogen Oxides					
Carbon Monoxide					
Lead					
Other: Air Toxics					

APPLICABLE FEDERAL RULES:

NSPS? NESHAP? PSD? OFFSET POLICY?

WHAT IS THE BAT DETERMINATION, AND WHAT IS THE BASIS FOR THE DETERMINATION?

See additional terms and conditions

IS THIS SOURCE SUBJECT TO THE AIR TOXICS POLICY? yes

OPTIONAL: WHAT IS THE CAPITAL COST OF CONTROL EQUIPMENT? \$

TOXIC AIR CONTAMINANTS

Ohio EPA's air toxics policy applies to contaminants for which the American Conference of Governmental Industrial Hygienists (ACGIH) has a listed threshold limit value.

AIR TOXICS MODELING PERFORMED*? x YES NO

IDENTIFY THE AIR CONTAMINANTS: MEK, Styrene, Acrylonitrile, 1,3 Butadiene and Chlorobenzene

NEW SOURCE REVIEW FORM B

PTI Number: 01-08258

Facility ID: 0145020221

FACILITY NAME Bayer Corporation Polymers Division

FACILITY DESCRIPTION Thermoplastic compounding.

CITY/TWP Hebron

Emissions Unit ID: **P032**SIC CODE 3087SCC CODE 30800901EMISSIONS UNIT ID P028

EMISSIONS UNIT DESCRIPTION Thermoplastic compounding extruder line #7 with condenser, electrostatic precipitator (ESP), thermal oxidizer and acid gas scrubber

DATE INSTALLED 2/94

EMISSIONS: (Click on bubble help for Air Quality Descriptions)

Pollutants	Air Quality Description	Actual Emissions Rate		PTI Allowable	
		Short Term Rate	Tons Per Year	Short Term Rate	Tons Per Year
Particulate Matter					
PM ₁₀					
Sulfur Dioxide					
Organic Compounds		0.47	2.1	0.47	2.1
Nitrogen Oxides					
Carbon Monoxide					
Lead					
Other: Air Toxics					

APPLICABLE FEDERAL RULES:

NSPS?

NESHAP?

PSD?

OFFSET POLICY?

WHAT IS THE BAT DETERMINATION, AND WHAT IS THE BASIS FOR THE DETERMINATION?

See additional terms and conditionsIS THIS SOURCE SUBJECT TO THE AIR TOXICS POLICY? yes

OPTIONAL: WHAT IS THE CAPITAL COST OF CONTROL EQUIPMENT? \$

TOXIC AIR CONTAMINANTS

Ohio EPA's air toxics policy applies to contaminants for which the American Conference of Governmental Industrial Hygienists (ACGIH) has a listed threshold limit value.

AIR TOXICS MODELING PERFORMED*? x YES NOIDENTIFY THE AIR CONTAMINANTS: MEK, Styrene, Acrylonitrile, 1,3 Butadiene and Chlorobenzene

NEW SOURCE REVIEW FORM B

PTI Number: 01-08258

Facility ID: 0145020221

FACILITY NAME Bayer Corporation Polymers Division

FACILITY DESCRIPTION Thermoplastic compounding.

CITY/TWP Hebron

Emissions Unit ID: **P032**SIC CODE 3087SCC CODE 30800901EMISSIONS UNIT ID P029

EMISSIONS UNIT DESCRIPTION Thermoplastic compounding extruder line #8 with condenser, thermal oxidizer and acid gas scrubber

DATE INSTALLED 8/96

EMISSIONS: (Click on bubble help for Air Quality Descriptions)

Pollutants	Air Quality Description	Actual Emissions Rate		PTI Allowable	
		Short Term Rate	Tons Per Year	Short Term Rate	Tons Per Year
Particulate Matter					
PM ₁₀					
Sulfur Dioxide					
Organic Compounds		0.14	0.4	0.14	0.4
Nitrogen Oxides					
Carbon Monoxide					
Lead					
Other: Air Toxics					

APPLICABLE FEDERAL RULES:

NSPS?

NESHAP?

PSD?

OFFSET POLICY?

WHAT IS THE BAT DETERMINATION, AND WHAT IS THE BASIS FOR THE DETERMINATION?

See additional terms and conditionsIS THIS SOURCE SUBJECT TO THE AIR TOXICS POLICY? yes

OPTIONAL: WHAT IS THE CAPITAL COST OF CONTROL EQUIPMENT?

\$

TOXIC AIR CONTAMINANTS

Ohio EPA's air toxics policy applies to contaminants for which the American Conference of Governmental Industrial Hygienists (ACGIH) has a listed threshold limit value.

AIR TOXICS MODELING PERFORMED*?

x

YES

 NOIDENTIFY THE AIR CONTAMINANTS: MEK, Styrene, Acrylonitrile, 1,3 Butadiene and Chlorobenzene

NEW SC

PTI Num

FACILITY

Emissions Unit ID: **P032**

FACILITY DESCRIPTION Thermoplastic compounding. CITY/TWP Hebron

SIC CODE 3087 SCC CODE 30800901 EMISSIONS UNIT ID P030

EMISSIONS UNIT DESCRIPTION Thermoplastic compounding extruder line #9 with condenser, thermal oxidizer and acid gas scrubber

DATE INSTALLED 8/96

EMISSIONS: (Click on bubble help for Air Quality Descriptions)

Pollutants	Air Quality Description	Actual Emissions Rate		PTI Allowable	
		Short Term Rate	Tons Per Year	Short Term Rate	Tons Per Year
Particulate Matter					
PM ₁₀					
Sulfur Dioxide					
Organic Compounds		0.21	0.6	0.21	0.6
Nitrogen Oxides					
Carbon Monoxide					
Lead					
Other: Air Toxics					

APPLICABLE FEDERAL RULES:

NSPS? NESHAP? PSD? OFFSET POLICY?

WHAT IS THE BAT DETERMINATION, AND WHAT IS THE BASIS FOR THE DETERMINATION?
See additional terms and conditions

IS THIS SOURCE SUBJECT TO THE AIR TOXICS POLICY? yes
OPTIONAL: WHAT IS THE CAPITAL COST OF CONTROL EQUIPMENT? \$

TOXIC AIR CONTAMINANTS

Ohio EPA's air toxics policy applies to contaminants for which the American Conference of Governmental Industrial Hygienists (ACGIH) has a listed threshold limit value.

AIR TOXICS MODELING PERFORMED*? x YES NO

IDENTIFY THE AIR CONTAMINANTS: MEK, Styrene, Acrylonitrile, 1,3 Butadiene and Chlorobenzene

NEW SOURCE REVIEW FORM B

PTI Number: 01-08258

Facility ID: 0145020221

FACILITY NAME Bayer Corporation Polymers Division

FACILITY DESCRIPTION Thermoplastic compounding.

CITY/TWP Hebron

Emissions Unit ID: **P032**

SIC CODE 3087

SCC CODE 30800901

EMISSIONS UNIT ID P031

EMISSIONS UNIT DESCRIPTION Thermoplastic compounding extruder cleaner with thermal pyrolysis furnace, thermal oxidizer and acid gas scrubber

DATE INSTALLED 11/00

EMISSIONS: (Click on bubble help for Air Quality Descriptions)

Pollutants	Air Quality Description	Actual Emissions Rate		PTI Allowable	
		Short Term Rate	Tons Per Year	Short Term Rate	Tons Per Year
Particulate Matter		0.27	1.2	0.27	1.2
PM ₁₀					
Sulfur Dioxide					
Organic Compounds		0.04	0.2	0.04	0.2
Nitrogen Oxides		0.06	0.3	0.06	0.3
Carbon Monoxide		0.1	0.5	0.1	0.5
Lead					
Other: Air Toxics					

APPLICABLE FEDERAL RULES:

NSPS?

NESHAP?

PSD?

OFFSET POLICY?

WHAT IS THE BAT DETERMINATION, AND WHAT IS THE BASIS FOR THE DETERMINATION?

See additional terms and conditionsIS THIS SOURCE SUBJECT TO THE AIR TOXICS POLICY? no

OPTIONAL: WHAT IS THE CAPITAL COST OF CONTROL EQUIPMENT? \$

TOXIC AIR CONTAMINANTS

Ohio EPA's air toxics policy applies to contaminants for which the American Conference of Governmental Industrial Hygienists (ACGIH) has a listed threshold limit value.

AIR TOXICS MODELING PERFORMED*? _____ YES x NO

IDENTIFY THE AIR CONTAMINANTS: _____

PTI Num

FACILITY

Emissions Unit ID: **P032** _____FACILITY DESCRIPTION Thermoplastic compounding.CITY/TWP Hebron

Ohio EPA Permit to Install Information Form Please describe below any documentation which is being submitted with this recommendation (must be sent the same day). Electronic items should be submitted with the e-mail transmitting the PTI terms, and in software that CO can utilize. If mailing any hard copy, this section must be printed as a cover page. All items must be clearly labeled indicating the PTI name and number. Submit **hard copy items to Pam McGraner, AQM&P, DAPC, Central Office, and electronic files to airpti@epa.state.oh.us**

Please fill out the following. If the checkbox does not work, replace it with an 'X'

	<u>Electronic</u>	<u>Additional information File Name Convention (your PTI # plus this letter)</u>	<u>Hard Copy</u>	<u>None</u>
<u>Calculations (required)</u>	<input checked="" type="checkbox"/>	000000c.wpd	<input type="checkbox"/>	
<u>Modeling form/results</u>	<input type="checkbox"/>	000000s.wpd	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<u>PTI Application (complete or partial)*</u>	<input type="checkbox"/>	000000a.wpd	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<u>BAT Study</u>	<input type="checkbox"/>	000000b.wpd	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<u>Other/misc.</u>	<input type="checkbox"/>	000000t.wpd	<input type="checkbox"/>	<input checked="" type="checkbox"/>

* Mandatory for netting, PSD, nonattainment NSR, 112(g), 21-07(G)(9)(g) and 21-09(U)(2)(f) - 2 complete copies.

Please complete (see comment bubble to the left for additional instructions):

NSR Discussion

Bayer Corporation - Polymers Division operates a thermoplastic compounding facility in Hebron. The facility has been permitted properly in the past. However, PTIs issued in February 2000 required the facility to conduct compliance testing in order to confirm the emission factors used to create the previous emission limitations. Emission testing revealed emission factors much higher than expected. Additional testing revealed that, for a brief period of time, Bayer's raw material had been changed (unknown to Bayer) in such a way that their emission factors changed. Bayer immediately instituted multiple operational restrictions, new restrictions on raw materials and changed the supplier of their raw materials. As a result, their actual emissions were significantly lowered. However, based upon the initial testing conducted in March 2000, the PTE of VOCs, single HAP and combined HAPs of the facility triggered Title V permitting.

On September 19, 2000, Bayer submitted a BAT study (as required by the PTI issued 2/00) along with new PTI applications for each unit contributing VOC or HAP emissions. The PTI applications specified that changes would be made to many units and that all units would be vented to a Regenerative Thermal Oxidizer (RTO) followed by an Acid Gas Scrubber (AGS). This control equipment will effectively control the emissions from the facility such that the PTE of single and combined HAPs will be below the TV trigger levels.

CDO has reviewed the BAT study and concurs with Bayer's conclusion that a RTO and AGS are the best available control technologies for the emission units at this site. In order to achieve Bayer's goal of emitting less than TV trigger levels for HAP and HAPs, BAT requirements shall constitute the use of the RTO and AGS, emission calculations and testing to confirm the control. Testing and calculations required by this permit will demonstrate the facility's claim of

NEW SOURCE REVIEW FORM B

PTI Number: 01-08258

Facility ID: 0145020221

FACILITY NAME Bayer Corporation Polymers Division

FACILITY DESCRIPTION Thermoplastic compounding.

CITY/TWP Hebron

Emissions Unit ID: **P032**

actual facility wide emissions less than 10 tons HAP and 25 tons HAPs. The facility's PM and VOC emission limits on each unit are the units maximum capacity. The NOx emission limits will be demonstrated through calculations specified in the "Testing" sections.

Bayer has voluntarily decided to restrict their emissions of HAP and HAPs to below twenty percent (20%) of the major source thresholds. Their operation will not allow production or operational limits due to the variability in the products they produce. Therefore, they have opted to calculate their emissions on a daily basis and restrict their emissions on a rolling 12-month basis.

The facility-wide emission limitations specified in the T&Cs are determined by summing the emission unit calculations and the control equipment calculations.

Calculations are as follows:

Assumptions:

Capture efficiency of the emissions on all emission units (except lines 3,4,5,7) = 100% (this is a completely enclosed system); Some of the capture eff. calculations are still performed for lines 1&6 because the RTO will be installed before all modifications to the lines are made. Therefore, the calculations of fugitive emissions need to be performed until the line modifications are made. Lines 3,4,5,7 do not have an enclosed system at the die face and are unable to achieve 100% capture efficiency. The capture efficiencies assigned were determined through testing witnessed by the Ohio EPA on 12-8-00.

Streamtime = operating time

P022 (Line 1) maximum throughput =	3000 lb feedstock/hr 3000 x 8760 = 26,280,000 lb feedstock/yr
P023 (Line 2) maximum throughput =	1200 lb feedstock/hr 1200 x 8760 = 10,512,000 lb feedstock/yr
P024 (Line 3) maximum throughput =	1000 lb feedstock/hr 1000 x 8760 = 8,760,000 lb feedstock/yr
P025 (Line 4) maximum throughput =	5000 lb feedstock/hr 5000 x 8760 = 43,800,000 lb feedstock/yr
P026 (Line 5) maximum throughput =	250 lb feedstock/hr 250 x 8760 = 2,190,000 lb feedstock/yr
P027 (Line 6) maximum throughput =	5000 lb feedstock/hr 5000 x 8760 = 43,800,000 lb feedstock/yr
P028 (Line 7) maximum throughput =	7000 lb feedstock/hr 7000 x 8760 = 61,320,000 lb feedstock/yr
P029 (Line 8) maximum throughput =	8000 lb feedstock/hr 8000 x 8760 = 70,080,000 lb feedstock/yr
P030 (Line 9) maximum throughput =	12,000 lb feedstock/hr 12,000 x 8760 = 105,120,000 lb feedstock/yr

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PTI Number: 01-08258

Facility ID: 0145020221

FACILITY NAME Bayer Corporation Polymers Division

FACILITY DESCRIPTION Thermoelastic compounding.

CITY/TWP Hebron

Emissions Unit ID: **P032**

P031 (cleaner) maximum throughput = See below.
P032 (silos) maximum throughput = See below.

Emission Factors:

Emission factors assume the highest emitting product (for each respective pollutant) is used on each extruder throughout the year at it's maximum capacity.

P022-P030: Worst case emission factors and the associated product:

- MEK = 0.127 lb/1000 lb ABS - Lustran throughput (Testing, 8/14/00)
- 1,3 Butadiene = 0.083 lb/1000 lb ABS - Lustran throughput (Testing, 5/31/00)
- Acrylonitrile = 0.247 lb/1000 lb ABS - Lustran throughput (Testing, 8/16/00)
- Styrene = 1.097 lb/1000 lb ABS - Lustran throughput (Testing, 8/14/00)
- Chlorobenzene = 0.213 lb/1000 lb PC-Makrolon throughput (Testing, 5/31/00)
- VOC = 1.787 lb/1000 lb ABS - Lustran throughput (Testing, 8/14/00 thru 8/16/00)

Facility wide:

- NOx = See below.
- HCl = See below.

Emissions after control:

- Capture efficiency on Die hood = unique to each unit with a hood
- Control equipment* = 99% control efficiency
- Control equipment* = 95% control efficiency of HCl
- MEK = 0.000127 lb/1000 lb ABS - Lustran throughput
- 1,3-Butadiene = 0.000083 lb/1000 lb ABS - Lustran throughput
- Acrylonitrile = 0.000247 lb/1000 lb ABS - Lustran throughput
- Styrene = 0.001097 lb/1000 lb ABS - Lustran throughput
- Chlorobenzene = 0.000213 lb/1000 lb PC-Makrolon throughput
- VOC = 0.001787 lb/1000 lb ABS - Lustran throughput
- NOx = See below.
- HCl = See below.

* These control efficiencies will be reassessed through stack testing for each air pollutant restricted in this permit.

Emission Limitation Calculations :

Each emission unit's VOC emissions are found by summing the fugitive and stack emissions. Listed below are the stack emissions. To account for the fugitive emissions, follow the equation specified in the testing section of the permit.

$$\begin{aligned}
 \text{P022: } & 3000 \text{ lb/hr} \times 1.787 \text{ lb VOC/1000 lb} & & = 5.361 \text{ lb VOC/hr uncontrolled} \times (1-0.99) = \\
 & & & 0.05361 \text{ lb/hr controlled} \\
 & 26,280,000 \text{ lb/yr} \times 1.787 \text{ lb VOC/1000 lb} \times 1 \text{ ton/2000 lb} & & = 23.48 \text{ ton VOC/yr uncontrolled} \times (1-0.99)
 \end{aligned}$$

FACILITY DESCRIPTION Thermoplastic compounding.CITY/TWP Hebron

= 0.235 ton/yr controlled

P023: 1200 lb/hr x 1.787 lb VOC/1000 lb = 2.144 lb VOC/hr uncontrolled x (1-0.99) =
 0.02144 lb/hr controlled

10,512,000 lb/yr x 1.787 lb VOC/1000 lb x 1ton/2000lb = 9.39 ton VOC/yr uncontrolled x (1-0.99) =
 0.094 ton/yr controlled

P024: 1000 lb/hr x 1.787 lb VOC/1000 lb = 1.787 lb VOC/hr uncontrolled x (1-0.99) =
 0.01787 lb/hr controlled

8,760,000 lb/yr x 1.787 lb VOC/1000 lb x 1ton/2000lb = 7.83 ton VOC/yr uncontrolled x (1-0.99) =
 0.078 ton/yr controlled

P025: 5000 lb/hr x 1.787 lb VOC/1000 lb = 8.935 lb VOC/hr uncontrolled x (1-0.99) =
 0.08935 lb/hr controlled

43,800,000 lb/yr x 1.787 lb VOC/1000 lb x 1ton/2000lb = 39.14 ton VOC/yr uncontrolled x (1-0.99)
 = 0.391 ton/yr controlled

P026: 250 lb/hr x 1.787 lb VOC/1000 lb = 0.449 lb VOC/hr uncontrolled x (1-0.99) =
 0.00449 lb/hr controlled

2,190,000 lb/yr x 0.001787 lb VOC/1000 lb x 1ton/2000lb = 1.272 ton VOC/yr uncontrolled x (1-0.99)
 = 0.01272 ton/yr controlled

P027: 5000 lb/hr x 1.787 lb VOC/1000 lb = 8.935 lb VOC/hr uncontrolled x (1-0.99) =
 0.08935 lb/hr controlled

43,800,000 lb/yr x 1.787 lb VOC/1000 lb x 1ton/2000lb = 25.438 ton VOC/yr uncontrolled x
 (1-0.99) = 0.25438 ton/yr controlled

P028: 7000 lb/hr x 1.787 lb VOC/1000 lb = 12.509 lb VOC/hr uncontrolled x (1-0.99)
 = 0.12509 lb/hr controlled

61,320,000 lb/yr x 1.787 lb VOC/1000 lb x 1ton/2000lb = 35.613 ton VOC/yr uncontrolled x
 (1-0.99) = 0.35613 ton/yr controlled

P029: 8000 lb/hr x 1.787 lb VOC/1000 lb = 14.296 lb VOC/hr uncontrolled x (1-0.99)
 = 0.14296 lb/hr controlled

70,080,000 lb/yr x 1.787 lb VOC/1000 lb x 1ton/2000lb = 40.701 ton VOC/yr uncontrolled x
 (1-0.99) = 0.40701 ton/yr controlled

P030: 12,000 lb/hr x 1.787 lb VOC/1000 lb = 21.444 lb VOC/hr uncontrolled x (1-0.99) =
 0.21444 lb/hr controlled

105,120,000 lb/yr 1.787 lb VOC/1000 lb x 1ton/2000lb = 61.051 ton VOC/yr uncontrolled x
 (1-0.99) = 0.61051 ton/yr controlled

NEW SOURCE REVIEW FORM B

PTI Number: 01-08258

Facility ID: 0145020221

FACILITY NAME Bayer Corporation Polymers Division

FACILITY DESCRIPTION Thermoplastic compounding.

CITY/TWP Hebron

Emissions Unit ID: **P032****P031 - Screw Cleaner**

Assumptions: Emission factor = 0.0542 lb NO_x/hr (Manufacturer E.F.)
 0.035 lb VOC/hr (Manufacturer E.F.)
 0.27 lb PM/hr (Manufacturer E.F.)
 0.10 lb CO/hr (Manufacturer E.F.)

Maximum capacity = 8760 hrs/yr

All emissions are vented through a primary and secondary pyrolysis furnace
 These emissions will also be vented through the oxidizer and acid gas scrubber.

0.0542 lb NO_x/hr x 8760 hr/yr x 1 ton/2000 lb = 0.24 ton NO_x/yr

0.035 lb VOC/hr x 8760 hr/yr x 1 ton/2000 lb = 0.2 ton VOC/yr

0.27 lb PM/hr x 8760 hr/yr x 1 ton/2000 lb = 1.2 tons PM/yr

0.10 lb CO/hr x 8760 hr/yr x 1 ton/2000 lb = 0.5 ton CO/yr

P032 - Silos - (2) 6500 cu.ft storage silos

Assumptions: Each silo will have a fabric filter attached to the vent.
 Percent of product released during transfer = 0.00031% (testing 6/95)
 Maximum throughput = 17,500 tons/yr per silo

17,500 tons/yr x 0.0000031 x 2 = 0.108 tons/yr per silo

Emissions From Control Equipment:

The control equipment required as BAT for these emission units will produce additional pollutants. Specifically, the RTO will produce HCl (HAP) and PM (from combustion) and the AGS will produce NO_x. Supplemental firing of natural gas will take place in the RTO. The capacity of the burner is 2.12 mmBTU/hr. Calculations are as follows:

HCl: Assumptions: The chlorobenzene releases chlorine in the RTO.
 Emission factor = 0.32382 lb HCl/lb uncontrolled chlorobenzene
 The AGS controls 95% of the HCl emissions
 Chlorobenzene uncontrolled = 9.04 lb/hr
 8760 hr/yr

Calculations: 0.32382 lb HCl/lb chlorobenzene x 9.04 lb chlorobenzene/hr = 2.93 lb HCl/hr uncontrolled
 2.93 lb HCl/hr x (1-0.95) = **0.146 lb HCl/hr controlled**

2.93 lb/hr x 8760 hr/yr x 1 ton/2000 lb = 18.83 ton HCl/yr uncontrolled
 18.83 ton HCl/yr x (1-0.95) = **0.94 ton HCl/yr controlled**

NO_x: Assumptions: The acrylonitrile releases Nitrogen when thermally oxidized.

FACILITY DESCRIPTION	Thermoplastic compounding.	CITY/TWP	Hebron
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The product Lustran releases the highest amount of acrylonitrile.

Throughput restriction = 286,822,567.0 lb Lustran/yr

The maximum facility wide throughput = 42,450 pounds/hr

371,862,000 pounds/yr.

Emission factor = 0.247 lb acrylonitrile/1000 lbs ABS Lustran throughput (Testing 8/16/00)

0.5654 lb NOx/lb acrylonitrile (letter 12/13/00)

10.49 lb acrylonitrile/hr = max uncontrolled acrylonitrile emission rate (See calculations)

Calculations: $0.247 \text{ lb acrylonitrile}/1000 \text{ lbs} \times 42,450 \text{ lbs/hr} \times 0.5654 \text{ lb NOx/lb acrylonitrile} = \mathbf{5.93 \text{ lb NOx/hr}}$

$0.247 \text{ lb acrylonitrile}/1000 \text{ lbs} \times 371,862,000 \text{ lb Lustran/yr} \times 0.5654 \text{ lb NOx/lb acrylonitrile} \times 1 \text{ ton}/2000 \text{ lb} = 25.97 \text{ ton NOx/hr uncontrolled}$

$256,446,992 \text{ lb Lustran/yr} \times 0.247 \text{ lb acrylonitrile}/1000 \text{ lb Lustran} \times 0.5654 \text{ lb NOx/lb acrylonitrile} \times 1 \text{ ton}/2000 \text{ lb} = \mathbf{17.9 \text{ ton NOx/yr controlled}}$

PM: Assumptions: 0.0076 lb PM/mmBTU (AP-42, 1.4-2, 7/98)

Thermal Rating = 2.12 mmBTU/hr

$0.0076 \text{ lb PM/mmBTU} \times 2.12 \text{ mmBTU/hr} = 0.016 \text{ lb PM/hr}$

$0.016 \text{ lb/hr} \times 8760 \text{ hr/yr} \times 2000 \text{ lb/ton} = 0.07 \text{ ton PM/yr}$

Natural Gas Combustion:

Assumptions: 2.12 mmBTU/hr = rated capacity

Emission factors = 0.2 lb NOx/mmBTU (Manufacturer)

= 0.08 lb CO/mmBTU (AP-42, 1.4, 7/98)

= 0.007 lb PM/mmBTU (AP-42, 1.4, 7/98)

= 0.0006 lb SO₂/mmBTU (AP-42, 1.4, 7/98)

= 0.005 lb VOC/mmBTU (AP-42, 1.4, 7/98)

$2.12 \text{ mmBTU/hr} \times 0.2 \text{ lb NOx/mmBTU} = \mathbf{0.424 \text{ lb NOx/hr}}$

$2.12 \text{ mmBTU/hr} \times 0.2 \text{ lb NOx/mmBTU} \times 8760 \text{ hr/yr} \times 1 \text{ hr}/2000 \text{ lb} = \mathbf{1.86 \text{ ton NOx/yr}}$

$2.12 \text{ mmBTU/hr} \times 0.08 \text{ lb CO/mmBTU} = \mathbf{0.170 \text{ lb CO/hr}}$

$2.12 \text{ mmBTU/hr} \times 0.08 \text{ lb CO/mmBTU} \times 8760 \text{ hr/yr} \times 1 \text{ hr}/2000 \text{ lb} = \mathbf{0.74 \text{ ton CO/yr}}$

$2.12 \text{ mmBTU/hr} \times 0.007 \text{ lb PM/mmBTU} = \mathbf{0.015 \text{ lb PM/hr}}$

$2.12 \text{ mmBTU/hr} \times 0.007 \text{ lb PM/mmBTU} \times 8760 \text{ hr/yr} \times 1 \text{ hr}/2000 \text{ lb} = \mathbf{0.06 \text{ ton PM/yr}}$

$2.12 \text{ mmBTU/hr} \times 0.0006 \text{ lb SO}_2\text{/mmBTU} = \mathbf{0.001 \text{ lb SO}_2\text{/hr}}$

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PTI Number: 01-08258

Facility ID: 0145020221

FACILITY NAME Bayer Corporation Polymers Division

FACILITY DESCRIPTION Thermoelastic compounding.

CITY/TWP Hebron

Emissions Unit ID: **P032**

2.12 mmBTU/hr x 0.0006 lb SO2/mmBTU x 8760 hr/yr x 1hr/2000 lb = **0.01 ton SO2/yr**

2.12 mmBTU/hr x 0.005 lb VOC/mmBTU = **0.011 lb VOC/hr**

2.12 mmBTU/hr x 0.005 lb VOC/mmBTU x 8760 hr/yr x 1hr/2000 lb = **0.05 ton VOC/yr**

Modeling conducted for MEK, Styrene, Acrylonitrile, 1,3 Butadiene and Chlorobenzene did not predict any exceedances of the MAGLC.

The facility is exempt from 40 CFR Part 63 Subpart JJJ because all of their operations are considered finishing.

As we discussed, this permit is considered a "rush permit". In addition, the protocol is being followed to allow installation at the Draft stage. If you have any questions, feel free to give me a call at (614) 728-3811.

Thank you,

Adam Ward

DAPC/CDO/Ohio EPA

Please complete for these type permits (For PSD/NSR Permit, place mouse over this text):

Synthetic Minor Determination and/or Netting Determination

Permit To Install 01-08258

A. Source Description

The Bayer Corporation plant at Hebron, Ohio serves a broad cross-section of the plastics industry by compounding thermoplastic resins. Basic resins are received at the plant and undergo one or more fundamental compounding steps. The resins may be blended with other resins, may have pigments added to alter the color, may have structural fillers added to change the physical properties or may have more than one of these compounding steps performed.

The basic manufacturing technology used is high temperature extrusion. In this process, the basis resins and any additives are blended, mixed, heated in the extrusion equipment and forced through the extrusion dies. At the die face, hooding is used to capture the emissions while a vacuum system is used to remove the majority of volatile materials including water, several VOCs and HAPs from the extruder and send the air pollutants through the central air pollution control system.

Each of the nine extruder lines are affected by the facility wide federally enforceable restrictions. Without the federally enforceable limitations, the facility has a potential to emit greater than the Title V thresholds for HAP, HAPs and VOC.

B. Facility Emissions and Attainment Status

FACILITY DESCRIPTION Thermoplastic compounding. CITY/TWP Hebron

The emission units which the federally enforceable restrictions will affect include each of the nine extruder lines (P022-P030). Without the federally enforceable limitations, the facility has a potential to emit greater than the Title V thresholds for HAP, HAPs and VOC. Specifically:

<u>Pollutant</u>	<u>Facility-wide PTE Pre-synthetic minor</u>	<u>Facility-wide PTE Post-synthetic minor</u>
Styrene	187.9	2.0
Acrylonitrile	30.0	2.0
1,3-Butadiene	14.2	2.0
Monochlorobenzene	36.5	2.0
MEK	21.8	2.0
Combined HAPs	290.4	5.0
VOC	306.0	20.0

C. Source Emissions

The facility will be limited to 2.0 tons per year for each HAP, 5 tons per year for combined HAPs and 20.0 tons per year for VOC. The facility is unable to institute production or hourly restrictions to achieve these emission levels because the facility operates on a per batch basis. Therefore, each batch may be different from the previous batch and therefore, the emission may change. With the operational, record keeping, reporting, and testing requirements within this permit, the facility will be calculating their emissions on a daily basis and summing these emissions towards the facilities monthly rolling, 12-month limits.

D. Conclusion

Bayer has the potential to emit Styrene, Acrylonitrile, 1,3 Butadiene, Monochlorobenzene, MEK, combined HAPs and VOC greater than Title V thresholds. With the emission restrictions found in this permit, the emissions are limited to less than 20% of the thresholds. Compliance with each rolling, 12-month emission limitation will be demonstrated through daily record keeping, along with reporting and testing requirements.

PLEASE PROVIDE ADDITIONAL NOTES OR COMMENTS AS NECESSARY:

NONE

Please complete:

SUMMARY (for informational purposes only)
TOTAL PERMIT TO INSTALL ALLOWABLE EMISSIONS
Pollutant Tons Per Year

196 **NEW SOURCE REVIEW FORM B**

PTI Number: 01-08258

Facility ID: 0145020221

FACILITY NAME Bayer Corporation Polymers Division

FACILITY DESCRIPTION Thermoelastic compounding.

CITY/TWP Hebron

Emissions Unit ID: **P032**

PM	0.2
CO	0.7
VOC	20.0
NOx	20.0
MEK	2.0
1,3 Butadiene	2.0
Acrylonitrile	2.0
Chlorobenzene	2.0
Styrene	2.0
HAPs	5.0