

**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION**

September 29, 2017

PERMIT TO INSTALL
88-17

ISSUED TO
BASF Corporation – Plastics Plants

LOCATED AT
1609 Biddle Avenue
Wyandotte, Michigan

IN THE COUNTY OF
Wayne

STATE REGISTRATION NUMBER
M4777

The Air Quality Division has approved this Permit to Install, pursuant to the delegation of authority from the Michigan Department of Environmental Quality. This permit is hereby issued in accordance with and subject to Section 5505(1) of Article II, Chapter I, Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. Pursuant to Air Pollution Control Rule 336.1201(1), this permit constitutes the permittee's authority to install the identified emission unit(s) in accordance with all administrative rules of the Department and the attached conditions. Operation of the emission unit(s) identified in this Permit to Install is allowed pursuant to Rule 336.1201(6).

DATE OF RECEIPT OF ALL INFORMATION REQUIRED BY RULE 203: June 2, 2017	
DATE PERMIT TO INSTALL APPROVED: September 29, 2017	SIGNATURE:
DATE PERMIT VOIDED:	SIGNATURE:
DATE PERMIT REVOKED:	SIGNATURE:

PERMIT TO INSTALL

Table of Contents

Section	Page
Alphabetical Listing of Common Abbreviations / Acronyms	2
General Conditions	3
Special Conditions	5
Emission Unit Summary Table.....	5
Flexible Group Summary Table	6
Special Conditions for FGTPU	7

Common Abbreviations / Acronyms

Common Acronyms		Pollutant / Measurement Abbreviations	
AQD	Air Quality Division	acfm	Actual cubic feet per minute
BACT	Best Available Control Technology	BTU	British Thermal Unit
CAA	Clean Air Act	°C	Degrees Celsius
CAM	Compliance Assurance Monitoring	CO	Carbon Monoxide
CEM	Continuous Emission Monitoring	CO _{2e}	Carbon Dioxide Equivalent
CFR	Code of Federal Regulations	dscf	Dry standard cubic foot
COM	Continuous Opacity Monitoring	dscm	Dry standard cubic meter
Department/ department	Michigan Department of Environmental Quality	°F	Degrees Fahrenheit
EU	Emission Unit	gr	Grains
FG	Flexible Group	HAP	Hazardous Air Pollutant
GACS	Gallons of Applied Coating Solids	Hg	Mercury
GC	General Condition	hr	Hour
GHGs	Greenhouse Gases	HP	Horsepower
HVLP	High Volume Low Pressure*	H ₂ S	Hydrogen Sulfide
ID	Identification	kW	Kilowatt
IRSL	Initial Risk Screening Level	lb	Pound
ITSL	Initial Threshold Screening Level	m	Meter
LAER	Lowest Achievable Emission Rate	mg	Milligram
MACT	Maximum Achievable Control Technology	mm	Millimeter
MAERS	Michigan Air Emissions Reporting System	MM	Million
MAP	Malfunction Abatement Plan	MW	Megawatts
MDEQ	Michigan Department of Environmental Quality	NMOC	Non-methane Organic Compounds
MSDS	Material Safety Data Sheet	NO _x	Oxides of Nitrogen
NA	Not Applicable	ng	Nanogram
NAAQS	National Ambient Air Quality Standards	PM	Particulate Matter
NESHAP	National Emission Standard for Hazardous Air Pollutants	PM ₁₀	Particulate Matter equal to or less than 10 microns in diameter
NSPS	New Source Performance Standards	PM _{2.5}	Particulate Matter equal to or less than 2.5 microns in diameter
NSR	New Source Review	pph	Pounds per hour
PS	Performance Specification	ppm	Parts per million
PSD	Prevention of Significant Deterioration	ppmv	Parts per million by volume
PTE	Permanent Total Enclosure	ppmw	Parts per million by weight
PTI	Permit to Install	psia	Pounds per square inch absolute
RACT	Reasonable Available Control Technology	psig	Pounds per square inch gauge
ROP	Renewable Operating Permit	scf	Standard cubic feet
SC	Special Condition	sec	Seconds
SCR	Selective Catalytic Reduction	SO ₂	Sulfur Dioxide
SNCR	Selective Non-Catalytic Reduction	TAC	Toxic Air Contaminant
SRN	State Registration Number	Temp	Temperature
TEQ	Toxicity Equivalence Quotient	THC	Total Hydrocarbons
USEPA/EPA	United States Environmental Protection Agency	tpy	Tons per year
VE	Visible Emissions	µg	Microgram
		µm	Micrometer or Micron
		VOC	Volatile Organic Compounds
		yr	Year

*For HVLP applicators, the pressure measured at the gun air cap shall not exceed 10 psig.

GENERAL CONDITIONS

1. The process or process equipment covered by this permit shall not be reconstructed, relocated, or modified, unless a Permit to Install authorizing such action is issued by the Department, except to the extent such action is exempt from the Permit to Install requirements by any applicable rule. **(R 336.1201(1))**
2. If the installation, construction, reconstruction, relocation, or modification of the equipment for which this permit has been approved has not commenced within 18 months, or has been interrupted for 18 months, this permit shall become void unless otherwise authorized by the Department. Furthermore, the permittee or the designated authorized agent shall notify the Department via the Supervisor, Permit Section, Air Quality Division, Michigan Department of Environmental Quality, P.O. Box 30260, Lansing, Michigan 48909-7760, if it is decided not to pursue the installation, construction, reconstruction, relocation, or modification of the equipment allowed by this Permit to Install. **(R 336.1201(4))**
3. If this Permit to Install is issued for a process or process equipment located at a stationary source that is not subject to the Renewable Operating Permit program requirements pursuant to R 336.1210, operation of the process or process equipment is allowed by this permit if the equipment performs in accordance with the terms and conditions of this Permit to Install. **(R 336.1201(6)(b))**
4. The Department may, after notice and opportunity for a hearing, revoke this Permit to Install if evidence indicates the process or process equipment is not performing in accordance with the terms and conditions of this permit or is violating the Department's rules or the Clean Air Act. **(R 336.1201(8), Section 5510 of Act 451, PA 1994)**
5. The terms and conditions of this Permit to Install shall apply to any person or legal entity that now or hereafter owns or operates the process or process equipment at the location authorized by this Permit to Install. If the new owner or operator submits a written request to the Department pursuant to R 336.1219 and the Department approves the request, this permit will be amended to reflect the change of ownership or operational control. The request must include all of the information required by subrules (1)(a), (b), and (c) of R 336.1219 and shall be sent to the District Supervisor, Air Quality Division, Michigan Department of Environmental Quality. **(R 336.1219)**
6. Operation of this equipment shall not result in the emission of an air contaminant which causes injurious effects to human health or safety, animal life, plant life of significant economic value, or property, or which causes unreasonable interference with the comfortable enjoyment of life and property. **(R 336.1901)**
7. The permittee shall provide notice of an abnormal condition, start-up, shutdown, or malfunction that results in emissions of a hazardous or toxic air pollutant which continue for more than one hour in excess of any applicable standard or limitation, or emissions of any air contaminant continuing for more than two hours in excess of an applicable standard or limitation, as required in Rule 912, to the Department. The notice shall be provided not later than two business days after start-up, shutdown, or discovery of the abnormal condition or malfunction. Written reports, if required, must be filed with the Department within 10 days after the start-up or shutdown occurred, within 10 days after the abnormal conditions or malfunction has been corrected, or within 30 days of discovery of the abnormal condition or malfunction, whichever is first. The written reports shall include all of the information required in Rule 912(5). **(R 336.1912)**
8. Approval of this permit does not exempt the permittee from complying with any future applicable requirements which may be promulgated under Part 55 of 1994 PA 451, as amended or the Federal Clean Air Act.
9. Approval of this permit does not obviate the necessity of obtaining such permits or approvals from other units of government as required by law.
10. Operation of this equipment may be subject to other requirements of Part 55 of 1994 PA 451, as amended and the rules promulgated thereunder.

11. Except as provided in subrules (2) and (3) or unless the special conditions of the Permit to Install include an alternate opacity limit established pursuant to subrule (4) of R 336.1301, the permittee shall not cause or permit to be discharged into the outer air from a process or process equipment a visible emission of density greater than the most stringent of the following. The grading of visible emissions shall be determined in accordance with R 336.1303. **(R 336.1301)**
 - a) A six-minute average of 20 percent opacity, except for one six-minute average per hour of not more than 27 percent opacity.
 - b) A visible emission limit specified by an applicable federal new source performance standard.
 - c) A visible emission limit specified as a condition of this Permit to Install.

12. Collected air contaminants shall be removed as necessary to maintain the equipment at the required operating efficiency. The collection and disposal of air contaminants shall be performed in a manner so as to minimize the introduction of contaminants to the outer air. Transport of collected air contaminants in Priority I and II areas requires the use of material handling methods specified in R 336.1370(2). **(R 336.1370)**

13. The Department may require the permittee to conduct acceptable performance tests, at the permittee's expense, in accordance with R 336.2001 and R 336.2003, under any of the conditions listed in R 336.2001. **(R 336.2001)**

SPECIAL CONDITIONS

EMISSION UNIT SUMMARY TABLE

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

Emission Unit ID	Emission Unit Description (Process Equipment & Control Devices)	Installation Date / Modification Date	Flexible Group ID
EUETPUI	All process equipment used to expand thermoplastic polyurethane pellets in the ETPUI production line which is controlled by dust collector F-780. Equipment in EUETPUI includes a butane collection system that captures butane and stores it in Tank 780 until it is condensed by a nitrogen condenser system and returned for re-use in the ETPUI process. The equipment in EUETPUI includes, but is not limited to the following: One (1) plastic pellet impregnation vessel; One (1) product rundown vessel; One (1) flash dryer; One (1) spin dryer; One (1) off-gas holding tank; Four (4) batch off gas silos; Miscellaneous fabric filter devices; Miscellaneous product transfer and holding equipment	2/5/1988, 2/23/2006	FGETPU
EUETPUII	All process equipment used to expand thermoplastic polyurethane pellets in the ETPUII production line which is controlled by dust collector F-880. The equipment includes a butane collection system that captures butane and stores it in Tank 880 until it is condensed by a nitrogen condenser system and returned for re-use in the ETPUII process. Equipment in EUETPUII includes, but is not limited to the following: One (1) plastic pellet impregnation vessel; One (1) product rundown vessel; One (1) flash dryer; One (1) spin dryer; One (1) off-gas holding tank; Four (4) batch off gas silos; Miscellaneous fabric filter devices Miscellaneous product transfer and holding equipment	1/23/1994, 2/23/2006	FGETPU
EUETPURAWMATERI AL	Raw material storage equipment common to EUETPUI and EUETPUII and controlled by dust collector, F-841.	2/5/1988	FGETPU

Emission Unit ID	Emission Unit Description (Process Equipment & Control Devices)	Installation Date / Modification Date	Flexible Group ID
EUETPUBULKSTORAGE	Finished product bulk loading facility and storage equipment common to EUETPUI and EUETPUII. EUETPUBULKSTORAGE consists of equipment dedicated to the bulk storage and product evaluation of expanded thermoplastic polyurethane. The equipment includes, but not limited to, the following: Four (4) material pneumatic transfer blowers; One (1) railcar loading cyclone	1/1/1993	FGETPU
Changes to the equipment described in this table are subject to the requirements of R 336.1201, except as allowed by R 336.1278 to R 336.1290.			

FLEXIBLE GROUP SUMMARY TABLE

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

Flexible Group ID	Flexible Group Description	Associated Emission Unit IDs
FGETPU	Expanded thermoplastic polyurethane (ETPU) production lines I and II, raw material storage, finished product storage and loading, and condensation system..	EUETPUI, EUETPUII, EUETPURAWMATERIAL, EUETPUBULKSTORAGE

The following conditions apply to: FGETPU

DESCRIPTION: Expanded thermoplastic polyurethane (ETPU) production lines I and II, raw material storage, finished product storage and loading, and condensation system.

Emission Units: EUETPUI, EUETPUII, EUETPURAWMATERIAL, EUETPUBULKSTORAGE.

POLLUTION CONTROL EQUIPMENT: Fabric filter dust collectors (F-780 and F-880, F-841); Butane condensation system, regenerative thermal oxidizer (RTO)

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. VOC	70 TPY*	12-rolling time period as determined at the end of each calendar month	Emissions from the warehouse super sacks, the drying lines, and fugitives from both ETPU production lines combined.	V.1 VI.11	R 336.1205 R 336.1225, R 336.1702(a)
2. VOC	82 TPY*	12-rolling time period as determined at the end of each calendar month	Point source and fugitive emissions from both ETPU production lines combined.	V.1 VI.11	R 336.1205 R 336.1225, R 336.1702(a)

* These VOC emission limitations shall be implemented upon start-up of the RTO. The permittee shall submit to the agency 150 days after issuance of this Permit, a schedule for specification, procurement, installation and start-up of the RTO. This condition will become applicable only after the completion of all ETPU operations upgrades and the installation and operation of all emission capture and control systems, including the RTO. Prior to this time, operation of FGETPU will be consistent with the existing conditions within MI-ROP-N7238-2011.

II. MATERIAL LIMIT(S)

Material	Limit	Time Period/ Operating Scenario	Equipment	Monitoring/ Testing Method	Underlying Applicable Requirements
1. Fresh butane * used in EUETPUI and EUETPUII	875 TPY	12-month rolling time period as determined at the end of each calendar month	ETPU production lines I and II combined	VI.10	R 336.1205 R 336.1225, R 336.1702(a)

* In these conditions, "butane" refers to a hydrocarbon mixture consisting of n-butane, isobutane, and propane that is used as an expansion agent in EUETPUI and EUETPUII. The primary component of "butane" is n-butane. "Fresh" butane refers to butane obtained from outside FGETPU for use in EUETPUI and EUETPUII, as distinct from butane recovered via the condensation system for re-use in FGETPU.

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall not operate EUETPUI, EUETPUII or EUETPURAWMATERIAL unless the dust collector operating procedures are implemented and maintained. The procedures shall be kept on site and made available to the Department upon request. **(R 336.1331)**
2. The permittee shall not operate EUETPUI or EUETPUII unless the butane collection system operating procedures are implemented and maintained. The procedures shall be kept on site and made available to the Department upon request. **(R 336.1205, R 336.1225, R 336.1702(a))**

3. The permittee shall not operate EUETPUI or EUETPUII unless the condensation system operating procedures, or an alternate plan approved by the AQD District Supervisor, are implemented and maintained. If changes are made to the condensation system, the plan shall be revised to reflect the changes. The permittee shall keep the plan on site and make it available to the Department upon request. **(R 336.1205, R 336.1225, R 336.1702(a))**
4. The permittee shall not operate EUETPUI or EUETPUII unless the RTO operating procedures, or an alternate plan approved by the AQD District Supervisor, are implemented and maintained. If changes are made to the RTO, the plan shall be revised to reflect the changes. The permittee shall keep the plan on site and make it available to the Department upon request. ¹ **(R 336.1205, R 336.1225, R 336.1702(a))**
5. The permittee shall not operate EUETPUI or EUETPUII unless a malfunction abatement plan (MAP) as described in Rule 911(2), for the RTO, has been submitted within 60 days of RTO, installation. If at any time the MAP fails to address or inadequately addresses an event that meets the characteristics of a malfunction, the permittee shall amend the MAP within 45 days after such an event occurs. The permittee shall also amend the MAP within 45 days, if new equipment is installed or upon request from the District Supervisor. The permittee shall submit the MAP to the AQD District Supervisor for review and approval. For any amendments to the MAP relating to requirements of Rule 911(2), the permittee shall submit the MAP and any amendments to the MAP to the AQD District Supervisor for review and approval. If the AQD does not notify the permittee within 90 days of submittal, the MAP or amended MAP shall be considered approved. Until an amended plan is approved, the permittee shall implement corrective procedures or operational changes to achieve compliance with all applicable emission limits. **(R 336.1225, R 336.1331, R 336.1702(a), R 336.1910, R 336.1911, 40 CFR 52.21(c) & (d))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall not operate EUETPUI, EUETPUII or EUETPURAWMATERIAL unless the corresponding dust collector, F-780, F880 or F-841, respectively, is installed, maintained, and operated in a satisfactory manner. Satisfactory operation includes installing a pressure drop monitoring device on each of the dust collectors and maintaining the pressure drop at proper operating levels as specified in the dust collector operating procedures. **(R 336.1331)**
2. The permittee shall not operate EUETPUI or EUETPUII unless the corresponding butane collection and hold tank, Tank 780 or Tank 880, respectively, is installed, maintained and operated in a satisfactory manner. Satisfactory operation includes installing and maintaining a monitoring device on each tank that allows the permittee to ensure that each tank has adequate capacity to receive butane from each production batch it serves before beginning to process the batch. These and all other operations relating to the proper operation of the butane collection and hold tanks shall be specified in the butane collection system operating procedures. **(R 336.1205, R 336.1225, R 336.1702(a))**
3. The permittee shall not operate EUETPUI or EUETPUII unless the condensation system is installed, maintained and operated in a satisfactory manner. Satisfactory operation includes maintaining a column temperature with a maximum temperature of -184 F over a 3-hour block average when feeding and recovering butane through the condensation system and having a system in place that will shut off the flow of butane to the condensation system if the system malfunctions, as specified in the condensation system operating procedures. **(R 336.1205, R 336.1225, R 336.1702(a))**
4. The permittee shall not operate EUETPUI or EUETPUII unless the RTO is installed, maintained and operated in a satisfactory manner. Satisfactory operation of the regenerative thermal oxidizer includes a minimum VOC destruction efficiency of 98 percent (by weight), and maintaining a minimum temperature of 1300 °F and a minimum retention time of 0.5 seconds. The permittee shall also have a system in place that will shut off the flow of butane to the regenerative thermal oxidizer if the regenerative thermal oxidizer malfunctions, as specified in the regenerative thermal oxidizer system operating procedures. ¹ **(R 336.1205, R 336.1225, R 336.1702(a), R336.1910)**

5. The permittee shall install, calibrate, maintain and operate in a satisfactory manner a device to continuously monitor and record the combustion chamber temperature of the RTO. Satisfactory manner includes measuring the temperature to within 1 percent (relative to degrees Celsius) or ± 0.5 °C (± 0.9 °F), whichever is greater. Continuous monitoring means at least one measurement every fifteen minutes. ¹ **(R 336.1205, R 336.1225, R 336.1702(a), R336.1910)**
6. The permittee shall not install bypass valves that could divert a vent stream from the RTO, except as allowed by SC IV.7 when the vent stream goes to the emergency vent stack of the RTO. ¹ **(R 336.1205, R 336.1225, R 336.1702(a), R336.1910)**
7. During periods of shutdown of the RTO for maintenance, offline inspections, or malfunctions, the permittee may vent the off-gassing silos to atmosphere by way of an RTO emergency vent stack. During RTO shutdowns, the permittee shall minimize uncontrolled emissions by shutting down FGETPU production processes so that emissions occurring during these events are limited to the losses from the off-gassing silos. During RTO shutdowns, the permittee shall not transfer any material into the off-gassing silos. Emergency venting procedures shall be outlined in the RTO operating procedures and MAP for the RTO. ¹ **(R 336.1205, R 336.1225, R 336.1702(a))**

V. TESTING/SAMPLING

1. Within 180 days after commencement of trial operation, the permittee shall verify VOC destruction efficiency and VOC emission rates from the RTO by testing at the owner's expense, in accordance with Department requirements. Testing shall be performed using an approved EPA Method listed in 40 CFR Part 60, Appendix A. An alternate method, or a modification to the approved EPA Method, may be specified in an AQD approved Test Protocol. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD Technical Programs Unit and District Office. The AQD must approve the final plan prior to testing, including any modifications to the method in the test protocol that are proposed after initial submittal. The permittee must submit a complete report of the test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test. **(R 336.1205, R 336.1225, R 336.1702(a), R 336.2001, R 336.2003, R 336.2004)**

VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall complete all required calculations in a format acceptable to the AQD District Supervisor by the 15th day of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition. **(R 336.1205, R 336.1225, R 336.1702(a))**
2. The permittee shall monitor in a satisfactory manner, the temperature in the combustion chamber of the RTO, on a continuous basis, during operation of FGETPU. Monitoring of data "on a continuous basis" is defined as an instantaneous data point recorded at least once every 15 minutes.¹ **(R 336.1205, R 336.1225, R 336.1702(a), R336.1910)**
3. The permittee shall conduct regular inspections, as outlined below, of the RTO for the purpose of determining the operating condition of the RTO.
 - a. Regular inspections of the RTO shall be conducted during scheduled outages or downtime, but not less frequently than every 12-months.
 - b. The operational condition, and if necessary, reasons for the failure or malfunction of the different components of the RTO shall be determined during the inspection.
 - c. Any maintenance activities, repairs and corrective actions, needed to address the causes of malfunction or failure shall be performed within one hour. If the problem is not corrected within one hour, the facility shall promptly discontinue the source of emissions to the RTO until any repairs and corrective actions needed to address the causes of malfunction or failure is performed. ¹**(R 336.1205, R 336.1225, R 336.1702(a))**

4. The permittee shall keep up-to-date, readily-accessible records of the following information measured during each performance test, and shall include the following information in the report of the initial performance test in addition to the written results of such performance tests. The same information specified in this condition shall be submitted in the reports of all subsequently required performance tests where either the emission control efficiency of a combustion device or the outlet concentration of VOC (minus methane and ethane) is determined.
 - a. The average combustion chamber temperature of the RTO measured at least every 15 minutes and averaged over the performance test period,
 - b. The percent reduction of VOC (minus methane and ethane) achieved by the RTO,
 - c. A description of the location at which the vent stream is introduced into the RTO, and
 - d. All periods when the RTO device is not operating.¹**(R 336.1205, R 336.1225, R 336.1702(a), R 336.1910)**
5. The permittee shall maintain a demonstration that the minimum retention time of 0.5 seconds is obtained for the RTO. If such a demonstration cannot be shown through engineering calculations of maximum possible gas flow, based on the size of the ductwork, the size of the combustion chamber, and the size of the fan, or some alternative method acceptable to the AQD, then the permittee shall provide monitoring on a daily basis, acceptable to the AQD, for the RTO which will allow for the assurance that the 0.5 second retention time is maintained.¹ **(R 336.1205, R 336.1225, R 336.1702(a), R 336.1910)**
6. The permittee shall monitor the pressure drop across each dust collector, on a daily basis, during operation. **(R 336.1331)**
7. The permittee shall keep, in a satisfactory manner, records of the monitored temperature in the thermal oxidizer on a continuous basis. “On a continuous basis” is defined as an instantaneous data point recorded at least once every 15 minutes. The permittee may record average values (rolling or block) for 15 minute or shorter periods calculated from all measured data values during each period. The permittee shall keep all records on file and make them available to the Department upon request.¹ **(R 336.1205, R 336.1225, R 336.1702(a), R 336.1910)**
8. Permittee shall keep, in a satisfactory manner, records of the daily pressure drop readings for each of the dust collectors. All records shall be made available to the Department upon request. **(R 336.1331)**
9. The permittee shall keep for at least 5 years, up-to-date, readily accessible continuous records of periods of operation during which the parameter boundaries established during the most recent performance test on the RTO are exceeded. Periods of operation during which the parameter boundaries established during the most recent performance test are exceeded is defined as all 3-hour periods of operation during which the average combustion temperature was more than 28 °C (50 °F) below the average combustion temperature during the most recent performance test at which compliance was demonstrated.¹ **(R 336.1205, R 336.1225, R 336.1702(a))**
10. The permittee shall keep, in a satisfactory manner, monthly and 12-month rolling time period records of both of the following:
 - a. the amount of fresh butane used in FGETPU, and
 - b. number of product batches produced in FGETPUAll records shall be made available to the Department upon request. **(R 336.1205, R 336.1225, R 336.1702(a))**
11. The permittee shall keep, in a satisfactory manner, monthly and 12-month rolling time period VOC emission calculation records for FGETPU, using butane usage records and all of the following equations:
 - a.

Equation 1: Fugitive Emissions from Plant

$$\sum \left[\left(\frac{\text{Number of Emission Points by Type}}{\text{Emission}} \right) \times \left(\frac{\text{Emission Factor by Type}}{\text{Factor}} \right) \times \left(\frac{\text{Operating Days in Month}}{\text{Days in Month}} \right) \times \left(\frac{24 \text{ hours}}{\text{per Day}} \right) \right] = \left(\frac{\text{Fugitive Emissions}}{\text{per Month}} \right)$$

Equation 2: Drying Line Emissions from Plant

$$\left[\left(\frac{\text{Number of Batches Produced}}{\text{per Month}} \right) \times \left(\frac{\text{Drying Line Butane Emissions}}{\text{per Batch}} \right) \right] = \left(\frac{\text{Drying Line Emissions}}{\text{per Month}} \right)$$

Equation 3: Warehouse Super-Sack Degassing Emissions

$$\left[\left(\frac{\text{Number of Batches Produced}}{\text{per Month}} \right) \times \left(\frac{\text{SuperSack Emissions}}{\text{per Batch}} \right) \right] = \left(\frac{\text{Warehouse Degassing Emissions}}{\text{per Month}} \right)$$

Equation 4: Regenerative Thermal Oxidizer Emissions

$$\left[\left(\frac{\text{Monthly Butane Consumption}}{\text{per Month}} \right) - \left(\frac{\text{Fugitive Emissions}}{\text{per Month}} \right) - \left(\frac{\text{Drying Line Emissions}}{\text{per Month}} \right) - \left(\frac{\text{Warehouse Degassing Emissions}}{\text{per Month}} \right) \right] \times (2\%) = \left(\frac{\text{RTO Emissions}}{\text{per month}} \right)$$

Butane emissions from both the drying line and super sack shall be defined in the malfunction abatement plan. Emissions from the warehouse super sacks, the drying lines, and fugitives from both ETPU production lines equals the summation of equations 1, 2, 3 listed above. Total VOC emissions in pounds per month equals the summation of equations 1, 2, 3, and 4 listed above. All records shall be made available to the Department upon request. **(R 336.1205, R 336.1225, R 336.1702(a))**

12. The permittee shall monitor and record, in a satisfactory manner, the condensation column temperature on a continuous basis. Monitoring and recording of data “on a continuous basis” is defined as an instantaneous data point recorded at least once every 15 minutes. The permittee may record average values (rolling or block) for 15 minute or shorter periods calculated from all measured data values during each period.¹
(R 336.1205, R 336.1225, R 336.1910)
13. The permittee shall keep, in a satisfactory manner, monthly records for FGETPU of all instances where the butane collection and hold tank or the condensation system fails to capture butane as designed, whether due to malfunction, operator error, or any other cause. The record for each instance shall include an estimate of the amount of butane that would have been recovered if the failure had not occurred. The permittee shall make all records available to the Department upon request. **(R 336.1205, R 336.1225, R 336.1910)**

VII. REPORTING

NA

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENT(S)

1. If the RTO is not installed and operating by December 31, 2018, this permit, No. 88-17 will become void.
(R 336.1205, R 336.1225, R 336.1702(a))

Footnote:

¹This condition will become applicable only after the completion of all ETPU operations upgrades and the installation and operation of all emission capture and control systems, including the RTO. Prior to this time, operation of FGETPU will be consistent with the existing conditions within MI-ROP-N7238-2011.