

**MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
AIR QUALITY DIVISION**

May 19, 2023

PERMIT TO INSTALL
35-07D

ISSUED TO
Harbor Foam, Inc.

LOCATED AT
2950 Prairie Street SW
Grandville, Michigan 49418

IN THE COUNTY OF
Kent

STATE REGISTRATION NUMBER
N7754

The Air Quality Division has approved this Permit to Install, pursuant to the delegation of authority from the Michigan Department of Environment, Great Lakes, and Energy. 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: March 20, 2023	
DATE PERMIT TO INSTALL APPROVED: May 19, 2023	SIGNATURE:
DATE PERMIT VOIDED:	SIGNATURE:
DATE PERMIT REVOKED:	SIGNATURE:

PERMIT TO INSTALL

Table of Contents

COMMON ACRONYMS2
POLLUTANT / MEASUREMENT ABBREVIATIONS.....3
GENERAL CONDITIONS4
EMISSION UNIT SPECIAL CONDITIONS.....6
 EMISSION UNIT SUMMARY TABLE6
 EU35-07C7
 EUPLASTICRESIN 10
FGFACILITY CONDITIONS..... 15
APPENDIX A – Emission Calculations for EUPLASTICRESIN 17

COMMON ACRONYMS

AQD	Air Quality Division
BACT	Best Available Control Technology
CAA	Clean Air Act
CAM	Compliance Assurance Monitoring
CEMS	Continuous Emission Monitoring System
CFR	Code of Federal Regulations
COMS	Continuous Opacity Monitoring System
Department/department/EGLE	Michigan Department of Environment, Great Lakes, and Energy
EU	Emission Unit
FG	Flexible Group
GACS	Gallons of Applied Coating Solids
GC	General Condition
GHGs	Greenhouse Gases
HVLP	High Volume Low Pressure*
ID	Identification
IRSL	Initial Risk Screening Level
ITSL	Initial Threshold Screening Level
LAER	Lowest Achievable Emission Rate
MACT	Maximum Achievable Control Technology
MAERS	Michigan Air Emissions Reporting System
MAP	Malfunction Abatement Plan
MSDS	Material Safety Data Sheet
NA	Not Applicable
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standard for Hazardous Air Pollutants
NSPS	New Source Performance Standards
NSR	New Source Review
PS	Performance Specification
PSD	Prevention of Significant Deterioration
PTE	Permanent Total Enclosure
PTI	Permit to Install
RACT	Reasonable Available Control Technology
ROP	Renewable Operating Permit
SC	Special Condition
SCR	Selective Catalytic Reduction
SNCR	Selective Non-Catalytic Reduction
SRN	State Registration Number
TBD	To Be Determined
TEQ	Toxicity Equivalence Quotient
USEPA/EPA	United States Environmental Protection Agency
VE	Visible Emissions

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

POLLUTANT / MEASUREMENT ABBREVIATIONS

acfm	Actual cubic feet per minute
BTU	British Thermal Unit
°C	Degrees Celsius
CO	Carbon Monoxide
CO ₂ e	Carbon Dioxide Equivalent
dscf	Dry standard cubic foot
dscm	Dry standard cubic meter
°F	Degrees Fahrenheit
gr	Grains
HAP	Hazardous Air Pollutant
Hg	Mercury
hr	Hour
HP	Horsepower
H ₂ S	Hydrogen Sulfide
kW	Kilowatt
lb	Pound
m	Meter
mg	Milligram
mm	Millimeter
MM	Million
MW	Megawatts
NMOC	Non-Methane Organic Compounds
NO _x	Oxides of Nitrogen
ng	Nanogram
PM	Particulate Matter
PM10	Particulate Matter equal to or less than 10 microns in diameter
PM2.5	Particulate Matter equal to or less than 2.5 microns in diameter
pph	Pounds per hour
ppm	Parts per million
ppmv	Parts per million by volume
ppmw	Parts per million by weight
psia	Pounds per square inch absolute
psig	Pounds per square inch gauge
scf	Standard cubic feet
sec	Seconds
SO ₂	Sulfur Dioxide
TAC	Toxic Air Contaminant
Temp	Temperature
THC	Total Hydrocarbons
tpy	Tons per year
µg	Microgram
µm	Micrometer or Micron
VOC	Volatile Organic Compounds
yr	Year

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 Environment, Great Lakes, and Energy, 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 Rule 210 (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 Rule 219 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 Rule 219 and shall be sent to the District Supervisor, Air Quality Division, Michigan Department of Environment, Great Lakes, and Energy. **(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 Rule 301, 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 Rule 303 (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 Rule 370(2). **(R 336.1370)**
13. The Department may require the permittee to conduct acceptable performance tests, at the permittee's expense, in accordance with Rule 1001 and Rule 1003, under any of the conditions listed in Rule 1001. **(R 336.2001)**

EMISSION UNIT 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 (Including Process Equipment & Control Device(s))	Installation Date / Modification Date	Flexible Group ID
EU35-07C	Hirsch 9000 resin pre-expander, canvas holding bags, Hirsch adjustable wall mold, hot room, wire cutting operations, embossing area, and other associated operations to produce expanded polystyrene (EPS) foam. This emission unit is for operation of the associated equipment before installation of the non-fugitive enclosure (NFE) and regenerative thermal oxidizer (RTO).	June 2007 / August 2021	NA
EUPLASTICRESIN	Expanded polystyrene foam operations including a Hirsch 9000 resin pre-expander, Hirsch 18000 resin pre-expander, pre-puff storage (canvas holding bags), molds, hot room, wire cutting operations, embossing area, regrind operations and other associated operations to produce expanded polystyrene (EPS) foam. Pre-expanders and pre-puff storage are controlled by a non-fugitive enclosure (NFE) and regenerative thermal oxidizer (RTO). This emission unit is for operation of the associated equipment after installation of the NFE and RTO.	June 2007 / August 2021 / TBD	NA

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 336.1291.

EU35-07C
EMISSION UNIT CONDITIONS

DESCRIPTION

Hirsch 9000 resin pre-expander, canvas holding bags, Hirsch adjustable wall mold, hot room, wire cutting operations, embossing area, and other associated operations to produce expanded polystyrene (EPS) foam. This emission unit is for operation of the associated equipment before installation of the non-fugitive enclosure (NFE) and regenerative thermal oxidizer (RTO).

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. VOC	139.8 tpy	12-month rolling time period as determined at the end of each calendar month. Effective through August 31, 2021.	EU35-07C	SC V.1, SC VI.1, SC VI.6	R 336.1702(a)
2. VOC	164.8 tpy	12-month rolling time period as determined at the end of each calendar month. Effective from September 1, 2021, through February 28, 2022.	EU35-07C	SC V.1, SC VI.1, SC VI.6	R 336.1702(a)
3. VOC	159.8 tpy*	12-month time period effective from April 1, 2021, through March 31, 2022.	EU35-07C	SC V.1, SC VI.1, SC VI.6	R 336.1702(a)
4. VOC	154.8 tpy*	12-month time period effective from May 1, 2021, through April 30, 2022.	EU35-07C	SC V.1, SC VI.1, SC VI.6	R 336.1702(a)
5. VOC	149.8 tpy*	12-month time period effective from June 1, 2021, through May 31, 2022.	EU35-07C	SC V.1, SC VI.1, SC VI.6	R 336.1702(a)
6. VOC	144.8 tpy*	12-month time period effective from July 1, 2021, through June 30, 2022.	EU35-07C	SC V.1, SC VI.1, SC VI.6	R 336.1702(a)
7. VOC	139.8 tpy	12-month rolling time period as determined at the end of each calendar month. Effective beginning July 1, 2022.	EU35-07C	SC V.1, SC VI.1, SC VI.6	R 336.1702(a)

* SC I.3, I.4, I.5 and I.6 are monthly step downs in the emission limit to transition from the SC I.2 emission limit to the SC I.7 emission limit.

II. MATERIAL LIMIT(S)

1. The VOC content of the EPS beads used in EU35-07C shall not exceed 6.3 pounds per 100 pounds of EPS beads processed, based upon a 12-month rolling time period as determined at the end of each month. **(R 336.1225, R 336.1702(a))**

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

V. TESTING/SAMPLING

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

1. Upon request of the AQD District Supervisor, the permittee shall verify the VOC content, as shipped, of product from EU35-07C, by testing at owner's expense, in accordance with Department requirements. The samples shall represent the full range of VOC content of EPS beads used in EU35-07C and shall support an estimate of the production-weighted average VOC content of product from EU35-07C. The permittee shall use sampling and analysis methods approved by the AQD District Supervisor. **(R 336.1702(a))**

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 336.1225, R 336.1702)**
2. The permittee shall keep, in a satisfactory manner, a separate record of the pounds of VOC per 100 pounds of EPS beads for each shipment of EPS beads received. All records shall be kept on file and made available to the Department upon request. **(R 336.1225, R 336.1702(a))**
3. The permittee shall keep, in a satisfactory manner, a separate record of the pounds of scrap material processed by the grinder. All records shall be kept on file and made available to the Department upon request. **(R 336.1225, R 336.1702(a))**
4. The permittee shall keep, in a satisfactory manner, monthly and 12-month rolling time period records of the throughput of EPS beads at the pre-expander portion of EU35-07C. All records shall be kept on file and made available to the Department upon request. **(R 336.1702(a))**
5. The permittee shall keep, in a satisfactory manner, records of the VOC content, as shipped, of product from EU35-07C. All records of VOC content determinations shall be kept on file and made available to the Department upon request. **(R 336.1702(a))**
6. The permittee shall keep, in a satisfactory manner, monthly and 12-month rolling time period records of the VOC emission rate from EU35-07C using the method detailed in Appendix A. All records shall be kept on file and made available to the Department upon request. **(R 336.1702(a))**

VII. REPORTING

NA

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Diameter / Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SV-1	24	43	R 336.1225, R 336.1901, R 336.2803, R 336.2804, 40 CFR 52.21(c) & (d)
2. SV-2	16	41	R 336.1225, R 336.1901, R 336.2803, R 336.2804, 40 CFR 52.21(c) & (d)

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with the requirements of EU35-07C until the NFE and RTO have been installed and any emissions from the pre-expanders or pre-puff storage are exhausted to the control equipment. Once emissions from the pre-expanders and pre-puff storage are captured by the NFE and controlled by the RTO, the requirements in EU35-07C are no longer applicable. **(R 336.1201)**

Footnotes:

¹ This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

**EUPLASTICRESIN
EMISSION UNIT CONDITIONS**

DESCRIPTION

Expanded polystyrene foam operations including a Hirsch 9000 resin pre-expander, Hirsch 18000 resin pre-expander, pre-puff storage (canvas holding bags), molds, hot room, wire cutting operations, embossing area, regrind operations and other associated operations to produce expanded polystyrene (EPS) foam. Pre-expanders and pre-puff storage are controlled by a non-fugitive enclosure (NFE) and regenerative thermal oxidizer (RTO). This emission unit is for operation of the associated equipment after installation of the NFE and RTO.

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT

The pre-expanders and pre-puff storage are controlled by a non-fugitive enclosure (NFE) and regenerative thermal oxidizer (RTO).

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. VOC	223.5 tpy**	12-month rolling time period as determined at the end of each calendar month.	EUPLASTICRESIN	SC V.1, V.2, V.3, V.4, V.5, VI.2, VI.3, VI.4, VI.5.	R 336.1205, R 336.1702(a)
** 12-month rolling time period emission calculations for EUPLASTICRESIN shall include prior emissions from associated equipment in EU35-07C.					

II. MATERIAL LIMIT(S)

- The VOC content of the EPS beads used in EUPLASTICRESIN, based on the monthly average bead VOC content, shall not exceed 6.3 pounds per 100 pounds of EPS beads processed. **(R 336.1205, R 336.1225, R 336.1702(a))**
- The permittee shall not exceed the material usage limits in the following table:

Material	Annual Usage Limit (lbs)	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
a) EPS beads used for molded foam density of 1.0 lbs/ft ³	5,000,000	12-month rolling time period as determined at the end of each calendar month	EUPLASTICRESIN	SC VI.2	R 336.1205(1)(a) & (3)
b) EPS beads used for molded foam density of 1.25 lbs/ft ³	4,000,000	12-month rolling time period as determined at the end of each calendar month	EUPLASTICRESIN	SC VI.2	R 336.1205(1)(a) & (3)
c) EPS beads used for molded foam density of 1.5 lbs/ft ³	12,000,000	12-month rolling time period as determined at the end of each calendar month	EUPLASTICRESIN	SC VI.2	R 336.1205(1)(a) & (3)

Material	Annual Usage Limit (lbs)	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
d) EPS beads used for molded foam density of 2.0 lbs/ft ³	12,000,000	12-month rolling time period as determined at the end of each calendar month	EUPLASTICRESIN	SC VI.2	R 336.1205(1)(a) & (3)
e) EPS beads used for molded foam density of 3.0 lbs/ft ³	2,000,000	12-month rolling time period as determined at the end of each calendar month	EUPLASTICRESIN	SC VI.2	R 336.1205(1)(a) & (3)

3. The permittee shall not regrind more than 2,000,000 pounds of EPS foam per 12-month rolling time period as determined at the end of each calendar month. **(R 336.1205(1)(a) & (3))**

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall not operate EUPLASTICRESIN unless a malfunction abatement plan (MAP) as described in Rule 911(2), is implemented and maintained.

- a) A complete preventative maintenance program including identification of the supervisory personnel responsible for overseeing the inspection, maintenance, and repair of air-cleaning devices, a description of the items or conditions that shall be inspected, the frequency of the inspections or repairs, and an identification of the major replacement parts that shall be maintained in inventory for quick replacement.
- b) An identification of the source and air-cleaning device operating variables that shall be monitored to detect a malfunction or failure, the normal operating range of these variables, records of maintenance activities performed, records of calibration of the RTO temperature monitoring device, and a description of the method of monitoring or surveillance procedures.
- c) A description of the corrective procedures or operational changes that shall be taken in the event of a malfunction or failure to achieve compliance with the applicable emission limits.

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 AQD District Supervisor. 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 336.1205, R 336.1225, R 336.1702(a), R 336.1910, R 336.1911)**

2. The permittee shall not operate the pre-expanders or pre-puff storage unless the NFE is installed, maintained, and operated in a satisfactory manner. Satisfactory operation requires that the NFE is operating at a pressure lower than all adjacent areas, so that air flows into the NFE through all natural draft openings (NDOs). NDO is defined as any opening that is not connected to a duct in which a fan or blower is installed. **(R 336.1205, R 336.1702(a))**

3. The permittee shall not operate the pre-expanders or pre-puff storage unless the NFE is vented to the RTO and the RTO is installed, maintained, and operated in a satisfactory manner. Satisfactory operation includes maintaining a minimum VOC destruction efficiency in the regenerative thermal oxidizer of 98.0 percent by weight and a minimum combustion temperature of 1500°F. **(R 336.1205, R 336.1225, R 336.1702(a), R 336.1910)**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall install, calibrate, maintain, and operate in a satisfactory manner a temperature monitoring device in the combustion chamber of the RTO to monitor and record the temperature on a continuous basis. **(R 336.1205, R 336.1225, R 336.1702(a), R 336.1910)**

V. TESTING/SAMPLING

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

1. Upon request of the AQD District Supervisor, the permittee shall verify the VOC content, as shipped, of product from EUPLASTICRESIN, by testing at owner's expense, in accordance with Department requirements. The samples shall represent the full range of VOC content of EPS beads used in EUPLASTICRESIN and shall support an estimate of the production-weighted average VOC content of product from EUPLASTICRESIN. The permittee shall use sampling and analysis methods approved by the AQD District Supervisor. **(R 336.1205, R 336.1702(a))**
2. Within 180 days after commencement of trial operation of the RTO, the permittee shall verify the VOC emission rates from the RTO and the RTO destruction efficiency, 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 and must meet the requirements of the federal Clean Air Act, all applicable state and federal rules and regulations, and be within the authority of the AQD to make the change. 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)**
3. Within 180 days after commencement of trial operation of the RTO, and annually thereafter, the permittee shall verify that the direction of air flow at each natural draft opening (NDO) is into the NFE, using a smoke test (i.e., smoke bomb, smoke tube) or an approved alternate method. The permittee shall notify the AQD District Supervisor in writing at least 15 days before the test is scheduled. No less than 60 days prior to testing, the permittee shall submit a complete test plan to the AQD. The AQD must approve the final plan prior to testing. Verification of air flow direction includes the submittal of a complete report of the test results to the AQD District Supervisor within 30 days following the date of the test. After two consecutive tests demonstrate that the direction of air flow at each NDO is into the non-fugitive enclosure, the permittee may submit a request for a change in the testing frequency to the AQD District Supervisor for review and approval. **(R 336.1205, R 336.1225, R 336.1702(a))**
4. Within 180 days after commencement of the trial operation of the RTO, and annually thereafter, the permittee shall determine the weight fraction of VOC in the raw beads that is emitted from the controlled portion of EUPLASTICRESIN (pre-expansion and pre-puff storage), and the weight fraction of VOC in the raw beads that is emitted from the uncontrolled portion of EUPLASTICRESIN (molding, cutting and storage). These VOC emission rates shall be determined for each density of foam produced (i.e. 1.0 lbs/ft³, 1.25 lbs/ft³, 1.5 lbs/ft³, 2.0 lbs/ft³, and 3.0 lbs/ft³). The permittee shall use sampling and analysis methods approved by the AQD District Supervisor. **(R 336.1205, R 336.1225, R 336.1702(a))**
5. Within 180 days after commencement of the trial operation of the RTO, and annually thereafter, the permittee shall determine the weight fraction of VOC in the foam that is used in the regrind process; and the weight fraction of the VOC in the final compressed product from the regrind foam. The permittee shall use sampling and analysis methods approved by the AQD District Supervisor. **(R 336.1205, R 336.1225, R 336.1702(a))**

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)**
2. The permittee shall keep, in a satisfactory manner, records of the following:
 - a) A separate record of each shipment of EPS beads received which includes the total weight (in pounds) of each shipment of EPS beads and the VOC content (in pounds of VOC per 100 pounds of EPS beads) for each shipment of EPS beads.
 - b) Monthly records of the amount of each shipment of EPS beads processed which includes the weight (in pounds) of each batch processed, and the VOC content (in pounds of VOC per 100 pounds of EPS beads) for each batch processed.
 - c) Monthly records of the average VOC content (in pounds of VOC per 100 pounds of EPS beads) of the EPS beads processed that month.

The permittee shall keep all records on file at the facility, in a format acceptable to the AQD District Supervisor, and make them available to the Department upon request. **(R 336.1205, R 336.1225, R 336.1702(a))**

3. The permittee shall keep, in a satisfactory manner, monthly and 12-month rolling time period records of the throughput of the following:
 - d) The amount (in pounds) of EPS beads used to produce foam with a final density of 1.0 lbs/ft³.
 - e) The amount (in pounds) of EPS beads used to produce foam with a final density of 1.25 lbs/ft³.
 - f) The amount (in pounds) of EPS beads used to produce foam with a final density of 1.50 lbs/ft³.
 - g) The amount (in pounds) of EPS beads used to produce foam with a final density of 2.0 lbs/ft³.
 - h) The amount (in pounds) of EPS beads used to produce foam with a final density of 3.0 lbs/ft³.
 - i) The amount (in pounds) of scrap material processed by the grinder.

The permittee shall keep all records on file at the facility, in a format acceptable to the AQD District Supervisor, and make them available to the Department upon request. **(R 336.1205, R 336.1225, R 336.1702(a))**

4. The permittee shall keep, in a satisfactory manner, monthly and 12-month rolling time period records of the VOC emission rate from EUPLASTICRESIN using the method detailed in Appendix A. The permittee shall keep all records on file at the facility, in a format acceptable to the AQD District Supervisor, and make them available to the Department upon request. **(R 336.1205, R 336.1702(a))**
5. The permittee shall monitor and record, in a satisfactory manner, the regenerative thermal oxidizer combustion chamber temperature on a continuous basis in a manner and with instrumentation acceptable to the Air Quality Division. Temperature data recording shall consist of measurements made at equally spaced intervals, not to exceed 15 minutes per interval. The permittee shall keep all records on file at the facility, in a format acceptable to the AQD District Supervisor, and make them available to the Department upon request. **(R 336.1205, R 336.1225, R 336.1702(a), R 336.1910)**

VII. REPORTING

1. Within 30 days after completion of the installation, construction, reconstruction, relocation, or modification authorized by this Permit to Install, the permittee or the authorized agent pursuant to Rule 204, shall notify the AQD District Supervisor, in writing, of the completion of the activity. Completion of the installation, construction, reconstruction, relocation, or modification is considered to occur not later than commencement of trial operation of the RTO. **(R 336.1201(7)(a))**

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Diameter / Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SV-RTO	34	45	R 336.1225, 40 CFR 52.21(c) & (d)

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with the requirements listed in EUPLASTICRESIN after emissions from the pre-expanders and pre-puff storage are captured by the NFE and controlled by the RTO. **(R 336.1205, R 336.1225, R 336.1702)**

Footnotes:

¹ This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

FGFACILITY CONDITIONS

DESCRIPTION: The following conditions apply source-wide to all process equipment including equipment covered by other permits, grand-fathered equipment and exempt equipment.

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. VOCs	Less than 224 tpy	12-month rolling time period as determined at the end of each calendar month	FGFACILITY	SC VI.2	R 336.1205(3)

* For the first month following permit issuance, and continuing for the first 12 calendar months, this limit applies to the cumulative total VOC emissions. Thereafter, the limit shall become a 12-month rolling limit.

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

V. TESTING/SAMPLING

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

NA

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(3))**
2. The permittee shall calculate the VOC emission rate from FGFACILITY monthly, for the preceding 12-month rolling time period, using a method acceptable to the AQD District Supervisor. The permittee shall keep all records on file at the facility and make them available to the Department upon request. **(R 336.1205)**

VII. REPORTING

NA

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENT(S)

Footnotes:

¹ This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

APPENDIX A – Emission Calculations for EUPLASTICRESIN

- I. Emission calculations shall be performed using the emissions profile based on the VOC content of the EPS bead used and the final product density of the foam produced. For each lot of EPS beads (*i*) used in the processes, the VOC emissions for the calendar period shall be calculated as follows:

$$E_i = \frac{PC}{100} \left[\left(U_i \times \frac{V_i}{100} \right) - \left(U_i \times \frac{V_i}{100} \times \frac{CE \times DE}{100} \right) \right] + \frac{PF}{100} \left(U_i \times \frac{V_i}{100} \right)$$

where:

- E_i* = VOC emissions (in pounds) due to use of EPS beads from lot *i* during the calendar period.
- U_i* = EPS beads (in pounds) from lot *i* used during the calendar period.
- V_i* = VOC content of EPS beads (in pounds per 100 pounds of beads) from lot *i*.
- PC* = Percent Controlled: weight fraction (percent) of VOC in the raw beads that is emitted during pre-expansion and pre-puff storage; and controlled by the NFE and RTO. Based upon most recent test results (EUPLASTICRESIN SC V.4).
- PF* = Percent Fugitive: weight fraction (percent) of VOC in the raw beads that is emitted during molding, cutting and storage. Based upon most recent test results (EUPLASTICRESIN SC V.4).
- PR* = Percent Retained: weight fraction (percent) of the VOC in the raw beads that remains in the foam product. Based upon most recent test results (EUPLASTICRESIN SC V.4).
- CE* = Capture efficiency of the NFE (percent). The default value for this shall be 90.0 percent.
- DE* = VOC destruction efficiency (percent of VOC in the inlet to the RTO that is destroyed in the RTO) of the thermal oxidizer. The default value for this shall be 98.0 percent; the actual tested value may be used with the approval of the AQD District Supervisor.

- II. The VOC emissions for the calendar period from the grinding of scrap material shall be calculated as follows:

$$E_i(scrap) = U_i \left(\frac{V_s - V_r}{100} \right)$$

where:

- E_i(scrap)* = VOC emissions (in pounds) due to grinding of EPS foam from lot *i* and producing a recycled product during the calendar period, in pounds.
- U_i* = EPS beads (in pounds) from lot *i* used during the calendar period.
- V_s* = VOC content of EPS foam scrap (in pounds per 100 pounds of beads) from lot *i*. Based upon most recent test results (EUPLASTICRESIN SC V.5).
- V_r* = VOC content of recycled product EPS foam scrap (in pounds per 100 pounds of beads) from lot *i*. Based upon most recent test results (EUPLASTICRESIN SC V.5).

- III. The total VOC emission for the calendar period due to the use in the processes of all lots of EPS beads shall be calculated as follows:

$$T = \sum_i E_i + \sum_i E_i(scrap)$$

where:

- T* = Total VOC emissions for all lots of beads processed during the calendar period, in pounds.
- E_i* = VOC emissions (in pounds) due to use of EPS beads from lot *i* during the calendar period, calculated as above.
- E_i(scrap)* = VOC emissions (in pounds) due to grinding of EPS foam from lot *i* and producing a recycled product during the calendar period, in pounds, calculated as above.

NOTE: Appendix A shows emission calculations to be used for EUPLASTICRESIN. Emissions from EU35-07C shall use the emission calculations show in Appendix 7 of MI-ROP-7754-2018.