

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

October 14, 2016

PERMIT TO INSTALL
238-94B

ISSUED TO
Arvron, Inc.

LOCATED AT
4720 Clay Avenue SW
Grand Rapids, Michigan

IN THE COUNTY OF
Kent

STATE REGISTRATION NUMBER
N5296

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: September 9, 2016	
DATE PERMIT TO INSTALL APPROVED: October 14, 2016	SIGNATURE:
DATE PERMIT VOIDED:	SIGNATURE:
DATE PERMIT REVOKED:	SIGNATURE:

PERMIT TO INSTALL

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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 ₂ e	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	PM10	Particulate Matter equal to or less than 10 microns in diameter
NSPS	New Source Performance Standards	PM2.5	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
EU-PE-1	Existing Hirsch Model 12000 expandable polystyrene (EPS) pre-expander, including receiving bin and fluidized bed dryer, that exhausts to the regenerative thermal oxidizer (RTO)		FG-EPS
EU-PE-2	New Hirsch Model 14000 EPS pre-expander, including receiving bin and fluidized bed dryer, that exhausts to the RTO		FG-EPS
EU-StorageBins	Permeable storage bins for dried pre-puff beads with emissions exhausted to the RTO		FG-EPS
EU-M-1	Existing Hirsch EPS vacuum block mold with vacuum discharge exhausted to the RTO		FG-EPS
EU-M-2	New EPS vacuum block mold with vacuum discharge exhausted to the RTO		FG-EPS
EU-M-3	New EPS vacuum block mold with vacuum discharge exhausted to the RTO		FG-EPS
EU-BlockDryCure	Heated storage to dry and cure molded blocks		FG-EPS
EU-FinishOps	Area for cutting, packaging, and shipping activities		FG-EPS
EU-Boiler1	Existing natural gas-fired Cleaver Brooks boiler rated at 6.277 MMBTU/hour heat input		FG-EPS
EU-Boiler2	New natural gas-fired boiler rated at less than 10 MMBTU/hour heat input		FG-EPS
EU-Engine1	Natural gas-fired reciprocating emergency generator engine subject to 40 CFR Part 60 Subpart JJJJ and 40 CFR Part 63 Subpart ZZZZ		FGFACILITY
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.			

The following conditions apply to:
EU-Engine1

DESCRIPTION: Natural gas-fired reciprocating emergency generator engine subject to 40 CFR Part 60 Subpart JJJJ and 40 CFR Part 63 Subpart ZZZZ

Flexible Group ID: FGFACILITY

POLLUTION CONTROL EQUIPMENT:

I. EMISSION LIMITS

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. NO _x + HC ^A	10 grams per HP-hr	Test protocol*	EU-Engine1	SC VI.2	40 CFR 60.4233(d)
2. CO	387 grams per HP-hr	Test protocol*	EU-Engine1	SC VI.2	40 CFR 60.4233(d)

^A NO_x + HC as presented in Table 1 to 40 CFR Part 60 Subpart JJJJ.
* Test protocol shall specify averaging time.

II. MATERIAL LIMITS

1. The permittee shall burn only pipeline quality natural gas in EU-Engine1. **(R 336.1224, R 336.1225, 40 CFR 52.21(c)&(d))**

III. PROCESS/OPERATIONAL RESTRICTIONS

1. The permittee shall not operate EU-Engine1 for more than 1,000 hours per year on a 12-month rolling time period basis as determined at the end of each calendar month, including the hours as specified in SC III.2. **(R 336.1205(1)(a), R 336.1702(b), 40 CFR 52.21(c)&(d))**
2. The permittee may operate EU-Engine1 for no more than 100 hours per calendar year for the purpose of necessary maintenance checks and readiness testing, provided that the tests are recommended by Federal, State, or local government, the manufacturer, the vendor, or the insurance company associated with the engine. The permittee may petition the Department for approval of additional hours to be used for maintenance checks and readiness testing. A petition is not required if the owner or operator maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency internal combustion engines beyond 100 hours per calendar year. EU-Engine1 may operate up to 50 hours per calendar year in non-emergency situations, but those 50 hours are counted towards the 100 hours per calendar year provided for maintenance and testing. The 50 hours per calendar year for non-emergency situations cannot be used for peak shaving or to generate income for a facility to supply non-emergency power as part of a financial arrangement with another entity. **(40 CFR 60.4243(d))**

3. If the permittee purchased a certified engine, according to procedures specified in 40 CFR Part 60 Subpart JJJJ, for the same model year, the permittee shall meet the following requirements for EU-Engine1:
 - a. Operate and maintain EU-Engine1 and control device according to the manufacturer's emission-related written instructions,
 - b. The permittee may only change those settings that are permitted by the manufacturer. If the permittee does not operate and maintain the engine and control device according to the manufacturer's emission-related written instructions, the engine must demonstrate compliance as specified in SC III.4, and
 - c. Meet the requirements as specified in 40 CFR Part 89, as it applies to the permittee.
(40 CFR 60.4243(a))
4. If the permittee purchased a non-certified engine or a certified engine operating in a non-certified manner, the permittee shall keep a maintenance plan for each such engine and shall, to the extent practicable, maintain and operate each such engine in a manner consistent with good air pollution control practice for minimizing emissions. **(40 CFR 60.4243(a)(2)(ii))**

IV. DESIGN/EQUIPMENT PARAMETERS

1. The permittee shall equip and maintain EU-Engine1 with a non-resettable hour meter to track the operating hours. **(R 336.1205(1)(a), 40 CFR 60.4237(b))**
2. The nameplate capacity of EU-Engine1 shall not exceed 20 kilowatts, as certified by the equipment manufacturer. **(R 336.1205(1)(a), R 336.1225(2), 40 CFR 60.4231, 40 CFR 89.112(a))**

V. TESTING/SAMPLING

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

1. The permittee shall conduct an initial performance test for EU-Engine1 within one year after startup of the engine to demonstrate compliance with the emission limits in 40 CFR 60.4233 unless the engine has been certified by the manufacturer and the permittee maintains the engine as required by 40 CFR Part 60 Subpart JJJJ. If a performance test is required, the performance tests shall be conducted according to 40 CFR 60.4244. No less than 30 days prior to testing, a complete test plan shall be submitted to the AQD. The final plan must be approved by the AQD prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. **(40 CFR 60.4243, 40 CFR 60.4244, 40 CFR Part 60 Subpart JJJJ)**

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 last day of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition. **(R 336.1205(1)(a), 40 CFR 52.21(c)&(d))**
2. The permittee shall keep, in a satisfactory manner, records of testing required in SC V.1 or manufacturer certification documentation indicating that EU-Engine1 meets the applicable emission limitations contained in the federal Standards of Performance for New Stationary Sources, 40 CFR Part 60 Subpart JJJJ. If EU-Engine1 becomes uncertified, then the permittee must also keep records of a maintenance plan and maintenance activities. The permittee shall keep all records on file at the facility and make them available to the Department upon request. **(40 CFR 60.4243)**
3. The permittee shall monitor and record the total hours of operation and the hours of operation during non-emergencies for EU-Engine1, on a monthly and 12-month rolling time period basis, in a manner acceptable to the AQD District Supervisor. The permittee shall document how many hours are spent for emergency operation of EU-Engine1, including what classified the operation as emergency and how many hours are spent for non-emergency operation. **(R 336.1205(1)(a), 40 CFR 60.4243)**

VII. REPORTING

1. The permittee shall provide written notification of the actual date of initial startup of EU-Engine1 to comply with the federal Standards of Performance for New Stationary Sources, 40 CFR 60.7. The permittee shall submit this notification to the AQD District Supervisor within the time frames specified in 40 CFR 60.7. **(40 CFR 60.7)**

VIII. STACK/VENT RESTRICTIONS

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-Engine1	6	1	40 CFR 52.21(c)&(d)

IX. OTHER REQUIREMENTS

1. The permittee shall comply with all provisions of the federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60 Subparts A and JJJJ, as they apply to EU-Engine1. **(40 CFR Part 60 Subparts A & JJJJ)**
2. The permittee shall comply with all provisions of the National Emission Standards for Hazardous Air Pollutants as specified in 40 CFR Part 63 Subparts A and ZZZZ, as they apply to EU-Engine1. **(40 CFR Part 63 Subparts A & ZZZZ)**

Footnotes:

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

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
FG-EPS	All EPS bead processing operations.	EU-PE-1, EU-PE-2, EU-StorageBins, EU-M-1, EU-M-2, EU-M-3, EU-BlockDryCure, EU-FinishOps, EU-Boiler1, EU-Boiler2
FGFACILITY	All process equipment source-wide including equipment covered by other permits, grand-fathered equipment and exempt equipment.	

The following conditions apply to:
FG-EPS

DESCRIPTION: All EPS bead processing operations.

Emission Units: EU-PE-1, EU-PE-2, EU-StorageBins, EU-M-1, EU-M-2, EU-M-3, EU-BlockDryCure, EU-FinishOps, EU-Boiler1, EU-Boiler2

POLLUTION CONTROL EQUIPMENT:

Regenerative thermal oxidizer (RTO) designed and operated to achieve 95% destruction of VOC emissions.

I. EMISSION LIMITS

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. n-Pentane	457.5 lbs per eight hours ¹	Each shift of operation ^A	FG-EPS	SC VI.4	R 336.1225
^A "Each shift" is presumed to be an eight-hour period.					

II. MATERIAL LIMITS

NA

III. PROCESS/OPERATIONAL RESTRICTIONS

1. The permittee shall maintain a minimum VOC destruction efficiency of 95 percent across the RTO. **(R 336.1702(a), R 336.1910)**

IV. DESIGN/EQUIPMENT PARAMETERS

1. Following installation of EU-PE-2, the permittee shall not operate EU-PE-1, EU-PE-2, EU-StorageBins, EU-M-1, EU-M-2, or EU-M-3 unless the RTO is installed, maintained, and operated in a satisfactory manner. Satisfactory operation of the RTO includes maintaining a minimum temperature in the combustion zone as described below. **(R 336.1225, R 336.1702(a), R 336.1910)**
 - a. Until stack testing demonstrating compliance with SC III.1 has been completed, the permittee shall maintain a minimum temperature in the combustion zone no lower than the temperature recommended by the RTO manufacturer for attaining a VOC destruction efficiency of 95 percent or greater.
 - b. After stack testing demonstrating compliance with SC III.1 has been completed, the permittee shall maintain a minimum temperature in the combustion zone no lower than the lowest of the following:
 - i. The temperature demonstrated in the most recent stack test demonstrating compliance with SC III.1
 - ii. 1400 degrees Fahrenheit
 - iii. The temperature recommended by the RTO manufacturer for attaining a VOC destruction efficiency of 95 percent or greater
 - iv. A temperature approved by the AQD District Supervisor, based on stack testing demonstrating compliance with SC III.1
2. The permittee shall equip and maintain the RTO with a combustion zone temperature indicator. **(R 336.1910)**

3. Following installation of EU-PE-2, the permittee shall not operate EU-PE-1, EU-PE-2, EU-StorageBins, EU-M-1, EU-M-2, or EU-M-3 unless the VOC emission capture system to direct emissions to the RTO is installed, maintained, and operated in a satisfactory manner. Satisfactory operation of the VOC emission capture system includes both of the following. **(R 336.1225, R 336.1702(a), R 336.1910)**
 - a. Complete capture of emissions from EU-PE-1, EU-PE-2, and EU-StorageBins
 - b. All mechanical exhausts from EU-M-1, EU-M-2, and EU-M-3 shall be ducted to the RTO.

V. TESTING/SAMPLING

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

1. Within 180 days after commencement of trial operation of EU-PE-2, the permittee shall determine VOC emission rates from FG-RTO and verify the VOC destruction efficiency of the RTO by testing at owner's expense, in accordance with Department requirements. 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. Verification of emission rates includes the submittal of 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 336.1225, 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 records in a format acceptable to the AQD District Supervisor by the last day of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition. **(R 336.1702(a))**
2. The permittee shall monitor and record, in a satisfactory manner, the temperature in the combustion chamber of the RTO, on a continuous basis, during operation of EU-PE-1, EU-PE-2, EU-StorageBins, EU-M-1, EU-M-2, or EU-M-3. 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 and calculations on file at the facility and make them available to the Department upon request. **(R 336.1910)**
3. The permittee shall keep a record of the amount of material processed in all pre-expanders combined for each shift EU-PE-1 or EU-PE-2 operates. The permittee shall keep the records on file at the facility in a format acceptable to the AQD District Supervisor, and make them available to the Department upon request.¹ **(R 336.1225)**
4. The permittee shall keep a record of the following information for EU-PE-1 and EU-PE-2 combined for each shift EU-PE-1 or EU-PE-2 operates.
 - a. Pounds of each type of EPS bead processed.
 - b. n-Pentane content of each type of bead processed as fresh pre-puff beads (as received), as aged pre-puff beads (ready to be processed in EU-M-1, EU-M-2, or EU-M-3), and as foam product (as shipped).
 - c. Emission calculations, based on Appendix A, demonstrating compliance with FG-EPS SC I.1.

The permittee shall keep the records on file at the facility, in a format acceptable to the AQD District Supervisor, and make them available to the Department upon request.¹ **(R 336.1225)**

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 EU-PE-2. **(R 336.1201(7)(a))**

VIII. STACK/VENT RESTRICTIONS

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	28	32	40 CFR 52.21(c)&(d)

IX. OTHER REQUIREMENTS

NA

Footnotes:

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

**The following conditions apply Source-Wide to:
 FGFACILITY**

POLLUTION CONTROL EQUIPMENT:

I. EMISSION LIMITS

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. VOC	Less than 90 tpy	12-month rolling time period as determined at the end of each calendar month	FGFACILITY	SC II.1, IV.1, VI.3	R 336.1205(3), R 336.1702(a)
2. Individual HAP	Less than 9 tpy	12-month rolling time period as determined at the end of each calendar month	FGFACILITY	SC VI.4	R 336.1205(3)
3. Aggregate HAPs	Less than 22.5 tpy	12-month rolling time period as determined at the end of each calendar month	FGFACILITY	SC VI.4	R 336.1205(3)

II. MATERIAL LIMITS

Material	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. Material processed in pre-expanders ^A	Less than 30,000,000 lbs	12-month rolling time period as determined at the end of each calendar month	FGFACILITY	SC VI.2	R 336.1205(3)

^A Compliance with this limit shall be determined from throughput at pre-expansion.

III. PROCESS/OPERATIONAL RESTRICTIONS

NA

IV. DESIGN/EQUIPMENT PARAMETERS

NA

V. TESTING/SAMPLING

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

1. The permittee shall determine the VOC and n-pentane content of the materials listed below according to a sampling schedule approved by the AQD District Supervisor. The samples shall represent the full range of VOC and n-pentane content of EPS beads used in FGFACILITY and shall be used to estimate the VOC and n-pentane emissions from processing EPS beads in FGFACILITY. The permittee shall use sampling and analysis methods approved by the AQD District Supervisor. **(R 336.1205(3))**
 - a. Fresh pre-puff beads, as received
 - b. Aged pre-puff beads, ready to be processed in EU-M-1, EU-M-2, or EU-M-3
 - c. Foam product, as shipped

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 last 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 keep a record of the amount of material processed in pre-expanders during each calendar month and during the 12-month rolling time period ending that month. The permittee shall keep the 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(3))**
3. The permittee shall calculate the VOC emission rate from FGFACILITY for each calendar month and for the 12-month rolling time period ending that month using the calculations listed below or using an alternate method acceptable to the AQD District Supervisor. **(R 336.1205(3), R 336.1702(a))**
 - a. Emissions from EU-PE-1, EU-PE-2, EU-StorageBins, EU-M-1, EU-M-2, EU-M-3, EU-BlockDryCure, and EU-FinishOps: Appendix A
 - b. Fuel combustion emissions from EU-Boiler1, EU-Boiler2, EU-Engine1, and the RTO: fuel combustion mission factors
4. The permittee shall keep the following information on a monthly basis for FGFACILITY:
 - a. Gallons or pounds of each HAP containing material used.
 - b. Where applicable, gallons or pounds of each HAP containing material reclaimed.
 - c. HAP content, in pounds per gallon or pounds per pound, of each HAP containing material used.
 - d. Individual and aggregate HAP emission calculations, based on a mass balance, determining the monthly emission rate of each in tons per calendar month.
 - e. Fuel usage for all fuels used in combustion sources and HAP emission factors for each fuel.
 - f. Individual and aggregate HAP emission calculations, based on Appendix A and fuel combustion emission factors, determining the cumulative emission rate of each during the first 12-months and the annual emission rate of each thereafter, in tons per 12-month rolling time period as determined at the end of each calendar month.

The permittee shall keep the 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(3))**

5. The permittee shall keep a record of the VOC content, as received, of each lot of EPS beads used in FGFACILITY. **(R 336.1702(a))**
6. The permittee shall keep a record of the VOC content determinations required by SC V.1 for product from FGFACILITY. The permittee shall keep the 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 336.1702(a))**

VII. REPORTING

1. The permittee shall submit all records of product VOC content for FGFACILITY, (as required by SC V.1) to the AQD District Supervisor in an acceptable format within 30 days following the receipt of analytical results. Upon written approval by the AQD District Supervisor, submittal of these records may be discontinued. **(R 336.1702(a))**

VIII. STACK/VENT RESTRICTIONS

NA

IX. OTHER REQUIREMENTS

NA

Footnotes:

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

APPENDICES

Appendix A: Emission Calculations for EPS Processing

Emissions from bead processing (does not include emissions from fuel combustion)

Calculations are based on throughput at pre-expansion.

$$ET = Ea + Eb$$

$$Ea = [Cin - C mold] \times \left[\left(\frac{100 - D}{100} \right) \right]$$

$$Eb = [C mold - Cout] \times \left[\frac{\eta}{100} \times \left(\frac{100 - D}{100} \right) + \left(1 - \frac{\eta}{100} \right) \right]$$

$$Cin = \sum_i (Ui \times Vi)$$

$$C mold = \sum_j (Uj \times Vj)$$

$$Cout = \sum_k (Uk \times Vk)$$

Term / Nomenclature	Meaning/Explanation ^A (“Emissions” refers to emissions of VOC or n-pentane, as appropriate to the calculation being performed.)	
<i>ET^B</i>	Total emissions from EU-PE-1, EU-PE-2, EU-StorageBins, EU-M-1, EU-M-2, EU-M-3, EU-BlockDryCure, and EU-FinishOps, reflecting emission control by the RTO.	
<i>Ea</i>	Total emissions from EU-PE-1, EU-PE-2 and EU-StorageBins, reflecting emission control by the RTO.	
<i>Eb</i>	Total emissions from EU-M-1, EU-M-2, EU-M-3, EU-BlockDryCure, and EU-FinishOps, reflecting emission control by the RTO.	
<i>η</i>	Overall capture efficiency for emissions from EU-M-1, EU-M-2, EU-M-3, EU-BlockDryCure, and EU-FinishOps combined.	
<i>Cin</i>	Total VOC or n-pentane content of EPS beads processed at pre-expansion during a time period, in pounds, based on “as received” composition of beads.	
<i>C mold</i>	VOC or n-pentane content of aged pre-puff beads ready to be processed in EU-M-1, EU-M-2, or EU-M-3.	
<i>Cout</i>	VOC or n-pentane content of product as shipped, in pounds VOC per pound of beads.	
<i>Ui, Uj, Uk</i>	Weight of each type of EPS beads used, in pounds.	i designates material as received j designates material ready to enter the vacuum block mold
<i>Vi, Vj, Vk</i>	VOC or n-pentane content of each type of EPS beads used, in pounds VOC per pound of beads.	k designates product ready to ship
<i>D</i>	The RTO’s destruction efficiency, in percent, initially presumed to be 95%. Upon approval by the AQD District Supervisor, a value based on stack testing may be used.	

^A Capture efficiency is presumed to be 100% for emissions from EU-PE-1, EU-PE-2, and EU-StorageBins, and 60% overall for emissions from EU-M-1, EU-M-2, EU-M-3, EU-BlockDryCure, and EU-FinishOps. Upon approval of the AQD District Supervisor, alternate values based on testing or other demonstration may be used.

^B Emissions shall be calculated separately for two groups of equipment (EU-PE-1, EU-PE-2, and EU-StorageBins in one group and EU-M-1, EU-M-2, EU-M-3, EU-BlockDryCure, and EU-FinishOps in the other group) and summed to provide total emissions, or by another method approved by the AQD District Supervisor.