

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

October 14, 2020
REVISED APRIL 22, 2022

PERMIT TO INSTALL
167-101

ISSUED TO
Soulbrain MI

LOCATED AT
47050 FIVE MILE ROAD
NORTHVILLE, MI 48168

IN THE COUNTY OF
WAYNE

STATE REGISTRATION NUMBER
SRN M4742

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: June 24, 2020	
DATE PERMIT TO INSTALL APPROVED: October 14, 2020	SIGNATURE:
DATE PERMIT VOIDED:	SIGNATURE:
DATE PERMIT REVOKED:	SIGNATURE:

PERMIT TO INSTALL

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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 condition 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))	Flexible Group ID
EUTANK101A	792-gallon storage tank	FGELFACILITY
EUTANK101B	792-gallon storage tank	FGELFACILITY
EUTANK102A	3962-gallon storage tank	FGELFACILITY
EUTANK102B	3962-gallon storage tank	FGELFACILITY
EUTANK103A	3962-gallon storage tank	FGELFACILITY
EUTANK103B	3962-gallon storage tank	FGELFACILITY
EUTANK104A	3962-gallon storage tank	FGELFACILITY
EUTANK104B	3962-gallon storage tank	FGELFACILITY
EUTANK105A	1320-gallon storage tank	FGELFACILITY
EUTANK105B	1320-gallon storage tank	FGELFACILITY
EUTANK106	264-gallon storage tank	FGELFACILITY
EUTANK107	264-gallon storage tank	FGELFACILITY
EUTANK108	264-gallon storage tank	FGELFACILITY
EUTANK109	264-gallon storage tank	FGELFACILITY
EUTANK201	528-gallon reactor tank	FGELFACILITY
EUTANK202	1056-gallon reactor tank	FGELFACILITY
EUTANK203	1585-gallon reactor tank	FGELFACILITY
EUTANK500	2641-gallon storage tank	FGELFACILITY
EUTANK600	620-gallon storage tank	FGELFACILITY
EUTANK601	950-gallon storage tank	FGELFACILITY
EUDISPENSE	Final product dispensing area and canister cleaning area	FGELFACILITY

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.

FLEXIBLE GROUP SPECIAL CONDITIONS

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
FGELFACILITY	Lithium-ion battery electrolyte component manufacturing facility. Includes various material handling, mixing, drum cleaning, and other operations. Equipment consists of 15 chemical storage tanks, 3 mixing vessels, 2 liquid industrial waste tanks, 2 drum cleaning stations, 2 drum filling stations, 2 glove boxes, and other miscellaneous equipment. All vents (except EUTANK600 and EUTANK601) and areas of chemical use/emissions will be controlled by one of two carbon adsorption systems.	EUTANK101A, EUTANK101B, EUTANK102A, EUTANK102B, EUTANK103A, EUTANK103B, EUTANK104A, EUTANK104B, EUTANK105A, EUTANK105B, EUTANK106, EUTANK107, EUTANK108, EUTANK109, EUTANK201, EUTANK202, EUTANK203, EUTANK500, EUTANK600, EUTANK601, EUDISPENSE

**FGELFACILITY
 FLEXIBLE GROUP CONDITIONS**

DESCRIPTION

Lithium-ion battery electrolyte component manufacturing facility. Includes various material handling, mixing, drum cleaning, and other operations. Equipment consists of 15 chemical storage tanks, 3 mixing vessels, 2 liquid industrial waste tanks, 2 drum cleaning stations, 2 drum filling stations, 2 glove boxes, and other miscellaneous equipment. All vents (except EUTANK600 and EUTANK601) and areas of chemical use/emissions will be controlled by one of two carbon adsorption systems.

Emission Unit: EUTANK101A, EUTANK101B, EUTANK102A, EUTANK102B, EUTANK103A, EUTANK103B, EUTANK104A, EUTANK104B, EUTANK105A, EUTANK105B, EUTANK106, EUTANK107, EUTANK108, EUTANK109, EUTANK201, EUTANK202, EUTANK203, EUTANK500, EUTANK600, EUTANK601, EUDISPENSE

POLLUTION CONTROL EQUIPMENT

Activated carbon (low density), activated carbon (high density)

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. Ethyl methyl carbonate	1.1 tpy ¹	12-month rolling time period as determined at the end of each calendar month	FGELFACILITY	SC VI.3	R 336.1225

II. MATERIAL LIMIT(S)

1. The facility wide throughput shall not exceed the following:
 - a) 37,213 gallons per month of Dimethyl Carbonate.
 - b) 10,937 gallons per month of Propylene Carbonate.
 - c) 1,434 gallons per month of Methyl Propionate.
 - d) 277 gallons per month of Adiponitrile.
 - e) 236 gallons per month of gamma-Butyrolactone.
 - f) 266 gallons per month of 3,5-dimethylisoxazole.
 - g) 336 gallons per month of Acetonitrile.
 - h) 32 gallons per month of Tris(trimethylsilyl) borate.
 - i) 29,708 gallons per month of Diethyl Carbonate.
 - j) 35,944 gallons per month of Ethylene Carbonate.
 - k) 2,841 gallons per month of 1,3 – Propane Sultone.
 - l) 2,920 gallons per month of Vinylene Carbonate.
 - m) 14,622 gallons per month of Ethyl Acetate.
 - n) 1,521 gallons per month of Tert-Butylbenzene.
 - o) 100,553 gallons per month of Ethyl Methyl Carbonate.
 - p) 1,762 gallons per month of Fluorobenzene
 - q) 37.6 gallons per month of Tetravinylsilane
 - r) 266 gallons per month of 1-Propene 1,3-Sultone

(R 336.1205(a), R 336.1224, R 336.1225, R 336.1702(a))

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall not operate material loading or unloading, transfers, or production portions of FGELFACILITY unless the Low Density activated carbon system is installed, maintained, and operated in a satisfactory manner. **(R 336.1224, R 336.1225, R 336.1702, R 336.1910)**
2. The permittee shall not operate material loading or unloading, transfers, or production portions of FGELFACILITY unless the High Density activated carbon system is installed, maintained, and operated in a satisfactory manner. **(R 336.1224, R 336.1225, R 336.1702, R 336.1910)**
3. The permittee shall not operate material loading or unloading, transfers, or production portions of FGELFACILITY unless the associated hoods, stations, and emission collection points for both the Low Density and High Density activated carbon systems are installed, maintained and operated in a satisfactory manner. Satisfactory operation requires that the active hoods, stations, and emission collection points are operating at a pressure lower than all adjacent areas, so that air flows into the activated carbon systems. **(R 336.1224, R 336.1225, R 336.1702, R 336.1910)**
4. The maximum transfer rate for vinylene carbonate shall not exceed 1,200 gallons per hour. **(R 336.1205(a), R 336.1224, R 336.1225, R 336.1702(a))**

V. TESTING/SAMPLING

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

1. The permittee shall test, in a satisfactory manner, the Low Density activated carbon system for breakthrough at least once every two months. Testing the carbon system for breakthrough shall continue at a frequency of at least once every two months until the facility reaches operations of 50 percent or higher of production capacity. After reaching operations of 50 percent or higher of facility production capacity, the carbon system shall be tested for breakthrough at least once every month. The permittee shall evaluate breakthrough via Tedlar bag sampling followed by laboratory analysis; by use of a hand-held instrument capable of detecting concentrations at the levels expected; or an equivalent method. Breakthrough is considered a reading that is 20 percent or more of the influent concentration during normal operation AND an effluent concentration that exceeds the value calculated using either one of the following equations:

If the effluent stream is analyzed for EMC:

$$\text{Max allowable EMC concentration (ppmv)} = 1.728 \text{ ppmv EMC} \times 100\% / \text{Fan Setting (\%)}$$

If an FID calibrated with methane is used:

$$\text{Max allowable Total Organics above background (ppmv)} = 1.728 \text{ ppmv EMC} \times [100\% / \text{Fan Setting (\%)}] \times [100\% \text{ Total Organics} / 35.7\% \text{ EMC}]$$

Note, only the EMC concentration or the FID reading is required, not both. If breakthrough is detected, the permittee shall not operate the system until the carbon has been replaced. The permittee shall submit any request for a change in the testing frequency to the AQD District Supervisor for review and approval. **(R 336.1224, R 336.1225, R 336.1702, R 336.1910)**

2. The permittee shall test, in a satisfactory manner, the High Density activated carbon system for breakthrough at least once every two months. Testing the carbon system for breakthrough shall continue at a frequency of at least once every two months until the facility reaches operations of 50 percent or higher of production capacity. After reaching operations of 50 percent or higher of facility production capacity, the carbon system shall be tested for breakthrough at least once every month. The permittee shall evaluate breakthrough via Tedlar bag sampling followed by laboratory analysis; by use of a hand-held instrument capable of detecting concentrations at the levels expected; or an equivalent method. Breakthrough is considered a reading that is 20 percent or more of the influent concentration during normal operation AND an effluent concentration that exceeds the value calculated using either one of the following equations:

If the effluent stream is analyzed for EMC:

Max allowable EMC concentration (ppmv) = 8.641 ppmv EMC x 100%/Fan Setting (%)

If an FID calibrated with methane is used:

Max allowable Total Organics above background (ppmv) = 8.641 ppmv EMC x [100%/Fan Setting (%)] x [100% Total Organics/35.7% EMC]

Note, only the EMC concentration or the FID reading is required, not both. If breakthrough is detected, the permittee shall not operate the system until the carbon has been replaced. The permittee shall submit any request for a change in the testing frequency to the AQD District Supervisor for review and approval. **(R 336.1224, R 336.1225, R 336.1702, R 336.1910)**

3. Upon request of the AQD District Supervisor, the permittee shall verify that the direction of air flow at each hood, station, and emission collection point (open collection points only) for both the Low Density and High Density activated carbon systems is into the activated carbon system, 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. Within 60 days upon notification from AQD District Supervisor, 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 120 days from notification from the AQD District Supervisor. **(R 336.1224, R 336.1225, R 336.1702, R 336.1910)**

VI. MONITORING/RECORDKEEPING

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

1. The permittee shall keep, in a satisfactory manner, all records of the carbon breakthrough monitoring and carbon replacement for the FGELFACILITY Low Density activated carbon system on file at the facility and make them available to the Department upon request. **(R 336.1225, R 336.1702, R 336.1910)**
2. The permittee shall keep, in a satisfactory manner, all records of the carbon breakthrough monitoring and carbon replacement for the FGELFACILITY High Density activated carbon system on file at the facility and make them available to the Department upon request. **(R 336.1225, R 336.1702, R 336.1910)**
3. The permittee shall keep, in a satisfactory manner, all monthly ethyl methyl carbonate emission calculation records for FGELFACILITY to show compliance with the 12-month rolling time period emission limit in SC I.1 on file at the facility and make them available to the Department upon request.¹ **(R 336.1225)**
4. The permittee shall maintain a current list of the materials used in FGELFACILITY that are determined to be exempt from the health-based screening level requirement of Rule 225. The list shall include the compound name and CAS number and a calculation demonstrating the emission rate of each material. The permittee shall keep all records on file at the facility and make them available to the Department upon request.¹ **(R 336.1226(a))**
5. The permittee shall keep, in a satisfactory manner, monthly records of chemical usage at FGELFACILITY to show compliance with the material limits in SC II.1. The permittee shall maintain the records on file at the facility and make them available to the Department upon request. **(R 336.1205, R 336.1225, R 336.1702)**
6. The permittee shall keep, in a satisfactory manner, records of the maximum chemical transfer rate for vinylene carbonate FGELFACILITY to show compliance with the material limits in SC IV.4. The permittee shall maintain the records on file at the facility and make them available to the Department upon request. **(R 336.1205(a), R 336.1224, R 336.1225, 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. SVLOWDENSITY	28	45	R 336.1225 40 CFR 52.21(c) and (d)
2. SVHIGHDENSITY	14	45	R 336.1225 40 CFR 52.21(c) and (d)

IX. OTHER REQUIREMENT(S)

NA

Footnotes:

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