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

November 14, 2022

PERMIT TO INSTALL
166-20A

ISSUED TO
Dow Silicones Corporation

LOCATED AT
Michigan Operations
303 Building
Midland, Michigan 48686

IN THE COUNTY OF
Midland

STATE REGISTRATION NUMBER
A4043

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: **October 25, 2022**	
DATE PERMIT TO INSTALL APPROVED: **November 14, 2022**	SIGNATURE:
DATE PERMIT VOIDED:	SIGNATURE:
DATE PERMIT REVOKED:	SIGNATURE:

PERMIT TO INSTALL

Table of Contents

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_2e	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_2S	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))	Installation Date / Modification Date	Flexible Group ID
EU303-19	Phenyl methyl polymerization semi-continuous process consisting of an agitated kettle, water trap, storage tanks, distillation column, receivers, filters, vacuum pumps, and related equipment. Some equipment vents through condenser 3469 or FGTHROX; other equipment vents through condenser 3475 to either carbon beds or FGTHROX. The site scrubbers are used as control equipment if the THROX is not in operation. This emission unit is subject to the requirements of 40 CFR Part 63, Subparts FFFF and UU. The most recent PTI for this emission unit is PTI No. 166-20A.	1975 / 08-20-2021 / 11-14-2022	FGTHROX, FGSITESCRUBBERS, FGSITEBLOWER, FGMONMACT, FGHAP2012A2A

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.

EU303-19
EMISSION UNIT CONDITIONS

DESCRIPTION

Phenyl methyl polymerization semi-continuous process consisting of an agitated kettle, water trap, storage tanks, distillation column, receivers, filters, vacuum pumps, and related equipment. Some equipment vents through condenser 3469 or FGTHROX; other equipment vents through condenser 3475 to either carbon beds or FGTHROX. FGSITESCRUBBERS are used as control equipment if FGTHROX is not in operation. This emission unit is subject to the requirements of 40 CFR Part 63, Subparts FFFF and UU.

The most recent PTI for this emission unit is PTI No. 166-20A.

Flexible Group ID: FGTHROX, FGSITESCRUBBERS, FGSITEBLOWER, FGMONMACT, FGHAP2012A2A

POLLUTION CONTROL EQUIPMENT

- Condenser (3469)
- Condenser (3475)
- Carbon Beds
- FGTHROX
- FGSITESCRUBBERS

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. VOCs	2.06 tpy*	12-month rolling time period as determined at the end of each calendar month	EU303-19	SC VI.2, SC VI.3, SC VI.4	R 336.1702(a)
* This emission limit does not include fugitive emissions (i.e., emissions from leaking valves, flanges, etc.) from the emission unit.					

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall not operate equipment in EU303-19 that exhausts directly to either condenser 3469, FGTHROX, or FGSITESCRUBBERS unless one of the following requirements is met: **(R 336.1224, R 336.1225, R 336.1702(a), R 336.1910)**
   a) The exit gas temperature of condenser 3469 is 25°C or less.
   b) FGTHROX is operated in accordance with the requirements of FGTHROX.
   c) Site Scrubber #1 is operated in accordance with the requirements of FGSITESCRUBBERS.
   d) Site Scrubber #2 is operated in accordance with the requirements of FGSITESCRUBBERS.

2. The permittee shall not operate equipment in EU303-19 that exhausts first to condenser 3475 and then to either the carbon beds, FGTHROX, or FGSITESCRUBBERS unless one of the following requirements is met: **(R 336.1224, R 336.1225, R 336.1702(a), R 336.1910)**
   a) When exhausting to the carbon beds, the exit gas temperature of condenser 3475 is 2.22°C or less and the weight of the carbon drum is 23.46 kg or less.
   b) When exhausting to FGTHROX, FGTHROX is operated in accordance with the requirements of FGTHROX.
   c) When exhausting to Site Scrubber #1, the exit gas temperature of 3475 is 2.22°C or less and Site Scrubber #1 is operated in accordance with the requirements of FGSITESCRUBBERS.
   d) When exhausting to Site Scrubber #2, the exit gas temperature of 3475 is 2.22°C or less and Site Scrubber #2 is operated in accordance with the requirements of FGSITESCRUBBERS.

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall not operate equipment in EU303-19 that exhausts directly to either condenser 3469, FGTHROX, or FGSITESCRUBBERS unless the one of the following requirements is met: **(R 336.1224, R 336.1225, R 336.1702(a), R 336.1910)**
   a) Condenser 3469 is installed, maintained, and operated in a satisfactory manner acceptable to the AQD District Supervisor, which includes meeting the requirements of SC III.1(a).
   b) FGTHROX or FGSITESCRUBBERS is installed, maintained, and operated in a satisfactory manner acceptable to the AQD District Supervisor, which includes meeting the requirements of SC III.1(b), (c), or (d).

2. The permittee shall not operate equipment in EU303-19 that exhausts directly to condenser 3475 and then to either the carbon beds, FGTHROX, or FGSITESCRUBBERS unless: **(R 336.1224, R 336.1225, R 336.1702(a), R 336.1910)**
   a) Condenser 3475 is installed, maintained, and operated in a satisfactory manner acceptable to the AQD District Supervisor, which includes meeting the requirements of SC III.2(a), (c), or (d),
   b) When exhausting to the carbon beds, the carbon beds are installed, maintained, and operated in a satisfactory manner acceptable to the AQD District Supervisor, which includes meeting the requirements of SC III.2(a),
   c) When exhausting to FGTHROX or FGSITESCRUBBERS, FGTHROX or FGSITESCRUBBERS is installed, maintained, and operated in a satisfactory manner acceptable to the AQD District Supervisor, which includes meeting the requirements of SC III.2(b), (c), or (d).

3. The permittee shall equip and maintain each condenser (3469 and 3475) with a device to continuously monitor and record the condenser exit gas temperature. The permittee shall calibrate the exit gas temperature indicator in a satisfactory manner acceptable to the AQD District Supervisor. **(R 336.1224, R 336.1225, R 336.1702(a), R 336.1910)**

4. The permittee shall equip and maintain the carbon beds with a device to continuously monitor the mass of the carbon drum. The permittee shall calibrate the carbon drum mass indicator in a satisfactory manner acceptable to the AQD District Supervisor. **(R 336.1224, 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))**

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 last day of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition. **(R 336.1224, R 336.1225, R 336.1702(a), R 336.1910)**

2. The permittee shall monitor and record, on a continuous basis, the exit gas temperature of each condenser (3469, 3475) with instrumentation acceptable to the AQD. For the purpose of this condition, "on a continuous

basis" is defined as an instantaneous data point recorded at least once every 15 minutes. The permittee may record block average values for 15 minutes or shorter periods calculated from all measured data values during each period. The permittee shall keep all records on file at the facility and make them available to the Department upon request. **(R 336.1224, R 336.1225, R 336.1702(a), R 336.1910)**

3. When venting to the carbon beds, the permittee shall record the mass of the carbon drum, on a continuous basis, with instrumentation acceptable to the AQD. For the purpose of this condition, "on a continuous basis" is defined as an instantaneous data point recorded at least once every 15 minutes. The permittee may record block average values for 15 minutes or shorter periods calculated from all measured data values during each period. The permittee shall keep all records on file at the facility and make them available to the Department upon request. **(R 336.1224, R 336.1225, R 336.1702(a), R 336.1910)**

4. The permittee shall calculate and keep, in a satisfactory manner, records of monthly and 12-month rolling time period VOC emissions for EU303-19 using production records, operating records, and/or other data 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 336.1702(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. SV303-001[a] (1656 Tank Bypass)	6	42	R 336.1225, 40 CFR 52.21 (c) & (d)
2. SV303-024 (3463 Reactor Bypass)	1	57	R 336.1225, 40 CFR 52.21 (c) & (d)
3. SV303-026[a] (3434 Volatile Tank)	1	42	R 336.1225, 40 CFR 52.21 (c) & (d)
4. SV303-027[a] (3435 Volatile Tank)	1	43	R 336.1225, 40 CFR 52.21 (c) & (d)
5. SV303-055 (THROX Blower Bypass)	3	43	R 336.1225, 40 CFR 52.21 (c) & (d)
6. SV303-057 (Carbon Beds Bypass #1)	2	26	R 336.1225, 40 CFR 52.21 (c) & (d)
7. SV303-058 (Carbon Beds Bypass #2)	2	43	R 336.1225, 40 CFR 52.21 (c) & (d)
8. SV2514-006 (THROX)	54	90	R 336.1225, 40 CFR 52.21 (c) & (d)
9. SV2512-001 (Site Scrubber 1)	6	67	R 336.1225, 40 CFR 52.21 (c) & (d)
10. SV2512-002 (Site Scrubber 2)	6	67	R 336.1225, 40 CFR 52.21 (c) & (d)
11. SV2517-001[b] (TOX Vent)	30	102	R 336.1225, 40 CFR 52.21(c) & (d)
[a]This stack is not required to discharge unobstructed vertically upwards [b]This EU may exhaust from SV2517-001 after that stack has been installed.			

IX. OTHER REQUIREMENT(S)

NA

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