

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

December 11, 2018

**PERMIT TO INSTALL  
184-18**

**ISSUED TO**  
DDP Specialty Electronic Materials US 9, LLC

**LOCATED AT**  
5300 11 Mile Road  
Auburn, Michigan

**IN THE COUNTY OF**  
Bay

**STATE REGISTRATION NUMBER**  
B4022

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: <b>November 5, 2018</b>	
DATE PERMIT TO INSTALL APPROVED: <b>December 11, 2018</b>	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	Michigan Department of Environmental Quality
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
MDEQ	Michigan Department of Environmental Quality
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 <sub>2</sub> 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 <sub>2</sub> S	Hydrogen Sulfide
kW	Kilowatt
lb	Pound
m	Meter
mg	Milligram
mm	Millimeter
MM	Million
MW	Megawatts
NMOC	Non-Methane Organic Compounds
NO <sub>x</sub>	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 <sub>2</sub>	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 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 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 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 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.

<b>Emission Unit ID</b>	<b>Emission Unit Description (Including Process Equipment &amp; Control Device(s))</b>	<b>Flexible Group ID</b>
EUAUB-55	Capacitance-voltage testing process for silicon carbide wafers, including the testing machine and booth, an acid bath and rinse to clean the tested wafers, and a wastewater collection lift station.	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.

## **EUAUB-55**

### **EMISSION UNIT CONDITIONS**

#### **DESCRIPTION**

Capacitance-voltage testing process for silicon carbide wafers, including the testing machine and booth, an acid bath and rinse to clean the tested wafers, and a wastewater collection lift station.

**Flexible Group ID:** NA

#### **POLLUTION CONTROL EQUIPMENT**

- Activated charcoal filter to control mercury vapors emitted from the testing booth.
- Two-part activated charcoal filter (3 acid gas filters operating in parallel and 3 Hg vapor filters operating in parallel) to control emission from the acid bath and rinse station.
- A two-part activated charcoal filter (acid gas filter and Hg vapor filter) for the lift station.
- A two-part activated charcoal filter (acid gas filter and Hg vapor filter) for the tote station.

#### **I. EMISSION LIMIT(S)**

NA

#### **II. MATERIAL LIMIT(S)**

NA

#### **III. PROCESS/OPERATIONAL RESTRICTION(S)**

1. The permittee shall replace the activated charcoal in the testing booth filter at least once every six months. The permittee shall submit any request for a change in the replacement frequency to the AQD District Supervisor for review and approval. **(R 336.1224, R 336.1225, R 336.1910)**
2. The permittee shall replace the activated charcoal in the acid bath two-part filter at least once every 519 hours that the bath was operated (turned "on"). The permittee shall submit any request for a change in the replacement frequency to the AQD District Supervisor for review and approval. **(R 336.1224, R 336.1225, R 336.1910)**
3. The permittee shall replace the following activated charcoal filters at least once every two years:
  - a) two-part activated charcoal filter controlling emissions from the lift station
  - b) two-part activated charcoal filter controlling emissions from the tote station

The permittee shall submit any request for a change in the replacement frequency to the AQD District Supervisor for review and approval. **(R 336.1224, R 336.1225, R 336.1910)**

#### **IV. DESIGN/EQUIPMENT PARAMETER(S)**

1. The permittee shall not operate the testing booth unless the activated charcoal filter is installed, maintained, and operated in a satisfactory manner. **(R 336.1224, R 336.1225, R 336.1910)**
2. The permittee shall not operate the acid bath unless the two-part activated charcoal filter system to control acid gas and mercury vapor is installed, maintained, and operated in a satisfactory manner. **(R 336.1224, R 336.1225, R 336.1910)**
3. The permittee shall install and maintain a device to monitor and record the hours that the acid bath is operated (turned "on"). **(R 336.1224, R 336.1225)**

4. The permittee shall not transfer wastewater to the lift station and tote station unless the two-part activated charcoal filter systems to control acid gas and mercury vapor are installed, maintained, and operated in a satisfactory manner. **(R 336.1224, R 336.1225, 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 keep, in a satisfactory manner, all records of activated charcoal replacement for the testing booth filter on file at the facility and make them available to the Department upon request. **(R 336.1224, R 336.1225, R 336.1910)**
2. The permittee shall keep, in a satisfactory manner, a record of the hours that the acid bath was operated (turned "on"). Records shall be kept on file at the facility and made available to the Department upon request. **(R 336.1224, R 336.1225, R 336.1910)**
3. The permittee shall keep, in a satisfactory manner, all records of activated charcoal replacement for the acid bath two-part filter on file at the facility and make them available to the Department upon request. **(R 336.1224, R 336.1225, R 336.1910)**
4. The permittee shall keep, in a satisfactory manner, all records of activated charcoal replacement for the lift station and tote station two-part filters on file at the facility and make them available to the Department upon request. **(R 336.1224, R 336.1225, R 336.1910)**

**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:

<b>Stack &amp; Vent ID</b>	<b>Maximum Exhaust Diameter / Dimensions (inches)</b>	<b>Minimum Height Above Ground (feet)</b>	<b>Underlying Applicable Requirements</b>
1. SVA-MOD5-37	20 <sup>1</sup>	36.5 <sup>1</sup>	R 336.1225
2. SVA-MOD5-38	20 <sup>1</sup>	36.5 <sup>1</sup>	R 336.1225
3. SVA-MOD5-32	36 <sup>1</sup>	41.5 <sup>1</sup>	R 336.1225

**IX. OTHER REQUIREMENT(S)**

NA

**Footnotes:**

<sup>1</sup> 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 that is part of DDP Specialty Electronic Materials US9, LLC, SRN B4022. Note that, as of the date of this permit, DDP Specialty Electronic Materials US9, LLC is part of the same stationary source as Dow Silicones Corporation, SRN B4022. So long as these two facilities are a single stationary source, total emissions from both facilities must be added together to determine if the stationary source is a major source.

#### **POLLUTION CONTROL EQUIPMENT**

Dust collectors for solids-charging activities where particulate matter could be vented to the atmosphere.

- DV3750-FL1
- DV3750-FL2

#### **I. EMISSION LIMIT(S)**

<b>Pollutant</b>	<b>Limit</b>	<b>Time Period / Operating Scenario</b>	<b>Equipment</b>	<b>Monitoring / Testing Method</b>	<b>Underlying Applicable Requirements</b>
1. PM	Less than 9.9 tpy	12-month rolling time period as determined at the end of each calendar month	FGFACILITY	SC VI.2, VI.3	R 336.1205(3)
2. PM10	Less than 9.9 tpy	12-month rolling time period as determined at the end of each calendar month	FGFACILITY	SC VI.2, VI.3	R 336.1205(3)
3. PM2.5	Less than 9.9 tpy	12-month rolling time period as determined at the end of each calendar month	FGFACILITY	SC VI.2, VI.3	R 336.1205(3)
4. VOC	Less than 6.0 tpy	12-month rolling time period as determined at the end of each calendar month	FGFACILITY	SC VI.4*	R 336.1205(3)
5. Total HAPs	Less than 0.8 tpy	12-month rolling time period as determined at the end of each calendar month	FGFACILITY	SC VI.5	R 336.1205(3)
6. Each individual HAP	Less than 0.4 tpy	12-month rolling time period as determined at the end of each calendar month	FGFACILITY	SC VI.5	R 336.1205(3)

\* The permittee shall calculate VOC emissions from FGFACILITY according to the method specified in Appendix A or an alternate method acceptable to the AQD District Supervisor.

#### **II. MATERIAL LIMIT(S)**

<b>Material</b>	<b>Limit</b>	<b>Time Period / Operating Scenario</b>	<b>Equipment</b>	<b>Monitoring / Testing Method</b>	<b>Underlying Applicable Requirements</b>
1. Product Family 37	133,000 wafers per year	12-month rolling time period as determined at the end of each calendar month	FGFACILITY	SC VI.4.a	R 336.1205(3)
2. Product Family 38	66,000 EPI wafers per year	12-month rolling time period as determined at the end of each calendar month	FGFACILITY	SC VI.4.a	R 336.1205(3)
3. Product Family 39	7,000 boules per year	12-month rolling time period as determined at the end of each calendar month	FGFACILITY	SC VI.4.a	R 336.1205(3)

### **III. PROCESS/OPERATIONAL RESTRICTION(S)**

1. The permittee shall not conduct any solids-charging activities where particulate matter could be vented to the atmosphere unless the activities are exhausted to a dust collector and the associated dust collector is installed, maintained, and operated in a satisfactory manner. Satisfactory operation of each dust collector includes a pressure drop across the dust collector as specified below. Upon written approval by the AQD District Supervisor, an alternate pressure drop range may be used. **(R 336.1205(1)(a))**

<b>Dust Collector</b>	<b>Collector ID</b>	<b>Target pressure drop range (inches water column)</b>
MOD6 East	DV3750-FL1	0.1 < pressure drop < 7.0
MOD6 West	DV3750-FL2	0.1 < pressure drop < 7.0

### **IV. DESIGN/EQUIPMENT PARAMETER(S)**

1. The permittee shall equip and maintain each dust collector with a device to indicate the pressure drop across the collector. **(R 336.1205, 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 336.1205)**
2. The permittee shall monitor and record, in a satisfactory manner, the pressure drop across each dust collector once each shift that the collector operates. **(R 336.1910)**
3. The permittee shall calculate the PM, PM10, and PM2.5 emission rates from FGFACILITY for each calendar month and for the 12-month rolling time period ending that month using a method acceptable to the AQD District Supervisor. **(R 336.1205)**
4. The permittee shall keep the following information on a monthly basis for FGFACILITY:
  - a) Quantity of each product family produced per month and 12-month rolling time period.
  - b) VOC emission calculations determining the monthly emission rate in tons per calendar month.
  - c) VOC emission calculations determining the annual emission rate in tons per 12-month rolling time period as determined at the end of each calendar month.

VOC emission calculations shall be conducted according to the method in Appendix A or an alternate method acceptable to the AQD District Supervisor. 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(1)(a), R 336.1205(3))**

5. The permittee shall keep the following information on a monthly basis for FGFACILITY. Calculations shall use methods acceptable to the AQD District Supervisor.
- a) Quantity of each product family produced per month and 12-month rolling time period.
  - b) Individual and aggregate HAP emission calculations determining the monthly emission rate of each in tons per calendar month.
  - c) Individual and aggregate HAP emission calculations determining the annual emission rate of each in tons per 12-month rolling time period as determined at the end of each calendar month. For the first month following permit issuance, the calculations shall include the summation of emissions from the 11-month period immediately preceding the issuance date. For each month thereafter, calculations shall include the summation of emissions for the appropriate number of months prior to permit issuance plus the months following permit issuance for a total of 12 consecutive months.

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))**

**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:

NA

**IX. OTHER REQUIREMENT(S)**

NA

**Footnotes:**

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

### **APPENDIX A: VOC Emission Calculations for FGFACILITY**

The permittee shall calculate VOC emissions from FGFACILITY based on production data recorded according to FGFACILITY SC VI.4 and the emission factors and calculation methods specified below or using an alternate method acceptable to the AQD District Supervisor.

#### **Product Families**

For each product family, emissions shall be calculated according to methods from Emission Inventory Improvement Project, Volume II, Chapter 16.