

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

September 24, 2018

**PERMIT TO INSTALL
80-11B**

ISSUED TO
BASF Corporation – Chemical Plants

LOCATED AT
1609 Biddle Avenue
Wyandotte, Michigan

IN THE COUNTY OF
Wayne

STATE REGISTRATION NUMBER
B4359

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 5, 2018

DATE PERMIT TO INSTALL APPROVED:

September 24, 2018

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 _{2e} | 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) | Flexible Group ID |
|--|--|-------------------|
| EUCHEORGACT | Organic activator production utilizing existing equipment, including the primary condenser knockout pot (R802), the secondary condenser knockout pot (R801), the reactor vessel (R803), the primary condenser (E802), the secondary condenser (E801), sealed vacuum pump (VP-1), and two exhaust stacks (EF-1 and EF-2) and new equipment including an enclosed filter to filter the final product (F803). Emissions are controlled by a condenser system consisting of a primary condenser, cooled with river water, and a secondary condenser cooled with chilled glycol operating at 35°F. | NA |
| EUCHEX5400 | X-5400 catalyst production using hexane as a reaction base solvent utilizing existing equipment, including the condenser (E802), the decanter and receiver (D802 and R802), the reactor vessel (R803), a bulk storage tank and product bulk storage tank (TK-98 and TK-99), two exhaust stacks (EF-1 and EF-2) and an enclosed filter to filter the final product (F803). Emissions are controlled by a condenser system cooled with an inlet chilled liquid solution operating at an inlet temperature at the condenser of 57°F or less and a vapor balancing system for transfers to and from both bulk storage tanks. | 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 336.1290. | | |

The following conditions apply to: EUCHEORGACT

DESCRIPTION: Organic activator production utilizing existing equipment, including the primary condenser knockout pot (R802), the secondary condenser knockout pot (R801), the reactor vessel (R803), the primary condenser (E802), the secondary condenser (E801), sealed vacuum pump (VP-1), and two exhaust stacks (EF-1 and EF-2) and new equipment including an enclosed filter to filter the final product (F803).

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT: Emissions are controlled by a condenser system consisting of a primary condenser, cooled with river water, and a secondary condenser cooled with chilled glycol operating at 35°F

I. EMISSION LIMITS

| Pollutant | Limit | Time Period / Operating Scenario | Equipment | Testing / Monitoring Method | Underlying Applicable Requirements |
|------------------|--------------|--|------------------|------------------------------------|--|
| 1. VOC | 0.3 tpy | 12 month rolling time period as determined at the end of each calendar month | EUCHEORGACT | GC 13 SC VI.5 | R 336.1205(3), R 336.1225, R 336.1702(a) |

II. MATERIAL LIMITS

1. The permittee shall not process more than 36 batches of organic activator in EUCHEORGACT per 12 month rolling time period, as determined at the end of each calendar month. **(R 336.1205(3), R 336.1225, R 336.1702(a))**

III. PROCESS/OPERATIONAL RESTRICTIONS

1. The permittee shall not operate EUCHEORGACT unless the condenser system exhaust gas temperature is 35°F or less. **(R 336.1205, R 336.1225, R 336.1702(a), R 336.1910)**

IV. DESIGN/EQUIPMENT PARAMETERS

1. The permittee shall not operate EUCHEORGACT unless the condenser system installed, maintained, and operated in a satisfactory manner. **(R 336.1205, R 336.1225, R 336.1702(a), R 336.1910)**

V. TESTING/SAMPLING

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

NA

VI. MONITORING/RECORDKEEPING

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

1. The permittee shall install, calibrate, maintain, and operate in a satisfactory manner a device to monitor and record, on a continuous basis, the exhaust gas temperature of the condenser system while EUCHEORGACT is operating. Temperature data recording shall consist of measurements made at equally spaced intervals, not to exceed 15 minutes per interval. The temperature monitoring device shall be calibrated once per calendar year. **(R 336.1205, R 336.1225, R 336.1702(a), R 336.1910)**
2. The permittee shall keep a record of the number of batches of organic activator produced in EUCHEORGACT for each month and 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, R 336.1225, R 336.1702(a))**
3. The permittee shall maintain a current list of the materials used in EUCHEORGACT 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 336.1901)**
4. 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, R 336.1225, R 336.1702(a))**
5. The permittee shall keep, in a satisfactory manner, monthly and 12-month rolling time period calculations of the VOC emission rates from EUCHEORGACT. The permittee shall keep all records on file at the facility and make them available to the Department upon request. **(R 336.1205, R 336.1225, R 336.1702(a))**

VII. REPORTING

NA

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. EF-1 | 36 | 72.9 | R 336.1225, 40 CFR 52.21 (c)&(d) |
| 2. EF-2 | 36 | 65.5 | R 336.1225, 40 CFR 52.21 (c)&(d) |

IX. OTHER REQUIREMENTS

1. 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 VVVVVV, as they apply to EUCHEORGACT. **(40 CFR Part 63 Subparts A & VVVVVV)**

Footnotes:

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

The following conditions apply to: EUCHEX5400

DESCRIPTION: X-5400 catalyst production using hexane as a reaction base solvent utilizing existing equipment, including the condenser (E802), the decanter and receiver (D802 and R802), the reactor vessel (R803), a bulk storage tank and product bulk storage tank (TK-98 and TK-99), two exhaust stacks (EF-1 and EF-2) and an enclosed filter to filter the final product (F803). Emissions are controlled by a condenser system cooled with an inlet chilled liquid solution operating at an inlet temperature at the condenser of 57°F or less and a vapor balancing system for transfers to and from both bulk storage tanks.

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT: Emissions are controlled by a condenser system cooled with an inlet chilled liquid solution operating at an inlet temperature at the condenser of 57°F or less and a vapor balancing system for transfers to and from both bulk storage tanks.

I. EMISSION LIMITS

| Pollutant | Limit | Time Period / Operating Scenario | Equipment | Testing / Monitoring Method | Underlying Applicable Requirements |
|------------------|--------------|--|------------------|------------------------------------|--|
| 1. VOC | 1.0 tpy | 12 month rolling time period as determined at the end of each calendar month | EUCHEX5400 | SC V.1, SC VI.5 | R 336.1205(3), R 336.1225, R 336.1702(a) |

II. MATERIAL LIMITS

1. The permittee shall not process more than 183 batches of X-5400 catalyst in EUCHEX5400 per 12 month rolling time period, as determined at the end of each calendar month. **(R 336.1205(3), R 336.1225, R 336.1702(a))**

III. PROCESS/OPERATIONAL RESTRICTIONS

1. The permittee shall not operate EUCHEX5400 unless the condenser system (E802) is installed, maintained, and operated in a satisfactory manner. **(R 336.1205, R 336.1225, R 336.1702(a), R 336.1910)**
2. The permittee shall not operate EUCHEX5400 unless the condenser system (E802) inlet chilled liquid solution is maintained at 57°F or less. **(R 336.1205, R 336.1225, R 336.1702(a), R 336.1910)**
3. The permittee shall not transfer any material to or from TK-98 or TK-99 unless a vapor balancing system is installed, maintained, and operated in a satisfactory manner. **(R 336.1205, R 336.1225, R 336.1702(a), R 336.1910)**

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. Upon request from the AQD District Supervisor, the permittee may be required to verify the VOC emission rates from EUCHEX5400 by testing at owner's expense, in accordance with Department requirements. Testing shall be performed using an approved EPA Method listed in 40 CFR Part 60, Appendix A. An alternate method, or a modification to the approved EPA Method, may be specified in an AQD-approved Test Protocol. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD Technical Programs Unit and District Office. The AQD must approve the final plan prior to testing, including any modifications to the method in the test protocol that are proposed after initial submittal. The permittee must submit a complete report of the test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test. **(R 336.1205, R 336.1224, R 336.1225, 40 CFR 52.21(C) & (d))**

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, R 336.1225, R 336.1702(a))**
2. The permittee shall install, calibrate, maintain, and operate in a satisfactory manner a device to monitor and record, on a continuous basis, the inlet chilled liquid solution temperature of the condenser system (E802) while EUCHEX5400 is operating. Temperature data recording shall consist of measurements made at equally spaced intervals, not to exceed 15 minutes per interval. The temperature monitoring device shall be calibrated once per calendar year. **(R 336.1205, R 336.1225, R 336.1702(a), R 336.1910)**
3. The permittee shall keep a record of the number of batches of X-5400 catalyst produced in EUCHEX5400 for each month and 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, R 336.1225, R 336.1702(a))**
4. The permittee shall maintain a current list of the materials used in EUCHEX5400 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. **(R 336.1901)**
5. The permittee shall keep, in a satisfactory manner, monthly and 12-month rolling time period calculations of the VOC emission rates from EUCHEX5400. The permittee shall keep all records on file at the facility and make them available to the Department upon request. **(R 336.1205, R 336.1225, R 336.1702(a))**

VII. REPORTING

NA

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. EF-1 | 36 | 72.9 | R 336.1225, 40 CFR 52.21 (c)&(d) |
| 2. EF-2 | 36 | 65.5 | R 336.1225, 40 CFR 52.21 (c)&(d) |
| 3. TK-98* | 3 | 18 | R 336.1225, 40 CFR 52.21 (c)&(d) |
| 4. TK-99* | 3 | 18 | R 336.1225, 40 CFR 52.21 (c)&(d) |

* This stack is not required to be discharged unobstructed vertically upwards to the ambient air.

IX. OTHER REQUIREMENTS

1. 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 VVVVVV, as they apply to EUCHEX5400. **(40 CFR Part 63 Subparts A & VVVVVV)**

Footnotes:

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