

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

November 1, 2021

PERMIT TO INSTALL
84-21

ISSUED TO
Corteva Agriscience, LLC

LOCATED AT
701 Washington Street
Midland, Michigan 48667

IN THE COUNTY OF
Midland

STATE REGISTRATION NUMBER
P1028

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: August 16, 2021	
DATE PERMIT TO INSTALL APPROVED: November 1, 2021	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))	Installation Date / Modification Date	Flexible Group ID
EU1028	<p>The Spinetoram manufacturing process at 1028 Building includes reactors, storage tanks, and other process vessels and receivers, along with ancillary equipment. Emission controls include three condensers, as well as dust collectors for emissions from solids loading and product packaging. This emission unit is subject to 40 CFR Part 63 Subparts A, F, and MMM and to the equipment leak provisions of 40 CFR Part 63 Subpart H.</p> <p>This emission unit was permitted in PTI 84-21.</p>	<p>11/1/2020 11/01/2021</p>	<p>FGPAIMACT, FG954THROX</p>

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.

**EU1028
 EMISSION UNIT CONDITIONS**

DESCRIPTION

The Spinetoram manufacturing process at 1028 Building includes reactors, storage tanks, and other process vessels and receivers, along with ancillary equipment. Emission controls include three condensers, as well as dust collectors for emissions from solids loading and product packaging. This emission unit is subject to 40 CFR Part 63 Subparts A, F, and MMM and to the equipment leak provisions of 40 CFR Part 63 Subpart H.

This emission unit was permitted in PTI 84-21.

Flexible Group ID: FGPAIMACT, FG954THROX

POLLUTION CONTROL EQUIPMENT

954 THROX, with quench and packed bed caustic and sodium thiosulfate scrubber
 Two condensers

- E-226 – V-226 hydrogenation vent exhausts to SVEU102801
- E-435 and knock-out pots – exhaust to 954 THROX

Two HEPA filters in series

- DC-215 and DC-216 – exhaust to SVEU102802

One dust collector with a HEPA filter

- DC-235 – exhausts to SVEU102803

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. PM	0.10 pph	Hourly	EU1028 operations exhausted through SVEU102802	SV VI.3, VI.4	R 336.1224, R 336.1225, R 336.1331, 40 CFR 52.21(c)&(d)
2. PM	0.41 pph	Hourly	EU1028 operations exhausted through SVEU102803	SV VI.3, VI.4	R 336.1224, R 336.1225, R 336.1331, 40 CFR 52.21(c)&(d)
3. VOC	1.2 tpy	12-month rolling time period as determined at the end of each calendar month	EU1028	SV VI.2	R 336.1702(a)
4. Ethyl bromide (CAS 74-96-4)	30.3 lbs/month ¹	Calendar month	EU1028	SC VI.5	R 336.1225

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall not charge solids to V-215 unless the DC-215 and DC-216 dust collectors are installed, maintained, and operated in a satisfactory manner acceptable to the AQD District Supervisor. **(R 336.1224, R 336.1225, R 336.1331, R 336.1910, 40 CFR 52.21(c) and (d))**

2. The permittee shall not dry or package product in EU1028 unless the DC-235 dust collector and the DC-235 HEPA filter are installed, maintained, and operated in a satisfactory manner acceptable to the AQD District Supervisor. **(R 336.1224, R 336.1225, R 336.1331, R 336.1910, 40 CFR 52.21(c) and (d))**
3. The permittee shall not operate equipment in EU1028 that vents to the 954 THROX unless condenser E-435 and the 954 THROX and scrubber are installed, maintained, and operated in a satisfactory manner acceptable to the AQD District Supervisor. Satisfactory operation of condenser E-435 includes maintaining a coolant return temperature less than 5 degrees Celsius. Satisfactory operation of the 954 THROX and scrubber includes meeting the requirements of FG954THROX and attaining at least 99.0% destruction of organic compounds in the THROX and scrubber and at least 99% removal of hydrogen bromide in the scrubber. **(R 336.1224, R 336.1225, R 336.1702(a), R 336.1910)**
4. The permittee shall not operate equipment in EU1028 that vents to condenser E-226 unless condenser E-226 is installed, maintained, and operated in a satisfactory manner acceptable to the AQD District Supervisor. **(R 336.1910)**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall equip and maintain E-435 condenser with a device to indicate the coolant return temperature. **(R 336.1224, R 336.1225, R 336.1702(a), R 336.1910)**
2. The permittee shall equip and maintain E-226 condenser with a device to indicate the coolant return temperature. **(R 336.1910)**

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 shall verify hydrogen bromide emission rates and/or removal efficiency from EU1028 by testing at the 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 or 40 CFR Part 63, Appendix A. An alternate method, or a modification to the approved EPA Method, may be specified in an AQD approved Test Protocol and must meet the requirements of the federal Clean Air Act, all applicable state and federal rules and regulations, and be within the authority of the AQD to make the change. 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 336.1224, R 336.1225, R 336.2001)**

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 and 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 336.1224, R 336.1225, R 336.1702(a), R 336.1910))**
2. The permittee shall calculate the VOC emission rates from EU1028 for each calendar month and for the 12-month rolling time period ending that month using a method 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))**
3. The permittee shall monitor SVEU102802 and SVEU102803 to verify the dust collectors are operating properly, by taking visible emission readings for each a minimum of once per calendar month. Either a certified or non-certified reader shall take each visible emission reading during routine operating conditions. Such readings do not have to be conducted per the requirements of Method 9. Multiple stacks may be observed simultaneously. If any visible emissions (other than uncombined water vapor) are observed, the

permittee shall immediately inspect the pertinent dust collector and perform any required maintenance. **(R 336.1224, R 336.1225, R 336.1331, R 336.1910, 40 CFR 52.21(c)&(d))**

4. The permittee shall keep, in a satisfactory manner, records of all visible emission readings for SVEU102802 and SVEU102803. At a minimum, records for each reading shall include the date, the name or initials of the observer, the status of visible emissions, and any corrective action that was taken. 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 336.1331, R 336.1910, 40 CFR 52.21(c)&(d))**
5. The permittee shall calculate the ethyl bromide (CAS 74-96-4) emission rates from EU1028 for each calendar month using a method 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.¹ **(R 336.1225)**
6. The permittee shall maintain a current list of the materials used in EU1028 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)**
7. The permittee shall monitor and record, on a continuous basis, the coolant return temperature of condenser E-435 with instrumentation acceptable to the AQD. For the purposes of this condition, “on a continuous basis” is defined as an instantaneous data point recorded at least once every 15 minutes for at least 90% of the operating time. The permittee may record block average values for 15 minute 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)**
8. The permittee shall monitor and record, on a continuous basis, the coolant return temperature of condenser E-226 with instrumentation acceptable to the AQD. For the purposes of this condition, “on a continuous basis” is defined as an instantaneous data point recorded at least once every 15 minutes for at least 90% of the operating time. The permittee may record block average values for 15 minute 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 336.1910)**

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:

Stack & Vent ID	Maximum Exhaust Diameter / Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SV954THROX (954 THROX) ^A	24	60	R 336.1225, 40 CFR 52.21(c)&(d)
2. SVEU102801 (E-226 vent)	1.5	89	R 336.1225, 40 CFR 52.21(c)&(d)
3. SVEU102802 * (DC-216 vent)	1.5	57	R 336.1225, 40 CFR 52.21(c)&(d)
4. SVEU102803 * (DC-235 vent)	1	40.5	R 336.1225, 40 CFR 52.21(c)&(d)

^A This stack’s requirements also appear in the conditions for FG954THROX.

* This vent discharges horizontally

IX. OTHER REQUIREMENT(S)

NA

Footnotes:

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