

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

December 14, 2022

PERMIT TO INSTALL
220-03A

ISSUED TO
Federal Mogul Powertrain, Inc.

LOCATED AT
560 Avis Drive
Ann Arbor, Michigan 48108

IN THE COUNTY OF
Washtenaw

STATE REGISTRATION NUMBER
N6266

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: December 12, 2022	
DATE PERMIT TO INSTALL APPROVED: December 14, 2022	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
EUTESTCELL1	Engine dynamometer test cell capable of testing natural gas and diesel fuels. This test cell can accommodate an engine rated up to 700 HP.	1/1/1990	FGTESTCELLS
EUTESTCELL2	Engine dynamometer test cell capable of testing natural gas and diesel fuels. This test cell can accommodate an engine rated up to 600 HP.	1/1/1990	FGTESTCELLS
EUTESTCELL3	Engine dynamometer test cell capable of testing natural gas and diesel fuels. This test cell can accommodate an engine rated up to 600 HP.	1/1/1993	FGTESTCELLS
EUTESTCELL4	Engine dynamometer test cell capable of testing natural gas and diesel fuels. This test cell can accommodate an engine rated up to 800 HP.	1/1/1993	FGTESTCELLS
EUTESTCELL5	Engine dynamometer test cell capable of testing natural gas and diesel fuels. This test cell can accommodate an engine rated up to 1,500 HP.	12/31/1998	FGTESTCELLS
EUTESTCELL6	Engine dynamometer test cell restricted to testing hydrogen gas. This test cell can accommodate an engine rated up to 500hp (373 kW)	12/31/1998 / TBD	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.

**EUTESTCELL6
 EMISSION UNIT CONDITIONS**

DESCRIPTION

Engine dynamometer test cell restricted to testing hydrogen gas. This test cell can accommodate an engine rated up to 500 hp (373 kW).
Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. NOx	315 lb/MMscf hydrogen gas	Hourly	EUTESTCELL6	SC V.1	R 336.1205 (3), 40 CFR 52.21(c) & (d)
2. NOx	3.15 tpy	12-month rolling time period as determined at the end of each calendar month.	EUTESTCELL6	SC VI.2	R 336.1205 (3), 40 CFR 52.21(c) & (d)

II. MATERIAL LIMIT(S)

1. The hydrogen gas usage for EUTESTCELL6 shall not exceed 20,000,000 scf of hydrogen gas per 12-month rolling time period as determined at the end of each calendar month. **(R 336.1205(3))**

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall only burn hydrogen gas as fuel in EUTESTCELL6. **(R 336.1205(1)(a) & (3), R 336.1224, R 336.1225, R 336.1702, 40 CFR 52.21(c) & (d))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

V. TESTING/SAMPLING

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

1. Upon the request of the AQD District Supervisor, the permittee shall verify NOx emission rates from EUTESTCELL6 by testing at owner's expense, in accordance with Department requirements. Testing shall be performed using an approved EPA Method listed in:

Pollutant	Test Method Reference
NOx	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 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 336.1205(3), R 336.1902, R 336.2001, R 336.2003, R 336.2004, 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 monitor in a satisfactory manner the hydrogen gas usage for EUTESTCELL6 on a monthly basis. **(R 336.1205(3))**
2. The permittee shall keep, in a satisfactory manner, monthly and previous 12-month NOx emission calculation records for EUTESTCELL6. All records shall be kept on file for a period of at least five years and made available to the Department upon request. **(R 336.1205(3))**
3. The permittee shall keep, in a satisfactory manner, monthly and 12-month rolling hydrogen gas fuel use records for EUTESTCELL6. All records shall be kept on file for a period of at least five years and made available to the Department upon request. **(R 336.1205(3))**

VII. REPORTING

1. Within 30 days after completion of the installation, construction, reconstruction, relocation, or modification authorized by this Permit to Install, the permittee or the authorized agent pursuant to Rule 204, shall notify the AQD District Supervisor, in writing, of the completion of the activity. Completion of the installation, construction, reconstruction, relocation, or modification is considered to occur not later than commencement of trial operation of EUTESTCELL6 using hydrogen as fuel. **(R 336.1201(7)(a))**

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
SVCELL6H2GAS	5	38	40 CFR 52.21(c) & (d)

IX. OTHER REQUIREMENT(S)

NA

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
FGTESTCELLS	Five engine dynamometer test cells using natural gas and diesel fuel.	EUTESTCELL1 EUTESTCELL2 EUTESTCELL3 EUTESTCELL4 EUTESTCELL5

**FGTESTCELLS
 FLEXIBLE GROUP CONDITIONS**

DESCRIPTION

Five engine dynamometer test cells using natural gas and diesel fuel.

Emission Unit: EUTESTCELL1, EUTESTCELL2, EUTESTCELL3, EUTESTCELL4, EUTESTCELL5

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. NOx	2,840 lb/MMscf natural gas	Hourly	FGTESTCELLS	SC V.1	R 336.1205 (3)
2. NOx	0.377 lb/gallon diesel	Hourly	FGTESTCELLS	SC V.1	R 336.1205 (3)
3. NOx	86.4 tpy	12-month rolling time period as determined at the end of each calendar month.	FGTESTCELLS	SC VI.2, VI.3	R 336.1205 (3)

II. MATERIAL LIMIT(S)

1. The natural gas usage for FGTESTCELLS shall not exceed 21,500,000 standard cubic feet per 12-month rolling time period as determined at the end of each calendar month. **(R 336.1205 (3))**
2. The diesel usage for FGTESTCELLS shall not exceed 296,500,000 gallons per 12-month rolling time period as determined at the end of each calendar month. **(R 336.1205 (3))**

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall only burn natural gas and diesel in FGTESTCELLS. **(R 336.1205(1)(a) & (3), R 336.1224, R 336.1225, R 336.1702, 40 CFR 52.21(c) & (d))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

V. TESTING/SAMPLING

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

1. Upon the request of the AQD District Supervisor, the permittee shall verify NOx emission rates from any unit in FGTESTCELLS by testing at owner's expense, in accordance with Department requirements. Testing shall be performed using an approved EPA Method listed in:

Pollutant	Test Method Reference
NO _x	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 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 336.1205(3), R 336.1902, R 336.2001, R 336.2003, R 336.2004, 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 monitor in a satisfactory manner the natural gas and diesel usage rates for FGTESTCELLS on a monthly basis. **(R 336.1205(3))**
2. The permittee shall keep, in a satisfactory manner, monthly and previous 12-month NOx emission calculation records for FGTESTCELLS. All records shall be kept on file for a period of at least five years and made available to the Department upon request. **(R 336.1205(3))**
3. The permittee shall keep, in a satisfactory manner, monthly natural gas and diesel fuel use records for FGTESTCELLS. All records shall be kept on file for a period of at least five years and made 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:

Stack & Vent ID	Maximum Exhaust Diameter / Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SVCELL1 ^a	8	30	40 CFR 52.21(c) & (d)
2. SVCELL2	6	30	40 CFR 52.21(c) & (d)
3. SVCELL3 ^a	8	30	40 CFR 52.21(c) & (d)
4. SVCELL4 ^a	8	30	40 CFR 52.21(c) & (d)
5. SVCELL5 ^a	10	39	40 CFR 52.21(c) & (d)

^a SC IX.1 contains the date of compliance for the stack diameter and height

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with the stack parameters within 180 days of permit issuance, or another timeframe if requested by the permittee and approved by the AQD District Supervisor, or the permittee submits an administratively complete application to modify the stacks. **(R 336.1201, 40 CFR 52.21(c) &(d))**

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.

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. NOx	89.9 tpy*	12-month rolling time period as determined at the end of each calendar month	FGFACILITY	SC VI.1	R 336.1205(3)

*Potential emissions are limited by fuel limits in FGTESTCELLS and EUTESTCELL6, and the heat rate capacities of other equipment at the time of issuance.

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

V. TESTING/SAMPLING

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, monthly and previous 12-month facility-wide NOx emission calculation records. All records shall be kept on file for a period of at least five years and made available to the Department upon request. (R 336.1205(3))

VII. REPORTING

NA

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENT(S)

NA