

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

September 10, 2024

**PERMIT TO INSTALL
95-24**

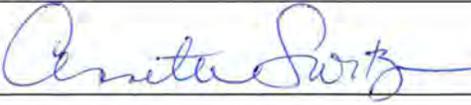
ISSUED TO
Air Products and Chemicals, Inc.

LOCATED AT
1025 South Oakwood Boulevard
Detroit, Michigan 48217

IN THE COUNTY OF
Wayne

STATE REGISTRATION NUMBER
A9831

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: March 20, 2024	
DATE PERMIT TO INSTALL APPROVED: September 10, 2024	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 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.

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date / Modification Date	Flexible Group ID
EU71-H2HTR-S3	Hydrogen Plant Heater. Area 71. Fuel: Refinery fuel gas, pressure swing absorption gas, Syngas, and natural gas. Permit: 63-08E, 95-24	11/05/2012	FGDHOUANNUAL-S3 FGDPPANNUAL-S3
EU71-H2PLANT-S3	Hydrogen Plant. Area 71. The H2 Plant will process natural gas, refinery fuel gas and/or a high-pentane refinery stream to produce 99.9% pure hydrogen and high-pressure steam through the use of a steam/methane reforming technology. This emission unit consists of process vessels, heater, compressors, pumps, piping, drains, and various components (pumps and compressor seals, process valves, pressure relief valves, flanges, connectors, etc.). Other EU's were created to address individual pieces of equipment within this unit that have specific applicable requirements. Permit: 63-08E, 95-24	11/05/2012	FGDHOUANNUAL-S3
EU71-H2STEAMSYS-S3	Hydrogen Plant Deaerator, Blowdown Vent, and Steam Vent. Area 71. During normal operation, small quantities of VOC may be emitted from the Hydrogen Plant Deaerator and the Blowdown Vent. During periods of startup, shutdown, and unanticipated outages, small quantities of VOC may be emitted from the Hydrogen Plant Deaerator, Blowdown Vent, and Steam Vent. Permit: 63-08E, 95-24	11/05/2012	FGDHOUANNUAL-S3

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.

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
FGDHOUANNUAL-S3	These emission units and flexible groups used the Actual-to-Potential test for PSD applicability. The emission limits in this group serve to limit the Potential to Emit of covered equipment. Permit: 63-08E, 95-24	EU71-H2HTR-S3, EU71-H2PLANT-S3, EU71-H2STEAMSYS-S3
FGDPPANNUAL-S3	The emission limits in this group are voluntary caps for the emission units affected by the 2023 Detroit Permitting Project. Permit: 95-24	EU71-H2HTR-S3

**FGDPPANNUAL-S3
 FLEXIBLE GROUP CONDITIONS**

DESCRIPTION

The emission limits in this group are voluntary caps for the emission units affected by the 2023 Detroit Permitting Project. Permit: 95-24

Emission Unit: EU71-H2HTR-S3

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. PM10	111.1 tpy ^A	12 month rolling time period as determined at the end of each calendar month	FGDPPANNUAL-S3	SC VI.1	R 336.201(3)
2. PM2.5	111.1 tpy ^A	12 month rolling time period as determined at the end of each calendar month	FGDPPANNUAL-S3	SC VI.1	R 336.201(3)
3. NOx	424.4 tpy ^A	12 month rolling time period as determined at the end of each calendar month	FGDPPANNUAL-S3	SC VI.1	R 336.201(3)
4. SO ₂	187.6 tpy ^A	12 month rolling time period as determined at the end of each calendar month	FGDPPANNUAL-S3	SC VI.1	R 336.201(3)
5. CO	168.4 tpy ^A	12 month rolling time period as determined at the end of each calendar month	FGDPPANNUAL-S3	SC VI.1	R 336.201(3)
6. VOC	153.0 tpy ^A	12 month rolling time period as determined at the end of each calendar month	FGDPPANNUAL-S3	SC VI.1	R 336.201(3)

^A This limit is the summation of the emissions from the equipment FGDPPANNUAL-S1 and FGDPPANNUAL-S3.

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

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))**

NA

VI. MONITORING/RECORDKEEPING

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

1. The permittee shall calculate the PM₁₀, PM_{2.5}, NO_x, SO₂, CO, and VOC emission rates from FGDDPANNUAL-S3 in tons per 12-month rolling time period as determined at the end of each calendar month, using a method acceptable to the AQD District Supervisor, considering the following. **(R 336.1201(3))**
 - a) Fugitive emissions from all components that may leak, such as those addressed in leak detection and repair programs.
2. The permittee shall calculate and keep records of the annual emissions of SO₂ from FGDDPANNUAL-S3 described in Appendix A, in tons per calendar year. Calculations and recordkeeping shall begin following the resumption of regular operations after the change and shall continue for ten (10) years. Resumption of regular operations is the issuance date of this PTI. **(R 336.2902(6)(c))**
3. The permittee shall calculate and keep records of the annual emissions of NO_x from FGDDPANNUAL-S3 described in Appendix B, in tons per calendar year. Calculations and recordkeeping shall begin following the resumption of regular operations after the change and shall continue for ten (10) years. Resumption of regular operations is the issuance date of this PTI. **(R 336.2818(3)(c))**

VII. REPORTING

1. The permittee shall submit records of the annual emissions of SO₂ from FGDDPANNUAL-S3 described in Appendix A, in tons per calendar year, to the AQD District Supervisor and Permit Section Manager within 60 days following the end of each reporting year if both the following occur:
 - a) The calendar year actual emission of SO₂ exceed the baseline actual emissions (BAE) for that pollutant by a significant amount, and
 - b) The calendar year actual emissions differ from the pre-construction projection. (The pre-construction projection is the sum of the projected actual emissions from each existing emission unit included in the Actual to Projected Actual Applicability Test used for FGDDPANNUAL-S3.)

The report shall contain the name, address, and telephone number of the facility; the annual emissions as calculated pursuant to SC VI.2, and any other information the owner or operator wishes to include (i.e., an explanation why emissions differ from the pre-construction projection). **(R 336.2902(6)(e))**

2. The permittee shall submit records of the annual emissions of NO_x from FGDDPANNUAL-S3 described in Appendix B, in tons per calendar year, to the AQD District Supervisor and Permit Section Manager within 60 days following the end of each reporting year if both the following occur:
 - a) The calendar year actual emission of NO_x exceed the baseline actual emissions (BAE) for that pollutant by a significant amount, and
 - b) The calendar year actual emissions differ from the pre-construction projection. (The pre-construction projection is the sum of the projected actual emissions from each existing emission unit included in the Actual to Projected Actual Applicability Test used for FGDDPANNUAL-S3.)

The report shall contain the name, address, and telephone number of the facility; the annual emissions as calculated pursuant to SC VI.3, and any other information the owner or operator wishes to include (i.e., an explanation why emissions differ from the pre-construction projection). **(R 336.2818(3)(e))**

See Appendix 8-S3 of Renewable Operating Permit No. MI-ROP-A9831-2012c

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENT(S)

NA

Footnotes:

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

FGDHOUANNUAL-S3 FLEXIBLE GROUP CONDITIONS
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DESCRIPTION

These emission units and flexible groups used the Actual-to-Potential test for PSD applicability for the Detroit Heavy Oil Upgrade Project. The previous emission limits in this group served to limit the Potential to Emit of covered equipment. The requirement to meet the previous emission limits and keep records of emissions expired on November 5, 2022, so the emission limits and associated recordkeeping and reporting have been removed. Permit: 63-08E, 95-24

Emission Unit: EU71-H2HTR-S3, EU71-H2PLANT-S3, EU71-H2STEAMSYS-S3

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

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))

NA

VI. MONITORING/RECORDKEEPING

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

NA

VII. REPORTING

NA

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENT(S)

NA

Footnotes:

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

**APPENDIX A. Recordkeeping Provisions
 Recordkeeping Provisions for Source Using
 Actual to Projected-Actual Applicability Test**

All information in this Appendix shall be maintained pursuant to R 336.2902(6) for ten years following the resumption of regular operations after the change. Resumption of regular operations is the issuance date of this PTI. The monitoring, recordkeeping, and reporting requirements for the pollutants listed below are listed in FGDPANNUAL-S3, SC VI.2 and SC VII.1.

- A. Project Description:** Detroit Permitting Project
- B. Applicability Test Description:** Actual to Projected Actual Test
- C. Emission Limitations:**

Emission Unit/Flexible Group ID	Pollutant	Emissions (tpy)			Reason for Exclusion
		Baseline Actual	Projected Actual	Excluded	
FGDPANNUAL-S3	SO ₂	172.1	187.6	10.8	Numerous emission units have operated for a minimum of one month with actual emission rates above baseline emission rates.

**APPENDIX B. Recordkeeping Provisions
 Recordkeeping Provisions for Source Using
 Actual to Projected-Actual Applicability Test**

All information in this Appendix shall be maintained pursuant to R 336.2818(3) for ten years following the resumption of regular operations after the change. Resumption of regular operations is the issuance date of this PTI. The monitoring, recordkeeping, and reporting requirements for the pollutants listed below are listed in FGDPANNUAL-S3, SC VI.3 and SC VII.2.

- A. Project Description:** Detroit Permitting Project
- B. Applicability Test Description:** Actual to Projected Actual Test
- C. Emission Limitations:**

Emission Unit/Flexible Group ID	Pollutant	Emissions (tpy)			Reason for Exclusion
		Baseline Actual	Projected Actual	Excluded	
FGDPANNUAL-S3	NOx	348.9	424.4	45.4	Numerous emission units have operated for a minimum of one month with actual emission rates above baseline emission rates.