

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

December 21, 2023

PERMIT TO INSTALL
152-15B

ISSUED TO
PVS Technologies, Inc.

LOCATED AT
10825 Harper Avenue
Detroit, Michigan 48231

IN THE COUNTY OF
Wayne

STATE REGISTRATION NUMBER
B2371

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: November 27, 2023	
DATE PERMIT TO INSTALL APPROVED: December 21, 2023	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 _{2e}	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
PM ₁₀	Particulate Matter equal to or less than 10 microns in diameter
PM _{2.5}	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
EUK-127	Single-stage packed bed scrubber for hydrogen chloride. The scrubber uses water as a scrubbing solution.	1995	FGREDUCTION FGMIP
EUK-501-502	Two-stage packed bed scrubber for chlorine. The scrubbing solutions for the scrubber may be ferrous chloride in both stages or ferrous chloride in one stage and a caustic solution in the other stage.	1991	FGCHLORINE
EUT-50	A 10,000-gallon storage tank for etchant or other specialty products.	1991	FGFERRICCHLORIDE
EUT-101	A 30,000-gallon intermediate process storage FRP tank for ferric chloride.	1991	FGFERRICCHLORIDE
EUT-102	A 30,000-gallon storage FRP tank for liquid ferric chloride.	1991	FGFERRICCHLORIDE
EUT-103	A 30,000-gallon chlorine scrubber feed FRP tank containing filtered ferrous chloride.	2015 / 2022	FGCHLORINE
EUT-104	A 30,000-gallon intermediate process storage FRP tank for unfiltered ferrous chloride.	1991	FGFERRICCHLORIDE
EUT-106A	A 10,000-gallon reaction vessel that produces ferrous chloride.	2022	FGREDUCTION
EUT-106B	A 10,000-gallon reaction vessel that produces ferrous chloride.	2022	FGREDUCTION
EUT-107	A 20,500-gallon reduction reactor to produce a concentrated ferrous chloride solution.	1995	FGREDUCTION
EUT-107A	A 15,000-gallon reduction reactor to produce a concentrated ferrous chloride solution.	1995	FGREDUCTION
EUT-108A	A 30,000-gallon reactor that chlorinates the ferrous chloride into ferric chloride.	1991	FGCHLORINE
EUT-108B	A 30,000-gallon reactor that chlorinates the ferrous chloride into ferric chloride.	1991	FGCHLORINE
EUT-108C	A 30,000-gallon reactor that chlorinates the ferrous chloride into ferric chloride.	2001	FGCHLORINE
EUT-108D	A 30,000-gallon reactor that chlorinates the ferrous chloride into ferric chloride.	2022	FGCHLORINE
EUT-109	A 3,000-gallon intermediate storage tank containing unfiltered ferrous chloride. Exhaust gas vents to EUK-127.	1991	FGREDUCTION
EUT-114	A 150,000-gallon ferrous chloride/HCl solution storage tank.	1991	FGREDUCTION

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date / Modification Date	Flexible Group ID
EUT-115	A 150,000-gallon ferrous chloride/HCl solution storage tank.	1991	FGREDUCTION
EUT-116	A 150,000-gallon storage tank for drinking water grade liquid ferric chloride or may be used for ferrous chloride solution based upon need.	1991	FGREDUCTION
EUT-195	A 10,566-gallon storage tank for etchant or other specialty products.	1991	FGFERRICCHLORIDE
EUT-196	A 21,672-gallon storage tank for etchant or other specialty products.	1991	FGFERRICCHLORIDE
EUT-197	A 16,561-gallon storage tank for etchant or other specialty products.	1991	FGFERRICCHLORIDE
EUT-198	A 21,672-gallon storage tank for etchant or other specialty products.	1991	FGFERRICCHLORIDE
EUT-199	An 8,478-gallon storage tank for etchant or other specialty products.	1991	FGFERRICCHLORIDE
EUT-200	A 4,700-gallon HCl storage tank.	1991	FGREDUCTION
EUT-201	A 10,000-gallon mini-iron plant (MIP) reactor tank.	1991 / 2023	FGMIP
EUT-202	An 8,000-gallon cationic polymer storage tank. The tank may also be used to store ferric chloride.	2022	FGPOLYMER
EUT-203	An 8,000-gallon cationic polymer storage tank. The tank may also be used to store ferric chloride.	2022	FGPOLYMER
EUT-204	A 10,240-gallon mini-iron plant (MIP) reactor tank.	2023	FGMIP
EUCIRailCar	Rail car that delivers chlorine to the facility and is unloaded into the chlorine pipeline.	Portable	FGCHLORINE
EUYARD	All open area storage piles of various material sizes and types. All truck traffic for delivery of raw material, loader traffic associated with storage pile handling, and unloading of delivery trucks.	1991	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.

EUCIRailCar EMISSION UNIT CONDITIONS

DESCRIPTION

Rail car that delivers chlorine to the facility and is unloaded into the chlorine pipeline.

Flexible Group ID: FGCHLORINE

POLLUTION CONTROL EQUIPMENT:

Two-stage packed tower scrubber.

I. EMISSION LIMITS

NA

II. MATERIAL LIMITS

NA

III. PROCESS/OPERATIONAL RESTRICTIONS

1. The permittee shall submit, implement, and maintain a malfunction abatement plan (MAP) as described in Rule 911(2), for the operation and unloading of EUCIRailCar. If at any time the MAP fails to address or inadequately addresses an event that meets the characteristics of a malfunction, the permittee shall amend the MAP within 45 days after such an event occurs. The permittee shall also amend the MAP within 45 days, if new equipment is installed or upon request from the District Supervisor. The permittee shall submit the MAP and any amendments to the MAP to the AQD District Supervisor for review and approval. If the AQD does not notify the permittee within 90 days of submittal, the MAP or amended MAP shall be considered approved. Until an amended plan is approved, the permittee shall implement corrective procedures or operational changes to achieve compliance with all applicable emission limits. **(R 336.1225, R 336.1910, R 336.1911)**

IV. DESIGN/EQUIPMENT PARAMETERS

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 the MAP at the facility and make it available to the Department upon request. The permittee shall keep all records demonstrating compliance with any preventative activities at the facility and make it available to the Department upon request. **(R 336.1225, R 336.1910, R 336.1911)**

VII. REPORTING

NA

VIII. STACK/VENT RESTRICTIONS

NA

IX. OTHER REQUIREMENTS

1. All rail cars entering the facility shall operate in compliance with all conditions of EUCIRailCar pursuant to this Permit to Install.¹ **(R 336.1224, R 336.1225)**

Footnotes:

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

EUYARD EMISSION UNIT CONDITIONS
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DESCRIPTION

All open area storage piles of various material sizes and types. All truck traffic for delivery of raw material, loader traffic associated with storage pile handling, and unloading of delivery trucks.

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT:

NA

I. EMISSION LIMITS

1. Visible emissions from each of the material storage piles, including loading and unloading, and all truck traffic operated in conjunction with EUYARD shall not exceed five (5) percent opacity. Compliance shall be demonstrated using Test Method 9D as defined in Section 324.5525(j) of Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451). **(R 336.1301, 40 CFR 52.21(c) & (d), Act 451 324.5524(2))**

II. MATERIAL LIMITS

NA

III. PROCESS/OPERATIONAL RESTRICTIONS

1. The permittee shall submit, implement, and maintain a nuisance minimization plan for fugitive dust for all plant roadways, the plant yard, all material storage piles, and all material handling. The permittee shall submit the nuisance minimization plan and any amendments to the nuisance minimization plan to the AQD District Supervisor for review and approval. The permittee shall keep the nuisance minimization plan on file at the facility, in a format acceptable to the AQD District Supervisor, and make it available to the Department upon request. **(Act 451 324.5524)**

IV. DESIGN/EQUIPMENT PARAMETERS

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 records of activities associated with nuisance minimization. **(Act 451 324.5524)**

VII. REPORTING

NA

VIII. STACK/VENT RESTRICTIONS

NA

IX. OTHER REQUIREMENTS

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
FGREDUCTION	The reduction of iron oxide and iron scrap with HCl to produce ferrous chloride.	EUK-127, EUT-106A, EUT-106B, EUT-107, EUT-107A, EUT-109, EUT-114, EUT-115, EUT-116, EUT-200
FGCHLORINE	The chlorination of ferrous chloride into ferric chloride.	EUK-501-502, EUT-103 EUT-108A, EUT-108B, EUT-108C, EUT-108D EUCIRailCar
FGPOLYMER	Two (2) 8,000-gallon storage tanks used to store cationic polymer added to some blends of the ferric chloride product. The tanks may also be used to store ferric chloride.	EUT-202, EUT-203
FGFERRICCHLORIDE	The total process of processing iron oxide and iron scrap into ferric chloride, and the final product storage.	FGREDUCTION, FGCHLORINE, FGPOLYMER, EUT-50, EUT-101, EUT-102, EUT-104, EUT-195, EUT-196, EUT-197, EUT-198, EUT-199
FGMIP	Mini Iron Plant consisting of two reactors used to react hydrochloric acid solution and iron oxide to produce 35-43% ferric chloride solution. The emissions from the process will be exhausted to the single stage packed tower scrubber EUK-127.	EUT-201, EUT-204, EUK-127

FGREDUCTION FLEXIBLE GROUP CONDITIONS
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DESCRIPTION

The reduction of iron oxide and iron scrap with HCl to produce ferrous chloride.

Emission Units: EUK-127, EUT-106A, EUT-106B, EUT-107, EUT-107A, EUT-109, EUT-114, EUT-115, EUT-116, EUT-200

POLLUTION CONTROL EQUIPMENT:

Single-stage packed tower scrubber.

I. EMISSION LIMITS

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. Hydrogen chloride ¹	0.594 pph	Hourly	FGREDUCTION	SC V.1*	R 336.1224, R 336.1225
*Compliance with this emission limit is also demonstrated through parametric monitoring of the control equipment.					

II. MATERIAL LIMITS

NA

III. PROCESS/OPERATIONAL RESTRICTIONS

1. The permittee shall not operate any equipment in FGREDUCTION unless a malfunction abatement plan (MAP) as described in Rule 911(2), for the single-stage packed tower scrubber (EUK-127), has been submitted to the AQD District Office, and is implemented and maintained. The MAP shall, at a minimum, specify the following:
 - a) A complete preventative maintenance program including identification of the supervisory personnel responsible for overseeing the inspection, maintenance, and repair of air-cleaning devices, a description of the items or conditions that shall be inspected, the frequency of the inspections or repairs, and an identification of the major replacement parts that shall be maintained in inventory for quick replacement.
 - b) An identification of the source and air-cleaning device operating variables that shall be monitored to detect a malfunction or failure, the normal operating range of these variables, and a description of the method of monitoring or surveillance procedures.
 - c) A description of the corrective procedures or operational changes that shall be taken in the event of a malfunction or failure to achieve compliance with the applicable emission limits.

If at any time the MAP fails to address or inadequately addresses an event that meets the characteristics of a malfunction, the permittee shall amend the MAP within 45 days after such an event occurs. The permittee shall also amend the MAP within 45 days, if new equipment is installed or upon request from the District Supervisor. The permittee shall submit the MAP and any amendments to the MAP to the AQD District Supervisor for review and approval. If the AQD does not notify the permittee within 90 days of submittal, the MAP or amended MAP shall be considered approved. Until an amended plan is approved, the permittee shall implement corrective procedures or operational changes to achieve compliance with all applicable emission limits. **(R 336.1224, R 336.1225, R 336.1910, R 336.1911)**

2. The permittee shall immediately discontinue the input feed to all equipment in FGREDUCTION, consistent with safe operating procedures, upon occurrence of a malfunction of the single-stage packed tower scrubber. **(R 336.1224, R 336.1225, R 336.1910)**
3. The permittee shall use water or sodium hydroxide as the scrubbing solution in the single-stage packed tower scrubber. The conductance of water shall not exceed 709,000 microsiemens/centimeter. The conductance of sodium hydroxide shall not exceed 414,000 microsiemens/centimeter. **(R 336.1224, R 336.1225, R 336.1910)**
4. The permittee shall maintain a minimum liquid flow rate within EUK-127 of 14 gallons per minute and shall not exceed a gas flow rate to EUK-127 of 3,600 standard cubic feet per minute. The permittee shall not exceed a maximum pressure drop of 3 inches water gauge across EUK-127. **(R 336.1224, R 336.1225, R 336.1910)**

IV. DESIGN/EQUIPMENT PARAMETERS

1. The permittee shall not operate any equipment in FGREDUCTION unless the single-stage packed tower scrubber (EUK-127) is installed, maintained, and operated in a satisfactory manner. **(R 336.1224, R 336.1225, R 336.1910)**
2. The permittee shall maintain, in a satisfactory manner, an alternate pump for resuming the normal flow of scrubbing liquid to the single-stage packed tower scrubber upon occurrence of a malfunction of the operating pump. The alternate pump shall be readily accessible at the facility. **(R 336.1224, R 336.1225, R 336.1910)**
3. The permittee shall install, calibrate, maintain and operate in a satisfactory manner, a device to monitor the conductivity of the scrubbing solution in EUK-127 on a continuous basis while operating any equipment in FGREDUCTION. Continuous shall be defined in this permit at least one reading every 15 minutes. **(R 336.1224, R 336.1225, R 336.1910)**
4. The permittee shall install, calibrate, maintain and operate in a satisfactory manner, a device to monitor the liquid flow rate of the scrubbing solution of EUK-127 on a continuous basis while operating any equipment in FGREDUCTION. **(R 336.1224, R 336.1225, R 336.1910)**
5. The permittee shall install, calibrate, maintain and operate in a satisfactory manner, a device to monitor the pressure drop across EUK-127 on a continuous basis while operating any equipment in FGREDUCTION. **(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))**

1. Upon request of the AQD District Supervisor, the permittee shall verify hydrogen chloride emission rates from FGREDUCTION by testing at owner's expense, in accordance with Department requirements. If the initial test is performed with a caustic scrubbing solution, then a subsequent test shall be performed within 180 days of switching the scrubbing solution to water. No less than 60 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. Verification of emission rates includes the submittal of 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, R 336.2003, R 336.2004)**

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 records in a format acceptable to the AQD District Supervisor and make them available by the 15th day of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition.¹ **(R 336.1224, R 336.1225)**
2. The permittee shall keep, in a satisfactory manner, a log of all EUK-127 downtime and maintenance and repair activities. 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 336.1910, R 336.1911)**
3. The permittee shall maintain records of the maximum fan capacity for the fan associated with the exhaust gas flowing to EUK-127 to demonstrate compliance with SC III.4. The permittee shall keep all records on file at the facility and make them available to the Department upon request.¹ **(R 336.1224, R 336.1225)**
4. The permittee shall record and maintain the following information for FGREDUCTION at least once per shift:
 - a) The conductance of the scrubbing solution in EUK-127.
 - b) EUK-127 liquid flow rate in gallons per minute.
 - c) The pressure drop across EUK-127 in inches water gauge.

One data point for each listed item shall be recorded, unless a more frequent timeframe is specified in the MAP. 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.¹ **(R 336.1224, R 336.1225)**

5. The permittee shall maintain records of the results of the testing required in SC V.1. The permittee shall keep all records on file at the facility and make them available to the Department upon request.¹ **(R 336.1224, R 336.1225)**

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. SVK-127	18	49	R 336.1225 40 CFR 52.21(c) & (d)

IX. OTHER REQUIREMENTS

NA

Footnotes:

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

FGCHLORINE FLEXIBLE GROUP CONDITIONS

DESCRIPTION

The chlorination of ferrous chloride into ferric chloride.

Emission Units: EUK-501-502, EUT-103, EUT-108A, EUT-108B, EUT-108C, EUT-108D, EUCIRailCar

POLLUTION CONTROL EQUIPMENT

Two-stage packed tower scrubber.

I. EMISSION LIMITS

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. Chlorine ¹	1 ppmv	Hourly	FGCHLORINE	SC VI.2*	R 336.1224, R 336.1225
2. Chlorine ¹	0.022 pph	Hourly	FGCHLORINE	SC V.1*	R 336.1224, R 336.1225

*Compliance with this emission limit is also demonstrated through parametric monitoring of the control equipment.

II. MATERIAL LIMITS

NA

III. PROCESS/OPERATIONAL RESTRICTIONS

1. The permittee shall not operate any equipment in FGCHLORINE unless a malfunction abatement plan (MAP) as described in Rule 911(2), for the two-stage packed tower scrubber (EUK-501-502), has been submitted to the AQD District Office, and is implemented and maintained. The MAP shall, at a minimum, specify the following:
 - a) A complete preventative maintenance program including identification of the supervisory personnel responsible for overseeing the inspection, maintenance, and repair of air-cleaning devices, a description of the items or conditions that shall be inspected, the frequency of the inspections or repairs, and an identification of the major replacement parts that shall be maintained in inventory for quick replacement.
 - b) An identification of the source and air-cleaning device operating variables that shall be monitored to detect a malfunction or failure, the normal operating range of these variables, and a description of the method of monitoring or surveillance procedures.
 - c) A description of the corrective procedures or operational changes that shall be taken in the event of a malfunction or failure to achieve compliance with the applicable emission limits.
 - d) A description of the procedure for maintaining calibration on the continuous chlorine emission monitor.

If at any time the MAP fails to address or inadequately addresses an event that meets the characteristics of a malfunction, the permittee shall amend the MAP within 45 days after such an event occurs. The permittee shall also amend the MAP within 45 days, if new equipment is installed or upon request from the District Supervisor. The permittee shall submit the MAP and any amendments to the MAP to the AQD District Supervisor for review and approval. If the AQD does not notify the permittee

within 90 days of submittal, the MAP or amended MAP shall be considered approved. Until an amended plan is approved, the permittee shall implement corrective procedures or operational changes to achieve compliance with all applicable emission limits. **(R 336.1225, R 336.1910, R 336.1911)**

2. The permittee shall immediately discontinue the input feed to all equipment in FGCHLORINE, consistent with safe operating procedures, upon occurrence of a malfunction of the two-stage packed tower scrubber. **(R 336.1224, R 336.1225, R 336.1910)**
3. The permittee shall cease operation of FGCHLORINE if the chlorine concentration meets or exceeds the limit in SC I.1. **(R 336.1224, R 336.1225, R 336.1910)**
4. The permittee shall not exceed a gas flow rate to EUK-501-502 of 2,000 standard cubic feet per minute.¹ **(R 336.1224, R 336.1225)**

IV. DESIGN/EQUIPMENT PARAMETERS

1. The permittee shall not operate any equipment in FGCHLORINE unless the two-stage packed tower scrubber (EUK-501-502) is installed, maintained, and operated in a satisfactory manner. **(R 336.1224, R 336.1225, R 336.1910)**
2. The permittee shall maintain, in a satisfactory manner, an alternate pump for resuming the normal flow of scrubbing liquid to the two-stage packed tower scrubber upon occurrence of a malfunction of the operating pump. The alternate pump shall be readily accessible at the facility. **(R 336.1224, R 336.1225, R 336.1910)**
3. The permittee shall install, calibrate, maintain and operate in a satisfactory manner, a device to monitor and record the chlorine concentration of the exhaust gas from SVK-501-502 on a continuous basis while operating any equipment in FGCHLORINE. The monitoring device shall be equipped with an alarm and interlocking shutdown system that ceases operation of FGCHLORINE when the monitored chlorine concentration meets or exceeds the limit in SC I.1. **(R 336.1224, R 336.1225, R 336.1910)**
4. The permittee shall use ferrous chloride only or ferrous chloride and sodium hydroxide as the scrubbing solutions in the two-stage packed tower scrubber. The permittee shall install, calibrate, maintain and operate in a satisfactory manner, a device to monitor the Oxidation Reduction Potential of the ferrous chloride scrubbing solution in EUK-501-502 on a continuous basis while operating any equipment in FGCHLORINE. If the permittee switches from a sodium hydroxide scrubbing solution to a ferrous chloride scrubbing solution in EUK-501-502, then the permittee shall, within 90 days of the switch, install, calibrate, maintain and operate in a satisfactory manner, a device to monitor the Oxidation Reduction Potential of the ferrous chloride scrubbing solution in that stage of EUK-501-502 on a continuous basis while operating any equipment in FGCHLORINE. **(R 336.1224, R 336.1225, R 336.1910)**
5. The permittee shall install, calibrate, maintain and operate in a satisfactory manner, a device to monitor the liquid flow rates of the scrubbing solutions of EUK-501-502 on a continuous basis while operating any equipment in FGCHLORINE. **(R 336.1224, R 336.1225, R 336.1910)**
6. The permittee shall install, calibrate, maintain and operate in a satisfactory manner, a device to monitor the pressure drop across EUK-501-502 on a continuous basis while operating any equipment in FGCHLORINE. **(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))**

1. Upon request of the AQD District Supervisor, the permittee shall verify chlorine emission rates from FGCHLORINE by testing at owner's expense, in accordance with Department requirements. If the initial test is performed with ferrous chloride and sodium hydroxide as the scrubbing solutions, then a

subsequent test shall be performed within 180 days of switching to the use of ferrous chloride only. No less than 60 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. Verification of emission rates includes the submittal of 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, R 336.2003, R 336.2004)**

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 records in a format acceptable to the AQD District Supervisor and make them available by the 15th day of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition.¹ **(R 336.1224, R 336.1225)**
2. The permittee shall keep, in a satisfactory manner, records of the chlorine concentration in the exhaust gas from SVK-501-502 on a continuous basis. 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 336.1910)**
3. The permittee shall keep, in a satisfactory manner, a log of all EUK-501-502 downtime and maintenance and repair activities, including all events related to the shutdown of EUK-501-502 through the interlocking shutdown system. 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 336.1910, R 336.1911)**
4. The permittee shall keep, in a satisfactory manner, a record of the operating hours of FGCHLORINE on a daily and monthly basis. The permittee shall keep all records on file at the facility and make them available to the Department upon request.¹ **(R 336.1225)**
5. The permittee shall maintain records of the maximum fan capacity for the fan associated with the exhaust gas flowing to EUK-501-502 to demonstrate compliance with SC III.4. The permittee shall keep all records on file at the facility and make them available to the Department upon request.¹ **(R 336.1224, R 336.1225)**
6. The permittee shall maintain records of the results of the testing required in SC V.1. The permittee shall keep all records on file at the facility and make them available to the Department upon request.¹ **(R 336.1224, R 336.1225)**

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. SVK-501-502	18	49	R 336.1225 40 CFR 52.21(c) & (d)

IX. OTHER REQUIREMENTS

NA

Footnotes:

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

**FGPOLYMER
FLEXIBLE GROUP CONDITIONS**

DESCRIPTION

Two (2) 8,000-gallon storage tanks used to store cationic polymer added to some blends of the ferric chloride product. The tanks may also be used to store ferric chloride.

Emission Units: EUT-202, EUT-203

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMITS

NA

II. MATERIAL LIMITS

Material	Limit	Time Period / Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. Cationic polymer	4,700 gallons filled per hour	Hourly	FGPOLYMER	SC VI.2	R 336.1225, R 336.1702
2. Cationic polymer	128,000 gallons filled per year	12-month rolling time period as determined at the end of each calendar month	FGPOLYMER	SC VI.3	R 336.1225, R 336.1702

III. PROCESS/OPERATIONAL RESTRICTIONS

NA

IV. DESIGN/EQUIPMENT PARAMETERS

1. The permittee shall not fill FGPOLYMER at the facility unless each tank in FGPOLYMER is equipped with submerged fill piping. **(R 336.1224, R 336.1225, R 336.1702)**

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 complete all required calculations in a format acceptable to the AQD District Supervisor by the 15th day of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition.¹ **(R 336.1225)**
2. Within 30 days after completion of the installation of FGPOLYMER, the permittee shall submit an acceptable demonstration to the AQD District Supervisor that shows the maximum filling rate of the

pump used to fill the tanks in FGPOLYMER. The demonstration shall be updated and re-submitted to the AQD District Supervisor within 30 days of any modification to or replacement of the pump. The permittee shall keep all records on file at the facility and make them available to the Department upon request. **(R 336.1225, 336.1702(a))**

3. The permittee shall monitor and record, in a satisfactory manner acceptable to the AQD District Supervisor, the cationic polymer fill rate on a monthly and 12-month rolling time period, in gallons, for FGPOLYMER. The permittee shall keep all records on file at the facility and make them available to the Department upon request. **(R 336.1225, R 336.1702(a))**

VII. REPORTING

NA

VIII. STACK/VENT RESTRICTIONS

NA

IX. OTHER REQUIREMENTS

NA

Footnotes:

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

FGFERRICCHLORIDE FLEXIBLE GROUP CONDITIONS

DESCRIPTION

The total process of processing iron oxide and iron scrap into ferric chloride, and the final product storage.

Flexible Group IDs and Emission Units: FGREDUCTION, FGCHLORINE, FGPOLYMER, EUT-50, EUT-101, EUT-102, EUT-104, EUT-195, EUT-196, EUT-197, EUT-198, EUT-199

POLLUTION CONTROL EQUIPMENT

A single-stage packed tower scrubber for FGREDUCTION and a two-stage packed tower scrubber for FGCHLORINE.

I. EMISSION LIMITS

NA

II. MATERIAL LIMITS

NA

III. PROCESS/OPERATIONAL RESTRICTIONS

1. The permittee shall maintain the Emergency Action Plan for the equipment in FGFERRICCHLORIDE. The Emergency Action Plan should describe the triggering event for use of the Emergency Action Plan and the subsequent actions to be taken. The permittee shall keep a copy of the Emergency Action Plan on file at the facility and make it available to the Department upon request. **(R 336.1224, R 336.1225)**

IV. DESIGN/EQUIPMENT PARAMETERS

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 the Emergency Action Plan at the facility and make it available to the Department upon request. The permittee shall keep all records related to triggering events and the subsequent actions taken and make them available to the Department upon request. **(R 336.1224, R 336.1225)**

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. SVK-127	18	49	R 336.1225 40 CFR 52.21(c) & (d)
2. SVK-501-502	18	49	R 336.1225 40 CFR 52.21(c) & (d)

IX. OTHER REQUIREMENTS

NA

Footnotes:

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

**FGMIP
FLEXIBLE GROUP CONDITIONS**

DESCRIPTION

Mini Iron Plant consisting of two reactors used to react hydrochloric acid solution and iron oxide to produce 35-43% ferric chloride solution. The emissions from the process will be exhausted to the single stage packed tower scrubber EUK-127.

Emission Units: EUT-201, EUT-204, EUK-127

POLLUTION CONTROL EQUIPMENT:

Single-stage packed tower scrubber.

I. EMISSION LIMITS

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Testing / Monitoring Method	Underlying Applicable Requirements
1. Hydrogen chloride ¹	0.118 pph	Hourly	FGMIP	SC V.1*	R 336.1224, R 336.1225
*Compliance with this emission limit is also demonstrated through parametric monitoring of the control equipment.					

II. MATERIAL LIMITS

NA

III. PROCESS/OPERATIONAL RESTRICTIONS

1. The permittee shall not operate any equipment in FGMIP unless a malfunction abatement plan (MAP) as described in Rule 911(2), for the single-stage packed tower scrubber (EUK-127), has been submitted to the AQD District Office, and is implemented and maintained. The MAP shall, at a minimum, specify the following:
 - a) A complete preventative maintenance program including identification of the supervisory personnel responsible for overseeing the inspection, maintenance, and repair of air-cleaning devices, a description of the items or conditions that shall be inspected, the frequency of the inspections or repairs, and an identification of the major replacement parts that shall be maintained in inventory for quick replacement.
 - b) An identification of the source and air-cleaning device operating variables that shall be monitored to detect a malfunction or failure, the normal operating range of these variables, and a description of the method of monitoring or surveillance procedures.
 - c) A description of the corrective procedures or operational changes that shall be taken in the event of a malfunction or failure to achieve compliance with the applicable emission limits.

If at any time the MAP fails to address or inadequately addresses an event that meets the characteristics of a malfunction, the permittee shall amend the MAP within 45 days after such an event occurs. The permittee shall also amend the MAP within 45 days, if new equipment is installed or upon request from the District Supervisor. The permittee shall submit the MAP and any amendments to the MAP to the AQD District Supervisor for review and approval. If the AQD does not notify the permittee within 90 days of submittal, the MAP or amended MAP shall be considered approved. Until an amended plan is approved, the permittee shall implement corrective procedures or operational changes

to achieve compliance with all applicable emission limits. **(R 336.1224, R 336.1225, R 336.1910, R 336.1911)**

2. The permittee shall immediately discontinue the input feed to all equipment in FGMIP, consistent with safe operating procedures, upon occurrence of a malfunction of the single-stage packed tower scrubber. **(R 336.1224, R 336.1225, R 336.1910)**
3. The permittee shall use water or sodium hydroxide as the scrubbing solution in the single-stage packed tower scrubber. The conductance of water shall not exceed 709,000 microsiemens/centimeter. The conductance of sodium hydroxide shall not exceed 414,000 microsiemens/centimeter. **(R 336.1224, R 336.1225, R 336.1910)**
4. The permittee shall maintain a minimum liquid flow rate within EUK-127 of 14 gallons per minute and shall not exceed a gas flow rate to EUK-127 of 3,600 standard cubic feet per minute. The permittee shall not exceed a maximum pressure drop of 3 inches water gauge across EUK-127. **(R 336.1224, R 336.1225, R 336.1910)**

IV. DESIGN/EQUIPMENT PARAMETERS

1. The permittee shall not operate any equipment in FGMIP unless the single-stage packed tower scrubber (EUK-127) is installed, maintained, and operated in a satisfactory manner. **(R 336.1224, R 336.1225, R 336.1910)**
2. The permittee shall maintain, in a satisfactory manner, an alternate pump for resuming the normal flow of scrubbing liquid to the single-stage packed tower scrubber upon occurrence of a malfunction of the operating pump. The alternate pump shall be readily accessible at the facility. **(R 336.1224, R 336.1225, R 336.1910)**
3. The permittee shall install, calibrate, maintain and operate in a satisfactory manner, a device to monitor the conductivity of the scrubbing solution in EUK-127 on a continuous basis while operating any equipment in FGMIP. Continuous shall be defined in this permit at least one reading every 15 minutes. **(R 336.1224, R 336.1225, R 336.1910)**
4. The permittee shall install, calibrate, maintain and operate in a satisfactory manner, a device to monitor the liquid flow rate of the scrubbing solution of EUK-127 on a continuous basis while operating any equipment in FGMIP. **(R 336.1224, R 336.1225, R 336.1910)**
5. The permittee shall install, calibrate, maintain and operate in a satisfactory manner, a device to monitor the pressure drop across EUK-127 on a continuous basis while operating any equipment in FGMIP. **(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))**

1. Upon request of the AQD District Supervisor, the permittee shall verify hydrogen chloride emission rates from FGMIP by testing at owner's expense, in accordance with Department requirements. If the initial test is performed with a caustic scrubbing solution, then a subsequent test shall be performed within 180 days of switching the scrubbing solution to water. No less than 60 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. Verification of emission rates includes the submittal of 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, R 336.2003, R 336.2004)**

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 records in a format acceptable to the AQD District Supervisor and make them available by the 15th day of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition.¹ **(R 336.1224, R 336.1225)**
2. The permittee shall keep, in a satisfactory manner, a log of all EUK-127 downtime and maintenance and repair activities. 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 336.1910, R 336.1911)**
3. The permittee shall maintain records of the maximum fan capacity for the fan associated with the exhaust gas flowing to EUK-127 to demonstrate compliance with SC III.4. The permittee shall keep all records on file at the facility and make them available to the Department upon request.¹ **(R 336.1224, R 336.1225)**
4. The permittee shall record and maintain the following information for FGMIP at least once per shift:
 - a) The conductance of the scrubbing solution in EUK-127.
 - b) EUK-127 liquid flow rate in gallons per minute.
 - c) The pressure drop across EUK-127 in inches water gauge.

One data point for each listed item shall be recorded, unless a more frequent timeframe is specified in the MAP. 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.¹ **(R 336.1224, R 336.1225)**

5. The permittee shall maintain records of the results of the testing required in SC V.1. The permittee shall keep all records on file at the facility and make them available to the Department upon request.¹ **(R 336.1224, R 336.1225)**

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 FGMIP. **(R 336.1201(7)(a))**

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. SVK-127	18	49	R 336.1225 40 CFR 52.21(c) & (d)

IX. OTHER REQUIREMENTS

NA

Footnotes:

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