

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
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))	Flexible Group ID
EUDRYER1	Natural gas rotary dryer processing titanium scrap (crushed turnings/"chips"). This dryer is located in Wash Building 1 and the emissions are controlled by a cyclone and a Rotoclone wet scrubber.	FGDRYERS
EUDRYER2	Natural gas rotary dryer processing titanium scrap (crushed turnings/"chips"). This dryer is located in Wash Building 2 building and the emissions are controlled by a cyclone and a Sly venturi wet scrubber.	FGDRYERS
EUFETIFURN1	Inductotherm induction crucible furnace for melting ferrotitanium. Rated for 2,500 lb/charge. Located in the Melt Shop. Controlled by the 40,000 cfm Dustar baghouse.	FGFETIFURNS
EUFETIFURN2	Inductotherm induction crucible furnace for melting ferrotitanium. Rated for 2,500 lb/charge. Located in the Melt Shop. Controlled by the 40,000 cfm Dustar baghouse.	FGFETIFURNS
EUFETICRUSH1	Kue Ken 90/57 crusher which processes ferrotitanium "heats" (ingots) from the induction furnaces. This crusher is located in the Melt shop and the emissions are controlled by a Schubert 4,000 cfm wet scrubber (SV4KSCHUBERTA), different from the 4,000 cfm Schubert in EUPOWDER.	FGFETICRUSHERS
EUFETICRUSH2	Kue Ken 55 crusher processing materials from EUFETICRUSH1. This crusher is located in Building 202B and the emissions are controlled by a Tri-Mer 12,000 cfm wet scrubber shared with EUFETICRUSHER3.	FGFETICRUSHERS
EUFETICRUSH3	Kue Ken 24/25 crusher processing materials from EUFETICRUSH2. This crusher is located in Building 202B and the emissions are controlled by a Tri-Mer 12,000 cfm wet scrubber shared with EUFETICRUSHER2.	FGFETICRUSHERS
EUFETICRUSH4	Roll crusher processing materials discharged from EUFETICRUSH2 and/or EUFETICRUSH3. This crusher is located in Building 202B and the emissions are controlled by a Tri-Mer 6,000 cfm wet scrubber.	FGFETICRUSHERS

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Flexible Group ID
EUPOWDER	<p>Titanium powders are produced through the hydride de-hydride (HDH) process.</p> <p>Two (2) electrically heated vacuum furnaces and several closed-system powder screeners are uncontrolled.</p> <p>A powder crushing terminator and rod mill crusher, a terminator, two (2) powder crushing attrition mills, and screeners are controlled by a Schubert 6,000 cfm wet scrubber (SV6KSCHUBERT), different from the 6,000 cfm Schubert in EUDOSS.</p> <p>An impact mill, a powder crushing attrition mill, powder granulating and screening, and powder blending are controlled by a Schubert 4,000 cfm wet scrubber (SV4KSCHUBERTB), different from the 4,000 cfm Schubert in EUFETICRUSH1 .</p>	FGPOWDER
EUDOSS	<p>Some powders from the HDH process go through the de-oxidation process (DOSS Process). This process uses the same electrically heated vacuum furnaces as EUPOWDER, and also includes the following equipment located in the Church building:</p> <p>A dilute HCl water bath and closed-system screeners are uncontrolled.</p> <p>An impact mill, (2) attrition mills, (2) terminators, and blending operations are controlled by a 6,000 cfm Schubert wet scrubber (SVSCHUBERT), different from the 6,000 cfm Schubert in EUPOWDER.</p>	FGPOWDER

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
FGDRYERS	Two (2) natural gas rotary dryers processing titanium scrap (crushed turnings/"chips"). Both dryers have cyclone dust control and wet dust control.	EUDRYER1, EUDRYER2
FGFETIFURNS	Two (2) Inductotherm induction crucible furnaces for melting ferrotitanium. Rated for 2,500 lb/charge each. Located in the Melt Shop. Both furnaces are controlled by the Dostar baghouse.	EUFETIFURN1, EUFETIFURN2
FGFETICRUSHERS	Four (4) crushers processing ferrotitanium from FGFETIFURNS. EUFETICRUSH1 is located in the melt shop, and the other crushers are located in Building 202B. Wet scrubbers are used to control emissions.	EUFETICRUSH1, EUFETICRUSH2, EUFETICRUSH3, EUFETICRUSH4
FGPOWDER	Titanium powders production processes, including the hydride de-hydride (HDH) process equipment and the de-oxidation (DOSS) process equipment. Wet scrubbers control certain equipment, while other equipment is uncontrolled.	EUPOWDER, EUDOSS
FGFUGDUST	Sources of fugitive dust at the facility, including but not limited to: storage, handling, and transport of bulk materials, emissions from roads and lots, and emissions from building openings.	NA

**FGDRYERS
 FLEXIBLE GROUP CONDITIONS**

DESCRIPTION

Two (2) natural gas rotary dryers processing titanium scrap (crushed turnings/“chips”). Both dryers have cyclone dust control and wet dust control.

Emission Unit: EUDRYER1, EUDRYER2

POLLUTION CONTROL EQUIPMENT

EUDRYER1: cyclone and a Rotoclone wet scrubber.
 EUDRYER2: cyclone and a Sly venturi scrubber.

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

Material	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. Metals Processed	150,000 lbs per day	Calendar Day	EUDRYER1	SC VI.1	R 336.1205, R 336.1225, R 336.1301, 40 CFR 52.21(c) and (d)
2. Metal Processed	150,000 lbs per day	Calendar Day	EUDRYER2	SC VI.2	R 336.1205, R 336.1225, R 336.1301, 40 CFR 52.21(c) and (d)

3. The permittee shall not process titanium scrap with more than four percent by weight nickel nor more than four percent by weight chromium, in FGDRYERS.¹ **(R 336.1224, R 336.1225)**

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall not operate either dryer in FGDRYERS unless a malfunction abatement plan (MAP) as described in Rule 911(2) for the associated cyclone and wet scrubber has been submitted within 90 days of permit issuance and is implemented and maintained. The permittee shall submit the MAP and any amendments to the MAP to the AQD District Supervisor for review and approval. 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. 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 336.1205, R 336.1224, R 336.1225, R 336.1301, R 336.1331, R 336.1910, R 336.1911, 40 CFR 52.21(c) and (d))**
2. The permittee shall not operate EUDRYER1 unless a minimum water flow rate of 3.0 gallons per minute and a pressure drop between two to six inches water column across the Rotoclone wet scrubber is maintained. **(R 336.1205, R 336.1224, R 336.1225, R 336.1301, R 336.1331, R 336.1910, 40 CFR 52.21(c) and (d))**

3. The permittee shall not operate EUDRYER2 unless each of the two inlet liquid streams maintains a minimum water flow rate of 6.0 gallons per minute and a pressure drop between 10 to 30 inches water column across the wet venturi scrubber is maintained. **(R 336.1205, R 336.1224, R 336.1225, R 336.1301, R 336.1331, R 336.1910, 40 CFR 52.21(c) and (d))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall not operate EUDRYER1 unless the cyclone and Rotoclone wet scrubber are installed, maintained, and operated in a satisfactory manner. **(R 336.1205, R 336.1224, R 336.1225, R 336.1301, R 336.1331, R 336.1910, 40 CFR 52.21(c) and (d))**
2. The permittee shall install, calibrate, maintain, and operate in a satisfactory manner, a device to monitor the water flow rate and a device to monitor the pressure drop for the EUDRYER1 Rotoclone wet scrubber on a continuous basis. Calibrations shall take place on a schedule specified in the MAP. **(R 336.1205, R 336.1224, R 336.1225, R 336.1301, R 336.1331, R 336.1910, 40 CFR 52.21(c) and (d))**
3. The permittee shall not operate EUDRYER2 unless the cyclone and wet venturi scrubber is installed, maintained, and operated in a satisfactory manner. **(R 336.1205, R 336.1224, R 336.1225, R 336.1301, R 336.1331, R 336.1910, 40 CFR 52.21(c) and (d))**
4. The permittee shall install, calibrate, maintain, and operate in a satisfactory manner, a device to monitor the water flow rate and a device to monitor the pressure drop for the EUDRYER2 wet venturi scrubber on a continuous basis. Calibrations shall take place on a schedule specified in the MAP. **(R 336.1205, R 336.1224, R 336.1225, R 336.1301, R 336.1331, R 336.1910, 40 CFR 52.21(c) and (d))**

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 monitor and record, in a satisfactory manner, the amount of metals processed in EUDRYER1 for each day that the unit is operated. **(R 336.1205, R 336.1224, R 336.1225, R 336.1301, R 336.1331, 40 CFR 52.21)**
2. The permittee shall monitor and record, in a satisfactory manner, the amount of metals processed in EUDRYER2 for each day that the unit is operated. **(R 336.1205, R 336.1224, R 336.1225, R 336.1301, R 336.1331, 40 CFR 52.21)**
3. The permittee shall monitor and record, in a satisfactory manner, the pressure drop and the water flow rate for the air pollution control equipment associated with EUDRYER1 and EUDRYER2 at least once per shift. **(R 336.1205, R 336.1224, R 336.1225, R 336.1301, R 336.1331, R 336.1910, 40 CFR 52.21(c) and (d))**
4. The permittee shall keep a record of all inspections and maintenance performed on any air emission control system associated with FGDRYERS. The permittee shall maintain this record on site and make it available to the Department upon request. **(R 336.1205, R 336.1224, R 336.1225, R 336.1301, R 336.1331, 40 CFR 52.21)**
5. The permittee shall maintain a current listing of the composition of metal processed in FGDRYERS, including the weight percent of each metal. The data may consist of Material Safety Data Sheets, manufacturer's formulation data, or both as deemed acceptable by the AQD District Supervisor. The permittee shall keep all records on file and make them available to the Department upon request.¹ **(R 336.1225)**

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. SVDRYER1	16	34	R 336.1225, 40 CFR 52.21(c) and (d)
2. SVDRYER2	10	34	R 336.1225, 40 CFR 52.21(c) and (d)

IX. OTHER REQUIREMENT(S)

NA

**FGFETIFURNS
 FLEXIBLE GROUP CONDITIONS**

DESCRIPTION

Two (2) Inductotherm induction crucible furnaces for melting ferrotitanium. Rated for 2,500 lb/charge each. Located in the Melt Shop. Both furnaces are controlled by the Dustar baghouse.

Emission Unit: EUFETIFURN1, EUFETIFURN2.

POLLUTION CONTROL EQUIPMENT

40,000 cfm Dustar Baghouse shared by both furnaces.

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. PM	1.84 lbs per hour	Hourly	FGFETIFURNS	SC V.1	R 331.1331(c)
2. PM	0.01 lb/1,000 lb exhaust gas	Hourly	FGFETIFURNS	SC V.1	R 331.1331(c)

II. MATERIAL LIMIT(S)

Material	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. Metals Processed	140,000 lbs per day	Calendar Day	FGFETIFURNS	SC VI.1	R 336.1301, R 331.1331(c)

2. The permittee shall only charge the furnaces with clean, dry scrap. **(R 336.1205, R 336.1224, R 336.1225)**
3. Applicant shall not charge the furnaces with more than two percent nickel by weight nor more than two percent chromium by weight. **(R 336.1205, R 336.1224, R 336.1225)**
4. The permittee shall not use flux in FGFETIFURNS.¹ **(R 336.1224, R 336.1225)**

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall not operate either furnace in FGFETIFURNS unless a malfunction abatement plan (MAP) as described in Rule 911(2) for the Dustar Baghouse has been submitted within 90 days of permit issuance and is implemented and maintained. The permittee shall submit the MAP and any amendments to the MAP to the AQD District Supervisor for review and approval. 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. 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 336.1205, R 336.1224, R 336.1225, R 336.1301, R 336.1331, R 336.1910, R 336.1911, 40 CFR 52.21(c) and (d))**
2. The permittee shall not operate either furnace of FGFETIFURNS unless a pressure drop between two to six inches water column across the baghouse is maintained. **(R 336.1205, R 336.1224, R 336.1225, R 336.1301, R 336.1331, R 336.1910, 40 CFR 52.21(c) and (d))**

3. The permittee shall keep the bay doors closed while tapping (pouring from) the furnaces of FGFETIFURNS. In addition, while charging and melting are occurring, the permittee shall keep the bay doors closed unless the doors are actively in use. **(R 336.1205, R 336.1301, R 336.1910, 40 CFR 52.21(c) and (d))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall not operate either furnace of FGFETIFURNS unless the associated baghouse is installed, maintained, and operated in a satisfactory manner. **(R 336.1205, R 336.1224, R 336.1225, R 336.1301, R 336.1331, R 336.1910, 40 CFR 52.21(c) and (d))**
2. The permittee shall install, calibrate, maintain, and operate in a satisfactory manner, a device to monitor the pressure drop across the baghouse on a continuous basis. Calibrations shall take place on a schedule specified in the MAP. The device shall be equipped with an alarm that indicates the occurrence of a pressure drop outside of the normal operating range of two to six inches water column. **(R 336.1205, R 336.1224, R 336.1225, R 336.1301, R 336.1331, R 336.1910, 40 CFR 52.21(c) and (d))**

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 Supervisor, the permittee shall verify PM emission rates from FGFETIFURNS, by testing at the owner's expense, in accordance with Department requirements. Testing shall be performed using an approved EPA Method listed in Part 10 of the Michigan Air Pollution Control Rules. An alternate method, or a modification to the approved EPA Method, may be specified in an AQD approved Test Protocol. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD Technical Programs Unit and District Office. The AQD must approve the final plan prior to testing, including any modifications to the method in the test protocol that are proposed after initial submittal. The permittee must submit a complete report of the test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test. **(R 336.1205, R 336.1702, 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 monitor and record, in a satisfactory manner, the amount of metals processed in FGFETIFURNS on a daily basis. **(R 336.1205, R 336.1224, R 336.1225, R 336.1301, R 336.1331, 40 CFR 52.21)**
2. The permittee shall monitor and record, in a satisfactory manner, the pressure drop across the baghouse associated with FGFETIFURNS at least once per shift. **(R 336.1205, R 336.1224, R 336.1225, R 336.1301, R 336.1331, R 336.1910, 40 CFR 52.21(c) and (d))**
3. The permittee shall keep a record of all inspections and maintenance performed on baghouse associated with FGFETIFURNS. The permittee shall maintain this record on site and make it available to the Department upon request. **(R 336.1205, R 336.1224, R 336.1225, R 336.1301, R 336.1331, 40 CFR 52.21)**
4. The permittee shall maintain a current listing of the composition of metal processed in FGDRYERS, including the weight percent of each metal. The data may consist of Material Safety Data Sheets, manufacturer's formulation data, or both as deemed acceptable by the AQD District Supervisor. The permittee shall keep all records on file and make them available to the Department upon request.¹ **(R 336.1225)**

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. SVFETIFURNS	50	80	40 CFR 52.21(c) and (d)

IX. OTHER REQUIREMENT(S)

NA

Footnotes:

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

**FGFETICRUSHERS
 FLEXIBLE GROUP CONDITIONS**

DESCRIPTION

Four (4) crushers processing ferrotitanium from FGFETIFURNS. EUFETICRUSH1 is located in the melt shop, and the other crushers are located in Building 202B. Wet scrubbers are used to control emissions.

Emission Unit: EUFETICRUSH1, EUFETICRUSH2, EUFETICRUSH3, EUFETICRUSH4

POLLUTION CONTROL EQUIPMENT

EUFETICRUSH1 is controlled by a Schubert 4,000 cfm wet scrubber, different from the 4,000 cfm Schubert in EUPOWDER.

EUFETICRUSH2 and EUFETICRUSH3 are controlled by a single Tri-Mer 12,000 cfm wet scrubber.

EUFETICRUSH4 is controlled by a Tri-Mer 6,000 cfm wet scrubber.

I. EMISSION LIMIT(S)

1. There shall be no visible emissions from vents or openings of the building housing EUFETICRUSH1. **(R 336.1225, R 336.1301)**
2. There shall be no visible emissions from vents or openings in the building housing EUFETICRUSH2, EUFETICRUSH3, and EUFETICRUSH4. **(R 336.1225, R 336.1301)**

II. MATERIAL LIMIT(S)

Material	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. Materials Processed	160,000 lbs per day	Calendar Day	EUFETICRUSH1	SC VI.1	R 336.1205, R 336.1225, R 336.1301, 40 CFR 52.21(c) and (d)
2. Metals Processed	160,000 lbs per day	Calendar Day	EUFETICRUSH2	SC VI.1	R 336.1205, R 336.1225, R 336.1301, 40 CFR 52.21(c) and (d)
3. Metals Processed	86,400 lbs per day	Calendar Day	EUFETICRUSH3	SC VI.1	R 336.1205, R 336.1225, R 336.1301, 40 CFR 52.21(c) and (d)
4. Metals Processed	86,400 lbs per day	Calendar Day	EUFETICRUSH4	SC VI.1	R 336.1205, R 336.1225, R 336.1301, 40 CFR 52.21(c) and (d)

5. The permittee shall not process ferrotitanium with more than two percent by weight nickel, two percent by weight chromium, nor more than six percent by weight vanadium, in any crusher of FGFETICRUSHERS.¹ **(R 336.1224, R 336.1225)**

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall not operate any crusher in FGFETICRUSHERS unless a malfunction abatement plan (MAP) as described in Rule 911(2) for the associated wet scrubber has been submitted within 90 days of permit issuance and is implemented and maintained. The permittee shall submit the MAP and any amendments to the MAP to the AQD District Supervisor for review and approval. 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. 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 336.1205, R 336.1224, R 336.1225, R 336.1301, R 336.1331, R 336.1910, R 336.1911, 40 CFR 52.21(c) and (d))**
2. The permittee shall keep doors closed when not in use, for the building housing EUFETICRUSH1. **(R 336.1205, R 336.1224, R 336.1225, R 336.1301, 40 CFR 52.21(c) and (d))**
3. The permittee shall keep doors closed when not in use, for the building housing EUFETICRUSH2, EUFETICRUSH3, and EUFETICRUSH4. **(R 336.1205, R 336.1224, R 336.1225, R 336.1301, 40 CFR 52.21(c) and (d))**
4. The permittee shall not operate a crusher in FGFETICRUSHERS unless a pressure drop of seven to eight inches water column across the associated wet scrubber is maintained. **(R 336.1205, R 336.1224, R 336.1225, R 336.1301, R 336.1331, R 336.1910, 40 CFR 52.21(c) and (d))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall not operate any crusher in FGFETICRUSHERS unless the associated wet scrubber is installed, maintained, and operated in a satisfactory manner. **(R 336.1205, R 336.1224, R 336.1225, R 336.1301, R 336.1331, R 336.1910, 40 CFR 52.21(c) and (d))**
2. The permittee shall install, calibrate, maintain, and operate in a satisfactory manner, a device to monitor the pressure drop of each wet scrubber associated with FGFETICRUSHERS on a continuous basis. Calibrations shall take place on a schedule specified in the MAP. **(R 336.1205, R 336.1224, R 336.1225, R 336.1301, R 336.1331, R 336.1910, 40 CFR 52.21(c) and (d))**

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 monitor and record, in a satisfactory manner, the amount of materials processed in each crusher in FGFETICRUSHERS, for each calendar day that the unit is operated. **(R 336.1205, R 336.1224, R 336.1225, R 336.1301, R 336.1331, 40 CFR 52.21)**
2. The permittee shall maintain a current listing of the composition of ferrotitanium processed in FGFETICRUSHERS, including the weight percent of each metal. The data may consist of Material Safety Data Sheets, manufacturer's formulation data, or both as deemed acceptable by the AQD District Supervisor. The permittee shall keep all records on file and make them available to the Department upon request.¹ **(R 336.1225)**
3. The permittee shall monitor and record, in a satisfactory manner, the pressure drop across each wet scrubber associated with FGFETICRUSHERS at least once per shift. **(R 336.1205, R 336.1224, R 336.1225, R 336.1301, R 336.1331, R 336.1910, 40 CFR 52.21(c) and (d))**

4. The permittee shall keep a record of all inspections and maintenance performed on the wet scrubbers associated with FGFETICRUSHERS. The permittee shall maintain this record on site and make it available to the Department upon request. **(R 336.1205, R 336.1224, R 336.1225, R 336.1301, R 336.1331, 40 CFR 52.21)**
5. The permittee shall verify the presence of visible emissions by taking six-minute visible emission readings a minimum of once per week, for fugitive emissions from the building housing EUFETICRUSH1, and for fugitive emissions from the building housing EUFETICRUSH2, EUFETICRUSH3, and EUFETICRUSH4. Either a certified or non-certified reader shall take each visible emission reading during routine operating conditions. Multiple vents or building openings may be observed simultaneously. If the permittee observes any visible emissions, the permittee shall immediately implement the following procedures: **(R 336.1225, R 336.1301)**
 - a) The permittee shall perform the six-minute visible emission readings at least once every 30 minutes until emissions are no longer visible or until emissions have been observed for more than two hours.
 - b) If visible emissions have been observed for more than two hours, a certified reader shall determine the opacity using Federal Reference Test Method 9 **(40 CFR Part 60, Appendix A)**.
 - c) If visible emissions are observed, the permittee shall immediately initiate corrective actions. **(R 336.1301, R 336.1303)**
6. The permittee shall keep, in a satisfactory manner, records of all visible emission readings for FGFETICRUSHERS. At a minimum, records shall include the date, time, name of observer/reader, whether the reader is certified, and status of visible emissions. The permittee shall keep all records on file at the facility and make them available to the Department upon request. **(R 336.1301, R 336.1303)**

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. SV4KSCHUBERTA (for EUFETICRUSH1)	20	40	R 336.1225, 40 CFR 52.21(c) and (d)
2. SVFETICRUSH2-3	23	16	R 336.1225, 40 CFR 52.21(c) and (d)
3. SVFETICRUSH4	22	16	R 336.1225, 40 CFR 52.21(c) and (d)

IX. OTHER REQUIREMENT(S)

NA

Footnotes:

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

**FGPOWDER
 FLEXIBLE GROUP CONDITIONS**

DESCRIPTION

Titanium powders production processes, including the hydride de-hydride (HDH) process equipment and the de-oxidation (DOSS) process equipment. Wet scrubbers control certain equipment, while other equipment is uncontrolled.

Emission Unit: EUPOWDER, EUDOSS.

POLLUTION CONTROL EQUIPMENT

A powder crushing terminator and rod mill crusher, a terminator, two (2) powder crushing attrition mills, and screeners are controlled by the Schubert wet scrubber (6,000 cfm), different from the 6,000 cfm Schubert in EUDOSS.

An impact mill, a powder crushing attrition mill, powder granulating and screening, and powder blending are controlled by the Schubert wet scrubber (4,000 cfm), different from the 4,000 cfm Schubert in EUFETICRUSH1.

An impact mill, (2) attrition mills, (2) terminator mills, and blending operations are controlled by the Schubert wet scrubber (6,000 cfm), different from the 6,000 cfm Schubert in EUPOWDER.

Two (2) electrically heated vacuum furnaces, the dilute HCl water bath, and several closed-system powder screeners are uncontrolled.

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

Material	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. Metal processed	4,000 lbs per day	Calendar Day	EUPOWDER	SC VI.1	R 336.1224, R 336.1225, 40 CFR 52.21(c) and (d)
2. Metal processed	4,000 lbs per day	Calendar Day	EUDOSS	SC VI.2	R 336.1224, R 336.1225, 40 CFR 52.21(c) and (d)
3. Metal processed	600,000 lbs per year	12-month rolling time period as determined at the end of each calendar month	EUPOWDER	SC VI.3	R 336.1224, R 336.1225, 40 CFR 52.21(c) and (d)
4. Metal processed	240,000 lbs per year	12-month rolling time period as determined at the end of each calendar month	EUDOSS	SC VI.4	R 336.1224, R 336.1225, 40 CFR 52.21(c) and (d)

5. The permittee shall only process 6/4 titanium in, at most, one (1) impact/terminator/attrition mill and four (4) screens in EUPOWDER simultaneously. The remaining equipment in EUPOWDER shall only process commercially pure titanium. (R 336.1224, R 336.1225)

6. The permittee shall not process titanium with more than 0.1 percent by weight chromium in FGPOWDER.¹
(R 336.1224, R 336.1225)

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall not operate the equipment in FGPOWDER unless a malfunction abatement plan (MAP) as described in Rule 911(2) for the control devices (Schubert wet scrubbers) have been submitted within 90 days of permit issuance and is implemented and maintained. The permittee shall submit the MAP and any amendments to the MAP to the AQD District Supervisor for review and approval. 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. 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 336.1205, R 336.1224, R 336.1225, R 336.1301, R 336.1331, R 336.1910, R 336.1911, 40 CFR 52.21(c) and (d))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall not operate process equipment of FGPOWDER unless the associated control device is installed, maintained, and operated in a satisfactory manner. Satisfactory operation includes operating the control device pressure drop within the specified range. The equipment, associated control devices, and acceptable pressure drop ranges are listed below. **(R 336.1205, R 336.1224, R 336.1225, R 336.1301, R 336.1331, R 336.1910, 40 CFR 52.21(c) and (d))**

	Equipment	Control device	Pressure Drop
a)	A powder crushing terminator, rod mill crusher, and powder crushing attrition mills	Schubert wet scrubber(6,000 cfm)	3-4 inches water column
b)	A powder crushing attrition mill, powder granulating and screening, and powder blending	Schubert wet scrubber (4,000 cfm)	3-4 inches water column
c)	An impact mill, (2) attrition mills, (2) terminator mills, and blending operations	Schubert wet scrubber (6,000 cfm)	2-3 inches water column
d)	Two (2) electrically heated vacuum furnaces, the dilute HCl water bath, and several closed-system powder screeners	NA (No control device)	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 monitor and record, in a satisfactory manner, the total weight of metals entering the EUPOWDER process for each calendar day that the equipment is operated. **(R 336.1205, R 336.1224, R 336.1225, 40 CFR 52.21(c) and (d))**
2. The permittee shall monitor and record, in a satisfactory manner, the total weight of metals entering the EUDOSS process for each calendar day that the equipment is operated. **(R 336.1205, R 336.1224, R 336.1225, 40 CFR 52.21(c) and (d))**

3. The permittee shall monitor and record, in a satisfactory manner, the amount of metals processed in EUPOWDER on a monthly and 12-month rolling time period basis. The permittee shall complete all calculations in a format acceptable to the AQD District Supervisor by the last day of the calendar month, for the previous calendar month. **(R 336.1205, R 336.1224, R 336.1225, 40 CFR 52.21(c) and (d))**
4. The permittee shall monitor and record, in a satisfactory manner, the amount of metals processed in EUDOSS on a monthly and 12-month rolling time period basis. The permittee shall complete all calculations in a format acceptable to the AQD District Supervisor by the last day of the calendar month, for the previous calendar month. **(R 336.1205, R 336.1224, R 336.1225, 40 CFR 52.21(c) and (d))**
5. The permittee shall monitor and record, in a satisfactory manner, the pressure drop for each wet scrubber associated with FGPOWDER at least once per shift. **(R 336.1205, R 336.1224, R 336.1225, R 336.1301, R 336.1331, R 336.1910, 40 CFR 52.21(c) and (d))**
6. The permittee shall keep a record of all inspections and maintenance performed on any air emission control system associated with FGPOWDER. The permittee shall maintain this record on site and make it available to the Department upon request. **(R 336.1205, R 336.1224, R 336.1225, R 336.1301, R 336.1331, 40 CFR 52.21)**
7. Within 30 days after completion of the installation, construction, reconstruction, relocation, or modification authorized by this Permit to Install, the permittee shall maintain a current listing of all equipment and associated control devices in FGPOWDER. The permittee shall maintain this record on site and make it available to the Department upon request. **(R 336.1205, R 336.1224, R 336.1225, R 336.1301, R 336.1331, 40 CFR 52.21)**
8. The permittee shall maintain a current listing of the composition of metal processed in EUPOWDER, including the weight percent of each metal. The data may consist of Material Safety Data Sheets, manufacturer's formulation data, or both as deemed acceptable by the AQD District Supervisor. The permittee shall keep all records on file and make them available to the Department upon request.¹ **(R 336.1225)**
9. The permittee shall maintain a current listing of the composition of metal processed in EUDOSS, including the weight percent of each metal. The data may consist of Material Safety Data Sheets, manufacturer's formulation data, or both as deemed acceptable by the AQD District Supervisor. The permittee shall keep all records on file and make them available to the Department upon request.¹ **(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 EUDOSS. **(R 336.1201(7)(a))**
2. The permittee shall notify the Department if a change in land use occurs for property classified as industrial or as a public roadway, where this classification was relied upon to demonstrate compliance with Rule 225(1). The permittee shall submit the notification to the AQD District Supervisor, within 30 days of the actual land use change. Within 60 days of the land use change, the permittee shall submit to the AQD District Supervisor a plan for complying with the requirements of Rule 225(1). The plan shall require compliance with Rule 225(1) no later than one year after the due date of the plan submittal. **(R 336.1225(4))**

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. SV4KSCHUBERT B (for EUPOWDER)	18	28	R 336.1224, R 336.1225, 40 CFR 52.21(c) and (d)
2. SV6KSCHUBERT (for EUPOWDER)	24	36	R 336.1224, R 336.1225, 40 CFR 52.21(c) and (d)
3. SVHDFURN1	6	36	R 336.1224, R 336.1225, 40 CFR 52.21(c) and (d)
4. SVHDFURN2	6	36	R 336.1224, R 336.1225, 40 CFR 52.21(c) and (d)
5. SVSCHUBERT (AKA SVDROSS, for EUDOSS)	30	18.5	R 336.1224, R 336.1225, 40 CFR 52.21(c) and (d)

IX. OTHER REQUIREMENT(S)

NA

FGFUGDUST FLEXIBLE GROUP CONDITIONS

DESCRIPTION

Sources of fugitive dust at the facility, including but not limited to: storage, handling, and transport of bulk materials, emissions from roads and lots, and emissions from building openings.

Emission Unit: NA

POLLUTION CONTROL EQUIPMENT

Various control strategies may be used, as necessary.

I. EMISSION LIMIT(S)

1. The permittee shall not cause or allow the emission of fugitive dust from any road, lot, or storage pile, including any material handling activity at a storage pile, that has an opacity greater than five percent as determined by Reference Test Method 9d. **(Act 451, 324.5524(2))**
2. The permittee shall not cause or allow the emission of fugitive dust from any fugitive dust source other than those listed in SC I.1 that has an opacity greater than 20 percent as determined by Reference Test Method 9d. The provisions of this subsection shall not apply to storage pile material handling activities when wind speeds are in excess of 25 miles per hour (40.2 kilometers per hour). **(Act 451, 324.5524(2))**

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall not operate FGFUGDUST unless the fugitive dust control plan for all plant roadways, the plant yard, all material storage piles, and all material handling operations specified in the plan has been implemented and is maintained. **(R 336.1371, R 336.1372, Act 451 324.5524)**
2. At a minimum, the operating program required by SC III.1 shall include all of the following: **(Act 451, 324.5524(5))**
 - (a) The name and address of the facility.
 - (b) The name and address of the owner or operator responsible for implementation of the operating program.
 - (c) A map or diagram of the facility showing all of the following:
 - (i) Approximate locations of storage piles.
 - (ii) Conveyor loading operations.
 - (iii) All traffic patterns within the facility.
 - (d) The location of unloading and transporting operations with pollution control equipment.
 - (e) A detailed description of the best management practices utilized to achieve compliance with this section, including an engineering specification of particulate collection equipment, application systems for water, oil, chemicals, and dust suppressants utilized, and equivalent methods utilized.
 - (f) A test procedure, including record keeping, for testing all waste or recycled oils used for fugitive dust control for toxic contaminants.
 - (g) The frequency of application, application rates, and dilution rates if applicable, of dust suppressants by location of materials.
 - (h) The frequency of cleaning paved traffic pattern roads and parking facilities.
 - (i) Other information as may be necessary to facilitate the department's review of the operating program.

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 keep, in a satisfactory manner, a record of all fugitive dust control measures taken according to the operating program for fugitive dust control. The permittee shall maintain this record on site and make it available to the Department upon request. (R 336.1205, R 336.1224, R 336.1225, R 336.1301, R 336.1371, Act 451, 324.5524(4), (5) and (7), 40 CFR 52.21(c) and (d))

VII. REPORTING

NA

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENT(S)

NA