

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

March 13, 2023

PERMIT TO INSTALL
22-97D

ISSUED TO
Silbond Corporation

LOCATED AT
9901 Sand Creek Highway
Weston, Michigan 43289

IN THE COUNTY OF
Lenawee

STATE REGISTRATION NUMBER
B2952

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: January 4, 2023	
DATE PERMIT TO INSTALL APPROVED: March 13, 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 ₂ e	Carbon Dioxide Equivalent
dscf	Dry standard cubic foot
dscm	Dry standard cubic meter
°F	Degrees Fahrenheit
gr	Grains
HAP	Hazardous Air Pollutant
Hg	Mercury
hr	Hour
HP	Horsepower
H ₂ S	Hydrogen Sulfide
kW	Kilowatt
lb	Pound
m	Meter
mg	Milligram
mm	Millimeter
MM	Million
MW	Megawatts
NMOC	Non-Methane Organic Compounds
NO _x	Oxides of Nitrogen
ng	Nanogram
PM	Particulate Matter
PM10	Particulate Matter equal to or less than 10 microns in diameter
PM2.5	Particulate Matter equal to or less than 2.5 microns in diameter
pph	Pounds per hour
ppm	Parts per million
ppmv	Parts per million by volume
ppmw	Parts per million by weight
psia	Pounds per square inch absolute
psig	Pounds per square inch gauge
scf	Standard cubic feet
sec	Seconds
SO ₂	Sulfur Dioxide
TAC	Toxic Air Contaminant
Temp	Temperature
THC	Total Hydrocarbons
tpy	Tons per year
µg	Microgram
µm	Micrometer or Micron
VOC	Volatile Organic Compounds
yr	Year

GENERAL CONDITIONS

1. The process or process equipment covered by this permit shall not be reconstructed, relocated, or modified, unless a Permit to Install authorizing such action is issued by the Department, except to the extent such action is exempt from the Permit to Install requirements by any applicable rule. **(R 336.1201(1))**
2. If the installation, construction, reconstruction, relocation, or modification of the equipment for which this permit has been approved has not commenced within 18 months, or has been interrupted for 18 months, this permit shall become void unless otherwise authorized by the Department. Furthermore, the permittee or the designated authorized agent shall notify the Department via the Supervisor, Permit Section, Air Quality Division, Michigan Department of Environment, Great Lakes, and Energy, P.O. Box 30260, Lansing, Michigan 48909-7760, if it is decided not to pursue the installation, construction, reconstruction, relocation, or modification of the equipment allowed by this Permit to Install. **(R 336.1201(4))**
3. If this Permit to Install is issued for a process or process equipment located at a stationary source that is not subject to the Renewable Operating Permit program requirements pursuant to Rule 210 (R 336.1210), operation of the process or process equipment is allowed by this permit if the equipment performs in accordance with the terms and conditions of this Permit to Install. **(R 336.1201(6)(b))**
4. The Department may, after notice and opportunity for a hearing, revoke this Permit to Install if evidence indicates the process or process equipment is not performing in accordance with the terms and conditions of this permit or is violating the Department's rules or the Clean Air Act. **(R 336.1201(8), Section 5510 of Act 451, PA 1994)**
5. The terms and conditions of this Permit to Install shall apply to any person or legal entity that now or hereafter owns or operates the process or process equipment at the location authorized by this Permit to Install. If the new owner or operator submits a written request to the Department pursuant to Rule 219 and the Department approves the request, this permit will be amended to reflect the change of ownership or operational control. The request must include all of the information required by subrules (1)(a), (b), and (c) of Rule 219 and shall be sent to the District Supervisor, Air Quality Division, Michigan Department of Environment, Great Lakes, and Energy. **(R 336.1219)**
6. Operation of this equipment shall not result in the emission of an air contaminant which causes injurious effects to human health or safety, animal life, plant life of significant economic value, or property, or which causes unreasonable interference with the comfortable enjoyment of life and property. **(R 336.1901)**
7. The permittee shall provide notice of an abnormal condition, start-up, shutdown, or malfunction that results in emissions of a hazardous or toxic air pollutant which continue for more than one hour in excess of any applicable standard or limitation, or emissions of any air contaminant continuing for more than two hours in excess of an applicable standard or limitation, as required in Rule 912, to the Department. The notice shall be provided not later than two business days after start-up, shutdown, or discovery of the abnormal condition or malfunction. Written reports, if required, must be filed with the Department within 10 days after the start-up or shutdown occurred, within 10 days after the abnormal condition or malfunction has been corrected, or within 30 days of discovery of the abnormal condition or malfunction, whichever is first. The written reports shall include all of the information required in Rule 912(5). **(R 336.1912)**
8. Approval of this permit does not exempt the permittee from complying with any future applicable requirements which may be promulgated under Part 55 of 1994 PA 451, as amended or the Federal Clean Air Act.
9. Approval of this permit does not obviate the necessity of obtaining such permits or approvals from other units of government as required by law.
10. Operation of this equipment may be subject to other requirements of Part 55 of 1994 PA 451, as amended and the rules promulgated thereunder.

11. Except as provided in subrules (2) and (3) or unless the special conditions of the Permit to Install include an alternate opacity limit established pursuant to subrule (4) of Rule 301, the permittee shall not cause or permit to be discharged into the outer air from a process or process equipment a visible emission of density greater than the most stringent of the following. The grading of visible emissions shall be determined in accordance with Rule 303 (R 336.1303). **(R 336.1301)**
 - a) A six-minute average of 20 percent opacity, except for one six-minute average per hour of not more than 27 percent opacity.
 - b) A visible emission limit specified by an applicable federal new source performance standard.
 - c) A visible emission limit specified as a condition of this Permit to Install.
12. Collected air contaminants shall be removed as necessary to maintain the equipment at the required operating efficiency. The collection and disposal of air contaminants shall be performed in a manner so as to minimize the introduction of contaminants to the outer air. Transport of collected air contaminants in Priority I and II areas requires the use of material handling methods specified in Rule 370(2). **(R 336.1370)**
13. The Department may require the permittee to conduct acceptable performance tests, at the permittee's expense, in accordance with Rule 1001 and Rule 1003, under any of the conditions listed in Rule 1001. **(R 336.2001)**

EMISSION UNIT SPECIAL CONDITIONS

EMISSION UNIT SUMMARY TABLE

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date / Modification Date	Flexible Group ID
EUREACTOR502-101	500-gallon reactor, R-502-101 in building 502, used for producing further purified tetraethyl orthosilicate (TEOS) via distillation. Unit is controlled by a chilled water condenser.	1995	FGPROCESSES
EUREACTOR102-100	4000-gallon reactor, R-102-100, located in building 102, is used for the tetraethyl orthosilicate (TEOS) and catalyst production. Unit is controlled by condenser and a flare.	1984	FGPROCESSES
EUREACTOR102-80	2000-gallon reactor, R-102-80, located in building 102, a two column vacuum distillation process used for further purification of tetraethyl orthosilicate (TEOS). Unit is controlled by a chilled water condenser.	1995	FGPROCESSES
EUREACTOR102-200	Two (2) separate jacketed 500-gallon reactor/mixer R-102-200 and R-102-201, located in building 102, used for manufacturing ethyl polysilicate products via hydrolysis. Unit is controlled by a condenser.	1984	FGPROCESSES
EUREACTOR102-300	2000-gallon neutralizer reactor, R-102-300, located in building 102, used for manufacturing ethyl polysilicate products via hydrolysis. Unit is controlled by a condenser.	1984	FGPROCESSES

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date / Modification Date	Flexible Group ID
EUREACTOR102-10	2000-gallon color treatment reactor, R102-10, located in building 102, used for manufacturing ethyl polysilicate products via hydrolysis. Unit is controlled by a condenser.	1984	FGPROCESSES
EUREACTOR102-30	2000-gallon reactor, R-102-30, located in building 102, used for manufacturing conventional binders via hydrolysis and/or creating mixtures with other components. Also used for further purification of TEOS products via distillation. Unit is controlled by condenser.	1984	FGPROCESSES
EUREACTOR102-40	2000-gallon reactor, R-102-40, located in building 102, used for manufacturing tetraethyl orthosilicate (TEOS) binders via hydrolysis and/or creating mixtures with other components. Also used for further purification of TEOS products via distillation. Unit is controlled by two (2) condensers in series.	1984	FGPROCESSES
EUREACTOR501-10	Building 501, single process reactor, R-501-10 used for manufacturing tetraethyl orthosilicate (TEOS) based binders via hydrolysis and/or creating mixtures with other components. Unit is controlled by a condenser.	1984	FGPROCESSES
EUREACTOR501-50	Building 501, single process reactor, R-501-50 used for manufacturing tetraethyl orthosilicate (TEOS) based binders via hydrolysis and/or creating mixtures with other components. Unit is controlled by a condenser.	1984	FGPROCESSES

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date / Modification Date	Flexible Group ID
EUSTORAGETANKS	A series of storage tanks ranging in various sizes, from 55 gallons to 50,000 gallons. Some of these tanks are used for storing only raw materials and some only store finished products but a number of these tanks can be used for storing both raw materials and finished products.	Prior to 1997, 2004	FGPROCESSES
EUREACTOR-401-71/72	Two (2) separate jacketed 2,000-gallon reactor/mixer with ancillary equipment to feed reactants, strip vapors, and discharge products to storage or packaging. Emission controls include vent condensers. Emission controls include vent condensers, with one (1) dedicated vent condenser for each reactor, and two (2) additional ones that will be used interchangeably, one (1) at a time for each reactor.	TBD	FGNSPSVVa
EUPACKAGING-401-90	Packaging activity for the final product. The product is sent to the packaging station. The final product is stored in one or more of the following options: 5-gal pails, 55-gal drums and 275-gal totes. The containers with final product are then transferred to a warehouse area before they are shipped.	TBD	FGNSPSVVa
EU-TK406	10,000-gallon storage tank.	1990, 3/13/2023	FGSTORAGETANKS-401, FGNSPSVVa
EU-TK412	11,000-gallon storage tank.	1985, 3/13/2023	FGSTORAGETANKS-401, FGNSPSVVa
EU-TK616	11,000-gallon storage tank.	1985, 3/13/2023	FGSTORAGETANKS-401, FGNSPSVVa
EU-TK623	50,000-gallon product storage tank.	2004, 3/13/2023	FGSTORAGETANKS-401, FGNSPSVVa
EU-TK624	50,000-gallon product storage tank.	2004, 3/13/2023	FGSTORAGETANKS-401, FGNSPSVVa

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.

**EUREACTOR-401-71/72
 EMISSION UNIT CONDITIONS**

DESCRIPTION

Two (2) separate jacketed 2,000-gallon reactor/mixer with ancillary equipment to feed reactants, strip vapors, and discharge products to storage or packaging. Emission controls include vent condensers. Emission controls include vent condensers, with one (1) dedicated vent condenser for each reactor, and two (2) additional ones that will be used interchangeably, one (1) at a time for each reactor.

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT

Four (4) vent condensers with one dedicated vent condenser for each reactor (X-401-71 and X-401-72), and two additional ones that will be used interchangeably, one (1) at a time, for each reactor (X-401-81 and X-401-82). The dedicated vent condenser along with the additional condenser (X-401-81 or X-401-82) comprise a condenser train, with both condensers in the train operating in series.

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. VOC	2.82 pph	Hourly	EUREACTOR-401-71/72	SC V.1	R 336.1205, R 336.1702(a)
2. VOC	9.02 tpy	12-month rolling time period as determined at the end of each calendar month	EUREACTOR-401-71/72	SC VI.3	R 336.1205, R 336.1702(a)

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall not operate EUREACTOR-401-71/72 unless the outlet vapor temperature of each condenser train (X-401-81 and X-401-82) is 20°C or less. **(R 336.1205, R 336.1224, R 336.1225, R 336.1702, R 336.1910)**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall not operate EUREACTOR-401-71/72 unless each condenser train is installed, maintained, and operated in a satisfactory manner acceptable to the AQD District Supervisor, which includes meeting the requirements of SC III.1. **(R 336.1205, R 336.1224, R 336.1225, R 336.1702(a), R 336.1910)**
2. The permittee shall equip and maintain each condenser train (on X-401-81 and X-401-82) with a device to continuously monitor and record the condenser train outlet vapor temperature. The permittee shall calibrate

the exit vapor temperature indicator in a satisfactory manner acceptable to the AQD District Supervisor. **(R 336.1205, R 336.1224, R 336.1225, R 336.1702(a), 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 the VOC emission rate from EUREACTOR-401-71/72 by testing at owner's expense, in accordance with Department requirements. Testing shall be performed using an approved EPA Method listed in the table below.

Pollutant	Test Method Reference
VOC	40 CFR Part 60, Appendix A

An alternate method, or a modification to the approved EPA Method, may be specified in an AQD approved Test Protocol and must meet the requirements of the federal Clean Air Act, all applicable state and federal rules and regulations, and be within the authority of the AQD to make the change. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD Technical Programs Unit and District Office. The AQD must approve the final plan prior to testing, including any modifications to the method in the test protocol that are proposed after initial submittal. The permittee must submit a complete report of the test results to the AQD Technical Programs Unit and District Office within 60 days following the last date of the test. **(R 336.1205, 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 complete all required calculations in a format acceptable to the AQD District Supervisor and make them available by the last day of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition. **(R 336.1205, R 336.1224, R 336.1225, R 336.1702)**
2. The permittee shall monitor and record, in a satisfactory manner, the outlet vapor temperature of each condenser train (X-401-81 and X-401-82) on a continuous basis. For the purpose of this condition, "on a continuous basis" is defined as an instantaneous data point recorded at least once every 15 minutes. The permittee may record block average values for 15 minute or shorter periods calculated from all measured data values during each period. The permittee shall keep all records on file at the facility and make them available to the Department upon request. **(R 336.1205, R 336.1224, R 336.1225, R 336.1702(a), R 336.1910)**
3. The permittee shall calculate and keep, in a satisfactory manner, records of monthly and 12-month rolling time period VOC emissions for EUREACTOR-401-71/72. The permittee shall keep all records on file at the facility and make them available to the Department upon request. **(R 336.1205, R 336.1702(a))**

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 EUREACTOR-401-71/72. **(R 336.1201(7)(a))**

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Diameter / Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SV-401-01 ^a	2	26	R 336.1225, 40 CFR 52.21 (c) and (d)
^a This stack is not required to be discharged unobstructed vertically upwards to the ambient air.			

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with all applicable provisions of the New Source Performance Standards, as specified in 40 CFR Part 60, Subpart A and Subpart VVa, as they apply to EUREACTOR-401-71/72. **(40 CFR Part 60, Subparts A and VVa)**

Footnotes:

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

**EUPACKAGING-401-90
 EMISSION UNIT CONDITIONS**

DESCRIPTION

Packaging activity for the final product. The product is sent to the packaging station. The final product is stored in one of the following options: 5-gal pails, 55-gal drums and 275-gal totes. The containers with final product are then transferred to the Warehouse in Building 502 before they are shipped.

Flexible Group ID: NA

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. VOC	14.9 lb/yr	12-month rolling time period as determined at the end of each calendar month	EUPACKAGING-401-90	SC VI.2	R 336.1702(a)

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

V. TESTING/SAMPLING

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

NA

VI. MONITORING/RECORDKEEPING

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

1. The permittee shall complete all required calculations in a format acceptable to the AQD District Supervisor and make them available by the last day of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition. **(R 336.1702)**
2. The permittee shall calculate and keep, in a satisfactory manner, records of monthly and 12-month rolling time period VOC emissions for EUPACKAGING-401-90. The permittee shall keep all records on file at the facility and make them available to the Department upon request. **(R 336.1702(a))**

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 EUPACKAGING-401-90. **(R 336.1201(7)(a))**

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with all applicable provisions of the New Source Performance Standards, as specified in 40 CFR Part 60, Subpart A and Subpart VVa, as they apply to EUPACKAGING-401-90. **(40 CFR Part 60, Subparts A and VVa)**

Footnotes:

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

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
FGPROCESSES	Existing permitted chemical processes.	EUREACTOR502-101, EUREACTOR102-100, EUREACTOR102-80, EUREACTOR102-200, EUREACTOR102-300, EUREACTOR102-10, EUREACTOR102-30, EUREACTOR102-40, EUREACTOR501-10, EUREACTOR501-50, EUSTORAGETANKS
FGSTORAGETANKS-401	Collection of five (5) storage tanks, ranging from 10,000 gallons to 50,000 gallons in capacity, containing either ethyl silicate, ethanol, and water.	EU-TK406, EU-TK412, EU-TK616, EU-TK623, EU-TK624
FGNSPSVVa	All pumps, valves, and pressure relief devices in light liquid and heavy liquid service; all valves and pressure relief devices in gas/vapor service; each sampling connection; and each open-ended valve or line and all associated closed vent systems and control devices.	EUREACTOR-401-71/72, EUPACKAGING-401-90, EU-TK406, EU-TK412, EU-TK616, EU-TK623, EU-TK624

**FGPROCESSES
 FLEXIBLE GROUP CONDITIONS**

DESCRIPTION

Existing permitted chemical processes.

Emission Unit: EUREACTOR502-101, EUREACTOR102-100, EUREACTOR102-80, EUREACTOR102-200, EUREACTOR102-300, EUREACTOR102-10, EUREACTOR102-30, EUREACTOR102-40, EUREACTOR501-10, EUREACTOR501-50, and EUSTORAGETANKS.

POLLUTION CONTROL EQUIPMENT

Chilled water condenser(s), slurry tank vent condenser, and flare.

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. VOC	65 tpy	12-month rolling time period as determined at the end of each calendar month	FGPROCESSES	SC VI.4	R 336.1205, R 336.1702(a)

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall not operate any of the reactors in FGPROCESSES unless the associated condenser (or condenser series/train) is installed, maintained, and operated in a satisfactory manner. Satisfactory operation includes but is not limited to maintaining the exhaust gases from each vent condenser at or below 20 degrees centigrade. **(R 336.1225, R 336.1702(a), R 336.1910)**
2. The permittee shall not operate EUREACTOR102-100 unless the slurry tank vent condenser and the flare are installed, maintained, and operated in a satisfactory manner. Satisfactory operation of the flare includes but is not limited to submitting an operation and maintenance plan within 30 calendar days of the permit approval date that describes the proper operation and maintenance procedures for the flare to the District for review and approval. **(R 336.1225, R 336.1702(a), R 336.1910)**
3. The permittee shall equip and maintain each reactor controlled by a condenser(s) in FGPROCESSES with a temperature gauge to monitor the vent gas exhaust temperature. **(R 336.1225, R 336.1702(a), R 336.1910)**

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 the vent gas exhaust temperature for each reactor on a continuous basis during operation of the reactor. **(R 336.1225, R 336.1702(a), R 336.1910)**
2. The permittee shall continue to keep in-place the Leak Detection and Repair (LDAR) monitoring program for all pipe fittings, flanges and pump seals in FGPROCESSES. Except as otherwise provided in this condition, the LDAR monitoring shall be conducted once every two years (biennial) using methods and procedures acceptable to the District Supervisor, Air Quality Division. If the biennial LDAR monitoring demonstrates leaks of greater than five (5) percent of all monitored components, then the AQD may require LDAR monitoring on a quarterly basis until the permittee demonstrates that the monitored components can achieve a leak rate of less than five (5) percent for two consecutive quarters and then the following two consecutive years, then the permittee may return to biennial monitoring. The permittee may petition the AQD by demonstrating that quarterly monitoring is unnecessary because of an error in sampling, monitoring or statistical evaluations; corrections or modifications; or other circumstances. A summary of results of any quarterly, annual or biennial monitoring shall be sent to the District Supervisor within 30 days after completion of the monitoring event. **(R 336.1225, R 336.1702(a), R 336.1205)**
3. All required calculations shall be completed in a format acceptable to the AQD District Supervisor and made available by the last day of the calendar month, for the previous calendar month, unless otherwise specified in any recordkeeping, reporting or notification special condition. **(R 336.1205(3))**
4. The permittee shall keep, in a satisfactory manner, records of monthly and 12-month rolling time period VOC rate calculations for FGPROCESSES, as required by SC I.1. All records shall be kept on file for a period of at least five years and made available to the Department upon request. **(R 336.1225, R 336.1702(a), R 336.1205)**
5. The permittee shall keep, in a satisfactory manner, records of the number, weight and composition of batches produced in each reactor in FGPROCESSES on a daily and monthly basis and a 12-month rolling time period basis as determined at the end of each calendar month. All records shall be kept on file for a period of at least five years and made available to the Department upon request. **(R 336.1225, R 336.1702(a))**

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. SV0011	2	30	R 336.1225
2. SV0012	2	50	R 336.1225
3. SV0014	2	20	R 336.1225
4. SV0016	2	40	R 336.1225
5. SV0017	2	35	R 336.1225

Stack & Vent ID	Maximum Exhaust Diameter / Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
6. SV0021	2	30	R 336.1225
7. SV0022	2	16	R 336.1225
The exhaust gases shall be discharged unobstructed vertically upwards to the ambient air.			

IX. OTHER REQUIREMENT(S)

NA

Footnotes:

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

**FGSTORAGETANKS-401
FLEXIBLE GROUP CONDITIONS**

DESCRIPTION

Collection of five (5) storage tanks, ranging from 10,000 gallons to 50,000 gallons in capacity, containing either ethyl silicate, ethanol, and water.

Emission Unit: EU-TK406, EU-TK412, EU-TK616, EU-TK623, and EU-TK624

POLLUTION CONTROL EQUIPMENT

Conservation vents

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. VOC	0.31 tpy	12-month rolling time period as determined at the end of each calendar month	FGSTORAGETANKS-401	SC VI.3	R 336.1702(a)

II. MATERIAL LIMIT(S)

1. The permittee shall only store ethanol in EU-TK406.¹ **(R 336.1225)**
2. The permittee shall only store tetraethyl orthosilicate in EU-TK623 and EU-TK624.¹ **(R 336.1225)**

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall not operate any storage tank in FGSTORAGETANKS-401 unless the corresponding conservation vent is installed, maintained, and operated in a satisfactory manner. **(R 336.1225, R 336.1702(a))**

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 complete all required calculations in a format acceptable to the AQD District Supervisor and make them available by the last day of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition. **(R 336.1702)**

- The permittee shall keep records of the throughput of each material for each storage tank in FGSTORAGETANKS-401 for each calendar month and 12-month rolling time period, as determined at the end of each calendar month. The permittee shall keep all records on file at the facility and make them available to the Department upon request. **(R 336.1702(a))**
- The permittee shall calculate and keep, in a satisfactory manner, records of monthly and 12-month rolling time period VOC emissions for FGSTORAGETANKS-401. The permittee shall keep all records on file at the facility and make them available to the Department upon request. **(R 336.1702(a))**

VII. REPORTING

- 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 FGSTORATANKS-401. **(R 336.1201(7)(a))**

VIII. STACK/VENT RESTRICTION(S)

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Diameter / Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SV-TK406	2	15	R 336.1225, 40 CFR 52.21 (c) and (d)
2. SV-TK412	2	19	R 336.1225, 40 CFR 52.21 (c) and (d)
3. SV-TK616	2	13	R 336.1225, 40 CFR 52.21 (c) and (d)
4. SV-TK623	2	25	R 336.1225, 40 CFR 52.21 (c) and (d)
5. SV-TK624	2	25	R 336.1225, 40 CFR 52.21 (c) and (d)

IX. OTHER REQUIREMENT(S)

- The permittee shall comply with all applicable provisions of the New Source Performance Standards, as specified in 40 CFR Part 60, Subpart A and Subpart VVa, as they apply to FGSTORATANKS-401. **(40 CFR Part 60, Subparts A and VVa)**

Footnotes:

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

FGNSPSVVa
FLEXIBLE GROUP CONDITIONS

DESCRIPTION

All pumps, valves, and pressure relief devices in light liquid and heavy liquid service; all valves and pressure relief devices in gas/vapor service; each sampling connection; and each open-ended valve or line and all associated closed vent systems and control devices.

Emission Unit: EUREACTOR-401-71/72, EUPACKAGING-401-90, EU-TK406, EU-TK412, EU-TK616, EU-TK623, EU-TK624

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

NA

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

1. The permittee shall operate each pressure relief device in gas/vapor service with no detectable emissions, as specified in 40 CFR 60.482-4a(a) and (b). **(40 CFR 60.482-4a(a) and (b))**
2. The permittee shall design and operate vapor recovery systems (for example, condensers and absorbers) used to comply with 40 CFR 60 subpart VVa to recover the VOC emissions vented to them with an efficiency of 95 percent or greater, or to an exit concentration of 20 parts per million by volume, whichever is less stringent. **(40 CFR 60.482-10a(b))**
3. The permittee shall design and operate enclosed combustion devices used to comply with 40 CFR 60 Subpart VVa to reduce the VOC emissions vented to them with an efficiency of 95 percent or greater, or to an exit concentration of 20 parts per million by volume, on a dry basis, corrected to 3 percent oxygen, whichever is less stringent or to provide a minimum residence time of 0.75 seconds at a minimum temperature of 816 °C (1,500 °F). **(40 CFR 60.482-10a(c))**
4. The permittee shall comply with the standards for pumps and valves in heavy liquid service, pressure relief devices in light liquid or heavy liquid service, and connectors in 40 CFR 60.482-8a. **(40 CFR 60.482-8a)**
5. The permittee may delay repair of equipment for which leaks have been detected as specified in 40 CFR 60.482-9a. **(40 CFR 60.482-9a)**
6. The permittee shall repair leaks of a closed vent system as specified in 40 CFR 60.482-10a(g). **(40 CFR 60.482-10a(g))**
7. The permittee shall repair leaks of each connector in gas/vapor service and in light liquid service as specified in 40 CFR 60.482-11a(d). **(40 CFR 60.482-11a(d))**

IV. DESIGN/EQUIPMENT PARAMETER(S)

1. The permittee shall equip each sampling connection system with a closed-purged, closed-loop, or closed-vent system, as specified in 40 CFR 60.482-5a. **(40 CFR 60.482-5a)**

2. The permittee shall equip each open-ended valve or line with a cap, blind flange, plug, or a second valve, as specified in 40 CFR 60.482-6a. **(40 CFR 60.482-6a)**
3. The permittee shall operate closed vent systems and control devices used to comply with 40 CFR 60 Subpart VVa at all times when emissions may be vented to them. **(40 CFR 60.482-10a(m))**
4. The permittee shall, when each leak is detected as specified in 40 CFR 60.482-2a, 60.482-3a, 60.482-7a, 60.482-8a, 60.482-11a, and 60.483-2a, take the actions specified in 40 CFR 60.486a(b) and (c). **(40 CFR 60.486a(b) & (c))**

V. TESTING/SAMPLING

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

1. The permittee shall demonstrate compliance with the requirements of 40 CFR Part 60 subparts A and VVa within 180 days of initial startup. All required testing shall be at owner's expense. The permittee shall notify the AQD District Supervisor in writing within 15 days of the date of commencement of trial operation in accordance with 40 CFR 60.7(a)(3). Performance testing procedures shall be in accordance with the applicable federal Reference Methods, 40 CFR Part 60 Appendix A. No less than 60 days prior to testing, a complete test plan shall be submitted to the AQD. The final plan must be approved by the AQD prior to testing. Compliance with 40 CFR 60.482-1a through 40 CFR 60.482-11a will be determined by review of records and reports, review of performance test results, and inspection using the methods and procedures specified in 40 CFR 60.485a. Equipment that is in vacuum service is excluded from the requirements of 40 CFR 60.482-2a to 40 CFR 60.482-11a if it is identified as required in 40 CFR 60.486a(e)(5). **(R 336.1225, R 336.1702(b), 40 CFR Part 60 Subparts A and VVa, 40 CFR 60.482-1a, 40 CFR 60.485a)**

VI. MONITORING/RECORDKEEPING

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

1. The permittee shall comply with the standards for pumps in light liquid service in 40 CFR 60.482-2a. **(40 CFR 60.482-2a)**
2. The permittee shall monitor each valve in gas/vapor service and in light liquid service as specified in 40 CFR 60.482-7a. **(40 CFR 60.482-7a)**
3. The permittee shall monitor control devices used to comply with 40 CFR 60 subpart VVa to ensure that they are operated and maintained in conformance with their designs. **(40 CFR 60.482-10a(e))**
4. The permittee shall inspect each closed vent system according to the procedures and schedule specified in 40 CFR 60.482-10a(f). **(40 CFR 60.482-10a(f))**
5. The permittee shall record the information specified in 40 CFR 60.482-10a(l). **(40 CFR 60.482-10a(l))**
6. The permittee shall monitor each connector in gas/vapor service and in light liquid service as specified in 40 CFR 60.482-11a. **(40 CFR 60.482-11a)**
7. The permittee shall record the information specified in 40 CFR 60.486a(d) pertaining to the design requirements for closed vent systems and control devices described in 40 CFR 60.482-10a. This information shall be kept in a readily accessible location. **(40 CFR 60.486a(d))**
8. The permittee shall record the information specified in 40 CFR 60.486a(e) pertaining to all equipment subject to the requirements in 40 CFR 60.482-1a to 60.482-11a. This information shall be kept in a readily accessible location. **(40 CFR 60.486a(e))**
9. The permittee shall record the information specified in 40 CFR 60.486a(f) pertaining to all valves subject to the requirements of 40 CFR 60.482-7a(g) and (h), to all pumps subject to the requirements of 40 CFR 60.482-2a(g), and to all connectors subject to the requirements of 40 CFR 60.482-11a(e). This information shall be kept in a readily accessible location. **(40 CFR 60.486a(f))**

10. The permittee shall record a schedule of monitoring and the percent of valves found leaking during each monitoring period valves complying with 40 CFR 60.483-2a. **(40 CFR 60.486a(g))**
11. The permittee shall record the design criterion required in 40 CFR 60.482-2a(d)(5) and 60.482-3a(e)(2) and an explanation of the design criterion and any changes to this criterion and the reasons for the changes. This information shall be kept in a readily accessible location. **(40 CFR 60.486a(h))**
12. The permittee shall record the information specified in 40 CFR 486a(i) for use in determining exemptions as provided in 40 CFR 60.480a(d). This information shall be kept in a readily accessible location. **(40 CFR 60.486a(i))**
13. The permittee shall record information and data used to demonstrate that a piece of equipment is not in VOC service. This information shall be kept in a readily accessible location. **(40 CFR 60.486a(j))**

VII. REPORTING

1. The permittee shall submit reports as required to comply with the federal NSPS as specified in 40 CFR Part 60 Subparts A and VVa. The permittee shall keep all required records on file for a period of at least five years and make them available to the Department upon request. **(40 CFR 60.487a)**

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENT(S)

1. The permittee shall comply with all provisions of the federal NSPS as specified in 40 CFR Part 60 Subparts A and VVa as they apply to FGNSPSVVa. **(40 CFR Part 60 Subparts A and VVa)**

Footnotes:

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

FGFACILITY CONDITIONS

DESCRIPTION

The following conditions apply source-wide to all process equipment including equipment covered by other permits, grand-fathered equipment, and exempt equipment.

POLLUTION CONTROL EQUIPMENT

NA

I. EMISSION LIMIT(S)

Pollutant	Limit	Time Period / Operating Scenario	Equipment	Monitoring / Testing Method	Underlying Applicable Requirements
1. VOC*	Less than 89.9 tpy	12-month rolling time period as determined at the end of each calendar month	FGFACILITY	SC VI.2	R 336.1205(3)
2. Individual HAP	Less than 8 tpy	12-month rolling time period as determined at the end of each calendar month	FGFACILITY	SC VI.2	R 336.1205(3)
3. Total HAPs	Less than 18 tpy	12-month rolling time period as determined at the end of each calendar month	FGFACILITY	SC VI.2	R 336.1205(3)

* The enforceable restrictions that are associated with SC I.1 are found in EUREACTOR-401-71/72, SC III.1-3, SC IV.1-2 and in FGPROCESSES, SC IV.1-4.

II. MATERIAL LIMIT(S)

NA

III. PROCESS/OPERATIONAL RESTRICTION(S)

NA

IV. DESIGN/EQUIPMENT PARAMETER(S)

- The permittee shall not operate any storage tanks at FGFACILITY that are used to store materials with a vapor pressure greater than 1.5 psia or contain HAP compounds unless those tanks are equipped and maintained with conservation vents. **(R 336.1205(3))**

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. All required calculations shall be completed in a format acceptable to the AQD District Supervisor and made available by the last day of the calendar month, for the previous calendar month, unless otherwise specified in any recordkeeping, reporting or notification special condition. **(R 336.1205(3))**
2. The permittee shall keep, in a satisfactory manner, records of monthly and 12-month rolling time period VOC, individual HAP and total HAP emission rate calculations for FGFACILITY, as required by SC I.1, SC I.2 and SC I.3. All records shall be kept on file for a period of at least five years and made available to the Department upon request. **(R 336.1205(3))**

VII. REPORTING

NA

VIII. STACK/VENT RESTRICTION(S)

NA

IX. OTHER REQUIREMENT(S)

NA

Footnotes:

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