

I. Source Information

- 1. Product/Process Description:** The source produces formaldehyde and phenolic resins.
- 2. Process Description:** The source reacts monomers using the silver or metal oxide process to produce formaldehyde. The source produces phenolic resins. The source produces steam for plant-wide use with gas and fuel oil fired boilers.
- 3. Site Determination:** There are no other facilities that are contiguous or adjacent and under common control.
- 4. Emission Unit Summary:**
 - A. Plant-Wide Emission Unit
 - B. Formaldehyde Production – Silver Process
 - C. Resin Production (PF-1) Powders
 - D. Liquid Resin Production
 - E. Specialty Resin Production
 - F. Phenol and Methanol Recovery
 - G. Formaldehyde Production - Metal Oxide Process
 - H. Resin Production (PF-2)
 - I. Wastewater Treatment Plant
 - J. Utilities
 - K. IA1: Parts Washer
 - L. IA2: New Emergency Generator(s)

5. Permit Revisions

Revision No.	Issue Date	Public Notice Date	Type	Page No.	Description
N/A	9/25/2014	8/10/2014	Initial	Entire Permit	Initial Permit Issuance

- 6. Fugitive Sources:** Fugitive emissions of dust from any part of the plant are subject to Regulation 1.14, *Control of Fugitive Particulate Emissions*.
- 7. Plant-wide Emission Summary:**

Pollutant	District Calculated Actual Emissions 2012 Data (tpy)	Major Source Status (based on PTE)
CO	41.28	Yes
NO _x	22.34	No
SO ₂	0.18	Yes
PM/PM ₁₀	27.44/25.99	Yes
VOC	19.12	Yes
Phenol	6.43	Yes
Formaldehyde	0.815	Yes
Methanol	4.44	Yes
Total HAPs	12.82	Yes
GHG	103,800.4	Yes*

Note: The source accepted synthetic minor source limits on all criteria pollutants and HAPs

*Note: The GHG are potential to emit (PTE) emissions not actual emissions.

8. Applicable Requirements:

PSD Part 60 SIP Part 63

NSR Part 61 District-Origin Other

9. MACT Requirements:

This source was major for HAPs before October 31, 2005 and is subject to the following MACT regulations:

40 CFR 63 Subpart A	General Provisions
40 CFR 63 Subpart F	National Emission Standards for Organic Hazardous Air Pollutants From the Synthetic Organic Chemical Manufacturing Industry
40 CFR 63 Subpart G	National Emission Standards for Organic Hazardous Air Pollutants From the Synthetic Organic Chemical Manufacturing Industry for Process Vents, Storage Vessels, Transfer Operations, and Wastewater
40 CFR 63 Subpart H	National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks
40 CFR 63 Subpart ZZZZ	National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines
40 CFR 63 Subpart CCCCCC	National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Dispensing Facilities

10. Referenced non-MACT Federal Regulations in Permit:

40 CFR 60 Subpart A	General Provisions
40 CFR 60 Subpart Dc	Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units
40 CFR 60 Subpart Kb	Standards of Performance for Volatile Organic Liquid Storage Vessels (including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984
40 CFR 60 Subpart VV	Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for which Construction, Reconstruction, or Modification Commenced After January 5, 1981, and on or Before November 7, 2006
40 CFR 60 Subpart III	Standards of Performance for Volatile Organic Compound (VOC) Emissions From the Synthetic Organic Chemical Manufacturing Industry (SOCMI) Air Oxidation Unit Processes
40 CFR 60 Subpart RRR	Standards of Performance for Volatile Organic Compound Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes
40 CFR 60 Subpart IIII	Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

40 CFR 68 Subparts A through H Chemical Accident Prevention Provisions

II. Regulatory Analysis

1. **Acid Rain Requirements:** The source is not subject to the Acid Rain Program.
2. **Stratospheric Ozone Protection Requirements:** Title VI of the CAAA regulates ozone depleting substances and requires a phase-out of their use. This rule applies to any facility that manufactures, sells, distributes, or otherwise uses any of the listed chemicals. This source does not manufacture, sell, or distribute any of the listed chemicals. The source's use of listed chemicals is that in fire extinguishers, chillers, air conditioners and other HVAC equipment.
3. **Prevention of Accidental Releases 112(r):** The source does manufacture, process, use, store, or otherwise handle one or more of the regulated substances listed in 40 CFR Part 68, Subpart F, and District Regulation 5.15, Chemical Accident Prevention Provisions, in a quantity in excess of the corresponding specified threshold amount. The required Risk Management Plan was submitted on October 27, 2009.
4. **40 CFR Part 64 Applicability Determination:** In accordance with 40 CFR 64, Compliance Assurance Monitoring for Major Stationary Sources, the source is not required to propose a CAM plan based on current process and control device requirements and practices.
5. **Basis of Regulation Applicability**

- a. **Plant-wide**

The company is a major source for VOC, total HAPs, single HAPs (Cresol, Formaldehyde, Methanol, Phenol, Styrene, and Triethylamine), CO, PM₁₀, and CO_{2e} (Greenhouse Gases). Regulation 2.16-*Title V Operating Permits* establishes requirements for major sources.

Regulation 2.05 adopts the Federal Prevention of Significant Deterioration of Air Quality program, and provides for the prevention of significant deterioration of air quality where the national ambient air quality standards have been achieved. Limits for Greenhouse Gases (GHG) are given to avoid the applicability of PSD.

The Company is limited to synthetic minor source emission levels of all criteria pollutants per agreed to Board Order 2142. In addition the Board Order also required that the following HAP emission limits were taken to assure that the source remains a synthetic minor source for HAPs.

- The source shall limit each single plant-wide HAP emissions to less than 10 tons per 12 consecutive month period.
- The owner or operator shall limit the total plant-wide HAP emissions to less than 25 tons per 12 consecutive month period.

Regulations 5.00, 5.01, 5.20, 5.21, 5.22 and 5.23 (STAR Program) establishes requirements for environmental acceptability of toxic air contaminants (TACs) and the requirement to comply with all applicable emission standards.

The TAC emissions from the combustion of natural gas are considered to be “de minimis emissions” by the District. This includes all of the emissions from a process or process equipment for which the only emissions are the products of combustion of natural gas, such as from a natural gas-fired boiler or turbine, but

does not include the other emissions from a process or process equipment that are not the products of the combustion of natural gas. (Regulation 5.21, section 2.7)

The District determined on March 04, 2014 that potential TAC emissions were either de minimis or compliant with STAR EA goals.

Regulation 2.16, sections 4.1.9.1 and 4.1.9.2 requires sufficient monitoring and record keeping to assure ongoing compliance with the terms and conditions of the permit. The owner or operator shall maintain all the required records for a minimum of 5 years and make the records readily available to the District upon request.

Regulation 2.16, section 4.3.5, requires stationary sources for which a Title V is issued shall submit an annual compliance certification by April 15. In addition, as required by Regulation 2.16, section 4.1.9.3, the source shall submit compliance reports at least every six months to show compliance with the permit. Compliance reports and compliance certifications shall be signed by a responsible official and shall include a certification statement per Regulation 2.16, section 3.5.11.

Regulation 2.16, section 4.3.1 establishes testing requirements to assure compliance with the terms and conditions of the permit. Thus, an EPA Reference Method performance test shall be performed every 10 years to determine the emission rate and control efficiency.

Regulation 7.25, section 3.1 requires that best available control technology (BACT) be utilized at affected facilities and that permit conditions be set out to insure compliance with this requirement. The District set forth BACT conditions based on Company submittals dated February 16, 2007 and August 21, 2013. BACT stipulations include control of Silver Plant (Unit 1) by the Silver Plant Boiler at all times except for a maximum of 100 hours per 12 consecutive months, that the bypass emissions be controlled by secondary controls consisting of a packed bed scrubber, and that emissions from the packed bed scrubber amount to no more than 0.64 tons of VOC per 12 consecutive months. Additionally a plant-wide limit of 70 tons per year of VOC emissions was established.

b. **Applicable Regulations:**

Regulation	Title	Type
2.01	General Application	SIP
2.02	Air Pollution Regulation Requirements and Exemptions	SIP
2.03	Authorization to Construct or Operate; Demolition/Renovation Notices and Permit Requirements	SIP
2.08	Emissions Fees, Permit Fees, Permit Renewal Procedures, and Additional Program Fees	Local
2.09	Causes for Permit Modification, Revocation, or Suspension	SIP
2.10	Stack Height Considerations	SIP
2.11	Air Quality Model Usage	SIP
2.16	Title V Operating Permits	SIP
4.01	General Provisions for Emergency Episodes	SIP

Regulation	Title	Type
4.02	Episode Criteria	SIP
4.03	General Abatement Requirements	SIP
4.07	Episode Reporting Requirements	SIP
5.00	Standards for Toxic Air Contaminants and Hazardous Air Pollutants	Local
5.01	General Provisions	SIP
5.02	Federal Emission Standards for Hazardous Air Pollutants Incorporated by Reference	Local
5.14	Hazardous Air Pollutants and Source Categories	Local
5.15	Chemical Accident Prevention Provisions	Local
5.20	Methodology for Determining Benchmark Ambient Concentration of a Toxic Air Contaminant	Local
5.21	Environmental Acceptability for Toxic Air Contaminants	Local
5.22	Procedures for Determining the Maximum Ambient Concentration of a Toxic Air Contaminant	Local
5.23	Categories of Toxic Air Contaminants	Local
6.01	General Provisions (for <i>Existing Affected Facilities</i>)	SIP
6.02	Emission Monitoring for Existing Sources	SIP
6.09	Standards of Performance for Existing Process Operations	SIP
6.13	Standard of Performance for Existing Storage Vessels for Volatile Organic Compounds	SIP
6.18	Standards of Performance for Solvent Metal Cleaning Equipment	SIP
6.22	Standard of Performance for Existing Volatile Organic Materials Loading Facilities	SIP
6.24	Standard of Performance for Existing Sources Using Organic Materials	SIP
6.26	Standard of Performance for Existing Volatile Organic Compound Water Separators	SIP
6.40	Standards of Performance for Gasoline Transfer to Motor Vehicles (Stage II Vapor Recovery)	SIP
6.43	Volatile Organic Compound Emission Reduction Requirements	SIP
7.01	General Provisions (for <i>New Affected Facilities</i>)	SIP
7.02	Federal New Source Performance Standards Incorporated by Reference	Local
7.06	Standards of Performance for New Indirect Heat Exchangers	SIP
7.08	Standards of Performance for New Process Operations	SIP
7.12	Standard of Performance for New Storage Vessels for Volatile Organic Compounds	SIP

Regulation	Title	Type
7.15	Standards of Performance for Gasoline Transfer to New Service Station Storage Tanks (Stage I Vapor Recovery)	SIP
7.22	Standard of Performance for New Volatile Organic Materials Loading Facilities	SIP
7.25	Standard of Performance for New Sources Using Volatile Organic Compounds	SIP

c. **Basis for Applicability**

Regulation	Basis for Applicability
2.03	Establishes requirements for Permits to Construct and Operate
2.16	Title V source
5.00	Establishes definitions of terms used in the Strategic Toxic Air Reduction Program.
5.01	Establishes general provisions for process equipment from which a toxic air contaminant is or may be emitted.
5.02	Adoption and Incorporation by Reference of National Emission Standards for Hazardous Air Pollutants
5.20	Establishes the methodology for determining the benchmark ambient concentration of a toxic air contaminant.
5.21	Establishes the criteria for determining the environmental acceptability of emissions of toxic air contaminants.
5.22	Establishes the procedures for determining the maximum ambient concentration of a toxic air contaminant.
5.23	Establishes categories of toxic air contaminants.
6.13	VOC storage tanks greater than 250 gallon capacity are subject to Regulation 6.13 for VOC which were installed before September 1, 1976.
6.18	Applies to cold cleaners.
6.40	Applies to the refueling of motor vehicles at a gasoline dispensing facility.
7.02	Adoption of Federal New Source Performance Standards
7.06	Applies to each indirect heat exchanger having input capacity of more than one million BTU per hour commenced after September 1, 1976.
7.08	Equipment installed after September 1, 1976 and subject to the PM emission standard.
7.12	Storage tanks with a capacity greater than 250 gallons constructed after April 19, 1972
7.15	Applies to the transfer of VOC from transport tanks into storage tanks constructed after June 13, 1979
7.22	Applies to loading facilities which load more than 200 gallons of "volatile organic materials" into tank trucks, trailer, or railroad tank cars in any one day, commencing after June 13, 1979.

Regulation	Basis for Applicability
7.25	Affected facility constructed after June 13, 1979 for VOC.
40 CFR 60 Subpart A	General Provisions
40 CFR 60 Subpart Db	Applies to each steam generating unit that commences construction, modification, or reconstruction after June 19, 1984, and that has a heat input capacity from fuels combusted in the steam generating unit of greater than 29 megawatts (MW) (100 MMBtu/hr).
40 CFR 60 Subpart Kb	Applies to storage vessels of volatile organic liquids which have a design capacity of 19,800 gal or greater, construction commenced after July 23, 1984, and a maximum true vapor pressure 15.0 kPa or greater.
40 CFR 60 Subpart VV	Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for which Construction, Reconstruction, or Modification Commenced After January 5, 1981, and on or Before November 7, 2006
40 CFR 60 Subpart III	Standards of Performance for Volatile Organic Compound (VOC) Emissions From the Synthetic Organic Chemical Manufacturing Industry (SOCMI) Air Oxidation Unit Processes
40 CFR 60 Subpart IIII	Applies to stationary CI internal combustion engines that commences construction after July 11, 2005.
40 CFR 63 Subpart A	These standards regulate specific categories of stationary sources that emit (or have the potential to emit) one or more hazardous air pollutants.
40 CFR 63 Subpart F	National Emission Standards for Organic Hazardous Air Pollutants From the Synthetic Organic Chemical Manufacturing Industry
40 CFR 63 Subpart G	National Emission Standards for Organic Hazardous Air Pollutants From the Synthetic Organic Chemical Manufacturing Industry for Process Vents, Storage Vessels, Transfer Operations, and Wastewater
40 CFR 63 Subpart H	National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks
40 CFR 63, Subpart ZZZZ	Applies to existing, new, and reconstructed stationary engines. The generators are stationary RICE located at an area source of HAP emissions, therefore 40 CFR 63 Subpart ZZZZ applies.
40 CFR 63 Subpart CCCCCC	Applies to gasoline storage tanks located at an area source of HAP emissions
40 CFR 68	Chemical Accident Prevention Provisions

d. **Emission Unit 1: Formaldehyde Production – Silver Process**i. **Equipment**

ID	Description	Applicable Regulation(s)	Control Device	Stack ID
E1	Primary Absorber (C-001) 1970	STAR 5.15 7.25 40 CFR 60 Subparts VV & III 40 CFR 63 Subparts F, G, & H	C6 (Boiler E18) or C26 (Packed Bed Scrubber)	S2 or S3
E2	Secondary Absorber (C-002) 1970		C6 (Boiler E18) or C26 (Packed Bed Scrubber)	S2 or S3
E3	Distillation Column (C-003) 1970		C6 (Boiler E18) or C26 (Packed Bed Scrubber)	S2 or S3
E4	Purification Column (C-004) 1970		C6 (Boiler E18) or C26 (Packed Bed Scrubber)	S2 or S3
E5	Waste Heat Recovery Boiler (E-001) 1970	IA (See Comment 6)	C6 (Boiler E18) or C26 (Packed Bed Scrubber)	S2 or S3
E6	Methanol Process Condenser (E-004) 1970	STAR 5.15 7.25 40 CFR 60 Subparts VV & III 40 CFR 63 Subparts F, G, & H	C6 (Boiler E18) or C26 (Packed Bed Scrubber)	S2 or S3
E7	Air Heater Chest (E-010) 1970		C6 (Boiler E18) or C26 (Packed Bed Scrubber)	S2 or S3
E8	Methanol Feed Tank (V-001) 1970		C6 (Boiler E18) or C26 (Packed Bed Scrubber)	S2 or S3
E9	Raw Formaldehyde Feed Tank (V-004) 1970		C6 (Boiler E18) or C26 (Packed Bed Scrubber)	S2 or S3
E10	Product Accumulator (V-005) 1970		C6 (Boiler E18) or C26 (Packed Bed Scrubber)	S2 or S3
E11	Reflux Accumulator (V-006) 1970		C6 (Boiler E18) or C26 (Packed Bed Scrubber)	S2 or S3
E12	Oxalic Acid Tank (V-012) 1970	STAR 7.25	NA	S7
E13.1 through E13.60	Reactors (60) 1970	STAR 5.15 7.25 40 CFR 60 Subparts VV & III 40 CFR 63 Subparts F, G, & H	C6 (Boiler E18) or C26 (Packed Bed Scrubber)	S2 or S3

ID	Description	Applicable Regulation(s)	Control Device	Stack ID	
E18	Silver Plant Boiler 12.6 MMBtu/hr (H-001) 1970	STAR 6.07	NA	S2	
E19	Formaldehyde Storage Tank 20616 gal (V-021) 1971	STAR 5.15 6.13 40 CFR 60 Subparts VV & III 40 CFR 63 Subparts F, G, & H	C6 (Boiler E18) or C26 (Packed Bed Scrubber)	S2 or S3	
E20	Formaldehyde Storage Tank 20616 gal (V-022) 1971		C6 (Boiler E18) or C26 (Packed Bed Scrubber)	S2 or S3	
E21	Formaldehyde Storage Tank 20616 gal (V-023) 1971		C6 (Boiler E18) or C26 (Packed Bed Scrubber)	S2 or S3	
E22	Formaldehyde Storage Tank 20616 gal (V-024) 1971		C6 (Boiler E18) or C26 (Packed Bed Scrubber)	S2 or S3	
E23	Formaldehyde Storage Tank 20616 gal (V-025) 1971		C6 (Boiler E18) or C26 (Packed Bed Scrubber)	S2 or S3	
E24	Formaldehyde Storage Tank 20616 gal (V-026) 1971		C6 (Boiler E18) or C26 (Packed Bed Scrubber)	S2 or S3	
E25	Formaldehyde Storage Tank 20616 gal (V-027) 1971		C6 (Boiler E18) or C26 (Packed Bed Scrubber)	S2 or S3	
E26	Formaldehyde Storage Tank 20616 gal (V-028) 1971		C6 (Boiler E18) or C26 (Packed Bed Scrubber)	S2 or S3	
E27	Methanol Storage Tank 750000 gal (V-00A) 1971		STAR 6.13 40 CFR 60 Subparts VV & III 40 CFR 63 Subparts F, G, & H	Internal Floating Roof	S8
E28	Formaldehyde Rail Loading Arm #7 1990		STAR 5.15	C6 (Boiler E18) or C26 (Packed Bed Scrubber)	S2 or S3
E29	Formaldehyde Rail Loading Arm #10 1990	STAR 7.22 40 CFR 60 Subparts	C6 (Boiler E18) or C26 (Packed Bed Scrubber)	S2 or S3	

ID	Description	Applicable Regulation(s)	Control Device	Stack ID
E30	Formaldehyde Rail Loading Arm #12 1990	VV & III 40 CFR 63 Subparts F, G, & H	C6 (Boiler E18) or C26 (Packed Bed Scrubber)	S2 or S3
E31	Formaldehyde Rail Loading Arm #14 1990		C6 (Boiler E18) or C26 (Packed Bed Scrubber)	S2 or S3
E32	Formaldehyde Truck Loading Bay 1990		C6 (Boiler E18) or C26 (Packed Bed Scrubber)	S2 or S3
E34	Formaldehyde Storage Tank 40000 gal (V-58) 1996	STAR 5.15 7.12 40 CFR 60 Subpart Kb 40 CFR 60 Subparts VV & III 40 CFR 63 Subparts F, G, & H	C6 (Boiler E18) or C26 (Packed Bed Scrubber) Submerged Fill	S2 or S3
E35	Formaldehyde Storage Tank 40000 gal (V-59) 1996		C6 (Boiler E18) or C26 (Packed Be Scrubber) Submerged Fill	S2 or S3
E37	UFC Distillate Storage Tank 25000 gal (V-61) 1996	STAR 5.15 7.12 40 CFR 60 Subparts VV & III 40 CFR 63 Subparts F, G, & H	C6 (Boiler E18) or C26 (Packed Bed Scrubber) Submerged Fill	S2 or S3

ii. **Standards/Operating Limits**

1) **VOC**

- (a) Regulation 7.22 stipulates use of controls for facilities loading 20,000 gallons or more of volatile organic material.
- (b) Regulation 6.13, applies to tank E27 due to the vapor pressure as stored being greater than 1.5 psia and a tank size of 750000 gallons.
- (c) 40 CFR 60 Subpart Kb provisions do not apply since the provisions of the HON MACT do apply for this process unit.
- (d) For Storage Tank (E19, E20, E21, E22, E23, E24, E25, E26, E34, E35, and E37), Regulation 6.13 section 3.3 and 7.12 section 3.3 requires submerged fill if the materials have an as stored vapor pressure of 1.5 psia or greater.
- (e) The Silver Plant boiler bypass vent is limited to 100 hours in accordance with Regulation 7.25 BACT dated 2/16/2007.
- (f) See Plant-wide emission limits

2) **HAP**

Federal Regulation 40 CFR 63 Subparts F, G, and H regulate the emissions of HAP from the synthetic organic manufacturing industry. Although a synthetic minor source for HAP emissions the Company agreed to regulation of the two Formaldehyde production processes as part of Board Order agreement 2142.

3) **TAC**

Per Regulations 5.00 and 5.21, TAC emissions must not exceed environmentally acceptable levels.

4) **PM**

Silver Plant boiler emissions are limited in accordance with Regulation 6.07, Table 1 which allows for the interpolation of allowable emission by use of the following equation:

$$Y = 0.9634 X^{-0.2356}$$

Where:

Y = allowable particulate emissions in pounds per million BTU per hour heat input.

X = millions of BTU per hour heat input capacity rating.

5) **Opacity**

Silver Plant boiler emissions are limited in accordance with Regulation 6.07.

6) **SO2**

Silver Plant boiler emissions are limited in accordance with Regulation 6.07, Table 2 which allows for the interpolation of allowable emissions by use of the following equation for liquid or gaseous fuels:

$$Y = 7.722 X^{-0.4106}$$

Where:

Y = allowable sulfur dioxide emissions in pounds per million BTU per hour heat input.

X = millions of BTU per hour heat input capacity rating.

e. **Emission Unit 2: Resin Production (PF-1) Powders**

i. **Equipment**

ID	Description	Applicable Regulation(s)	Control Device	Stack ID
E38	V-217 Seal Water Tank 370 gal (V-217) 1977	STAR 5.15 7.25	PF-1 RTO (PF-1 Recuperative Thermal Oxidizer)	PF-1 RTO
E39	Knockout Pot 300 gal (V-218A) 1977	STAR 7.25	PF-1 RTO (PF-1 Recuperative Thermal Oxidizer)	PF-1 RTO
E40	Phenol Weigh Tank 5300 gal (V-219)		PF-1 RTO (PF-1 Recuperative)	PF-1 RTO

ID	Description	Applicable Regulation(s)	Control Device	Stack ID
	1977		Thermal Oxidizer)	
E41	D Formaldehyde Weigh Tank 3125 gal (V-220) 1977	STAR 5.15 7.25	PF-1 RTO (PF-1 Recuperative Thermal Oxidizer)	PF-1 RTO
E42	Reactor Line A HCHO Weigh Tank 3125 gal (V-204A) 1977		PF-1 RTO (PF-1 Recuperative Thermal Oxidizer)	PF-1 RTO
E43	Reactor Line A Condenser (E-201A) 1977	STAR 5.15 7.25	PF-1 RTO (PF-1 Recuperative Thermal Oxidizer)	PF-1 RTO
E44	Reactor Line A Distillate Receiver (V-208A) 6900 gal 1977		PF-1 RTO (PF-1 Recuperative Thermal Oxidizer) for Vacuum Distillates/ NA for Atmospheric Distillates	PF-1 RTO for Vacuum/ S-DR-V208A for Atmospheric
E45	Reactor Line A Reactor (R-201A) 8836 gal 1977		PF-1 RTO (PF-1 Recuperative Thermal Oxidizer)	PF-1 RTO
E46	Reactor Line A Surge Tank 5450 gal (V-205A) 1977		C3 (PF-1 Fume Scrubber)	S-DR-V205A
E47	A Azeotropic Separator 572 gal (V-221A) 1977		PF-1 RTO (PF-1 Recuperative Thermal Oxidizer)	PF-1 RTO
E48	Reactor Line B Condenser (E-201B) 1977		PF-1 RTO (PF-1 Recuperative Thermal Oxidizer)	PF-1 RTO
E49	Reactor Line B HCHO Weigh Tank 3125 gal (V-204B) 1977		PF-1 RTO (PF-1 Recuperative Thermal Oxidizer)	PF-1 RTO
E50	Reactor Line B Reactor 8835 gal (R-201B) 1977		PF-1 RTO (PF-1 Recuperative Thermal Oxidizer)	PF-1 RTO
E51	Reactor Line B Distillate Receiver 6900 gal (V-208B) 1977		PF-1 RTO (PF-1 Recuperative Thermal Oxidizer) for Vacuum Distillates/ NA for Atmospheric	PF-1 RTO for Vacuum/ S-DR-V208B for Atmospheric

ID	Description	Applicable Regulation(s)	Control Device	Stack ID
			Distillates	
E52	Reactor Line B Surge Tank 6000 gal (V-205B) 1977		NA	S-DR-V205B
E53	B Azeotropic Separator 572 gal (V-221B) 1977		PF-1 RTO (PF-1 Recuperative Thermal Oxidizer)	PF-1 RTO
E54	Reactor Vacuum Compressor (K-202-1) 1995		PF-1 RTO (PF-1 Recuperative Thermal Oxidizer)	PF-1 RTO
E55	Reactor Vacuum Compressor (K-202-2) 1977		PF-1 RTO (PF-1 Recuperative Thermal Oxidizer)	PF-1 RTO
E56	Reactor Vacuum Compressor (K-202-3) 1977		PF-1 RTO (PF-1 Recuperative Thermal Oxidizer)	PF-1 RTO
E57	Reactor Vacuum Compressor (K-202-4) 1977		PF-1 RTO (PF-1 Recuperative Thermal Oxidizer)	PF-1 RTO
E58	Reactor Vacuum Compressor (K-202-5) 1977		PF-1 RTO (PF-1 Recuperative Thermal Oxidizer)	PF-1 RTO
E59	Reactor Vacuum Compressor Separator 200 gal (V-207A) 1977		PF-1 RTO (PF-1 Recuperative Thermal Oxidizer)	PF-1 RTO
E60	Reactor Vacuum Compressor Separator 200 gal (V-207B) 1977	STAR 5.15 7.25	PF-1 RTO (PF-1 Recuperative Thermal Oxidizer)	PF-1 RTO
E61	Vacuum Compressor Knockout Pot 200 gal (V-207D) 1977		PF-1 RTO (PF-1 Recuperative Thermal Oxidizer)	PF-1 RTO
E63	A Flaker (M-401A) 1977	STAR 7.25 7.08	C3 (PF-1 Fume Scrubber) and C12 (Fabric Filter)	S9 and S50
E64	A Flake Breaker (M-402A) 1977	7.08	C12 (Fabric Filter)	S50
E65	A Flaker Hopper (M-403A) 2006		C12 (Fabric Filter)	S50

ID	Description	Applicable Regulation(s)	Control Device	Stack ID
E67	B Flaker (M-401B) 1977	STAR 7.25 7.08	C3 (PF-1 Fume Scrubber) and C12 (Fabric Filter)	S9 and S50
E68	B Flake Breaker (M-402B) 1977	7.08	C12 (Fabric Filter)	S50
E69	B Flaker Hopper (M-403B) 2006		C12 (Fabric Filter)	S50
E72	Flake Tote Scale (M-410) 1977		NA	S64
E73	Flake Tote Filling Scale (M-415) 1977		C12 (Fabric Filter)	S50
E75	A and B Crusher (M-505) 1977		C20 (Fabric Filter)	S58
E76	A and B Grinder Feed Bin (V-514) 1977		C20 (Fabric Filter)	S58
E77	Resin Grinder A (M-516A) 1977		C13 (Fabric Filter)	S51
E78	Resin Grinder B (M-516B) 1977		C14 (Fabric Filter)	S52
E79	Blender A (M-519A) 1977		C16 (Fabric Filter)	S54
E80	Blender B (M-519B) 1977		C16 (Fabric Filter)	S54
E81	Blender C (M-519C) 1977		C16 (Fabric Filter)	S54
E82	Powder Resin Screener A (M-521A-1) 1977	7.08	C16 (Fabric Filter)	S54
E83	Powder Resin Screener B (M-521B-1) 1977		C16 (Fabric Filter)	S54
E84	Powder Bagger A (M-524A) 1977		C16 (Fabric Filter)	S54
E85	Powder Bagger B (M-524B) 1977		C16 Fabric Filter	S54
E86	Talc Mixer		C16 (Fabric Filter)	S54

ID	Description	Applicable Regulation(s)	Control Device	Stack ID
	1977			
E87	A-B Side Super Sacker (M-525) 1977		C19 (Fabric Filter)	S57
E88	Decanted Phenol Storage Tank 25000 gal (V-101) 1977	STAR 7.12	Submerged Fill	S18
E90	93% Sulfuric Acid Tank (V-104) 1940 gal	STAR	Submerged Fill	S19
E91	Butyl Acetate Storage Tank 6000 gal (V-106) 1977		Submerged Fill	S20
E95	Weak Distillate Storage Tank 20300 gal 1977		Submerged Fill	S25
E96	Weak Distillate Storage Tank 20300 gal 1977	STAR 5.15 7.12	Submerged Fill	S26
E99	Recovered Phenol Storage Tank 25382 gal (V-312A) 1977		Submerged Fill	S29
E101	Drumming Shed #1-Tote Filling 1985	STAR 5.15 7.22	NA	S45
E102	Drumming Shed #2-Tote Filling 1985		NA	S46
E104	Truck Loading Station 1985	STAR 5.15 7.22	NA	S47
E109	Liquid Resin Storage Tank 17000 gal (V-612-2A) 1985	STAR 7.12	NA	S34
E120	Glycol Water Storage Tank 20000 gal (V-833) 1977	STAR 7.12	Submerged Fill	S32
E123	Formaldehyde Weigh Tank 5300 gal (V-225E/F) 1991	STAR 5.15 7.25	PF-1 RTO (PF-1 Recuperative Thermal Oxidizer)	PF-1 RTO
E124	Formaldehyde Weigh Tank		PF-1 RTO (PF-1)	PF-1 RTO

ID	Description	Applicable Regulation(s)	Control Device	Stack ID
	5300 gal (V-226E/F) 1991		Recuperative Thermal Oxidizer)	
E125	Reactor Line C Condenser (E-201C) 1991		PF-1 RTO (PF-1 Recuperative Thermal Oxidizer)	PF-1 RTO
E126	Reactor Line C Distillate Receiver 6900 gal (V-208C) 1991		PF-1 RTO (PF-1 Recuperative Thermal Oxidizer) for Vacuum Distillation/ NA for Vacuum Distillates	PF1RTO for Vacuum/ S-DR-V208C for Atmospheric
E127	Reactor Line C Reactor 6600 gal (R-201C) 1991		PF-1 RTO (PF-1 Recuperative Thermal Oxidizer)	PF-1 RTO
E128	Reactor Line D Condenser (E-201D) 1991		PF-1 RTO (PF-1 Recuperative Thermal Oxidizer)	PF-1 RTO
E129	Reactor Line D Distillate Receiver 6900 gal (V-208D) 1991		PF-1 RTO (PF-1 Recuperative Thermal Oxidizer) for Vacuum Distillates/ NA for Atmospheric Distillates	PF1RTO for Vacuum/ S-DR-V208D for Atmospheric
E130	Reactor Line D Reactor 10000 gal (R-201D) 1991		PF-1 RTO (PF-1 Recuperative Thermal Oxidizer)	PF-1 RTO
E131	Reactor Line D Surge Tank 10000 gal (V-205DS) 1991		NA	S10
E132	Reactor Line E Condenser (E-201E) 1991		PF-1 RTO (PF-1 Recuperative Thermal Oxidizer)	PF-1 RTO
E133	Reactor Line E Reactor 11000 gal (R-201E) 1991		PF-1 RTO (PF-1 Recuperative Thermal Oxidizer)	PF-1 RTO
E134	Reactor Line E Surge Tank 13600 gal (V-205E) 1991		NA	S-DR-V205E
E135	Reactor Line E Distillate Receiver 6900 gal (V-208-E)		PF-1 RTO (PF-1 Recuperative Thermal Oxidizer) for Vacuum	PF1RTO for Vacuum/ S-DR-V208E for

ID	Description	Applicable Regulation(s)	Control Device	Stack ID
	1991		Distillates/ NA for Atmospheric Distillates	Atmospheric
E136	Lime Slurry Tank 200 gal (V-228E) 1991	IA	NA	S15
E137	Oxalic Acid Tank 200 gal (V-229E)	IA	NA	S14
E139	Small Utility Storage Tank 220 gal (V-211) 1991	IA	NA	S12
E140	Reactor Vacuum Compressor (K-202-6) 1995	STAR 5.15 7.25	PF-1 RTO (PF-1 Recuperative Thermal Oxidizer)	PF-1 RTO
E141	Reactor Vacuum Compressor (K-202-7) 1995		PF-1 RTO (PF-1 Recuperative Thermal Oxidizer)	PF-1 RTO
E142	Reactor Vacuum Compressor (K-202-8) 1995		PF-1 RTO (PF-1 Recuperative Thermal Oxidizer)	PF-1 RTO
E144	Reactor Vacuum Compressor Separator 200 gal (V-207E) 1991		PF-1 RTO (PF-1 Recuperative Thermal Oxidizer)	PF-1 RTO
E147	House Vacuum System (F-506C) 1991	7.08	C15 (Fabric Filter)	S53
E150	Reactor Line F Reactor 16000 gal (R-201F) 1995	STAR 5.15 7.25	PF-1 RTO (PF-1 Recuperative Thermal Oxidizer)	PF-1 RTO
E151	Reactor Line F Condenser (E-201F) 1995		PF-1 RTO (PF-1 Recuperative Thermal Oxidizer)	PF-1 RTO
E152	Reactor Line F Distillate Receiver 6900 gal (V-208F) 1995		PF-1 RTO (PF-1 Recuperative Thermal Oxidizer)	PF-1 RTO
E153	Reactor Line F Surge Tank 13600 gal (V-206F) 1995		NA	S-DR-V206F
E155	Lime Slurry Tank 400 gal	IA	NA	S16

ID	Description	Applicable Regulation(s)	Control Device	Stack ID
	(V-228F) 1995			
E156	Oxalic Acid Tank (V-229F) 200 gal	IA	NA	S14
E157	Reactor Vacuum Compressor Separator 33 gal (V-218-7) 1995	STAR 5.15 7.25	PF-1 RTO (PF-1 Recuperative Thermal Oxidizer)	PF-1 RTO
E158	Reactor Vacuum Compressor Separator 33 gal (V-218-8) 1995		PF-1 RTO (PF-1 Recuperative Thermal Oxidizer)	PF-1 RTO
E159	Reactor Vacuum Compressor Separator 33 gal (V-218-6) 1995		PF-1 RTO (PF-1 Recuperative Thermal Oxidizer)	PF-1 RTO
E160	E/F Seal Water Pot 500 gal (E-204) 1995		NA	S11
E161	C Flaker (M-401C) 1993	STAR 7.08 7.25	C3 (PF-1 Fume Scrubber)) and C21 (Fabric Filter)	S9and S59
E162	C Flake Breaker (M-402C) 1993	7.08	C21 (Fabric Filter)	S59
E163	C Flake Hopper (M-403C) 1993		C21 (Fabric Filter)	S59
E165	D Flaker (M-401D) 1995	STAR 7.08 7.25	C3 (PF-1 Fume Scrubber) and C21 (Fabric Filter)	S9 and S59
E166	D Flake Breaker (M-402D) 1995	7.08	C21 (Fabric Filter)	S59
E167	D Flake Hopper 1995		C21 (Fabric Filter)	S59
E170	o-Cresol Storage Tank 25000 gal (V-108) 1995	7.12	Submerged Fill	S24
E171	Phenol Distillate Decanter 20300 gal (V-312B)	STAR 5.15 7.25	NA	S30

ID	Description	Applicable Regulation(s)	Control Device	Stack ID
	1994			
E172	Fatty Acid Storage Tank 12000 gal (V-399) 1994	7.12	NA	S31
E173	C/D Flake Crusher (M-555) 1995	7.08	C18 (Fabric Filter)	S56
E174	C Grinder Feed Bin (V-154C) 1995		C18 (Fabric Filter)	S56
E175	Resin Grinder C (M-516C) 1995		C24 (Fabric Filter)	S63
E176	D Blender (M-519D) 1995		C23 (Fabric Filter)	S62
E177	E Blender (M-519E) 1995	7.08	C17 (Fabric Filter)	S55
E178	D Screen (M-520D) 1995		C23 (Fabric Filter)	S62
E179	E Screen (M-520E) 1995		C17 (Fabric Filter)	S55
E180	Powder Bagger C (M-524C) 1995		C16 (Fabric Filter)	S54
E181	Powder Bagger D (M-524D) 1995		C23 (Fabric Filter)	S62
E182	Powder Bagger E (M-524E) 1995		C23 (Fabric Filter)	S62
E183	C-Side Powder Drum Packer (M-526) 1995		C23 (Fabric Filter)	S62
E184	C Supersacker (M-527) 1995		C23 (Fabric Filter)	S62
E185	Hexa Station 1995		NA	S60
E462	Recovered Phenol Tank Vent 25380 gal (V-314)		STAR 5.15 7.12	NA
E463	Phenolic Distillate Tank 35535 gal (V-316)	NA		S21

ID	Description	Applicable Regulation(s)	Control Device	Stack ID
E464	Phenolic Distillate Tank 35535 gal (V-317)		NA	S22
E472	45% KOH Storage Tank (V-105)	IA	Submerged Fill	NA
E475	ABC-Bagger Surge Bin 2003	STAR 5.15 7.12	C16 (Fabric Filter)	S54
E476	Super Sack Transfer Conveyor 2003		C16 (Fabric Filter)	S54
E477	C Bucket Conveyor 2003		C21 (Fabric Filter)	S59
E478	C Transfer Conveyor 2003		C21 (Fabric Filter)	S59
E480	D Bucket Conveyor 2003		C21 (Fabric Filter)	S59
E483	C/D Flaking area Bag Filling Station 2003		C21 (Fabric Filter)	S59
E484	Carbon Black Surge Bin 2003		C17 (Fabric Filter)	S55
E486	Furfuryl Alcohol Raw Material Blend Storage Tank 15000 gal (V-42-622)	STAR 5.15 7.12	NA	S176

ii. **Standards/Operating Limits**

1) **VOC**

- (a) Regulation 7.22 stipulates use of controls for facilities loading 20,000 gallons or more of volatile organic material.
- (b) For Storage Tank (E88, E91, E95, E96, E99, E109, E120, E138, E170, E172, E462, E463, E464, and E486), Regulation 7.12, section 3.3 requires submerged fill if the materials have an as stored vapor pressure of 1.5 psia or greater.
- (c) See Plant-wide emission limits

2) **HAP**

Federal Regulation 40 CFR 63 Subparts F, G, and H regulate the emissions of HAP from the synthetic organic manufacturing industry. Although a synthetic minor source for HAP emissions the Company agreed to regulation of the two Formaldehyde production processes as part of Board Order agreement 2142.

3) **TAC**

Per Regulations 5.00 and 5.21, TAC emissions must not exceed environmentally acceptable levels.

4) **PM**

- (a) Limits for Emission Points (E63-E65, E67-E69, E72, E73, E75, E76, E79-E87, E147, E161-E163, E165-E167, E173, E176-E182, E184, E185, E475-E478, E480, E483, and E484) are stipulated per District permits 74-03-C, 173-06-C, 174-06-C, 175-06-C, 176-06-C, 177-06-C, 178-06-C, and 503-08-C.
- (b) Regulation 7.08, Table 1 stipulates lb/hr PM emission standards for Emission Points (E77, E78, E174, E175, and E183) according to the equation $E = 3.59(P)^{0.62}$, where P is process weight rate in tons/hr and E is the rate of emission in lb/hr for process weight rates up to 60,000 lb/hr.

5) **Opacity**

Regulation 7.08, section 3.1.1 establishes opacity standards.

f. **Emission Unit 3: Liquid Resin Production**i. **Equipment**

ID	Description	Applicable Requirement(s)	Control Device	Stack ID
E192	Reactor Line J Reactor 7000 gal (R-225J) 1996	STAR 5.15 7.25	C4 (LRU Boiler (E246)) or C7 (LRU CTO (E292))	S110 or S118
E193	Reactor Line J Condenser (E-225J) 1996		C4 (LRU Boiler (E246)) or C7 (LRU CTO (E292))	S110 or S118
E194	Reactor Line J Distillate Receiver Storage Tank 450 gal (V-225J) 1996	STAR 5.15 7.12	C4 (LRU Boiler (E246)) or C7 (LRU CTO (E292)) for Vacuum Distillates/ N/A for Atmospheric Distillates	S110 or S118 for Vacuum/ S-DR-V226J for Atmospheric
E195	Reactor Line K Reactor 16000 gal (R-225K) 1996	STAR 5.15 7.25	C4 (LRU Boiler (E246)) or C7 (LRU CTO (E292))	S110 or S118
E196	Reactor Line K Condenser (E-225K) 1996		C4 (LRU Boiler (E246)) or C7 (LRU CTO (E292))	S110 or S118
E197	Reactor Line K Distillate Receiver	STAR	C4 (LRU Boiler (E246))	S110

ID	Description	Applicable Requirement(s)	Control Device	Stack ID
	Storage Tank 450 gal (V-225K) 1996	5.15 7.12	or C7 (LRU CTO (E292)) for Vacuum Distillates/ N/A for Atmospheric Distillates	or S118 for Vacuum/ S-DR-V226K for Atmospheric
E198	Reactor Line L Reactor 16000 gal (R-225L) 1996	STAR 5.15 7.25	C4 (LRU Boiler (E246)) or C7 (LRU CTO (E292))	S110 or S118
E199	Reactor Line L Condenser (E-225L) 1996		C4 (LRU Boiler (E246)) or C7 (LRU CTO (E292))	S110 or S118
E200	Reactor Line L Distillate Receiver Storage Tank 450 gal (V-225L) 1996	STAR 5.15 7.12	C4 (LRU Boiler (E246)) or C7 (LRU CTO (E292)) for Vacuum Distillates/ N/A for Atmospheric Distillates	S110 or S118 for Vacuum/ S-DR-V226L for Atmospheric
E201	Reactor Line M Reactor 20000 gal (R-225M) 1996	STAR 5.15 7.25	C4 (LRU Boiler (E246)) or C7 (LRU CTO (E292))	S110 or S118
E202	Reactor Line M Condenser (E-225M) 1996		C4 (LRU Boiler (E246)) or C7 (LRU CTO (E292))	S110 or S118
E203	Reactor Line M Distillate Receiver Storage Tank 450 gal (V-225M) 1996	STAR 5.15 7.12	C4 (LRU Boiler (E246)) or C7 (LRU CTO (E292)) for Vacuum Distillates/ N/A for Atmospheric Distillates	S110 or S118 for Vacuum/ S-DR-V226M for Atmospheric
E204	Vacuum Pump (K-225-1) 1996		C4 (LRU Boiler (E246)) or C7 (LRU CTO (E292))	S110 or S118
E205	Vacuum Pump (K-225-2) 1996	STAR 5.15 7.25	C4 (LRU Boiler (E246)) or C7 (LRU CTO (E292))	S110 or S118
E206	Vacuum Pump (K-225-3) 1996		C4 (LRU Boiler (E246)) or C7 (LRU CTO (E292))	S110 or S118
E207	Vacuum Pump (K-225-4) 1996		C4 (LRU Boiler (E246)) or C7 (LRU CTO (E292))	S110 or S118
E208	Vacuum Pump		C4 (LRU Boiler (E246))	S110

ID	Description	Applicable Requirement(s)	Control Device	Stack ID
	(K-225-5) 1996		or C7 (LRU CTO (E292))	or S118
E209	Vacuum Pump Separator 33 gal (V-225-1) 1996		C4 (LRU Boiler (E246)) or C7 (LRU CTO (E292))	S110 or S118
E210	Vacuum Pump Separator 33 gal (V-225-2) 1996		C4 (LRU Boiler (E246)) or C7 (LRU CTO (E292))	S110 or S118
E211	Vacuum Pump Separator 33 gal (V-225-3) 1996		C4 (LRU Boiler (E246)) or C7 (LRU CTO (E292))	S110 or S118
E212	Vacuum Pump Separator 33 gal (V-225-4) 1996		C4 (LRU Boiler (E246)) or C7 (LRU CTO (E292))	S110 or S118
E213	Vacuum Pump Separator 33 gal (V-225-5) 1996		C4 (LRU Boiler (E246)) or C7 (LRU CTO (E292))	S110 or S118
E214	Vacuum Pump Seal for K-225-1 1999		NA	S65
E215	Vacuum Pump Seal for K-225-2 1999	STAR 5.15 7.25	NA	S65
E216	Vacuum Pump Seal for K-225-3 1999		NA	S65
E217	Vacuum Pump Seal for K-225-4 1999		NA	S65
E218	Vacuum Pump Seal for K-225-5 1999		NA	S65
E219	Centrifuge Feed Tank 15000 gal (V-232) 1996		NA	S80
E220	Centrifuge #1 3000 gal (M-243) 1996		NA	S66
E221	Deaeration Tank 1 150 gal (V-231) 1996		NA	S66
E222	Centrifuge #2		NA	S66

ID	Description	Applicable Requirement(s)	Control Device	Stack ID
	3000 gal (M-242) 1996			
E223	Deaeration Tank 2 150 gal (V-230) 1996		NA	S66
E224	Centrifuge #3 3000 gal (M-241) 1996		NA	S66
E225	Deaeration Tank 3 150 gal (V-229) 1996		NA	S66
E226	Sludge Control Feeder 25 gal 1996		C4 (LRU Boiler (E246)) or C7 (LRU CTO (E292))	S110 or S118
E227	Zinc Sludge Drum Filling (M-133) 1996		NA	S66
E228	Resole Distillate Hold Tank 25000 gal (V-236) 1996	STAR 5.15 7.25	NA	S83
E229	Centrifuge Hold Tank 20000 gal (V-237) 1996		NA	S84
E230	Rinse Water Storage Tank 25000 gal (V-238) 1996	STAR 5.15 7.12	NA	S85
E231	Seal Water Storage Tank 1500 gal (V-239) 1996		C4 (LRU Boiler (E246)) or C7 (LRU CTO (E292))	S110 or S118
E232	Phenolic Urethane Tank 18000 gal (V-233) 1996		NA	S81
E233	Phenolic Urethane Tank 18000 gal (V-234) 1996		NA	S82

ID	Description	Applicable Requirement(s)	Control Device	Stack ID
E235	Isocyanate Blend Storage Tank 10000 gal (V-241) 1996		NA	S111
E236	Urethane Part III Mix Tank 1000 gal (V-242) 1996	STAR 7.25	NA	S111
E237	Urethane Part III Mix/Packaging system 1996		NA	S111
E238	Part I Silane Addition System 1996		NA	S111
E240	LRU Tote Blend System 1996	STAR 5.15 7.25	NA	S111
E241	Hydrofluoric Acid Addition System 1996	STAR	NA	S87
E242	BPAC Truck Loading	STAR 7.22 7.25	C4 (LRU Boiler (E246)) or C7 (LRU CTO (E292))	S110 or S118
E243	Resole Tote/Drum Loading Line 1996	STAR 7.25	NA	S111
E244	Part II Tote/Drum Loading Line 1996		NA	S111
E245	Part I Tote/Drum Loading Line 1996	STAR 5.15 7.25	NA	S111
E246	LRU Boiler, natural gas fired 62.4 MMBtu/hr (K-802C) 1996	STAR 7.06 40 CFR 60 Subpart Dc	NA	S110
E249	50% Formaldehyde Storage Tank 108000 gal (V-050) 1996	STAR 5.15 7.12	C5 (Catalytic Oxidizer)	S135
E250	50% Formaldehyde Storage Tank 108000 gal (V-051) 1996		C5 (Catalytic Oxidizer)	S135
E251	Phenol Storage Tank 90000 gal (V-125) 1996	STAR 7.12	NA	S67

ID	Description	Applicable Requirement(s)	Control Device	Stack ID
E252	Phenol Storage Tank 90000 gal (V-126) 1996		NA	S68
E253	DBE Storage Tank 30000 gal (V-127) 1996		NA	S69
E254	DOA Storage Tank (V-128) 9800 gal 1996		NA	S70
E255	Methyl Ester Storage Tank 9800 gal (V-129) 1996		NA	S71
E256	Furfuryl Alcohol Storage Tank 30000 gal (V-130) 1996		NA	S72
E257	SS150ND Storage Tank 30000 gal (V-131) 1996		NA	S73
E258	SS205 Storage Tank 30000 gal (V-132) 1996		NA	S74
E259	25% Zinc Acetate Solution Storage Tank 12000 gal (V-133) 1996	IA	NA	S75
E260	Isocyanate Storage Tank 30000 gal (V-134) 1996		NA	S76
E261	Kerosene Storage Tank 9800 gal (V-135) 1996		NA	S77
E262	Isocyanate Storage Tank 30000 gal (V-137) 1996		NA	S78
E263	Vycel-U Storage Tank 9800 gal (V-139) 1996	STAR 7.12	NA	S79

ID	Description	Applicable Requirement(s)	Control Device	Stack ID
E264	Phenolic Urethane Storage Tank 25800 gal (V-625) 1996		NA	S88
E265	Phenolic Urethane Storage Tank 25800 gal (V-626) 1996	STAR 5.15 7.12	NA	S89
E266	Phenolic Urethane Storage Tank 25800 gal (V-627) 1996		NA	S90
E267	Phenolic Urethane Storage Tank 25800 gal (V-628) 1996		NA	S91
E268	Phenolic Urethane Storage Tank 25800 gal (V-629) 1996		NA	S92
E269	Phenolic Urethane Storage Tank 25800 gal (V-630) 1996		NA	S93
E270	Phenolic Urethane Resole Storage Tank 18000 gal (V-631) 1996		NA	S94
E271	Phenolic Urethane/Resole Storage Tank 18000 gal (V-632) 1996		NA	S95
E272	Phenolic Urethane/Resole Storage Tank 18000 gal (V-633) 1996		NA	S96
E273	Phenolic Urethane/Resole Storage Tank 18000 gal (V-634) 1996		NA	S97

ID	Description	Applicable Requirement(s)	Control Device	Stack ID
E274	Phenolic Urethane/Resole Storage Tank 18000 gal (V-635) 1996		NA	S98
E275	Phenolic Urethane/Resole Storage Tank 18000 gal (V-636) 1996		NA	S99
E276	Phenolic Urethane/Resole Storage Tank 18000 gal (V-637) 1996		NA	S100
E277	Phenolic Urethane/Resole Storage Tank 18000 gal (V-638) 1996		NA	S101
E278	Phenolic Urethane/Resole Storage Tank 18000 gal (V-639) 1996		NA	S102
E279	Phenolic Urethane/Resole Storage Tank 18000 gal (V-640) 1996	STAR 5.15 7.12	NA	S103
E280	Isocyanate Blend Liquid Storage Tank 10000 gal (V-641) 1996		NA	S104
E281	Isocyanate Blend Liquid Storage Tank 10000 gal (V-642) 1996	STAR 7.12	NA	S105
E282	Phenolic Urethane/Resole Storage Tank 18000 gal (V-643) 1996	STAR 5.15 7.12	NA	S106

ID	Description	Applicable Requirement(s)	Control Device	Stack ID
E283	Phenolic Urethane/Resole Storage Tank 18000 gal (V-644) 1996		NA	S107
E284	Phenolic Urethane/Resole Storage Tank 18000 gal (V-645) 1996		NA	S108
E285	Glycol/Water Storage Tank 25800 gal (V-825) 1996	STAR 7.12	NA	S109
E288	Southwest Truck Loading Station 1996		NA	S115
E289	Southeast Truck Loading Station 1996		NA	S116
E290	North Product Loading Truck Station 1996	STAR 5.15 7.22	NA	S114
E291	South Tank farm Truck Loading Station 1996		NA	S117
E336	Methanol Column 900 gal (C-278) 1997	STAR 5.15 7.25	C4 (LRU Boiler (E246)) or C7 (LRU CTO (E292))	S110 or S118
E337	Condenser (E-275) 1997		C4 (LRU Boiler (E246)) or C7 (LRU CTO (E292))	S110 or S118
E338	Recovered Methanol Storage Tank 25000 gal (V-275) 1997	STAR 7.12	C4 (LRU Boiler (E246)) or C7 (LRU CTO (E292))	S110 or S118
E339	Urethane Distillate Storage Tank 25000 gal (V-276) 1997	STAR 5.15 7.12	C4 (LRU Boiler (E246)) or C7 (LRU CTO (E292))	S110 or S118
E340	Tank Accumulator 100 gal (V-277) 1997	STAR 5.15 7.25	C4 (LRU Boiler (E246)) or C7 (LRU CTO (E292))	S110 or S118
E444	SS606 Storage Tank 30000 gal (V-140) 2002	STAR 7.12	NA	S157

ID	Description	Applicable Requirement(s)	Control Device	Stack ID
E445	SS100 Storage Tank 10000 gal (V-141) 2002		NA	S158
E446	Isocyanate Liquid Storage Tank 25000 gal (V-142) 2002		NA	S159
E447	Isocyanate Liquid Storage Tank 25000 gal (V-143) 2002		NA	S160
E451	Liquid Resin Storage Tank 15000 gal (V-646) 2002	STAR 7.12	NA	S164
E452	Liquid Resin Storage Tank 15000 gal (V-647) 2002		NA	S165
E458	North Railcar Loading/Unloading Station 2007	STAR 7.22 7.25	NA	S171
E459	Benzene Phosphorus Oxychloride Storage Tank 200 gal (V-147) 2002	IA	NA	S172
E460	Phosphorus Oxychloride Storage Tank 200 gal (V-148) 2002	IA	NA	S173
E461	Orthophthaloyl Chloride Storage Tank 250 gal (V-149) 2002	IA	NA	S174
E469	Supersack Conditioner	IA	NA	NA
E484	BPAC Storage Tank 40000 gal (V-136) 2002	STAR 7.12	C4 (LRU Boiler (E246)) or C7 (LRU CTO (E292))	S110 or S118

ii. **Standards/Operating Limits**

1) **VOC**

- (a) Regulation 7.22 stipulates use of controls for facilities loading 20,000 gallons or more of volatile organic material.
- (b) For Storage Tank (E194, E197, E200, E203, E230, E231, E233, E249-E287, E338, E339, and E444-E447, E451, and E452), Regulation 7.12, section 3.3 requires submerged fill if the materials have an as stored vapor pressure of 1.5 psia or greater.
- (c) For Storage Tank (E484) Regulation 7.12, section 3.1 requires the owner or operator to equip the vessel with a floating roof, vapor recovery system, or their equivalent.
- (d) See Plant-wide emission limits

2) **HAP**

Federal Regulation 40 CFR 63 Subparts F, G, and H regulate the emissions of HAP from the synthetic organic manufacturing industry. Although a synthetic minor source for HAP emissions the Company agreed to regulation of the two Formaldehyde production processes as part of Board Order agreement 2142.

3) **TAC**

Per Regulations 5.00 and 5.21, TAC emissions must not exceed environmentally acceptable levels.

4) **PM**

LRU boiler emissions are limited in accordance with Regulation 7.06 section 4.1 which stipulates that for a facility which commenced operation on or after for combined heat input values between 10 and 250 million BTU per hour that the standard be given by the equation $E = 1.919(\text{total heat input capacity in millions of BTU})^{-0.535}$.

5) **Opacity**

LRU boiler emissions are limited in accordance with Regulation 7.06.

6) **SO2**

- (a) LRU boiler emissions are limited in accordance with Regulation 7.06 section 5.1 which stipulates a standard of 1.0 pound per million BTU actual heat input for combustion of liquid and gaseous fuels for sources with less than 145 million BTU per hour or less combined.
- (b) 40 CFR 60 Subpart Dc requires that records be kept of the type and quantity of fuels burned.

g. **Emission Unit 4: Specialty Resin Production**

i. **Equipment**

ID	Description	Applicable Regulation(s)	Control Device	Stack ID
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ID	Description	Applicable Regulation(s)	Control Device	Stack ID
E293	R-100 Weigh Tank 40 gal (V-100) 1987	STAR 5.15 7.25	SP RTO (Specialty Plant Recuperative Thermal Oxidizer)	S119
E294	R-100 Reactor 100 gal (R-100) 1981		SP RTO (Specialty Plant Recuperative Thermal Oxidizer)	S119
E295	R-100 Process Condenser (E-100) 1981		SP RTO (Specialty Plant Recuperative Thermal Oxidizer)	S119
E296	R-100 Distillate Receiver 80 gal (V-101) 1990		SP RTO (Specialty Plant Recuperative Thermal Oxidizer) for Vacuum Distillates/ NA for Atmospheric Distillates	S119 for Vacuum/ S-DR-V101for Atmospheric
E297	R-150 Weigh Tank 60 gal (V-150) 1987		SP RTO (Specialty Plant Recuperative Thermal Oxidizer)	S119
E298	R-150 Reactor 150 gal (R-150) 1981	STAR 5.15 7.25	SP RTO (Specialty Plant Recuperative Thermal Oxidizer)	S119
E299	R-150 Process Condenser (E-150) 1981		SP RTO (Specialty Plant Recuperative Thermal Oxidizer)	S119
E300	R-150 Distillate Receiver 120 gal (V-151) 1990		SP RTO (Specialty Plant Recuperative Thermal Oxidizer) for Vacuum Distillates/ NA for Atmospheric Distillates	S119 for Vacuum/ S-DR-V151for Atmospheric
E301	Recycle Formaldehyde Tote 250 gal 1990		NA	S125
E302	R-800 Weigh Tank 300 gal (V-800) 1987		SP RTO (Specialty Plant Recuperative Thermal Oxidizer)	S119
E303	R-800 Reactor 800 gal (R-800) 2008		SP RTO (Specialty Plant Recuperative Thermal Oxidizer)	S119
E304	R-800 Process Condenser (E-800) 1981		SP RTO (Specialty Plant Recuperative Thermal Oxidizer)	S119

ID	Description	Applicable Regulation(s)	Control Device	Stack ID
E305	R-800 Distillate Receiver 600 gal (V-801) 1990		SP RTO (Specialty Plant Recuperative Thermal Oxidizer) for Vacuum Distillation/NA for Atmospheric Distillates	S119 for Vacuum/S-DR-V801 for Atmospheric
E306	800 Drop Pan (M-501) 1990		SP RTO (Specialty Plant Recuperative Thermal Oxidizer)	S119
E307	Phenol Storage Tank 600 gal 1990	STAR 7.12	NA	SPST
E309	Formaldehyde Storage Tank 2000 gal (V-121) 2003	STAR 5.15 7.12	SP RTO (Specialty Plant Recuperative Thermal Oxidizer)	S119
E310	37/11 Formaldehyde Storage Tank 10000 gal 1990		NA	NA
E311	SIHI Vacuum Compressor (K-015) 2001	STAR 5.15 7.25	SP RTO (Specialty Plant Recuperative Thermal Oxidizer)	S119
E312	Nash Vacuum Compressor (K-011) 1990		SP RTO (Specialty Plant Recuperative Thermal Oxidizer)	S119
E315	Nash Compressors Seal Water Pot 250 gal (V-805) 1990		SP RTO (Specialty Plant Recuperative Thermal Oxidizer)	S119
E316	Nash Vacuum Compressor (K-012) 1990	STAR 5.15 7.25	SP RTO (Specialty Plant Recuperative Thermal Oxidizer)	S119
E317	Nash Vacuum Compressor (K-016) 1990		SP RTO (Specialty Plant Recuperative Thermal Oxidizer)	S119
E319	Distillate Loading Station 1990	STAR 5.15 7.22	NA	S129
E320	Specialty Plant Product Loading 1990		NA	S130
E321	Cresol Distillate Tank 20000 gal (V-203) 2007	STAR 5.15 7.12	NA	S128
E324	1500 Flaker Belt (M-401) 2003	STAR 7.25 7.08	SP RTO (Specialty Plant Recuperative Thermal Oxidizer)	S119

ID	Description	Applicable Regulation(s)	Control Device	Stack ID
E325	800 Resin Crusher (M-500) 1990	7.08	C8 (Specialty Plant Resin Crusher Dust Collector F-500)	S120
E327	50% Formaldehyde Weigh Tank 1160 gal (V-1502) 1994	STAR 7.25	SP RTO (Specialty Plant Recuperative Thermal Oxidizer)	S119
E328	R-1500 Formaldehyde Weigh Tank 1160 gal (V-1501) 1994	STAR 5.15 7.25	SP RTO (Specialty Plant Recuperative Thermal Oxidizer)	S119
E329	R-1500 Reactor 1500 gal (R-1500) 1994		SP RTO (Specialty Plant Recuperative Thermal Oxidizer)	S119
E330	R-1500 Condenser (E-1500) 1993		SP RTO (Specialty Plant Recuperative Thermal Oxidizer)	S119
E331	R-1500 Distillate Receiver 1160 gal (V-1503) 1993		SP RTO (Specialty Plant Recuperative Thermal Oxidizer)) for Vacuum Distillation/ NA for Atmospheric Distillates	S119 for Vacuum/ S-DR-1503 for Atmospheric
E332	R-1500 Distillate Phase Separator 35 gal (V-1504) 2013		SP RTO (Specialty Plant Recuperative Thermal Oxidizer)	S119
E334	Blend Reflake Tank 3000 gal (V-300) 1989		7.08	NA
E335	Fume Hood in Warehouse 1 1990	STAR 7.25	NA	S124
E474	1500 Drop Pan (M-406)	STAR 5.15 7.25	SP RTO (Specialty Plant Recuperative Thermal Oxidizer)	S119
E492	1500 Flake Crusher (M-404)	7.08	CDC401 (Specialty Plant Resin Crusher Dust Collector DC-401)	S175
E493	1500 Flake Hopper (M-405)	7.08	CDC401 (Specialty Plant Resin Crusher Dust Collector DC-401)	S175

ID	Description	Applicable Regulation(s)	Control Device	Stack ID
E494	1500 Bucket Conveyor (M408)	7.08	CDC401 (Specialty Plant Resin Crusher Dust Collector DC-401)	S175
E495	1500 Drop Pan Crusher (M-409)	7.08	CDC401 (Specialty Plant Resin Crusher Dust Collector DC-401)	S175

ii. **Standards/Operating Limits**

1) **VOC**

- (a) Regulation 7.22 stipulates use of controls for facilities loading 20,000 gallons or more of volatile organic material.
- (b) For Storage Tank (E307, E309, E310, and E321), Regulation 7.12, section 3.3 requires submerged fill if the materials have an as stored vapor pressure of 1.5 psia or greater.
- (c) See Plant-wide emission limits

2) **HAP**

Federal Regulation 40 CFR 63 Subparts F, G, and H regulate the emissions of HAP from the synthetic organic manufacturing industry. Although a synthetic minor source for HAP emissions the Company agreed to regulation of the two Formaldehyde production processes as part of Board Order agreement 2142.

3) **TAC**

Per Regulations 5.00 and 5.21, TAC emissions must not exceed environmentally acceptable levels.

4) **PM**

- (a) Limits for Emission Points (E324, E325, E492, E493, E494 and E495) are stipulated per District permits 15-03-C and 172-06-C.
- (b) Regulation 7.08, Table 1 stipulates lb/hr PM emission standards for Emission Point (E334) according to the equation $E = 3.59(P)^{0.62}$, where P is process weight rate in tons/hr and E is the rate of emission in lb/hr for process weight rates up to 60,000 lb/hr.

5) **Opacity**

Regulation 7.08, section 3.1.1 establishes opacity standards.

h. **Emission Unit 6: Phenol and Methanol Recovery**i. **Equipment**

ID	Description	Applicable Regulation(s)	Control Device	Stack ID	
E341	Process Condenser (E-324) 1994	STAR 5.15 7.25	NA	S133	
E343	Process Condenser (E-321) 1994	STAR 5.15 7.25	NA	S133	
E344	Recovered Methanol Tank 2500 gal (V-325) 1994	STAR 7.12	NA	S133	
E345	York Liquid Extraction Column (C-301) 1978	STAR 5.15 7.25	NA	S132	
E346	Butyl Acetate Phenol Column (C-302) with Condenser (E-302) 1978		NA	S132	
E347	Stripper Column (C-320) 1994		NA	S133	
E348	Methanol Purification Column (C-323) 1994		NA	S133	
E350	Butyl Acetate Hold Tank (V-160) 1994		NA	S132	
E351	Butyl Acetate Decanter Tank (V-321) 1994		NA	S133	
E352	Reflux Tank/Butyl Acetate Decant Tank (V-322) 1994		NA	S134	
E353	Recovered Methanol Tank (C-324) 1994		NA	S178	
E500	Recovered Methanol Tanker Truck (8000 gallon)		STAR 5.15 7.12	NA	S179
E501	Heat Recovery Exchanger (E-326)		IA (See Comment 4)	NA	133
E502	Heat Recovery Exchanger (E-327)	IA (See Comment 4)	NA	133	

ii. **Standards/Operating Limits**1) **VOC**

(a) For Storage Tanks (E344 and E500), Regulation 7.12, section 3.3 requires submerged fill if the materials have an as stored vapor pressure of 1.5 psia or greater.

(b) See Plant-wide emission limits

2) **HAP**

Federal Regulation 40 CFR 63 Subparts F, G, and H regulate the emissions of HAP from the synthetic organic manufacturing industry. Although a synthetic minor source for HAP emissions the Company agreed to regulation of the two Formaldehyde production processes as part of Board Order agreement 2142.

3) **TAC**

Per Regulations 5.00 and 5.21, TAC emissions must not exceed environmentally acceptable levels.

i. **Emission Unit 7: Formaldehyde Production - Metal Oxide Process**

i. **Equipment**

ID	Description	Applicable Regulation(s)	Control Device	Stack ID
E354	Methanol Storage Tank, 1400000 gal (V-00B) 1995	STAR 7.12 40 CFR 60 Subpart Kb 40 CFR 60 Subparts VV, III, & RRR 40 CFR 63 Subpart F, G, and H	Internal Floating Roof	S139
E355	Tank Vent Knockout Pot 60 gal (V-065) 2001	STAR 5.15 7.25 40 CFR 60 Subparts VV, III, & RRR 40 CFR 63 Subpart F, G, and H	C5 (Catalytic Oxidizer)	S135
E356	Air Inlet System (S-1/2) 1995		C5 (Catalytic Oxidizer)	S135
E357	Reactor #1 (R-1) 1995		C5 (Catalytic Oxidizer)	S135
E358	Reactor #2 (R-2) 1995		C5 (Catalytic Oxidizer)	S135
E359	Distillation Column (C-1) 1995		C5 (Catalytic Oxidizer)	S135
E360	Waste Heat Recovery Boiler (DS-1/SG-1)	NA (See Comment 3)	NA	S136

ID	Description	Applicable Regulation(s)	Control Device	Stack ID
E361	Dowtherm Storage Tank (DT-1) 1995	STAR 7.12 40 CFR 60 Subparts VV, III, & RRR 40 CFR 63 Subpart F, G, and H	NA	S136
E362	Methanol Vaporizer (HX-1) 1995	STAR 7.25 40 CFR 60 Subparts VV, III, & RRR 40 CFR 63 Subpart F, G, and H	C5 (Catalytic Oxidizer)	S135
E364	Urea Formaldehyde Concentrate (UFC) Storage Tank 70500 gal (V-52) 1996	STAR 5.15 7.12 40 CFR 60 Subpart Kb 40 CFR 60 Subparts VV, III, & RRR 40 CFR 63 Subpart F, G, and H	C5 (Catalytic Oxidizer)	S135
E365	Urea Formaldehyde Concentrate (UFC) Storage Tank 70500 gal (V-53) 1996		C5 (Catalytic Oxidizer)	S135
E366	Urea Formaldehyde Concentrate (UFC) Storage Tank 25000 gal (V-54) 1996		C5 (Catalytic Oxidizer)	S135
E367	Urea Water Storage Tank 40000 gal (V-56) 1996	STAR 7.22	NA	S137
E368	Urea Water Storage Tank 40000 gal (V-57) 1996	STAR 7.22	NA	S138

ii. **Standards/Operating Limits**

1) **VOC**

- (a) For Storage Tank (E361, E366, E367, and E368), Regulation 7.12, section 3.3 requires submerged fill if the materials have an as stored vapor pressure of 1.5 psia or greater.
- (b) For Storage Tank (E354, E364, and E365) Regulation 7.12, section 3.1 requires the owner or operator to equip the vessel with a floating roof, vapor recovery system, or their equivalent.

(c) 40 CFR 60 Kb provisions do not apply since the provisions of the HON MACT do apply for this process unit.

(d) See Plant-wide emission limits

2) **HAP**

Federal Regulation 40 CFR 63 Subparts F, G, and H regulate the emissions of HAP from the synthetic organic manufacturing industry. Although a synthetic minor source for HAP emissions the Company agreed to regulation of the two Formaldehyde production processes as part of Board Order agreement 2142.

3) **TAC**

Per Regulations 5.00 and 5.21, TAC emissions must not exceed environmentally acceptable levels.

j. **Emission Unit 8: Resin Production (PF-2)**

i. **Equipment**

ID	Description	Applicable Regulation(s)	Control Device	Stack ID
E369	Reactor Line G/H Weigh Tank 5300 gal (V-226G/H) 1996	STAR 5.15 7.25	PF-2 RTO (Recuperative Thermal Oxidizer)	PF-2 RTO
E370	Reactor Line G Reactor 16000 gal (R-201G) 1996		PF-2 RTO (Recuperative Thermal Oxidizer)	PF-2 RTO
E371	Reactor Line G Condenser (E-201G) 1996		PF-2 RTO (Recuperative Thermal Oxidizer)	PF-2 RTO
E372	Reactor Line G Surge Tank 13600 gal (V-205G) 1996		PF-2 RTO (Recuperative Thermal Oxidizer)	PF-2 RTO
E373	Reactor Line G Distillate Receiver tank 6900 gal (V-208G) 1996		PF-2 RTO (Recuperative Thermal Oxidizer) for Vacuum Distillates/ NA for Atmospheric Distillates	PF-2 RTO for Vacuum/ S-DR-V208G for Atmospheric
E375	Reactor Line H Reactor 16000 gal (R-201H) 1996	STAR 5.15 7.25	PF-2 RTO (Recuperative Thermal Oxidizer)	PF-2 RTO
E376	Reactor Line H Condenser (E-201H) 1996		PF-2 RTO (Recuperative Thermal Oxidizer)	PF-2 RTO
E377	Reactor Line H Surge Tank 13600 gal (V-205H)		PF-2 RTO (Recuperative Thermal Oxidizer)	PF-2 RTO

ID	Description	Applicable Regulation(s)	Control Device	Stack ID	
	1996				
E503	G/H Surge Tank Knock Out Pot (V-899G/H) 1996	IA	PF-2 RTO (Recuperative Thermal Oxidizer)	PF-2 RTO	
E378	Reactor Line H Distillate Receiver tank 6900 gal (V-208H) 1996	STAR 5.15 7.25	PF-2 RTO (Recuperative Thermal Oxidizer) for Vacuum Distillation/ NA for Atmospheric Distillation	PF-2 RTO for Vacuum/ S-DR-V208H for Atmospheric	
E379	Shared Vacuum Compressor (K-202-10) 1996		PF-2 RTO (Recuperative Thermal Oxidizer)	PF-2 RTO	
E380	H Vacuum Compressor (K-202-11) 1996		PF-2 RTO (Recuperative Thermal Oxidizer)	PF-2 RTO	
E381	G Vacuum Compressor (K-202-9) 1996		PF-2 RTO (Recuperative Thermal Oxidizer)	PF-2 RTO	
E382	Shared Vacuum Compressor Separator 33 gal (K-218-10) 1996		PF-2 RTO (Recuperative Thermal Oxidizer)	PF-2 RTO	
E383	H Vacuum Compressor Separator 33 gal (K-218-11) 1996		PF-2 RTO (Recuperative Thermal Oxidizer)	PF-2 RTO	
E384	G Vacuum Compressor Separator 33 gal (K-218-9) 1996		PF-2 RTO (Recuperative Thermal Oxidizer)	PF-2 RTO	
E385	Seal Water Pot 500 gal (V-233G/H) 1996		NA	S143	
E386	Weak Distillate Tank 10000 gal (V-108G/H) 1996		STAR 7.25	NA	S144
E387	Decanted Phenol 25000 gal (V-308G/H) 1996			NA	S145
E388	Lime Slurry Weigh Tank 650 gal (V-228G/H)	7.08	C9 (Fabric Filter)	S140	

ID	Description	Applicable Regulation(s)	Control Device	Stack ID
	1996			
E389	Sulfamic Acid Weigh tank 575 gal (V-215G/H) 1996	STAR 7.25 7.08 7.08	C10 (Fabric Filter)	S141
E392	G Flaker Belt (M-401G) 1996		PF-2 RTO (Recuperative Thermal Oxidizer) and C11 (Fabric Filter)	PF-2 RTO and S142
E393	G Flake Hopper (V-403G) 1996		C11 (Fabric Filter)	S142
E394	G Flake Crusher (M-405G) 1996		C11 (Fabric Filter)	S142
E395	G Supersacker (V-402G) 1996		C11 (Fabric Filter)	S142
E504	G 50 lb. Bagger (M-407G) 1996	7.08 STAR 7.25 7.08 7.08	C11 (Fabric Filter)	S142
E396	H Flaker Belt (M-401H) 1996		PF-2 RTO (Recuperative Thermal Oxidizer) and C11 (Fabric Filter)	PF-2 RTO and S142
E397	H Flake Hopper (V-403H) 1996		C11 (Fabric Filter)	S142
E398	H Flake Crusher (M-405H) 1996	7.25	C11 (Fabric Filter)	S142
E399	H Supersacker (V-401H) 1996		C11 (Fabric Filter)	S142
E465	Steam Ejector #1 (VJ250 G/H – A) 2008		PF-2 RTO (Recuperative Thermal Oxidizer)	PF-2 RTO
E466	Steam Ejector #2 (VJ250 G/H – B) 2008	PF-2 RTO (Recuperative Thermal Oxidizer)	PF-2 RTO	
E467	Steam Ejector Condenser (E251G/H) 2008	PF-2 RTO (Recuperative Thermal Oxidizer)	PF-2 RTO	

ii. **Standards/Operating Limits**

1) **VOC**

See Plant-wide emission limits

2) **HAP**

Federal Regulation 40 CFR 63 Subparts F, G, and H regulate the emissions of HAP from the synthetic organic manufacturing industry. Although a synthetic minor source for HAP emissions the Company agreed to regulation of the two Formaldehyde production processes as part of Board Order agreement 2142.

3) **TAC**

Per Regulations 5.00 and 5.21, TAC emissions must not exceed environmentally acceptable levels.

4) **PM**

Regulation 7.08, Table 1 stipulates lb/hr PM emission standards for Emission Points (E388, E389, E392- E399, and E504) according to the equation $E = 3.59(P)^{0.62}$, where P is process weight rate in tons/hr and E is the rate of emission in lb/hr for process weight rates up to 60,000 lb/hr.

5) **Opacity**

Regulation 7.08, section 3.1.1 establishes opacity standards.

k. **Emission Unit 9: Wastewater Treatment Plant**

i. **Equipment**

ID	Description	Applicable Regulation(s)	Control Device	Stack ID
E422	Stream #2: Weir/Waterfall (sump 3) 1977	STAR 5.15 7.25	NA	FS024
E423	Waste #6: Storage Tank (sump 8A) 1977		NA	FS027
T-101A	West EQ Tank (96V-751) 2009		WWTP RTO (Recuperative Thermal Oxidizer)	WWTP RTO
T-101B	East EQ Tank (96V-750) 2009		WWTP RTO (Recuperative Thermal Oxidizer)	WWTP RTO
E426	N Aeration Basin 1977		NA	FS018
E427	S Aeration Basin 1977		NA	FS019
E428	West Clarifier (V-701A)		NA	FS016
E429	East Clarifier (V-701B)		NA	FS020
E434	Digester (V-717)		NA	FS015

ID	Description	Applicable Regulation(s)	Control Device	Stack ID
E434	100,000 gallon Digester (V-717) Not installed to date		WWTP RTO (Recuperative Thermal Oxidizer)	WWTP RTO
E436	East Spill Containment Tank (V-715B) 1982		NA	E Spill Tank
E441a	Open Trench (filter press)		NA	FS022
E441b	Stream #8: Open Trench (storm water)		NA	FS026
T-102A	Clarifier Primary North (V-770A) 2009		NA	PClar1
T-102B	Clarifier Primary South (V770B) 2009		NA	PClar2
E480	EQ Tank Sump (V-760)		NA	EQ Tank Sump
E487	Run Down Tank		NA	FS021
E488	Stream #1: Storage Tank (caustic wash)		NA	FS023
E489	Stream #3: Weir/Waterfall (sump 14)		NA	FS025
E490	Stream #4: Weir/Waterfall (sump 25)		NA	FS028

ii. **Standards/Operating Limits**

1) **VOC**

See Plant-wide emission limits

2) **HAP**

Federal Regulation 40 CFR 63 Subparts F, G, and H regulate the emissions of HAP from the synthetic organic manufacturing industry. Although a synthetic minor source for HAP emissions the Company agreed to regulation of the two Formaldehyde production processes as part of Board Order agreement 2142.

3) **TAC**

Per Regulations 5.00 and 5.21, TAC emissions must not exceed environmentally acceptable levels.

1. **Emission Unit 10: Utilities**

i. **Equipment**

ID	Description	Applicable Regulation(s)	Control Device	Stack ID
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ID	Description	Applicable Regulation(s)	Control Device	Stack ID
E401	H2SO4 Tank 5000 gal (V-712) 1997	STAR	NA	S154
E402	Diesel Fire Pump 240 hp 1994	40 CFR 63 Subpart <i>ZZZZ</i>	NA	S146
E403	Backup Diesel Generator #1 540 hp 1998	40 CFR 63 Subpart <i>ZZZZ</i>	NA	S147
E404	Backup Diesel Generator #2 280 hp 1993	40 CFR 63 Subpart <i>ZZZZ</i>	NA	S148
E406	Fuel Oil Storage Tank 11000 gal (V-816) 1995 (Insignificant Activity)	7.12	NA	S155
E407	Gasoline Tank and Gasoline Refueling 500 gal 2000	STAR 6.40 7.15 40 CFR 63 Subpart CCCCCC	NA	S152
E408	Used Oil Tank 700 gal 1997 (Insignificant Activity)	7.12	NA	S153
E409	Utility Boiler 1, natural gas fired with fuel oil backup, make Johnston, model 609 31.5 MMBtu/hr 1977	7.06	NA	S150
E410	Utility Boiler 2, natural gas fired with fuel oil backup, make Johnston, model 609 31.5 MMBtu/hr 1977		NA	S151
E419	East Cooling Tower 1 1977	7.08	NA	NA
E420	East Cooling Tower 2 1996		NA	NA
E421	West Cooling Tower 1996		NA	NA

ii. **Standards/Operating Limits**

1) **VOC**

- (a) Federal Regulation 40 CFR Subpart CCCCCC as a surrogate for HAP and District Regulations 6.40 and 7.15 stipulate conditions for the storage and transfer of gasoline.

- (b) For Storage Tank (E406 and E408), Regulation 7.12, section 3.3 requires submerged fill if the materials have an as stored vapor pressure of 1.5 psia or greater.
- (c) See Plant-wide emission limits
- 2) **HAP**
 - (a) Federal Regulation 40 CFR 63 Subpart ZZZZ stipulates conditions for the operation of emergency engines.
 - (b) Federal Regulation 40 CFR Subpart CCCCC stipulates conditions for the storage and transfer of gasoline.
- 3) **TAC**

Per Regulations 5.00 and 5.21, TAC emissions must not exceed environmentally acceptable levels.
- 4) **PM**
 - (a) Utility Boilers 1 & 2 emissions are limited in accordance with Regulation 7.06 section 4.1 which stipulates that for a facility which commenced operation on or after for combined heat input values between 10 and 250 million BTU per hour that the standard be given by the equation $E = 1.919(\text{total heat input capacity in millions of BTU})^{-0.535}$.
 - (b) Emissions from the cooling towers is limited in accordance with Regulation 7.08, Table 1 which stipulates lb/hr PM emission standards based on the equation $E = 17.31(P)^{0.16}$, where P is process weight rate in tons/hr and E is the rate of emission in lb/hr for process weight rates greater than 60,000 lb/hr.
- 5) **Opacity**
 - (a) Utility Boilers 1 & 2 emissions are limited in accordance with Regulation 7.06.
 - (b) Cooling tower emission are limited in accordance with Regulation 7.08.
- 6) **SO2**

Utility Boilers 1 & 2 emissions are limited in accordance with Regulation 7.06 section 5.1 which stipulates a standard of 1.0 pound per million BTU actual heat input for combustion of liquid and gaseous fuels for sources with less than 145 million BTU per hour or less combined.

III. Other Requirements

1. **Temporary Sources:** The source did not request to operate any temporary facilities.
2. **Short Term Activities:** The source did not report any short term activities.
3. **Emissions Trading:** N/A
4. **Operational Flexibility:** The source did not request any operational flexibility for the emission points.

5. Compliance History:

Incident Dates	Regulation Violated	Result
4/27/1998	1.09 0 General Prohibition of Air Pollution	Agreement
10/29/1999	2.17 03 GENERAL PROVISIONS 7.25 03 Failure to Comply with VOC limit or BACT 5.11 00 AIR TOXICS-EXISTING-EXCEEDING STANDARDS 7.25 03 SOP-NEW SOURCES USING VOC 5.11 01 SOP-EXISTING SOURCES EMITTING TAP 2.17 03 COMPLIANCE WITH PERMIT	Board Order
2/27/2003	1.13 02 ODORS-PROHIBITION	Agreement
9/1/2011	2.17 03 Failure to Comply with FEDOOP Permit 1.07 04 Failure to Report Excess Emissions	Board Order

6. Calculation Methodology:

The Company uses a variety of methods to estimate air emissions. Most of the emission estimates are based on established calculation methodologies for common processes and emissions-generating activities, which are based on EPA's AP-42. The calculation methods include:

a. Loading and Unloading losses

Loading and Unloading losses are determined by methods based on EPA's AP-42; Chapter 5.2 version dated January 1995.

b. Working and Breathing losses from tanks

Breathing losses for all major raw material storage tanks are estimated by using Tanks 4.0 which is based on Chapter 7, "Liquid Storage Tanks" from the AP-42 version dated January 1995.

c. Fugitive losses

Fugitive losses due to equipment leaks are monitored plant-wide which is then used to calculate emissions using the SOCFI equation set. Fugitive emissions are incorporated in unit totals.

d. Stream testing

Stack tests were performed to determine some control device efficiencies and emission rates.

e. EPA emission factors

EPA AP-42 factors are used for combustion emissions except where site-specific stack test data is available.

f. Vendor control efficiency information

Vendor control efficiencies are applied to estimate most of the particulate emissions.

g. Engineering judgment

Engineering judgment is applied to determine some emissions.

7. Insignificant Activities:

Source	No.	Description	PTE	Regulatory Citation
Internal Combustion (IC) Engines	8	Diesel fire pump and 2 generators in PTE (E 402, E403, and E404) listed as backup generators but PTE is calculated with 500 hours max use. Included in Emission Unit 10 1 Portable Air Compressors - 5 hp 2 Generators/Welders - 1 16-HP; 1 20-HP 1 Pressure Washer (WWTP) - 15 HP 1 Trash Pump (WWTP) - 15 HP Note: There is no natural gas generator on-site.	4.19 tpy NOx largest pollutant PTE	Regulation 1.02 Appendix A
R&D Boiler (<10MMBTU)	1	Natural Gas R&D Boiler 0.875 MMBTU	0.376 tpy NOx largest pollutant PTE	Regulation 1.02 Appendix A
E503 Knockout Pot	1	Knock-out pot (V-899G/H) was installed as part of the project in permit 497-96. The Knock-out pot does not vent to the atmosphere.	1.05 tpy VOC	Regulation 1.02

Activities without Appreciable Emissions

Source	No.	Description	Regulatory Citation
Fuel or oil storage tank with VP<10mmHg	1	Fuel Oil Storage Tank (E406)	Regulation 1.02 Appendix A
Portable diesel or gasoline storage tanks	1	Gasoline Tank(E407)	Regulation 1.02
Diesel or FO storage tank with TO<2X/year	1	Used oil tank is in the PTE (E408)	Regulation 1.02 Appendix A
E5 Waste Heat Recovery Boiler 1970	1	Heat Exchanger	Regulation 1.02
E136 Lime Slurry Tank	1	200 gal installed 1991	Regulation 1.02
E155 Lime Slurry Tank	1	400 gal installed 1995	Regulation 1.02
E259 - 25% Zinc Acetate Solution Storage Tank	1	12000 gal installed 1996	Regulation 1.02
E460 Phosphorus Oxychloride Storage Tank	1	200 gal installed 2002	Regulation 1.02
E461 Orthophthaloyl Chloride Storage Tank	1	250 gal installed 2002	Regulation 1.02
E469 Supersack Conditioner	1	No Known Regulated Emissions	Regulation 1.02
E472 KOH Storage Tank	1	No Known Regulated Emissions	Regulation 1.02
E360 Waste Heat Recovery Boiler	1	Heat Exchanger	Regulation 1.02
Unit 6 E501 and E502 Heat Recovery Exchangers	2	Heat Exchangers	Regulation 1.02
Facilities using peanut etc. oils	1	LRU (Castor Oil, Cashew Nut Shell Liquid Distillate, Linseed Oil).	Regulation 1.02 Appendix A

Cold Solvent Parts Cleaner - Secondary Reservoir	1	Safety Kleen Parts Washer - Maintenance 44" x 24" x 8" Freeboard (reservoir underneath, no free liquid in upper unit); spray nozzle & spray brush.	Regulation 1.02 Appendix A
Emergency vents or systems	6	The emissions from these vents are included in piping fugitives. These emissions were included in the PTE with the emissions from the processing equipment. PF-1: 2 LRU: 1 PF-2: 1 SP: 2	Regulation 1.02 Appendix A
VOC storage tanks <250 gal	4	Benzene Phosphorus Oxychloride Storage Tank, Small Utility Tank, and two Oxalic Acid Tanks	Regulation 1.02 Appendix A
Lab vents/exhausts	5	The activities in the hoods are R&D or product testing related. These are intermittent activities. No bulk chemical storage occurs in these hoods.	Regulation 1.02 Appendix A
Residential domestic equipment	5	Vacuum cleaners.	Regulation 1.02 Appendix A

1. Insignificant Activities identified in District Regulation 1.02 Appendix A may be subject to size or production rate disclosure requirements.
2. Insignificant Activities identified in District Regulation 1.02 Appendix A shall comply with generally applicable requirements.
3. Activities identified in Regulation 1.02, Appendix A, may not require a permit and may be insignificant with regard to application disclosure requirements but may still have generally applicable requirements that continue to apply to the source and must be included in the permit.
4. Emissions from Insignificant Activities shall be reported in conjunction with the reporting of annual emissions of the facility as required by the District.
5. In lieu of recording annual throughputs and calculating actual annual emissions, the owner or operator may elect to report the pollutant Potential To Emit (PTE) quantity listed in the Insignificant Activities table, as the annual emission for each piece of equipment.
6. The Insignificant Activities Table is correct as of the date the permit was proposed for review by U.S. EPA, Region 4.
7. The owner or operator shall submit an updated list of Insignificant Activities whenever changes in equipment located at the facility occur that cause changes to the plant wide emissions.

8. IA Emission Units with Applicable Regulations

a. **Emission Unit IA1: Parts Washer**

i. **Equipment**

IA1 Emission Points		
Emission Point	Description	Applicable Regulations
PW	One (1) cold solvent metal parts washer with a secondary reservoir	6.18

ii. **Standards/Operating Limits**

VOC

- (a) Per Regulation 6.18, the owner or operator shall install, maintain, and operate the control equipment for Emission Points E38 and E39, shall observe specific operating requirements, and shall not operate a cold cleaner using a solvent with a vapor pressure that exceeds 1.0 mm Hg (0.019 psi) measured at 20°C (68°F).
- (b) See Plant-wide emission limits

b. Emission Unit IA2: New Emergency Generator(s)

i. Equipment

Emission Point	Description	Applicable Regulation	Basis for Applicability
NEG	Emergency diesel generators that installed after July 11, 2005 and manufactured after April 1, 2006, with a maximum engine power less than or equal to 500 HP and located at an area source of HAP.	40 CFR 63, Subpart ZZZZ, 40 CFR 60, Subpart IIII	40CFR60 Subpart IIII applies to manufacturers, owner or operators of new stationary compression ignition internal combustion engines. 40CFR63 Subpart ZZZZ establishes national emission limitations and operating limitations for HAP emitted from stationary RICE located at major and area sources of HAP emissions.

ii. Standards/Operating Limits

1) VOC

See Plant-wide emission limits

2) Unit Operation

(a) 40 CFR 60.4202 and 4205 establish emission standards for the owner or operator or manufacturer of the emergency stationary CI ICE.

(b) 40 CFR 60.4211 establishes unit operation requirements for emergency stationary CI ICE.

3) Fuel requirements

40 CFR 60.4207 establishes requirement for non-road diesel fuel.