



GEORGIA

DEPARTMENT OF NATURAL RESOURCES

ENVIRONMENTAL PROTECTION DIVISION

Air Quality Permit

In accordance with the provisions of the Georgia Air Quality Act, O.C.G.A. Section 12-9-1, et seq and the Rules, Chapter 391-3-1, adopted pursuant to and in effect under that Act,

Facility Name: Stepan Company
Facility Address: 951 Bankhead Hwy
Winder, Georgia 30680 Barrow County
Mailing Address: 951 Bankhead Hwy
Winder, Georgia 30680
Facility AIRS Number: 04-13-013-00001

is issued a Permit for the following:

Operation of a specialty chemical production facility. This Permit is issued for the purpose of establishing practically enforceable emission limitations such that the facility will not be considered a major source with respect to Title V of the Clean Air Act Amendments of 1990.

This Permit is conditioned upon compliance with all provisions of The Georgia Air Quality Act, O.C.G.A. Section 12-9-1, et seq, the Rules, Chapter 391-3-1, adopted and in effect under that Act, or any other condition of this Permit.

This Permit may be subject to revocation, suspension, modification or amendment by the Director for cause including evidence of noncompliance with any of the above; or for any misrepresentation made in Application No. 24119 dated December 28, 2016; any other applications upon which this Permit is based; supporting data entered therein or attached thereto; or any subsequent submittals or supporting data; or for any alterations affecting the emissions from this source.

This Permit is further subject to and conditioned upon the terms, conditions, limitations, standards, or schedules contained in or specified on the attached **22** pages.



[Signed]

Richard E. Dunn, Director
Environmental Protection Division

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EQUIPMENT LIST					
Emission Units				Associated Control Devices	
Source Code	Description	Installation Date	Applicable Requirements/Standards	Source Code	Description
	Batch Reaction Processes And Associated Equipment				
R01	Alkoxylation process reactor (8,000 gallons) including catch tanks and heat exchangers.	1990	391-3-1-.02(2)(e) 391-3-1-.02(2)(b) Avoidance of 40 CFR Part 70	SCR-3500	Scrubber (1998)
T3300	31,780 gallon storage tank (typically holds propylene oxide), pressurized vessel Maximum true vapor pressure of contents: 10.99 psia Operates as a pressurized vessel over 29.7 psia.	1998	391-3-1-.02(2)(e) 391-3-1-.02(2)(b) Avoidance of 40 CFR Part 70	SCR-3500	Scrubber (1998)
T-3400	31,780 gallon storage tank (typically holds ethylene oxide), pressurized vessel Maximum true vapor pressure of contents: 26.69 psia Operates as a pressurized vessel over 29.7 psia.	1998	391-3-1-.02(2)(e) 391-3-1-.02(2)(b) Avoidance of 40 CFR Part 70	SCR-3500	Scrubber (1998)
UNLOAD	Railcar Unloading of EO/PO	--	391-3-1-.02(2)(e) 391-3-1-.02(2)(b) Avoidance of 40 CFR Part 70	SCR-3500	Scrubber (1998)
R02	Esterification process reactor (6,000 gallons) including process tanks, heat exchangers, and condenser(s).	1978	391-3-1-.02(2)(e) 391-3-1-.02(2)(b) Avoidance of 40 CFR Part 70	SCR-NAOHR02	Scrubber (1978)
R04	Intermediate esterification process reactor (8,000 gallons) including process tanks, heat exchangers, and condenser(s).	2009	391-3-1-.02(2)(e) 391-3-1-.02(2)(b) Avoidance of 40 CFR Part 70	SCR-NAOHR02	Scrubber (1978)
R05	Process which includes a reactor (8,500 gallons), heat exchangers, and condenser(s).	2001	391-3-1-.02(2)(e) 391-3-1-.02(2)(b) Avoidance of 40 CFR Part 70	SCR-NAOHR02	Scrubber (1978)
DMS	Railcar/Truck Dimethyl Sulfate Unloading	--	391-3-1-.02(2)(e) 391-3-1-.02(2)(b) Avoidance of 40 CFR Part 70	SCR-8126	DMS Storage Scrubber
T-126	25,000 gallon process vessel (typically holds Dimethyl Sulfate), pressurized vessel	1992	391-3-1-.02(2)(e) 391-3-1-.02(2)(b) Avoidance of 40 CFR Part 70	SCR-8126	DMS Storage Scrubber

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Source Code	Description	Installation Date	Applicable Requirements/Standards	Source Code	Description
--	R05 Solids – Bag Dump Station	--	391-3-1-.02(2)(e) 391-3-1-.02(2)(b) Avoidance of 40 CFR Part 70	N/A	None
--	R05 Solids Conveying Cyclone to R05 Reactor	--	391-3-1-.02(2)(e) 391-3-1-.02(2)(b) Avoidance of 40 CFR Part 70	N/A	None
Continuous Process Lines					
R-1002	Sulfonation I Process Line – includes sulfur burner, sulfur dioxide and sulfur trioxide coolers, air dryers, converter, sulfonator (or reactor) , separators, process scrubbers and process mist eliminators	1977	391-3-1-.02(2)(e) 391-3-1-.02(2)(b) Avoidance of 40 CFR Part 70	SCP-DRY1 SCP-DEM11 SCP-DEM12 SCP-NAOH1 SCP-TAIL1	Dry Scrubber (1977) Dry Scrubber Demister 1 (1977) Dry Scrubber Demister 2 (1977) Caustic Scrubber (1977) Tail Gas Demister (1977)
R420	Sulfonation II Process Line – includes sulfur burner, sulfur dioxide and sulfur trioxide coolers, air dryers, converter, sulfonator (or reactor) , separators, process scrubbers and process mist eliminators	1992	391-3-1-.02(2)(e) 391-3-1-.02(2)(b) 40 CFR 60 Subpart A 40 CFR 60 Subpart RRR Avoidance of 40 CFR Part 70	SCP-DRY2 SCP-DEM21 SCP-DEM22 SCP-NAOH2 SCP-TAIL2	Dry Scrubber (1992) Scrubber Demister (1992) Scrubber Demister (1992) Caustic Scrubber (1992) Tail Gas Demister (1992)
Batch Neutralizers					
R-BN1	Reactor #1 (8,000 gallons)	1984	391-3-1-.02(2)(e) 391-3-1-.02(2)(b) Avoidance of 40 CFR Part 70	N/A	None
R-BN2	Reactor #2 (8,000 gallons)	1987	391-3-1-.02(2)(e) 391-3-1-.02(2)(b) Avoidance of 40 CFR Part 70	N/A	None
R-BN3	Reactor #3 (17,000 gallons)	1989	391-3-1-.02(2)(e) 391-3-1-.02(2)(b) Avoidance of 40 CFR Part 70	N/A	None
R-BN4	Reactor #4 (17,000 gallons)	1989	391-3-1-.02(2)(e) 391-3-1-.02(2)(b) Avoidance of 40 CFR Part 70	N/A	None
T-550	7,400 gallon HVP Reblend Process Tank	1994	391-3-1-.02(2)(e) 391-3-1-.02(2)(b) Avoidance of 40 CFR Part 70	N/A	None
Cooling Towers					
CT1	Oxide Cooling Tower	1992	391-3-1-.02(2)(e) 391-3-1-.02(2)(b) Avoidance of 40 CFR Part 70	N/A	None

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Emission Units				Associated Control Devices	
Source Code	Description	Installation Date	Applicable Requirements/Standards	Source Code	Description
CT2	Sulfonation II Process Line Cooling Tower	1992	391-3-1-.02(2)(e) 391-3-1-.02(2)(b) Avoidance of 40 CFR Part 70	N/A	None
Blenders					
R-BL1	Blender #1 (10,000 gallons) equipped with a venturi scrubber that operates as process equipment. Also included is a Silverson Mixer and Supersack Loader	1977	391-3-1-.02(2)(e) 391-3-1-.02(2)(b) Avoidance of 40 CFR Part 70	N/A	None
R-BL2	Blender #2 (10,000 gallons)	1977	391-3-1-.02(2)(e) 391-3-1-.02(2)(b) Avoidance of 40 CFR Part 70	N/A	None
R-BL3	Blender #3 (1,000 gallons)	1988	391-3-1-.02(2)(e) 391-3-1-.02(2)(b) Avoidance of 40 CFR Part 70	N/A	None

STORAGE TANKS						
Equipment Group	Source Code	Capacity (gallons)	Contents	Control Device	Installation Date	Maximum True Vapor Pressure (psia)
--	T-077	10,000	Not a VOL	N/A	1978	--
--	T-9035.2	8,000	Not a VOL	N/A	2014	--
Equipment Group 1 Storage Tanks defined as Tanks which contain VOL with a maximum true vapor pressure between 0.19 and 2.2 psia. Each of these storage tanks has a storage capacity less than 151 m ³ (39,890 gallons).						
1	T-029	10,000	VOL	N/A	1978	≥0.19 psia but < 2.2 psia
1	T-030	10,000	VOL	N/A	1978	≥0.19 psia but < 2.2 psia
1	T-058	10,000	VOL	N/A	1979	≥0.19 psia but < 2.2 psia
1	T-060	10,000	VOL	N/A	1979	≥0.19 psia but < 2.2 psia
1	T-061	10,000	VOL	N/A	1979	≥0.19 psia but < 2.2 psia
1	T-073	10,000	VOL	N/A	1978	≥0.19 psia but < 2.2 psia
1	T-074	10,000	VOL	N/A	1978	≥0.19 psia but < 2.2 psia
1	T-075	10,000	VOL	N/A	1978	≥0.19 psia but < 2.2 psia

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STORAGE TANKS						
Equipment Group	Source Code	Capacity (gallons)	Contents	Control Device	Installation Date	Maximum True Vapor Pressure (psia)
1	T-076	10,000	VOL	N/A	1978	≥0.19 psia but < 2.2 psia
1	T-053	14,000	VOL	N/A	1977	≥0.19 psia but < 2.2 psia
1	T-082	25,000	VOL	N/A	2010	≥0.19 psia but < 2.2 psia
1	T-012	30,000	VOL	N/A	1989	≥0.19 psia but < 2.2 psia
1	T-120	30,000	VOL	N/A	1990	≥0.19 psia but < 2.2 psia
1	T-121	30,000	VOL	N/A	1990	≥0.19 psia but < 2.2 psia
1	T-130	30,000	VOL	N/A	1995	≥0.19 psia but < 2.2 psia
Equipment Group 2: Tanks which contain VOL with a maximum true vapor pressure equal to or greater than 2.2 psia but less than 4.0 psia.						
2	T-080	10,000	VOL	N/A	1978	≥ 2.2 psia but < 4.0 psia
2	T-136	10,000	VOL	N/A	2003	≥ 2.2 psia but < 4.0 psia
2	T-137	22,500	VOL	N/A	2008	≥ 2.2 psia but < 4.0 psia
2	T-122	30,000	VOL	N/A	1990	≥ 2.2 psia but < 4.0 psia
2	T-124	30,000	VOL	N/A	1990	≥ 2.2 psia but < 4.0 psia

FUEL BURNING SOURCES					
Source Code	Input Heat Capacity (MMBtu/hr)	Description	Installation Date	Construction Date	Applicable Requirements/Standards
E-001	16.7	400 hp Steam Generator Boiler #1 (Source Code #4) Natural gas fired only	1977	1977	Georgia Rule 391-3-1-.02(2)(d) Georgia Rule 391-3-1-.02(2)(g)
E-002	16.7	400 hp Steam Generator Boiler #2 (Source Code #8) Natural gas fired only	1985	1985	Georgia Rule 391-3-1-.02(2)(d) Georgia Rule 391-3-1-.02(2)(g)
E-005	9.99	Hot Oil Heater Natural gas in-direct fired only This hot oil heater provides heat energy to the R02 Esterification Kettle and the R04 Quaternary Reactor.	2006	2006	Georgia Rule 391-3-1-.02(2)(d) Georgia Rule 391-3-1-.02(2)(g)
GEN1	--	536.4 hp (or 400 kW) Standby emergency generator, firing diesel fuel	1996	1996	Georgia Rule 391-3-1-.02(2)(b) Georgia Rule 391-3-1-.02(2)(g) 40 CFR 63 Subpart A 40 CFR 63 Subpart ZZZZ

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FUEL BURNING SOURCES

Source Code	Input Heat Capacity (MMBtu/hr)	Description	Installation Date	Construction Date	Applicable Requirements/Standards
GEN2	--	469.35 hp (or 350 kW) Standby emergency generator, firing diesel fuel	2016	2016	Georgia Rule 391-3-1-.02(2)(b) Georgia Rule 391-3-1-.02(2)(g) 40 CFR 60 Subpart A 40 CFR 60 Subpart IIII 40 CFR 63 Subpart A 40 CFR 63 Subpart ZZZZ
FP1	--	215 hp Standby Fire Water Pump Engine, firing diesel fuel	1978	1978	Georgia Rule 391-3-1-.02(2)(b) Georgia Rule 391-3-1-.02(2)(g) 40 CFR 63 Subpart A 40 CFR 63 Subpart ZZZZ
FP2	--	215 hp Standby Fire Water Pump Engine, firing diesel fuel	1978	1978	Georgia Rule 391-3-1-.02(2)(b) Georgia Rule 391-3-1-.02(2)(g) 40 CFR 63 Subpart A 40 CFR 63 Subpart ZZZZ

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1. General Requirements

- 1.1 At all times, including periods of startup, shutdown, and malfunction, the Permittee shall maintain and operate this source, including associated air pollution control equipment, in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Division which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection or surveillance of the source.
- 1.2 The Permittee shall not build, erect, install or use any article, machine, equipment or process the use of which conceals an emission which would otherwise constitute a violation of an applicable emission standard. Such concealment includes, but is not limited to, the use of gaseous diluents to achieve compliance with an opacity standard or with a standard that is based on the concentration of a pollutant in the gases discharged into the atmosphere.
- 1.3 The Permittee shall submit a Georgia Air Quality Permit application to the Division prior to the commencement of any modification, as defined in 391-3-1-.01(pp), which may result in air pollution and which is not exempt under 391-3-1-.03(6). Such application shall be submitted sufficiently in advance of any critical date involved to allow adequate time for review, discussion, or revision of plans, if necessary. The application shall include, but not be limited to, information describing the precise nature of the change, modifications to any emission control system, production capacity and pollutant emission rates of the plant before and after the change, and the anticipated completion date of the change.
- 1.4 Unless otherwise specified, all records required to be maintained by this Permit shall be recorded in a permanent form suitable for inspection and submittal to the Division and shall be retained for at least five (5) years following the date of entry.
- 1.5 In cases where conditions of this Permit conflict with each other for any particular source or operation, the most stringent condition shall prevail.

2. Allowable Emissions

Synthetic Minor Emissions Limits

- 2.1 The Permittee shall not discharge or cause the discharge into the atmosphere from the entire facility any gases which contain volatile organic compounds (VOC) in the amount equal to or in excess of 100 tons during any consecutive 12-month period.
[Avoidance of 40 CFR Part 70]
- 2.2 The Permittee shall not discharge, or cause the discharge, into the atmosphere from Sulfonation I Process Line sulfur dioxide (SO₂) in amount exceeding 1.0 pounds per hour.
[Avoidance of 40 CFR Part 70]

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- 2.3 The Permittee shall not discharge, or cause the discharge, into the atmosphere from Sulfonation I Process Line sulfuric acid mist (SAM) in amount exceeding 0.05 pound per hour.
[391-3-1-.03(2)(c)]
- 2.4 The Permittee shall not discharge, or cause the discharge, into the atmosphere from Sulfonation II Process Line SO₂ in amount exceeding 2.0 pounds per hour.
[Avoidance of 40 CFR Part 70]
- 2.5 The Permittee shall not discharge, or cause the discharge, into the atmosphere from Sulfonation II Process Line SAM in amount exceeding 0.25 pound per hour.
[391-3-1-.03(2)(c)]
- 2.6 The Permittee shall only fire diesel fuel in generators GEN1 and GEN2 or fire pump engines FP1 and FP2 that contains a fuel sulfur content of 0.0015 weight percent or less.
[Avoidance of 40 CFR Part 70; 391-3-1-.02(2)(g) Subsumed]
- 2.7 The Permittee shall only combust natural gas in Boilers E-001 and E-002 and Hot Oil Heater E-005.
[Avoidance of 40 CFR Part 70; Avoidance of 40 CFR Part 63 Subpart JJJJJ and 391-3-1-.02(2)(g) Subsumed]

40 CFR 60 Subpart RRR

- 2.8 The Permittee shall comply with all applicable provisions of the New Source Performance Standards (NSPS) as found in 40 CFR 60 Subpart A - "General Provisions" and Subpart RRR – "Standards of Performance for Volatile Organic Compound Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes" as they apply to the Sulfonation II Process Line.
[40 CFR 60 Subparts A and RRR]
- 2.9 The Permittee shall maintain a *total resource effectiveness* (TRE) value greater than 1.0 without use of a VOC emission control device for the Sulfonation II Process Line *affected facility*. For purposes of this Permit Condition, the term Sulfonation II Process Line *affected facility* shall mean the combination of the Sulfonation II Process Line reactor and cyclone/acid-gas separator system immediately downstream of the reactor.
[40 CFR 60.700(b) and 40 CFR 60.702(c)]

40 CFR 60 Subpart Kb

- 2.10 The Permittee shall comply with all applicable provisions of the New Source Performance Standards (NSPS) as found in 40 CFR 60 Subpart A - "General Provisions" and 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" for tanks T-122, T-124, T-137, T-3300 and T-3400.
[40 CFR 60 Subparts A and Kb]

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- 2.11 Storage tanks T-3300 and T-3400 shall each be equipped with a closed vent system and control device meeting the following specifications in accordance with 40 CFR 60.112b(a)(3): [40 CFR 60.112b(a)(3)]
- a. The closed vent system shall be designed to collect all VOC vapors and gases discharged from the storage vessel and operated with no detectable emissions as indicated by an instrument reading of less than 500 ppm above background and visual inspection, as determined in part 60, subpart VV, 40 CFR 60.485(b); and
 - b. The control device shall be designed and operate to reduce inlet VOC emissions by 95 percent or greater.

Fuel-Burning Equipment

- 2.12 The Permittee shall not cause, let, suffer, permit, or allow any emissions from hot oil heater E-005 which contain fly ash and/or other particulate matter in amounts equal to or exceeding 0.5 pounds per million BTU heat input.
[391-3-1-.02(2)(d)2.(i)]
- 2.13 The Permittee shall not cause, let, suffer, permit, or allow any emissions from boilers E-001 and E-002, each, which contain fly ash and/or other particulate matter in amounts equal to or exceeding the rate derived from $P = 0.5(10/R)^{0.5}$ where R equals heat input rate in million BTU per hour and P equals the allowable emission rate in pounds per million BTU.
[391-3-1-.02(2)(d)2.(ii)]
- 2.14 The Permittee shall not cause, let, suffer, permit, or allow the emissions from boiler E-001 and E-002 and hot oil heater E-005 visible emissions the opacity of which is equal to or greater than twenty (20) percent except for one six minute period per hour of not more than twenty-seven (27) percent opacity
[391-3-1-.02(2)(d)3.]

Emergency Generators and Fire Pump Engines

- 2.15 The Permittee shall operate emergency generator GEN1 and GEN2 and fire pump engines FP1 and FP2 only when electric power from the local utility is not available and each emergency generator or fire pump engine must operate less than 200 hours during any consecutive 12-month period.
[391-3-1-.02(2)(mmm)4.(i)]
- 2.16 The Permittee shall not discharge, or cause the discharge, into the atmosphere, from GEN1, GEN2, FP1, and FP2, any gases which exhibit visible emissions, the opacity of which is equal to or greater than 40 percent, unless otherwise specified.
[391-3-1-.02(2)(b)1.]

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Batch Reactor Processes and Continuous Processes

2.17 The Permittee shall not cause, let, suffer, permit, or allow the emissions from any source particulate matter in total quantities equal to or exceeding the allowable rate as calculated using the applicable equation below, unless otherwise specified in this Permit.
[391-3-1-.02(2)(e)1.]

a. $E = 4.1P^{0.67}$, for process input weight rate up to and including 30 tons per hour;

b. $E = 55P^{0.11} - 40$, for process input weight rate in excess of 30 tons per hour.

Where:

E = allowable emission rate in pounds per hour;

P = process input weight rate in tons per hour.

2.18 The Permittee shall not discharge, or cause the discharge, into the atmosphere, from all process equipment any gases which exhibit visible emissions, the opacity of which is equal to or greater than 40 percent, unless otherwise specified.
[391-3-1-.02(2)(b)1.]

3. Fugitive Emissions

3.1 The Permittee shall take all reasonable precautions to prevent fugitive dust from becoming airborne from any operation, process, handling, and transportation or storage facility. The opacity from any fugitive dust source shall not equal or exceed twenty percent. Reasonable precautions that should be taken to prevent dust from becoming airborne include, but are not limited to, the following:
[391-3-1-.02(2)(n)]

- a. Use, where possible, of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads or the clearing of land;
- b. Application of asphalt, water, or suitable chemicals on dirt roads, materials, stockpiles, and other surfaces that can give rise to airborne dusts;
- c. Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty materials. Adequate containment methods can be employed during sandblasting or other similar operations;
- d. Covering, at all times when in motion, open-bodied trucks, transporting materials likely to give rise to airborne dust; and
- e. The prompt removal of earth or other material from paved streets onto which earth or other material has been deposited.

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4. Process & Control Equipment

- 4.1 Routine maintenance shall be performed on all air pollution equipment. Maintenance records shall be recorded in a permanent form suitable and available for inspection or submittal to the Division. The records shall be retained for at least five (5) years following the date of such maintenance.
- 4.2 A spare parts inventory for control equipment shall be maintained by the Permittee.

Sulfonation Process Lines

- 4.3 At all times during the operation of Sulfonation I Process Line, the Permittee shall route the exhaust gases from the Sulfonation I Process Line Reactor through control equipment which includes a dry scrubber, three demisters, and a caustic scrubber (SCP-NAOH1).
- 4.4 At all times during the operation of Sulfonation II Process Line, the Permittee shall route the exhaust gases from the Sulfonator II Reactor through control equipment which includes a dry scrubber, three demisters, and a caustic scrubber (SCP-NAOH2).
- 4.5 During the times when the Sulfonation I Process Line is in operation, the Permittee shall operate the control devices in accordance with the following operating conditions. A “daily block average” is an average of the continuous measurements from 12:00 AM (day 1) to 12:00 AM (day 2).

a.	The Permittee shall maintain a daily pressure drop block average within the range of 2 to 50 inches of water for dry scrubber SCR-DRY1.
b.	The Permittee shall maintain a daily pressure drop block average within the range of 3 to 80 inches of water for demister SCP-DEM11.
c.	The Permittee shall maintain a daily pressure drop block average within the range of 3 to 80 inches of water for demister SCP-DEM12.
d.	The Permittee shall maintain a daily pressure drop block average within the range of 1 to 40 inches of water for demister SCP-TAIL1.
e.	The Permittee shall maintain a daily pressure drop block average within the range of 1 to 10 inches of water for scrubber SCP-NAOH1.
f.	The Permittee shall maintain a daily pH block average within 5 to 12 for scrubber SCP-NAOH1.
g.	The Permittee shall maintain a daily scrubbant flow rate block average greater than 30 gallons per minute for scrubber SCP-NAOH1.

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- 4.6 During the times when the Sulfonation II Process Line is in operation, the Permittee shall operate the control devices in accordance with the following operating conditions. A “daily block average” is an average of the continuous measurements from 12:00 AM (day 1) to 12:00 AM (day 2).

a.	The Permittee shall maintain a daily pressure drop block average within the range of 0.1 to 1.0 psi for the cyclone/acid-gas separator system immediately downstream of the Sulfonation II Process Line Reactor.
b.	The Permittee shall maintain a daily pressure drop block average within the range of 2 to 50 inches of water for dry scrubber SCR-DRY2.
c.	The Permittee shall maintain a daily pressure drop block average within the range of 3 to 80 inches of water for demister SCP-DEM21.
d.	The Permittee shall maintain a daily pressure drop block average within the range of 3 to 80 inches of water for demister SCP-DEM22.
e.	The Permittee shall maintain a daily pressure drop block average within the range of 1 to 40 inches of water for demister SCP-TAIL2.
f.	The Permittee shall maintain a daily pressure drop block average within the range of 1 to 10 inches of water for scrubber SCP-NAOH2.
g.	The Permittee shall maintain a daily pH block average within 5 to 12 for scrubber SCP-NAOH2.
h.	The Permittee shall maintain a daily scrubbant flow rate block average greater than 80 gallons per minute for scrubber SCP-NAOH2.

Batch Process Lines

- 4.7 At all times during the operation of process vessel T-126, the Permittee shall route the exhaust gases from this process vessel through a scrubber (SCR-8126).
- 4.8 At all times during the operation of railcar and/or tank truck unloading of dimethyl sulfate, the Permittee shall route the exhaust gases from this unloading through a scrubber (SCR-8126).
- 4.9 At all times during the operation of Alkoxylation process which includes Reactor R01, the Permittee shall route the exhaust gases from Reactor R01 through a scrubber (SCR-3500).
- 4.10 At all times during the operation of railcar unloading of ethylene oxide and propylene oxide (UNLOAD), the Permittee shall route the exhaust gases from UNLOAD through a scrubber (SCR-3500).
- 4.11 At all times during the depressurization of the propylene oxide and ethylene oxide storage tanks (T-3300 and T-3400), the Permittee shall route the exhaust gases from Storage tanks T-3300 and T-3400, each, through a scrubber (SCR-3500).

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- 4.12 During the times when operation of the Alkoxylation process scrubber (SCR-3500) is required under Condition Nos. 4.9 through 4.11, the Permittee shall operate the scrubber (SCR-3500) in accordance with the following operating conditions. A “daily block average” is an average of the continuous measurements from 12:00 AM (day 1) to 12:00 AM (day 2).

a.	The Permittee shall maintain the percent scrubbant range within 4 to 7 percent acid [inclusive], measured once per calendar month of operation.
b.	The Permittee shall maintain the scrubbant volume flow rate, on a daily block average, greater than 35 gallons per minute (gpm).
c.	The Permittee shall maintain the gas flow rate in to the scrubber at a flow rate, on a daily block average, of less than 250 scfm.

- 4.13 At all times during the operation of Esterification process which includes Reactor R02, the Permittee shall route the exhaust gases from Reactor R02 through a scrubber (SCR-NAOHR02).

- 4.14 At all times during the operation of Intermediate Esterification process which includes Reactor R04, the Permittee shall route the exhaust gases from Reactor R04 through a scrubber (SCR-NAOHR02).

- 4.15 At all times during operation of Reactor R05, the Permittee shall route the exhaust gases from Reactor R05 through a scrubber (SCR-NAOHR02).

- 4.16 During the times when operation of the Esterification process scrubber (SCR-NAOHR02) is required under Condition Nos. 4.13 through 4.15, the Permittee shall operate the scrubber (SCR-NAOHR02) in accordance with the following operating conditions. A “daily block average” is an average of the continuous measurements from 12:00 AM (day 1) to 12:00 AM (day 2).

a.	The Permittee shall maintain the caustic above 5 percent, measured once per calendar week of operation.
b.	The Permittee shall maintain the pressure drop, on a daily block average, is outside the range of 0.3 to 20 inches of water.
c.	The Permittee shall maintain the scrubbant volume flow rate, on a daily block average, greater than 20 gallons per minute (gpm).

5. Monitoring

- 5.1 Should any control equipment parameters fall outside the normal operational ranges, the Permittee shall take immediate corrective actions. The Permittee shall record the time of occurrence, the nature, the cause, and the corrective action of such deviations. Said records shall be maintained in a permanent form suitable and available onsite for inspection by the Division and shall be retained for at least five (5) years from the date of last entry.

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- 5.2 Any continuous monitoring system required by the Division and installed by the Permittee shall be in continuous operation and data recorded during all periods of operation of the effected facility except for continuous monitoring system breakdowns and repairs. Monitoring system response, relating only to calibration checks and zero and span adjustments, shall be measured and recorded during such periods. Maintenance or repair shall be conducted in the most expedient manner to minimize the period during which the system is out of service. This information required to be monitored and recorded shall be recorded in a permanent form suitable and available for inspection.

[391-3-1-.02(6)(b)1.]

- 5.3 The Permittee shall install, calibrate, maintain, and operate monitoring devices for the measurement of the indicated parameters on the following equipment. Data shall be recorded at the frequency specified below. Where such performance specification(s) exist, each system shall meet the applicable performance specification(s) of the Division's monitoring requirements. This information required to be monitored and recorded shall be recorded in a permanent form suitable and available for inspection.

[391-3-1-.02(6)(b)1.]

Batch Process Lines

- a. Percent by weight of acid in the scrubbant for Scrubber SCR-3500 for Alkoxylation Process including Reactor R01. Data shall be recorded at least once per calendar month.
 - b. Percent by weight of caustic in the scrubbant for Scrubber SCR-NAOHR02 servicing Reactors R02, R04 and/or R05. Data shall be recorded at least once per calendar week.
- 5.4 The Permittee shall install, calibrate, maintain, and operate a system to continuously monitor and record the indicated parameters on the following equipment. Where such performance specification(s) exist, each system shall meet the applicable performance specification(s) of the Division's monitoring requirements. This information required to be monitored and recorded shall be recorded in a permanent form suitable and available for inspection.

[391-3-1-.02(6)(b)1.]

Sulfonation I Process Line – Continuous Process Line

- a. Pressure drop across Dry Scrubber in Sulfonation I Process Line (SCP-DRY1). The Permittee shall use this data to compute and record a daily block average. The Permittee shall maintain records of the derivation of each daily block average.
- b. Pressure drop across Demister 1 in Sulfonation I Process Line (SCP-DEM11). The Permittee shall use this data to compute and record a daily block average. The Permittee shall maintain records of the derivation of each daily block average.
- c. Pressure drop across Demister 2 in Sulfonation I Process Line (SCP-DEM12). The Permittee shall use this data to compute and record a daily average. The Permittee shall maintain records of the derivation of each daily block average.

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- d. Pressure drop across Tail Gas Demister 1 in Sulfonation I Process Line (SCP-TAIL1). The Permittee shall use this data to compute and record a daily block average. The Permittee shall maintain records of the derivation of each daily block average.
- e. The pH of the scrubbant in Caustic Scrubber SCP-NAOH1 for Sulfonation I Process Line. The data shall be used to compute and record a daily block average. The Permittee shall maintain records of the derivation of each daily block average.
- f. Pressure drop across Caustic Scrubber SCP-NAOH1 for Sulfonation I Process Line. The Permittee shall use this data to compute and record a daily block average. The Permittee shall maintain records of the derivation of each daily block average.
- g. Scrubbant flow rate across Caustic Scrubber SCP-NAOH1 for Sulfonation I Process Line. The Permittee shall use this data to compute and record a daily block average. The Permittee shall maintain records of the derivation of each daily block average.

Sulfonation II Process Line – Continuous Process Line

- h. Pressure drop across the cyclone/acid-gas separator system immediately downstream of Sulfonation II Process Line Reactor. The Permittee shall use this data to compute and record a daily block average. The Permittee shall maintain records of the derivation of each daily block average.
[40 CFR 60.703(e)]
- i. Pressure drop across Dry Scrubber in Sulfonation II Process Line (SCR-DRY2). The Permittee shall use this data to compute and record a daily block average. The Permittee shall maintain records of the derivation of each daily block average.
- j. Pressure drop across Demister 1 in Sulfonation II Process Line (SCP-DEM21). The Permittee shall use this data to compute and record a daily block average. The Permittee shall maintain records of the derivation of each daily block average.
- k. Pressure drop across Demister 2 in Sulfonation II Process Line (SCP-DEM22). The Permittee shall use this data to compute and record a daily average. The Permittee shall maintain records of the derivation of each daily block average.
- l. Pressure drop across Tail Gas Demister 1 in Sulfonation II Process Line (SCP-TAIL2). The Permittee shall maintain records of the derivation of each daily block average.
- m. The pH of the scrubbant in Caustic Scrubber SCP-NAOH2 for Sulfonation II Process Line. The data shall be used to compute and record a daily block average. The Permittee shall maintain records of the derivation of each daily block average.
- n. Pressure drop across Caustic Scrubber SCP-NAOH2 for Sulfonation II Process Line. The Permittee shall use this data to compute and record a daily block average. The Permittee shall maintain records of the derivation of each daily block average.

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- o. Scrubbant flow rate across Caustic Scrubber SCP-NAOH2 for Sulfonation II Process Line. The Permittee shall use this data to compute and record a daily block average. The Permittee shall maintain records of the derivation of each daily block average.

Batch Process Lines

- p. Scrubbant flow rate (gallons per minute) for Scrubber SCR-3500 for Alkoxylation Process including Reactor R01. The Permittee shall use this data to compute and record a daily block average. The Permittee shall maintain records of the derivation (including calculation) of each daily block average.
- q. Gas flow rate (scfm) for Scrubber SCR-3500 for Alkoxylation Process including Reactor R01. The Permittee shall maintain records of the derivation (including calculation) of each daily block average.
- r. Pressure drop across Scrubber SCR-NAOHR02 for Reactors R02, R04, and/or R05. The Permittee shall use this data to compute and record a daily block average. The Permittee shall maintain records of the derivation of each daily block average.
- s. Scrubbant flow rate across Scrubber SCR-NAOHR02 for Reactors R02, R04, and/or R05. The Permittee shall use this data to compute and record a daily block average. The Permittee shall maintain records of the derivation of each daily block average.

Generators and Fire Pumps

- 5.5 The Permittee shall install, calibrate, maintain, and operate a non-resettable monitoring system on each Fire Pump (FP1 and FP2) and each Emergency Generator (GEN1 and GEN2). The hours of operation shall be recorded monthly. This information shall be recorded in a permanent form suitable and available for inspection or submittal when requested by the Division.

Sulfonation II Process Line – 40 CFR 60 Subpart RRR

- 5.6 The Permittee shall maintain records describing the operation of the cyclone separator, immediately downstream of the reactor, on Sulfonation II Process Line and the process parameter(s) which would indicate proper operation and maintenance of the cyclone separator in accordance with 40 CFR 60.703(e). These records shall be maintained in a permanent form suitable and readily available for inspection or submittal when requested by the Division.
[40 CFR 60.703(e)]

Storage Tanks – 40 CFR 60 Subpart Kb

- 5.7 With regard to the operation of Storage Tanks T-3300 and T-3400 the Permittee shall operate the closed vent system and control device (SCR-3500 Scrubber) and monitor the parameters of the closed vent systems and control devices in accordance with the operating plan submitted to the Division in accordance with 40 CFR 60.113b(c)(1).
[40 CFR 60.112b]

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6. Performance Testing

- 6.1 The Permittee shall cause to be conducted a performance test at any specified emission point when so directed by the Division. The following provisions shall apply with regard to such tests:
- a. All tests shall be conducted and data reduced in accordance with applicable procedures and methods specified in the Division's Procedures for Testing and Monitoring Sources of Air Pollutants.
 - b. All test results shall be submitted to the Division within sixty (60) days of the completion of testing.
 - c. The Permittee shall provide the Division thirty (30) days prior written notice of the date of any performance test(s) to afford the Division the opportunity to witness and/or audit the test, and shall provide with the notification a test plan in accordance with Division guidelines.
 - d. All monitoring systems and/or monitoring devices required by the Division shall be installed, calibrated and operational prior to conducting any performance test(s). For any performance test, the Permittee shall, using the monitoring systems and/or monitoring devices, acquire data during each performance test run. All monitoring system and/or monitoring device data acquired during the performance testing shall be submitted with the performance test results.

Sulfonation II Process Line – 40 CFR 60 Subpart RRR

- 6.2 The test methods described in 40 CFR 60.704(d) shall be used for determining the process vent stream TRE index value to determine compliance under 40 CFR 60.702(c) for the *affected facility* defined in Permit Condition No. 2.9. This information shall be recorded in a permanent form suitable and available for inspection.
[40 CFR 60.704(d)]
- 6.3 For purposes of complying with 40 CFR 702(c), the Permittee shall calculate the TRE index value of the vent stream using the equations specified in 40 CFR 60.704(e), as applicable. This information shall be recorded in a permanent form suitable and available for inspection.
[40 CFR 60.704(e)]
- 6.4 The Permittee shall recalculate the TRE index value for the *affected facility* as defined in Permit Condition No. 2.9 whenever process changes are made. Examples of process changes include changes in production capacity, feedstock type, or catalyst type, or whenever there is replacement, removal, or addition of recovery equipment. The TRE index value shall be recalculated based on test data, or on best engineered estimates of the effects of the change on the recovery system. This information shall be recorded in a permanent form suitable and available for inspection.
[40 CFR 60.704(f)]

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- 6.5 Where the recalculated TRE index value is less than or equal to 8.0 but greater than 1.0, the Permittee shall conduct a performance test in accordance with 40 CFR 60.8 and 40 CFR 60.704 and shall comply with 40 CFR 60.703, 40 CFR 60.704, and 40 CFR 60.705. Performance tests must be conducted as soon as possible after the process change but no later than 180 days from the time of the process change.
[40 CFR 60.704(f)(2)]

7. Notification, Reporting and Record Keeping Requirements

General Requirements

- 7.1 The Permittee shall maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of an affected facility, any malfunction of the air pollution control equipment or any periods during which a continuous monitoring system or monitoring device is inoperative. The Permittee shall retain these records for a period of at least five (5) years after the date of any such startup, shutdown, or malfunction. This information shall be recorded in a permanent form suitable and available for inspection.
- 7.2 The Permittee shall maintain a file of all measurements, including continuous monitoring system, monitoring device, and performance testing measurements; all continuous monitoring system performance evaluations; all continuous monitoring system or monitoring device calibration checks; adjustments and maintenance performed on these systems or devices; and all other information required by this Permit. This information shall be recorded in a permanent form suitable and available for inspection.

Verification of Compliance with Facility-wide VOC Emissions Limit

- 7.3 The Permittee shall maintain a written emission calculation protocol for determining actual emissions of VOC emitted from the entire facility on a monthly basis. The protocol should include, but not limited to, the following: (1) VOC emission factors for each product or process line, storage tanks, equipment leak components, wastewater treatment plant, fuel combustion, and any other applicable source of VOC emissions at the site; (2) formulas for computing VOC emissions from each applicable source of VOC emissions and the origin of each formula. The Permittee shall use the written emission calculation protocol (including emission factors) submitted to the Division on May 19, 2017. The existing version of the protocol and any subsequent modification to the protocol shall be kept in a permanent form suitable and available for inspection.

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- 7.4 The Permittee shall maintain the monthly operating records necessary to determine actual monthly VOC emissions in conjunction with the protocol required by Permit Condition No. 7.3. The records shall include, but may not be limited to, the quantity (total lbs and total number of batch) of each product manufactured during the month, records of storage tank usage, and the quantities of fuel burned in the boilers, emergency generators, and fire pump engines. The Permittee shall notify the Division, in writing, if emissions of VOC exceed 8.33 tons during any calendar month from the facility. This notification shall be postmarked by the fifteenth day of the following month and shall include an explanation of how the Permittee intends to maintain compliance with the emission limit in Permit Condition No. 2.1. This information (including calculations) shall be recorded in a permanent form suitable and readily available for inspection or submittal to the Division.
- 7.5 The Permittee shall use the records required by Permit Condition No. 7.4 to compute the consecutive twelve month total of VOC emissions from the facility on a monthly basis. The Permittee shall notify the Division, in writing, if emissions of VOC equal or exceed 100 tons during any consecutive twelve month period from the facility. This notification shall be postmarked by the fifteenth day of the following month. This information (including calculations) shall be recorded in a permanent form suitable and readily available for inspection or submittal to the Division.

Verification of Compliance with Diesel Fuel Sulfur Content Limit

- 7.6 For each shipment of diesel fuel, the Permittee shall obtain certification from the supplier that the diesel fuel meets the fuel sulfur limits specified in Permit Condition No. 2.6. The certification shall contain the following:
- a. The name of the diesel fuel supplier;
 - b. The location of the diesel fuel when the sample was drawn for analysis to determine the sulfur content of the diesel fuel, specifically including whether the diesel fuel was sampled as delivered to the affected facility, or whether the sample was drawn from diesel fuel in storage at the diesel fuel supplier's or oil refiner's facility, or other location;
 - c. The sulfur content of the diesel fuel from which the shipment came (or of the shipment itself);
 - d. The method used to determine the sulfur content of the oil.

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Storage Tanks – 40 CFR 60 Subpart Kb

7.7 The Permittee shall maintain on-site a Division approved operating plan for storage tanks T-3300 and T-3400 that meets the following requirements:

- a. Documentation demonstrating that the control device will achieve the required control efficiency during maximum loading conditions. This documentation is to include a description of the gas stream which enters the control device, including flow and VOC content under varying liquid level conditions (dynamic and static) and manufacturer's design specifications for the control device.

[40 CFR 60.113b(c)(1)(i)]

If the control device or the closed vent capture system receives vapors, gases, or liquids other than fuels from sources that are not designated sources under 40 CFR 60 Subpart Kb, the efficiency demonstration is to include consideration of all vapors, gases, and liquids received by the closed vent capture system and control device.

- b. A description of the parameter or parameters to be monitored to ensure that the control device will be operated in conformance with its design and an explanation of the criteria used for selection of that parameter (or parameters).

[40 CFR 60.113b(c)(1)(ii)]

7.8 The Permittee shall maintain on-site the following records for storage tanks T-122, T-124, T-137, T-3300, and T-3400 in a format suitable for inspection or submittal to the Division. This information shall be recorded in a permanent form suitable and available for inspection or submittal to the Division.

- a. Records showing the dimension of the storage vessel and an analysis showing the capacity of the storage vessel.

[40 CFR 60.116b(b)]

- b. Records of the VOL stored, the period of storage, and the maximum true vapor pressure of that VOL during the respective storage period, excluding storage tanks T-3300 and T-3400 per 40 CFR 60.116b(g). Available data on the storage temperature may be used to determine the maximum true vapor pressure. For vessels operated above or below ambient temperatures, the maximum true vapor pressure is calculated based on upon the highest expected calendar-month average of the storage temperature. For vessels operated at ambient temperatures, the maximum true vapor pressure is calculated based upon the maximum local monthly average ambient temperature as reported by the National Weather Service.

[40 CFR 60.116b(c), 40 CFR 60.116b(e), and 40 CFR 60.116b(g)]

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40 CFR 60 Subpart RRR

7.9 The Permittee shall keep up-to-date, readily accessible records of the following as they relate to the Sulfonation II Process Line reactor and cyclone separator immediately downstream of the reactor. This information shall be recorded in a permanent form suitable and available for inspection or submittal to the Division.

- a. All measurements and calculations performed to determine the TRE index value of the vent stream.
[40 CFR 60.705(b)(4)(v)]
- b. Any changes in production capacity, feedstock type, or catalyst type, or of any replacement, removal or addition of recovery equipment or reactors.
[40 CFR 60.705(g)(1)]
- c. Any recalculation of the TRE index value performed pursuant to 40 CFR 60.704(f); and
[40 CFR 60.705(g)(2)]
- d. The results of any performance test pursuant to the methods and procedures required by 40 CFR 60.704(d).
[40 CFR 60.705(g)(3)]

Miscellaneous Recordkeeping

7.10 The Permittee shall maintain an updated equipment list (including control devices) as found in this Permit. This information shall be recorded in a permanent form suitable and available for inspection or submittal to the Division.

Reporting Requirements

7.11 The Permittee shall submit a written report of reportable incidences for each semiannual period. The report shall cover each semiannual period ending June 30 and December 31 of each year, shall be postmarked by August 29 and February 28, respectively, and shall contain the nature and cause of the reportable incident, the time and date of occurrence, and any initial and final corrective action taken. They report shall also contain a summary of any days for which any of the required operation and maintenance surveillance checks were not made and the reasons for such failure to perform the surveillance. A reportable incidence is defined as the following:

	Device	Definition of Reportable Incidence
a.	SCR-DRY1	Any pressure drop measurement required by Section 5 of this permit that is outside the range prescribed in Section 4 of this permit.
b.	SCP-DEM11	Any pressure drop measurement required by Section 5 of this permit that is outside the range prescribed in Section 4 of this permit.
c.	SCP-DEM12	Any pressure drop measurement required by Section 5 of this permit that is outside the range prescribed in Section 4 of this permit.
d.	SCP-TAIL1	Any pressure drop measurement required by Section 5 of this permit that is outside the range prescribed in Section 4 of this permit.

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	Device	Definition of Reportable Incidence
e.	SCP-NAOH1	Any pressure drop measurement required by Section 5 of this permit that is outside the range prescribed in Section 4 of this permit.
f.	SCP-NAOH1	Any pH measurement required by Section 5 of this permit that is outside the range prescribed in Section 4 of this permit.
g.	SCP-NAOH1	Any scrubbant flow rate measurement required by Section 5 of this permit that is outside the range prescribed in Section 4 of this permit.
h.	Cyclone/Acid Gas Separator System on Sulfonation II Process Line	Any pressure drop measurement required by Section 5 of this permit that is outside the range prescribed in Section 4 of this permit.
i.	SCR-DRY2	Any pressure drop measurement required by Section 5 of this permit that is outside the range prescribed in Section 4 of this permit.
j.	SCP-DEM21	Any pressure drop measurement required by Section 5 of this permit that is outside the range prescribed in Section 4 of this permit.
k.	SCP-DEM22	Any pressure drop measurement required by Section 5 of this permit that is outside the range prescribed in Section 4 of this permit.
l.	SCP-TAIL1	Any pressure drop measurement required by Section 5 of this permit that is outside the range prescribed in Section 4 of this permit.
m.	SCP-NAOH2	Any pressure drop measurement required by Section 5 of this permit that is outside the range prescribed in Section 4 of this permit.
n.	SCP-NAOH2	Any pH measurement required by Section 5 of this permit that is outside the range prescribed in Section 4 of this permit.
o.	SCP-NAOH2	Any scrubbant volume flow rate measurement required by Section 5 of this permit that is outside the range prescribed in Section 4 of this permit.
p.	SCR-3500	Any percent scrubbant range of acid measurement required by Section 5 of this permit that is outside the range prescribed in Section 4 of this permit.
q.	SCR-3500	Any scrubbant volume flow rate measurement required by Section 5 of this permit that is outside the range prescribed in Section 4 of this permit.
r.	SCR-3500	Any gas flow rate measurement required by Section 5 of this permit that is outside the range prescribed in Section 4 of this permit.
s.	SCR-NAOHR02	Any percent caustic measurement required by Section 5 of this permit that is outside the range prescribed in Section 4 of this permit.
t.	SCR-NAOHR02	Any pressure drop measurement required by Section 5 of this permit that is outside the range prescribed in Section 4 of this permit.
u.	SCR-NAOHR02	Any scrubbant volume flow rate measurement required by Section 5 of this permit that is outside the range prescribed in Section 4 of this permit.

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7.12 The Permittee shall submit the following information to the Division as part of the report required by Permit Condition No. 7.11.

- a. The consecutive twelve month total of VOC emissions from the facility for each month in the reporting period.

8. Special Conditions

- 8.1 At any time that the Division determines that additional control of emissions from the facility may reasonably be needed to provide for the continued protection of public health, safety and welfare, the Division reserves the right to amend the provisions of this Permit pursuant to the Division's authority as established in the Georgia Air Quality Act and the rules adopted pursuant to that Act.
- 8.2 The Permittee shall comply with Georgia Rule 391-3-1-.02(6)(a)4., as applicable.
- 8.3 The Permittee shall calculate and pay an annual Permit fee to the Division. The amount of the fee shall be determined each year in accordance with the "Procedures for Calculating Air Permit Fees."
- 8.4 Permit No. 2843-013-0001-S-01-0 is hereby revoked in its entirety.