

EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES

Permit Nos. 36644, PSD-TX-903, and N-007

This table lists the maximum allowable emission rates and all sources of air contaminants on the applicant's property covered by this permit. The emission rates shown are those derived from information submitted as part of the application for permit and are the maximum rates allowed for these facilities. Any proposed increase in emission rates may require an application for a modification of the facilities covered by this permit.

AIR CONTAMINANTS DATA

Emission *	Source	Air Contaminant	<u>Emission Rates</u>	
<u>Point No. (1)</u>	<u>Name (2)</u>	<u>Name (3)</u>	<u>lb/hr</u>	<u>TPY</u>
N-1	Recycle Ethane Cracking Furnace	NO _x	24.16	79.37
		SO ₂	1.12	4.89
		CO	23.25	101.85
		PM ₁₀	1.51	6.61
		VOC	0.57	2.51
N-2	Fresh Feed Cracking Heater	NO _x	35.34	116.08
		SO ₂	1.61	7.07
		CO	34.01	148.97
		PM ₁₀	2.21	9.67
		VOC	0.84	3.68
N-3	Fresh Feed Cracking Heater	NO _x	35.34	116.08
		SO ₂	1.61	7.07
		CO	34.01	148.97
		PM ₁₀	2.21	9.67
		VOC	0.84	3.68
N-4	Fresh Feed Cracking Heater	NO _x	35.34	116.08
		SO ₂	1.61	7.07
		CO	34.01	148.97
		PM ₁₀	2.21	9.67
		VOC	0.84	3.68
N-5	Fresh Feed Cracking Heater	NO _x	35.34	116.08
		SO ₂	1.61	7.07
		CO	34.01	148.97
		PM ₁₀	2.21	9.67

VOC

0.84

3.68

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Emission *	Source	Air Contaminant	<u>Emission Rates</u>	
<u>Point No. (1)</u>	<u>Name (2)</u>	<u>Name (3)</u>	<u>lb/hrTPY</u>	
N-6	Fresh Feed Cracking Heater 116.08	NO _x	35.34	
		SO ₂	1.61	7.07
		CO	34.01	148.97
		PM ₁₀	2.21	9.67
		VOC	0.84	3.68
N-7	Fresh Feed Cracking Heater 116.08	NO _x	35.34	
		SO ₂	1.61	7.07
		CO	34.01	148.97
		PM ₁₀	2.21	9.67
		VOC	0.84	3.68
N-8	Fresh Feed Cracking Heater 116.08	NO _x	35.34	
		SO ₂	1.61	7.07
		CO	34.01	148.97
		PM ₁₀	2.21	9.67
		VOC	0.84	3.68
N-9	Fresh Feed Cracking Heater 116.08	NO _x	35.34	
		SO ₂	1.61	7.07
		CO	34.01	148.97
		PM ₁₀	2.21	9.67
		VOC	0.84	3.68
N-10	Catalyst Regeneration Effluent	VOC	<0.001	<0.001
N-11	Reactor Regeneration Effluent	VOC	<0.001	<0.001

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<u>Point No. (1)</u>	<u>Name (2)</u>	<u>Name (3)</u>	<u>lb/hrTPY</u>	
N-12	DP Reactor Feed Heater	NO _x	5.01	13.71
		SO ₂	0.22	0.95
		CO	0.69	3.02
		PM ₁₀	0.38	1.64
		VOC	0.17	0.74
N-13	DP Reactor Regeneration 1.42 Heater	NO _x		1.73
		SO ₂	0.07	0.10
		CO	0.24	0.31
		PM ₁₀	0.13	0.17
		VOC	0.06	0.08
N-14A	Auxiliary Boiler	NO _x	24.96	91.10
		SO ₂	1.44	6.32
		CO	28.70	125.72
		PM ₁₀	2.91	12.75
		VOC	2.91	12.75
N-14B	Auxiliary Boiler	NO _x	24.96	91.10
		SO ₂	1.44	6.32
		CO	28.70	125.72
		PM ₁₀	2.91	12.75
		VOC	2.91	12.75
N-15	Flare	VOC	5.23	5.02
		NO _x	0.45	1.27
		CO	3.30	9.21
		SO ₂	0.03	0.14
N-16	Emergency Generator	NO _x	36.68	2.86
		SO ₂	2.43	0.19
		CO	7.90	0.62

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<u>Point No. (1)</u>	<u>Name (2)</u>	<u>Name (3)</u>	<u>lb/hr</u>	<u>TPY</u>
		PM ₁₀	2.60	0.20
		VOC	2.97	0.23
N-17	Condensate Splitter Heater 46.22		NO _x	16.89
		SO ₂	0.73	3.21
		CO	2.32	10.17
		PM ₁₀	1.27	5.55
		VOC	0.57	2.50
N-18	Decoking Drum	CO	720.00	27.88
		PM ₁₀	78.73	3.04
N-19	Thermal Oxidizer	VOC	0.024	0.107
		NO _x	0.24	0.88
		CO	0.51	1.86
		SO ₂	0.08	0.28
		PM ₁₀	0.04	0.13
N-21A	Fire Pump Diesel Engine (7)		VOC	1.26
			0.016	
		NO _x	15.81	0.21
		CO	3.41	0.04
		SO ₂	1.05	0.014
		PM ₁₀	1.12	0.015
N-21B	Fire Pump Diesel Engine (7)		VOC	1.26
			0.016	
		NO _x	15.81	0.21
		CO	3.41	0.04
		SO ₂	1.05	0.014
		PM ₁₀	1.12	0.015

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Emission *	Source	Air Contaminant	<u>Emission Rates</u>	
Point No. (1)	Name (2)	Name (3)	lb/hrTPY	
TK-2501	IFR Spent Caustic	VOC	0.29	1.16
TK-8001	IFR WW Equalization	VOC	0.39	1.72
TK-8101	EFR Contaminated Stormwater	VOC	<0.001	<0.001
TK-7702	Sulfuric Acid Tank	H ₂ SO ₄ SO ₃	<0.001 <0.001	<0.001 <0.001
TK-800	EFR Tank	VOC	4.05	6.22
TK-801	EFR Tank	VOC	4.16	6.22
TK-802	EFR Tank	VOC	4.16	6.22
TK-805	EFR Tank	VOC	2.78	4.05
TK-807	IFR Tank	VOC	1.26	3.08
TK-811	IFR Tank (Toluene)	VOC	0.61	0.13
TK-812	IFR Tank (Toluene)	VOC	0.51	0.13
TK-813	IFR Tank (Toluene)	VOC	0.51	0.13
F-1	Fugitives (4)	VOC	2.44	10.77
F-2	Cooling Tower	VOC (5) Benzene PM ₁₀	12.6 0.45 1.9	55.19 1.99 2.76

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F-4	Benzene/Toluene Process	VOC	0.25
	1.12		
TBN (6)	Cogen	NO _x	86.6 185.06
		SO ₂	5.31 12.83
		CO	65.3 252.06
		PM ₁₀	8.42 25.7
		VOC	8.79 25.73

- (1) Emission point identification - either specific equipment designation or emission point number from plot plan.
- (2) Specific point source name. For fugitive sources use area name or fugitive source name.
- (3) VOC - volatile organic compounds as defined in General Rule 101.1
NO_x - total oxides of nitrogen
SO₂ - sulfur dioxide
PM₁₀ - particulate matter (PM) equal to or less than 10 microns in diameter. Where PM is not listed, it shall be assumed that no particulate matter greater than 10 microns is emitted.
CO - carbon monoxide
H₂SO₄ - sulfuric acid
SO₃ - sulfur trioxide
- (4) Fugitive emissions are an estimate only and should not be considered as a maximum allowable emission rate.
- (5) The VOC emissions rates from the cooling tower are 12.6 pounds per hour and 55.19 tons per year, including benzene. The VOC emission rates are for total VOC.
- (6) Place holder for cogeneration unit emissions. The cogeneration unit includes two turbines equipped with duct burners, and a supplemental boiler. The holder of this permit may choose the Auxiliary Boilers and Emergency Generator (EPN's N-14A, N-14B, and

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N-16, respectively) or a cogeneration unit and supplemental boiler. The applicant may supply additional information, EPN's for each specific piece of equipment, etc., as required by Special Condition No. 26 of this permit.

- (7) Emissions from the Fire Pump Diesel Engines are based on 26 hours per year operation.

* Emission rates are based on and the facilities are limited by the following maximum operating schedule:

_____Hrs/day _____Days/week _____Weeks/year or 8,760
Hrs/year

Dated_____