

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

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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>

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Emission *	Source	Air Contaminant	Emission Rates	
Point No. (1)	Name (2)	Name (3)	lb/hr	TPY
N-6	Fresh Feed Cracking Heater 116.08	NO <sub>x</sub>		35.34
		SO <sub>2</sub>	1.61	7.07
		CO	34.01	148.97
		PM <sub>10</sub>	2.21	9.67
		VOC	0.84	3.68
N-7	Fresh Feed Cracking Heater 116.08	NO <sub>x</sub>		35.34
		SO <sub>2</sub>	1.61	7.07
		CO	34.01	148.97
		PM <sub>10</sub>	2.21	9.67
		VOC	0.84	3.68
N-8	Fresh Feed Cracking Heater 116.08	NO <sub>x</sub>		35.34
		SO <sub>2</sub>	1.61	7.07
		CO	34.01	148.97
		PM <sub>10</sub>	2.21	9.67
		VOC	0.84	3.68
N-9	Fresh Feed Cracking Heater 116.08	NO <sub>x</sub>		35.34
		SO <sub>2</sub>	1.61	7.07
		CO	34.01	148.97
		PM <sub>10</sub>	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
N-12	DP Reactor Feed Heater	NO <sub>x</sub>	5.01	13.71
		SO <sub>2</sub>	0.22	0.95
		CO	0.69	3.02

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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 <sub>10</sub>	0.38	1.64
		VOC	0.17	0.74

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Emission *	Source	Air Contaminant	Emission	Rates
Point No. (1)	Name (2)	Name (3)	lb/hr	TPY
N-13	DP Reactor Regeneration Heater	NO <sub>x</sub>	1.73	1.42
		SO <sub>2</sub>	0.07	0.10
		CO	0.24	0.31
		PM <sub>10</sub>	0.13	0.17
		VOC	0.06	0.08
N-14	Supplemental Boiler	NO <sub>x</sub>	13.65	16.20
		SO <sub>2</sub>	0.61	0.73
		CO	15.70	18.63
		PM <sub>10</sub>	1.59	1.89
		VOC	1.59	1.89
N-15	Flare	VOC	5.23	5.02
		NO <sub>x</sub>	0.45	1.27
		CO	3.30	9.21
		SO <sub>2</sub>	0.03	0.14
N-17	Condensate Splitter Heater 46.22	NO <sub>x</sub>		16.89
		SO <sub>2</sub>	0.73	3.21
		CO	2.32	10.17
		PM <sub>10</sub>	1.27	5.55
		VOC	0.57	2.50
N-18	Decoking Drum	CO	720.00	27.88
		PM <sub>10</sub>	78.73	3.04
N-19	Thermal Oxidizer	VOC	0.024	0.107
		NO <sub>x</sub>	0.24	0.88
		CO	0.51	1.86
		SO <sub>2</sub>	0.08	0.28
		PM <sub>10</sub>	0.04	0.13
N-20A	CTG HRSG Unit 1 GE Frame 6B 310.4 MMBtu/hr	NO <sub>x</sub>	44.94	102.62
		SO <sub>2</sub>	2.27	6.50
		CO	56.94	165.18

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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/hr</u>	<u>TPY</u>
	Duct Burner	VOC	4.21	11.65
		PM <sub>10</sub>	5.55	19.31

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Emission *	Source	Air Contaminant	Emission Rates	
Point No. (1)	Name (2)	Name (3)	lb/hr	TPY
N-20B	CTG HRSG Unit 2 GE Frame 6B 310.4 MMBtu/hr Duct Burner (with SCR)	NO <sub>x</sub>	26.96	61.57
		SO <sub>2</sub>	2.27	6.50
		CO	56.94	165.18
		VOC	4.21	11.65
		PM <sub>10</sub>	5.55	19.31
		NH <sub>3</sub>	7.94	22.57
N-21A	Fire Pump Diesel Engine (6)		VOC	1.26
		0.016		
		NO <sub>x</sub>	15.81	0.21
		CO	3.41	0.04
		SO <sub>2</sub>	1.05	0.014
		PM <sub>10</sub>	1.12	0.015
N-21B	Fire Pump Diesel Engine (6)		VOC	1.26
		0.016		
		NO <sub>x</sub>	15.81	0.21
		CO	3.41	0.04
		SO <sub>2</sub>	1.05	0.014
		PM <sub>10</sub>	1.12	0.015
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 <sub>2</sub> SO <sub>4</sub>	<0.001	<0.001
		SO <sub>3</sub>	<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

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<u>Point No. (1)</u>	<u>Name (2)</u>	<u>Name (3)</u>	<u>lb/hr</u>	<u>TPY</u>
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)	12.6	55.19
		Benzene	0.45	1.99
		PM <sub>10</sub>	1.9	2.76
F-4	Benzene/Toluene Process	VOC	0.25	1.12

(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 30 Texas Administrative Code Section 101.1

NO<sub>x</sub> - total oxides of nitrogen

SO<sub>2</sub> - sulfur dioxide

PM<sub>10</sub> - 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

H<sub>2</sub>SO<sub>4</sub> - sulfuric acid

SO<sub>3</sub> - sulfur trioxide

NH<sub>3</sub> - ammonia

(4) Fugitive emissions are an estimate only and should not be



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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) 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 \_\_\_\_\_