Emission Sources - Maximum Allowable Emission Rates

Permit Numbers 8780 and PSDTX416M1

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, sources, and related activities. Any proposed increase in emission rates may require an application for a modification of the facilities covered by this permit.

Air Contaminants Data

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates	
			lbs/hour	TPY (4)
E-6B	Waste Heat Boiler	PM	24.34	(5)
		PM_{10}	14.61	(5)
		$PM_{2.5}$	10.47	(5)
		SO_2	2073.60	(5)
		NO_x	169.78	(5)
		VOC (6)	24.89	(5)
		CO	853.69	(5)
		H_2S	18.73	(5)
		COS	4.94	(5)
		CS_2	7.39	(5)
		HCN	1.54	(5)
		BZ	0.83	(5)
		Al	0.67	(5)
		Cl	0.87	(5)
E-10FL	Unit 1 Reactor / Flare (7)	PM	9.13	(5)
		PM_{10}	5.48	(5)
		$PM_{2.5}$	3.93	(5)
		SO_2	777.60	(5)
		NO_x	62.82	(5)
		VOC (6)	9.33	(5)
		CO	320.13	(5)
		H_2S	7.02	(5)
		COS	1.85	(5)

Emission Sources - Maximum Allowable Emission Rates

		CS_2	2.77	(5)
		HCN	0.58	(5)
		BZ	0.31	(5)
		Al	0.25	(5)
		Cl	0.33	(5)
E-20FL	Unit 2 Reactor / Flare (7)	PM	9.13	(5)
		PM_{10}	5.48	(5)
		$PM_{2.5}$	3.93	(5)
		SO_2	777.60	(5)
		NO_x	62.82	(5)
		VOC (6)	9.33	(5)
		CO	320.13	(5)
		H_2S	7.02	(5)
		COS	1.85	(5)
		CS_2	2.77	(5)
		HCN	0.58	(5)
		BZ	0.31	(5)
		Al	0.25	(5)
		Cl	0.33	(5)
E-40FL	Unit 4 Reactor / Flare (7)	PM	9.13	(5)
		PM_{10}	5.48	(5)
		$PM_{2.5}$	3.93	(5)
		SO_2	777.60	(5)
		NO_x	62.82	(5)
		VOC (6)	9.33	(5)
		CO	320.13	(5)
		H_2S	7.02	(5)
		COS	1.85	(5)
		CS_2	2.77	(5)

Emission Sources - Maximum Allowable Emission Rates

		HCN	0.58	(5)
		BZ	0.31	(5)
		Al	0.25	(5)
		Cl	0.33	(5)
Emissions Cap	Combined Sources of Tail Gas (5)	PM	---	78.44
		PM_{10}	---	47.07
		$PM_{2.5}$	---	33.73
		SO_2	---	8476.88
		NO_x	---	688.14
		VOC (6)	---	101.07
		CO	---	3577.04
		H_2S	---	76.56
		COS	---	20.19
		CS_2	---	30.20
		HCN	---	6.27
		BZ	---	3.03
		Al	---	1.93
		Cl	---	2.50
E-10D/E-11D	B-1 Dryers (19 MMBtu/hr)	PM	0.30	1.30
		PM_{10}	0.18	0.78
		$PM_{2.5}$	0.13	0.56
		SO_2	0.02	0.10
		NO_x	3.80	16.64
		VOC	0.21	0.94
		CO	3.27	14.34
E-20D/E-21D	B-2 Dryers (19 MMBtu/hr)	PM	0.30	1.30
		PM_{10}	0.18	0.78
		$PM_{2.5}$	0.13	0.56
		SO_2	0.02	0.10

Emission Sources - Maximum Allowable Emission Rates

		NO_x	3.80	16.64
		VOC	0.21	0.94
		CO	3.27	14.34
E-40D/E-41D	B-4 Dryers (19 MMBtu/hr)	PM	0.30	1.30
		PM_{10}	0.18	0.78
		$PM_{2.5}$	0.13	0.56
		SO_2	0.02	0.10
		NO_x	3.80	16.64
		VOC	0.21	0.94
		CO	3.27	14.34
E-10DF and E-11DF	B-1 Dryer Bag Filter	PM	1.54	6.76
		PM_{10}	0.93	4.05
		$PM_{2.5}$	0.66	2.91
		SO_2	< 0.01	0.01
		NO_x	0.38	1.66
		VOC	2.87	12.58
		CO	0.33	1.43
E-20DF and E-21DF	B-2 Dryer Bag Filter	PM	1.54	6.76
		PM_{10}	0.93	4.05
		$PM_{2.5}$	0.66	2.91
		SO_2	< 0.01	0.01
		NO_x	0.38	1.66
		VOC	3.19	13.97
		CO	0.33	1.43
E-41P and E-41DF	B-4 Dryer Bag Filter	PM	1.54	6.76
		PM_{10}	0.93	4.05
		$PM_{2.5}$	0.66	2.91
		SO_2	< 0.01	0.01
		NO_x	0.38	1.66

Emission Sources - Maximum Allowable Emission Rates

		VOC	2.87	12.58
		CO	0.33	1.43
E-10CU	B-1 Clean Up Bag Filter / Loop Vent Filter	PM	0.51	2.25
		PM_{10}	0.31	1.35
		$PM_{2.5}$	0.22	0.97
E-20CU	B-2 Clean Up Bag Filter	PM	0.51	2.25
		PM_{10}	0.31	1.35
		$PM_{2.5}$	0.22	0.97
E-40CU	B-4 Clean Up Bag Filter	PM	0.51	2.25
		PM_{10}	0.31	1.35
		$PM_{2.5}$	0.22	0.97
E-1VF	Furnace Vacuum Bag Filter	PM	0.38	1.65
		PM_{10}	0.23	0.99
		$PM_{2.5}$	0.16	0.71
FURN-FUG	Furnace Area Fugitives (8)	PM	3.33	14.60
		PM_{10}	2.00	8.76
		$PM_{2.5}$	1.43	6.28
		VOC	0.09	0.38
E-50R	Thermal Unit 1 Reactor (7)	PM	7.86	20.04
		PM_{10}	4.71	12.02
		$PM_{2.5}$	3.38	8.62
		SO_2	0.69	3.01
		NO_x	5.80	25.40
		CO	12.50	54.75
E-51R	Thermal Unit 1 Reactor (7)	PM	7.86	20.04
		PM_{10}	4.71	12.02
		$PM_{2.5}$	3.38	8.62
		SO_2	0.69	3.01
		NO_x	5.80	25.40

Emission Sources - Maximum Allowable Emission Rates

		CO	12.50	54.75
E-53P	Thermal Puff Eliminator (TPE) Bag Filter	PM	1.30	5.69
		PM_{10}	0.78	3.42
		$PM_{2.5}$	0.56	2.45
		SO_2	1.37	6.02
		NO_x	23.20	101.62
		CO	50.00	219.00
E-5B	Thermal Boiler	PM	0.12	0.55
		PM_{10}	0.12	0.55
		$PM_{2.5}$	0.12	0.55
		SO_2	< 0.01	0.04
		NO_x	1.64	7.19
		CO	1.38	6.04
		VOC	0.09	0.40
E-50DH	Thermal Dehumidifier Reactor Unit 1	CO	2.94	12.89
E-51P	Thermal Bag Filter Screw Vent Filter	PM	0.02	0.08
		PM_{10}	0.01	0.05
		$PM_{2.5}$	< 0.01	0.03
E-4VF	Thermal Cleanup Bag Filter	PM	0.09	0.38
		PM_{10}	0.05	0.23
		$PM_{2.5}$	0.04	0.16
E-5VF	Thermal Cleanup Bag Filter	PM	0.09	0.38
		PM_{10}	0.05	0.23
		$PM_{2.5}$	0.04	0.16
THERM-FUG	Thermal Area Fugitives (8)	PM	0.29	1.28
		PM_{10}	0.18	0.77
		$PM_{2.5}$	0.13	0.55
OIL-FUG	Oil Storage	VOC	0.16	0.68

Emission Sources - Maximum Allowable Emission Rates

	Fugitives (8)			
P-60P	Waste Heat Boiler Planned Startup, Tail Gas Vent to Atmosphere - MSS (9)	PM	0.08	< 0.01
		PM_{10}	0.05	< 0.01
		$PM_{2.5}$	0.03	< 0.01
		SO_2	0.21	<0.01
		NO_x	0.38	< 0.01
		VOC (6)	8.49	0.13
		CO	143.72	2.16
		H_2S	4.43	0.07
		COS	0.34	< 0.01
		CS_2	1.51	0.02
		HCN	0.63	< 0.01
		BZ	0.18	< 0.01
BAGFILTFUG	Bag Filter Change-out Fugitives - MSS (10)	PM	0.57	< 0.01
		PM_{10}	0.34	< 0.01
		$PM_{2.5}$	0.24	< 0.01
BRICKFUG	Re-bricking Fugitives-MSS (11)	PM	2.10	0.05
		PM_{10}	2.10	0.05
		$PM_{2.5}$	0.53	0.01

(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 Title 30 Texas Administrative Code § 101.1
NO_x - total oxides of nitrogen
SO_2 - sulfur dioxide
PM - total particulate matter, suspended in the atmosphere, including PM_{10} and $PM_{2.5}$, as represented
PM_{10} - total particulate matter equal to or less than 10 microns in diameter, including $PM_{2.5}$, as represented
$PM_{2.5}$ - particulate matter equal to or less than 2.5 microns in diameter
CO - carbon monoxide
H_2S - hydrogen sulfide
COS - carbonyl sulfide
CS_2 - carbon disulfide
HCN - hydrogen cyanide

Emission Sources - Maximum Allowable Emission Rates

BZ - benzene
Al - aluminum
Cl - chlorine
MSS - planned maintenance, startup and shutdown
EPN - emission point number

(4) Compliance with annual emission limits (tons per year) is based on a 12 month rolling period.
(5) The total combined annual emissions of all sources combusting tail gas shall not exceed these allowable emission rates. The short-term emission rates for each source are listed separately. Short term and annual emission rates of natural gas combustion during startup and/or shutdown are authorized in the tail gas combustion cap in NSR Permit No. 8780.
(6) VOC includes (but is not limited to) acetylene (C_2H_2), COS, CS_2, HCN and BZ.
(7) Startup and shutdown emissions of products of natural gas combustion are captured in the emission rates for this source / EPN.
(8) Emission rate is an estimate and is enforceable through compliance with the applicable special condition(s) and permit application representations.
(9) MSS emissions from the waste heat boiler startup do not occur simultaneously with production emissions and are captured by EPN E-6B.
(10) PM/PM_{10}/$PM_{2.5}$ emissions from bagfilter changeouts do not occur simultaneously with production emissions from the corresponding unit and are captured by the following corresponding unit EPNs: E-10FL, E-20FL, E-40FL, E-50R, and E-51R
(11) PM/PM_{10}/$PM_{2.5}$ emissions from re-bricking are captured by EPNs E-10FL, E-20FL, E-40FL, E-50R, and E-51R. Production rate will be reduced to stay within the PM/PM_{10}/$PM_{2.5}$ emission limits.

Date: March 24, 2015