Emission Sources - Maximum Allowable Emission Rates

Permit Numbers 107518 and PSDTX1383M2

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)
All Furnace EPNs (OL3- FUR1 through OL3-FUR14)	Pyrolysis Furnace Annual CAP	NO_x	(6)	167.28
		CO	(6)	472.16
		VOC	(6)	165.84
		PM	(6)	33.73
		PM_{10}	(6)	33.73
		$PM_{2.5}$	(6)	33.73
		NH_3	(6)	60.18
		SO_2	(6)	13.79
OL3-FUR1	Pyrolysis Furnace 1	NO_x	5.50	(6)
		NO_x (startup & shutdown)	15.00	(6)
		CO	7.70	(6)
		CO (startup & shutdown)	21.00	(6)
		VOC	2.70	(6)
		PM	0.55	(6)
		PM_{10}	0.55	(6)
		$PM_{2.5}$	0.55	(6)
		NH_3	1.47	(6)
		SO_2	0.22	(6)
OL3-FUR2	Pyrolysis Furnace 2	NO_x	5.50	(6)
		NO_x (startup & shutdown)	15.00	(6)
		CO	7.70	(6)
		CO (startup & shutdown)	21.00	(6)
		VOC	2.70	(6)
		PM	0.55	(6)
		PM_{10}	0.55	(6)
		$PM_{2.5}$	0.55	(6)

Emission Sources - Maximum Allowable Emission Rates

		NH_3	1.47	(6)
		SO_2	0.22	(6)
OL3-FUR3	Pyrolysis Furnace 3	NO_x	5.50	(6)
		NO_x (startup & shutdown)	15.00	(6)
		CO	7.70	(6)
		CO (startup & shutdown)	21.00	(6)
		VOC	2.70	(6)
		PM	0.55	(6)
		PM_{10}	0.55	(6)
		$PM_{2.5}$	0.55	(6)
		NH_3	1.47	(6)
		SO_2	0.22	(6)
OL3-FUR4	Pyrolysis Furnace 4	NO_x	5.50	(6)
		NO_x (startup & shutdown)	15.00	(6)
		CO	7.70	(6)
		CO (startup & shutdown)	21.00	(6)
		VOC	2.70	(6)
		PM	0.55	(6)
		PM_{10}	0.55	(6)
		$PM_{2.5}$	0.55	(6)
		NH_3	1.47	(6)
		SO_2	0.22	(6)
OL3-FUR5	Pyrolysis Furnace 5	NO_x	5.50	(6)
		NO_x (startup & shutdown)	15.00	(6)
		CO	7.70	(6)
		CO (startup & shutdown)	21.00	(6)
		VOC	2.70	(6)
		PM	0.55	(6)
		PM_{10}	0.55	(6)
		$PM_{2.5}$	0.55	(6)
		NH_3	1.47	(6)
		SO_2	0.22	(6)
OL3-FUR6	Pyrolysis Furnace 6	NO_x	5.50	(6)
		NO_x (startup & shutdown)	15.00	(6)

Emission Sources - Maximum Allowable Emission Rates

		CO (startup & shutdown)	21.00	(6)
		VOC	2.70	(6)
		PM	0.55	(6)
		PM_{10}	0.55	(6)
		$PM_{2.5}$	0.55	(6)
		NH_3	1.47	(6)
		SO_2	0.22	(6)
OL3-FUR7	Pyrolysis Furnace 7	NO_x	5.50	(6)
		NO_x (startup & shutdown)	15.00	(6)
		CO	7.70	(6)
		CO (startup & shutdown)	21.00	(6)
		VOC	2.70	(6)
		PM	0.55	(6)
		PM_{10}	0.55	(6)
		$PM_{2.5}$	0.55	(6)
		NH_3	1.47	(6)
		SO_2	0.22	(6)
OL3-FUR8	Pyrolysis Furnace 8	NO_x	5.50	(6)
		NO_x (startup & shutdown)	15.00	(6)
		CO	7.70	(6)
		CO (startup & shutdown)	21.00	(6)
		VOC	2.70	(6)
		PM	0.55	(6)
		PM_{10}	0.55	(6)
		$PM_{2.5}$	0.55	(6)
		NH_3	1.47	(6)
		SO_2	0.22	(6)
OL3-FUR9	Pyrolysis Furnace 9	NO_x	5.50	(6)
		NO_x (startup & shutdown)	15.00	(6)
		CO	7.70	(6)
		CO (startup & shutdown)	21.00	(6)
		VOC	2.70	(6)
		PM	0.55	(6)
		PM_{10}	0.55	(6)

Emission Sources - Maximum Allowable Emission Rates

		NH_3	1.47	(6)
		SO_2	0.22	(6)
OL3-FUR10	Pyrolysis Furnace 10	NO_x	5.50	(6)
		NO_x (startup & shutdown)	15.00	(6)
		CO	7.70	(6)
		CO (startup & shutdown)	21.00	(6)
		VOC	2.70	(6)
		PM	0.55	(6)
		PM_{10}	0.55	(6)
		$PM_{2.5}$	0.55	(6)
		NH_3	1.47	(6)
		SO_2	0.22	(6)
OL3-FUR11	Pyrolysis Furnace 11	NO_x	5.50	(6)
		NO_x (startup & shutdown)	15.00	(6)
		CO	7.70	(6)
		CO (startup & shutdown)	21.00	(6)
		VOC	2.70	(6)
		PM	0.55	(6)
		PM_{10}	0.55	(6)
		$PM_{2.5}$	0.55	(6)
		NH_3	1.47	(6)
		SO_2	0.22	(6)
OL3-FUR12	Pyrolysis Furnace 12	NO_x	5.50	(6)
		NO_x (startup & shutdown)	15.00	(6)
		CO	7.70	(6)
		CO (startup & shutdown)	21.00	(6)
		VOC	2.70	(6)
		PM	0.55	(6)
		PM_{10}	0.55	(6)
		$PM_{2.5}$	0.55	(6)
		NH_3	1.47	(6)
		SO_2	0.22	(6)
OL3-FUR13	Pyrolysis Furnace 13	NO_x	5.50	(6)
		NO_x (startup & shutdown)	15.00	(6)

Emission Sources - Maximum Allowable Emission Rates

		CO (startup & shutdown)	21.00	(6)
		VOC	2.70	(6)
		PM	0.55	(6)
		PM_{10}	0.55	(6)
		$PM_{2.5}$	0.55	(6)
		NH_3	1.47	(6)
		SO_2	0.22	(6)
OL3-FUR14	Pyrolysis Furnace 14	NO_x	5.50	(6)
		NO_x (startup & shutdown)	15.00	(6)
		CO	7.70	(6)
		CO (startup & shutdown)	21.00	(6)
		VOC	2.70	(6)
		PM	0.55	(6)
		PM_{10}	0.55	(6)
		$PM_{2.5}$	0.55	(6)
		NH_3	1.47	(6)
		SO_2	0.22	(6)
All Steam Boiler EPNs (OL3-BOIL1 through OL3-BOIL4)	Steam Boiler Annual CAP	NO_x	(8)	75.51
		CO	(8)	279.39
		VOC	(8)	64.79
		PM	(8)	18.88
		PM_{10}	(8)	18.88
		$PM_{2.5}$	(8)	18.88
		NH_3	(8)	36.76
		SO_2	(8)	75.14
OL3-BOIL1	Steam Boiler 1	NO_x	6.47	(8)
		NO_x (startup & shutdown)	43.10	(8)
		CO	15.95	(8)
		VOC	3.70	(8)
		PM	1.08	(8)
		PM_{10}	1.08	(8)
		$PM_{2.5}$	1.08	(8)
		NH_3	3.15	(8)
		SO_2	4.29	(8)

Emission Sources - Maximum Allowable Emission Rates

		NO_x (startup & shutdown)	43.10	(8)
		CO	15.95	(8)
		VOC	3.70	(8)
		PM	1.08	(8)
		PM_{10}	1.08	(8)
		$PM_{2.5}$	1.08	(8)
		NH_3	3.15	(8)
		SO_2	4.29	(8)
OL3-BOIL3	Steam Boiler 3	NO_x	6.47	(8)
		NO_x (startup & shutdown)	43.10	(8)
		CO	15.95	(8)
		VOC	3.70	(8)
		PM	1.08	(8)
		PM_{10}	1.08	(8)
		$PM_{2.5}$	1.08	(8)
		NH_3	3.15	(8)
		SO_2	4.29	(8)
OL3-BOIL4	Steam Boiler 4	NO_x	6.47	(8)
		NO_x (startup & shutdown)	43.10	(8)
		CO	15.95	(8)
		VOC	3.70	(8)
		PM	1.08	(8)
		PM_{10}	1.08	(8)
		$PM_{2.5}$	1.08	(8)
		NH_3	3.15	(8)
		SO_2	4.29	(8)
OL3-DK1, OL3-DK2	Decoking Drums 1 and 2 (7)	VOC	<0.01	<0.01
		CO	196.07	68.66
		PM	0.52	0.18
		PM_{10}	0.29	0.10
		$PM_{2.5}$	0.25	0.09
OL3-CTWR	Olefins 3 Cooling Tower	VOC	5.75	25.21
		Chlorine Compounds	<0.01	<0.01
		PM	7.48	20.92

Emission Sources - Maximum Allowable Emission Rates

		$PM_{2.5}$	0.01	0.04
PDH-CTWR	PDH Unit Cooling Tower	VOC	3.75	16.44
		Chlorine Compounds	<0.01	<0.01
		PM	4.88	13.64
		PM_{10}	1.15	5.04
		$PM_{2.5}$	0.01	0.03
OL3-FUG	Olefins 3 Fugitives	VOC	124.14	543.75
		Cl_2	<0.01	0.02
		NH_3	0.24	1.04
All VCU EPNs (OL3-VCU1 & OL3-VCU2)	Olefins 3 VCU 1 & 2 Annual CAP	VOC	(9)	3.21
		NO_x	(9)	31.32
		CO	(9)	69.99
		PM	(9)	0.88
		PM_{10}	(9)	0.88
		$PM_{2.5}$	(9)	0.88
		SO_2	(9)	0.09
OL3-VCU1	Olefins 3 VCU 1	VOC	0.97	(9)
		NO_x	3.80	(9)
		CO	10.98	(9)
		PM	0.10	(9)
		PM_{10}	0.10	(9)
		$PM_{2.5}$	0.10	(9)
		SO_2	0.01	(9)
OL3-VCU2	Olefins 3 VCU 2	VOC	0.97	(9)
		NO_x	3.80	(9)
		CO	10.98	(9)
		PM	0.10	(9)
		PM_{10}	0.10	(9)
		$PM_{2.5}$	0.10	(9)
		SO_2	0.01	(9)
OL3-MAPD	MAPD Regeneration Vent	VOC	0.21	<0.01
		CO	11.55	0.05
OL3-GEN	OL3 Unit Diesel Emergency Generator Engine	NO_x	11.69	0.58
		CO	6.33	0.32

Emission Sources - Maximum Allowable Emission Rates

		PM	0.37	0.02
		PM_{10}	0.37	0.02
		$PM_{2.5}$	0.37	0.02
		SO_2	0.01	<0.01
PDH-RXNHTR	PDH Reactor Charge Heater	NO_x	4.50	13.14
		NO_x (startup & shutdown)	20.25	
		CO	12.67	54.24
		VOC	2.57	11.28
		PM	1.55	6.79
		PM_{10}	1.55	6.79
		$PM_{2.5}$	1.55	6.79
		NH_3	2.01	5.86
		SO_2	2.99	13.08
PDH-WHBLR	PDH Waste Heat Boiler (and Air Heater)	NO_x	30.59	74.45
		NO_x (startup & shutdown)	76.49	
		CO	55.63	148.89
		VOC	13.25	58.02
		PM	3.15	13.79
		PM_{10}	3.15	13.79
		$PM_{2.5}$	3.15	13.79
		NH_3	7.18	20.96
		SO_2	2.00	8.76
PDH-FUG	PDH Unit Fugitives (5)	VOC	17.59	77.06
		Cl_2	<0.01	0.02
		NH_3	0.05	0.21
PDH-GEN	PDH Unit Diesel Emergency Generator Engine	NO_x	11.64	0.58
		CO	6.31	0.32
		VOC	11.64	0.58
		PM	0.36	0.02
		PM_{10}	0.36	0.02
		$PM_{2.5}$	0.36	0.02
		SO_2	0.01	<0.01
OL3-ACID	Sulfuric Acid Tank	H_2SO_4	1.27	0.03
OL3-PLO	PGC Lube Oil Reservoir	VOC	0.91	<0.01

Emission Sources - Maximum Allowable Emission Rates

OL3-BRLO	BRC Lube Oil Reservoir	VOC	0.47	<0.01
OL3-Chem1	Amine Storage Tank	VOC	0.79	<0.01
OL3-Chem2	Amine Storage Tank	VOC	0.79	<0.01
OL3-Chem3	Inhibitor Storage Tank	VOC	7.36	0.06
OL3-Chem4	Inhibitor Storage Tank	VOC	7.36	0.06
OL3-Chem5	Amine Storage Tank	VOC	0.79	0.01
OL3-Chem6	OL3 BFW Amine Tank	VOC	2.08	0.01
OL3-Chem7	Package Boilers BFW Amine Tank	VOC	0.71	0.01
OL3-DIES	OL3 Emergency Generator Diesel Storage Tank	VOC	0.10	<0.01
OL3-ACID2	Zimpro Acid Day Tank	H_2SO_4	4.30	0.04
PDH-PLO	PGC Lube Oil Reservoir	VOC	0.02	<0.01
PDH-PRLO	PRC Lube Oil Reservoir	VOC	0.02	<0.01
PDH-ACID	Sulfuric Acid Tank	H_2SO_4	1.02	<0.01
PDH-ERLO	ERC Lube Oil Reservoir	VOC	0.02	<0.01
PDH-Chem1	Amine Storage Tank	VOC	0.49	<0.01
PDH-Chem2	Inhibitor Storage Tank	VOC	4.48	0.06
PDH-Chem3	Inhibitor Storage Tank	VOC	4.48	0.06
PDH-Chem4	Inhibitor Storage Tank	VOC	3.72	0.05
PDH-Chem5	Product Inhibitor Storage Tank	VOC	3.72	0.05
PDH-DIES	Diesel Storage Tank	VOC	0.21	<0.01
PDH-RALO1	RAC 1 Lube Oil Reservoir	VOC	0.02	<0.01
PDH-RALO2	RAC 2 Lube Oil Reservoir	VOC	0.02	<0.01
PDH-TRK	PDH Truck Loading Fugitives	VOC	0.06	<0.01
PDH-MSSVO	PDH Maintenance Fugitives	VOC-MSS	68.69	1.82
		Inorganics – MSS	0.16	<0.01
OL3-MSSVO	MSS - Vessel Opening	VOC-MSS	214.73	6.99
		Inorganics – MSS	1.90	<0.01
1018, 1067, OL3-FLRA, OL3-FLRB, OL3-FLRC, EGF-1, EGF-2, EGF-3, EGF-4	Routine Waste Gas Flaring Hourly Cap (10)	VOC	34.08	-
		NO_X (Elevated Flare option)	79.45	-
		CO (Elevated Flare option)	409.00	-
		SO_2 (Elevated Flare option)	0.01	-
		NO_X (EGF option)	75.00	-
		CO (EGF option)	641.05	-

Emission Sources - Maximum Allowable Emission Rates

1018, 1067, OL3-FLRA, OL3-FLRB, OL3-FLRC, EGF-1, EGF-2, EGF-3, EGF-4	MSS Waste Gas Flaring Hourly Cap (10)	VOC (Elevated Flare option)	5,057.15	-
		VOC (EGF option)	5372.0	-
		NO_X (Elevated Flare option)	1,615.32	-
		CO (Elevated Flare option)	8,321.30	-
		NO_X (EGF option)	3,482.4	-
		CO (EGF option)	13,869.0	-
FLARECAP	Elevated and Enclosed Ground Flares Annual Cap (11)	CO	-	2162.07
		NOx	-	267.89
		SO_2	-	3.01
		VOC	-	95.14
FLARECAP	Elevated and Enclosed Ground Flares MSS Annual Cap (11)	VOC	-	321.37
		NOx	-	145.31
		CO	-	578.70

(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_2SO_4 - sulfuric acid mist
Cl_2 - chlorine
NH_3 - ammonia
Chlorine Compounds - includes hypochlorous and hydrochloric acids
(4) Compliance with annual emission limits (tons per year) is based on a 12 month rolling period.
(5) Emission rate is an estimate and is enforceable through compliance with the applicable special condition(s) and permit application representations.
(6) Annual emissions included in annual compliance CAP for pyrolysis furnaces (EPNs OL3- FUR1 through OL3-FUR14).
(7) Maximum emissions from decoking all furnaces to either decoke drum (EPN OL3-DK1 or OL3-DK2).
(8) Annual emissions included in annual compliance CAP for steam boilers (EPNs OL3-BOIL1 through OL3-BOIL4).
(9) Annual emissions included in annual compliance CAP for VCUs (EPNs OL3-VCU1 & OL3-VCU2).
(10) Maximum hourly emission rate for waste gas flaring may occur from any combination of EPNs.

(11) Emissions in the cap are authorized to be emitted from any combination of the following flare EPNs: 1018, 1067, OL3-FLRA/B/C, EGF-1, EGF-2, EGF-3, and EGF-4.

Emission Sources - Maximum Allowable Emission Rates

Date: TBD

Emission Sources - Maximum Allowable Emission Rates

Permit Number GHGPSDTX48M1

This table lists the maximum allowable emission rates of greenhouse gas (GHG) emissions, as defined in Title 30 Texas Administrative Code § 101.1, for all sources of GHG air contaminants on the applicant's property that are authorized 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 authorized by this permit.

Air Contaminants Data

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates
			TPY (4)
GHGFLARECAP	Elevated and Enclosed Ground Flares GHG Annual Cap (6)	CO_2 (5)	661,230.60
		CH_4 (5)	715.40
		N_2O (5)	4.39
		CO_2e	681,822.90
OL3-FUR1 OL3-FUR2 OL3-FUR3 OL3-FUR4 OL3-FUR5 OL3-FUR6 OL3-FUR7 OL3-FUR8 OL3-FUR9 OL3-FUR10 OL3-FUR11 OL3-FUR12 OL3-FUR13 OL3-FUR14	Pyrolysis Cracking Furnaces	CO_2 (5)	1,553,673.00
		CH_4 (5)	82.10
		N_2O (5)	15.46
		CO_2e	1,560,331.00
OL3-BOIL1 OL3-BOIL2 OL3-BOIL3 OL3-BOIL4	Steam Boilers	CO_2 (5)	695,769.00
		CH_4 (5)	40.44
		N_2O (5)	7.61
		CO_2e	699,048.00
OL3-VCU1	Olefins 3 VCU 1	CO_2 (5)	13,159.00
		CH_4 (5)	9.86
		N_2O (5)	0.08
		CO_2e	13,429.00
OL3-VCU2	Olefins 3 VCU 2	CO_2 (5)	13,159.00
		CH_4 (5)	9.86
		N_2O (5)	0.08
		CO_2e	13,429.00
OL3-DK1 OL3-DK2	Decoking drum	CO_2 (5)	329.00
		CO_2e	329.00
OL3-GEN	Emergency generator engine	CO_2 (5)	592.00
		CO_2e	592.00
PDH-GEN	Emergency generator engine	CO_2 (5)	592.00
		CO_2e	592.00

Emission Sources - Maximum Allowable Emission Rates

PDH-RXNHTR	Reactor charge heater	CO_2 (5)	133,684.00
		CH_4 (5)	8.43
		N_2O (5)	1.61
		CO_2e	13,4376.00
PDH-WHBLR	Air heater and waste heat boiler	CO_2 (5)	495,571.00
		CH_4 (5)	643.00
		CO_2e	511,636.00

(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) CO_2 - carbon dioxide
N_2O - nitrous oxide
CH_4 - methane
HFCs - hydrofluorocarbons
PFCs - perfluorocarbons
SF_6 - sulfur hexafluoride
CO_2e - carbon dioxide equivalents based on the following Global Warming Potentials (1/2015):
CO_2 (1), N_2O (298), CH_4(25), SF_6 (22,800), HFC (various), PFC (various)
(4) Compliance with annual emission limits (tons per year) is based on a 12-month rolling period. These rates include emissions from maintenance, startup, and shutdown.
(5) Emission rate is given for informational purposes only and does not constitute enforceable limit.
(6) Emissions in the cap are authorized to be emitted from any combination of the following flare EPNs: 1018, 1067, OL3-FLRA/B/C, EGF-1, EGF-2, EGF-3, and EGF-4.

Date: TBD