

# Emission Sources - Maximum Allowable Emission Rates

Permit Numbers 107518 and PSDTX1383M1

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 <sub>x</sub>	(6)	167.28
		CO	(6)	472.16
		VOC	(6)	165.84
		PM	(6)	33.73
		PM <sub>10</sub>	(6)	33.73
		PM <sub>2.5</sub>	(6)	33.73
		NH <sub>3</sub>	(6)	60.18
		SO <sub>2</sub>	(6)	13.79
OL3-FUR1	Pyrolysis Furnace 1	NO <sub>x</sub>	5.50	(6)
		NO <sub>x</sub> (startup & shutdown)	15.00	(6)
		CO	7.70	(6)
		CO (startup & shutdown)	21.00	(6)
		VOC	2.70	(6)
		PM	0.55	(6)
		PM <sub>10</sub>	0.55	(6)
		PM <sub>2.5</sub>	0.55	(6)
		NH <sub>3</sub>	1.47	(6)
		SO <sub>2</sub>	0.22	(6)
OL3-FUR2	Pyrolysis Furnace 2	NO <sub>x</sub>	5.50	(6)
		NO <sub>x</sub> (startup & shutdown)	15.00	(6)
		CO	7.70	(6)
		CO (startup & shutdown)	21.00	(6)
		VOC	2.70	(6)
		PM	0.55	(6)
		PM <sub>10</sub>	0.55	(6)
		PM <sub>2.5</sub>	0.55	(6)

Emission Sources - Maximum Allowable Emission Rates

		NH <sub>3</sub>	1.47	(6)
		SO <sub>2</sub>	0.22	(6)
OL3-FUR3	Pyrolysis Furnace 3	NO <sub>x</sub>	5.50	(6)
		NO <sub>x</sub> (startup & shutdown)	15.00	(6)
		CO	7.70	(6)
		CO (startup & shutdown)	21.00	(6)
		VOC	2.70	(6)
		PM	0.55	(6)
		PM <sub>10</sub>	0.55	(6)
		PM <sub>2.5</sub>	0.55	(6)
		NH <sub>3</sub>	1.47	(6)
		SO <sub>2</sub>	0.22	(6)
OL3-FUR4	Pyrolysis Furnace 4	NO <sub>x</sub>	5.50	(6)
		NO <sub>x</sub> (startup & shutdown)	15.00	(6)
		CO	7.70	(6)
		CO (startup & shutdown)	21.00	(6)
		VOC	2.70	(6)
		PM	0.55	(6)
		PM <sub>10</sub>	0.55	(6)
		PM <sub>2.5</sub>	0.55	(6)
		NH <sub>3</sub>	1.47	(6)
		SO <sub>2</sub>	0.22	(6)
OL3-FUR5	Pyrolysis Furnace 5	NO <sub>x</sub>	5.50	(6)
		NO <sub>x</sub> (startup & shutdown)	15.00	(6)
		CO	7.70	(6)
		CO (startup & shutdown)	21.00	(6)
		VOC	2.70	(6)
		PM	0.55	(6)
		PM <sub>10</sub>	0.55	(6)
		PM <sub>2.5</sub>	0.55	(6)
		NH <sub>3</sub>	1.47	(6)

Emission Sources - Maximum Allowable Emission Rates

OL3-FUR6	Pyrolysis Furnace 6	SO <sub>2</sub>	0.22	(6)
		NO <sub>x</sub>	5.50	(6)
		NO <sub>x</sub> (startup & shutdown)	15.00	(6)
		CO	7.70	(6)
		CO (startup & shutdown)	21.00	(6)
		VOC	2.70	(6)
		PM	0.55	(6)
		PM <sub>10</sub>	0.55	(6)
		PM <sub>2.5</sub>	0.55	(6)
		NH <sub>3</sub>	1.47	(6)
		SO <sub>2</sub>	0.22	(6)
OL3-FUR7	Pyrolysis Furnace 7	NO <sub>x</sub>	5.50	(6)
		NO <sub>x</sub> (startup & shutdown)	15.00	(6)
		CO	7.70	(6)
		CO (startup & shutdown)	21.00	(6)
		VOC	2.70	(6)
		PM	0.55	(6)
		PM <sub>10</sub>	0.55	(6)
		PM <sub>2.5</sub>	0.55	(6)
		NH <sub>3</sub>	1.47	(6)
		SO <sub>2</sub>	0.22	(6)
OL3-FUR8	Pyrolysis Furnace 8	NO <sub>x</sub>	5.50	(6)
		NO <sub>x</sub> (startup & shutdown)	15.00	(6)
		CO	7.70	(6)
		CO (startup & shutdown)	21.00	(6)
		VOC	2.70	(6)
		PM	0.55	(6)
		PM <sub>10</sub>	0.55	(6)
		PM <sub>2.5</sub>	0.55	(6)
		NH <sub>3</sub>	1.47	(6)
		SO <sub>2</sub>	0.22	(6)

Emission Sources - Maximum Allowable Emission Rates

OL3-FUR9	Pyrolysis Furnace 9	NO <sub>x</sub>	5.50	(6)
		NO <sub>x</sub> (startup & shutdown)	15.00	(6)
		CO	7.70	(6)
		CO (startup & shutdown)	21.00	(6)
		VOC	2.70	(6)
		PM	0.55	(6)
		PM <sub>10</sub>	0.55	(6)
		PM <sub>2.5</sub>	0.55	(6)
		NH <sub>3</sub>	1.47	(6)
		SO <sub>2</sub>	0.22	(6)
OL3-FUR10	Pyrolysis Furnace 10	NO <sub>x</sub>	5.50	(6)
		NO <sub>x</sub> (startup & shutdown)	15.00	(6)
		CO	7.70	(6)
		CO (startup & shutdown)	21.00	(6)
		VOC	2.70	(6)
		PM	0.55	(6)
		PM <sub>10</sub>	0.55	(6)
		PM <sub>2.5</sub>	0.55	(6)
		NH <sub>3</sub>	1.47	(6)
		SO <sub>2</sub>	0.22	(6)
OL3-FUR11	Pyrolysis Furnace 11	NO <sub>x</sub>	5.50	(6)
		NO <sub>x</sub> (startup & shutdown)	15.00	(6)
		CO	7.70	(6)
		CO (startup & shutdown)	21.00	(6)
		VOC	2.70	(6)
		PM	0.55	(6)
		PM <sub>10</sub>	0.55	(6)
		PM <sub>2.5</sub>	0.55	(6)
		NH <sub>3</sub>	1.47	(6)
		SO <sub>2</sub>	0.22	(6)
OL3-FUR12	Pyrolysis Furnace 12	NO <sub>x</sub>	5.50	(6)

Emission Sources - Maximum Allowable Emission Rates

		NO <sub>x</sub> (startup & shutdown)	15.00	(6)
		CO	7.70	(6)
		CO (startup & shutdown)	21.00	(6)
		VOC	2.70	(6)
		PM	0.55	(6)
		PM <sub>10</sub>	0.55	(6)
		PM <sub>2.5</sub>	0.55	(6)
		NH <sub>3</sub>	1.47	(6)
		SO <sub>2</sub>	0.22	(6)
OL3-FUR13	Pyrolysis Furnace 13	NO <sub>x</sub>	5.50	(6)
		NO <sub>x</sub> (startup & shutdown)	15.00	(6)
		CO	7.70	(6)
		CO (startup & shutdown)	21.00	(6)
		VOC	2.70	(6)
		PM	0.55	(6)
		PM <sub>10</sub>	0.55	(6)
		PM <sub>2.5</sub>	0.55	(6)
		NH <sub>3</sub>	1.47	(6)
		SO <sub>2</sub>	0.22	(6)
OL3-FUR14	Pyrolysis Furnace 14	NO <sub>x</sub>	5.50	(6)
		NO <sub>x</sub> (startup & shutdown)	15.00	(6)
		CO	7.70	(6)
		CO (startup & shutdown)	21.00	(6)
		VOC	2.70	(6)
		PM	0.55	(6)
		PM <sub>10</sub>	0.55	(6)
		PM <sub>2.5</sub>	0.55	(6)
		NH <sub>3</sub>	1.47	(6)
		SO <sub>2</sub>	0.22	(6)
All Steam Boiler EPNs (OL3-BOIL1 through OL3-BOIL4)	Steam Boiler Annual CAP	NO <sub>x</sub>	(8)	75.51
		CO	(8)	279.39

Emission Sources - Maximum Allowable Emission Rates

		VOC	(8)	64.79
		PM	(8)	18.88
		PM <sub>10</sub>	(8)	18.88
		PM <sub>2.5</sub>	(8)	18.88
		NH <sub>3</sub>	(8)	36.76
		SO <sub>2</sub>	(8)	75.14
OL3-BOIL1	Steam Boiler 1	NO <sub>x</sub>	6.47	(8)
		NO <sub>x</sub> (startup & shutdown)	43.10	(8)
		CO	15.95	(8)
		VOC	3.70	(8)
		PM	1.08	(8)
		PM <sub>10</sub>	1.08	(8)
		PM <sub>2.5</sub>	1.08	(8)
		NH <sub>3</sub>	3.15	(8)
		SO <sub>2</sub>	4.29	(8)
OL3-BOIL2	Steam Boiler 2	NO <sub>x</sub>	6.47	(8)
		NO <sub>x</sub> (startup & shutdown)	43.10	(8)
		CO	15.95	(8)
		VOC	3.70	(8)
		PM	1.08	(8)
		PM <sub>10</sub>	1.08	(8)
		PM <sub>2.5</sub>	1.08	(8)
		NH <sub>3</sub>	3.15	(8)
		SO <sub>2</sub>	4.29	(8)
OL3-BOIL3	Steam Boiler 3	NO <sub>x</sub>	6.47	(8)
		NO <sub>x</sub> (startup & shutdown)	43.10	(8)
		CO	15.95	(8)
		VOC	3.70	(8)
		PM	1.08	(8)
		PM <sub>10</sub>	1.08	(8)
		PM <sub>2.5</sub>	1.08	(8)

Emission Sources - Maximum Allowable Emission Rates

		NH <sub>3</sub>	3.15	(8)
		SO <sub>2</sub>	4.29	(8)
OL3-BOIL4	Steam Boiler 4	NO <sub>x</sub>	6.47	(8)
		NO <sub>x</sub> (startup & shutdown)	43.10	(8)
		CO	15.95	(8)
		VOC	3.70	(8)
		PM	1.08	(8)
		PM <sub>10</sub>	1.08	(8)
		PM <sub>2.5</sub>	1.08	(8)
		NH <sub>3</sub>	3.15	(8)
		SO <sub>2</sub>	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 <sub>10</sub>	0.29	0.10
		PM <sub>2.5</sub>	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
		PM <sub>10</sub>	1.76	7.72
		PM <sub>2.5</sub>	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 <sub>10</sub>	1.15	5.04
		PM <sub>2.5</sub>	0.01	0.03
OL3-FUG	Olefins 3 Fugitives	VOC	124.14	543.75
		Cl <sub>2</sub>	<0.01	0.02
		NH <sub>3</sub>	0.24	1.04
OL3-FLRA, OL3-FLRB, OL3-FLRC	Olefins 3 Elevated Flare (1st, 2nd and 3rd Stage tips)	VOC	34.08	50.75
		NO <sub>x</sub>	79.45	140.99

Emission Sources - Maximum Allowable Emission Rates

		CO	185.43	303.32
		SO <sub>2</sub>	<0.01	<0.01
All VCU EPNs (OL3-VCU1 & OL3-VCU2)	Olefins 3 VCU 1 & 2 Annual CAP	VOC	(9)	1.82
		NO <sub>x</sub>	(9)	12.76
		CO	(9)	32.56
		PM	(9)	0.44
		PM <sub>10</sub>	(9)	0.44
		PM <sub>2.5</sub>	(9)	0.44
		SO <sub>2</sub>	(9)	0.05
OL3-VCU1	Olefins 3 VCU 1	VOC	0.97	(9)
		NO <sub>x</sub>	3.80	(9)
		CO	10.98	(9)
		PM	0.10	(9)
		PM <sub>10</sub>	0.10	(9)
		PM <sub>2.5</sub>	0.10	(9)
		SO <sub>2</sub>	0.01	(9)
OL3-VCU2	Olefins 3 VCU 2	VOC	0.97	(9)
		NO <sub>x</sub>	3.80	(9)
		CO	10.98	(9)
		PM	0.10	(9)
		PM <sub>10</sub>	0.10	(9)
		PM <sub>2.5</sub>	0.10	(9)
		SO <sub>2</sub>	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 <sub>x</sub>	11.69	0.58
		CO	6.33	0.32
		VOC	11.69	0.58
		PM	0.37	0.02
		PM <sub>10</sub>	0.37	0.02
		PM <sub>2.5</sub>	0.37	0.02



Emission Sources - Maximum Allowable Emission Rates

PDH-RXNHTR	PDH Reactor Charge Heater	SO <sub>2</sub>	0.01	<0.01
		NO <sub>x</sub>	4.50	13.14
		NO <sub>x</sub> (startup & shutdown)	20.25	
		CO	12.67	54.24
		VOC	2.57	11.28
		PM	1.55	6.79
		PM <sub>10</sub>	1.55	6.79
		PM <sub>2.5</sub>	1.55	6.79
		NH <sub>3</sub>	2.01	5.86
		SO <sub>2</sub>	2.99	13.08
PDH-WHBLR	PDH Waste Heat Boiler (and Air Heater)	NO <sub>x</sub>	30.59	74.45
		NO <sub>x</sub> (startup & shutdown)	76.49	
		CO	55.63	148.89
		VOC	13.25	58.02
		PM	3.15	13.79
		PM <sub>10</sub>	3.15	13.79
		PM <sub>2.5</sub>	3.15	13.79
		NH <sub>3</sub>	7.18	20.96
		SO <sub>2</sub>	2.00	8.76
PDH-FUG	PDH Unit Fugitives (5)	VOC	17.59	77.06
		Cl <sub>2</sub>	<0.01	0.02
		NH <sub>3</sub>	0.05	0.21
PDH-GEN	PDH Unit Diesel Emergency Generator Engine	NO <sub>x</sub>	11.64	0.58
		CO	6.31	0.32
		VOC	11.64	0.58
		PM	0.36	0.02
		PM <sub>10</sub>	0.36	0.02
		PM <sub>2.5</sub>	0.36	0.02
		SO <sub>2</sub>	0.01	<0.01
OL3-ACID	Sulfuric Acid Tank	H <sub>2</sub> SO <sub>4</sub>	1.27	0.03
OL3-PLO	PGC Lube Oil Reservoir	VOC	0.91	<0.01

Emission Sources - Maximum Allowable Emission Rates

OL3-PRLO	PRC Lube Oil Reservoir	VOC	0.37	<0.01
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 <sub>2</sub> SO <sub>4</sub>	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 <sub>2</sub> SO <sub>4</sub>	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
OL3-FLRA, OL3-FLRB, OL3-TEMP, PDH-TEMP	MSS Degassing to Flare or Temporary Control Device	VOC – MSS	5057.15	102.27
		NO <sub>x</sub> – MSS	1615.32	19.95
		CO – MSS	8321.3	102.78

Emission Sources - Maximum Allowable Emission Rates

- (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<sub>x</sub> - total oxides of nitrogen
- SO<sub>2</sub> - sulfur dioxide
- PM - total particulate matter, suspended in the atmosphere, including PM<sub>10</sub> and PM<sub>2.5</sub>, as represented
- PM<sub>10</sub> - total particulate matter equal to or less than 10 microns in diameter, including PM<sub>2.5</sub>, as represented
- PM<sub>2.5</sub> - particulate matter equal to or less than 2.5 microns in diameter
- CO - carbon monoxide
- H<sub>2</sub>SO<sub>4</sub> - sulfuric acid mist
- Cl<sub>2</sub> - chlorine
- NH<sub>3</sub> - 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).

Date: \_\_\_\_\_ TBD \_\_\_\_\_