

# Emission Sources - Maximum Allowable Emission Rates

Permit Number 2356

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)
Incoming Material Handling/Treatment				
CSTS66	Bunker Convey	PM	0.046	0.20
		PM <sub>10</sub>	0.046	0.20
		PM <sub>2.5</sub>	0.009	0.04
CRH22	Incoming Material Crushing Conveyor	PM	0.129	0.563
		PM <sub>10</sub>	0.129	0.563
		PM <sub>2.5</sub>	0.026	0.113
PST23	Storage Hopper Baghouse	PM	0.021	0.094
		PM <sub>10</sub>	0.021	0.094
		PM <sub>2.5</sub>	0.004	0.019
PST24	Blender Conveyor Baghouse	PM	0.021	0.094
		PM <sub>10</sub>	0.021	0.094
		PM <sub>2.5</sub>	0.004	0.019
PMTH60	PM Stack Conveyor	PM	0.086	0.375
		PM <sub>10</sub>	0.086	0.375
		PM <sub>2.5</sub>	0.017	0.075
PMSH61	PM Stack Conveyor	PM	0.034	0.150
		PM <sub>10</sub>	0.034	0.150
		PM <sub>2.5</sub>	0.007	0.030
BBV26	Blender Fill Baghouse	PM	0.004	0.019

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		PM <sub>10</sub>	0.004	0.019
		PM <sub>2.5</sub>	0.001	0.004
SFS38	FM Stack	PM	0.069	0.30
		PM <sub>10</sub>	0.069	0.30
		PM <sub>2.5</sub>	0.014	0.06
PSE73	Stack No. 1 Conveyor	PM	0.069	0.30
		PM <sub>10</sub>	0.069	0.30
		PM <sub>2.5</sub>	0.014	0.06
PMFH77	PM Stack Conveyor	PM	0.021	0.094
		PM <sub>10</sub>	0.021	0.094
		PM <sub>2.5</sub>	0.004	0.019
MM1-29	PS1 Mix Baghouse	PM	0.004	0.019
		PM <sub>10</sub>	0.004	0.019
		PM <sub>2.5</sub>	0.001	0.004
PS1TH30	PS1 Conveyor Baghouse	PM	0.021	0.094
		PM <sub>10</sub>	0.021	0.094
		PM <sub>2.5</sub>	0.004	0.019
RM1-31	PS1 Sizer Baghouse	PM	0.004	0.019
		PM <sub>10</sub>	0.004	0.019
		PM <sub>2.5</sub>	0.001	0.004
MM2BV33	PS2 Mixer Baghouse	PM	0.004	0.019
		PM <sub>10</sub>	0.004	0.019
		PM <sub>2.5</sub>	0.001	0.004
RM2-34	PS2 Sizer Baghouse	PM	0.004	0.019
		PM <sub>10</sub>	0.004	0.019

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		PM <sub>2.5</sub>	0.001	0.004
S5SHA72	PS5 Conveyor	PM	0.021	0.094
		PM <sub>10</sub>	0.021	0.094
		PM <sub>2.5</sub>	0.004	0.019
S5SHB78	PS5 Conveyor	PM	0.021	0.094
		PM <sub>10</sub>	0.021	0.094
		PM <sub>2.5</sub>	0.004	0.019
S5SHC101	PS5 Conveyor	PM	0.021	0.094
		PM <sub>10</sub>	0.021	0.094
		PM <sub>2.5</sub>	0.004	0.019
S5SHD102	PS5 Conveyor	PM	0.021	0.094
		PM <sub>10</sub>	0.021	0.094
		PM <sub>2.5</sub>	0.004	0.019
S5SHE103	PS5 Conveyor	PM	0.021	0.094
		PM <sub>10</sub>	0.021	0.094
		PM <sub>2.5</sub>	0.004	0.019
S5SHF104	PS5 Conveyor	PM	0.021	0.094
		PM <sub>10</sub>	0.021	0.094
		PM <sub>2.5</sub>	0.004	0.019
S5SHG105	PS5 Conveyor	PM	0.021	0.094
		PM <sub>10</sub>	0.021	0.094
		PM <sub>2.5</sub>	0.004	0.019
S5SHH106	PS5 Conveyor	PM	0.021	0.094
		PM <sub>10</sub>	0.021	0.094
		PM <sub>2.5</sub>	0.004	0.019

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S5SHG107	PS5 Conveyor	PM	0.021	0.094
		PM <sub>10</sub>	0.021	0.094
		PM <sub>2.5</sub>	0.004	0.019
S5SHG108	PS5 Conveyor	PM	0.021	0.094
		PM <sub>10</sub>	0.021	0.094
		PM <sub>2.5</sub>	0.004	0.019
S5TH75	PS5 Conveyor	PM	0.029	0.125
		PM <sub>10</sub>	0.029	0.125
		PM <sub>2.5</sub>	0.006	0.025
S5RH76	PS5 Conveyor	PM	0.018	0.079
		PM <sub>10</sub>	0.018	0.079
		PM <sub>2.5</sub>	0.004	0.016
CBFA64	Bunker Fugitives (5)	PM	0.031	0.001
		PM <sub>10</sub>	0.031	0.001
		PM <sub>2.5</sub>	0.006	0.0002
MSP79	Concrete Storage Pad (5)	PM	-	0.163
PS8TH122	PS8T Conveyor	PM	0.137	0.300
		PM <sub>10</sub>	0.137	0.300
		PM <sub>2.5</sub>	0.027	0.060
MM8-123	PS8T Conveyor	PM	0.009	0.019
		PM <sub>10</sub>	0.009	0.019
		PM <sub>2.5</sub>	0.002	0.004
PS8TH124	PS8T Conveyor	PM	0.043	0.094
		PM <sub>10</sub>	0.043	0.094
		PM <sub>2.5</sub>	0.009	0.019

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RM8-125	PS8T Conveyor	PM	0.009	0.019
		PM <sub>10</sub>	0.009	0.019
		PM <sub>2.5</sub>	0.002	0.004
PS8TH126	PS8T Conveyor	PM	0.043	0.094
		PM <sub>10</sub>	0.043	0.094
		PM <sub>2.5</sub>	0.009	0.019
MM9-127	PS9T Conveyor	PM	0.043	0.094
		PM <sub>10</sub>	0.043	0.094
		PM <sub>2.5</sub>	0.009	0.019
PS9TH128	PS9T Conveyor	PM	0.137	0.300
		PM <sub>10</sub>	0.137	0.300
		PM <sub>2.5</sub>	0.027	0.060
Pilot Plant				
SFH44	Sizer Baghouse	PM	0.031	0.135
		PM <sub>10</sub>	0.031	0.135
		PM <sub>2.5</sub>	0.006	0.027
PPPP48	Bulk Fill Baghouse	PM	0.002	0.002
		PM <sub>10</sub>	0.002	0.002
		PM <sub>2.5</sub>	0.0004	0.0004
ACM2-83	Sizer Baghouse	PM	0.060	0.06
		PM <sub>10</sub>	0.060	0.06
		PM <sub>2.5</sub>	0.012	0.01
PPBGS84	Conveyor Discharge	PM	0.092	0.207
		PM <sub>10</sub>	0.092	0.207
		PM <sub>2.5</sub>	0.018	0.04

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MTS39	Conveyor Baghouse	PM	0.021	0.043
		PM <sub>10</sub>	0.021	0.043
		PM <sub>2.5</sub>	0.004	0.0086
ACMD46	Sizer Baghouse	PM	0.06	0.06
		PM <sub>10</sub>	0.060	0.06
		PM <sub>2.5</sub>	0.012	0.012
TPU10	R&D Preconditioner 1 Oxidizer	NO <sub>x</sub>	0.445	0.411
		CO	0.011	0.029
		VOC	0.001	0.003
		PM	0.034	0.122
		PM <sub>10</sub>	0.034	0.122
		PM <sub>2.5</sub>	0.0068	0.024
		SO <sub>2</sub>	0.008	0.017
TPU80	R&D Preconditioner Oxidizer	NO <sub>x</sub>	0.787	0.713
		CO	0.019	0.045
		VOC	0.001	0.004
		PM	0.059	0.215
		PM <sub>10</sub>	0.059	0.215
		PM <sub>2.5</sub>	0.012	0.043
		SO <sub>2</sub>	0.014	0.03
TPUBS81	R&D Preconditioner Burner	NO <sub>x</sub>	0.011	0.049
		CO	0.005	0.021
		VOC	0.0007	0.003
		PM	0.0009	0.004
		PM <sub>10</sub>	0.0009	0.004

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		PM <sub>2.5</sub>	0.0002	0.0008
		SO <sub>2</sub>	0.0001	0.0003
Graphite Production				
S1DC36	S1 Baghouse	PM	0.763	3.34
		PM <sub>10</sub>	0.763	3.34
		PM <sub>2.5</sub>	0.15	0.67
S1MT51	Storage Hopper Baghouse	PM	0.068	0.297
		PM <sub>10</sub>	0.068	0.297
		PM <sub>2.5</sub>	0.014	0.059
BFM1-17	Bake Furnace M-1 Oxidizer	NO <sub>x</sub>	1.0	2.2
		CO	1.4	3.1
		VOC	0.4	0.88
		PM	0.02	0.04
		PM <sub>10</sub>	0.02	0.04
		PM <sub>2.5</sub>	0.004	0.009
		SO <sub>2</sub>	0.76	1.8
		H <sub>2</sub> S	0.005	0.011
		COS	0.22	0.48
BFM2-18	Bake Furnace M-2 Oxidizer	NO <sub>x</sub>	1.0	2.2
		CO	1.4	3.1
		VOC	0.4	0.88
		PM	0.02	0.04
		PM <sub>10</sub>	0.02	0.04
		PM <sub>2.5</sub>	0.004	0.009
		SO <sub>2</sub>	0.76	1.8

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		H <sub>2</sub> S	0.005	0.011
		COS	0.22	0.48
BFM3-19	Bake Furnace M-3 Oxidizer	NO <sub>x</sub>	1.0	2.2
		CO	1.4	3.1
		VOC	0.4	0.88
		PM	0.02	0.04
		PM <sub>10</sub>	0.02	0.04
		PM <sub>2.5</sub>	0.004	0.009
		SO <sub>2</sub>	0.76	1.8
		H <sub>2</sub> S	0.005	0.011
		COS	0.22	0.48
BFM4-20	Bake Furnace M-4 Oxidizer	NO <sub>x</sub>	1.3	2.8
		CO	1.9	4.2
		VOC	0.5	1.1
		PM	0.03	0.05
		PM <sub>10</sub>	0.03	0.05
		PM <sub>2.5</sub>	0.005	0.010
		SO <sub>2</sub>	0.78	1.88
		H <sub>2</sub> S	0.007	0.015
		COS	0.29	0.635
BFS1-21	Bake Furnace S-1 Oxidizer	NO <sub>x</sub>	0.339	0.584
		CO	0.37	0.63
		VOC	0.017	0.03
		PM	0.09	0.17
		PM <sub>10</sub>	0.09	0.17
		PM <sub>2.5</sub>	0.018	0.034



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		SO <sub>2</sub>	0.31	0.63
		H <sub>2</sub> S	0.0084	0.011
		COS	0.001	0.004
BFS2-90	Bake Furnace S-2 Oxidizer	NO <sub>x</sub>	0.54	0.94
		CO	0.59	1.02
		VOC	0.027	0.04
		PM	0.14	0.27
		PM <sub>10</sub>	0.14	0.27
		PM <sub>2.5</sub>	0.028	0.054
		SO <sub>2</sub>	0.48	1.01
		H <sub>2</sub> S	0.013	0.018
		COS	0.001	0.0044
BFS3-91	Bake Furnace S-3 Oxidizer	NO <sub>x</sub>	0.54	0.94
		CO	0.59	1.02
		VOC	0.027	0.04
		PM	0.14	0.27
		PM <sub>10</sub>	0.14	0.27
		PM <sub>2.5</sub>	0.028	0.054
		SO <sub>2</sub>	0.48	1.01
		H <sub>2</sub> S	0.013	0.018
		COS	0.001	0.0044
BFS4-87	Bake Furnace S-4 Oxidizer	NO <sub>x</sub>	0.54	0.94
		CO	0.59	1.02
		VOC	0.027	0.04
		PM	0.14	0.27
		PM <sub>10</sub>	0.14	0.27

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		PM <sub>2.5</sub>	0.028	0.054
		SO <sub>2</sub>	0.48	1.01
		H <sub>2</sub> S	0.013	0.018
		COS	0.001	0.0044
BFOX3-74	Bake Furnace S-5 Oxidizer	NO <sub>x</sub>	0.54	0.94
		CO	0.59	1.02
		VOC	0.027	0.04
		PM	0.14	0.27
		PM <sub>10</sub>	0.14	0.27
		PM <sub>2.5</sub>	0.028	0.054
		SO <sub>2</sub>	0.48	1.01
		H <sub>2</sub> S	0.013	0.018
		COS	0.001	0.0044
BFS6-88	Bake Furnace S-6 Oxidizer	NO <sub>x</sub>	0.54	0.94
		CO	0.59	1.02
		VOC	0.027	0.04
		PM	0.14	0.27
		PM <sub>10</sub>	0.14	0.27
		PM <sub>2.5</sub>	0.028	0.054
		SO <sub>2</sub>	0.48	1.01
		H <sub>2</sub> S	0.013	0.018
		COS	0.001	0.0044
BFOX2-63	Bake Furnace S-7 Oxidizer	NO <sub>x</sub>	0.54	0.94
		CO	0.59	1.02
		VOC	0.027	0.04
		PM	0.14	0.27

Emission Sources - Maximum Allowable Emission Rates

		PM <sub>10</sub>	0.14	0.27
		PM <sub>2.5</sub>	0.028	0.054
		SO <sub>2</sub>	0.48	1.01
		H <sub>2</sub> S	0.013	0.018
		COS	0.001	0.0044
BFS8-89	Bake Furnace S-8 Oxidizer	NO <sub>x</sub>	0.54	0.94
		CO	0.59	1.02
		VOC	0.027	0.04
		PM	0.14	0.27
		PM <sub>10</sub>	0.14	0.27
		PM <sub>2.5</sub>	0.028	0.054
		SO <sub>2</sub>	0.48	1.01
		H <sub>2</sub> S	0.013	0.018
		COS	0.001	0.0044
BFS9-92	Bake Furnace S-9 Oxidizer	NO <sub>x</sub>	0.54	0.94
		CO	0.59	1.02
		VOC	0.027	0.04
		PM	0.14	0.27
		PM <sub>10</sub>	0.14	0.27
		PM <sub>2.5</sub>	0.028	0.054
		SO <sub>2</sub>	0.48	1.01
		H <sub>2</sub> S	0.013	0.018
		COS	0.001	0.0044
BFS10-93	Bake Furnace S-10 Oxidizer	NO <sub>x</sub>	0.54	0.94
		CO	0.59	1.02
		VOC	0.027	0.04

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		PM	0.14	0.27
		PM <sub>10</sub>	0.14	0.27
		PM <sub>2.5</sub>	0.028	0.054
		SO <sub>2</sub>	0.48	1.01
		H <sub>2</sub> S	0.013	0.018
		COS	0.001	0.0044
BFS11-94	Bake Furnace S-11 Oxidizer	NO <sub>x</sub>	0.54	0.94
		CO	0.59	1.02
		VOC	0.027	0.04
		PM	0.14	0.27
		PM <sub>10</sub>	0.14	0.27
		PM <sub>2.5</sub>	0.028	0.054
		SO <sub>2</sub>	0.48	1.01
		H <sub>2</sub> S	0.013	0.018
		COS	0.001	0.0044
BFS12-95	Bake Furnace S-12 Oxidizer	NO <sub>x</sub>	0.54	0.94
		CO	0.59	1.02
		VOC	0.027	0.04
		PM	0.14	0.27
		PM <sub>10</sub>	0.14	0.27
		PM <sub>2.5</sub>	0.028	0.054
		SO <sub>2</sub>	0.48	1.01
		H <sub>2</sub> S	0.013	0.018
		COS	0.001	0.0044
BFS13-96	Bake Furnace S-13 Oxidizer	NO <sub>x</sub>	0.54	0.94
		CO	0.59	1.02
		VOC	0.027	0.04

Emission Sources - Maximum Allowable Emission Rates

		PM	0.14	0.27
		PM <sub>10</sub>	0.14	0.27
		PM <sub>2.5</sub>	0.028	0.054
		SO <sub>2</sub>	0.48	1.01
		H <sub>2</sub> S	0.013	0.018
		COS	0.001	0.0044
BGDC4	"A" Graphitizer Baghouse	PM	0.257	1.126
		PM <sub>10</sub>	0.257	1.126
		PM <sub>2.5</sub>	0.051	0.225
BGTVS5	"A" Graphitizer Hopper Baghouse	PM	0.017	0.001
		PM <sub>10</sub>	0.017	0.001
		PM <sub>2.5</sub>	0.0034	0.0002
GSS3	"A" Graphitizer Scrubber	H <sub>2</sub> S	0.00025	0.0005
HGTDC2	"B" Graphitizer Baghouse	PM	0.257	0.514
		PM <sub>10</sub>	0.257	0.514
		PM <sub>2.5</sub>	0.051	0.103
HGIS6	"B" Graphitizer Oxidizer	NO <sub>x</sub>	0.011	0.049
		CO	0.0048	0.021
		VOC	0.0007	0.0029
		PM	3.8	9.8
		PM <sub>10</sub>	3.8	9.8
		PM <sub>2.5</sub>	0.76	1.96
		SO <sub>2</sub>	5.1	12.5
		H <sub>2</sub> S	0.022	0.04
		FeSO <sub>4</sub>	0.147	0.418

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CGRAPH59	“C” Graphitizer Oxidizer	NO <sub>x</sub>	0.016	0.07
		CO	0.007	0.03
		VOC	0.001	0.004
		PM	5.0	14.6
		PM <sub>10</sub>	5.0	14.6
		PM <sub>2.5</sub>	1.0	2.92
		SO <sub>2</sub>	6.7	18.8
		H <sub>2</sub> S	0.029	0.060
		FeSO <sub>4</sub>	0.735	2.575
DGRAPH85	“D” Graphitizer Scrubber	NO <sub>x</sub>	0.016	0.07
		CO	0.007	0.03
		VOC	0.001	0.004
		PM	0.005	0.023
		PM <sub>10</sub>	0.005	0.023
		PM <sub>2.5</sub>	0.001	0.005
		SO <sub>2</sub>	0.25	1.00
		H <sub>2</sub> S	0.011	0.029
		FeSO <sub>4</sub>	0.096	0.272
DGDC86	“D” Graphitizer Baghouse	PM	0.857	3.75
		PM <sub>10</sub>	0.857	3.75
		PM <sub>2.5</sub>	0.171	0.75
Post-processing Operations				
SPC12	SP Processes Scrubber	Cl <sub>2</sub>	0.14	0.61
SPC130	SP2 Processes Scrubber	Cl <sub>2</sub>	0.140	0.17
BGVH53	BG Hood	VOC	0.18	0.01

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VPE54	E2 and BG Vacuum Pump	VOC	2.67	0.62
BGDO56	BG Oven	VOC	0.5	1.0
HBF8	Harper Furnace Oxidizer	NO <sub>x</sub>	0.031	0.136
		CO	0.026	0.114
		VOC	0.002	0.0075
		PM	0.002	0.01
		PM <sub>10</sub>	0.002	0.01
		PM <sub>2.5</sub>	0.0004	0.002
		SO <sub>2</sub>	0.0002	0.001
		HCl	5.1	0.87
		P <sub>2</sub> O <sub>5</sub>	2.5	0.43
SF9	Stewart Furnace	NO <sub>x</sub>	0.03	0.13
		CO	0.025	0.11
		VOC	0.002	0.0072
		PM	0.002	0.01
		PM <sub>10</sub>	0.002	0.01
		PM <sub>2.5</sub>	0.0004	0.002
		SO <sub>2</sub>	0.0002	0.0008
KILNS82	SC Kilns	CO	0.65	2.50
		PM	0.08	0.31
		PM <sub>10</sub>	0.08	0.31
		PM <sub>2.5</sub>	0.016	0.06
DVCVC117	Ceramic Kilns	PM	0.19	0.32
		PM <sub>10</sub>	0.19	0.32
		PM <sub>2.5</sub>	0.038	0.064

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SIC99	SIC Process Scrubber	PM	0.024	0.090
		PM <sub>10</sub>	0.024	0.09
		PM <sub>2.5</sub>	0.005	0.018
		HCl	0.12	0.44
BGDO118	BG Oven	VOC	0.50	1.00
BGDO119	BG Oven	VOC	0.50	1.00
<b>General Dust Collection/Housekeeping</b>				
JSDC62	East Baghouse	PM	1.54	6.17
		PM <sub>10</sub>	1.54	6.17
		PM <sub>2.5</sub>	0.31	1.23
FESDC35	South Baghouse	PM	0.643	2.57
		PM <sub>10</sub>	0.643	2.57
		PM <sub>2.5</sub>	0.129	0.51
PPNDC43	PP North Baghouse	PM	0.21	0.939
		PM <sub>10</sub>	0.21	0.939
		PM <sub>2.5</sub>	0.042	0.188
PPWDC47	PP West Baghouse	PM	0.29	1.276
		PM <sub>10</sub>	0.29	1.276
		PM <sub>2.5</sub>	0.058	0.255
PPSDC45	PP South Baghouse	PM	0.257	1.126
		PM <sub>10</sub>	0.257	1.126
		PM <sub>2.5</sub>	0.051	0.225

- (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



Emission Sources - Maximum Allowable Emission Rates

- PM - total particulate matter, suspended in the atmosphere, including PM<sub>10</sub> and PM<sub>2.5</sub>
  - PM<sub>10</sub> - total particulate matter equal to or less than 10 microns in diameter, including PM<sub>2.5</sub>
  - PM<sub>2.5</sub> - particulate matter equal to or less than 2.5 microns in diameter
  - CO - carbon monoxide
  - H<sub>2</sub>S - hydrogen sulfide
  - COS - carbonyl sulfide
  - FeSO<sub>4</sub> - ferrous sulfate
  - P<sub>2</sub>O<sub>5</sub> - phosphorus pentoxide
  - HCl - hydrogen chloride
  - Cl<sub>2</sub> - chlorine
- (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.

Date: October 21, 2016