Emission Sources - Maximum Allowable Emission Rates

Permit Number 9402 and N022

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)
FCC-3A	Feed Hopper Bag Filter	PM	0.04	0.18
FCC-9A	Final Product Bag Filter	PM_{10}	0.58	2.55
FCC-10	2nd Molsieve Flash Dryer Bag Filter	VOC	0.08	0.28
		NO_x	2.07	7.39
		SO_2	0.01	0.03
		PM	0.60	2.24
		PM_{10}	0.60	2.24
		$PM_{2.5}$	0.60	2.24
		CO	1.21	4.33
FCC-11	Reslurry Tank Bag Filter	PM_{10}	0.04	0.17
FCC-11A	Calciner Vent Scrubber	NH_3	2.40	10.51
		PM	0.01	0.01
FCC-12	2nd Molsieve Calciner	VOC	0.03	0.12
		NO_x	0.69	3.01
		SO_2	0.01	0.01
		PM	0.04	0.16
		CO	0.40	1.76
FCC-14	Rare Earth Chloride Storage Tank	HCl	0.03	0.01
FCC-15	Ammonia Scrubber	NH_3	1.28	5.60

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FCC-16	Portaclay/Reslurry Vent Bag Filter	PM_{10}	0.02	0.11
FCC-17	Sulfuric Acid Tank	H_2SO_4	0.01	0.01
		SO_3	0.01	0.01
FCC-18	Strike Tanks Vent	PM_{10}	0.84	2.95
FCC-19	Kaolin Dosing Bag Hopper	PM	0.29	1.26
FCC-20	C Alumina Storage Silo Bag Filter	PM	0.16	0.53
		PM_{10}	0.16	0.53
		$PM_{2.5}$	0.16	0.53
FCC-21	Spray Dryer Bag Filter	VOC	1.05	4.22
		NO_x	13.51	54.50
		SO_2	0.11	0.46
		PM	7.91	31.54
		PM_{10}	7.91	31.54
		$PM_{2.5}$	7.91	31.54
		CO	15.98	64.43
		NH_3	3.00	13.14
		HNO_3	7.50	32.85
	Final Product Calciner II (12)	NO_x (NA)	2.31	10.12
		PM	0.26	1.14
		PM_{10}	0.26	1.14
		$PM_{2.5}$	0.26	1.14
		CO	2.87	12.56
		VOC	0.19	0.82
		SO_2	0.02	0.09
FCC-23	Separator Fines Bag Filter	PM	0.48	1.90

Emission Sources - Maximum Allowable Emission Rates

		PM_{10}	0.48	1.90
		$PM_{2.5}$	0.48	1.90
FCC-27	FCC Boiler	VOC	0.53	2.33
		NO_x	3.57	15.61
		SO_2	0.06	0.25
		PM	0.73	3.22
		PM_{10}	0.73	3.22
		$PM_{2.5}$	0.73	3.22
		CO	8.11	35.54
FCC-34	Ammonia Absorber	NH_3	0.68	2.98
FCC-40	Kaolin Unloading Bag Filter	PM_{10}	0.15	0.32
FCC-41	Sulfuric Acid Storage Tank	H_2SO_4	0.01	0.01
		SO_3	0.01	0.01
FCC-42	Filter Hoods Vent (9)	NH_3	0.20	0.87
FCC-43	Ammonium Chloride Tank (7)	NH_3	0.01	0.01
FCC-44	Ammonia Storage Tank/Scrubber	NH_3	0.03	0.01
FCC-46	Ammonia Scrubber	NH_3 (8)	0.31	1.35
		HCl	0.01	0.01
FCC-51	Crude Product Bag Filter	PM_{10}	0.07	0.28
FCC-52	Crude Product Bag Filter	PM_{10}	0.07	0.28
		$PM_{2.5}$	0.07	0.28
FCC-53	Crude Product Bag Filter	PM_{10}	0.01	0.05
FCC-54	Crude Product Bag Filter	PM_{10}	0.03	0.09
FCC-55	Ventilation Air Bag Filter	PM_{10}	0.01	0.04

Emission Sources - Maximum Allowable Emission Rates

FCC-57	Product Transport Bag Filter	PM_{10}	0.04	0.18
FCC-58	Product Dist. Conveyor Bag Filter	PM_{10}	0.42	1.82
FCC-60	DBS Filter Vent Hood (7)	NH_3	0.35	0.01
FCC-61/FCC-76	Product Air Slide Bag Filter (10)	PM	0.17	0.76
		PM_{10}	0.17	0.76
		$PM_{2.5}$	0.17	0.76
FCC-62	Product Air Slide Bag Filter	PM_{10}	0.09	0.38
FCC-63	Weigh Scale Bag Filter	PM_{10}	0.26	1.16
FCC-64	Blended Product Bag Filter	PM_{10}	0.24	1.07
FCC-65	Bulk Loading Station Bag Filter	PM_{10}	0.24	1.07
FCC-66	Portable Bag Filter	PM_{10}	0.09	0.19
		Ni	0.01	0.01
		CO	0.01	0.01
FCC-67	Diesel Engine	NO_x	2.85	0.43
		CO	0.44	0.07
		PM	0.32	0.05
		PM_{10}	0.32	0.05
		$PM_{2.5}$	0.32	0.05
		SO_2	0.14	0.02
		VOC	0.22	0.03
FCC-68	Kaolin Silo Bag Filter	PM	0.23	0.60
		PM_{10}	0.23	0.60
		$PM_{2.5}$	0.23	0.60

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FCC-69	C Alumina Dosing Bag Filter	PM	0.25	0.44
		PM_{10}	0.25	0.44
		$PM_{2.5}$	0.25	0.44
FCC-70	BOC Silo Bag Filter	PM	0.19	0.43
		PM_{10}	0.19	0.43
		$PM_{2.5}$	0.19	0.43
FCC-71	BOC Dosing Bag Filter	PM	0.20	0.44
		PM_{10}	0.20	0.44
		$PM_{2.5}$	0.20	0.44
FCC-72	Vacuum System 434-901 (6) (9)	NH_3	0.43	1.87
FCC-73	Vacuum System 431-910 (6) (9)	NH_3	0.01	0.01

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FCC-74	Final Product Calciner II (12)	NO_x (NA)	2.31	10.12
		PM	0.26	1.14
		PM_{10}	0.26	1.14
		$PM_{2.5}$	0.26	1.14
		CO	2.87	12.56
		VOC	0.19	0.82
		SO2	0.02	0.09
FCC-75	SCR System (Thermal Oxidizer/SCR)	N_2O	32.30	141.47
		NO_x (NA)	3.00	13.14
		PM	0.05	0.23
		PM_{10}	0.05	0.23
		$PM_{2.5}$	0.05	0.23
		SO_2	0.01	0.02
		NH_3	0.34	1.48
FCC-77	FC BOC Storage Silo Bag Filter	PM	0.19	0.41
		PM_{10}	0.19	0.41
		$PM_{2.5}$	0.19	0.41
FCC-79	Diesel Engine II (11)	NO_x	2.44	2.44
		CO	0.23	0.23
		VOC	0.06	0.06
		PM	0.16	0.16
		PM_{10}	0.16	0.16
		$PM_{2.5}$	0.16	0.16
		SO_2	0.30	0.30
FCC-80	Portable Bag Filter II	PM	0.09	0.19

Emission Sources - Maximum Allowable Emission Rates

		PM_{10}	0.09	0.19
		$PM_{2.5}$	0.09	0.19
FCC-81	Tote Bin Bag Filter	PM	0.02	0.09
		PM_{10}	0.02	0.09
		$PM_{2.5}$	0.02	0.09
FCC-FUG	Fugitives (5)	NH_3	0.25	1.12
		H_3PO_4	0.01	0.01
		HNO_3	0.11	0.48
FCC-82	Portable Bag Filter	PM	0.09	0.19
		PM_{10}	0.09	0.19
		$PM_{2.5}$	0.09	0.19
FCC-CAASCADE	Cascade Reactor Vent	NH_3	0.01	0.01
PERMITWIDE	Permit Wide	NO_x	--	81.00

(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) 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
SO_3 sulfur trioxide
CO carbon monoxide
NH_3 ammonia
HCl hydrogen chloride
H_2SO_4 sulfuric acid
Ni nickel
N_2O nitrous oxide
H_3PO_4 phosphoric acid
HNO_3 nitric acid
(NA) - Nonattainment Review

Emission Sources - Maximum Allowable Emission Rates

(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) Either Vacuum System 434-901 (EPN FCC-72) or Vacuum System 434-910 (EPN FCC-73) may be used alone to provide vacuum to all the equipment normally served by the two vacuum systems during periods of maintenance or alternate operations. The emissions from the vacuum system remaining in operation during such periods shall not exceed the sum of the maximum allowable emission rates for EPNs FCC-72 and FCC-73.
(7) These emission points are typically routed to the Ammonia Scrubber (EPN 46), except when the NH_3 scrubber is not in operation due to maintenance of the scrubber.
(8) Total emissions of ammonia plus ammonium hydroxide.
(9) These emission points are typically routed to the Ammonia Scrubber (EPN 46), but may discharge directly to atmosphere when the DBW section of the FCC Catalyst Unit is not operating and no NH_3-containing solutions are used in alumina preparation section.
(10) PM_{10} emissions will happen from either FCC-61 or FCC-76, but not both.
(11) Emissions are based on 4,160 hours per year operation.
(12) Final Product Calciner II may be routed through either EPN FCC-74 or EPN FCC-21.

Date: August 24, 2016