EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES

Permit Numbers 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. 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 * lb/hr	TPY**
FCC-3A	Feed Hopper Bag Filter	PM	0.04	0.18
FCC-5A	Final Product Calciner	VOC	0.09	0.38
		NO_x	1.87	8.18
		SO_2	0.01	0.04
		PM	0.12	0.52
		CO	1.31	5.73
FCC-8	1st Molsieve Flash Drier Bag Filter	VOC	0.05	0.23
		NO_x	1.39	6.08
		SO_2	0.01	0.03
		PM	0.66	2.87
		CO	0.81	3.56
FCC-9	1st 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-9A	Final Product Bag Filter	PM_{10}	0.58	2.55
FCC-10	2nd Molsieve Flash Dryer Bag Filter	VOC	0.05	0.23
		NO_x	1.39	6.08
		SO_2	0.01	0.03
		PM	0.66	2.87
		CO	0.81	3.56
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

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Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates * lb/hr	TPY**
FCC-12	2nd Molsieve Calciner	VOC	0.03	0.12
		NO_x	0.69	3.01
		SO_2	0.01	0.01
		PM_{10}	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
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_{10}	0.29	0.91
FCC-21	Spray Dryer Bag Filter	VOC	0.74	3.03
		NO_x	19.32	79.00
		SO_2	0.08	0.33
		PM_{10}	8.94	38.84
		CO	11.31	46.24
		NH_3	1.09	4.78
FCC-23	Separator Fines Bag Filter	PM	0.48	2.09
FCC-27	FCC Boiler	VOC	0.53	2.33
		NO_x	3.57	15.61
		SO_2	0.06	0.25
		PM_{10}	0.73	3.22
		CO	8.11	35.54
FCC-34	Ammonia Absorber	NH_3	0.68	2.98

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Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates * lb/hr	TPY**
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 (7)	NH_3	0.20	0.87
FCC-43	Ammonium Chloride Tank (5)	NH_3	0.01	0.01
FCC-44	Ammonia Storage Tank/Scrubber	NH_3	0.03	0.01
FCC-46	Ammonia Scrubber	NO_x	2.62	11.48
		CO	1.07	4.70
		NH_3 (6)	0.88	3.86
		PM_{10}	1.22	5.30
		HCl	0.01	0.01
		VOC	0.07	0.31
		SO_2	0.01	0.03
FCC-51	Crude Product Bag Filter	PM_{10}	0.07	0.28
FCC-52	Crude Product Bag Filter	PM_{10}	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
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 (5)	NH_3	0.35	0.01
FCC-61/ FCC-76	Product Air Slide Bag Filter (8)	PM_{10}	0.17	0.76

EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES

AIR CONTAMINANTS DATA

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates * lb/hr	TPY**
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	2.86	5.96
		CO	0.44	0.92
		PM_{10}	0.32	0.67
		SO_2	0.14	0.30
		VOC	0.22	0.46
FCC-68	Kaolin Silo Bag Filter	PM_{10}	0.26	0.58
FCC-69	C Alumina Dosing Bag Filter	PM_{10}	0.24	0.55
FCC-70	BOC Silo Bag Filter	PM_{10}	0.19	0.41
FCC-71	BOC Dosing Bag Filter	PM_{10}	0.21	0.44
FCC-72	Vacuum System 434-901 (4) (7)	NH_3	0.43	1.87
FCC-73	Vacuum System 431-910 (4) (7)	NH_3	0.01	0.01
FCC-74	Final Product Calciner II	NO_x	2.31	10.12
		PM_{10}	0.26	1.14
		CO	2.87	12.56

EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES

AIR CONTAMINANTS DATA

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates * lb/hr	TPY**
		VOC	0.19	0.82
		SO_2	0.02	0.09
FCC-75	SCR System	N_2O	32.30	141.47
	(Thermal oxidizer/SCR)	NO_x	3.00	13.14
		PM_{10}	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_{10}	0.19	0.41
FCC-78	FC BOC Dosing Hopper Bag Filter	PM_{10}	0.21	0.44
FCC-79	Diesel Engine II (9)	NO_x	2.05	4.27
		CO 0.19	0.40	
		VOC 0.05	0.11	
		PM_{10} 0.13	0.28	
		SO_2 0.25	0.52	
FCC-80	Portable Bag Filter II	PM_{10}	0.09	0.19
FCC-81	Tote Bin Bag Filter	PM_{10}	0.02	0.09
FCC-FUG	Fugitives (10)	NH_3	0.25	1.12
		H_3PO_4 0.01	0.01	
		HNO_3 0.11	0.48	

(1) Emission point identification - either specific equipment designation or emission point number (EPN) from a plot plan.

(2) Specific point source names. For fugitive sources use area name or fugitive source name.

(3) NO_x - total oxides of nitrogen
CO - carbon monoxide
NH_3 - ammonia
PM - particulate matter, suspended in the atmosphere, including PM_{10}

EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES

PM_{10} - particulate matter equal to or less than 10 microns in diameter. Where PM is not listed, it shall be assumed that no particulate matter greater than 10 microns is emitted.
SO_2 - sulfur dioxide
SO_3 - sulfur trioxide
Ni - nickel
VOC - volatile organic compounds as defined in Title 30 Texas Administrative Code § 101.1
N_2O - nitrous oxide
HCl - hydrochloric acid
H_2SO_4 - sulfuric acid
H_3PO_4 - phosphoric acid
HNO_3 - nitric acid

(4) 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.
(5) These emission points are typically routed to the Ammonia Scrubber (EPN 46), except when the ammonia scrubber is not in operation due to maintenance of the scrubber.
(6) Total emissions of ammonia plus ammonium hydroxide.
(7) 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 ammonia-containing solutions are used in alumina preparation section.
(8) PM_{10} emissions will happen from either FCC-61 or FCC-76, but not both.
(9) Emissions are based on 4,160 hours per year operation.
(10) Fugitive emissions are an estimate only.

* Emission rates are based on and the facilities are limited by the following maximum operating schedule:

_____ Hrs/day _____ Days/week _____ Weeks/year or 8,760 Hrs/year

** Compliance with annual emission limits is based on a rolling 12-month period.

Dated April 19, 2006