

## EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES

Permit Nos. 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-46	Ammonia Scrubber	NO <sub>x</sub>	2.62	11.5
		CO	0.21	0.9
		NH <sub>3</sub> (6)	0.88	3.86
		PM <sub>10</sub>	1.22	5.3
		HCl	<0.01	<0.01
FCC-50	Crude Unloading Bag Filter	PM <sub>10</sub>	<0.01	<0.01
FCC-51	Crude Product Bag Filter	PM <sub>10</sub>	0.07	0.28
FCC-52	Crude Product Bag Filter	PM <sub>10</sub>	0.07	0.28
FCC-53	Crude Product Bag Filter	PM <sub>10</sub>	0.01	0.05
FCC-54	Crude Product Bag Filter	PM <sub>10</sub>	0.03	0.09
FCC-55	Ventilation Air Bag Filter	PM <sub>10</sub>	0.01	0.04
FCC-57	Product Transport Bag Filter	PM <sub>10</sub>	0.04	0.15
FCC-58	Crude and Product Bag Filter	PM <sub>10</sub>	0.42	1.82
FCC-60	Vent Hood (5)	NH <sub>3</sub>	5.0	<0.01
FCC-61	Product Air Slide Bag Filter	PM <sub>10</sub>	0.09	0.38
FCC-62	Product Air Slide Bag Filter	PM <sub>10</sub>	0.09	0.38
FCC-63	Product Vacuum Bag Filter	PM <sub>10</sub>	0.26	1.16
FCC-64	Blending Silo Bag Filter	PM <sub>10</sub>	0.24	1.07
FCC-65	Bulk Loadout Bag Filter	PM <sub>10</sub>	0.24	1.07

# 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-66	Portable Bag Filter	PM <sub>10</sub>	0.09	0.19
		Ni	<0.001	
		CO	<0.001	
FCC-67	Diesel Engine	NO <sub>x</sub>	2.86	5.96
		CO	0.44	0.92
		PM <sub>10</sub>	0.32	0.67
		SO <sub>2</sub>	0.14	0.30
		VOC	0.22	0.46
FCC-3A	Feed Hopper Bag Filter	PM	0.04	0.18
FCC-5A	Calciner	VOC	0.46	2.02
		NO <sub>x</sub>	1.85	8.09
		SO <sub>2</sub>	0.01	0.04
		PM	0.08	0.34
		CO	0.54	2.36
FCC-8	Flash Dryer Bag Filter	VOC	0.05	0.22
		NO <sub>x</sub>	1.39	6.08
		SO <sub>2</sub>	0.01	0.03
		PM	1.0	4.4
		CO	0.19	0.85
FCC-9	Molsieve Calciner	VOC	0.03	0.11
		NO <sub>x</sub>	0.69	3.01
		SO <sub>2</sub>	<0.01	<0.01
		PM	0.02	0.11
		CO	0.10	0.42
FCC-9A	Final Product Bag Filter	PM	0.58	2.55
FCC-10	Flash Dryer Bag Filter	VOC	0.05	0.22
		NO <sub>x</sub>	1.39	6.08
		SO <sub>2</sub>	<0.01	0.03
		PM	1.0	4.4
		CO	0.19	0.85

## 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-11	Reslurry Tank Bag Filter	PM	0.3	1.2
FCC-11A	Calciner Scrubber	NH <sub>3</sub>	2.4	10.5
		PM	<0.10	<0.10
		NO <sub>x</sub>	5.48	4.93
		N <sub>2</sub> O	40.00	24.56
FCC-12	Molsieve Calciner	VOC	0.03	0.11
		NO <sub>x</sub>	0.69	3.01
		SO <sub>2</sub>	<0.01	0.01
		PM	0.02	0.11
		CO	0.10	0.42
FCC-14	HCl Scrubber	HCl	<0.10	<0.10
FCC-15	Ammonia Scrubber	NH <sub>3</sub>	1.96	8.58
FCC-16	Portaclay/Reslurry Bag Filter	PM	0.05	0.24
FCC-17	Sulfuric Acid Storage Tank	H <sub>2</sub> SO <sub>4</sub>	<0.01	<0.01
		SO <sub>3</sub>	<0.01	<0.01
FCC-18	Strike Tanks Vent	PM <sub>10</sub>	0.84	2.95
FCC-19	Kaolin Dosing Bag Hopper	PM	0.29	1.26
FCC-20	C Alumina Silo Bag Filter	PM <sub>10</sub>	0.29	0.91
FCC-21	Spray Dryer Bag Filter (Five)	VOC	0.78	3.19
		NO <sub>x</sub>	19.32	79.00
		SO <sub>2</sub>	0.08	0.33
		PM <sub>10</sub>	8.59	37.41
		CO	5.39	22.02
		NH <sub>3</sub>	1.09	4.78
21.1-21.3	Crude Product Bag Filter	PM	0.1	0.6

# 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-23	Separator Fines Bag Filter	PM	0.48	2.09
FCC-27	Steam Boiler	VOC	0.2	0.8
		NO <sub>x</sub>	7.3	32.2
		SO <sub>2</sub>	<0.1	0.2
		PM	0.3	1.3
		CO	2.1	9.4
FCC-34	Ammonia Absorber	NH <sub>3</sub>	<0.01	0.03
FCC-40	Kaolin Unloading Bag Filter	PM <sub>10</sub>	0.15	0.32
FCC-41	Sulfuric Acid Storage Tank	H <sub>2</sub> SO <sub>4</sub>	<0.01	<0.01
		SO <sub>3</sub>	<0.01	<0.01
FCC-42	Filter Hoods Vent (7)	NH <sub>3</sub>	0.20	<0.87
FCC-43	Ammonium Chloride Tank (5)	NH <sub>3</sub>	<0.01	<0.01
FCC-47	Phosphoric Acid Tank	H <sub>3</sub> PO <sub>4</sub>	<0.001	<0.001
FCC-68	Kaolin Silo Bag Filter	PM <sub>10</sub>	0.26	0.58
FCC-69	C Alumina Dosing Bag Filter	PM <sub>10</sub>	0.24	0.55
FCC-70	BOC Silo Bag Filter	PM <sub>10</sub>	0.19	0.41
FCC-71	BOC Dosing Bag Filter	PM <sub>10</sub>	0.21	0.44
FCC-72	Vacuum System 434-901 (4) (7)	NH <sub>3</sub>	0.43	1.87
FCC-73	Vacuum System 431-910 (4) (7)	NH <sub>3</sub>	<0.01	<0.01
FCC-75	SCR Unit	N <sub>2</sub> O	32.3	141.47
		NO <sub>x</sub>	3.00	13.14

## 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-74	Final Product Calciner	PM <sub>10</sub>	0.01	0.05
		SO <sub>2</sub>	0.01	0.01
		NH <sub>3</sub>	0.34	1.48
		NO <sub>x</sub>	2.31	10.12
		PM <sub>10</sub>	0.26	1.14
		CO	2.87	12.56
		VOC	0.19	0.82
		SO <sub>2</sub>	0.02	0.09
FCC-FUG	Fugitives	NH <sub>3</sub>	0.01	0.01

- (1) Emission point identification - either specific equipment designation or emission point number from a plot plan.
- (2) Specific point source names. For fugitive sources use area name or fugitive source name.
- (3) NO<sub>x</sub> - total oxides of nitrogen  
CO - carbon monoxide  
NH<sub>3</sub> - ammonia  
PM - particulate matter, suspended in the atmosphere, including PM<sub>10</sub>  
PM<sub>10</sub> - 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<sub>2</sub> - sulfur dioxide  
Ni - nickel  
VOC - volatile organic compounds as defined in 30 Texas Administrative Code Section 101.1  
N<sub>2</sub>O - nitrous oxide  
HCl - hydrochloric acid  
H<sub>2</sub>SO<sub>4</sub> - sulfuric acid  
SO<sub>3</sub> - sulfur trioxide  
H<sub>3</sub>PO<sub>4</sub> - phosphoric 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.
- (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.

Permit Nos. 9402 and N022  
Page 6

#### EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES

\* 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

Dated July 11, 2001