

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

Identification

User Identification:	Sulfuric Acid Storage Tank #3
City:	Montrose
State:	Colorado
Company:	Energy Fuels
Type of Tank:	Vertical Fixed Roof Tank
Description:	Sulfuric Acid Storage Tank #3

Tank Dimensions

Shell Height (ft):	28.00
Diameter (ft):	28.00
Liquid Height (ft) :	28.00
Avg. Liquid Height (ft):	14.00
Volume (gallons):	128,972.52
Turnovers:	22.74
Net Throughput(gal/yr):	2,932,441.00
Is Tank Heated (y/n):	N

Paint Characteristics

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Roof Characteristics

Type:	Cone
Height (ft)	0.88
Slope (ft/ft) (Cone Roof)	0.06

Breather Vent Settings

Vacuum Settings (psig):	-0.03
Pressure Settings (psig)	0.03

Meteorological Data used in Emissions Calculations: Grand Junction, Colorado (Avg Atmospheric Pressure = 12.37 psia)

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Liquid Contents of Storage Tank

Sulfuric Acid Storage Tank #3 - Vertical Fixed Roof Tank
Montrose, Colorado

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg.	Min.	Max.		Avg.	Min.	Max.					
Sulfuric Acid	All	55.06	48.57	61.56	52.95	0.0004	0.0002	0.0006	98.0800			98.08	Option 1: VP50 = .000245 VP60 = .000551

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Detail Calculations (AP-42)

Sulfuric Acid Storage Tank #3 - Vertical Fixed Roof Tank
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Annual Emission Calculations

Standing Losses (lb):	1.0407
Vapor Space Volume (cu ft):	8,800.1246
Vapor Density (lb/cu ft):	0.0000
Vapor Space Expansion Factor:	0.0456
Vented Vapor Saturation Factor:	0.9997
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	8,800.1246
Tank Diameter (ft):	28.0000
Vapor Space Outage (ft):	14.2917
Tank Shell Height (ft):	28.0000
Average Liquid Height (ft):	14.0000
Roof Outage (ft):	0.2917
Roof Outage (Cone Roof)	
Roof Outage (ft):	0.2917
Roof Height (ft):	0.8750
Roof Slope (ft/ft):	0.0625
Shell Radius (ft):	14.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0000
Vapor Molecular Weight (lb/lb-mole):	98.0800
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0004
Daily Avg. Liquid Surface Temp. (deg. R):	514.7342
Daily Average Ambient Temp. (deg. F):	52.9333
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	512.6233
Tank Paint Solar Absorptance (Shell):	0.1700
Tank Paint Solar Absorptance (Roof):	0.1700
Daily Total Solar Insulation Factor (Btu/sqft day):	1,578.3125
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.0456
Daily Vapor Temperature Range (deg. R):	25.9688
Daily Vapor Pressure Range (psia):	0.0004
Breather Vent Press. Setting Range(psia):	0.0600
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0004
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.0002
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.0006
Daily Avg. Liquid Surface Temp. (deg R):	514.7342
Daily Min. Liquid Surface Temp. (deg R):	508.2420
Daily Max. Liquid Surface Temp. (deg R):	521.2264
Daily Ambient Temp. Range (deg. R):	25.6333
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9997
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0004

Vapor Space Outage (ft):	14.2917
Working Losses (lb):	2.7389
Vapor Molecular Weight (lb/lb-mole):	98.0800
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0004
Annual Net Throughput (gal/yr.):	2,932,441.0000
Annual Turnovers:	22.7369
Turnover Factor:	1.0000
Maximum Liquid Volume (gal):	128,972.5159
Maximum Liquid Height (ft):	28.0000
Tank Diameter (ft):	28.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	3.7796

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Individual Tank Emission Totals

Emissions Report for: Annual

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Montrose, Colorado

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Sulfuric Acid	2.74	1.04	3.78

