



Sour Gas Flare Properties

Company **Fire Sky Energy Inc**
 Facility **Battery 03-23-12-27**
 Case **Flare- SO2**

Flow Rate

Gas Stream	Solution	None	To Flare	
Flow Rate	0.750	0.000	0.750	10 ³ m ³ /d at 15°C and 101.3 kPa
Percentage	100.0	0.0	100.0	%
Reference Temp	15	15	15	°C

Composition (dry)

				Mole Fraction
H ₂	0.0020		0.0020	
He	0.0035		0.0035	
N ₂	0.4016		0.4016	
CO ₂	0.1134		0.1134	
H ₂ S	0.0560		0.0560	
C ₁	0.0743		0.0743	
C ₂	0.1627		0.1627	
C ₃	0.1171		0.1171	
iC ₄	0.0209		0.0209	
nC ₄	0.0316		0.0316	
iC ₅	0.0088		0.0088	
nC ₅	0.0037		0.0037	
C ₆	0.0027		0.0027	
C ₇₊	0.0017		0.0017	
Total	1.0000	0.0000	1.0000	

Gas Stream Properties

Molecular Mass	33.77	0.00	33.77	kg/kmole
Net Heating Value	32.11	0.00	32.11	10 ³ m ³ /d at 15°C and 101.3 kPa
Net Heat Release Rate	66,571	0	66,571	cal/s
Equivalent SO ₂ Inlet	0.114	0.000	0.114	t/d
Equivalent SO ₂ Inlet	1.32	0.00	1.32	g/s

Stack Parameters

Flare Stack Height	12.0	m		
Flare Stack Diameter	76.00	mm		
Actual Exit Velocity	1.91	m/s		
Length of Flame:	1.17	m		
Heat Intensity at Base	1.07	kW/m ²		Background = 1.04 kW/m ²
Conversion Efficiency	98.00	%		
Radiation Loss	25	%		(Brode => 55%, AENV => 25%)
Sensible Heat Release	48,596	cal/s		Based on conversion efficiency & radiation loss

Model Input Parameters

Effective Stack Height	12.92	m		(per EPA and Beychok, M.; 1979)
Pseudo-diameter	0.704	m		based on actual exit velocity
Actual Exit Velocity	1.91	m/s		
Exit Temperature	1273	K	1000	°C
Ambient temperature	288	K		Pseudo temperature for modelling

Emissions

SO ₂ Emission	1.291	g/s		Based on user-specified conversion efficiency
H ₂ S Emission	0.014	g/s		Based on user-specified conversion efficiency
NO _x Emission	0.008	g/s		Based on US EPA AP-42

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