

Sulphur Production and Incinerator Gas Dilution

Inlet Composition

Flow Rate = 30.0 MMSCFD = 30,000,000 SCFD
 = 3,481 lb mols/hr

	Mol %	Mol /hr
H ₂ S	10	348
CO ₂	4	139
N ₂	2	70
CH ₄	84	2,924
	100	3,481

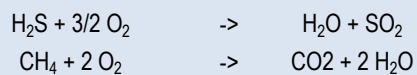
Acid Gas to be Incinerated

	Mol /hr	Mol %	
H ₂ S	348	67	
CO ₂	139	27	
N ₂	1	0	(Assuming 1% carry-over)
CH ₄	29	6	(Assuming 1% carry-over)
	517	100	

Estimated Sulphur Production (Worst Case as Sulphur can exist as S₂, S₆ and S₈)

Tons of S₂ to be Produced = 5,569 lb /hr
 = 2,526 kg/hr
 = 60,626 kg/day
 = 61 ton/day

Combustion Reactions



Oxygen Required

	Mol /hr
H ₂ S	522
CO ₂	-
N ₂	-
CH ₄	58
	581

Accompanying N₂ = 2,184 Mol /hr

Air Required = 2,765 Mol /hr
23,828,571 SCFD

Flare Gas Composition

	Mol /hr	Mol %
SO ₂	348	11
CO ₂	168	5
N ₂	2,184	70
H ₂ O	407	13
	3,107	100

Excess Air = 500 % Excess
= 13,823 Mol /hr
= 119,142,857 SCFD

	Mol /hr	Mol %
SO ₂	348	2.056
CO ₂	168	1.00
N ₂	13,104	77.40
H ₂ O	407	2.40
O ₂	2,903	17.15
	16,930	100

SO₂ Emission = 20,559 PPM
= 1,662 ug SO₂ / m³ Exhaust Gas
= 58,739 mg /Nm³

SO₂ Emission Standards

USA	0.025% Vol SO ₂ with 0% Vol Excess Air
Japan	8 - 190 PPM
Europe	200 mg/Nm ³