Alberta Welltest Incinerators

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H2S	Gas Rate [e^3m^3/day]		15	30	45	60	70	85	100	110
[mol %]	Gas Rate [MMSCFD]		0.53	1.06	1.59	2.12	2.47	3.00	3.53	3.88
0.00%	SO_2 Exhaust Rate	[g/s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SO_2 Exhaust Rate	[g/m^3]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Forced Draft Dilution Air	[e^3m^3/day]	473	872	1422	1839	1739	1586	1435	1333
	Forced Draft Dilution Factor		3.82	3.09	3.81	3.73	3.22	2.67	2.28	2.08
	Exit Velocity	[m/s]	4.71	9.38	14.18	19.18	20.64	23.51	26.28	28.07
	Exit Temperature	[ºC]	650	650	650	684	753	888	1017	1100
	Residence Time	[s]	1.81	0.91	0.60	0.45	0.41	0.36	0.32	0.30
1.00%	SO_2 Exhaust Rate	[g/s]	4.71	9.41	14.12	18.83	21.96	26.67	31.38	34.52
	SO_2 Exhaust Rate	[g/m^3]	0.20	0.20	0.20	0.20	0.21	0.23	0.24	0.24
	Forced Draft Dilution Air	[e^3m^3/day]	471	870	1417	1842	1743	1590	1440	1339
	Forced Draft Dilution Factor		3.82	3.10	3.82	3.75	3.24	2.68	2.29	2.09
	Exit Velocity	[m/s]	4.70	9.35	14.13	19.14	20.59	23.45	26.22	28.00
	Exit Temperature	[ºC]	650	650	650	682	751	886	1014	1097
	Residence Time	[s]	1.82	0.91	0.60	0.45	0.41	0.36	0.33	0.30
2.00%	SO_2 Exhaust Rate	[g/s]	9.41	18.83	28.24	37.65	43.93	53.34	62.76	69.03
	SO_2 Exhaust Rate	[g/m^3]	0.40	0.40	0.40	0.39	0.42	0.45	0.48	0.49
	Forced Draft Dilution Air	[e^3m^3/day]	469	868	1413	1845	1746	1594	1444	1344
	Forced Draft Dilution Factor		3.81	3.11	3.82	3.77	3.25	2.69	2.30	2.10
	Exit Velocity	[m/s]	4.68	9.32	14.08	19.10	20.54	23.40	26.15	27.94
	Exit Temperature	[ºC]	650	650	650	681	748	883	1012	1094
	Residence Time	[s]	1.82	0.92	0.61	0.45	0.42	0.36	0.33	0.31
3.00%	SO_2 Exhaust Rate	[g/s]	14.12	28.24	42.36	56.48	65.89	80.01	94.13	103.55
	SO_2 Exhaust Rate	[g/m^3]	0.60	0.60	0.60	0.59	0.64	0.68	0.72	0.74
	Forced Draft Dilution Air	[e^3m^3/day]	468	866	1409	1848	1749	1599	1449	1349
	Forced Draft Dilution Factor		3.81	3.12	3.83	3.79	3.27	2.71	2.32	2.11
	Exit Velocity	[m/s]	4.67	9.28	14.04	19.06	20.49	23.34	26.09	27.87
	Exit Temperature	[ºC]	650	650	650	679	746	881	1009	1091
	Residence Time	[s]	1.83	0.92	0.61	0.45	0.42	0.37	0.33	0.31
4.00%	SO_2 Exhaust Rate	[g/s]	18.83	37.65	56.48	75.31	87.86	106.68	125.51	138.06
	SO_2 Exhaust Rate	[g/m^3]	0.80	0.81	0.80	0.79	0.85	0.91	0.96	0.98
	Forced Draft Dilution Air	[e^3m^3/day]	466	864	1405	1850	1753	1603	1454	1354
	Forced Draft Dilution Factor		3.81	3.13	3.84	3.80	3.28	2.72	2.33	2.12
	Exit Velocity	[m/s]	4.65	9.25	13.99	19.01	20.45	23.29	26.03	27.80
	Exit Temperature	[ºC]	650	650	650	677	744	878	1006	1088
	Residence Time	[s]	1.84	0.92	0.61	0.45	0.42	0.37	0.33	0.31
5.00%	SO_2 Exhaust Rate	[g/s]	23.53	47.07	70.60	94.13	109.82	133.35	156.89	172.58
	SO_2 Exhaust Rate	[g/m^3]	1.01	1.01	1.00	0.98	1.07	1.14	1.20	1.23
	Forced Draft Dilution Air	[e^3m^3/day]	464	862	1401	1853	1756	1607	1459	1360
	Forced Draft Dilution Factor		3.80	3.14	3.84	3.82	3.30	2.73	2.34	2.13
	Exit Velocity	[m/s]	4.63	9.22	13.94	18.97	20.40	23.23	25.97	27.73
	Exit Temperature	[ºC]	650	650	650	675	742	876	1003	1085
	Residence Time	[s]	1.84	0.93	0.61	0.45	0.42	0.37	0.33	0.31

H2S	Gas Rate [e^3m^3/day]		15	30	45	60	70	85	100	110
[mol %]	Gas Rate [MMSCFD]		0.53	1.06	1.59	2.12	2.47	3.00	3.53	3.88
6.00%	SO_2 Exhaust Rate	[g/s]	28.24	56.48	84.72	112.96	131.79	160.03	188.27	207.09
	SO_2 Exhaust Rate	[g/m^3]	1.21	1.22	1.21	1.18	1.28	1.37	1.44	1.48
	Forced Draft Dilution Air	[e^3m^3/day]	462	860	1397	1856	1759	1611	1463	1365
	Forced Draft Dilution Factor		3.80	3.14	3.85	3.84	3.32	2.75	2.35	2.14
	Exit Velocity	[m/s]	4.62	9.19	13.89	18.93	20.35	23.18	25.90	27.67
	Exit Temperature	[ºC]	650	650	650	673	740	873	1000	1082
	Residence Time	[s]	1.85	0.93	0.61	0.45	0.42	0.37	0.33	0.31
7.00%	SO_2 Exhaust Rate	[g/s]	32.95	65.89	98.84	131.79	153.75	186.70	219.64	241.61
	SO_2 Exhaust Rate	[g/m^3]	1.42	1.43	1.42	1.38	1.50	1.60	1.69	1.74
	Forced Draft Dilution Air	[e^3m^3/day]	461	858	1393	1859	1763	1615	1468	1370
	Forced Draft Dilution Factor		3.80	3.15	3.86	3.86	3.33	2.76	2.36	2.16
	Exit Velocity	[m/s]	4.60	9.16	13.84	18.89	20.31	23.12	25.84	27.60
	Exit Temperature	[ºC]	650	650	650	671	737	871	997	1079
	Residence Time	[s]	1.85	0.93	0.62	0.45	0.42	0.37	0.33	0.31
8.00%	SO_2 Exhaust Rate	[g/s]	37.65	75.31	112.96	150.61	175.71	213.37	251.02	276.12
	SO_2 Exhaust Rate	[g/m^3]	1.63	1.64	1.62	1.58	1.72	1.83	1.93	1.99
	Forced Draft Dilution Air	[e^3m^3/day]	459	856	1388	1862	1766	1619	1473	1375
	Forced Draft Dilution Factor		3.79	3.16	3.86	3.88	3.35	2.77	2.37	2.17
	Exit Velocity	[m/s]	4.59	9.12	13.80	18.85	20.26	23.07	25.78	27.53
	Exit Temperature	[ºC]	650	650	650	669	735	868	995	1076
	Residence Time	[s]	1.86	0.94	0.62	0.45	0.42	0.37	0.33	0.31
9.00%	SO_2 Exhaust Rate	[g/s]	42.36	84.72	127.08	169.44	197.68	240.04	282.40	310.64
	SO_2 Exhaust Rate	[g/m^3]	1.84	1.85	1.83	1.79	1.94	2.07	2.18	2.24
	Forced Draft Dilution Air	[e^3m^3/day]	457	854	1384	1865	1769	1623	1478	1381
	Forced Draft Dilution Factor		3.79	3.17	3.87	3.90	3.37	2.79	2.38	2.18
	Exit Velocity	[m/s]	4.57	9.09	13.75	18.81	20.21	23.01	25.71	27.46
	Exit Temperature	[ºC]	650	650	650	667	733	866	992	1072
	Residence Time	[s]	1.87	0.94	0.62	0.45	0.42	0.37	0.33	0.31
10.00%	SO_2 Exhaust Rate	[g/s]	47.07	94.13	141.20	188.27	219.64	266.71	313.78	345.15
	SO_2 Exhaust Rate	[g/m^3]	2.05	2.06	2.04	1.99	2.16	2.30	2.43	2.50
	Forced Draft Dilution Air	[e^3m^3/day]	455	852	1380	1868	1773	1627	1482	1386
	Forced Draft Dilution Factor		3.79	3.18	3.88	3.92	3.39	2.80	2.40	2.19
	Exit Velocity	[m/s]	4.55	9.06	13.70	18.77	20.17	22.96	25.65	27.39
	Exit Temperature	[ºC]	650	650	650	665	731	863	989	1069
	Residence Time	[s]	1.87	0.94	0.62	0.45	0.42	0.37	0.33	0.31

Notes

1. Ambient temperature and pressure were assumed to be 15ºC and 101.3 kPa.
2. Dimensions of the stack were taken as 2.53m diameter x 8.53m long, with the stack exit point 12.19m above ground.
3. These numbers should be taken as guidelines only; for specific applications, please contact AWI.
4. Maximum airflow rate was taken as 2450 e3m3/day.
5. Gas temperature was taken as 15ºC.
6. Gas Composition was taken as: 1.82% C2H6, 1.53% C3H8, 0.34% C4H10, 0.60% C5H12, 0.26% C6H12, 0.017% C7H16, 0.01% H2, 0.25% N2, 1.36% CO2, variable H2S, balance CH4.
7. "Forced Draft Dilution Air" is the amount of excess air injected into the system.
8. "Forced Draft Dilution Factor" is the factor by which the SO2 exit concentration is diluted, when compared to the stoichiometric case.