

Appendix E: Tables E1 to E6 (Laboratory Data Sheets for Part V)

Table E1
Characteristics of fumes produced by oxyacetylene cutting of carbon steel plate at recommended conditions

Cutting tip number ¹	Oxygen pressure		Acetylene pressure		Plate thickness		Cutting speed		Fume generation rate, g/min	Weight of fumes/length of plate cut	
	kPa	psi	kPa	psi	mm	in.	mm/s	in./min		g/m	g/in.
4	241.3	35	34.5	5	12.7	0.50	5.50	13	0.45	1.38	0.035
4	241.3	35	34.5	5	12.7	0.50	5.50	13	0.42	1.26	0.032
4	241.3	35	34.5	5	12.7	0.50	5.50	13	0.38	1.14	0.029
									Avg 0.42	Avg 1.26	0.032
6	275.8	40	34.5	5	25.4	1.00	4.66	11	0.53	1.89	0.048
6	275.8	40	34.5	5	25.4	1.00	4.66	11	0.53	1.89	0.048
6	275.8	40	34.5	5	25.4	1.00	4.66	11	0.56	2.01	0.051
									Avg 0.54	Avg 1.93	0.049
8	275.8	40	41.4	6	50.8	2.00	2.75	6.5	0.67	4.06	0.103
8	275.8	40	41.4	6	50.8	2.00	2.75	6.5	0.67	4.06	0.103
8	275.8	40	41.4	6	50.8	2.00	2.75	6.5	0.66	4.02	0.102
									Avg 0.67	Avg 4.05	0.103

1. Cutting orifice diameter: No. 4: 0.04 in. (1.0 mm); No. 6: 0.06 in. (1.5 mm); No. 8: 0.08 in. (2.0 mm).

Table E2
Characteristics of fumes produced by oxyacetylene cutting of carbon steel plate at various oxygen and acetylene pressures

Cutting tip number ¹	Oxygen pressure		Acetylene pressure		Plate thickness		Cutting speed		Fume generation rate, g/min	Weight of fumes/ length of plate cut	
	kPa	psi	kPa	psi	mm	in.	mm/s	in./min		g/in	g/in.
High gas pressures											
4	275.8	40	48.3	7	13.7	0.50	5.50	13	0.46	1.38	0.035
4	275.8	40	48.3	7	13.7	0.50	5.50	13	0.47	1.42	0.036
4	275.8	40	48.3	7	13.7	0.50	5.50	13	0.46	1.38	0.035
									Avg	1.39	0.035
6	310.3	45	48.3	7	25.4	1.00	4.66	11	0.63	2.24	0.057
6	310.3	45	48.3	7	25.4	1.00	4.66	11	0.65	2.23	0.059
6	310.3	45	48.3	7	25.4	1.00	4.66	11	0.63	2.24	0.057
									Avg	2.24	0.058
8	310.3	45	55.2	8	50.8	2.00	2.75	6.5	0.80	4.84	0.123
8	310.3	45	55.2	8	50.8	2.00	2.75	6.5	0.81	4.92	0.125
8	310.3	45	55.2	8	50.8	2.00	2.75	6.5	0.81	4.92	0.125
									Avg	4.89	0.124
Low gas pressures											
4	206.8	30	20.7	3	13.7	0.50	5.50	13	0.33	0.98	0.025
4	206.8	30	20.7	3	13.7	0.50	5.50	13	0.34	1.02	0.026
4	206.8	30	20.7	3	13.7	0.50	5.50	13	0.34	1.02	0.026
									Avg	1.01	0.026
6	241.3	35	20.7	3	25.4	1.00	4.66	11	0.34	1.22	0.031
6	241.3	35	20.7	3	25.4	1.00	4.66	11	0.35	1.26	0.032
6	241.3	35	20.7	3	25.4	1.00	4.66	11	0.35	1.26	0.032
									Avg	1.25	0.032
8	241.3	35	27.6	4	50.8	2.00	2.75	6.5	0.49	2.95	0.075
8	241.3	35	27.6	4	50.8	2.00	2.75	6.5	0.46	2.80	0.071
8	241.3	35	27.6	4	50.8	2.00	2.75	6.5	0.47	2.83	0.072
									Avg	2.86	0.073

1. Cutting orifice diameter: No. 4: 0.04 in. (1.0 mm); No. 6: 0.06 in. (1.5 mm); No. 8: 0.08 in. (2.0 mm).

Table E3
Characteristics of fumes produced by oxyacetylene cutting of carbon steel plates at various speeds

Cutting tip number ¹	Oxygen pressure		Acetylene pressure		Plate thickness		Cutting speed		Fume generation rate, g/min	Weight of fumes/length of plate cut	
	kPa	psi	kPa	psi	mm	in.	mm/s	in./min		g/m	g/in.
High cutting speeds											
4	241.3	35	34.5	5	13.7	0.50	6.77	16	0.48	1.18	0.030
4	241.3	35	34.5	5	13.7	0.50	6.77	16	0.49	1.22	0.031
4	241.3	35	34.5	5	13.7	0.50	6.77	16	0.49	1.22	0.031
									Avg	1.21	0.031
6	275.8	40	34.5	5	25.4	1.00	5.93	14	0.58	1.61	0.041
6	275.8	40	34.5	5	25.4	1.00	5.93	14	0.58	1.61	0.041
6	275.8	40	34.5	5	25.4	1.00	5.93	14	0.56	1.57	0.040
									Avg	1.60	0.041
8	275.8	40	41.4	6	50.8	2.00	4.02	9.5	0.71	2.95	0.075
8	275.8	40	41.4	6	50.8	2.00	4.02	9.5	0.72	2.99	0.076
8	275.8	40	41.4	6	50.8	2.00	4.02	9.5	0.72	2.99	0.076
									Avg	2.98	0.076
Low cutting speeds											
4	241.3	35	34.5	5	13.7	0.50	4.23	10	0.45	1.77	0.045
4	241.3	35	34.5	5	13.7	0.50	4.23	10	0.45	1.77	0.045
4	241.3	35	34.5	5	13.7	0.50	4.23	10	0.45	1.77	0.045
									Avg	1.77	0.045
6	275.8	40	34.5	5	25.4	1.00	3.39	8	0.55	2.72	0.069
6	275.8	40	34.5	5	25.4	1.00	3.39	8	0.55	2.72	0.069
6	275.8	40	34.5	5	25.4	1.00	3.39	8	0.53	2.60	0.066
									Avg	2.68	0.068
8	275.8	40	41.4	6	50.8	2.00	1.48	3.5	0.52	5.87	0.149
8	275.8	40	41.4	6	50.8	2.00	1.48	3.5	0.54	6.06	0.154
8	275.8	40	41.4	6	50.8	2.00	1.48	3.5	0.53	5.94	0.151
									Avg	5.96	0.151

1. Cutting orifice diameter: No. 4: 0.04 in. (1.0 mm); No. 6: 0.06 in. (1.5 mm); No. 8: 0.08 in. (2.0 mm).

Table E4
Characteristics of fumes produced by oxy-methane cutting of carbon steel plate at recommended conditions

Cutting tip number	Oxygen pressure		Methane pressure		Plate thickness		Cutting speed		Fume generation rate, g/min	Weight of fumes/length of plate cut	
	kPa	psi	kPa	psi	mm	in.	mm/s	in./min		g/m	g/in.
00VVC	517.1	75	6.9	1	12.7	0.50	7.83	18.5	0.51	1.10	0.028
00VVC	517.1	75	6.9	1	12.7	0.50	8.09	19.1	0.71	1.46	0.037
00VVC	517.1	75	6.9	1	12.7	0.50	7.79	18.4	0.58	1.26	0.032
00VVC	517.1	75	6.9	1	12.7	0.50	7.45	17.6	0.59	1.33	0.034
							Avg 7.79	18.4	Avg 0.60	1.28	0.032
0-1/2VVC	689.7	100	6.9	1	25.4	1.00	6.22	14.7	0.53	1.42	0.036
0-1/2VVC	689.7	100	6.9	1	25.4	1.00	5.80	13.7	0.52	1.50	0.038
0-1/2VVC	689.7	100	6.9	1	25.4	1.00	6.01	14.2	0.55	1.54	0.039
							Avg 6.01	14.2	Avg 0.53	1.49	0.038
1VVC	723.9	105	6.9	1	50.8	2.00	5.08	12.0	0.59	1.93	0.049
1VVC	723.9	105	6.9	1	50.8	2.00	5.59	13.2	0.55	1.65	0.042
1VVC	723.9	105	6.9	1	50.8	2.00	5.16	12.2	0.48	1.54	0.039
							Avg 5.28	12.47	Avg 0.54	1.71	0.043

1. Cutting orifice diameter: No. 00VVC: 0.036 in. (0.9 mm); No. 0-1/2 VVC: 0.040 in. (1.0 mm); No. 1 VVC: 0.046 in. (1.2 mm).

Table E5
Characteristics of fumes produced by oxy-methane cutting of carbon steel plate at various oxygen and acetylene pressures

Cutting tip number ¹	Oxygen pressure		Methane pressure		Plate thickness		Cutting speed		Fume generation rate, g/min		Weight of fumes/length of plate cut	
	kPa	psi	kPa	psi	mm	in.	mm/s	in./min			g/m	g/in.
High gas pressure												
00VVC	689.4	100	6.9	1	12.7	0.50	8.17	19.3	0.66		1.38	0.035
00VVC	689.4	100	6.9	1	12.7	0.50	7.24	17.1	0.66		1.53	0.039
00VVC	689.4	100	6.9	1	12.7	0.50	8.17	19.3	0.73		1.50	0.038
							Avg 7.86	18.6	Avg 0.68		Avg 1.47	0.037
Low gas pressure												
00VVC	344.7	50	6.9	1	12.7	0.50	7.11	16.8	0.19		0.43	0.011
00VVC	344.7	50	6.9	1	12.7	0.50	6.86	16.2	0.30		0.71	0.018
00VVC	344.7	50	6.9	1	12.7	0.50	7.11	16.8	0.37		0.87	0.022
00VVC	344.7	50	6.9	1	12.7	0.50	6.73	15.9	0.33		0.83	0.021
							Avg 6.95	16.4	Avg 0.30		Avg 0.71	0.018
0-1/2VVC	517.1	75	20.7	3	25.4	1.00	4.23	10.0	0.61		2.40	0.061
1VVC	517.1	35	27.6	4	50.8	2.00	1.48	3.5	0.15		1.69	0.043
1VVC	517.1	35	27.6	4	50.8	2.00	1.48	3.5	0.12		1.65	0.042
1VVC	517.1	35	27.6	4	50.8	2.00	1.48	3.5	0.15		1.93	0.049
							Avg 1.48	3.5	Avg 0.14		Avg 1.58	0.045

1. Cutting orifice diameter: No. 00VVC: 0.036 in. (0.9 mm); No. 0-1/2 VVC: 0.040 in. (1.0 mm); No. 1 VVC: 0.046 in. (1.2 mm).

Table E6
Characteristics of fumes produced by oxyacetylene cutting of carbon steel plate at various speeds

Cutting tip number ¹	Oxygen pressure		Methane pressure		Plate thickness		Cutting speed		Fume generation rate, g/min		Weight of fumes/ length of plate cut	
	kPa	psi	kPa	psi	mm	in.	mm/s	in./min			g/m	g/in.
00VVC	689.4	100	6.9	1	12.7	0.50	High cutting speed		21.1	0.27	0.51	0.013
							8.93					
0-1/2VVC	689.4	100	6.9	1	25.4	1.00	8.66	20.5	0.33		0.63	0.016
0-1/2VVC	689.4	100	6.9	1	25.4	1.00	8.66	20.5	0.37		0.71	0.018
							Avg 8.66	20.5	Avg 0.35	Avg	0.67	0.017
00VVC	689.4	100	6.9	1	12.7	0.50	Slow cutting speed		15.8	0.69	1.73	0.044
							6.69					
00VVC	689.4	100	6.9	1	12.7	0.50	7.11	16.8	0.49		1.41	0.029
							Avg 6.90	16.3	Avg 0.59	Avg	1.57	0.037
0-1/2VVC	689.4	100	6.9	1	25.4	1.00	2.96	7.0	0.36		2.05	0.052
0-1/2VVC	689.4	100	6.9	1	25.4	1.00	2.96	7.0	0.36		2.01	0.051
0-1/2VVC	689.4	100	6.9	1	25.4	1.00	2.75	6.5	0.36		2.17	0.055
							Avg 2.89	6.8	Avg 0.36	Avg	2.08	0.053
1VVC	723.9	105	6.9	1	50.8	2.00	4.78	11.3	0.41		1.43	0.036

1. Cutting orifice diameter: No. 00VVC: 0.036 in. (0.9 mm); No. 0-1/2 VVC: 0.040 in. (1.0 mm); No. 1 VVC: 0.046 in. (1.2 mm).

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