

Table I (ESI) : Rate coefficients for the HO₂, self-reaction corrected for enhancement due to methanol vapour, as a function of [H₂O], temperature and pressure. Errors are 1σ and statistical only.

T / K	p / Torr	$[\text{H}_2\text{O}] / 10^{17}$ molec cm ⁻³	$k_1 / 10^{-12} \text{ cm}^3$ molec ⁻¹ s ⁻¹	Number of experiments
309	760	0	2.68 ± 0.27	16
		1.20	3.28 ± 0.15	8
		1.58	3.33 ± 0.36	15
		2.24	3.64 ± 0.20	8
		2.34	3.79 ± 0.36	4
		3.11	4.09 ± 0.48	8
		4.28	3.95 ± 0.43	8
		5.48	4.75 ± 0.48	5
		5.72	3.98 ± 0.56	16
296		0	2.86 ± 0.31	66
		0.24	2.93 ± 0.18	4
		0.56	2.94 ± 0.09	4
		1.32	3.28 ± 0.10	2
		2.00	3.62 ± 0.13	2
		2.45	4.32 ± 0.28	4
		2.99	4.37 ± 0.06	2
		3.86	4.80 ± 0.26	2
		4.11	3.99 ± 0.55	2

	4.97	4.50 ± 0.19	4
	5.62	5.19 ± 0.79	2
	5.97	5.15 ± 0.15	2
700	0	2.95 ± 0.37	11
	1.20	3.68 ± 0.16	4
	1.58	3.68 ± 0.05	4
	2.22	3.85 ± 0.34	4
	3.10	4.25 ± 0.28	4
	4.86	4.89 ± 0.43	8
600	0	2.82 ± 0.50	11
	1.11	3.34 ± 0.24	4
	1.47	3.86 ± 0.27	4
	2.09	4.08 ± 0.16	4
	2.86	4.48 ± 0.38	4
	3.94	4.79 ± 0.19	4
400	0	2.63 ± 0.37	23
	0.86	3.13 ± 0.43	8
	5.05	4.57 ± 0.22	6
	1.02	3.64 ± 0.16	6
	1.13	3.55 ± 0.19	3
	1.60	3.41 ± 0.30	2
	1.84	3.52 ± 0.20	8
	2.65	5.34 ± 0.48	6

		3.06	3.75 ± 0.50	3
287	760	0	3.00 ± 0.29	34
		0.25	3.46 ± 0.32	4
		0.43	3.62 ± 0.10	2
		0.58	3.48 ± 0.34	4
		0.91	4.13 ± 0.01	2
		1.27	4.10 ± 0.07	2
		1.37	4.51 ± 0.33	6
		1.68	4.38 ± 0.56	4
		1.80	5.00 ± 0.26	4
		1.92	4.86 ± 0.20	4
		2.06	4.72 ± 0.41	4
		2.37	5.30 ± 0.18	6
		2.53	5.24 ± 0.64	2
		2.70	5.34 ± 0.62	4
		3.09	5.34 ± 0.61	4
278		0	3.80 ± 0.19	10
		0.25	4.21 ± 0.08	4
		0.55	4.45 ± 0.24	4
		0.89	5.03 ± 0.50	4
		1.19	5.47 ± 0.34	5
		1.50	5.75 ± 0.43	4
		1.82	6.15 ± 0.75	4

274	0	3.99 ± 0.29	23
	0.26	4.33 ± 0.37	8
	0.56	4.96 ± 0.75	8
	0.70	5.23 ± 0.43	8
	0.91	5.77 ± 0.95	8
	1.06	5.61 ± 0.84	8
	1.27	5.67 ± 0.96	8
263	0	6.43 ± 1.30	17
	0.017	6.09 ± 0.58	4
	0.068	6.08 ± 0.79	4
	0.069	7.30 ± 0.79	6
	0.074	6.78 ± 0.34	8
	0.118	6.34 ± 0.48	4
	0.170	7.21 ± 1.32	10
	0.184	7.52 ± 0.35	8
	0.219	6.45 ± 0.44	8
	0.273	7.80 ± 1.93	10
	0.295	7.83 ± 0.47	2
	0.382	8.57 ± 1.18	6
	0.483	7.47 ± 0.06	2
254	0	7.25 ± 3.03	64
	0.004	7.57 ± 0.86	4
	0.017	9.84 ± 0.49	8

0.018	8.34 ± 0.71	12
0.031	8.36 ± 3.20	4
0.065	9.51 ± 0.50	8
0.072	10.32 ± 2.23	4
0.116	9.74 ± 0.51	8
0.125	12.42 ± 1.05	5

Table II (ESI) : Rate coefficients for the HO₂ self-reaction as a function of [CH₃OH] and temperature at 760 Torr. Errors are 1σ and statistical only.

T / K	$[\text{CH}_3\text{OH}] / 10^{17}$ molec cm ⁻³	$k_1 / 10^{-12} \text{ cm}^3$ molec ⁻¹ s ⁻¹	Number of experiments
309	0.11	2.74 ± 0.28	16
	0.78	3.13 ± 0.26	8
	1.62	3.70 ± 0.20	8
	2.47	4.12 ± 0.34	8
	3.36	4.94 ± 0.28	8
	4.15	5.25 ± 0.30	8
296	0.06	2.83 ± 0.08	2
	0.14	2.83 ± 0.26	38
	0.15	2.89 ± 0.03	2
	0.16	3.39 ± 0.40	10
	0.22	3.07 ± 0.10	2
	0.30	3.07 ± 0.17	2
	0.38	3.42 ± 0.13	10
	0.40	3.65 ± 0.06	4
	0.44	3.21 ± 0.27	5
	0.80	4.18 ± 0.17	8
	0.82	4.13 ± 0.76	16
	1.25	4.84 ± 0.32	4
	1.71	4.91 ± 0.20	8

	1.86	5.23 ± 0.17	4
	2.31	5.84 ± 0.11	4
	2.62	6.93 ± 0.81	11
	3.54	7.35 ± 0.52	4
	4.39	7.01 ± 1.07	8
287	0.14	3.17 ± 0.31	34
	0.85	4.70 ± 0.22	8
	1.76	6.47 ± 0.62	12
	2.70	6.69 ± 0.61	11
	3.65	8.36 ± 1.15	12
	4.53	8.71 ± 1.38	8
278	0.15	4.09 ± 0.21	10
	0.09	7.80 ± 1.15	8
	1.80	11.87 ± 2.42	8
	2.78	13.49 ± 3.75	6
	3.76	10.75 ± 3.59	8
	4.63	18.56 ± 4.54	8
274	0.12	4.37 ± 0.38	10
	0.15	4.30 ± 0.25	13
	0.88	7.24 ± 0.73	7
	1.85	8.04 ± 0.55	7
	2.83	8.39 ± 0.82	8
	3.83	11.18 ± 2.59	8

	4.74	13.51 ± 1.76	6
263	0.13	7.21 ± 1.46	17
	0.92	14.18 ± 2.70	15
	1.91	24.38 ± 3.89	14
	2.93	39.54 ± 7.88	15
	3.97	31.28 ± 7.77	15
254	0.14	8.09 ± 3.60	56
	0.44	15.42 ± 1.13	8
	0.69	20.15 ± 1.28	7
	0.95	19.08 ± 1.89	6
	1.20	23.41 ± 2.51	8
	1.46	30.11 ± 3.58	7