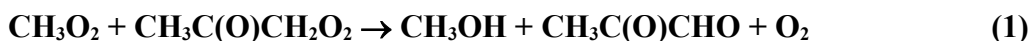


IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation – Data Sheet ROO_24

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This data sheet updated: 12th November 2002.



$$\Delta H^\circ(1) = -319.7 \text{ kJ}\cdot\text{mol}^{-1}$$

$$\Delta H^\circ(2) = -322.6 \text{ kJ}\cdot\text{mol}^{-1}$$

Rate coefficient data ($k = k_1 + k_2 + k_3$)

$k/\text{cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$	Temp./K	Reference	Technique/ Comments
<i>Absolute Rate Coefficients</i>			
$(3.8 \pm 0.4) \times 10^{-12}$	298	Bridier <i>et al.</i> , 1993 ¹	FP-UVA (a)
<i>Branching Ratios</i>			
$k_1/k = (0.5 \pm 0.1)$	298	Jenkin <i>et al.</i> , 1993 ²	P-FTIR (b)
$k_2/k = (0.2 \pm 0.1)$	298		
$k_3/k = (0.3 \pm 0.1)$	298	Bridier <i>et al.</i> , 1993 ¹	FP-UVA (c)

Comments

- Flash photolysis of Cl_2 in the presence of $\text{CH}_3\text{C}(\text{O})\text{CH}_3\text{-O}_2\text{-CH}_4\text{-N}_2$ mixtures at a total pressure of 1 bar (760 Torr). The overall rate coefficient k was derived from a kinetic analysis of absorption-time profiles measured at 230 nm and 260 nm.
- Steady-state photolysis of Cl_2 in the presence of $\text{CH}_3\text{C}(\text{O})\text{CH}_3\text{-N}_2$ mixtures at a total pressure of 930 mbar (700 Torr). Branching ratios were deduced from measurements of HCHO and $\text{CH}_3\text{C}(\text{O})\text{CHO}$ products by long-path FTIR spectroscopy and long-path UV-VIS diode-array spectroscopy.
- Derived from a kinetic analysis of the time-profiles obtained in the experiments described in Comment (a).

Preferred Values

$$k = 3.8 \times 10^{-12} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1} \text{ at } 298 \text{ K.}$$

$$k_1/k = 0.5 \text{ at } 298 \text{ K.}$$

$$k_2/k = 0.2 \text{ at } 298 \text{ K.}$$

$$k_3/k = 0.3 \text{ at } 298 \text{ K.}$$

Reliability

$$\Delta \log k = \pm 0.3 \text{ at } 298 \text{ K.}$$

$$\Delta(k_1/k) = \Delta(k_2/k) = \Delta(k_3/k) = \pm 0.15 \text{ at } 298 \text{ K.}$$

Comments on Preferred Values

The preferred values of the rate coefficient and branching ratios are based on the measurements of Bridier *et al.*¹ and Jenkin *et al.*,² and require independent confirmation to reduce the assigned error limits.

References

- ¹ I. Bridier, B. Veyret, R. Lesclaux, and M. E. Jenkin, *J. Chem. Soc. Faraday Trans.* **89**, 2993 (1993).
- ² M. E. Jenkin, R. A. Cox, M. Emrich, and G. K. Moortgat, *J. Chem. Soc. Faraday Trans.* **89**, 2983 (1993).