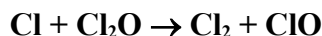


IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation – Data Sheet iClOx18

Website: <http://iupac.pole-ether.fr>. See website for latest evaluated data. Data sheets can be downloaded for personal use only and must not be re-transmitted or disseminated either electronically or in hard copy without explicit written permission.

This data sheet updated: 25th September 2003.



$$\Delta H^\circ = -96.9 \text{ kJ}\cdot\text{mol}^{-1}$$

Rate coefficient data

$k/\text{cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$	Temp./K	Reference	Technique/ Comments
<i>Absolute Rate Coefficients</i>			
$(9.33 \pm 0.54) \times 10^{-11}$	298	Ray, Keyser and Watson, 1980 ¹	DF-MS
$(1.03 \pm 0.08) \times 10^{-10}$	298	Ray, Keyser and Watson, 1980 ¹	DF-RF
$6.0 \times 10^{-11} \exp[(127 \pm 30)T]$	233-373	Stevens and Anderson, 1992 ²	DF-RF
$(9.1 \pm 0.4) \times 10^{-11}$	298		

Preferred Values

$$k = 9.6 \times 10^{-11} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1} \text{ at } 298 \text{ K.}$$

$$k = 6.2 \times 10^{-11} \exp(130/T) \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1} \text{ over the temperature range } 230 \text{ K to } 380 \text{ K.}$$

Reliability

$$\Delta \log k = \pm 0.1 \text{ at } 298 \text{ K.}$$

$$\Delta(E/R) = \pm 130 \text{ K.}$$

Comments on Preferred Values

The preferred room temperature value is the mean of the value reported by Stevens and Anderson² and the values obtained by Ray *et al.*¹ using two completely independent techniques. This value is confirmed by the relative rate study of Burrows and Cox.³ The much lower value reported earlier by Basco and Dogra⁴ has been rejected. The recommended temperature dependence is from Stevens and Anderson.² There is apparently no pressure dependence over the range 1 mbar to 1 bar.¹⁻³

References

- ¹ G. W. Ray, L. F. Keyser, and R. T. Watson, *J. Phys. Chem.* **84**, 1674 (1980).
- ² P. S. Stevens and J. G. Anderson, *J. Phys. Chem.* **96**, 1708 (1992).
- ³ J. P. Burrows and R. A. Cox, *J. Chem. Soc. Faraday Trans. 1*, **77**, 2465 (1981).
- ⁴ N. Basco and S. K. Dogra, *Proc. Roy. Soc. London A* **323**, 401 (1971).