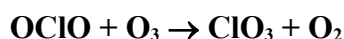


## IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation – Data Sheet iClOx39

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: 25<sup>th</sup> September 2003.



$$\Delta H^\circ = -20 \text{ kJ}\cdot\text{mol}^{-1}$$

### Rate coefficient data

$k/\text{cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$	Temp./K	Reference	Technique/ Comments
<i>Absolute Rate Coefficients</i>			
$(1.20 \pm 0.15) \times 10^{-19}$	298	Birks et al., 1977	(a)
$2.3 \times 10^{-12} \exp[-(4730 \pm 630)/T]$	262-298	Wongdontri -Stuper et al., 1979	PLP-UVA (b)
$3.0 \times 10^{-19}$	298		

### Comments

- (a) Static system, rate coefficient determined by monitoring the loss of O<sub>3</sub> in excess OCIO and also loss of OCIO in excess O<sub>3</sub>. Both species were measured by UVA; O<sub>3</sub> at 254 nm and OCIO at 366 nm.
- (b) The decay of OCIO in excess O<sub>3</sub> was monitored by UVA at 400 nm. The reaction rate was also determined by the pulsed photolysis of Cl<sub>2</sub>-O<sub>2</sub> mixtures at 366 nm to produce OCIO, followed by monitoring OCIO decay.

### Preferred Values

$k = 3.0 \times 10^{-19} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$  at 298 K.

$k = 2.1 \times 10^{-12} \exp(-4700/T) \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$  over the temperature range 260 K to 300 K.

### Reliability

$\Delta \log k = \pm 0.4$  at 298 K.

$\Delta(E/R) = \pm 1000$  K.

### Comments on Preferred Values

The preferred values are based on the results reported in the study of Wongdontri-Stuper et al. (1979). Within the indicated uncertainty limits, the preferred values encompass the lower room temperature value reported by Birks et al. (1977).

### References

- Birks, J. W., Shoemaker, B., Leck, T. J., Borders, R. A. and Hart, L. J.: J. Chem. Phys. 66, 4591, 1977.
- Wongdontri-Stuper, W., Jayanty, R. K. M., Simonaitis, R. and Heicklen, J.: J. Photochem. 10, 163, 1979.