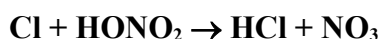


## IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation – Data Sheet iClOx15

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 last evaluated: 28<sup>th</sup> June 2007; no revision of preferred values.



$$\Delta H^\circ = -4.8 \text{ kJ}\cdot\text{mol}^{-1}$$

### Rate coefficient data

$k/\text{cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$	Temp./K	Reference	Technique/ Comments
<i>Absolute Rate Coefficients</i>			
$<5 \times 10^{-16}$	293	Zagogianni et al., 1987	DF-EPR
$<2.0 \times 10^{-16}$	298	Wine et al., 1988	PLP-AS (a)

### Comments

- (a) Pulsed laser photolysis of  $\text{Cl}_2\text{-HNO}_3\text{-He}$  mixtures at 351 nm.  $\text{NO}_3$  radical concentrations were monitored using long-path absorption spectroscopy. Experiments in which Cl atom concentrations were measured by resonance fluorescence were also carried out, but were less sensitive and resulted in higher upper limits to the rate coefficient, of  $k < 1.3 \times 10^{-15} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$  at 298 K and  $k < 1.0 \times 10^{-15} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$  at 400 K.

### Preferred Values

$k < 2 \times 10^{-16} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$  at 298 K.

#### Comments on Preferred Values

The preferred upper limit to the rate coefficient is that obtained by Wine et al. (1988), which receives support from the slightly higher value obtained by Zagogianni et al. (1987). Values from earlier studies of Leu and DeMore (1976), Clark et al. (1982) and Kurylo et al. (1983) are well above the preferred upper limit to the rate coefficient  $k$ .

### References

- Clark, R. H., Husain, D. and Jezequel, J. Y.: J. Photochem. 18, 39, 1982.  
Kurylo, M. J., Murphy, J. L. and Knable, G. L.: Chem. Phys. Lett. 94, 281, 1983.  
Leu, M.-T. and DeMore, W. B.: Chem. Phys. Lett. 41, 121, 1976.  
Wine, P. H., Wells, J. R. and Nicovich, J. M.: J. Phys. Chem. 92, 2223, 1988.  
Zagogianni, H., Mellouki, A. and Poulet, G.: C. R. Acad. Sci., Series 2, 304, 573, 1987.