IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation – Data Sheet iClOx23

This data sheet last evaluated: 28th June 2007; no revision of preferred values.

$HO + HOCl \rightarrow H_2O + ClO$

$\Delta H° = -99.4\ kJ \cdot mol^{-1}$

Rate coefficient data

$k/cm^3\ molecule^{-1}\ s^{-1}$	Temp./K	Reference	Technique/ Comments
Absolute Rate Coefficients			
$(1.7\text{-}9.5) \times 10^{-13}$	298	Ennis and Birks, 1988	DF-RF/MS (a)

Comments

(a) HO radical decays in the presence of excess HOCl were monitored by resonance fluorescence. HOCl concentrations were measured by MS. The effects of the presence of Cl_2O and Cl_2 impurities in the HOCl and the occurrence of secondary reactions were investigated through computer modeling, and the lower and upper limits to the rate coefficient k cited in the table obtained.

Preferred Values

$k = 5.0 \times 10^{-13}\ cm^3\ molecule^{-1}\ s^{-1}$ at 298 K.

Reliability

$\Delta \log k = \pm 0.5$ at 298 K.

Comments on Preferred Values

The only reported experimental value of Ennis and Birks (1988) has a large uncertainty, and the preferred value is based on the mid-range value of $5 \times 10^{-13}\ cm^3\ molecule^{-1}\ s^{-1}$ at 298 K from this study.

References

Ennis, C. A. and Birks, J. W.: J. Phys. Chem. 92, 1119, 1988.