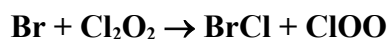


# IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation – Data Sheet iBrOx10

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: 12<sup>th</sup> July 2006.



$$\Delta H^\circ = -127.4 \text{ kJ mol}^{-1}$$

## Rate coefficient data

$k/\text{cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$	Temp./K	Reference	Technique/ Comments
<i>Absolute Rate Coefficients</i>			
$5.88 \times 10^{-12} \exp[-(173 \pm 20)/T]$ $(3.3 \pm 0.4) \times 10^{-12}$	223-298 298	Ingham et al., 2005	DF-MS (a)

## Comments

- (a)  $k$  was determined from pseudo-first order decay of  $\text{Cl}_2\text{O}_2$  in the presence of an excess of Br atoms.  $[\text{Br}]$  was determined after titration to BrCl, following reaction with  $\text{Cl}_2\text{O}$  or NOCl.

## Preferred Values

$$k = 3.3 \times 10^{-12} \text{ at } 298 \text{ K.}$$

$$k = 5.9 \times 10^{-12} \exp(170/T) \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1} \text{ over the range } 220 - 300 \text{ K.}$$

### Reliability

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

$$\Delta(E/R) = \pm 200 \text{ K.}$$

### Comments on Preferred Values

The preferred values are based on the study of Ingham et al. (2005), which is the only published determination of the reaction. The value of  $k$  at 298 K is in good agreement with an earlier unpublished discharge flow determination of R. R. Friedl (1991),  $3 \times 10^{-11} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$ , which formed the basis of our previous recommendation. Ingham et al. (2005) observed BrCl as a reaction product, providing evidence for the likely product channel (BrCl + ClOO), and were able to rule out the alternative formation of ClOBr and ClO from a failure to detect ClOBr.

## References

Ingham, T., Sander, S. P. and Friedl, R. R.: Faraday Discuss., 130, 89, 2005.