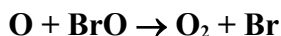


## IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation – Data Sheet iBrOx2

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: 23<sup>th</sup> July 2003.



$$\Delta H^\circ = -257 \text{ kJ}\cdot\text{mol}^{-1}$$

$k/\text{cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$	Temp./K	Reference	Technique/ Comments
<i>Absolute Rate Coefficients</i>			
$(2.5^{+2.5}_{-1.5}) \times 10^{-11}$	298	Clyne et al., 1976	DF-RF (a)
$1.9 \times 10^{-11} \exp[(230 \pm 150)/T]$	231-328	Thorn et al., 1995	PLP-A/RF (b)
$(4.1 \pm 0.6) \times 10^{-11}$	298		

### Comments

- Measurements of O atom consumption rates and Br atom production rates in the O + Br<sub>2</sub> reaction were interpreted to give an estimate of  $k(\text{O} + \text{BrO} \rightarrow \text{O}_2 + \text{Br})$ .
- Pulsed laser flash photolysis system with detection of BrO radicals by long path absorption and of O(<sup>3</sup>P) atoms by resonance fluorescence.

### Preferred Values

$$k = 4.1 \times 10^{-11} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1} \text{ at } 298 \text{ K.}$$

$$k = 1.9 \times 10^{-11} \exp(230/T) \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1} \text{ over the temperature range } 230 \text{ K to } 330 \text{ K.}$$

### Reliability

$$\Delta \log k = \pm 0.2 \text{ at } 298 \text{ K.}$$

$$\Delta(E/R) = \pm 150 \text{ K.}$$

### Comments on Preferred Values

The preferred value is based on the direct study of Thorn et al., (1995) in which the decay of O(<sup>3</sup>P) in the presence of excess BrO was monitored. Clyne et al. (1976) derived an indirect estimate of the room temperature value which was approximately 40% lower than the preferred value given above.

### References

- Clyne, M. A. A., Monkhouse, P. B. and Townsend, L. W.: Int. J. Chem. Kinet. 8, 425, 1976.  
Thorn, R. P., Cronkhite, J. M., Nicovich, J. M. and Wine, P. H.: J. Chem. Phys. 102, 4131, 1995.