IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation – Data Sheet iBrOx1

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$O + HOBr \rightarrow HO + BrO$

$\Delta H° \leq -36$ kJ·mol^{-1}

Rate coefficient data

k/cm^3 molecule^{-1} s^{-1}	Temp./K	Reference	Technique/ Comments
Absolute Rate Coefficients			
$(2.5 \pm 0.4) \times 10^{-11}$	298	Monks et al., 1993	DF-MS
$1.4 \times 10^{-10} \exp[-(430 \pm 260)/T]$	233-423	Nesbitt et al., 1995	DF-MS
$(2.5 \pm 0.6) \times 10^{-11}$	298		
$(3.1 \pm 0.2) \times 10^{-11}$	300	Kukui et al., 1996	DF-MS

Preferred Values

$k = 2.8 \times 10^{-11}$ cm^3 molecule^{-1} s^{-1} at 298 K.
$k = 1.2 \times 10^{-10} \exp(-430/T)$ cm^3 molecule^{-1} s^{-1} over the temperature range 230 K to 430 K.

Reliability

$\Delta \log k = \pm 0.2$ at 298 K.
$\Delta(E/R) = \pm 300$ K.

Comments on Preferred Values

The preferred rate coefficient at 298 K is the mean of the values of Nesbitt et al. (1995) and Kukui et al. (1996) and the temperature dependence is that of Nesbitt et al. (1995) with the A-factor adjusted to yield the preferred rate coefficient at 298 K. Note that the rate coefficient for this reaction is almost a factor of 200 greater than that for the corresponding reaction of O(^{3}P) atoms with HOCl (IUPAC, 2003).

References

IUPAC: http://iupac.ple-ether.fr, 2013
Kukui, A., Kirchner, U., Benter, Th. and Schindler, R. N.: Ber. Bunsenges. Phys. Chem. 100, 455, 1996.
Monks, P. S., Nesbitt, F. L., Scanlon, M. and Stief, L. J.: J. Phys. Chem. 97, 11699, 1993.
Nesbitt, F. L., Monks, P. S., Payne, W. A., Stief, L. J. and Toumi, R.: Geophys. Res. Lett. 22, 827, 1995.