IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation – Data Sheet oBrOx10

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HO + CF_2BrCF_2Br (Halon 2402) → products

Rate coefficient data

k/cm^3 molecule^{-1} s^{-1}	Temp./K	Reference	Technique/Comments
Absolute Rate Coefficients			
$<1.5 \times 10^{-16}$	298	Burkholder et al., 1991	DF-LMR/PLP-LIF
$<2.0 \times 10^{-17}$	298	Orkin and Khamaganov, 1993	DF-EPR
$<4.0 \times 10^{-16}$	460		

Preferred Values

$k < 6.0 \times 10^{-18}$ cm^3 molecule^{-1} s^{-1} at 298 K.
$k < 1.0 \times 10^{-12} \exp(-3600/T)$ cm^3 molecule^{-1} s^{-1} over the temperature range 250-460 K.

Comments on Preferred Values

Only upper limits to the rate coefficients were observed in the studies of Burkholder et al. (1991) and Orkin and Khamaganov (1993). The A-factor for the reaction was estimated to be ~1×10^{-12} cm^3 molecule^{-1} s^{-1}. The lower limit for E/R was estimated to be > 3600 K based on the upper limit value of the rate coefficient determined by Orkin and Khamaganov (1993) at 460 K. The upper limit for the rate coefficient at 298 K is obtained using these parameters.

References

Burkholder, J. B., Wilson, R. R., Gierczak, T., Talukdar, R., McKeen, S. A., Orlando, J. J., Vaghjiani, G. L. and Ravishankara, A. R.: J. Geophys. Res. 96, 5025, 1991.
Orkin, V. L. and Khamaganov, V. G.: J. Atmos. Chem. 16, 169, 1993.