

## IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation – Data Sheet oBrOx5

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### HO + CF<sub>2</sub>ClBr (Halon 1211) → products

#### Rate Coefficient Data

$k/\text{cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$	Temp./K	Reference	Technique/ Comments
<i>Absolute Rate Coefficients</i>			
$<1 \times 10^{-15}$	293	Clyne and Holt, 1979	DF-RF
$<2 \times 10^{-16}$	293	Burkholder et al., 1991	DF-LMR
$<9 \times 10^{-17}$	297		PLP-LIF
$<7 \times 10^{-17}$	373		PLP-LIF
$<2 \times 10^{-16}$	424		DF-LMR

#### Preferred Values

$k < 1 \times 10^{-17} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$  at 298 K.

$k < 1 \times 10^{-12} \exp(-3450/T) \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$  over the temperature range 250-380 K.

#### Comments on Preferred Values

The studies of Clyne and Holt (1979) and Burkholder et al. (1991) both observed no reaction of HO radicals with CF<sub>2</sub>ClBr. The preferred upper limit Arrhenius expression is obtained from an assumed Arrhenius pre-exponential factor of  $1 \times 10^{-12} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$  and the upper limit rate coefficient at 373 K measured by Burkholder et al. (1991). The resulting upper limit Arrhenius expression yields a 298 K upper limit rate coefficient which is consistent with the room temperature data of Clyne and Holt (1979) and Burkholder et al. (1991).

#### 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.  
Clyne, M. A. A. and Holt, P. M.: J. Chem. Soc. Faraday Trans. 2, 75, 569, 1979.