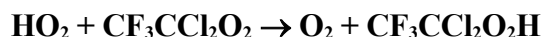


IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation – Data Sheet oClOx79

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 retransmitted or disseminated either electronically or in hardcopy without explicit written permission.

This data sheet last evaluated: June 2015; last change in preferred values: December 2004.



Rate coefficient data

$k/\text{cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$	Temp./K	Reference	Technique/ Comments
<i>Absolute Rate Coefficients</i> $(1.9 \pm 0.7) \times 10^{-12}$	298	Hayman et al., 1994	LP-UVA (a)

Comments

- (a) Laser flash photolysis-UV absorption study of $\text{CF}_3\text{CCl}_3\text{-CH}_3\text{OH-O}_2\text{-N}_2$ mixtures. The kinetic data were obtained by analyzing two sets of transient decays for $\text{CF}_3\text{CCl}_2\text{O}_2$ and HO_2 radicals on the basis of a mechanism consisting of 10 reactions.

Preferred Values

$k = 1.9 \times 10^{-12} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$ at 298 K.

Reliability

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

Comments on Preferred Values

While the above value of the rate coefficient seems reasonable, it has been derived from the analysis of a complex chemical system and requires independent verification to reduce the recommended error limits. It is interesting to note, by comparison with data for analogous halogenated RO_2 radicals, that while the α -substitution of Cl appears to reduce the rate coefficient slightly, the presence of the CF_3 group causes a much larger reduction in the value of k .

References

Hayman, G. D., Jenkin, M. E., Murrells, T. P. and Johnson, C. E.: Atmos. Environ. 28A, 421, 1994.