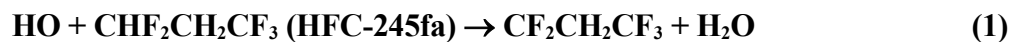


IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation – Data Sheet of FOx109

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This data sheet last evaluated: September 2011; last change in preferred values: September 2011.



Rate coefficient data ($k = k_1 + k_2$)

$k/\text{cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$	T/K	Reference	Technique/ Comments
<i>Absolute Rate Coefficients</i>			
$(6.12 \pm 0.22) \times 10^{-15}$	294	Nelson et al. (1995)	DF-LIF (a)
$6.32 \times 10^{-13} \exp[-(1331 \pm 43)/T]$	273-370	Orkin et al. (1996)	FP-RF (b)
$(7.24 \pm 0.02) \times 10^{-15}$	298		

Comments

- (a) HO radicals were generated by the reaction of H atoms with NO₂. The experiments were conducted in 1.1-6.8 Torr (1.5-9.1 mbar) of helium diluent. The loss of HO radicals was monitored by LIF at 282 nm.
- (b) HO radicals were generated by the flash photolysis of H₂O using a xenon lamp. The decay of HO radicals was monitored in the presence of CHF₂CH₂CF₃ in 100 Torr (133 mbar) of argon diluent.

Preferred Values

Parameter	Value	T/K
$k/\text{cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$	6.85×10^{-15}	298
$k/\text{cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$	$5.96 \times 10^{-13} \exp(-1331/T)$	270-370
<i>Reliability</i>		
$\Delta \log k$	± 0.1	298
$\Delta E/R$	± 300	

Comments on Preferred Values

The results reported by Nelson et al. (1995) and Orkin et al. (1996) are in excellent agreement. We have used the temperature dependence reported by Orkin et al. (1996) to adjust the result reported by Nelson et al. (1995) at 294 K (6.12×10^{-15}) to give a value at 298 K of $6.50 \times 10^{-15} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$. The recommended value at 298 K is the average of this result and that reported by Orkin et al. (1996). The recommended temperature dependence is taken from Orkin et al. (1996).

References

Nelson Jr., D. D., Zahniser, M. S., Kolb, C. E., and Magid, H.: J. Phys. Chem., 99, 16301, 1995.

