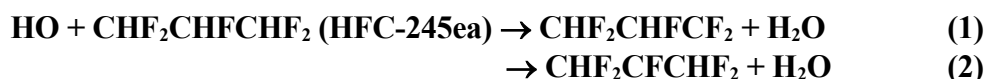


IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation - Data Sheet of FOx74; VII.A1.3

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The citation for the preferred values in this data sheet is: IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation, <http://iupac.pole-ether.fr>.

This datasheet last evaluated: June 2015; last change in preferred values: June 2009.



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>			
$(1.52 \pm 0.15) \times 10^{-14}$	294	Nelson et al. (1995)	DF-LIF (a)
1.93×10^{-14}	297	Rajakumar et al. (2006)	PLP-LIF (b)
$1.91 \times 10^{-12} \exp[-(1375 \pm 100)/T]$	238-374		

Comments

- (a) HO radicals were produced via the $\text{H} + \text{NO}_2$ reaction. Experiments were performed in 1.2-2.1 Torr (1.6-2.9 mbar) of helium diluent.
- (b) HO radicals were produced by 248 nm photolysis of H_2O_2 . Experiments were performed in 51-205 Torr (68-270 mbar) of helium diluent. The value given at 297 K is the average of the four determinations reported.

Preferred Values

Parameter	Value	T/K
k	$1.8 \times 10^{-14} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$	298
k	$1.8 \times 10^{-12} \exp(-1375/T) \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$	240-380
<i>Reliability</i>		
$\Delta \log k$	0.15	298
$\Delta E/R$	± 300	240-380

Comments on Preferred Values

The rate coefficient reported by Nelson et al. (1995) at 294 K is approximately 20% below that reported by Rajakumar et al. (2006) at 297 K. Adjusting both rate coefficients to values expected at 298 K using the temperature dependence reported by Rajakumar et al. (2006) reduces the difference between the studies to approximately 15%. Such a difference is within the likely combined uncertainties from the two studies. The preferred value at 298 K is the average of the values derived from Nelson et al. (1995) and Rajakumar et al. (2006). The temperature dependence is taken from Rajakumar et al. (2006) with the pre-exponential A factor adjusted to be consistent with the $k(298 \text{ K})$ value.

References

- Nelson Jr., D. D., Zahniser, M. S., Kolb, C. E., and Magid, H.: J. Phys. Chem., 99, 16301, 1995.
- Rajakumar, B., Portmann, R. W., Burkholder, J. B., and Ravishankara, A. R.: J. Phys. Chem. A, 110, 6724,

