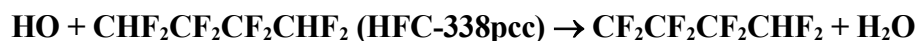


IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation - Data Sheet of O_x79; VII.A1.8

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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*)

<i>k</i> /cm ³ molecule ⁻¹ s ⁻¹	<i>T</i> /K	Reference	Technique/ Comments
<i>Absolute Rate Coefficients</i>			
$7.8 \times 10^{-13} \exp[-(1510 \pm 260)/T]$ $(4.18 \pm 0.30) \times 10^{-15}$	245-419 296	Zhang et al. (1992)	FP-RF (a)
$7.71 \times 10^{-13} \exp[-(1550 \pm 60)/T]$ $(3.87 \pm 0.27) \times 10^{-15}$	232-378 297	Schmoltner et al. (1993)	PLP-LIF (b)

Comments

- (a) HO radicals were produced by the flash photolysis ($\lambda \geq 165$ nm) of H₂O in 35 Torr (47 mbar) of argon diluent.
- (b) HO radicals were produced by the flash photolysis ($185 \text{ nm} \geq \lambda \geq 165 \text{ nm}$) of H₂O.

Preferred Values

Parameter	Value	<i>T</i> /K
<i>k</i>	$4.3 \times 10^{-15} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$	298
	$7.82 \times 10^{-13} \exp(-1548/T) \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$	230-420
<i>Reliability</i>		
$\Delta \log k$	0.08	298
$\Delta E/R$	± 200	230-420

Comments on Preferred Values

The results of the two studies are in good agreement. A fit of the Arrhenius expression to the combined data set from the two studies gives $k(\text{OH} + \text{CHF}_2\text{CF}_2\text{CF}_2\text{CHF}_2) = 7.82 \times 10^{-13} \exp(-1548/T) \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$. This expression gives $k(\text{OH} + \text{CHF}_2\text{CF}_2\text{CF}_2\text{CHF}_2) = 4.34 \times 10^{-15} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$ at 298 K.

References

- Zhang, Z., Saini, R.D., Kurylo, M.J., and Huie, R. E.: Chem. Phys. Lett., 200, 230, 1992.
- Schmoltner, A. M., Talukdar, R. K., Warren, R. F., Mellouki, A., Goldfarb, L., Gierczak, T., McKeen, S. A., and Ravishankara, A. R.: J. Phys. Chem., 97, 8976, 1993.

$k(\text{HO} + \text{CHF}_2\text{CF}_2\text{CF}_2\text{CHF}_2), 10^{-15} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$

