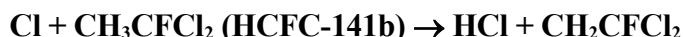


IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation – Data Sheet oC1Ox30

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. The citation for this data sheet is: Atkinson, R., Baulch, D. L., Cox, R. A., Crowley, J. N., Hampson, R. F., Hynes, R. G., Jenkin, M. E., Rossi, M. J., Troe, J., and Wallington, T. J.: Atmos. Chem. Phys., 9, 4141, 2008; IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation, <http://iupac.pole-ether.fr>. This data sheet last evaluated: June 2015; last change in preferred values: November 2003.



Rate coefficient data

$k/\text{cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$	Temp./K	Reference	Technique/ Comments
<i>Absolute Rate Coefficients</i>			
$(2.1 \pm 0.2) \times 10^{-15}$	297	Sawerysyn et al., 1992	DF-MS
$1.0 \times 10^{-12} \exp[-(1800 \pm 500)/T]$	298-376	Warren and Ravishankara, 1993	PLP-RF
$(2.4 \pm 0.4) \times 10^{-15}$	298		
$3.0 \times 10^{-12} \exp[-(2220 \pm 150)/T]$	299-429	Talhaoui et al., 1996	DF-MS
$(1.7 \pm 0.2) \times 10^{-15}$	299		
<i>Relative Rate Coefficients</i>			
$(2.0 \pm 0.2) \times 10^{-15}$	295	Wallington and Hurley, 1992	RR (a)
$(2.4 \pm 0.5) \times 10^{-15}$	298	Tuazon et al., 1992	RR (b)

Comments

- (a) Cl atoms were generated by the photolysis of Cl_2 . The decays of the reactant and reference organic were measured by FTIR spectroscopy. The measured rate coefficient ratio was placed on an absolute basis using $k(\text{Cl} + \text{CH}_4) = 1.0 \times 10^{-13} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$ (Atkinson et al., 2006).
- (b) Cl atoms were generated by the photolysis of Cl_2 . The decays of the reactant and reference organic were measured by FTIR spectroscopy. The measured rate coefficient was placed on an absolute basis using $k(\text{Cl} + \text{CH}_4) = 1.0 \times 10^{-13} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$ (Atkinson et al., 2006).

Preferred Values

Parameter	Value	T/K
$k/\text{cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$	2.1×10^{-15}	298
$k/\text{cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$	$1.7 \times 10^{-12} \exp(-2000/T)$	298-376
<i>Reliability</i>		
$\Delta \log k$	± 0.1	298
$\Delta(E/R)$	± 300	

Comments on Preferred Values

The preferred value at 298 K is an average of the results reported by Wallington and Hurley (1992), Tuazon et al. (1992), Warren and Ravishankara (1993) and Talhaoui et al. (1996). The

expression for the temperature dependence is an average of the values of E/R obtained by Warren and Ravishankara (1992) and Talhaoui et al. (1996). The data in Sawerysyn et al. (1992) are superseded by those in Talhaoui et al. (1996).

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