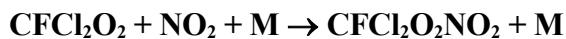


IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation – Data Sheet oRClOx43

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 updated: 27th January 2006.



$$\Delta H^\circ = -107 \text{ kJ mol}^{-1}$$

Low-pressure rate coefficients Rate coefficient data

$k_0/\text{cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$	Temp./K	Reference	Technique/ Comments
<i>Absolute Rate Coefficients</i>			
$(3.5 \pm 0.5) \times 10^{-29} [\text{O}_2]$	298	Lesclaux and Caralp, 1984	PLP-MS (a)
$(3.5 \pm 0.5) \times 10^{-29} (T/298)^{-4.1} [\text{O}_2]$	233-373	Lesclaux, Caralp and Dognon, 1986	PLP-MS (b)
$(5.5 \pm 1.6) \times 10^{-29} (T/298)^{-5.5} [\text{O}_2]$	233-373	Caralp et al., 1988	PLP-MS (c)

Comments

- Pulsed laser photolysis with MS detection of CFCl_2O_2 . Pressure range 1.3-13 mbar. Falloff extrapolation with $F_c = 0.6$ and $k_\infty = 6.0 \times 10^{-12} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$.
- As comment (a). Falloff extrapolation with $F_c = 0.6$ and $k_\infty = 5.9 \times 10^{-12} (T/298)^{-0.72} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$.
- As comment (a). Falloff extrapolation using $F_c = \exp(-T/342)$, i. e. $F_c = 0.42$ at 298 K, and $k_\infty = 8.3 \times 10^{-12} (T/298)^{-0.66} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$.

Preferred Values

$$k_0 = 5.5 \times 10^{-29} (T/298)^{-5.5} [\text{N}_2] \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1} \text{ over the temperature range 230-380 K.}$$

Reliability

$$\Delta \log k_0 = \pm 0.3 \text{ at 298 K.}$$

$$\Delta n = \pm 2.$$

Comments on Preferred Values

The data from Caralp et al. (1988) are preferred because they employ a value of $F_c = 0.42$. However, this value should be used independent of the temperature. Equal values of k_0 for the bath gases O_2 and N_2 are assumed.

High-pressure rate coefficients Rate coefficient data

$k_\infty/\text{cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$	Temp./K	Reference	Technique/ Comments
<i>Absolute Rate Coefficients</i>			
$(6.0 \pm 1.0) \times 10^{-12}$	298	Lesclaux and Caralp, 1984	(a)
$(5.9 \pm 1.0) \times 10^{-12} (T/298)^{-0.72}$	233-373	Lesclaux, Caralp and Dognon, 1986	(b)
$(8.3 \pm 1.0) \times 10^{-12} (T/298)^{-0.66}$	233-373	Caralp et al., 1988	(c)

Comments

- (a) See comment (a) for k_0 .
- (b) See comment (b) for k_0 .
- (c) See comment (c) for k_0 .

Preferred Values

$k_\infty = 8.3 \times 10^{-12} (T/298)^{-0.66} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$ over the temperature range 230-380 K.

Reliability

$\Delta \log k_\infty = \pm 0.2$ at 298 K.

$\Delta n = \pm 0.5$.

Comments on Preferred Values

See Comments on Preferred Values for k_0 .

References

Caralp, F., Lesclaux, R., Rayez, M.-T., Rayez, J.-C. and Forst, W.: J. Chem. Soc. Faraday Trans. 2, 84, 569, 1988.

Lesclaux, R. and Caralp, F.: Int. J. Chem. Kinet., 16, 1117, 1984.

Lesclaux, R., Caralp, F. and Dognon, A. M.: Geophys. Res. Lett., 13, 933, 1986.