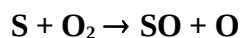


IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation – Data Sheet SOx7

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: 19th November 2001.



$$\Delta H^\circ = -23.0 \text{ kJ}\cdot\text{mol}^{-1}$$

Rate coefficient data

$k/\text{cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$	Temp./K	Reference	Technique/ Comments
<i>Absolute Rate Coefficients</i>			
$(2.0 \pm 0.5) \times 10^{-12}$	298	Fair and Thrush, 1969 ¹	DF-CL
$(2.8 \pm 0.3) \times 10^{-12}$	298	Fair, Van Roodselaar and Strausz, 1971 ²	FP-A
$2.2 \times 10^{-12} \exp[(0 \pm 50)/T]$	252-423	Davis, Klemm and Pilling, 1972 ³	FP-RF
$(1.7 \pm 0.3) \times 10^{-12}$	298	Donovan and Little, 1972 ⁴	FP-RA
$(1.5 \pm 0.3) \times 10^{-12}$	298	Clyne and Townsend, 1975 ⁵	DF-RF
$1.7 \times 10^{-12} \exp[(153 \pm 108)/T]$	296-393	Clyne and Whitefield, 1979 ⁶	DF-RF
$(2.6 \pm 0.3) \times 10^{-12}$	298		

Preferred Values

$k = 2.1 \times 10^{-12} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$, independent of temperature over the range 250-430 K.

Reliability

$\Delta \log k = \pm 0.2$ at 298 K.

$\Delta(E/R) = \pm 200$ K.

Comments on Preferred Values

All of the available measurements of k^{1-6} are in good agreement. Clyne and Whitefield⁶ observed a small decrease in k with increasing temperature, but until more definitive measurements of E/R are made a temperature independent k is recommended with error limits encompassing the existing measured values. The preferred value at 298 K is the mean of values from refs. 1-6.

References

- ¹ R. W. Fair and B. A. Thrush, *Trans. Faraday Soc.* **65**, 1557 (1969).
- ² R. W. Fair, A. Van Roodselaar, and O. P. Strausz, *Can J. Chem.* **49**, 1659 (1971).
- ³ D. D. Davis, R. B. Klemm, and M. J. Pilling, *Int. J. Chem. Kinet.* **4**, 367 (1972).
- ⁴ R. J. Donovan and D. J. Little, *Chem. Phys. Lett.* **13**, 488 (1972).
- ⁵ M. A. A. Clyne and L. W. Townsend, *Int. J. Chem. Kinet. Symp.* **1**, 73 (1975).
- ⁶ M. A. A. Clyne and P. D. Whitefield, *J. Chem. Soc. Faraday Trans. 2*, **75**, 1327 (1979).