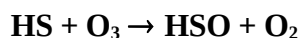


IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation – Data Sheet SO_x36

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.



$$\Delta H^\circ = -290 \text{ kJ}\cdot\text{mol}^{-1}$$

Rate coefficient data

$k/\text{cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$	Temp./K	Reference	Technique/ Comments
<i>Absolute Rate Coefficients</i>			
$(3.2 \pm 1.0) \times 10^{-12}$	298	Friedl, Brune and Anderson, 1985 ¹	DF-LIF
$(2.9 \pm 0.6) \times 10^{-12}$	298	Schoenle, Rahman and Schindler, 1987 ² ; Schindler and Benter, 1988 ³	DF-MS (a)
$1.1 \times 10^{-11} \exp[(-280 \pm 50)/T]$ $(4.39 \pm 0.88) \times 10^{-12}$	296-431 298	Wang and Howard, 1990 ⁴	DF-LMR

Comments

- (a) The value published in Schoenle, Rahman and Schindler, 1987² was corrected in the Erratum by Schindler and Benter, 1988³ to the value given in the table.

Preferred Values

$$k = 3.7 \times 10^{-12} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1} \text{ at } 298 \text{ K.}$$

$$k = 9.5 \times 10^{-12} \exp(-280/T) \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1} \text{ over the temperature range } 290\text{-}440 \text{ K.}$$

Reliability

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

$$\Delta(E/R) = \pm 250 \text{ K.}$$

Comments on Preferred Values

The values^{1,3,4} of k at 298 K agree reasonably well. A mean of the values from the three studies^{1,3,4} is taken as the preferred value. There is only one measurement of the temperature coefficient,⁴ which is the basis of the recommended expression, with the pre-exponential factor chosen to fit the recommended value of k at 298 K.

Since there is only one determination of the temperature dependence of k , and in view of the complexity of the secondary chemistry in these systems, substantial error limits are assigned.

References

- ¹ R. R. Friedl, W. H. Brune, and J. G. Anderson, *J. Phys. Chem.* **89**, 5505 (1985).
- ² G. Schoenle, M. M. Rahman, and R. N. Schindler, *Ber. Bunsenges. Phys. Chem.* **91**, 66 (1987).
- ³ R. N. Schindler and Th. Benter, *Ber. Bunsenges. Phys. Chem.* **92**, 558 (1988).
- ⁴ N. S. Wang and C. J. Howard, *J. Phys. Chem.* **94**, 8787 (1990).