

IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation – Data Sheet SOx74

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This data sheet last evaluated: 30th July 2007; revision of preferred values.

O₃ + CH₃SCH₃ → products

Rate coefficient data

<i>k</i> /cm ³ molecule ⁻¹ s ⁻¹	Temp./K	Reference	Technique/ Comments
<i>Absolute Rate Coefficients</i>			
<8.3 x 10 ⁻¹⁹	296	Martinez and Herron, 1978	S-MS (a)
(1.04 ± 0.21) x 10 ⁻¹⁹	301 ± 1	Du et al., 2007	S-UV (b)

Comments

- (a) Decays of CH₃SCH₃ were monitored by mass spectrometry in the presence of excess O₃, at a total pressure of 8 Torr (11 mbar).
- (b) O₃ decays were measured in the presence of excess CH₃SCH₃ at atmospheric pressure. Cyclohexane was also present in certain experiments to scavenge any HO radicals formed.

Preferred Values

$k < 2 \times 10^{-19} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$ at 298 K.

Comments on Preferred Values

The measurement of rate coefficients for slowly reacting chemicals is difficult and prone to erroneously high measured rate coefficients because of the presence of reactive impurities. The measured rate coefficient of Du et al. (2007) is used as the basis for the preferred value, with the upper limit to the 298 K preferred value being slightly higher than the reported rate coefficient of Du et al. (2007). The preferred value is consistent with the higher upper limit reported by Martinez and Herron (1978).

References

- Du, L., Xu, Y., Ge, M., Jia, L., Yao, L. and Wang, W.: Chem. Phys. Lett. 436, 36, 2007.
Martinez, R. I. and Herron, J. T.: Int. J. Chem. Kinet. 10, 433, 1978.