

IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation – Data Sheet SO_x30

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 last evaluated: 28th July 2007; no revision of preferred values.

NO₃ + OCS → products

Rate coefficient data

$k/\text{cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$	Temp./K	Reference	Technique/ Comments
<i>Relative Rate Coefficients</i> <4.6 x 10 ⁻¹⁷	297 ± 2	Mac Leod et al., 1986	RR (a)

Comments

- (a) NO₃ radicals were generated by the thermal decomposition of N₂O₅ at atmospheric pressure of air. The decay rates of OCS and propene were monitored by FTIR absorption spectroscopy. The upper limit to the rate coefficient is obtained by use of a rate coefficient of $k(\text{NO}_3 + \text{propene}) = 9.4 \times 10^{-15} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$ at 297 K (IUPAC, current recommendation).

Preferred Values

$k < 1 \times 10^{-16} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$ at 298 K.

Comments on Preferred Values

The preferred value is based upon the sole study of Mac Leod et al. (1986), with a somewhat higher upper limit than reported.

References

IUPAC: <http://iupac.pole-ether.fr>, 2007.

Mac Leod, H., Aschmann, S. M., Atkinson, R., Tuazon, E. C., Sweetman, J. A., Winer, A. M. and Pitts Jr., J. N.: J. Geophys. Res. 91, 5338, 1986.