

IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation – Data Sheet O_x_VOC11

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This data sheet updated: 12th December 2007 (with no revision of the preferred values).

O₃ + pinonaldehyde → products

Rate coefficient data

<i>k</i> /cm ³ molecule ⁻¹ s ⁻¹	Temp./K	Reference	Technique/ Comments
<i>Absolute Rate Coefficients</i>			
(8.9 ± 1.3) × 10 ⁻²⁰	300 ± 5	Glasius et al., 1997	S-FTIR (a,b)
<2 × 10 ⁻²⁰	296 ± 2	Alvarado et al., 1998	S-GC (a,c)

Comments

- Decays of pinonaldehyde monitored in the presence of an excess concentration of O₃ in the presence of ~1 bar of air.
- Pinonaldehyde was observed to decay to the 480 L reaction chamber walls in the absence of O₃, and these measured dark decays were taken into account in the data analysis.
- No decays of pinonaldehyde (<5%) were observed in the absence of O₃ in the 7000 L Teflon chamber used.

Preferred Values

$k = <2 \times 10^{-20} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$ at 298 K.

Comments on Preferred Values

The preferred upper limit to the 298 K rate coefficient is based on the study of Alvarado et al. (1998) carried out in a large volume Teflon chamber in which no wall losses of pinonaldehyde were observed.

References

- Alvarado, A., Arey, J. and Atkinson, R.: J. Atmos. Chem., 31, 281, 1998.
Glasius, M., Calogirou, A., Jensen, N. R., Hjorth, J. and Nielsen, C. J.: Int. J. Chem. Kinet., 29, 527, 1997.