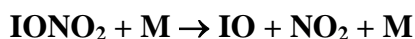


IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation – Data Sheet **iIOx20**

Datasheets can be downloaded for personal use only and must not be retransmitted or disseminated either electronically or in hardcopy without explicit written permission. The citation for this data sheet is: Atkinson, R., Baulch, D. L., Cox, R. A., Crowley, J. N., Hampson, R. F., Hynes, R. G., Jenkin, M. E., Rossi, M. J., and Troe, J., *Atmos. Chem. Phys.*, 7, 981-1191, 2007. / IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation, (<http://iupac.pole-ether.fr>).

This datasheet last evaluated: Sept 2018; last change in preferred values: Sept 2018



Falloff range

No direct measurements are available.

Preferred Values

$k(1\text{bar of air}) = 2.1 \times 10^{15} \exp(-13670/T) \text{ s}^{-1}$ over the temperature range 240-300 K.

$k(1\text{ bar of air}) = 3.4 \times 10^{-5} \text{ s}^{-1}$ at 298 K.

Reliability

$\Delta \log k = \pm 1$ at 300 K.

$\Delta E/R = \pm 500$ K.

Comments on Preferred Values

The expression was obtained by Kaltsoyannis and Plane (2008) by inverting an RRKM fit of rate coefficient measurements of the reverse reaction. Measurements of IO profiles at 473 K and 300 Torr indicated the presence of IONO₂ dissociation which is consistent with the proposed rate expression. This expression supercedes the earlier estimate of Allan and Plane (2002) who reported $k(1\text{bar of air}) = 1.1 \times 10^{15} \exp(-12060/T) \text{ s}^{-1}$.

References

Allan, B. J. and Plane, J. M. C.: *J. Phys. Chem. A*, 106, 8634, 2002.

Kaltsoyannis, N., and Plane, J. M. C., *Phys. Chem. Chem. Phys.*, 10, 1723-1733, 2008.