IUPAC Subcommittee on Gas Kinetic Data Evaluation – Data Sheet NO3_VOC11
Website: http://www.iupac-kinetic.ch.cam.ac.uk/. See website for latest evaluated data.
This datasheet updated: 9th August 2002.

$$NO_3 + CH_3C(O)CH_3 \rightarrow HNO_3 + CH_3C(O)CH_2$$

ΔH° = -15.5 kJ·mol^{-1}

Rate coefficient data

k/cm^3 molecule^{-1} s^{-1}	Temp./K	Reference	Technique/ Comments
Absolute Rate Coefficients			
$\leq(8.5 \pm 2.5) \times 10^{-18}$	302	Boyd *et al.*, 1991[1]	(a)

Comments

(a) Stopped flow system with detection of the NO_3 radical by optical absorption at 662 nm. Secondary reactions were believed to be important and a stoichiometry factor of ≥2 has been used to obtain the cited upper limit to the rate coefficient.

Preferred Values

$k < 3 \times 10^{-17}$ cm^3 molecule^{-1} s^{-1} at 298 K.

Comments on Preferred Values

The upper limit to the preferred value is derived from the overall rate coefficient of $(1.7 \pm 0.5) \times 10^{-17}$ cm^3 molecule^{-1} s^{-1} measured by Boyd *et al.*,[1] with no account taken of the expected greater than unity stoichiometry.

References

[1] A. Boyd, C. E. Canosa-Mas, A. D. King, R. P. Wayne, and M. R. Wilson, J. Chem. Soc. Faraday Trans. **87**, 2913 (1991).