i-$C_3H_7 + O_2 + M \rightarrow i$-$C_3H_7O_2 + M$

$\Delta H° = -158.9$ kJ·mol^{-1}

High-pressure rate coefficients

Rate coefficient data

k_∞/cm^3 molecule^{-1} s^{-1}	Temp./K	Reference	Technique/ Comments
Absolute Rate Coefficients			
$(1.41 \pm 0.24) \times 10^{-11}$	298	Ruiz and Bayes, 1984[1]	FP-MS (a)
8.3×10^{-12}	300	Munk *et al.*, 1986[2]	(b)

Comments

(a) No pressure dependence detected for He or N_2 pressures from 1.3 mbar to 5 mbar.
(b) Pulsed radiolysis in H_2 at 1 bar. i-C_3H_7 radicals were generated by the addition of H atoms to C_3H_6 and i-$C_3H_7O_2$ detected by UV absorption at 253 nm. Absorption spectrum of i-C_3H_7 was also detected.

Preferred Values

$k \approx k_\infty$ at 298 K and 1 bar of air.
$k_\infty = 1.1 \times 10^{-11}$ cm^3 molecule^{-1} s^{-1}, independent of temperature over the range 200 K to 300 K.

Reliability

$\Delta \log k_\infty = \pm 0.3$ over the range 200 K to 300 K.

Comments on Preferred Values

The preferred values are the average of the results from refs. 1 and 2. Falloff corrections are probably within the uncertainties of the average. The rate coefficient k_∞ for this reaction appears consistent with those for the reactions $C_2H_5 + O_2 + M \rightarrow C_2H_5O_2 + M$ and n-$C_3H_7 + O_2 + M \rightarrow n$-$C_3H_7O_2 + M$ (see this evaluation).

References

[1] R. P. Ruiz and K. D. Bayes, J. Phys. Chem. **88**, 2592 (1984).
[2] J. Munk, P. Pagsberg, E. Ratajczak, and A. Sillesen, Chem. Phys. Lett. **132**, 417 (1986).