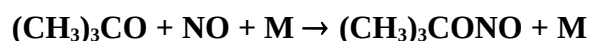


## IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation – Data Sheet II.A5.114 RO\_15

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This data sheet last evaluated: 4<sup>th</sup> June 2009. Last change in preferred values: 12<sup>th</sup> June 2003.



### High-pressure rate coefficients Rate coefficient data

$k_\infty/\text{cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$	Temp./K	Reference	Technique/ Comments
<i>Absolute Rate Coefficients</i>			
$(4.17 \pm 0.12) \times 10^{-11} (T/200)^{-1.27}$	200-390	Blitz <i>et al.</i> , 1999 <sup>1</sup>	LP-LIF (a)
$(2.74 \pm 0.5) \times 10^{-11} (T/300)^{-1.52}$	223-304	Lotz and Zellner, 2000 <sup>2</sup>	LP-LIF (b)

### Comments

- (a) Pulsed excimer laser photolysis of *tert*-butyl nitrite at 351 nm with and without added NO, using LIF detection of *tert*-butoxy and NO. Experiments in 92-658 mbar of He showed no pressure dependence of the rate coefficient.
- (b) Pulsed excimer laser photolysis of di-*tert*-butyl peroxide with added NO using LIF of *tert*-butoxy. No pressure dependence detected over the range 6.6-105 mbar of N<sub>2</sub>.

### Preferred Values

$k_\infty = 2.6 \times 10^{-11} (T/300)^{-1.4} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$  over the temperature range 200 to 400 K.

#### Reliability

$\Delta \log k_\infty = \pm 0.3$  at 298 K.

$\Delta n = \pm 0.5$ .

#### Comments on Preferred Values

The studies of refs. 1 and 2, using different sources of *tert*-butoxy radicals are in good agreement. The preferred values present the average of the two results.

### References

- <sup>1</sup> M. Blitz, M. J. Pilling, S. H. Robertson, and P. W. Seakins, *Phys. Chem. Chem. Phys.* **1**, 73 (1999).
- <sup>2</sup> Ch. Lotz and R. Zellner, *Phys. Chem. Chem. Phys.* **2**, 2353 (2000).