# IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation – Data Sheet ROO_38



This data sheet last evaluated: June 2010; last change in preferred values: June 2010.

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$$(CH_3)_2C(OH)CH_2O_2 + NO \rightarrow (CH_3)_2C(OH)CH_2O + NO_2 \quad (1)$$

$$(CH_3)_2C(OH)CH_2O_2 + NO + M \rightarrow (CH_3)_2C(OH)CH_2ONO_2 + M \quad (2)$$

## Rate coefficient data ($k = k_1 + k_2$)

| $k$/cm$^3$ molecule$^{-1}$ s$^{-1}$ | Temp./K | Reference | Technique/ Comments |
|---|---|---|---|
| *Absolute Rate Coefficients* | | | |
| $(4.9 \pm 0.9) \times 10^{-12}$ | 296 | Langer et al., 1994 | PR-UVA (a) |

## Comments

(a) $(CH_3)_2C(OH)CH_2O_2$ generated from the pulsed radiolysis of $SF_6$/*t*-butanol/$O_2$ mixtures at 1 bar. $k$ was investigated in experiments in which excess NO was added, and was determined from the formation kinetics of $NO_2$ as a function of NO concentration.

## Preferred Values

No recommendation

*Comments on Preferred Values*

Although the sole investigation of Langer et al. (1994) provides an indication of the magnitude of $k$, the determination is indirect and potentially complicated by delayed secondary sources of $NO_2$ in the system (e.g., the reaction of $HO_2$ with NO). Confirmatory determinations are therefore required before a recommendation can be made. It is noted that the wider kinetics database of reactions of NO with alkyl and β–hydroxyalkyl $RO_2$ radicals, generally show little sensitivity of the kinetics to the size or structure of the organic group, with values of $k$ of about (8–10) x $10^{-12}$ cm$^3$ molecule$^{-1}$ s$^{-1}$ typically reported (e.g., Miller et al., 2004, and references therein).

## References

Langer, S., Ljungström, E., Sehested, J. and Nielsen, O. J.: Chem. Phys. Lett., 226, 165, 1994.

Miller, A. M., Yeung, L. Y., Kiep, A. C. and Elrod, M. J.: Phys. Chem. Chem. Phys., 6 , 3402 – 3407, 2004.