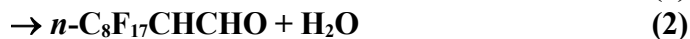


IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation - Data Sheet of FOx103; VII.A5.22

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The citation for the preferred values in this data sheet is: IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation, <http://iupac.pole-ether.fr>.

This datasheet last evaluated: June 2014; last change in preferred values: June 2009.



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

$k/\text{cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$	T/K	Reference	Technique/ Comments
<i>Relative Rate Coefficients</i> $(1.82 \pm 0.32) \times 10^{-12}$	296	Chiappero et al. (2008)	RR (a)

Comments

- (a) HO radicals were generated by the photolysis of CH_3ONO in $n\text{-C}_8\text{F}_{17}\text{CH}_2\text{CHO}/\text{C}_2\text{H}_4/\text{CH}_3\text{ONO}$ mixtures in 700 Torr (933 mbar) of air diluent. The loss of $\text{C}_8\text{F}_{17}\text{CH}_2\text{CHO}$ and C_2H_4 were monitored using FTIR spectroscopy and a rate coefficient ratio of $k(\text{HO}+\text{C}_8\text{F}_{17}\text{CH}_2\text{CHO})/k(\text{HO}+\text{C}_2\text{H}_4) = 0.23 \pm 0.04$ was obtained. Using $k(\text{HO}+\text{C}_2\text{H}_4) = 7.9 \times 10^{-12}$ (Atkinson et al., 2006) gives $k(\text{HO}+\text{C}_8\text{F}_{17}\text{CH}_2\text{CHO}) = (1.82 \pm 0.32) \times 10^{-12} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$.

Preferred Values

Parameter	Value	T/K
$k/\text{cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$	1.8×10^{-12}	298
<i>Reliability</i> $\Delta \log k$	0.15	298

Comments on Preferred Values

The recommendation is based on the sole study of this reaction by Chiappero et al. (2008). The reaction is expected to proceed predominantly via abstraction of the aldehydic hydrogen giving $\text{C}_8\text{F}_{17}\text{CH}_2\text{C}(\text{O})$ radicals.

References

- 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., 6, 3625, 2006; IUPAC Subcommittee for Gas Kinetic Data Evaluation, <http://iupac.pole-ether.fr>.
Chiappero, M. S., Argüello, G. A., Hurley, M. D., Wallington, T. J.: Chem. Phys. Lett., 461, 198, 2008.