IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation - Data Sheet oFOx103; VII.A5.22

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$$HO + n\text{-}C_8F_{17}CH_2CHO \rightarrow n\text{-}C_8F_{17}CH_2CO + H_2O \quad (1)$$
$$\rightarrow n\text{-}C_8F_{17}CHCHO + H_2O \quad (2)$$

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

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

Comments

(a) HO radicals were generated by the photolysis of CH_3ONO in n-$C_8F_{17}CH_2CHO$/C_2H_4/CH_3ONO mixtures in 700 Torr (933 mbar) of air diluent. The loss of $C_8F_{17}CH_2CHO$ and C_2H_4 were monitored using FTIR spectroscopy and a rate coefficient ratio of k(HO+$C_8F_{17}CH_2CHO$)/k(HO+C_2H_4) = 0.23 ± 0.04 was obtained. Using k(HO+C_2H_4) = 7.9 x 10^{-12} (Atkinson et al., 2006) gives k(HO+$C_8F_{17}CH_2CHO$) = (1.82 ± 0.32) x 10^{-12} cm^3 molecule^{-1} s^{-1}.

Preferred Values

Parameter	Value	T/K
k /cm^3 molecule^{-1} s^{-1}	1.8 x 10^{-12}	298
Reliability		
$\Delta \log k$	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 $C_8F_{17}CH_2C(O)$ 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.