**Task Group on Atmospheric Chemical Kinetic Data Evaluation – Data Sheet oClOx26**

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**Cl + CH2FCH2F (HFC-152)  HCl + CHFCH2F**

*H* = -4.6 kJ mol-1

**Rate coefficient data**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *k*/cm3 molecule-1 s-1 | Temp./K | Reference | Technique/ Comments | |
| *Relative Rate Coefficients* |  |  |  | |
| 2.8 x 10-11 exp(-1065/*T*) | 280-360 | Yano and Tschuikow-Roux, 1986 | RR (a) |  |
| 7.8 x 10-13 | 298 |  |  |  |
| (6.6  0.2) x 10-13 | 296 | Wallington et al., 1994 | RR (b) |  |
| (6.5  0.4) x 10-13 | 296 |  | RR (c) |  |

**Comments**

(a) Cl atoms were generated by the photolysis of Cl2. Product yield ratios were measured by GC and the measured rate coefficient ratio *k*(Cl+CH2FCH2F)/*k*(Cl+C2H6) = 0.333 exp(-965)/T was placed on an absolute basis using *k*(Cl + C2H6) = 8.1 x 10-11 exp(-100/*T*) cm3 molecule-1 s-1 (Atkinson et al., 2006).

(b) Cl atoms were generated by the photolysis of Cl2 in presence of CH2FCH2F-CH4 in air at 930 mbar total pressure. Loss of reactants was monitored by FTIR. The measured rate coefficient ratio *k*(Cl + CH2FCH2F)/*k*(Cl + CH4) = (6.60  0.16) was placed on an absolute basis using *k*(Cl + CH4) = 1.0 x 10-13 cm3 molecule-1 s-1 (Atkinson et al., 2006).

1. Cl atoms were generated by the photolysis of Cl2 in presence of CH2FCH2F-CH3Cl mixtures in air at 930 mbar total pressure. Loss of reactants was monitored by FTIR. The measured rate coefficient ratio *k*(Cl + CH2FCH2F)/*k*(Cl + CH3Cl) = (1.36  0.07) was placed on an absolute basis using *k*(Cl + CH3Cl) = 4.8 x 10-13 cm3 molecule-1 s-1 (Atkinson et al., 2006).

**Preferred Values**

|  |  |  |
| --- | --- | --- |
| **Parameter** | **Value** | ***T*/K** |
|  |  |  |
| *k* /cm3 molecule-1 s-1 | 7.0 x 10-13 | 298 |
| *k* /cm3 molecule-1 s-1 | 2.5 x 10-11 exp(-1065/*T*) | 280-360 |

*Reliability*

|  |  |  |
| --- | --- | --- |
|  log *k* | ± 0.2 | 298 |
| Δ(*E*/*R*) | ± 400 |  |

*Comments on Preferred Values*

The recommended value at 298 K is an average of the rate constants obtained by the relative rate studies of Yano and Tschuikow-Roux, (1986) and Wallington et al. (1994). The expression for the temperature dependence is taken from Yano and Tschuikow-Roux, (1986), modified to reproduce the recommended value at 298 K.

**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](http://iupac.pole-ether.fr/).

Wallington, T. J., Hurley, M. D., Ball, J. C., Ellermann, T., Nielsen, O. J. and Sehested, J.: J. Phys. Chem. ,98, 5435, 1994.

Yano, T. and Tschuikow-Roux, E.: J. Photochem., 32, 25, 1986.

