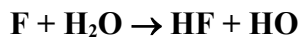


## IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation – Data Sheet iFOx5

Website: <http://iupac.pole-ether.fr>. See website for latest evaluated data. Data sheets can be downloaded for personal use only and must not be re-transmitted or disseminated either electronically or in hard copy without explicit written permission.

This data sheet last evaluated: 28<sup>th</sup> June 2007; no revision of preferred values.



$$\Delta H^\circ = -73.7 \text{ kJ}\cdot\text{mol}^{-1}$$

### Rate coefficient data

$k/\text{cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$	Temp./K	Reference	Technique/ Comments
<i>Absolute Rate Coefficients</i>			
$4.2 \times 10^{-11} \exp[-(400 \pm 70)/T]$	243-369	Walther and Wagner, 1983	DF-MS
$(1.1 \pm 0.1) \times 10^{-11}$	300		
$(1.3 \pm 0.1) \times 10^{-11}$	$298 \pm 4$	Frost et al., 1986	PLP-CL (a)
$1.6 \times 10^{-11} \exp[-(28 \pm 42)/T]$	240-373	Stevens et al., 1989	DF-RF (b)
$(1.42 \pm 0.06) \times 10^{-11}$	298		

### Comments

- (a) Pulsed laser photolysis of F<sub>2</sub>-H<sub>2</sub>O-he mixtures at 308 nm, with HF chemiluminescence being monitored.
- (b) Discharge flow system. F atoms were converted to D atoms by reaction with D<sub>2</sub> downstream of the reaction zone. D atoms were monitored by resonance fluorescence.

### Preferred Values

$k = 1.4 \times 10^{-11} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$ , independent of temperature over the range 240-380 K.

#### Reliability

$\Delta \log k = \pm 0.1$  at 298 K.

$\Delta(E/R) = \pm 200$  K.

#### Comments on Preferred Values

The recommended temperature-independent value is based on the study of Stevens et al. (1989). This value is in good agreement with the room temperature results of Walther and Wagner (1983) and Frost et al. (1986). Walther and Wagner (1983) reported an  $E/R$  value of 400 K. Although the data of Walther and Wagner (1983) have not been used in the derivation of the preferred values, with the exception of the one low temperature (243 K) data point they agree with the preferred values within the stated uncertainties.

## References

- Frost, R. J., Green, D. S., Osborn, M. K. and Smith, I. W. M.: *Int. J. Chem. Kinet.* 18, 885, 1986.
- Stevens, P. S., Brune, W. H. and Anderson, J. G.: *J. Phys. Chem.* 93, 4068, 1989.
- Walther, C.-D. and Wagner, H. Gg.: *Ber. Bunsenges. Phys. Chem.* 87, 403, 1983.