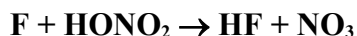


## IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation – Data Sheet iFOx9

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.



$$\Delta H^\circ = -143.9 \text{ kJ}\cdot\text{mol}^{-1}$$

### Rate coefficient data

$k/\text{cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$	Temp./K	Reference	Technique/ Comments
<i>Absolute Rate Coefficients</i>			
$(2.7 \pm 0.5) \times 10^{-11}$	298	Mellouki et al., 1987	DF-EPR
$(2.1 \pm 1) \times 10^{-11}$	298	Rahman et al., 1988	DF-MS
$6.0 \times 10^{-12} \exp[(400 \pm 120)/T]$	260-320	Wine et al., 1988	PLP-A (a)
$(2.3 \pm 0.3) \times 10^{-11}$	298		
$(2.2 \pm 0.2) \times 10^{-11}$	298	Becker et al., 1991	DF-MS
$(2.3 \pm 0.2) \times 10^{-11}$	298	Becker et al., 1991	DF-EPR

### Comments

- (a) Pulsed laser photolysis of F<sub>2</sub>-HONO<sub>2</sub>-He mixtures at 351 nm, with detection of NO<sub>3</sub> radicals by long-path laser absorption at 662 nm. At higher temperatures (335-373 K) the rate coefficient was observed to be independent of temperature with a value of  $(2.0 \pm 0.3) \times 10^{-11} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$ .

### Preferred Values

$$k = 2.3 \times 10^{-11} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1} \text{ at } 298 \text{ K.}$$

$$k = 6.0 \times 10^{-12} \exp(400/T) \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1} \text{ over the temperature range } 260\text{-}320 \text{ K.}$$

### Reliability

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

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

### Comments on Preferred Values

The recommendation is based on the results of the temperature-dependent study of Wine et al. (1988) and the room temperature results of Mellouki et al. (1987), Rahman et al. (1988) and Becker et al. (1991). The values at room temperature are in good agreement. The study of Wine et al. (1988) was carried out over the temperature range 260-373 K; below 320 K the authors fitted their data with the Arrhenius expression recommended here, whereas at higher temperatures a temperature-independent value was found suggesting the occurrence of different mechanisms in the two temperature regimes.

## References

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