IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation – Data Sheet iFOx11

This data sheet updated: 22th July 2003.

FO + NO → F + NO_2

$\Delta H° = -87$ kJ·mol^{-1}

Rate coefficient data

k/cm^3 molecule^{-1} s^{-1}	Temp./K	Reference	Technique/ Comments
Absolute Rate Coefficients			
$(2.6 \pm 0.5) \times 10^{-11}$	298	Ray and Watson, 1981[1]	DF-MS
$1.86 \times 10^{-11}(T/300)^{-(0.66 \pm 0.13)}$	300-845	Bedzhanyan, Markin, and Gershenzon, 1993[2]	DF-LMR
$(1.9 \pm 0.4) \times 10^{-11}$	300		

Preferred Values

$k = 2.2 \times 10^{-11}$ cm^3 molecule^{-1} s^{-1} at 298 K.
$k = 8.2 \times 10^{-12} \exp(300/T)$ cm^3 molecule^{-1} s^{-1} over the temperature range 290 K to 850 K.

Reliability

$\Delta \log k = \pm 0.15$ at 298 K.
$\Delta(E/R) = \pm 200$ K.

Comments on Preferred Values

The preferred room temperature value is the average of the room temperature values from the only two studies of Ray and Watson[1] and Bedzhanyan *et al*.[2] The temperature dependence is derived from a fit to the data of Bedzhanyan *et al*.[2] and the *A*-factor is fitted to the preferred 298 K value. The temperature dependence is similar to those for the analogous ClO and BrO radical reactions.

References

1 G. W. Ray and R. T. Watson, J. Phys. Chem. **85**, 2955 (1981).
2 Yu. R. Bedzhanyan, E. M. Markin, and Yu. M. Gershenzon, Kinet. Catal. **34**, 1 (1993); original pages 7-10 (1993).