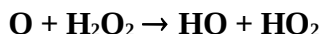


## IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation – Data Sheet HOx5

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 retransmitted or disseminated either electronically or in hardcopy without explicit written permission.

This data sheet updated: 2<sup>nd</sup> October 2001.



$$\Delta H^\circ = -60.1 \text{ kJ}\cdot\text{mol}^{-1}$$

### Rate coefficient data

$k/\text{cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$	Temp./K	Reference	Technique/ Comments
<i>Absolute Rate Coefficients</i>			
$2.75 \times 10^{-12} \exp[-(2125 \pm 261)/T]$	283-368	Davis, Wong and Schiff, 1974 <sup>1</sup>	FP-RF
$2.1 \times 10^{-15}$	298		
$1.13 \times 10^{-12} \exp[-(2000 \pm 160)/T]$	298-386	Wine <i>et al.</i> , 1983 <sup>2</sup>	FP-RF
$(1.45 \pm 0.29) \times 10^{-15}$	298		

### Preferred Values

$$k = 1.7 \times 10^{-15} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1} \text{ at } 298 \text{ K.}$$

$$k = 1.4 \times 10^{-12} \exp(-2000/T) \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1} \text{ over the temperature range } 280\text{--}390 \text{ K.}$$

### Reliability

$$\Delta \log k = \pm 0.3 \text{ at } 298 \text{ K.}$$

$$\Delta(E/R) = \pm 1000 \text{ K.}$$

### Comments on Preferred Values

The preferred values are based on the results of Davis *et al.*<sup>1</sup> and Wine *et al.*<sup>2</sup> These two studies are in agreement with regard to the temperature coefficient of the rate coefficient, but the absolute values of  $k$  differ by a factor of 2 throughout the range. In both cases the pre-exponential factor obtained is low compared with other atom-molecule reactions. To obtain the preferred values the temperature coefficient is accepted and the pre-exponential factor adjusted to obtain agreement with the recommended value of  $k$  at 298 K, which is the mean of the values found in the two studies.

Roscoe<sup>3</sup> has discussed earlier work on this reaction, which was invalidated by secondary reactions affecting the measurements.

## References

- <sup>1</sup> D. D. Davis, W. Wong, and R. Schiff, *J. Phys. Chem.* **78**, 463 (1974).
- <sup>2</sup> P. H. Wine, J. M. Nicovich, R. J. Thompson, and A. R. Ravishankara, *J. Phys. Chem.* **87**, 3948 (1983).
- <sup>3</sup> J. M. Roscoe, *Int. J. Chem. Kinet.* **14**, 471 (1982).