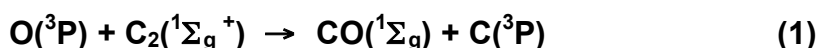


Author: Ian Smith (Cambridge University, UK)



#### Thermodynamic Data

$$\Delta H_{298}^0(1) = -480.8 \text{ kJ mol}^{-1}$$

Thermochemical data are taken from ref. (\*)

#### Rate Coefficient Data $k$

$k / \text{cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$	$T / \text{K}$	Reference	Comments
--	----------------	-----------	----------

#### Rate Coefficient Measurements

The only measurement that I can find (NIST database) is a shock tube study dating from 1969 giving a rate constant ( $6 \times 10^{-10} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$ ) at 8000 K.

#### Reviews and Evaluations

Nothing given for this reaction		Baulch <i>et al.</i> , 2005	(*)
$1.0 \times 10^{-10}$	10 – 300	UMIST database	
$1.0 \times 10^{-10}$	no $T$ -dependence	OSU website	

#### Comments

This reaction is highly exothermic and spin-allowed. I think that it is likely to be very fast. Unfortunately there are no measurements even at room temperature, never mind lower. It could probably be studied using the combined flowtube/pulsed photolysis used to study O + OH and N + OH but no-one has attempted this.

#### Reliability

$$\Delta \log k_1 (298 \text{ K}) = \pm 0.5$$

$$\Delta \log k_1 (10 \text{ K}) = \pm 0.5$$

$$F_0 = 3 ; g = 0$$

#### Comments on Preferred Values

I recommend values higher than those in the UMIST and Ohio databases but give wide uncertainties (factor of 3).

#### Preferred Values

$$k(298 \text{ K}) = 2.0 \times 10^{-10} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$$

$$k(10 \text{ K}) = 3.0 \times 10^{-10} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$$

$$k(T) = 2.0 \times 10^{-10} (T/300)^{-0.12} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$$

#### References

(\*) D. L. Baulch *et al.*, *J. Phys. Chem. Ref. Data* **34**, 575 (2005).

