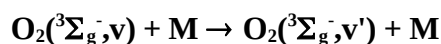


IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation – Data Sheet Ox6

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This data sheet updated: 2nd October 2001.



Rate coefficient data

$k/\text{cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$	M	ν	Temp./K	Reference	Technique/Comments
<i>Absolute Coefficients</i>					
<i>Rate</i>					
$(4.7 \pm 0.3) \times 10^{-15}$	O ₂	19	295	Price <i>et al.</i> , 1993 ¹	(a)
$(3.2 \pm 0.3) \times 10^{-15}$		20			
$(5.8 \pm 1.2) \times 10^{-15}$		21			
$(5.4 \pm 0.8) \times 10^{-14}$		22			
$(1.2 \pm 0.4) \times 10^{-14}$		23			
$(0.84 \pm 0.04) \times 10^{-14}$		24			
$(1.8 \pm 0.05) \times 10^{-14}$		25			
$(4.7 \pm 0.2) \times 10^{-14}$		26			
$(2.3 \pm 0.1) \times 10^{-14}$	O ₂	19	460		
$(3.1 \pm 0.08) \times 10^{-14}$		20			
$(2.2 \pm 0.9) \times 10^{-14}$		21			
$(3.7 \pm 0.3) \times 10^{-14}$		22			
$(4.1 \pm 0.6) \times 10^{-14}$		23			
$(6.9 \pm 0.5) \times 10^{-14}$		24			
$(11.7 \pm 0.2) \times 10^{-14}$		25			
$(16.4 \pm 2) \times 10^{-14}$		26			
$>8.3 \times 10^{-14}$		27			
$>1.2 \times 10^{-11}$		28			
6.5×10^{-14}	O ₂	8	300	Park and Slinger, 1994 ²	(b)
$>1.3 \times 10^{-13}$	He	22			
$(1.53 \pm 0.25) \times 10^{-11}$	O ₃	22			
2×10^{-13}	CO ₂	14			
9×10^{-14}		22			

Comments

(a) Vibrationally highly excited electronic ground state O₂ molecules were generated by stimulated emission pumping, and detected by LIF.

(b) Vibrationally highly excited electronic ground state O₂ molecules were formed by ozone photodissociation at 248 nm (Hartley band). The excited molecules were detected by LIF. Rate coefficients were evaluated using a cascade model, in which relaxation through single-quantum V-V and V-T steps was assumed.

Preferred Values

See table.

Reliability

$\Delta \log k = \pm 0.5$.

Comments on Preferred Values

The results given from ref. 1, and more results presented in graphical form from ref. 2, appear consistent with each other.

References

- ¹ J. M. Price, J. A. Mack, C. A. Rogaski, and A. M. Wodtke, *Chem. Phys.* **175**, 83 (1993).
- ² H. Park and T. G. Slanger, *J. Chem. Phys.* **100**, 287 (1994).