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$$\mathbf{N(^4S) + C_2N(X^2\Pi) \rightarrow CN(X\,^2\Sigma^+) + CN(X\,^2\Sigma^+)} \quad \Delta Hr^{298} = -277 \text{ kJ mol}^{-1} \textit{ (Baulch et al., 2005)}$$

Rate Coefficient Data *k*

k / cm^3 molecule^{-1} s^{-1}	T / K	Reference	Comments
Rate Coefficient Measurements			
1.0×10^{-10}	300 K	(a)	use the value given to model the time-dependence of CN in their experiments to find k for N + CN. It seems a reasonable value but is not a *measurement*. I doubt that their fitting is sensitive to the value assumed.
Reviews and Evaluations			
1.0×10^{-10}	10 - 300	UMIST database	
1.0×10^{-10}	no T-dependence	OSU website	

Comments

This radical-radical reaction is strongly exothermic. Reaction is spin-allowed (over triplet PESs). However, the reactants also correlate with quintet PESs.

Preferred Values

Rate coefficient (10 – 300 K)

k(300 K) = 1 x 10^{-10} cm^3 molecule^{-1} s^{-1}
k(10 K) = 1 x 10^{-10} cm^3 molecule^{-1} s^{-1}
k(T) = 1 x 10^{-10} cm^3 molecule^{-1} s^{-1}

Reliability

$\Delta \log k$ (300 K) = ± 0.5
$\Delta \log k$ (10 K) = ± 0.6
F_0 = 3 ; g = 2.97

Comments on Preferred Values

The UMIST and Ohio databases adopt the value given in (a). Despite my reservations about this experiment, I believe that the value they give is a reasonable estimate.

References

DL Baulch, CT Bowman, CJ Cobos, RA Cox, T Just, JA Kerr, MJ Pilling, D Stocker, J Troe, W Tsang, RW Walker, J Warnatz: J. Phys. Chem. Ref. Data 34 (2005) 757-1397. Thermochemical data for C_2N is evaluated from the paper by Mebel and Kaiser (b).

(a) A. R. Whyte and L. F. Phillips, Bull. Chem. Soc. Belg. **92**, 635 (1983); Chem. Phys. Lett. **98**, 590 (1983).
(b) A. M. Mebel and R. I. Kaiser, Ap. J. **564**, 787 (2002)