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$O(^3P) + C_3N(X^2\Sigma^+) \rightarrow CO(^1\Sigma^+) + C_2N(^2\Pi)$ (1) No thermochemical data for C_3N

Rate Coefficient Data *k*

k / cm^3 molecule^{-1} s^{-1}	T / K	Reference
Rate Coefficient Measurements		
No measurements in the literature were found.		
Reviews and Evaluations		
4×10^{-11}	10 – 300	UMIST database
4×10^{-11}	no T-dependence	OSU website

Comments

This radical-radical reaction (forming CO) is presumably exothermic and is spin-allowed (over doublet PESs). However, the reactants also correlate with quartet 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 same rate coefficient value – though it is not clear how they arrive at this value. It seems to me to be slightly low – even allowing for the non-reactive quintet PESs that correlate with the reactants.

References