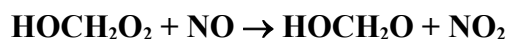


IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation – Data Sheet ROO_36

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. The citation for this data sheet is: IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation, <http://iupac.pole-ether.fr>.

This data sheet last evaluated: September 2009; last change in preferred values: September 2009.



Rate coefficient data

$k/\text{cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$	Temp./K	Reference	Technique/ Comments
<i>Absolute Rate Coefficients</i>			
5.6×10^{-12}	298	Veyret et al., 1982	FP-AS (a)

Comments

- (a) Flash photolysis of HCHO-NO₂-O₂-N₂ mixtures. The progress of the reaction was followed by time-resolved measurements of the chain formation of NO₂ through absorption at 514.5 nm. The value of k was extracted from simulations of the absorption profiles, using a detailed chemical mechanism, with the values of a number of other rate coefficients optimised simultaneously. The mechanism and parameters were further validated through simulations of HCOOH reported in other studies.

Preferred Values

Parameter	Value	T/K
$k/\text{cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$	5.6×10^{-12}	298
<i>Reliability</i>		
$\Delta \log k$	± 0.3	298

Comments on Preferred Values

The preferred value of k is based on the results of the only study of the reaction. The wide reliability limits reflect that k was extracted from simulation of a complex system with limited observational constraints. However, it is noted that the value is comparable with those recommended for the reactions of NO with the structurally-similar radicals CH₃O₂ and HOCH₂CH₂O₂. Independent confirmatory studies are required, as are measurements as a function of temperature.

References

Veyret, B., Rayez, J-C. and Lesclaux, R.: J. Phys. Chem., 86, 3424, 1982.