

IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation – Data Sheet SOx31

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This data sheet last evaluated: 28th July 2007; no revision of preferred values.

NO₃ + SO₂ → products

Rate coefficient data

$k/\text{cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$	Temp./K	Reference	Technique/ Comments
<i>Absolute Rate Coefficients</i>			
$<4 \times 10^{-16}$	298	Burrows et al., 1985	MM-A
$\leq 4 \times 10^{-16}$	298 ± 2	Wallington et al., 1986	FP-A
$<1 \times 10^{-17}$	295 ± 2	Canosa-Mas et al., 1988	DF-A
$<1.2 \times 10^{-17}$	473	Canosa-Mas et al., 1988	DF-A
$<1 \times 10^{-15}$	298	Dlugokencky and Howard, 1988	F-LIF
<i>Relative Rate Coefficients</i>			
$<7 \times 10^{-21}$	303	Daubendiek and Calvert, 1975	RR (a)

Comments

- (a) Derived from the lack of observation of SO₃ formation in N₂O₅-SO₂-O₃ mixtures, using IR absorption spectroscopy to measure the concentrations of SO₃.

Preferred Values

$k < 1 \times 10^{-19} \text{ cm}^3 \text{ molecule}^{-1} \text{ s}^{-1}$ at 298 K.

Comments on Preferred Values

The preferred value is based upon the relative rate study of Daubendiek and Calvert (1975), with a much higher upper limit. This preferred upper limit to the 298 K rate coefficient is consistent with the upper limits measured in the absolute rate coefficient studies of Burrows et al. (1985), Wallington et al. (1986), Canosa-Mas et al. (1988a,b) and Dlugokencky and Howard (1988).

References

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