IUPAC Task Group on Atmospheric Chemical Kinetic Data Evaluation – Data Sheet PBr6

This data sheet updated: 20th July 2006.

$BrNO_2 + h\nu \rightarrow$ products

Primary photochemical processes

Reaction		$\Delta H°/kJ \cdot mol^{-1}$ *	$\lambda_{threshold}/nm$
$BrNO_2 + h\nu \rightarrow Br + NO_2$	(1)	94	1272

*$\Delta H°_{298}(BrNO_2) = 51$ kJ·mol^{-1} taken from Lee (1996).

Preferred Values

Absorption cross-sections for $BrNO_2$ at 296 K

λ/nm	10^{20} σ/cm^2	λ/nm	10^{20} σ/cm^2	λ/nm	10^{20} σ/cm^2
185	2048	275	116	365	19
190	3601	280	88	370	17
195	5013	285	63	375	18
200	5386	290	44	380	17
205	4499	295	30	385	17
210	2521	300	20	390	16
215	1170	305	15	395	15
220	554	310	11	400	14
225	373	315	11	405	14
230	343	320	10	410	13
235	362	325	12	415	12
240	387	330	13	420	11
245	390	335	14	425	10
250	363	340	16	430	9
255	310	345	15	435	8
260	251	350	16	440	7
265	197	355	16	445	7
270	154	360	18	450	6

Comments on Preferred Values

The absorption spectrum of $BrNO_2$ samples (0.2 – 4 mbar, purity estimated as 95 %) have been reported by Scheffler et al. (1997). Burkholder and Orlando (2000) report a similar shaped $BrNO_2$ spectrum in their photochemical study of BrONO formation.

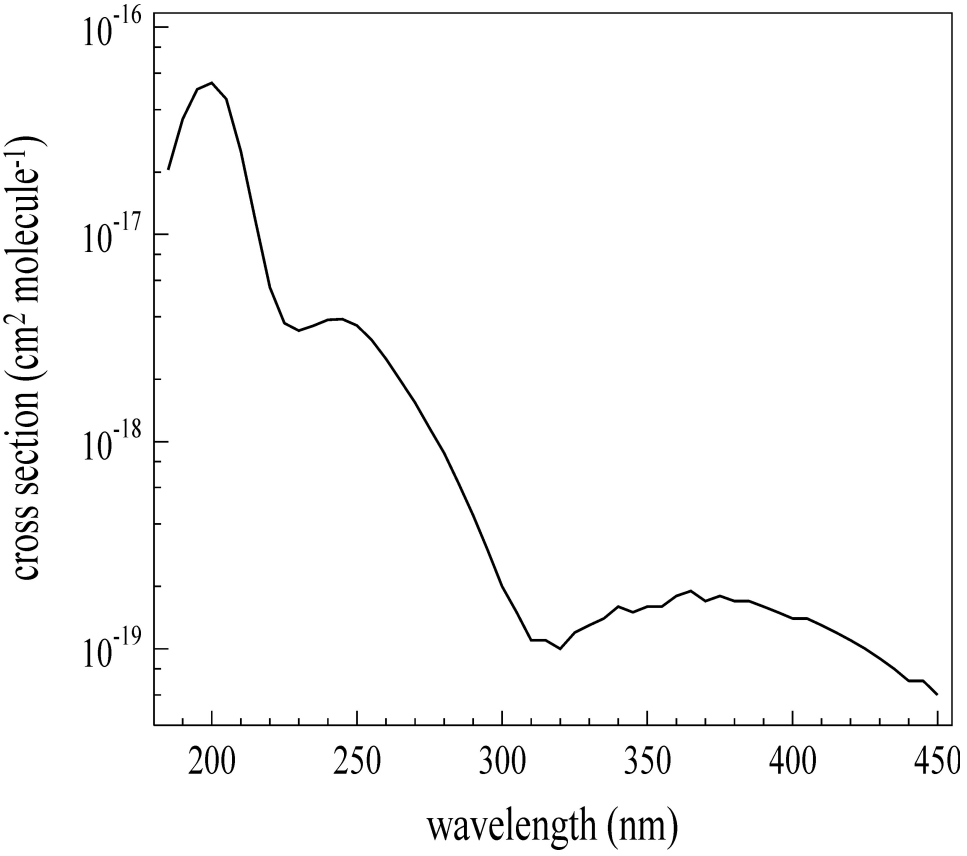
There are no experimental data on the primary photochemical processes for $BrNO_2$, though the major dissociation pathway is most likely to be formation of Br and NO_2 as indicated, with a quantum yield of unity.

References

Burkholder, J. B., and Orlando, J. J.: Chem. Phys. Lett., 317, 603-608, 2000.

Lee, T. J.: J. Phys. Chem., 100, 19847-19852, 1996.

Scheffler, D., Grothe, H., Willner, A., Frenzel, A., and Zetzsch, C.: Inorg. Chem. 36, 335-338, 1997.



Absorption cross sections of $BrNO_2$ as reported by Scheffler et al., 1997.