

Bismuth(III)

Reaction	Baes and Mesmer, 1976	Lothenbach et al., 1999	NIST46	Kitamura et al., 2010	Brown and Ekberg, 2016
$\text{Bi}^{3+} + \text{H}_2\text{O} = \text{BiOH}^{2+} + \text{H}^+$	-1.09	-0.92	-1.1	-0.920	-0.92 ± 0.15
$\text{Bi}^{3+} + 2 \text{H}_2\text{O} = \text{Bi}(\text{OH})_2^+ + 2 \text{H}^+$	(-4)	-2.56	-4.5	-2.560 ± 1.000	-2.59 ± 0.26
$\text{Bi}^{3+} + 3 \text{H}_2\text{O} = \text{Bi}(\text{OH})_3 + 3 \text{H}^+$	-8.86	-5.31	-9.0	-8.940 ± 0.500	-8.78 ± 0.20
$\text{Bi}^{3+} + 4 \text{H}_2\text{O} = \text{Bi}(\text{OH})_4^- + 4 \text{H}^+$	-21.8	-18.71	-21.2	-21.660 ± 0.870	-22.06 ± 0.14
$3 \text{Bi}^{3+} + 4 \text{H}_2\text{O} = \text{Bi}_3(\text{OH})_4^{5+} + 4 \text{H}^+$		-0.80		-0.800	
$6 \text{Bi}^{3+} + 12 \text{H}_2\text{O} = \text{Bi}_6(\text{OH})_{12}^{6+} + 12 \text{H}^+$		1.34		1.340	0.98 ± 0.13
$9 \text{Bi}^{3+} + 20 \text{H}_2\text{O} = \text{Bi}_9(\text{OH})_{20}^{7+} + 20 \text{H}^+$		-1.36		-1.360	

$9 \text{ Bi}^{3+} + 21 \text{ H}_2\text{O} = \text{Bi}_9(\text{OH})_{21}^{6+} + 21 \text{ H}^+$		-3.25		-3.250	
$9 \text{ Bi}^{3+} + 22 \text{ H}_2\text{O} = \text{Bi}_9(\text{OH})_{22}^{5+} + 22 \text{ H}^+$		-4.86		-4.860	
$\text{Bi}(\text{OH})_3(\text{am}) + 3 \text{ H}^+ = \text{Bi}^{3+} + 3 \text{ H}_2\text{O}$				31.501 ± 0.927	
$\alpha\text{-Bi}_2\text{O}_3(\text{cr}) + 6 \text{ H}^+ = 2 \text{ Bi}^{3+} + 3 \text{ H}_2\text{O}$		0.76			
$\text{BiO}_{1.5}(\text{s}, \alpha) + 3 \text{ H}^+ = \text{Bi}^{3+} + 1.5 \text{ H}_2\text{O}$	3.46			31.501 ± 0.927	2.88 ± 0.64

C.F. Baes and R.E. Mesmer, *The Hydrolysis of Cations*. Wiley, New York, 1976, pp. 375–383.

P.L. Brown and C. Ekberg, *Hydrolysis of Metal Ions*. Wiley, 2016, pp. 874–884.

A. Kitamura, K. Fujiwara, R. Doi, Y. Yoshida, M. Mihara, M. Terashima and M. Yui, *JAEA Thermodynamic Database for Performance Assessment of Geological Disposal of High-Level Radioactive and TRU-Wastes*. Report JAEA-Data/Code 2009-024, Japan Atomic Energy Agency, 2010, 84 pp.

B. Lothenbach, M. Ochs, H. Wanner and M. Yui, *Thermodynamic Data for the Speciation and Solubility of Pd, Pb, Sn, Sb, Nb and Bi in Aqueous Solution*. Japan Nuclear Cycle Development Institute, 1999, pp. 12–22.

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