Přemysl Lubal

August 2022

Cu(I)

Reaction	Brown and Ekberg, 2016
$Cu^{+} + H_2O \rightleftharpoons Cu(OH) + H^{+}$	–7.8 ± 0.4
$Cu^{+} + 2\ H_2O \rightleftharpoons Cu(OH)_2^{-} + 2\ H^{+}$	–18.6 ± 0.6

P.L. Brown and C. Ekberg, Hydrolysis of Metal Ions. Wiley, 2016, pp. 650–702.

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Copper(II)

Reaction	Baes and Mesmer, 1976	NIST46	Plyasunova et al., 1997	Powell et al., 2007	Brown and Ekberg, 2016
$Cu^{2+} + H_2O \rightleftharpoons CuOH^+ + H^+$	< –8	–7.7	–7.97 ± 0.09	–7.95 ± 0.16	–7.64 ± 0.17
$Cu^{2+} + 2\ H_2O \rightleftharpoons Cu(OH)_2 + 2\ H^+$	(< –17.3)	–17.3	–16.23 ± 0.15	–16.2 ± 0.2	–16.24 ± 0.03
$Cu^{2+} + 3\ H_2O \rightleftharpoons Cu(OH)_3^- + 3\ H^+$	(< –27.8)	–27.8	–26.63 ± 0.40	–26.60 ± 0.09	–26.65 ± 0.13
$Cu^{2+} + 4\ H_2O \rightleftharpoons Cu(OH)_4^{2-} + 4\ H^+$	–39.6	–39.6	–39.73 ± 0.17	–39.74 ± 0.18	–39.70 ± 0.19
$2\ Cu^{2+} + H_2O \rightleftharpoons Cu_2(OH)^{3+} + H^+$			–6.71 ± 0.30	–6.40 ± 0.12	–6.41 ± 0.17
$2\ Cu^{2+} + 2\ H_2O \rightleftharpoons Cu_2(OH)_2^{2+} + 2\ H^+$	–10.36	–10.3	–10.55 ± 0.17	–10.43 ± 0.07	–10.55 ± 0.02
$3\ Cu^{2+} + 4\ H_2O \rightleftharpoons Cu_3(OH)_4^{2+} + 4\ H^+$			–20.95 ± 0.30	–21.1 ± 0.2	–21.2 ± 0.4

$CuO(s) + 2\ H^+ \rightleftharpoons Cu^{2+} + H_2O$	7.62		7.64 ± 0.06	7.64 ± 0.06	7.63 ± 0.05
$Cu(OH)_2(s) + 2\ H^+ \rightleftharpoons Cu^{2+} + 2\ H_2O$				8.67 ± 0.05	8.68 ± 0.10

C.F. Baes and R.E. Mesmer, The Hydrolysis of Cations. Wiley, New York, 1976, p. 274.

P.L. Brown and C. Ekberg, Hydrolysis of Metal Ions. Wiley, 2016, pp. 650–702.

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