

# Zinc

Reaction	Baes and Mesmer, 1976	Powell and Brown, 2013	Brown and Ekberg, 2016
$\text{Zn}^{2+} + \text{H}_2\text{O} \rightleftharpoons \text{ZnOH}^+ + \text{H}^+$	$-8.96 \pm 0.05$	$-8.96 \pm 0.05$	$-8.94 \pm 0.06$
$\text{Zn}^{2+} + 2 \text{H}_2\text{O} \rightleftharpoons \text{Zn(OH)}_2 + 2 \text{H}^+$	$-16.9$	$-17.82 \pm 0.08$	$-17.89 \pm 0.15$
$\text{Zn}^{2+} + 3 \text{H}_2\text{O} \rightleftharpoons \text{Zn(OH)}_3^- + 3 \text{H}^+$	$-28.4 \pm 0.2$	$-28.05 \pm 0.05$	$-27.98 \pm 0.10$
$\text{Zn}^{2+} + 4 \text{H}_2\text{O} \rightleftharpoons \text{Zn(OH)}_4^{2-} + 4 \text{H}^+$	$-41.2 \pm 0.1$	$-40.41 \pm 0.12$	$-40.35 \pm 0.22$
$2 \text{Zn}^{2+} + \text{H}_2\text{O} \rightleftharpoons \text{Zn}_2\text{OH}^{3+} + \text{H}^+$	$-9.0 \pm 0.1$	$-7.9 \pm 0.2$	$-7.89 \pm 0.31$
$2 \text{Zn}^{2+} + 6\text{H}_2\text{O} \rightleftharpoons \text{Zn}_2(\text{OH})_6^{2-} + 6 \text{H}^+$	$-57.8 \pm 0.1$		
$\text{ZnO(s)} + 2 \text{H}^+ \rightleftharpoons \text{Zn}^{2+} + \text{H}_2\text{O}$	$11.14 \pm 0.03$	$11.12 \pm 0.05$	$11.11 \pm 0.10$
$\epsilon\text{-Zn(OH)}_2(\text{s}) + 2 \text{H}^+ \rightleftharpoons \text{Zn}^{2+} + 2 \text{H}_2\text{O}$	$11.50$	$11.38 \pm 0.20$	$11.38 \pm 0.20$
$\beta_1\text{-Zn(OH)}_2(\text{s}) + 2 \text{H}^+ \rightleftharpoons \text{Zn}^{2+} + 2 \text{H}_2\text{O}$	$11.73$	$11.72 \pm 0.04$	

$\beta_2\text{-Zn(OH)}_2(\text{s}) + 2 \text{H}^+ \rightleftharpoons \text{Zn}^{2+} + 2 \text{H}_2\text{O}$	11.77	$11.76 \pm 0.04$	
$\gamma\text{-Zn(OH)}_2(\text{s}) + 2 \text{H}^+ \rightleftharpoons \text{Zn}^{2+} + 2 \text{H}_2\text{O}$	11.71	$11.70 \pm 0.04$	
$\delta\text{-Zn(OH)}_2(\text{s}) + 2 \text{H}^+ \rightleftharpoons \text{Zn}^{2+} + 2 \text{H}_2\text{O}$	11.82	$11.81 \pm 0.04$	

C.F. Baes and R.E. Mesmer, *The Hydrolysis of Cations*. Wiley, New York, 1976, pp. 292–293

P.L. Brown and C. Ekberg, *Hydrolysis of Metal Ions*. Wiley, 2016, pp. 676–700.

K. J. Powell, P. L. Brown, R. H. Byrne, T. Gajda, G. Hefter, A.-K. Leuz, S. Sjöberg, and H. Wanner, *Pure and Applied Chemistry*, 85, 2249–2311 (2013).