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Equilibrium constants for hydrolysis and associated equilibria in critical compilations

Yttrium

Equilibrium reactions	lg*K* at infinite dilution and *T* = 298 K	
	Baes and Mesmer, 1976	Brown and Ekberg, 2016
$Y^{3+} + H_2O \rightleftharpoons YOH^{2+} + H^+$	–7.7	–7.77 ± 0.06
$Y^{3+} + 2\ H_2O \rightleftharpoons Y(OH)_2^+ + 2\ H^+$	(–16.4)*	
$Y^{3+} + 3\ H_2O \rightleftharpoons Y(OH)_3 + 3\ H^+$	(–26.0)*	
$Y^{3+} + 4\ H_2O \rightleftharpoons Y(OH)_4^- + 4\ H^+$	–36.5	
$2\ Y^{3+} + 2\ H_2O \rightleftharpoons Y_2(OH)_2^{4+} + 2\ H^+$	–14.23	–14.1 ± 0.2
$3\ Y^{3+} + 5\ H_2O \rightleftharpoons Y_3(OH)_5^{4+} + 5\ H^+$	–31.6	–32.7 ± 0.3
$Y(OH)_3(s) + 3\ H^+ \rightleftharpoons Y^{3+} + 3\ H_2O$	17.5	17.32 ± 0.30

*Estimation.

C.F. Baes and R.E. Mesmer, The Hydrolysis of Cations. Wiley, New York, 1976, p. 137.

P.L. Brown and C. Ekberg, Hydrolysis of Metal Ions. Wiley, 2016, pp. 135–145.

Distribution diagrams

These diagrams have been computed at two Y concentrations (1 mM = $1x10^{-3}$ mol L^{-1} and 1 µM = $1x10^{-6}$ mol L^{-1}) with the 'best' equilibrium constants above (in green). Calculations assume T = 298 K for the limiting case of zero ionic strength (*i.e.*, even neglecting plotted ions).