

Equilibrium constants for hydrolysis and associated equilibria in critical compilations

Terbium

Equilibrium reactions	lgK at infinite dilution and T = 298 K	
	Baes and Mesmer, 1976	Brown and Ekberg, 2016
$\text{Tb}^{3+} + \text{H}_2\text{O} \rightleftharpoons \text{TbOH}^{2+} + \text{H}^+$	-7.9	-7.60 ± 0.09
$2 \text{ Tb}^{3+} + 2 \text{ H}_2\text{O} \rightleftharpoons \text{Tb}_2(\text{OH})_2^{4+} + 2 \text{ H}^+$		-13.9 ± 0.2
$3 \text{ Tb}^{3+} + 5 \text{ H}_2\text{O} \rightleftharpoons \text{Tb}_3(\text{OH})_5^{4+} + 5 \text{ H}^+$		-31.7 ± 0.3
$\text{Tb}(\text{OH})_3(\text{s}) + 3 \text{ H}^+ \rightleftharpoons \text{Tb}^{3+} + 3 \text{ H}_2\text{O}$	16.5	16.33 ± 0.30

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. 247, 250–251 and 287–290.

Distribution diagrams

These diagrams have been computed at two Tb concentrations (1 mM = 1×10^{-3} mol L⁻¹ and 1 μ M = 1×10^{-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).

