
Equilibrium constants for hydrolysis and associated equilibria in critical compilations

Gallium

Equilibrium reactions	lgK at infinite dilution and $T = 298\text{ K}$		
	Baes and Mesmer, 1976	NIST46	Brown and Ekberg, 2016
$\text{Ga}^{3+} + \text{H}_2\text{O} \rightleftharpoons \text{GaOH}^{2+} + \text{H}^+$	-2.6	-2.897	-2.74
$\text{Ga}^{3+} + 2\text{H}_2\text{O} \rightleftharpoons \text{Ga}(\text{OH})_2^+ + 2\text{H}^+$	-5.9	-6.694	-7.0
$\text{Ga}^{3+} + 3\text{H}_2\text{O} \rightleftharpoons \text{Ga}(\text{OH})_3 + 3\text{H}^+$	-10.3		-11.96
$\text{Ga}^{3+} + 4\text{H}_2\text{O} \rightleftharpoons \text{Ga}(\text{OH})_4^- + 4\text{H}^+$	-16.6	-16.588	-15.52
$\text{Ga}(\text{OH})_3(\text{s}) \rightleftharpoons \text{Ga}^{3+} + 3\text{OH}^-$	≈ -37	-37.0	
$\text{GaO}(\text{OH})(\text{s}) + \text{H}_2\text{O} \rightleftharpoons \text{Ga}^{3+} + 3\text{OH}^-$	-39.06	-39.1	-40.51

C.F. Baes and R.E. Mesmer, The Hydrolysis of Cations. Wiley, New York, 1976, p.319.

P.L. Brown and C. Ekberg, Hydrolysis of Metal Ions. Wiley, 2016, pp. 797–812.

NIST46, NIST Critically Selected Stability Constants of Metal Complexes: Version 8.0. Available at: www.nist.gov/srd/nist46

Distribution diagrams

These diagrams have been computed at two Ga concentrations ($1 \text{ mM} = 1 \times 10^{-3} \text{ mol L}^{-1}$ and $1 \text{ }\mu\text{M} = 1 \times 10^{-6} \text{ mol L}^{-1}$) with the 'best' equilibrium constant above (in green). Calculations assume $T = 298 \text{ K}$ for the limiting case of zero ionic strength (*i.e.*, even neglecting plotted ions).

