

Equilibrium constants for hydrolysis and associated equilibria in critical compilations

Americium(III)

Equilibrium reactions	lgK at infinite dilution and $T = 298 \text{ K}$		
	NIST46	Brown and Ekberg, 2016	Grenthe et al., 2020
$\text{Am}^{3+} + \text{H}_2\text{O} \rightleftharpoons \text{AmOH}^{2+} + \text{H}^+$	-6.5 ± 0.1	-7.22 ± 0.03	-7.2 ± 0.5
$\text{Am}^{3+} + 2 \text{H}_2\text{O} \rightleftharpoons \text{Am}(\text{OH})_2^+ + 2 \text{H}^+$	-14.1 ± 0.3	-14.9 ± 0.2	-15.1 ± 0.7
$\text{Am}^{3+} + 3 \text{H}_2\text{O} \rightleftharpoons \text{Am}(\text{OH})_3 + 3 \text{H}^+$	-25.7	-26.0 ± 0.2	-26.2 ± 0.5
$\text{Am}^{3+} + 3 \text{H}_2\text{O} \rightleftharpoons \text{Am}(\text{OH})_3(\text{am}) + 3 \text{H}^+$	-16.9 ± 0.1	-16.9 ± 0.8	-16.9 ± 0.8
$\text{Am}^{3+} + 3 \text{H}_2\text{O} \rightleftharpoons \text{Am}(\text{OH})_3(\text{cr}) + 3 \text{H}^+$	-15.2	-15.62 ± 0.04	-15.6 ± 0.6

P.L. Brown and C. Ekberg, Hydrolysis of Metal Ions. Wiley, 2016, pp. 407–414.

I. Grenthe, X. Gaona, A.V.Plyasunov, L. Rao, W.H. Runde, B. Grambow, R.J.M. Konings, A. L. Smith and E.E. Moore, Second Update on the Chemical Thermodynamics of Uranium, Neptunium, Plutonium, Americium and Technetium, OECD Publishing, Paris 2020.

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 Am(III) 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).

