

Tantalum

Equilibrium reactions	lgK at infinite dilution and $T = 298 \text{ K}$	
	Baes and Mesmer, 1976	Filella and May, 2019 ^a
$\text{Ta(OH)}_5 + \text{H}^+ \rightleftharpoons \text{Ta(OH)}_4^+ + \text{H}_2\text{O}$	~1	0.7007
$\text{Ta(OH)}_5 + \text{H}_2\text{O} \rightleftharpoons \text{Ta(OH)}_6^- + \text{H}^+$	~ -9.6	
$\text{Ta}_6\text{O}_{19}^{8-} + \text{H}^+ \rightleftharpoons \text{HTa}_6\text{O}_{19}^{7-}$		16.35
$\text{HTa}_6\text{O}_{19}^{7-} + \text{H}^+ \rightleftharpoons \text{H}_2\text{Ta}_6\text{O}_{19}^{6-}$		14.00
$1/2 \text{ Ta}_2\text{O}_5(\text{act}) + 5/2 \text{ H}_2\text{O} \rightleftharpoons \text{Ta(OH)}_5$	~ -5.2	
$\text{Ta(OH)}_5(\text{s}) \rightleftharpoons \text{Ta(OH)}_5$		-5.295
$\text{Ta}_2\text{O}_5(\text{s}) + 5 \text{ H}_2\text{O} \rightleftharpoons 2 \text{ Ta(OH)}_5$		-20.00

^aThe number of significant figures are retained to minimise propagation of round-off errors; they should not be taken to indicate the relative uncertainty of the values, which is always at least one order of magnitude less than indicated.

C.F. Baes and R.E. Mesmer, *The Hydrolysis of Cations*. Wiley, New York, 1976, p. 252.

M. Filella and P.M. May, *The aqueous solution thermodynamics of tantalum under conditions of environmental and biological interest*. *Applied Geochemistry*, 109, 104402 (2019). doi:10.1016/j.apgeochem.2019.104402

Distribution diagrams

These diagrams have been computed at two Ta 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). The polynuclear species could not be included because isolated.

