
Equilibrium constants for hydrolysis and associated equilibria in critical compilations

Tellurium(-II)

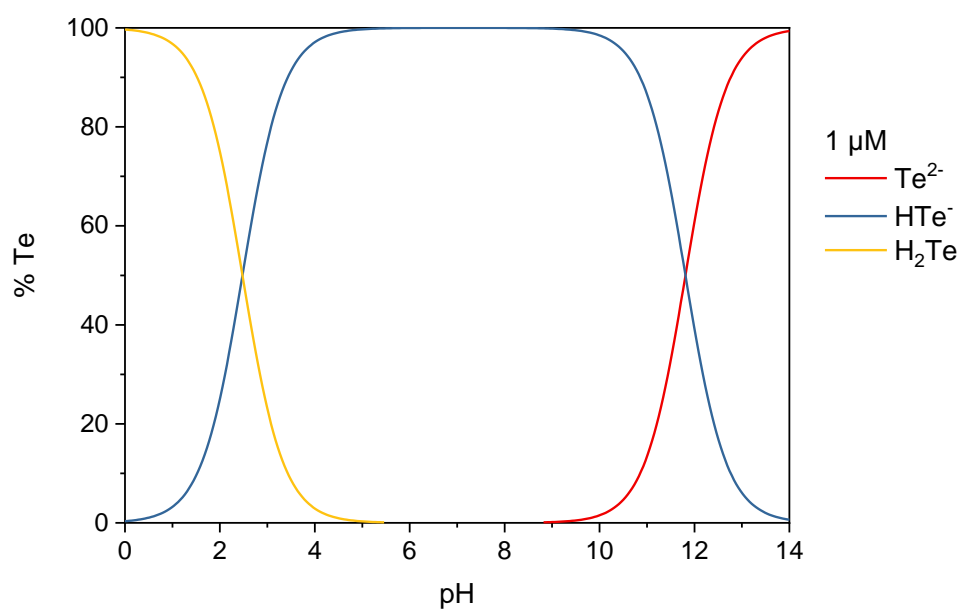
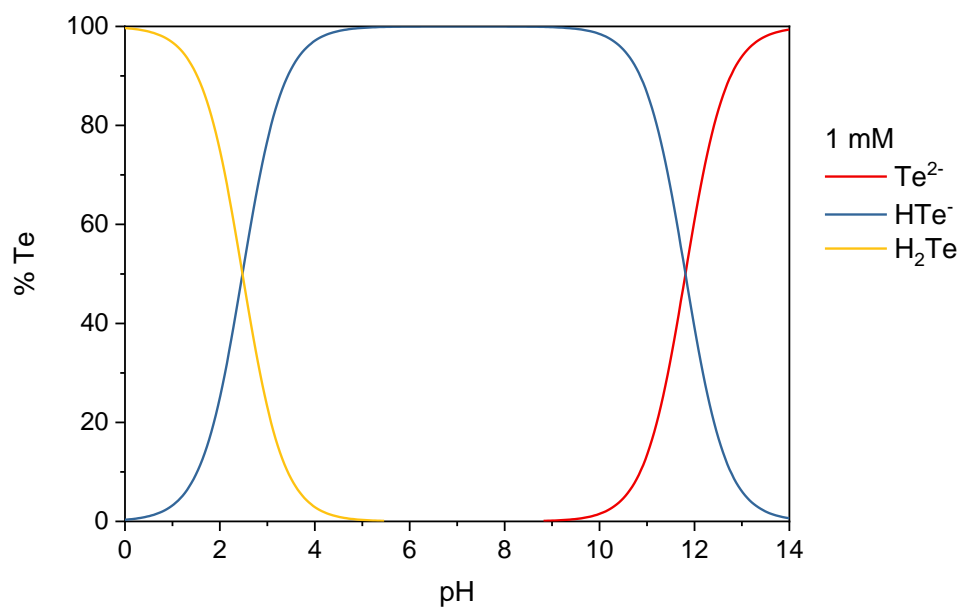
Equilibrium reactions	lgK at infinite dilution and $T = 298\text{ K}$
	Filella and May, 2019 ^a
$\text{Te}^{2-} + \text{H}^+ \rightleftharpoons \text{HTe}^-$	11.81
$\text{HTe}^- + \text{H}^+ \rightleftharpoons \text{H}_2\text{Te}$	2.476

^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.

M. Filella and P.M. May, The aqueous chemistry of tellurium: critically-selected equilibrium constants for the low-molecular-weight inorganic species. Environ. Chem. 16, 289–295 (2019). doi:10.1071/EN19017

Distribution diagrams

These diagrams have been computed at two Te(-II) 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. Calculations assume $T = 298$ K for the limiting case of zero ionic strength (*i.e.*, even neglecting plotted ions).



Equilibrium constants for hydrolysis and associated equilibria in critical compilations

Tellurium(IV)

Tellurite structures in solution are best written as TeO_3^{2-} , HTeO_3^- , H_2TeO_3 and $\text{Te}(\text{OH})_3^+$. Other notations can be found in the literature.

Equilibrium reactions	lgK at infinite dilution and $T = 298 \text{ K}$	
	Baes and Mesmer, 1976	Filella and May, 2019 ^a
$\text{TeO}_3^{2-} + \text{H}^+ \rightleftharpoons \text{HTeO}_3^-$		9.928
$\text{HTeO}_3^- + \text{H}^+ \rightleftharpoons \text{H}_2\text{TeO}_3$		6.445
$\text{H}_2\text{TeO}_3 \rightleftharpoons \text{HTeO}_3^- + \text{H}^+$	-2.68	
$\text{H}_2\text{TeO}_3 \rightleftharpoons \text{TeO}_3^{2-} + 2 \text{H}^+$	-12.5	
$\text{H}_2\text{TeO}_3 + \text{H}^+ \rightleftharpoons \text{Te}(\text{OH})_3^+$	3.13	2.415
$\text{TeO}_2(\text{s}) + \text{H}_2\text{O} \rightleftharpoons \text{H}_2\text{TeO}_3$		-4.709

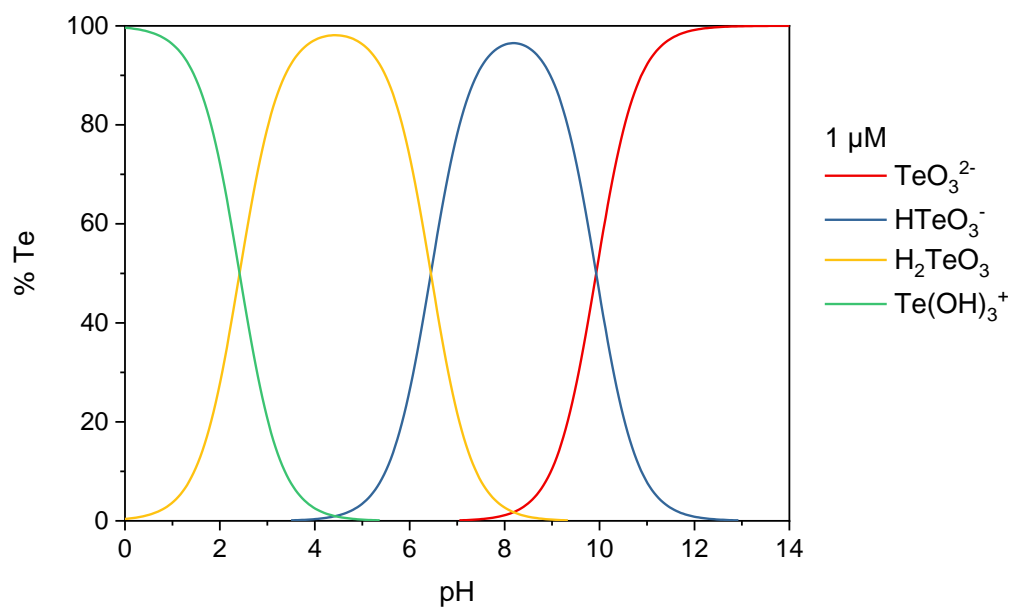
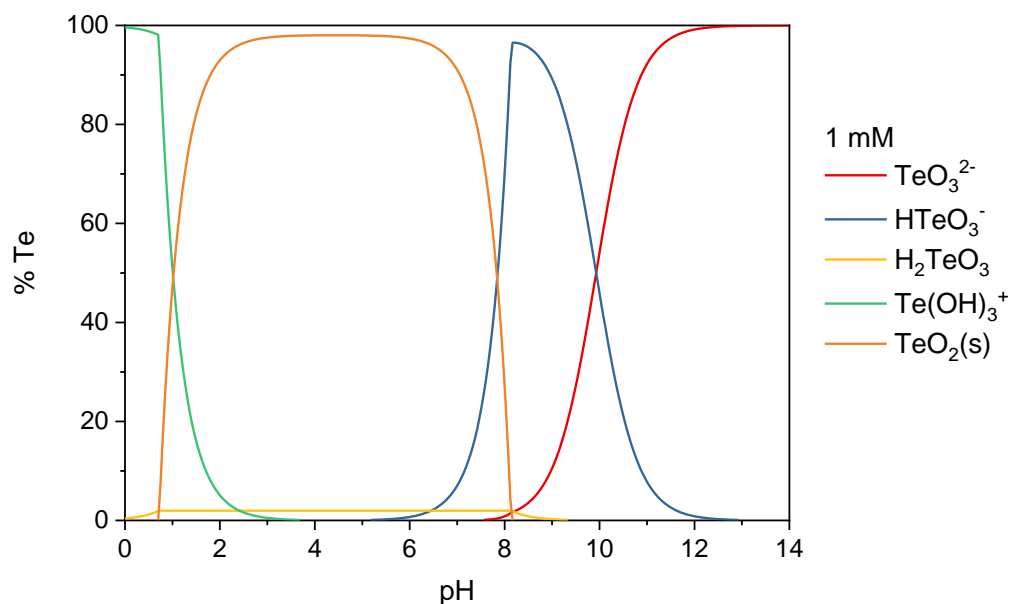
^aThe number of significant figures are retained to minimise propagation of round-off errors; they should not be taken to indicate the relative uncertainty of the values, which is always at least one order of magnitude less than indicated.

C.F. Baes and R.E. Mesmer, *The Hydrolysis of Cations*. Wiley, New York, 1976, p. 395.

M. Filella and P.M. May, *The aqueous chemistry of tellurium: critically-selected equilibrium constants for the low-molecular-weight inorganic species*. *Environ. Chem.* 16, 289–295 (2019). doi:10.1071/EN19017

Distribution diagrams

These diagrams have been computed at two Te(IV) 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).



Equilibrium constants for hydrolysis and associated equilibria in critical compilations

Tellurium(VI)

Tellurite structures in solution are best written as TeO_3^{2-} , HTeO_3^- , H_2TeO_3 and Te(OH)_3^+ . Other notations can be found in the literature.

Equilibrium reactions	lgK at infinite dilution and $T = 298 \text{ K}$	
	Baes and Mesmer, 1976	Filella and May, 2019 ^a
$\text{TeO}_2(\text{OH})_4^{2-} + \text{H}^+ \rightleftharpoons \text{TeO}(\text{OH})_5^-$		10.83
$\text{TeO}(\text{OH})_5^- + \text{H}^+ \rightleftharpoons \text{Te}(\text{OH})_6$	7.68	7.696
$\text{TeO}_2(\text{OH})_4^{2-} + 2 \text{H}^+ \rightleftharpoons \text{Te}(\text{OH})_6$	18.68	
$\text{TeO}_3(\text{OH})_3^{3-} + 3 \text{H}^+ \rightleftharpoons \text{Te}(\text{OH})_6$	34.3	
$2 \text{Te}(\text{OH})_6 \rightleftharpoons \text{Te}_2\text{O}(\text{OH})_{11}^- + \text{H}^+$		-6.929

^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.

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M. Filella and P.M. May, *The aqueous chemistry of tellurium: critically-selected equilibrium constants for the low-molecular-weight inorganic species*. *Environ. Chem.* 16, 289–295 (2019). doi:10.1071/EN19017

Distribution diagrams

These diagrams have been computed at two Te(VI) 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).

