Author: montserrat.filella@unige.ch
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Source: Compilation COST Action 1802

Equilibrium constants for hydrolysis and associated equilibria in critical compilations

Selenium(–II)

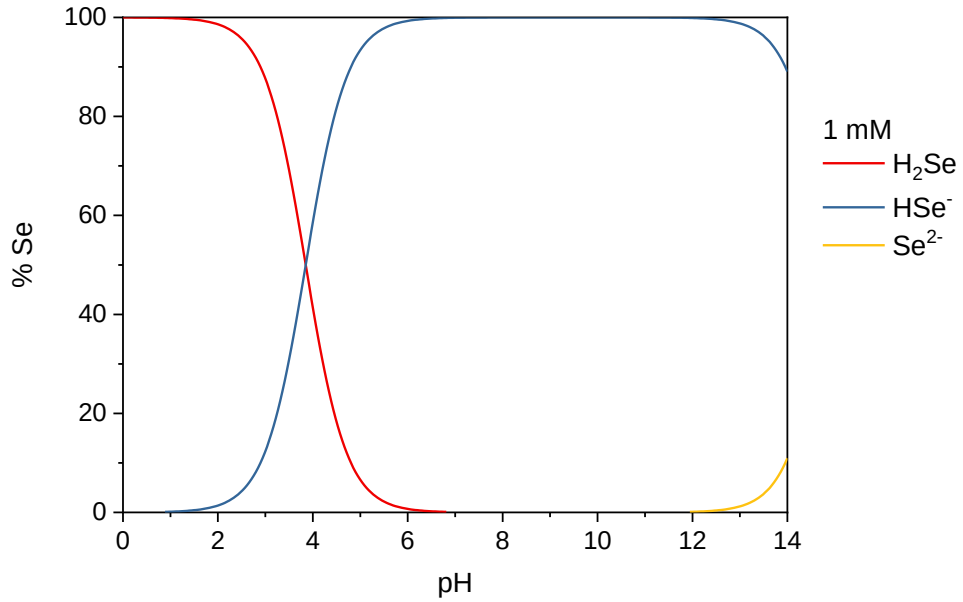
Equilibrium reactions	lg*K* at infinite dilution and *T* = 298 K	
	Olin et al., 2005	Thoenen et al., 2014
$H_2Se(g) \rightleftharpoons H_2Se(aq)$	–1.10 ± 0.01	–1.10 ± 0.01
$H_2Se \rightleftharpoons HSe^- + H^+$	–3.85 ± 0.05	–3.85 ± 0.05
$HSe^- \rightleftharpoons Se^{2-} + H^+$	–14.91 ± 0.20	

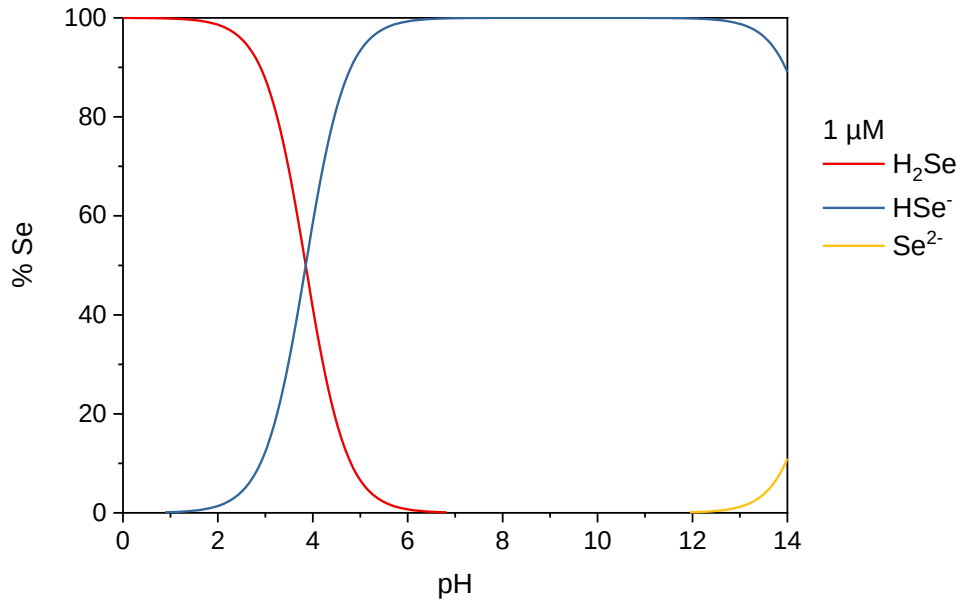
Å. Olin, B. Noläng, L.-O. Öhman, E. Osadchii, E. Rosén, Chemical Thermodynamics of Selenium, OECD Pub., 2005.

T. Thoenen, W. Hummel, U. Berner and E. Curti, The PSI/Nagra Chemical Thermodynamic Database 12/07, Villigen: Paul Scherrer Institut PSI, 2014.

Distribution diagrams

These diagrams have been computed at two Se(-II) concentrations (1 mM = 1x10^{-3} mol L^{-1} and 1 µM = 1x10^{-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).





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Equilibrium constants for hydrolysis and associated equilibria in critical compilations

Selenium(IV)

Equilibrium reactions	lg*K* at infinite dilution and *T* = 298 K		
	Baes and Mesmer, 1976	Olin et al., 2005	Thoenen et al., 2014
$SeO_3^{2-} + H^+ \rightleftharpoons HSeO_3^-$	8.50[a]	8.36 ± 0.23	8.36 ± 0.23
$HSeO_3^- + H^+ \rightleftharpoons H_2SeO_3$	2.75[a]	2.64 ± 0.14	2.64 ± 0.14

[a]Reaction written as deprotonation reaction in the original publication.

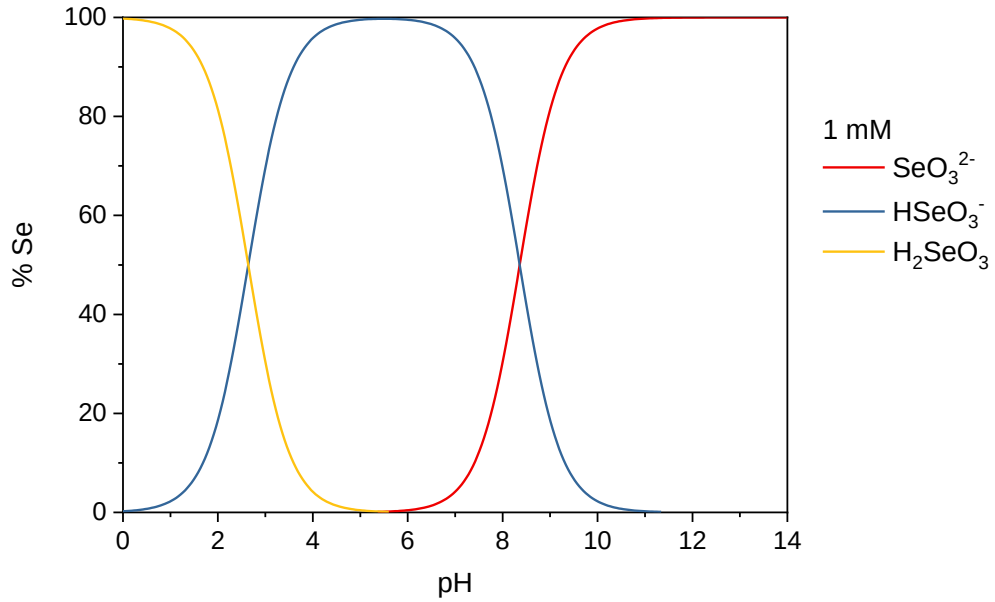
C.F. Baes and R.E. Mesmer, The Hydrolysis of Cations. Wiley, New York, 1976, p. 386.

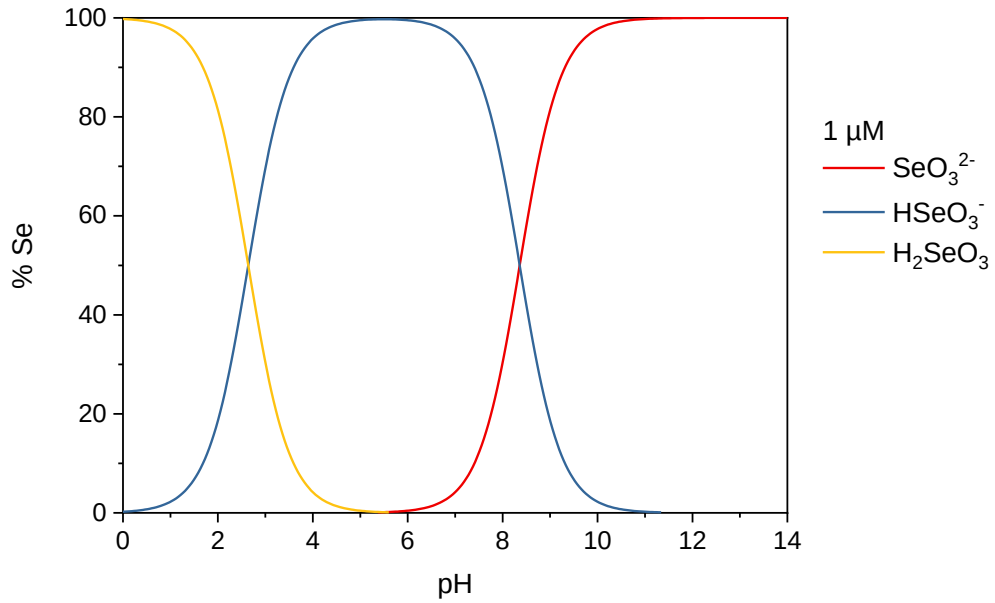
Å. Olin, B. Noläng, L.-O. Öhman, E. Osadchii, E. Rosén, Chemical Thermodynamics of Selenium, OECD Pub., 2005.

T. Thoenen, W. Hummel, U. Berner and E. Curti, The PSI/Nagra Chemical Thermodynamic Database 12/07, Villigen: Paul Scherrer Institut PSI, 2014.

Distribution diagrams

These diagrams have been computed at two Se(IV) concentrations (1 mM = $1x10^{-3}$ mol L^{-1} and 1 µM = $1x10^{-6}$ 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).





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Selenium(VI)

Equilibrium reactions	lg*K* at infinite dilution and *T* = 298 K		
	Baes and Mesmer, 1976	Olin et al., 2005	Thoenen et al., 2014
$SeO_4^{2-} + H^+ \rightleftharpoons HSeO_4^-$	1.360[a]	1.75 ± 0.10[a]	1.75 ± 0.10

[a]Reaction written as deprotonation reaction in the original publication.

C.F. Baes and R.E. Mesmer, The Hydrolysis of Cations. Wiley, New York, 1976, p. 387.

Å. Olin, B. Noläng, L.-O. Öhman, E. Osadchii and E. Rosén, Chemical Thermodynamics of Selenium, OECD Pub., 2005.

T. Thoenen, W. Hummel, U. Berner, E. Curti, The PSI/Nagra Chemical Thermodynamic Database 12/07, Villigen: Paul Scherrer Institut PSI, 2014.

Distribution diagrams

These diagrams have been computed at two Se(VI) concentrations (1 mM = $1x10^{-3}$ mol L^{-1} and 1 µM = $1x10^{-6}$ mol L^{-1}) with the 'best' equilibrium constant above (in green). Calculations assume T = 298 K for the limiting case of zero ionic strength (*i.e.*, even neglecting plotted ions).