## Equilibrium constants for hydrolysis and associated equilibria in critical compilations

# Mercury(I)

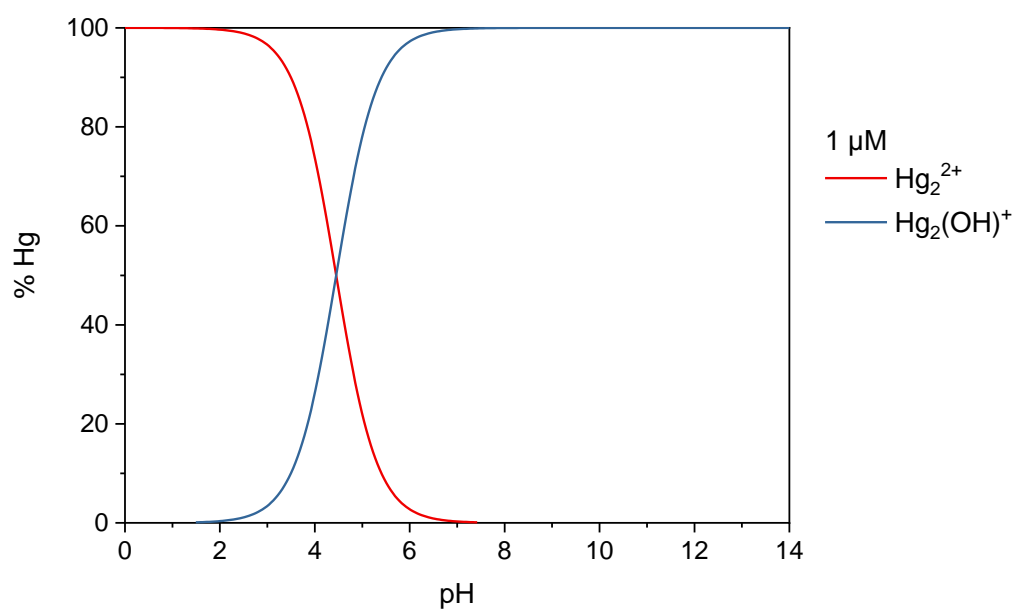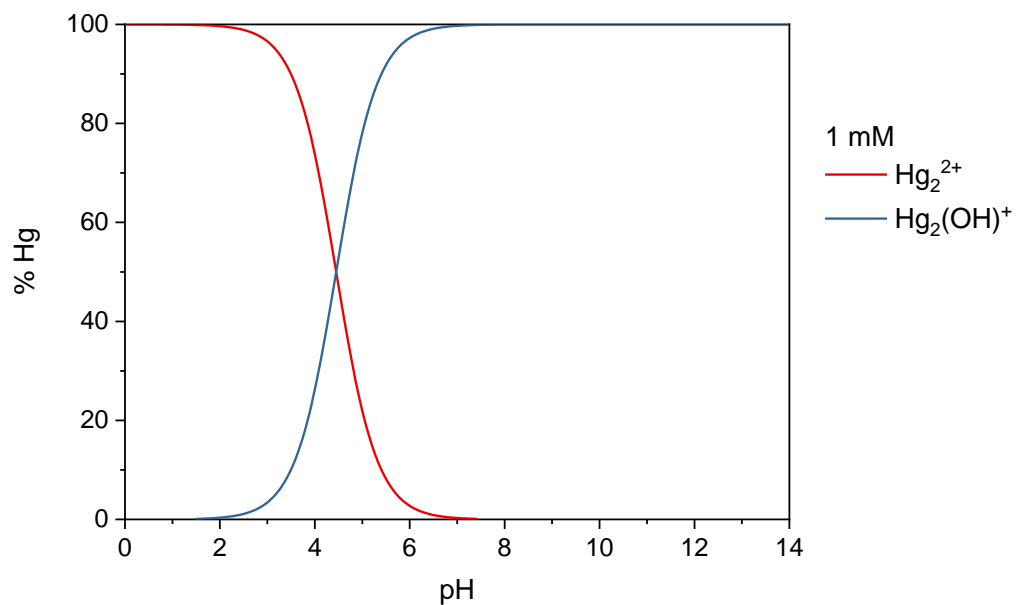| Equilibrium reaction | lg$K$ at infinite dilution and $T$ = 298 K | |
|---|---|---|
| | Baes and Mesmer, 1976 | Brown and Ekberg, 2016 |
| $Hg_2^{2+} + H_2O \rightleftharpoons Hg_2OH^+ + H^+$ | −5.0[a] | −4.45 ± 0.10 |

[a]0.5 M HClO$_4$

C C.F. Baes and R.E. Mesmer, The Hydrolysis of Cations. Wiley, New York, 1976, p. 302.

P.L. Brown and C. Ekberg, Hydrolysis of Metal Ions. Wiley, 2016, pp. 741-755.

# Distribution diagrams

These diagrams have been computed at two Hg(I) 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).

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| Equilibrium reactions | lg$K$ at infinite dilution and $T$ = 298 K | | |
|---|---|---|---|
| | Baes and Mesmer, 1976 | Powell et al., 2005 | Brown and Ekberg, 2016 |
| $Hg^{2+} + H_2O \rightleftharpoons HgOH^+ + H^+$ | −3.40 | −3.40 ± 0.08 | −3.40 ± 0.08 |
| $Hg^{2+} + 2\ H_2O \rightleftharpoons Hg(OH)_2 + 2\ H^+$ | -6.17 | −5.98 ± 0.06 | −5.96 ± 0.07 |
| $Hg^{2+} + 3\ H_2O \rightleftharpoons Hg(OH)_3^- + 3\ H^+$ | −21.1 | −21.1 ± 0.3 | |
| $HgO(s) + 2\ H^+ \rightleftharpoons Hg^{2+} + H_2O$ | 2.56 | 2.37 ± 0.08 | 2.37 ± 0.08 |

C.F. Baes and R.E. Mesmer, The Hydrolysis of Cations. Wiley, New York, 1976, p. 312.

P.L. Brown and C. Ekberg, Hydrolysis of Metal Ions. Wiley, 2016, pp. 741-755.

K.J. Powell, P.L. Brown, R.H. Byrne, T. Gajda, G. Hefter, S. Sjöberg, H. Wanner, Chemical speciation of environmentally significant heavy metals with inorganic ligands. Part 1: the $Hg^{2+}$− $Cl^-$, $OH^-$, $CO_3^{2-}$, $SO_4^{2-}$, and $PO_4^{3-}$ aqueous systems (IUPAC technical report). Pure Appl. Chem. 77, 739–800 (2005).

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