Lead(II)

Equilibrium reactions	lg*K* at infinite dilution and *T* = 298 K				
	Baes and Mesmer, 1976	NIST46	Powell et al., 2009	Brown and Ekberg, 2016	Cataldo et al., 2018
$Pb^{2+} + H_2O \rightleftharpoons PbOH^+ + H^+$	–7.71	–7.6	–7.46 ± 0.06	–7.49 ± 0.13	–6.47± 0.03
$Pb^{2+} + 2\ H_2O \rightleftharpoons Pb(OH)_2 + 2\ H^+$	–17.12	–17.1	–16.94 ± 0.09	–16.99 ± 0.06	–16.12 ± 0.01
$Pb^{2+} + 3\ H_2O \rightleftharpoons Pb(OH)_3^- + 3\ H^+$	–28.06	–28.1	–28.03± 0.06	–27.94 ± 0.21	–28.4 ± 0.1
$Pb^{2+} + 4\ H_2O \rightleftharpoons Pb(OH)_4^{2-} + 4\ H^+$			–40.8		
$2\ Pb^{2+} + H_2O \rightleftharpoons Pb_2(OH)^{3+} + H^+$	–6.36	–6.4	–7.28± 0.09	–6.73 ± 0.31	
$3\ Pb^{2+} + 4\ H_2O \rightleftharpoons Pb_3(OH)_4^{2+} + 4\ H^+$	–23.88	–23.9	–23.01 ± 0.07	–23.43 ± 0.10	

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$3\ Pb^{2+} + 5\ H_2O \rightleftharpoons Pb_3(OH)_5^{+} + 5\ H^{+}$				–31.11 ± 0.10	
$4\ Pb^{2+} + 4\ H_2O \rightleftharpoons Pb_4(OH)_4^{4+} + 4\ H^{+}$	–20.88	–20.9	–20.57± 0.06	–20.71 ± 0.18	
$6\ Pb^{2+} + 8\ H_2O \rightleftharpoons Pb_6(OH)_8^{4+} + 8\ H^{+}$	–43.61	–43.6	–42.89± 0.07	–43.27 ± 0.47	
$PbO(s) + 2\ H^{+} \rightleftharpoons Pb^{2+} + H_2O$			12.62 (red) 12.90 (yellow)		
$PbO(s) + H_2O \rightleftharpoons Pb^{2+} + 2\ OH^{-}$	–15.28 (red)	-15.3	–15.3 (red) –15.1 (yellow)	–15.37 ± 0.04 (red) –15.1 ± 0.08 (yellow)	
$Pb_2O(OH)_{2(s)} + H_2O \rightleftharpoons 2\ Pb^{2+} + 4\ OH^{-}$			–14.9		
$PbO_{(s)} + H_2O \rightleftharpoons Pb(OH)_2$			–4.4 (red) –4.2 (yellow)		
$Pb_2O(OH)_{2(s)} + H_2O \rightleftharpoons 2\ Pb(OH)_2$			–4.0		
$PbO_{(s)} + 2\ H_2O \rightleftharpoons Pb(OH)_3^{-} + H^{+}$			–1.4 (red) –1.2 (yellow)		

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$Pb_2O(OH)_2(s) + 2\ H_2O \rightleftharpoons 2\ Pb(OH)_3^- + 2\ H^+$			–1.0		

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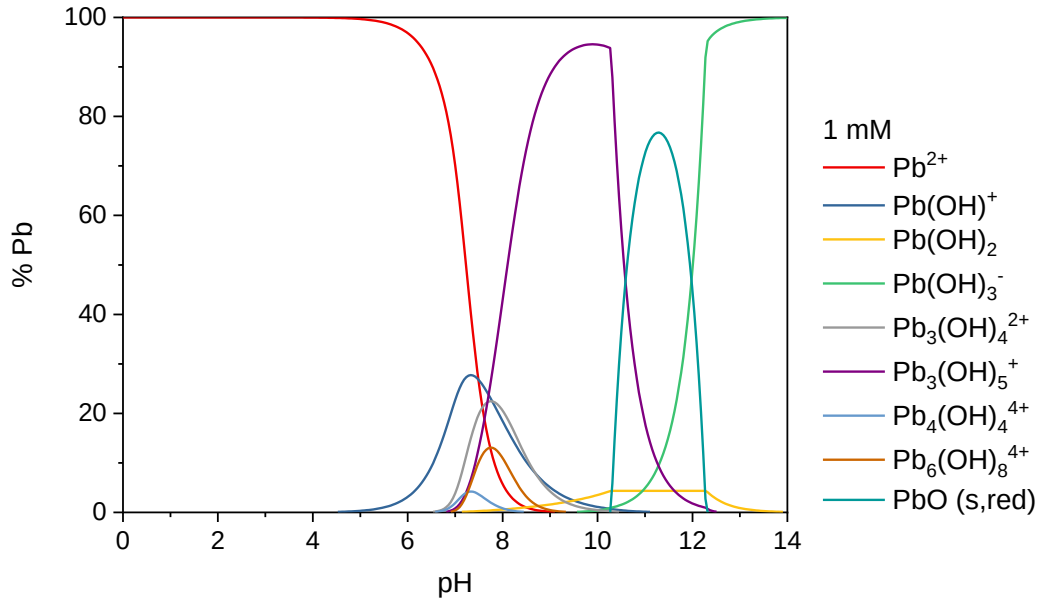
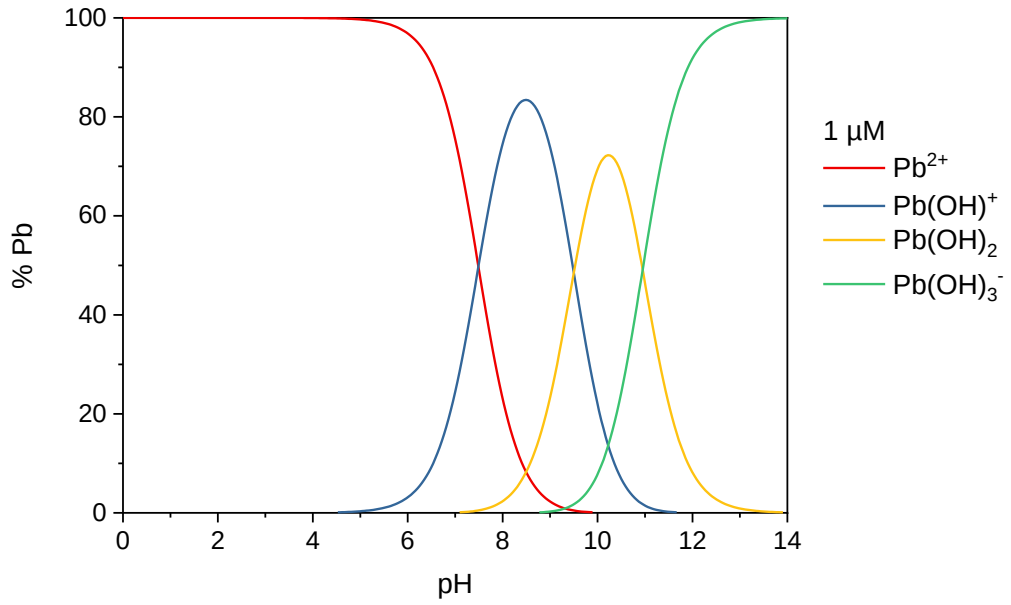
Distribution diagrams

These diagrams have been computed at two Pb(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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