

Equilibrium constants for hydrolysis and associated equilibria in critical compilations

Iron(II)

Equilibrium reactions	lgK at infinite dilution and $T = 298 \text{ K}$				
	Baes and Mesmer, 1976	Nordstrom et al., 1990	Hummel et al., 2002	Lemire et al., 2013	Brown and Ekberg, 2016
$\text{Fe}^{2+} + \text{H}_2\text{O} \rightleftharpoons \text{FeOH}^+ + \text{H}^+$	-9.3 ± 0.5	-9.5	-9.5	-9.1 ± 0.4	-9.43 ± 0.10
$\text{Fe}^{2+} + 2 \text{H}_2\text{O} \rightleftharpoons \text{Fe}(\text{OH})_2 + 2 \text{H}^+$	-20.5 ± 1.0				-20.52 ± 0.08
$\text{Fe}^{2+} + 3 \text{H}_2\text{O} \rightleftharpoons \text{Fe}(\text{OH})_3^- + 3 \text{H}^+$	-29.4 ± 1.2				-32.68 ± 0.15
$\text{Fe}(\text{OH})_2(\text{s}) + 2 \text{H}^+ \rightleftharpoons \text{Fe}^{2+} + 2 \text{H}_2\text{O}$					12.27 ± 0.88

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Distribution diagrams

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

