

Scandium

Reaction	Baes and Mesmer, 1976	Brown and Ekberg, 2016
$\text{Sc}^{3+} + \text{H}_2\text{O} \rightleftharpoons \text{ScOH}^{2+} + \text{H}^+$	-4.3	-4.16 ± 0.05
$\text{Sc}^{3+} + 2 \text{H}_2\text{O} \rightleftharpoons \text{Sc}(\text{OH})_2^+ + 2 \text{H}^+$	-9.7	-9.71 ± 0.30
$\text{Sc}^{3+} + 3 \text{H}_2\text{O} \rightleftharpoons \text{Sc}(\text{OH})_3 + 3 \text{H}^+$	-16.1	-16.08 ± 0.30
$\text{Sc}^{3+} + 4 \text{H}_2\text{O} \rightleftharpoons \text{Sc}(\text{OH})_4^- + 4 \text{H}^+$	~-26	-26.7 ± 0.3
$2 \text{Sc}^{3+} + 2 \text{H}_2\text{O} \rightleftharpoons \text{Sc}_2(\text{OH})_2^{4+} + 2 \text{H}^+$	-6.0	-6.02 ± 0.10
$3 \text{Sc}^{3+} + 5 \text{H}_2\text{O} \rightleftharpoons \text{Sc}_3(\text{OH})_5^{4+} + 5 \text{H}^+$	-16.34	-16.33 ± 0.10

$\text{Sc(OH)}_3(\text{s}) + 3 \text{H}^+ \rightleftharpoons \text{Sc}^{3+} + 3 \text{H}_2\text{O}$		9.17 ± 0.30
$\text{ScO}_{1.5}(\text{s}) + 3 \text{H}^+ \rightleftharpoons \text{Sc}^{3+} + 1.5 \text{H}_2\text{O}$		5.53 ± 0.30
$\text{ScO(OH)}(\text{c}) + 3 \text{H}^+ \rightleftharpoons \text{Sc}^{3+} + 2 \text{H}_2\text{O}$	9.4	
$0.5 \text{Sc}_2\text{O}_3(\text{c}) + 1.5 \text{H}_2\text{O} \rightleftharpoons \text{Sc}^{3+} + 3 \text{OH}^-$	-36.3*	
$\text{Sc(OH)}_3(\text{c}) \rightleftharpoons \text{Sc(OH)}_3(\text{aq})$	~-7	
$\text{Sc(OH)}_3(\text{c}) + \text{OH}^- \rightleftharpoons \text{Sc(OH)}_4^-$	~-3	-3.5 ± 0.2

*Derived by Baes and Mesmer (1976) from Gibbs energy data provided in the NBS tables.

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

P.L. Brown and C. Ekberg, *Hydrolysis of Metal Ions*. Wiley, 2016, pp. 135-145.