

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

$\text{Sc}(\text{OH})_3(\text{s}) + 3 \text{H}^+ \rightleftharpoons \text{Sc}^{3+} + 3 \text{H}_2\text{O}$		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
$\text{ScO}(\text{OH})(\text{c}) + 3 \text{H}^+ \rightleftharpoons \text{Sc}^{3+} + 2 \text{H}_2\text{O}$	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*	
$\text{Sc}(\text{OH})_3(\text{c}) \rightleftharpoons \text{Sc}(\text{OH})_3(\text{aq})$	~-7	
$\text{Sc}(\text{OH})_3(\text{c}) + \text{OH}^- \rightleftharpoons \text{Sc}(\text{OH})_4^-$	~-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.