

Uranium(IV)

Reaction	Baes and Mesmer, 1976	Thoenen et al., 2002	Brown and Ekberg, 2016	Grenthe et al., 2020
$U^{4+} + H_2O \rightleftharpoons UOH^{3+} + H^+$	-0.65 ± 0.04	-0.54 ± 0.06	-0.58 ± 0.08	-0.54 ± 0.06
$U^{4+} + 2 H_2O \rightleftharpoons U(OH)_2^{2+} + 2 H^+$	(-2.6)	-1.1 ± 1.0	-1.4 ± 0.2	-1.9 ± 0.2
$U^{4+} + 3 H_2O \rightleftharpoons U(OH)_3^+ + 3 H^+$	(-5.8)	-4.7 ± 1.0	-5.1 ± 0.3	-5.2 ± 0.4
$U^{4+} + 4 H_2O \rightleftharpoons U(OH)_4 + 4 H^+$	(-10.3)	-10.0 ± 1.4	-10.4 ± 0.5	-10.0 ± 1.4
$U^{4+} + 5 H_2O \rightleftharpoons U(OH)_5^- + 5 H^+$	-16.0			
$UO_2(\text{am, hyd}) + 4 H^+ \rightleftharpoons U^{4+} + 2 H_2O$		1.5 ± 1.0		
$UO_2(\text{am,hyd}) + 2 H_2O \rightleftharpoons U^{4+} + 4 OH^-$				-54.500 ± 1.000

$\text{UO}_2(\text{c}) + 4 \text{H}^+ \rightleftharpoons \text{U}^{4+} + 2 \text{H}_2\text{O}$	-1.8			
$\text{UO}_2(\text{c}) + 2 \text{H}_2\text{O} \rightleftharpoons \text{U}^{4+} + 4 \text{OH}^-$				-60.860 ± 1.000

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

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T. Thoenen, W. Hummel, U. Berner, E. Curti, *The PSI/Nagra Chemical Thermodynamic Database 12/07*, Villigen: Paul Scherrer Institut PSI, 2014.