

Arsenic(III)

| Equilibrium reaction | lgK at infinite dilution and $T = 298\text{ K}$ | | |
|--|---|----------------------------|------------------------|
| | Baes and Mesmer, 1976 | Nordstrom and Archer, 2003 | Nordstrom et al., 2014 |
| $\text{As(OH)}_4^- + \text{H}^+ \rightleftharpoons \text{As(OH)}_3 + \text{H}_2\text{O}$ | | 9.17 | 9.24 ± 0.02 |

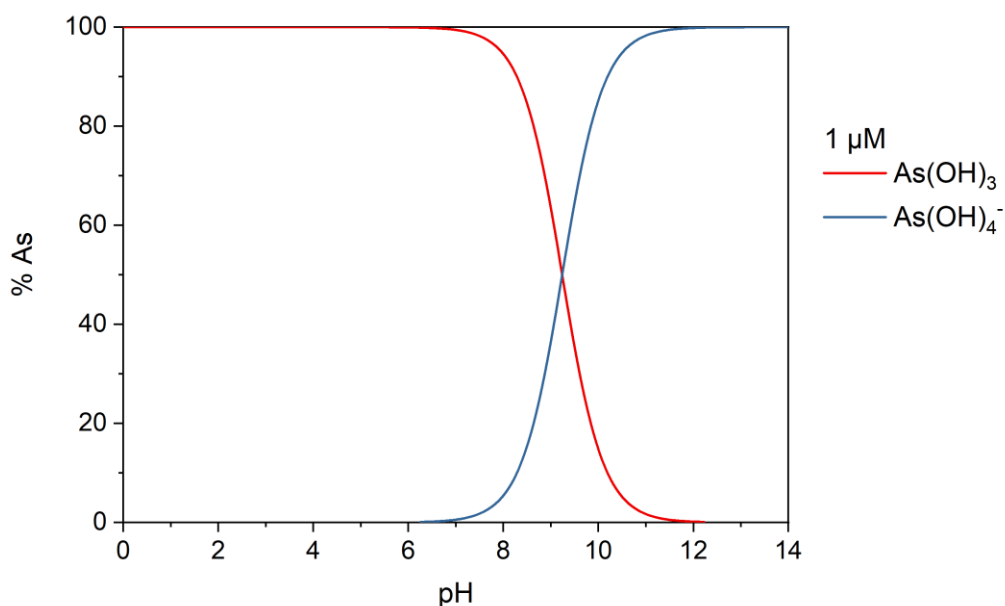
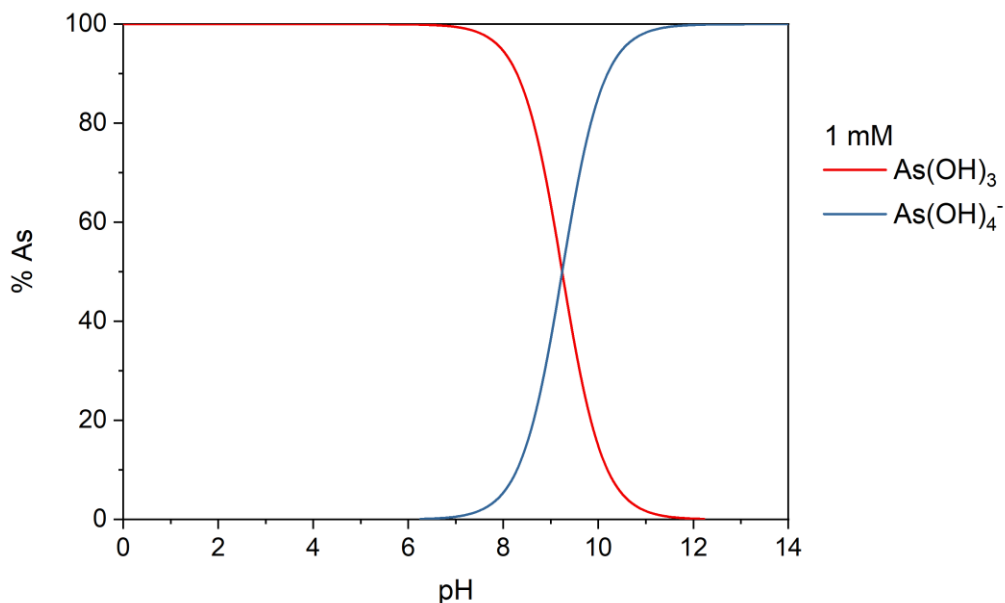
C.F. Baes and R.E. Mesmer, The Hydrolysis of Cations. Wiley, New York, 1976, p. 375.

D.K. Nordstrom and D. Archer, Arsenic thermodynamic data and environmental geochemistry. In: Arsenic in Ground Water. Welch AH, Stollenwerk KG (eds) Kluwer Academic Publishers, Amsterdam, 2003, pp. 1–25.

D.K. Nordstrom, J. Majzlan and E. Königsberger, Thermodynamic properties for As minerals & aqueous species. Reviews in Mineralogy & Geochemistry, 79, 217–255 (2014).

Distribution diagrams

These diagrams have been computed at two As(III) concentrations ($1 \text{ mM} = 1 \times 10^{-3} \text{ mol L}^{-1}$ and $1 \text{ }\mu\text{M} = 1 \times 10^{-6} \text{ mol L}^{-1}$) with the 'best' equilibrium constant above (in green). Calculations assume $T = 298 \text{ K}$ for the limiting case of zero ionic strength (*i.e.*, even neglecting plotted ions).



Arsenic(V)

| Equilibrium reaction | lgK at infinite dilution and $T = 298\text{ K}$ | | |
|---|---|----------------------------|------------------------|
| | Khodakovsky et al. (1968) | Nordstrom and Archer, 2003 | Nordstrom et al., 2014 |
| $\text{H}_2\text{AsO}_4^- + \text{H}^+ \rightleftharpoons \text{H}_3\text{AsO}_4$ | 2.21 | 2.26 ± 0.078 | 2.25 ± 0.04 |
| $\text{HAsO}_4^{2-} + \text{H}^+ \rightleftharpoons \text{H}_2\text{AsO}_4^-$ | 6.93 | 6.99 ± 0.1 | 6.98 ± 0.11 |
| $\text{AsO}_4^{3-} + \text{H}^+ \rightleftharpoons \text{HAsO}_4^{2-}$ | 11.51 | 11.80 ± 0.1 | 11.58 ± 0.05 |

I.L. Khodakovsky, B.N. Ryzhenko and G.B.Naumov, Thermodynamics of aqueous electrolyte solutions at elevated temperatures (Temperature dependence of the heat capacities of ions in aqueous solution). *Geokhimiya*, 12, 1486–1503, 1968.

D.K. Nordstrom and D. Archer, Arsenic thermodynamic data and environmental geochemistry. In: *Arsenic in Ground Water*. Welch AH, Stollenwerk KG (eds) Kluwer Academic Publishers, Amsterdam, 2003, pp. 1-25.

D.K. Nordstrom, J. Majzlan and E. Königsberger, Thermodynamic properties for As minerals & aqueous species. *Reviews in Mineralogy & Geochemistry*, 79, 217–255 (2014).

Distribution diagrams

These diagrams have been computed at two As(V) 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).

