

22.3: Formation Constants for Complex Ions

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|---|----------------------|
| Equilibrium | K_f |
| $\text{Al}^{3+} + 6 \text{F}^- \rightleftharpoons [\text{AlF}_6]^{3-}$ | 7×10^{19} |
| $\text{Cd}^{2+} + 4 \text{NH}_3 \rightleftharpoons [\text{Cd}(\text{NH}_3)_4]^{2+}$ | 1.3×10^7 |
| $\text{Cd}^{2+} + 4 \text{CN}^- \rightleftharpoons [\text{Cd}(\text{CN})_4]^{2-}$ | 3×10^{18} |
| $\text{Co}^{2+} + 6 \text{NH}_3 \rightleftharpoons [\text{Co}(\text{NH}_3)_6]^{2+}$ | 1.3×10^5 |
| $\text{Co}^{3+} + 6 \text{NH}_3 \rightleftharpoons [\text{Co}(\text{NH}_3)_6]^{3+}$ | 2.3×10^{33} |
| $\text{Cu}^+ + 2 \text{CN}^- \rightleftharpoons [\text{Cu}(\text{CN})_2]^-$ | 1.0×10^{16} |
| $\text{Cu}^{2+} + 4 \text{NH}_3 \rightleftharpoons [\text{Cu}(\text{NH}_3)_4]^{2+}$ | 1.7×10^{13} |
| $\text{Fe}^{2+} + 6 \text{CN}^- \rightleftharpoons [\text{Fe}(\text{CN})_6]^{4-}$ | 1.5×10^{35} |
| $\text{Fe}^{3+} + 6 \text{CN}^- \rightleftharpoons [\text{Fe}(\text{CN})_6]^{3-}$ | 2×10^{43} |
| $\text{Fe}^{3+} + 6 \text{SCN}^- \rightleftharpoons [\text{Fe}(\text{SCN})_6]^{3-}$ | 3.2×10^3 |
| $\text{Hg}^{2+} + 4 \text{Cl}^- \rightleftharpoons [\text{HgCl}_4]^{2-}$ | 1.1×10^{16} |
| $\text{Ni}^{2+} + 6 \text{NH}_3 \rightleftharpoons [\text{Ni}(\text{NH}_3)_6]^{2+}$ | 2.0×10^8 |
| $\text{Ag}^+ + 2 \text{Cl}^- \rightleftharpoons [\text{AgCl}_2]^-$ | 1.8×10^5 |
| $\text{Ag}^+ + 2 \text{CN}^- \rightleftharpoons [\text{Ag}(\text{CN})_2]^-$ | 1×10^{21} |
| $\text{Ag}^+ + 2 \text{NH}_3 \rightleftharpoons [\text{Ag}(\text{NH}_3)_2]^+$ | 1.7×10^7 |
| $\text{Zn}^{2+} + 4 \text{CN}^- \rightleftharpoons [\text{Zn}(\text{CN})_4]^{2-}$ | 2.1×10^{19} |
| $\text{Zn}^{2+} + 4 \text{OH}^- \rightleftharpoons [\text{Zn}(\text{OH})_4]^{2-}$ | 2×10^{15} |
| $\text{Fe}^{3+} + \text{SCN}^- \rightleftharpoons [\text{Fe}(\text{SCN})]^{2+}$ | 8.9×10^2 |
| $\text{Ag}^+ + 4 \text{SCN}^- \rightleftharpoons [\text{Ag}(\text{SCN})_4]^{3-}$ | 1.2×10^{10} |
| $\text{Pb}^{2+} + 4 \text{I}^- \rightleftharpoons [\text{PbI}_4]^{2-}$ | 3.0×10^4 |
| $\text{Pt}^{2+} + 4 \text{Cl}^- \rightleftharpoons [\text{PtCl}_4]^{2-}$ | 1×10^{16} |
| $\text{Cu}^{2+} + 4 \text{CN}^- \rightleftharpoons [\text{Cu}(\text{CN})_4]^{2-}$ | 1.0×10^{25} |
| $\text{Co}^{2+} + 4 \text{SCN}^- \rightleftharpoons [\text{Co}(\text{SCN})_4]^{2-}$ | 1×10^3 |

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