

6.11: Solubility Product Constant

Solubility Product Constant

John Moore, Jia Zhou, and Etienne Garand

Solubility Product Constants for Select Compounds

K_{sp} determined at 25 °C.

Substance	K_{sp}
Aluminum Compounds	
$AlAsO_4$	1.6×10^{-16}
$Al(OH)_3$ amorphous	1.3×10^{-33}
$AlPO_4$	6.3×10^{-19}
Barium Compounds	
$Ba_3(AsO_4)_2$	8.0×10^{-15}
$BaCO_3$	5.1×10^{-9}
BaC_2O_4	1.6×10^{-7}
$BaCrO_4$	1.2×10^{-10}
BaF_2	1.0×10^{-6}
$Ba(OH)_2$	5×10^{-3}
$Ba_3(PO_4)_2$	3.4×10^{-23}
$BaSeO_4$	3.5×10^{-8}
$BaSO_4$	1.1×10^{-10}
$BaSO_3$	8×10^{-7}
BaS_2O_3	1.6×10^{-5}
Bismuth Compounds	
$BiAsO_4$	4.4×10^{-10}
$BiOCl \cdot \frac{1}{2}H_2O$	1.8×10^{-31}
$BiO(OH)$	4×10^{-10}
$Bi(OH)_3$	4×10^{-31}
BiI_3	8.1×10^{-19}
$BiPO_4$	1.3×10^{-23}
Cadmium Compounds	
$Cd_3(AsO_4)_2$	2.2×10^{-33}
$CdCO_3$	5.2×10^{-12}
$Cd(CN)_2$	1.0×10^{-8}
$Cd_2[Fe(CN)_6]$	3.2×10^{-17}
$Cd(OH)_2$ fresh	2.5×10^{-14}
Calcium Compounds	
$Ca_3(AsO_4)_2$	6.8×10^{-19}
$CaCO_3$	2.8×10^{-9}
$CaCrO_4$	7.1×10^{-4}
$CaC_2O_4 \cdot H_2O$	4×10^{-9}
CaF_2	5.3×10^{-9}
$Ca(OH)_2$	5.5×10^{-6}
$CaHPO_4$	1×10^{-7}
$Ca_3(PO_4)_2$	2.0×10^{-29}

Substance	K_{sp}
CaSeO ₄	8.1×10^{-4}
CaSO ₄	9.1×10^{-6}
CaSO ₃	6.8×10^{-8}
Chromium Compounds	
CrAsO ₄	7.7×10^{-21}
Cr(OH) ₂	2×10^{-16}
Cr(OH) ₃	6.3×10^{-31}
CrPO ₄ ·4H ₂ O green§	2.4×10^{-23}
CrPO ₄ ·4H ₂ O violet§	1.0×10^{-17}
Cobalt Compounds	
Co ₃ (AsO ₄) ₂	7.6×10^{-29}
CoCO ₃	1.4×10^{-13}
Co(OH) ₂ fresh	1.6×10^{-15}
Co(OH) ₃	1.6×10^{-44}
CoHPO ₄	2×10^{-7}
Co ₃ (PO ₄) ₂	2×10^{-35}
Copper Compounds	
CuBr	5.3×10^{-9}
CuCl	1.2×10^{-6}
CuCN	3.2×10^{-20}
CuI	1.1×10^{-12}
CuOH	1×10^{-14}
CuSCN	4.8×10^{-15}
Cu ₃ (AsO ₄) ₂	7.6×10^{-36}
CuCO ₃	1.4×10^{-10}
Cu ₂ [Fe(CN) ₆]	1.3×10^{-16}
Cu(OH) ₂	2.2×10^{-20}
Cu ₃ (PO ₄) ₂	1.3×10^{-37}
Gold Compounds	
AuCl	2.0×10^{-13}
AuI	1.6×10^{-23}
AuCl ₃	3.2×10^{-25}
Au(OH) ₃	5.5×10^{-46}
AuI ₃	1×10^{-46}
Iron Compounds	
FeCO ₃	3.2×10^{-11}
Fe(OH) ₂	8.0×10^{-16}
FeC ₂ O ₄ ·2H ₂ O§	3.2×10^{-7}
FeAsO ₄	5.7×10^{-21}
Fe ₄ [Fe(CN) ₆] ₃	3.3×10^{-41}
Fe(OH) ₃	4×10^{-38}
FePO ₄	1.3×10^{-22}
Lead Compounds	
Pb ₃ (AsO ₄) ₂	4.0×10^{-36}

Substance	K_{sp}
PbBr ₂	4.0×10^{-5}
PbCO ₃	7.4×10^{-14}
PbCl ₂	1.6×10^{-5}
PbCrO ₄	2.8×10^{-13}
PbF ₂	2.7×10^{-8}
Pb(OH) ₂	1.2×10^{-15}
PbI ₂	7.1×10^{-9}
PbC ₂ O ₄	4.8×10^{-10}
PbHPO ₄	1.3×10^{-10}
Pb ₃ (PO ₄) ₂	8.0×10^{-43}
PbSeO ₄	1.4×10^{-7}
PbSO ₄	1.6×10^{-8}
Pb(SCN) ₂	2.0×10^{-5}
Magnesium Compounds	
Mg ₃ (AsO ₄) ₂	2.1×10^{-20}
MgCO ₃	3.5×10^{-8}
MgCO ₃ ·3H ₂ O§	2.1×10^{-5}
MgC ₂ O ₄ ·2H ₂ O§	1×10^{-8}

From Patnaik, P., Dean's Analytical Chemistry Handbook, 2nd ed. New York: McGraw-Hill, 2004, Table 4.2.

No metal sulfides are listed in this table because sulfide ion is such a strong base that the usual solubility product equilibrium equation does not apply. See Myers, R. J. Journal of Chemical Education, Vol. 63, 1986, pp. 687-690.

‡From Meites, L. Ed. Handbook of Analytical Chemistry, 1st ed. New York: McGraw-Hill, 1963.

§Because [H₂O] does not appear in equilibrium constants for equilibria in aqueous solution in general, it does not appear in the K_{sp} expressions for hydrated solids.

This page titled 6.11: Solubility Product Constant is shared under a CC BY-NC-SA 4.0 license and was authored, remixed, and/or curated by John Moore, Jia Zhou, and Etienne Garand via source content that was edited to the style and standards of the LibreTexts platform.