Science 10-Chemistry
3.1 notes

name: KEY

Complete the following table.

Name	**Formula**	**High or low solubility?**
aluminum hydroxide	$Al(OH)_3$ (s) Al^{3+} OH^-	low solubility (s)
ammonium chloride NH_4^+ Cl^-	NH_4Cl (aq)	high solubility (aq)
potassium sulfide	K_2S (aq) K^+ S^{2-}	high solubility (aq)
molybdenum chlorate Mo^{6+} ClO_3^-	$Mo(ClO_3)_6$ (aq)	high solubility (aq)
lead (II) acetate	$Pb(CH_3COO)_2$ (aq) Pb^{2+} CH_3COO^-	high solubility (aq)
copper(II) iodide Cu^{2+} I^-	CuI_2 (aq)	high solubility (aq)
iron (II) carbonate	$FeCO_3$ (s) Fe^{2+} CO_3^{2-}	low solubility (s)
calcium sulfite Ca^{2+} SO_3^{2-}	$CaSO_3$ (s)	low solubility (s)
barium phosphate	$Ba_3(PO_4)_2$ (s) Ba^{2+} PO_4^{3-}	low solubility (s)
palladium(II) bromide Pd^{2+} Br^-	$PdBr_2$ (aq)	high solubility (aq)
mercury (I) iodide	HgI (aq) Hg^+ I^-	high solubility (aq)
strontium sulfate Sr^{2+} SO_4^{2-}	$SrSO_4$ (s)	low solubility (s)

Solutions

Solubility of Selected Ionic Compounds in Aqueous Solutions at 25°C

Ion	Group 1 ions NH_4^+ NO_3^- ClO_3^- ClO_4^- CH_3COO^-	F^-	Cl^- Br^- I^-	SO_4^{2-}	CO_3^{2-} PO_4^{3-} SO_3^{2-}	IO_3^- $OOCCOO^{2-}$	OH^-
Solubility greater than or equal to 0.1 mol/L (very soluble) **(aq)**	most	most	most	most	Group 1 ions NH_4^+	Group 1 ions NH_4^+ $Co(IO_3)_2$ $Fe_2(OOCCOO)_3$	Group 1 ions NH_4^+
Solubility less than 0.1 mol/L (slightly soluble) (s)	$RbClO_4$ $CsClO_4$ $AgCH_3COO$	Li^+ Mg^{2+} Ca^{2+} Sr^{2+} Ba^{2+} Fe^{2+} Pb^{2+}	Cu^+ Ag^+ Pb^{2+} Tl^+	Ca^{2+} Sr^{2+} Ba^{2+} Ag^+ Pb^{2+} Ra^{2+}	most	most	most

Note: This solubility table is only a guideline that was established using the K_{sp} values. A concentration of 0.1 mol/L corresponds to approximately 10 g/L to 30 g/L, depending on molar mass.

Stoichiometry and Solution Formulas

$$n = \frac{m}{M}$$

$$C = \frac{n}{V}$$

$$C_i V_i = C_f V_f$$

$$\frac{coefficient_r}{coefficient_g} = \frac{n_r}{n_g} \quad \text{or} \quad n_r = n_g \times \frac{coefficient_r}{coefficient_g}$$

$$(\%\ V/V) = \frac{V_{solute}}{V_{solution}} \times 100\%$$

$$\text{parts per million} = \frac{m_{solute}}{m_{solution}} \times 10^6 \text{ ppm}$$

n = number of moles (mol)
m = mass (g)
M = molar mass (g/mol)
C = molar concentration (mol/L)
V = volume (L)
i = initial solution
f = final solution
r = required substance
g = given substance
% V/V = percent by volume concentration