

Solubility Chart

| | CH_3CO_2^- (Acetate) | NO_3^- | Cl^- | Br^- | I^- | SO_4^{2-} | CO_3^{2-} | CrO_4^{2-} | OH^- | O^{2-} | PO_4^{3-} | S^{2-} |
|--------------------|---|-----------------|---------------|---------------|--------------|--------------------|--------------------|---------------------|---------------|-----------------|--------------------|-----------------|
| NH_4^+ | aq | aq | aq | aq | aq | aq | aq | aq | aq | -- | aq | aq |
| Na^+ | aq | aq | aq | aq | aq | aq | aq | aq | aq | aq | aq | aq |
| K^+ | aq | aq | aq | aq | aq | aq | aq | aq | aq | aq | aq | aq |
| Mg^{2+} | aq | aq | aq | aq | aq | aq | i | aq | i | i | i | d |
| Ca^{2+} | aq | aq | aq | aq | aq | i | i | aq | i | i | i | d |
| Ba^{2+} | aq | aq | aq | aq | aq | i | i | i | s | s | i | d |
| Al^{3+} | aq | aq | aq | aq | aq | aq | -- | -- | i | i | i | d |
| Pb^{2+} | aq | aq | i | i | i | i | i | i | i | i | i | i |
| Co^{2+} | aq | aq | aq | aq | aq | aq | i | i | i | i | i | i |
| Cu^{2+} | aq | aq | aq | aq | -- | aq | i | i | i | i | i | i |
| Fe^{2+} | aq | aq | aq | aq | aq | aq | s | -- | i | i | i | i |
| Fe^{3+} | i | aq | aq | aq | -- | aq | i | i | i | i | i | i |
| Hg_2^{2+} | s | aq | i | i | i | i | i | s | -- | i | i | i |
| Hg^{2+} | aq | aq | aq | i | i | d | i | s | i | i | i | i |
| Ag^+ | s | aq | i | i | i | i | i | i | -- | i | i | i |
| Zn^{2+} | aq | aq | aq | aq | aq | aq | i | i | i | i | i | i |

Legend: aq = water soluble

i = insoluble in water (less than 1 g/100 g water)

s = slightly water soluble

d = decomposes in water

Electrolyte Strength

| Acids | | | Bases | | | Ionic Salts | | |
|---|-------------------------------|-----------------------|---|---|--|-----------------------------------|---|-----------------|
| Strong Electrolyte | Weak Electrolyte | Non-electrolyte | Strong Electrolyte | Weak Electrolyte | Non-electrolyte | Strong Electrolyte | Weak Electrolyte | Non-electrolyte |
| HCl HBr HI HNO ₃ H ₂ SO ₄ HClO ₄ HBrO ₄ HIO ₄ HClO ₃ | All other water soluble acids | Water insoluble acids | LiOH NaOH KOH RbOH CsOH Sr(OH) ₂ Ba(OH) ₂ | NH ₃ or NH ₄ OH Amines | Insoluble bases, most other metal hydroxides | Soluble salts, see rules or chart | HgCl ₂ CdCl ₂ Pb(CH ₃ CO ₂) ₂ | Insoluble salts |
| Ions | Molecules | Solids | Ions | Molecules | Solids | Ions | Few Ions | Solids |

Solubility Rules

| Soluble Compounds | Exceptions | Insoluble Compounds | Exceptions |
|------------------------------|--|---------------------|---|
| Nitrates | None | Carbonates | Alkali metals, ammonium |
| Chlorates | None | Phosphates | Alkali metals, ammonium |
| Perchlorates | K is slightly soluble | Chromates | Alkali metals, ammonium |
| Acetates | Ag and Hg(I) are slightly soluble | Oxalates | Alkali metals, ammonium |
| Chlorides, Bromides, Iodides | Ag , Pb(II), and Hg(I) are insoluble | Sulfites | Alkali metals, ammonium |
| Fluorides | Ca, Mg, Sr, Ba, and Pb(II) | Sulfides | Alkali metals, ammonium, Ca, Sr, Ba |
| Sulfates | Sr, Ba , Pb(II), and Hg(I) are insoluble; Ag and Ca are slightly soluble | Oxides | Li, Na, Ca, Sr, Ba |
| Alkali Metals | KClO ₄ (see above) | Hydroxides | Alkali metals, ammonium, Sr, Ba; Ca is slightly soluble |
| Ammonium | None | | |