

Solubility of Some Ionic Compounds in Water

Always Soluble

Alkali metals =	Li ⁺ , Na ⁺ , K ⁺ , Rb ⁺ , Cs ⁺
Ammonium =	NH ₄ ⁺
Acetate =	C ₂ H ₃ O ₂ ⁻
Chlorate =	ClO ₃ ⁻
Nitrate =	NO ₃ ⁻
Perchlorate =	ClO ₄ ⁻

AAA
CNP

Generally Soluble

Cl⁻, Br⁻, I⁻ Soluble except: Ag⁺, Pb²⁺, Hg₂²⁺

AP-H

F⁻ Soluble except: Ca²⁺, Ba²⁺, Sr²⁺, Pb²⁺, Mg²⁺

CBS-PM

Sulfate = SO₄²⁻ Soluble except: Ca²⁺, Ba²⁺, Sr²⁺, Pb²⁺

CBS-P

Generally Insoluble

O²⁻, OH⁻ Insoluble except: Alkali metals and NH₄⁺

AA

Somewhat soluble: Ca²⁺, Ba²⁺, Sr²⁺

CBS

CO₂²⁻, CO₃²⁻

S²⁻, SO₃²⁻

PO₄³⁻

CrO₄²⁻, Cr₂O₄²⁻

Insoluble except: Alkali metals and NH₄⁺

AA

Not Soluble = forms precipitate

Soluble = dissolves in water (aqueous)

Activity Series Chart

Metals

Non-Metals

Most
Active

Name

Symbol

Name

Symbol

Lithium *Li*
Potassium *K*
Barium *Ba*
Strontium *Sr*
Calcium *Ca*
Sodium *Na*
Magnesium *Mg*
Aluminum *Al*
Manganese *Mn*
Zinc *Zn*
Iron *Fe*
Cadmium *Cd*
Cobalt *Co*
Nickel *Ni*
Tin *Sn*
Lead *Pb*
Hydrogen *H*
Copper *Cu*
Silver *Ag*
Mercury *Hg*
Gold *Au*

Fluorine *F*
Chlorine *Cl*
Bromine *Br*
Iodine *I*

Least
Active

Elements CANNOT replace anything ABOVE them.
The reaction DOES NOT OCCUR in this situation.

Examples: $\text{ZnCl}_2 + \text{Mg} \rightarrow \text{MgCl}_2$
Magnesium is above Zinc so the reaction happens

$\text{ZnCl}_2 + \text{Cu} \rightarrow \text{No Reaction}$
Copper is below Zinc so no reaction happens