

Solubility Rules

1. All alkali metal (lithium, sodium, potassium, rubidium, and cesium) and ammonium compounds are **soluble (aq)**.
2. All acetate, perchlorate, chlorate, and nitrate compounds are **soluble (aq)**.
3. Silver, lead and mercury (I) compounds are **insoluble (s)**.
4. Chlorides, bromides and iodides are **soluble (aq)**.
5. Carbonates, hydroxides, oxides, phosphates, silicates, and sulfides are **insoluble (s)**.
6. Sulfates are **soluble (aq)** except for calcium and barium which are insoluble.

You must use these rules in order. The first rule that applies to the compound in question is the most pertinent. For example, silver nitrate is soluble. Both nitrate (rule 2) and silver (rule 3) apply, but since the nitrate rule is first, it is what gets expressed. $\text{AgNO}_3(\text{aq})$. Silver chloride is solid. Since the silver rule (rule 3) comes before the chloride rule (rule 4) it is applied. $\text{AgCl}(\text{s})$.