**General Rules of Solubility**

The dividing line between soluble and insoluble is 0.1-molar at 25 °C.

Any substance that can form 0.1 M or more concentrated is soluble. Any substance that fails to reach 0.1 M is defined to be insoluble.

This value was picked with a purpose. VERY FEW substances have their maximum solubility near to 0.1 M. Almost every substance of any importance in chemistry is either much MORE soluble or much LESS soluble.

We have a third category: slightly soluble.

**Solubility rules that apply to water solution:**

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

These rules are to be applied in the order given. For example, PbSO4 is insoluble because rule 3 comes before rule 6. In like manner, AgCl is insoluble because rule 3 (the smaller) takes precedence over rule 4 (the larger).

Please be aware that these rules are guidelines only. For example, there are some alkali metal compounds that are insoluble. However, these are rather exotic compounds and can be safely ignored at an introductory level.