

# Solubility Rules Chart



|                                 |         | Group I Alkali Metals       |                          |                         | Group II Alkaline Earth Metals |                               |                             | Transition Metals          |                               |                                |                                 |                         | Post-transition Metals   |                               |                              |                                 |
|---------------------------------|---------|-----------------------------|--------------------------|-------------------------|--------------------------------|-------------------------------|-----------------------------|----------------------------|-------------------------------|--------------------------------|---------------------------------|-------------------------|--------------------------|-------------------------------|------------------------------|---------------------------------|
|                                 |         | Ammonium<br>$\text{NH}_4^+$ | Lithium<br>$\text{Li}^+$ | Sodium<br>$\text{Na}^+$ | Potassium<br>$\text{K}^+$      | Magnesium<br>$\text{Mg}^{2+}$ | Calcium<br>$\text{Ca}^{2+}$ | Barium<br>$\text{Ba}^{2+}$ | Iron (II)<br>$\text{Fe}^{2+}$ | Iron (III)<br>$\text{Fe}^{3+}$ | Copper (II)<br>$\text{Cu}^{2+}$ | Silver<br>$\text{Ag}^+$ | Zinc<br>$\text{Zn}^{2+}$ | Lead (II)<br>$\text{Pb}^{2+}$ | Aluminum<br>$\text{Al}^{3+}$ |                                 |
| Fluoride<br>$\text{F}^-$        | soluble | slightly soluble            | soluble                  | soluble                 | insoluble                      | insoluble                     | slightly soluble            | slightly soluble           | slightly soluble              | soluble                        | soluble                         | soluble                 | soluble                  | insoluble                     | slightly soluble             | Fluoride<br>$\text{F}^-$        |
| Chloride<br>$\text{Cl}^-$       | soluble | soluble                     | soluble                  | soluble                 | soluble                        | soluble                       | soluble                     | soluble                    | soluble                       | soluble                        | insoluble                       | soluble                 | soluble                  | insoluble                     | soluble                      | Chloride<br>$\text{Cl}^-$       |
| Bromide<br>$\text{Br}^-$        | soluble | soluble                     | soluble                  | soluble                 | soluble                        | soluble                       | soluble                     | soluble                    | soluble                       | soluble                        | insoluble                       | soluble                 | slightly soluble         | soluble                       | soluble                      | Bromide<br>$\text{Br}^-$        |
| Iodide<br>$\text{I}^-$          | soluble | soluble                     | soluble                  | soluble                 | soluble                        | soluble                       | soluble                     | soluble                    | soluble                       | soluble                        | insoluble                       | soluble                 | soluble                  | insoluble                     | soluble                      | Iodide<br>$\text{I}^-$          |
| Chlorate<br>$\text{ClO}_3^-$    | soluble | soluble                     | soluble                  | soluble                 | soluble                        | soluble                       | soluble                     | soluble                    | soluble                       | soluble                        | soluble                         | soluble                 | soluble                  | soluble                       | soluble                      | Chlorate<br>$\text{ClO}_3^-$    |
| Hydroxide<br>$\text{OH}^-$      | --      | soluble                     | soluble                  | soluble                 | insoluble                      | slightly soluble              | soluble                     | insoluble                  | insoluble                     | insoluble                      | slightly soluble                | insoluble               | insoluble                | insoluble                     | insoluble                    | Hydroxide<br>$\text{OH}^-$      |
| Sulfite<br>$\text{SO}_3^{2-}$   | soluble | soluble                     | soluble                  | soluble                 | insoluble                      | insoluble                     | insoluble                   |                            |                               |                                | insoluble                       | insoluble               | insoluble                |                               |                              | Sulfite<br>$\text{SO}_3^{2-}$   |
| Sulfate<br>$\text{SO}_4^{2-}$   | soluble | soluble                     | soluble                  | soluble                 | slightly soluble               | insoluble                     | soluble                     | soluble                    | soluble                       | slightly soluble               | soluble                         | soluble                 | insoluble                | soluble                       | soluble                      | Sulfate<br>$\text{SO}_4^{2-}$   |
| Carbonate<br>$\text{CO}_3^{2-}$ | soluble | soluble                     | soluble                  | soluble                 | insoluble                      | insoluble                     | insoluble                   | insoluble                  |                               | insoluble                      | insoluble                       | insoluble               | insoluble                |                               |                              | Carbonate<br>$\text{CO}_3^{2-}$ |
| Nitrite<br>$\text{NO}_2^-$      | soluble | soluble                     | soluble                  | soluble                 | soluble                        | soluble                       |                             |                            |                               | insoluble                      |                                 |                         | soluble                  |                               |                              | Nitrite<br>$\text{NO}_2^-$      |
| Nitrate<br>$\text{NO}_3^-$      | soluble | soluble                     | soluble                  | soluble                 | soluble                        | soluble                       | soluble                     | soluble                    | soluble                       | soluble                        | soluble                         | soluble                 | soluble                  | soluble                       | soluble                      | Nitrate<br>$\text{NO}_3^-$      |
| Phosphate<br>$\text{PO}_4^{3-}$ | soluble | insoluble                   | soluble                  | soluble                 | insoluble                      | insoluble                     | insoluble                   | insoluble                  | insoluble                     | insoluble                      | insoluble                       | insoluble               | insoluble                | insoluble                     | insoluble                    | Phosphate<br>$\text{PO}_4^{3-}$ |