

Oxidation Number Rules:

1. For an atom in its **elemental** form, the oxidation number = 0.
2. Oxidation number of a **monoatomic ion** = ion charge
3. Group 1A metals in a compound = +1
4. Group 2A metals in a compound = +2
5. The oxidation number for **hydrogen** in a compound is +1 with a nonmetal and -1 with a metal or with boron.
6. The oxidation number for **fluorine** in a compound is -1.
7. The oxidation number for **oxygen** in a compound is -1 in a peroxide and -2 in all others.
8. The sum of the oxidation numbers for all atoms or ions in a compound or polyatomic ion equals the charge on the compound or polyatomic ion.

Solubility Guidelines:

Soluble Compounds:

1. All compounds of the 1A metals are soluble.
2. All compound containing the ammonium ion are soluble.
3. The following ions generally form **soluble compounds**:

Nitrate	no exceptions
Acetate	no exceptions
Chlorate	few common exceptions
Perchlorate	few common exceptions
Sulfate	except compounds containing calcium, strontium, barium, Pb^{2+} , or silver ions
Chloride	except compounds containing silver, Pb^{2+} , Cu^+ , or Hg_2^{2+} ions
Bromide	except compounds containing silver, Pb^{2+} , Cu^+ , or Hg_2^{2+} ions
Iodide	except compounds containing silver, Pb^{2+} , Cu^+ , or Hg_2^{2+} ions
Fluoride	except compounds with Pb^{2+} or the alkaline earth metal cations

Insoluble Compounds:

4. The following ions generally form **insoluble compounds**:

Sulfide	except compounds with ammonium ions, alkali metal cations, calcium, strontium, or barium ions
Carbonate	except compounds with the ammonium ion or group 1A
Phosphate	except compounds with the ammonium ion or group 1A
Hydroxide	except compounds with group 1A, ammonium, calcium, strontium, or barium ions

5. Hydrogen sulfide and hydrogen cyanide are gases.