

# General Chemistry Nomenclature

## Anions

### Monoatomic

|                 |          |
|-----------------|----------|
| Cl <sup>-</sup> | chloride |
| F <sup>-</sup>  | fluoride |
| Br <sup>-</sup> | bromide  |
| I <sup>-</sup>  | iodide   |
| O <sup>-2</sup> | oxide    |
| S <sup>-2</sup> | sulfide  |
| H <sup>-</sup>  | hydride  |
| N <sup>-3</sup> | nitride  |
| C <sup>-4</sup> | carbide  |

### Polyatomic

|   |              |
|---|--------------|
| OH <sup>-</sup>   | hydroxide    |
| PO <sub>4</sub> <sup>-3</sup>                             | phosphate    |
| CN <sup>-</sup>   | cyanide      |
| PO <sub>3</sub> <sup>-3</sup>                             | phosphite    |
| HCO <sub>3</sub> <sup>-</sup>                             | bicarbonate  |
| HSO <sub>4</sub> <sup>-</sup>                             | bisulfate    |
| NO <sub>3</sub> <sup>-</sup>                              | nitrate      |
| NO <sub>2</sub> <sup>-</sup>                              | nitrite      |
| MnO <sub>4</sub> <sup>-</sup>                             | permanganate |
| C <sub>2</sub> H <sub>3</sub> O <sub>2</sub> <sup>-</sup> | acetate      |
| O <sub>2</sub> <sup>-2</sup>                              | peroxide     |
| C <sub>2</sub> O <sub>4</sub> <sup>-2</sup>               | oxalate      |
| CO <sub>3</sub> <sup>-2</sup>                             | carbonate    |
| SO <sub>4</sub> <sup>-2</sup>                             | sulfate      |
| SO <sub>3</sub> <sup>-2</sup>                             | sulfite      |
| CrO <sub>4</sub> <sup>-2</sup>                            | chromate     |
| Cr <sub>2</sub> O <sub>7</sub> <sup>-2</sup>              | dichromate   |

|                               |             |                               |              |                              |            |
|-------------------------------|-------------|-------------------------------|--------------|------------------------------|------------|
| BrO <sup>-</sup>              | hypobromite | ClO <sup>-</sup>              | hypochlorite | IO <sup>-</sup>              | hypoiodite |
| BrO <sub>2</sub> <sup>-</sup> | bromite     | ClO <sub>2</sub> <sup>-</sup> | chlorite     | IO <sub>2</sub> <sup>-</sup> | iodite     |
| BrO <sub>3</sub> <sup>-</sup> | bromate     | ClO <sub>3</sub> <sup>-</sup> | chlorate     | IO <sub>3</sub> <sup>-</sup> | iodate     |
| BrO <sub>4</sub> <sup>-</sup> | perbromate  | ClO <sub>4</sub> <sup>-</sup> | perchlorate  | IO <sub>4</sub> <sup>-</sup> | periodate  |

## Cations

### +1 Cations

|                              |           |
|------------------------------|-----------|
| H <sup>+</sup>               | hydrogen  |
| Li <sup>+</sup>              | lithium   |
| Na <sup>+</sup>              | sodium    |
| K <sup>+</sup>               | potassium |
| Rb <sup>+</sup>              | rubidium  |
| Cs <sup>+</sup>              | cesium    |
| Ag <sup>+</sup>              | silver    |
| NH <sub>4</sub> <sup>+</sup> | ammonium  |

### +2 Cations

|                  |           |
|------------------|-----------|
| Be <sup>+2</sup> | beryllium |
| Mg <sup>+2</sup> | magnesium |
| Ca <sup>+2</sup> | calcium   |
| Sr <sup>+2</sup> | strontium |
| Ba <sup>+2</sup> | barium    |
| Zn <sup>+2</sup> | zinc      |
| Cd <sup>+2</sup> | cadmium   |

### +3 Cations

|                  |          |
|------------------|----------|
| Al <sup>+3</sup> | aluminum |
|------------------|----------|

## Cations with multiple oxidation states

Fe<sup>+2</sup> iron (II) or ferrous

Fe<sup>+3</sup> iron (III) or ferric

Cr<sup>+2</sup> chromium (II) or chromous

Cr<sup>+3</sup> chromium (III) or chromic

Sn<sup>+2</sup> tin (II) or stannous

Sn<sup>+4</sup> tin (IV) or stannic

Pb<sup>+2</sup> lead (II) or plumbous

Pb<sup>+4</sup> lead (IV) or plumbic

Cu<sup>+1</sup> copper (I) or cuprous

Cu<sup>+2</sup> copper (II) or cupric

Hg<sup>+2</sup> mercury (II) or mercuric

Hg<sub>2</sub><sup>+2</sup> mercury (I) or mercurous

## Acids

HF hydrofluoric acid

HCl hydrochloric acid

HBr hydrobromic acid

HI hydroiodic acid

HCN hydrocyanic acid

H<sub>2</sub>S hydrosulfuric acid

H<sub>2</sub>CO<sub>3</sub> carbonic acid

HNO<sub>2</sub> nitrous acid

HNO<sub>3</sub> nitric acid

H<sub>3</sub>PO<sub>4</sub> phosphoric acid

H<sub>2</sub>SO<sub>3</sub> sulfurous acid

H<sub>2</sub>SO<sub>4</sub> sulfuric acid

HC<sub>2</sub>H<sub>3</sub>O<sub>2</sub> acetic acid

H<sub>2</sub>C<sub>2</sub>O<sub>4</sub> oxalic acid

HClO hypochlorous acid

HClO<sub>2</sub> chlorous acid

HClO<sub>3</sub> chloric acid

HClO<sub>4</sub> perchloric acid

## Rules for Naming Compounds

### A. Binary Compounds Containing a Metal and a Nonmetal (ionic compounds)

1. Name of cation is given first (same as name of element)
2. Name of anion is given second
  - i. Monoatomic anions end in *-ide*
  - ii. Polyatomic ion names do not change

### B. Binary Compounds between Two Nonmetals (molecular compounds)

1. Prefixes are used to specify the number of each atom present  
i.e. 1=mono, 2=di, 3=tri, 4=tetra, 5=penta, 6=hexa, 7=hepta, 8=octa
2. If first atom is a single atom then prefix "mono" is omitted

## Rules for Writing Formulas

### A. Ionic Compounds

1. Sum of charges of all ions must equal zero i.e. total negative charge of all anions must cancel the total positive charge of all cations
2. Use subscripts to indicate the presence of more than one ion
3. Polyatomic ions must be in parentheses if subscripts are used.