

Charges of some Common Monatomic ions

H 1+ 1-																	
Li 1+	Be 2+													N 3-	O 2-	F 1-	
Na 1+	Mg 2+												Al 3+			Cl 1-	
K 1+	Ca 2+	Sc 3+	Ti 3+ 4+	V 3+ 4+	Cr 2+ 3+	Mn 2+ 3+	Fe 2+ 3+	Co 2+ 3+	Ni 2+ 4+	Cu 1+ 2+	Zn 2+					Br 1-	
Rb 1+	Sr 2+								Pd 2+ 4+	Ag 1+	Cd 2+			Sn 2+ 4+		I 1-	
Cs 1+	Ba 2+								Pt 2+ 4+	Au 1+ 3+	Hg 2+ *			Pb 2+ 4+			
Fr 1+	Ra 2+																

Please note that many of the metals shown here can have more possibilities that I can show here. Vanadium, for example, can be 2+, 3+, 4+ or 5+. I have only shown the more common charges.

*Mercury can be 1+ in the polyatomic ion Hg_2^{2+} .

Rules for naming binary covalent compounds:

- 1) Name the first nonmetal by its elemental name.
- 2) Name the second nonmetal by its elemental name and an -ide ending.
- 3) Use the prefixes mono, di, tri, tetra, penta or hexa to indicate the number of atoms of that element in the molecule.
- 4) If mono is the prefix on the first atom, it is understood and not written.

Table 11.2 Prefixes used to show the presence of one to ten carbons in an unbranched chain.

Formula	name	Formula	name
NH_4^+	Ammonium	SO_4^{2-}	Sulfate
OH^-	Hydroxide	CrO_4^{2-}	Chromate
NO_3^-	Nitrate	PO_4^{3-}	Phosphate
CH_3CO_2^-	Acetate	ClO_3^-	Chlorate
CN^-	Cyanide	SiO_4^{2-}	silicate
CO_3^{2-}	Carbonate	HCO_3^-	bicarbonate

Rules for naming simple ionic compounds.

1. Name the metal by its elemental name.
2. Name the nonmetal by its elemental name and an -ide ending.
3. Metals that can have different oxidation states (charges) use roman numerals in their names to indicate their specific positive charge.
Example Fe^{2+} is Iron(II)
(See following page to determine which metals can have more than one positive charge.)
4. Name polyatomic ions by their names.

Gas Laws

$$PV=nRT$$

$$K=273+^{\circ}\text{C}$$

$$101.325 \text{ kPa}=1.01325 \text{ bar}=1 \text{ atm}$$

$$R= 0.08206 \text{ L atm mol}^{-1}\text{K}^{-1}$$

$$\frac{P_1V_1}{T_1}=\frac{P_2V_2}{T_2}$$