

NAMING IONIC COMPOUNDS II

These ionic compounds are named by the simple rule:

Name the cation: then name the anion.

However, to avoid ambiguity the names of these cations must indicate the charge (oxidation number) on the metal ion.

1. The charge (oxidation number) is given by Roman numeral in parentheses after the name of the metal. Examples:

Cu^+ is **copper(I)** ion, so CuCl is named **copper(I) chloride**
 Cu^{2+} is **copper(II)** ion, so CuCl_2 is named **copper(II) chloride**
 Fe^{3+} is **iron(III)** ion, so FeCl_3 is named **iron(III) chloride**
 Sn^{4+} is **tin(IV)** ion, so SnCl_4 is named **tin(IV) chloride**

2. All metals not in groups IA, IIA, except Ag, Zn, and Al must include the charge (oxidation number) in the name.
3. The charge on the cation must be deduced from the formula using the subscripts and the charge on the anion so that all ionic charges sum to zero. Examples:

In CoCl_3 let Z = cobalt charge; -1 is the chloride charge;
since $Z + (-1) \times 3 = 0$, $Z = 3$; so cobalt is Co^{3+} or **cobalt(III)**.
 CoCl_3 is named **cobalt(III) chloride**

In V_2O_5 let Z = vanadium charge; -2 is the oxide charge;
since $Z \times 2 + (-2) \times 5 = 0$, $Z = 5$; so vanadium is V^{3+} or **vanadium(V)**.
 V_2O_5 is named **vanadium(V) oxide**.

You should be able to name the following:

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| a. FeS | g. SnI_2 | m. CrP |
| b. Au_2O_3 | h. CoO | n. HgBr_2 |
| c. MnO_2 | i. FeI_3 | o. AuCl_3 |
| d. SnF_4 | j. Fe_2O_3 | p. HgS |
| e. PbO_2 | k. SnS | q. CrCl_3 |
| f. NiF_2 | l. Cu_3N | r. MnBr_2 |

Answers are on the other side.