

Naming Compounds : Notes/W.S.-40

There are millions of different compounds. One common type of compound is the **ionic compound**. An ionic compound consists of a metal combined with a non-metal.

There is a convenient method for naming these compounds.

First, we assign a number called the **combining capacity** to each atom. The combining capacity is a number which indicates the combining ability of the atom. Most atoms have one or two combining capacities. These are given in the table below.

Combining Capacities

<u>metal</u>	<u>c.c.</u>	<u>non-metal</u>	<u>c.c.</u>
aluminum	3	bromine	1
barium	2	chlorine	1
calcium	2	fluorine	1
copper	1,2	iodine	1
iron	2,3	oxygen	2
lead	2,4	sulfur	2
magnesium	2		
nickel	2,3		
potassium	1		
silver	1		
sodium	1		
strontium	2		
zinc	2		

A metal on the left will combine with a non-metal on the right.

Naming Compounds (metal has only one c.c.)

The following rules are used when naming simple ionic compounds and writing down their formulas.

1) When naming a compound, put the metal first, the non-metal second, and change the ending of the non-metal to **ide**.

2) When writing the formula for a compound, switch the combining capacities of the metal and non-metal. If the combining capacities are equal, cancel.

Examples:

aluminum + oxygen -> aluminum oxide -> Al_2O_3

sodium + sulfur -> sodium sulfide -> Na_2S_1 -> Na_2S

calcium + oxygen -> calcium oxide -> Ca_2O_2 -> CaO

Problems:

- 1) What is an ionic compound?
- 2) What is the combining capacity for an atom?
- 3) Give the combining capacity for each of the following atoms;
 - a) Cl
 - b) O
 - c) Na
 - d) Al
- 4) Name the four metals which have two combining capacities.
- 5) When naming an ionic compound, which comes first, the metal or the non-metal?
- 6) Which three letters are always placed at the end of the non-metal in a simple ionic compound?
- 7) Give the name and formula for each of the following combinations.

		name	formula
a) sodium	+	chlorine	_____
b) aluminum	+	bromine	_____
c) calcium	+	sulfur	_____
d) potassium	+	oxygen	_____
e) silver	+	fluorine	_____

f) calcium + bromine -----

Answers: 1) It is a compound which is composed of a metal and a non-metal., 2) The combining capacity is a number which indicates the combining ability of the atom., 3)a) 1, b) 2, c) 1, d) 3, 4) copper, iron, lead, nickel, 5) metal, 6) ide, 7)a) sodium chloride, NaCl, b) aluminum bromide, AlBr₃, c) calcium sulfide, CaS, d) potassium oxide, K₂O, e) silver fluoride, AgF, f) calcium bromide, CaBr₂.