



Lesson 10: Ionic Compounds Lesson
10: Ionic Compounds (Nelson Textbook
Page 178-180)

Learning Goals

- I can:
 - Write the formulas for ions and ionic compounds
 - Name ionic compounds

How Ionic Compounds Form

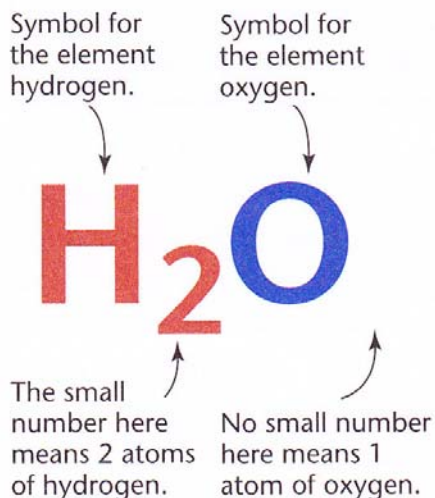
- An ionic compound is made up of ions of a **metal** and a **non-metal**.
- **Metals LOSE electrons** to non-metals, to form **positive ions**.
- **Non-metals GAIN electrons** from metals, to form **negative ions**.

Write the ion

- Li (metal) and F (non-metal)
- Li – electron \rightarrow Li¹⁺
- F + electron \rightarrow F¹⁻

Chemical Formula

- **Symbols** – which atoms or ions in the compounds
- **Subscripts** – how many atoms or ions of each element combine to form the compound.



Example 1:

- Sodium chloride, NaCl

→ 1 sodium ion (Na^+) and 1 chloride ion (Cl^-)

Example 2:

- Calcium bromide, CaBr_2
- ___ calcium ion (Ca^{2+})
- ___ bromide ion (Br^-)

- Total charge when you add all ions must = zero!!!!

Criss-cross method

STEP 1

Look at the name of the compound: aluminum oxide. Use the periodic table to find the symbols for the ions.

aluminum = Al
oxide = oxygen = O

STEP 2

Write the ion charges above the symbols for the ions.

Al^{3+} O^{2-}

STEP 3

Drop the + and - signs, and criss-cross the ion charges to get the subscripts: Al_2 and O_3 . If the charges are the same, they cancel. Use no subscripts.

Al_2^{3+} O_3^{2-}

STEP 4

Write the chemical formula.

Al_2O_3

Table 2.4 Common Non-metal Ions

Element Name	Element Symbol	Ion Symbol	Ion Name
nitrogen	N	N^{3-}	nitride
oxygen	O	O^{2-}	oxide
fluorine	F	F^-	fluoride
phosphorus	P	P^{3-}	phosphide
sulfur	S	S^{2-}	sulfide
chlorine	Cl	Cl^-	chloride
selenium	Se	Se^{2-}	selenide
bromine	Br	Br^-	bromide
iodine	I	I^-	iodide

Naming Ionic Compounds

- A **compound** composed of ions has **2 parts**:
 - a positive (metal) part
 - a negative (non-metal) part
- Name the **metal** first, using the name that appears on the **periodic table**.
- Name the **non-metal** second.
- **Change the ending** of the non-metal to **“ide.”**

Naming Ionic Compounds

**STEP
1**

Look at the chemical formula: CaCl_2 . Use the periodic table to name the metal ion.

Ca = calcium

**STEP
2**

Use the periodic table to name the non-metal ion.

Cl = chlorine

**STEP
3**

Change the ending of the non-metal ion to "ide."

chlorine → chloride

**STEP
4**

Write the first part of the name from step 1 with the second part of the name from step 3.

calcium chloride