

NAMING IONIC AND COVALENT COMPOUNDS



Chemical Formulas

- A **chemical formula** is a shorthand way of telling you
 - The **name** of a compound
 - What **type** of **atoms** are in the compound
 - **How many** of each element there are

How to read a formula

- A chemical formula uses
 - **symbols** for each element
 - **subscripts** to tell you how many of each element there are.

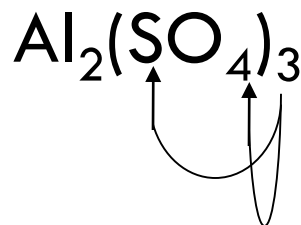
Example:

- If there is no subscript, you assume there is a “1” as the subscript (but you just don’t write it in). N_1H_4

What's with the parentheses?

- If a chemical formula has **parentheses** in it then you have to remember to **distribute** the subscript to each element inside the parentheses.

Example:



There are Aluminum atoms

Sulfur atoms

Oxygen atoms

Practice Questions



Ca = Br =



Cu = N = O =

Ionic or covalent?

- Cation & anion (usually metal & nonmetal) = ionic
- Non-metal and non-metal = covalent
- N_2O **COVALENT**
- KCl **IONIC**
- FeO **IONIC**
- C_2H_6 **COVALENT**
- $(\text{NH}_4)_2\text{CO}_3$

IONIC!!! Cation and anion – know your ions! NH_4^+ CO_3^{2-} POLYATOMIC!

NAMING

IONIC COMPOUNDS



Naming Ionic Compounds

□ Two types of ionic compounds

□ **BINARY**

- Only TWO types of elements



□ **POLYATOMIC**

- MORE than two types of elements



Naming Binary Compounds

- Cation first, Anion Second
- Metal first, Non-metal Second
- IGNORE THE SUBSCRIPTS!
- Transition metals with more than one possible charge put the charge in parentheses with roman numerals Mn(IV)

- Cation – same name as on periodic table
- Anion – drop the ending and add -ide

NaCl

Sodium Chloride

**See how it is chloride not
chlorine**

Practice Naming Binary Compounds

□ AgCl

□ Silver Chloride **NOT CHLORINE**

□ MgO

□ Magnesium Oxide **NOT OXYGEN**

□ KS

□ Potassium Sulfide **NOT SULFUR**

Naming Polyatomic Ionic Compounds

- Cation First, Anion Second
- Both Cation and Anion keep their “fancy” names if *polyatomic ions*. If a normal atom then cation keeps normal name and anion changes to -ide just like binary.

- $\text{Mg}(\text{OH})_2$
 - ▣ Magnesium Hydroxide

- $(\text{NH}_4)(\text{NO}_3)$
 - ▣ Ammonium Nitrate

Practice Naming Ionic Compounds

- MnF_4
 - Manganese (IV) Fluoride

- $\text{K}(\text{CN})$
 - Potassium Cyanide

NAMING COVALENT MOLECULES



JUST like ionic, but use prefixes

# of atoms	Prefix
1	mono-
2	di-
3	tri-
4	tetra-
5	penta-
6	hexa-
7	hepta-
8	octa-
9	nona-
10	deca-

Put a prefix in front of the ion name (except if it is mono- for the first element, then just leave it off)



Weird naming with double vowels

- When (ao) or (oo) bump up against each other drop the first one
 - NOT decAOxide ---- decoxide
 - NOT monOOxide ---- monoxide
 - NOT pentAOxide ---- pentoxide
- If there is an (i) present in the double vowel, leave it alone!
 - ▣ Hexaiodide is correct!!!
 - ▣ Diiodide is correct!!!
 - ▣ Dioxide is correct!!!
 - ▣ Trioxide is correct!!!

YouTube Link to Presentation

▣ <https://youtu.be/t2EYd9j6IjM>