

Ionic Compounds

Molecular Compounds

Ionic bonds

Covalent bonds

NaCl

 $\text{Na}^+ \text{Cl}^-$

sodium chloride

F $1s^2 2s^2 2p^5$ Cl $1s^2 2s^2 2p^6 3s^2 3p^5$ Share electronsNa $1s^2 2s^2 2p^6 3s^1$ Cl $1s^2 2s^2 2p^6 3s^2 3p^5$ nonmetals SO_2 transfer electronsmetal \rightarrow nonmetal $\text{Na}^+ \text{Cl}^-$

+/- attraction

sulfur dioxide



Molecular Compounds

MOLECULAR THEORY -**nonmetal** atoms share electrons in a **covalent bond** to attain a maximum number of valence electrons (complete outer shell) rather than gaining electrons from metal atoms.

Ex. CO₂

Molecular elements- although the chemical formula of metals are frequently shown alone as a single atom (Na), nonmetals frequently form **diatomic molecules**.

Ex. H₂, N₂, O₂, F₂, Cl₂, Br₂, I₂



Also: O₃, P₄, S₈

Naming *Binary molecular compounds*

As outlined by IUPAC rules, some molecular compounds signify the number of atoms in the molecular formula by using the same prefixes as hydrates.

Ex. CS₂

see Table 9.4 p. 269

The prefix system is usually not used for hydrogen molecular compounds

Ex. water - H₂O

Worksheets

Naming and Writing Formulas for Acids and Bases

Reminder:

Acids are aqueous hydrogen compounds that turn blue litmus red.

Bases are aqueous solutions of ionic hydroxides that turn red litmus blue.

IDENTIFYING ACIDS AND BASES FROM FORMULA'S

Most acid can be identified from **starting with H** or ending in **COOH**.

i.e. HCl , H_2SO_4 , CH_3COOH

Note: NH_3 and CH_4 are not acids!

Most bases can be identified from ending in **-OH**

Bases are named using the rules for naming ionic compounds.

Ex. NaOH sodium hydroxide

When naming acids, common names (for common acids) or IUPAC names can be used.

Classical Acid Names

- used the suffix **-ic** Ex. sulfuric
- used hydro and the suffix **-ic** Ex. hydrochloric
- used suffix **-ous** Ex. sulfurous
- and others (see inside back cover)

IUPAC (modern) Acid Names

- name the acid as an aqueous hydrogen compound
- Ex. aqueous hydrogen sulfide - $\text{H}_2\text{S}_{(\text{aq})}$

Rules for Naming Acids

1. If anion ends in -ide, the acid is "hydro_____ic acid"

Ex. HCl

2. If anion ends in -ate, the acid is "_____ic acid"

Ex. H₂SO₄

3. If anion ends in -ite, the acid is "_____ous acid"

Ex. H₂SO₃

p. 271-273

EXERCISE # 26-33