

## ChemThink: Covalent Bonding

Covalent bonding forms when atoms are Share electrons.

When two atoms get close enough, the nucleus attracts the other atom's ( Protons / Neutrons / Electrons ).

Before bonding, the atom's electrons spend most of their time around the nuclei of each atom. Once bonded, the electrons spend most of their time between the two nuclei.

Atoms must be able to hold onto their own electrons, while pulling/attracting another atom's electron.

Covalent bonds form between two nonmetals.

When atoms move closer, the potential energy ( Increases / Decreases ).

At a certain point the potential energy increases if you try and move the atoms closer because the protons in each nucleus are repelling each other.

The ideal distance between the atoms is known as the bond length.

Lower in energy = most stable

Bond Type	Draw an Example	# of paired e <sup>-</sup>	Total # of e <sup>-</sup> shared	Strongest/Weakest
Single	H-H	1	2	weakest
Double	O=O	2	4	—
Triple	N≡N	3	6	strongest

## Naming Simple Covalent Compounds:

The ending of the name of the second element is changed to IDE.

Prefixes are added to the beginning of some element names, and are used to tell us how many atoms of that element are present in the molecule.

The following prefixes are used in covalent compounds:

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

Exception: You never use the prefix mono if there is only one atom of the first element.

Examples:

$N_2O$	dinitrogen monoxide
$NO_2$	nitrogen dioxide
$N_2O_4$	dinitrogen tetroxide
$N_2O_3$	dinitrogen trioxide
$NO$	nitrogen monoxide
$S_2Cl_2$	Disulfur dichloride
$SO_2$	Sulfur dioxide
$S_2O_3$	Disulfur trioxide
$S_2O$	Disulfur monoxide
$SO_3$	Sulfur trioxide

\* complete problem set when finished \*