NAMING SIMPLE COMPOUNDS

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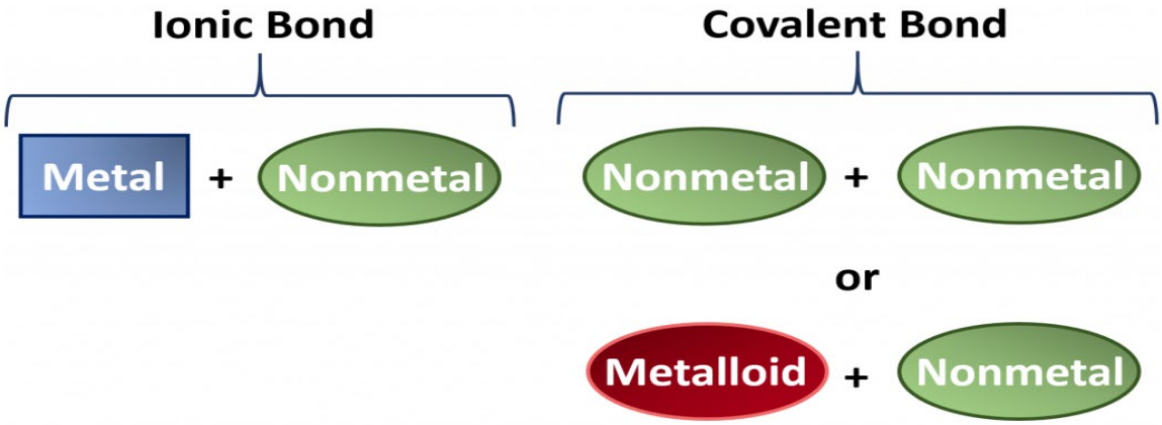
Naming Ionic Compounds



Typically compounds that are formed from a combination of a metal with a non-metal have more ionic bond character whereas compounds formed from two non-metals or a metalloid and a non-metal show more covalent character.

Although compounds usually lie on a spectrum somewhere between fully ionic and fully covalent character, for naming purposes, this guideline works well.

Writing the 'Formula' of Ionic Compounds

Ionic compounds: two-word chemical name

Word 1		Word 2
Name of metal element (M)	(Roman numerals) if applicable	Anion name (X)

Roman numerals give the charge of the metal ion in compound.

Copper (I) oxide

$Cu^{1}O^{2}$

Cu_2O

Copper (II) oxide

$Cu^{2}O^{2}$

Cu_2O_2

CuO

Anion charge (see table below).

Common Anions

-1		-2		-3	
Fluoride	F^-	Oxide	O^{2-}	Nitride	N^{3-}
Chloride	Cl^-	Sulfide	S^{2-}	Phosphide	P^{3-}
Bromide	Br^-	Sulfite	SO_3^{2-}	Phosphate	PO_4^{3-}
Iodide	I^-	Sulfate	SO_4^{2-}		
Hydride	H^-	Thiosulfate	$S_2O_3^{2-}$		
Hydrogen carbonate	HCO_3^-	Chromate	CrO_4^{2-}		
Hydroxide	OH^-	Dichromate	$Cr_2O_7^{2-}$		
Nitrite	NO_2^-	Oxalate	$C_2O_4^{2-}$		
Nitrate	NO_3^-				
Chlorate	ClO_3^-				
Perchlorate	ClO_4^-				
Hypochlorite	ClO^-				
Bisulfide	HS^-				
Hydrogen sulphide	HSO_4^-				
Iodate	IO_3^-				
Cyanide	CN^-				
Amide	NH_2^-				
Cyanate	OCN^-				

Peroxide	O_2^{2-}
Thiocyanate	SCN^-

Naming Ionic Compounds

$$M_aX_b$$

two-word chemical name

Word 1		Word 2
Name of metal element (M)	(Roman numerals) if applicable	Anion name (X)

Example: CaO

Ca is the chemical symbol for calcium (Word 1)

O is the chemical symbol for oxygen, which in a compound becomes oxide (Word 2)

Name: calcium oxide

Example: $Al(ClO_4)_3$

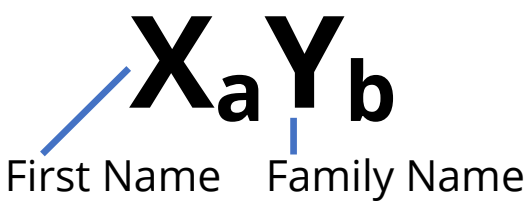
Al is the chemical symbol for aluminium (Word 1)

ClO_4^- is known as the perchlorate (Word 2) ion

Name: Aluminium perchlorate

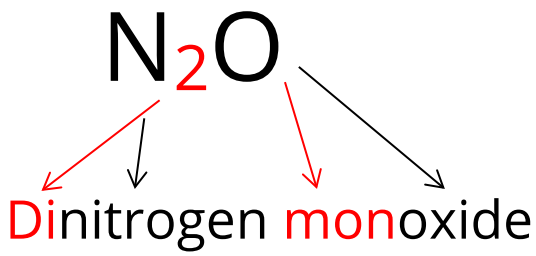
Naming Simple Covalent Compounds

Simple covalent compounds: two-word chemical name



X and Y are non-metals

First Name		Family Name	
Prefix (a)	name of element X	Prefix (b)	'anion name' of element(s) Y



List of prefixes

Mon-	1
Di-	2
Tri-	3
Tetra-	4
Penta-	5
Hexa-	6
Hepta-	7
Octa-	8

Examples

N_2O	Dinitrogen monoxide
NO	Nitrogen monoxide
NO_2	Nitrogen dioxide
N_2O_4	Dinitrogen tetraoxide
CCl_4	Carbon tetrachloride
SO_3	Sulfur trioxide
P_2O_5	Diphosphorus pentoxide
SF_2	Sulfur difluoride
CO	Carbon monoxide
CO_2	Carbon dioxide