

Nomenclature #2: Binary Covalent Compounds

- Ionic compounds are formed when _____ atoms bond with _____ atoms. They are named using the rules for naming ionic compounds that we have been learning up until now.
- Covalent (molecular) compounds are formed when two or more _____ atoms are bonded together. There is separate IUPAC system of naming that is used for **binary** covalent compounds, called the prefix system.

In the prefix system, the number of atoms of each element in the compound is indicated with a prefix. Because these rules are for binary compounds, the ending of the second element is changed to “ide”. There are two additional rules:

1. If there is only one atom of the first element, then a prefix is not used for that element:

eg. CO₂ is _____
NI₃ is _____

2. When the second element is oxygen and the prefix ends in an “o” or “a”, then the “o” or “a” is omitted:

eg. CO is _____
P₂O₅ is _____
N₂O is _____
N₂O₄ is _____

Prefixes
mono means
di means
tri means
tetra means
penta means
hexa means
hepta means
octa means
nona means
deca means

1. Name the following covalent compounds using the prefix system:

SO ₂	NF ₃
CCl ₄	N ₂ H ₂
SO ₃	P ₂ H ₄
PF ₅	XeF ₆
SCl ₆	NCl ₃
N ₂ S ₄	BI ₃
PBr ₃	SF ₆
H ₂ O	SiO ₂
NO ₂	CS ₂
OF ₂	XeI ₄

2. Use the prefix system to write the chemical formulas for the following molecules:

dihydrogen monoxide	silicon dioxide
dinitrogen trioxide	carbon monoxide
sulfur dioxide	sulfur tetrafluoride
boron triiodide	chlorine dioxide
carbon tetrachloride	phosphorus pentachloride
iodine heptafluoride	xenon hexafluoride
boron tribromide	silicon tetraiodide
diphosphorus pentasulfide	disulfur dichloride