

Naming Covalent Molecules

Unlike the nomenclature system for naming ionic compounds, the suffixes of the atoms involved in covalently bonded molecules are not all that are changed. In addition, prefixes are added to the names of the atoms to represent the number of atoms present. The prefixes that will be used are as follows:

Prefix	Subscript
mono	1
di	2
tri	3
tetra	4
penta	5
hexa	6
hepta	7
octa	8
nona	9

When naming the **covalently bonded** molecules we will now use these prefixes to represent the number of atoms in the ratio. For example, there exist two different molecules that involve covalent bonds between phosphorus and oxygen:



and



When naming each of these molecules we must focus upon the number of each atom present. Because both molecules have 2 phosphorus atoms present they will be named **diphosphorus**, however the problem arises in that they have differing numbers of oxygen atoms. Their names would therefore be as follows:

diphosphorus trioxide

and

diphosphorus pentoxide

Note that when the prefix penta- is used the “a” is dropped due to the vowel at the beginning of the name. This would be true for any prefix ending in “a”.

Another exception to the rule is the use of the prefix mono-. When naming a molecule that only contains one atom of the first element, the prefix mono- is omitted:



Therefore the name would be **carbon tetrachloride**. Practice this naming system by naming the following molecules:

a. SiO_2 , b. SO_2 , c. CF_4 , d. N_2O_3 , e. PBr_5 , f. PBr_3 , g. SO_3 , h. CF_4 , i. GeCl_4

j. CS_2 , k. PH_3