

Binary Molecular Compounds

Binary molecular compounds contain two nonmetals. Prefixes are used to denote subscripts. The second element name will end in **-ide** just as in binary ionic compounds. There are no charges and no reduction in subscripts.

The most commonly used prefixes are "*mono*" for 1, "*di*" for 2, "*tri*" for 3, "*tetra*" for 4, "*penta*" for 5, "*hexa*" for 6, "*hepta*" for 7, "*octa*" for 8, "*nona*" for 9, and "*deca*" for 10. The only exception is that "*mono*" is never used on the first element listed in the compound.

Examples:

| | | | | | |
|-----------------|-------------------------|------------------|--------------------------------|--------------------------------|---|
| CO | carbon mon oxide | PCl ₃ | phosphorus tri chloride | N ₂ Br ₄ | di nitrogen tetra bromide |
| CO ₂ | carbon di oxide | SF ₆ | sulfur hexa fluoride | Si ₃ N ₇ | tri silicon hepta nitride |

Practice

1. What are the formulas for these binary molecular compounds?

- silicon dioxide
- trinitrogen pentachloride
- dichlorine heptoxide
- dinitrogen tetrahydride
- tetraphosphorus decasulfide

2. What are the formulas for these binary molecular compounds?

- ClI₃
- SBr₆
- N₂O₅
- Si₃N₄
- S₂F₉

3. Three chemistry students, Ben Thayer, Don Thatt, and Jean Yuss are working in the lab. They are making a solution by adding blue-green crystals to a beaker of water. The label on the container of the blue-green solid gives the formula of the compound as **CuCl₂** but is missing the **name** of the compound. Ben states that the name of the compound is **copper dichloride**. Don says that the name of the compound is **copper chloride**. Jean is certain that the name of the compound is **copper (II) chloride**. Who is correct? Justify your answer.

