

Naming and Writing Formulas for Covalent Compounds

Covalent compounds are compounds formed by two elements that are NONMETAL. Nonmetals are all very electronegative and form bonds through the sharing of electrons to satisfy the octet rule.

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

Rules

1. The first element is named first, using the elements name.
 2. Second element is named as an Anion (suffix "-ide")
 3. Prefixes are used to denote the number of atoms
 4. "Mono" is not used to name the first element
- Note: when the addition of the Greek prefix places two vowels adjacent to one another, the "a" (or the "o") at the end of the Greek prefix is usually dropped; e.g., "nonaoxide" would be written as "nonoxide", and "monooxide" would be written as "monoxide". The "i" at the end of the prefixes "di-" and "tri-" are never dropped.*
5. Anytime hydrogen bonds with a Halogen (group 17), no prefix is needed. For example, HF, is simply hydrogen fluoride.

The Nonmetals

Some examples of writing the formula of a covalent compound.

1. Nitrogen Dioxide.

Since there is no prefix in front of nitrogen, there is only 1 nitrogen.

Since the prefix in front of oxide is di-, there are 2 oxygens.

The formula is NO₂.

2. Tetracarbon monoxide.

Since the prefix in front of carbon is tetra-, there are 4 carbons.

Since the prefix in front of oxide is mono-, there is one oxygen.

The formula is C₄O.

3. Diphosphorus trisulfide.

Since the prefix in front of phosphorus is di, there are two phosphorus.

Since the prefix in front of sulfide is tri-, there are 3 sulfurs.

The formula is P₂S₃.

5. Name the compound SiO_2 .

- (a) silver oxide
(b) silicon oxide
(c) silicon dioxide
(d) monosilicon dioxide

6. Name the compound N_2O_4 .

- (a) sodium tetroxide
(b) dinitrogen tetroxide
(c) nitrous oxide
(d) binitrogen oxide

7. Name the compound SO_3 .

- (a) sulfur trioxide
(b) silver trioxide
(c) selenium trioxide
(d) sodium trioxide

8. Name the compound N_2O_5 .

- (a) dinickel pentoxide
(b) dinitrogen pentoxide
(c) neon oxide
(d) nitric oxide

9. Name the compound N_2O_3 .

- (a) dinitrogen oxide
(b) nitrogen trioxide
(c) nitric oxide
(d) dinitrogen trioxide

10. What is the formula for nitrogen monoxide?

- (a) N_2O (b) NO (c) NOO (d) N_2O_2

11. What is the formula for nitrogen trifluoride?

- (a) NiF_3 (b) N_3F (c) NF_3 (d) Ni_3F

12. What is the formula for dinitrogen trioxide?

- (a) Ni_2O_3 (b) N_2O_6 (c) NO_3 (d) N_2O_3

13. What is the formula for sulfur dichloride?

- (a) NaCl_2 (b) S_2Cl (c) SCl_2 (d) S_2Cl_2

14. What is the formula for carbon disulfide?

- (a) CaS_2 (b) S_2C (c) CS_2 (d) SC_2

15. What is the formula for dihydrogen monoxide?

- (a) H_2O (b) H_2O_2 (c) OH_2 (d) HO_2