

Ionic Compound Nomenclature

ALL COMPOUNDS ARE NEUTRAL!

When ions combine, they will form neutral compounds. These formulas are written in the lowest, whole-number ratio. These lowest, whole-number ratios are called “formula units”.

An ionic compound is often referred to as a “salt”. One of the most common ionic compounds is NaCl. This is why we usually refer to it as salt or table salt.

When determining the formula for an ionic compound, determine the charges of each ion and be sure to combine them so that the number of positive charges is equal in magnitude to the number of negative charges.

Example: Al_2O_3 - aluminum oxide

It is made of two Al^{3+} ions (aluminum ions) and three O^{2-} ions (oxide ions).

2 Al^{3+} ions would make a total positive charge of +6.

3 O^{2-} ions would make a total negative charge of -6.

This makes a neutral compound.

Ionic Compounds are named after the ions they contain.

Example: CaI_2

This contains 1 Ca^{2+} ion and 2 I^- ions. They are written in a 1:2 ratio in the compound so it is neutral. However, when naming the compound, just write the names of the two types of ions. So the name is **calcium iodide**.

Example: MnO_2

This contains 1 Mn^{+4} ion and 2 O^{2-} ions. I had to determine the charge on the Mn. It is a transition metal and needs a roman numeral in its name. I first looked at the O and knew it was a 2-. I then thought that if there were two 2- ions, then that would be a total negative charge of 4-. In order to make a neutral compound, the positives would have to add up to 4+. If there is only one Mn in the compound, then its entire charge would be 4+. So, the compound is made of manganese(IV) ions and oxide ions. The name is **manganese (IV) oxide**.

Example: copper (I) sulfide

This contains Cu^+ ions and S^{2-} ions. Two Cu^+ ions are needed for each S^{2-} ion, making Cu_2S .