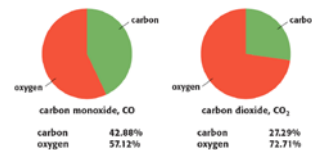


Determining Percent Composition



1. Start by identifying molar mass (from the periodic table)

Ex. Beryllium (atomic number 4) has a molar mass of 9.012 g/mol. This means that every mole (6.22×10^{23} atoms of Beryllium) if gathered together on a triple beam balance would have a mass of 9.012g.

Try it: Find the molar mass of each of the following.

O _____ **S** _____ **Cl** _____ **I** _____

H _____ **Na** _____ **Mg** _____

2. Identify how many of each atom you have from the subscripts in the molecular formula and add multiply by the molar mass of that element.

Ex. IF I had 2 moles of beryllium atoms, they would have a mass of $2 \times 9.012 \text{g/mol} = 18.024 \text{g}$!

Try it: Find the molar mass of each of the following.

H_2 _____ O_2 _____ Mg_3 _____ O_4 _____

3. Add the masses of each element together to get the total.

Ex. If you had Be_3N_2 (Beryllium Nitride) it would have 3 moles of Beryllium and 2 moles of nitrogen per mole of the molecule, and you would have to use $3 \times 9.012 \text{g/mol} + 2 \times 14.007 \text{g/mol} = 27.036 + 28.014 = 55.05 \text{g/mol}$

Try it: Find the molar mass of each of the following.

NaCl (Na+Cl) _____ **NaOH (Na+O+H)** _____

Na₂SO₄ _____ **Mg(OH)₂** _____

4. Divide the mass of the individual element within the compound by the entire mass of the compound. Multiply by 100 to get the percent! (Part/whole *100%)

Ex. Beryllium has a molar mass of 9.012g/mol while Be_3N_2 contains 3 Beryllium atoms and has a molar mass of 55.05g/mol.

$$\frac{\text{Mass of 3 Beryllium atoms}}{\text{Mass of Be}_3\text{N}_2} \rightarrow \frac{3 \times 9.012 \text{g/mol}}{55.05 \text{g/mol}} * 100\% = 49.11\% \text{ Beryllium by mass!}$$

Try it: Find the percent composition of each of the following. (use back if needed)

Percent Na in NaCl:	Percent Na in NaOH:
Percent Cl in NaCl:	Percent O:
Percent Na in Na ₂ SO ₄ :	Percent H:
Percent S:	Percent Mg in Mg(OH) ₂ :
Percent O:	Percent O:
	Percent H: