

Success 24/7: Empirical and Molecular Formulas

What is the empirical formula?

Basically, it is the opposite of percent composition. We will give you the percentage of each element and you will determine how many of each element are present.

Remember: Empirical formulas are the lowest whole number ratios of the elements present in a compound.

Empirical formula or no?

C_6H_9 _____

N_2O_5 _____

H_2O_2 _____

Calculating Empirical Formula:

Percent to Mass

Mass to Mole

Divide by Small

Round 'til Whole

A compound is 44.82% Potassium, 18.39% Sulfur, and 36.79% Oxygen. Write the empirical formula.

A compound is 52.0% Zinc, 9.6% Carbon, and 38.4% Oxygen. Calculate the empirical formula of the compound.

Molecular Formula

The actual formula of a molecule. Can be a multiple of the empirical formula or the same.

$$n = \frac{\text{molar mass}}{\text{molar mass of empirical formula}}$$

$$\text{molecular formula} = (\text{empirical formula})_n$$

A compound has an empirical formula of CH_2 . Its molar mass is 84.0 g/mol. What is its molecular formula?

A compound is 19.3% Na, 26.9% S, and 53.8% O. Its formula mass is 238 g. What is its molecular formula?

A compound is 92.2% Carbon and 7.76% Hydrogen. The formula mass of the compound is 78.1 g. Calculate the empirical formula and molecular formula of the compound.