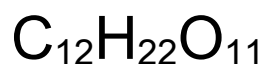


Warm Up

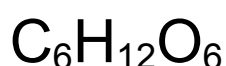
Which of following substances has a higher percentage of carbon?



$$\hookrightarrow (12 \times 12.01) + (22 \times 1.01) + (11 \times 16.00) = 342.34 \text{ g/mol}$$

$$\%C = \frac{(12 \times 12.01) \text{ g/mol}}{342.34 \text{ g/mol}} \times 100\%$$

$$\%C = 42.1\%$$

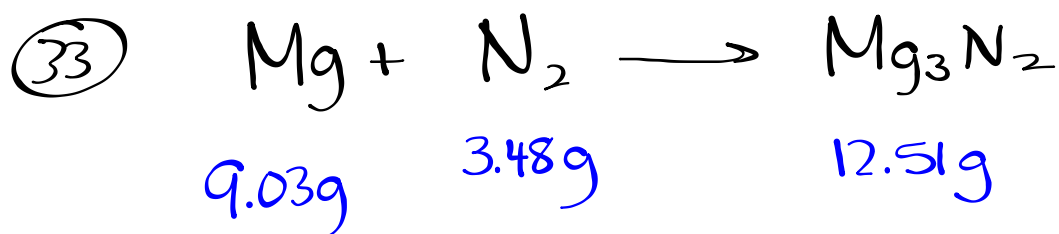


$$\hookrightarrow (6 \times 12.01) + (12 \times 1.01) + (6 \times 16.00) = 180.18 \text{ g/mol}$$

$$\%C = \frac{(6 \times 12.01) \text{ g/mol}}{180.18 \text{ g/mol}} \times 100\%$$

$$\%C = 40.0\%$$

Homework

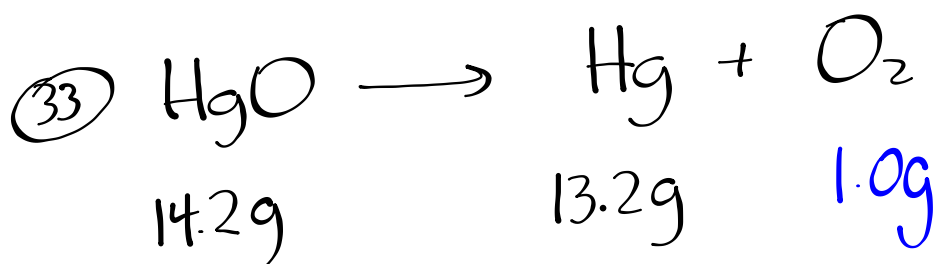


$$\% \text{Mg} = \frac{9.03\text{g}}{12.51\text{g}} \times 100\%$$

$$\% \text{Mg} = 72.2\%$$

$$\% \text{N} = \frac{3.48\text{g}}{12.51\text{g}} \times 100\%$$

$$\% \text{N} = 27.8\%$$



Empirical Formulas

The empirical formula of a compound is the smallest whole-number ratio of the atoms in a compound.



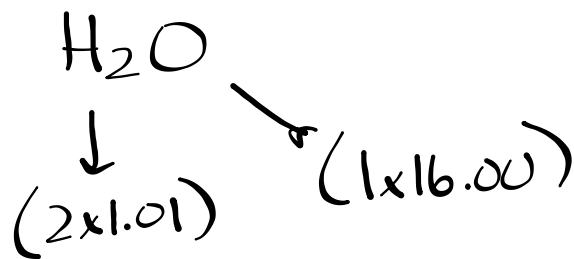
Determining the Empirical Formula of a Compound

Ex. A compound is analyzed and found to contain 25.9% nitrogen and 74.1% oxygen. What is the empirical formula of the compound?

$$25.9\text{g N} \times \frac{1\text{mol N}}{14.01\text{g N}} = \frac{1.8487\text{mol N}}{1.8487\text{mol}} = 1$$

$$74.1\text{g O} \times \frac{1\text{mol O}}{16.00\text{g O}} = \frac{4.6313\text{mol O}}{1.8487\text{mol}} = 2.5$$



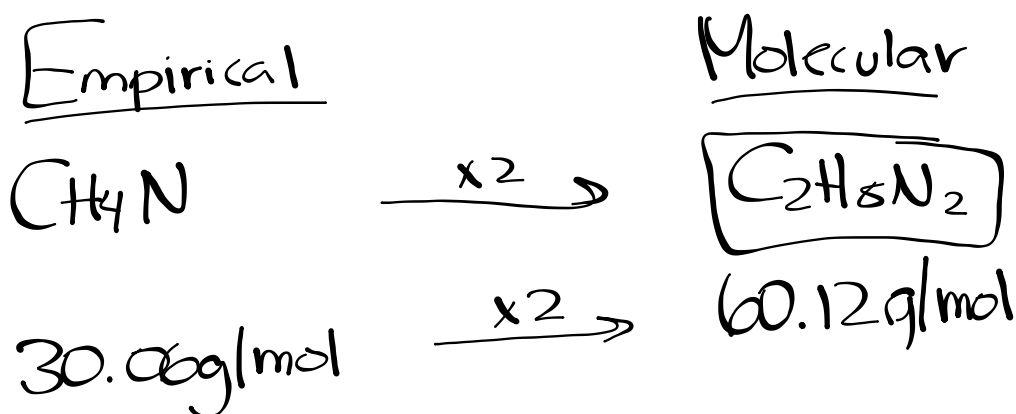


Molecular Formulas

The molecular is the same as the empirical formula of a compound or is a simple whole-number multiple of the empirical formula.

Determining the Molecular Formula of a Compound

Ex. Calculate the molecular formula of a compound whose molar mass is 60.06 g/mol and empirical formula is CH_4N .



$$\text{CH}_4\text{N} \rightarrow (1 \times 12.01) + (4 \times 1.01) + (1 \times 14.01) = 30.06 \text{ g/mol}$$

Homework

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