

## Ejercicios

1. Un experimento arrojó los siguientes resultados

$$C = 92.3$$

$$H = 7.7$$

Genere la fórmula empírica

$$C = \frac{92.3 \text{ g}}{12 \text{ g/mol}} = 7.69 = \frac{7.69}{7.69} = 1$$

$$H = \frac{7.7 \text{ g}}{1 \text{ g/mol}} = 7.7 = \frac{7.7}{7.7} = 1$$

$$\text{fórmula empírica} = CH_1 = CH$$

2. Obtenga fórmula empírica si hay sodio 32.47%, Azufre 25% y oxígeno 45.1%.

$$Na = \frac{32.47 \text{ g}}{23 \text{ g/mol}} = 1.41 = \frac{1.41}{0.70} = 2$$

$$S = \frac{25 \text{ g}}{32 \text{ g/mol}} = 0.78 = \frac{0.78}{0.70} = 1$$

$$O = \frac{45.1 \text{ g}}{16 \text{ g/mol}} = 2.82 = \frac{2.82}{0.70} = 4$$

$$\text{fórmula empírica} = Na_2SiO_4 = Na_2SO_4$$

3. Obtenga fórmula empírica si hay 48% de carbono, 4% de hidrógeno, 22.4% de Nitrogeno, 12.8% Azufre y 12.8% oxígeno

$$C = \frac{48 \text{ g}}{12 \text{ g/mol}} = 4 = \frac{4}{0.4} = 10$$

$$H = \frac{4 \text{ g}}{1 \text{ g/mol}} = 4 = \frac{4}{0.4} = 10$$

$$N = \frac{22.4 \text{ g}}{14 \text{ g/mol}} = 1.6 = \frac{1.6}{0.4} = 4$$

$$S = \frac{12.8 \text{ g}}{32 \text{ g/mol}} = 0.4 = \frac{0.4}{0.4} = 1$$

$$O = \frac{12.8 \text{ g}}{16 \text{ g/mol}} = 0.8 = \frac{0.8}{0.4} = 2$$

fórmula empírica =  $C_{10}H_{10}N_4SO_2$

9. Al analizar un óxido de nitrógeno, se obtiene 0.879 g de Nitrógeno y 0.181 g de oxígeno. Calcular la fórmula empírica. Datos Masas atómicas N=14, O=16

$$N = \frac{0.879 \text{ g}}{14 \text{ g/mol}} = 0.0628 \quad = \frac{0.6056}{0.0056} = 1$$

$$O = \frac{0.181 \text{ g}}{16 \text{ g/mol}} = 0.0113 \quad = \frac{0.0113}{0.0056} = 2$$

Fórmula empírica =  $\text{NO}_2$

5. Un compuesto contiene 21.6% de sodio, 33.3% de cloro y 45.1% de oxígeno. Determine la fórmula empírica del compuesto.

$$\text{Na} = \frac{21.6 \text{ g}}{23 \text{ g/mol}} = 0.93 \quad = \frac{0.93}{0.93} = 1$$

$$\text{Cl} = \frac{33.3 \text{ g}}{35 \text{ g/mol}} = 0.95 \quad = \frac{0.95}{0.93} = 1$$

$$\text{O} = \frac{45.1 \text{ g}}{16 \text{ g/mol}} = 2.81 \quad = \frac{2.81}{0.93} = 3$$

Fórmula empírica =  $\text{NaClO}_3$