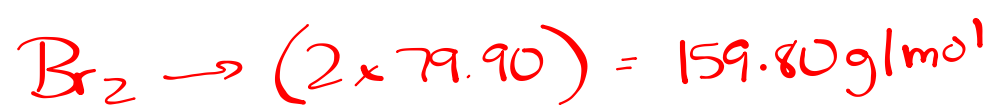


Worksheet - Molar Calculations

(13) 100% y 100.00% y - (. Br₂)



Percent Composition

The relative amounts of element in a compound are expressed as the percent composition (by mass) for each element within the compound.

Ex. K_2CrO_4

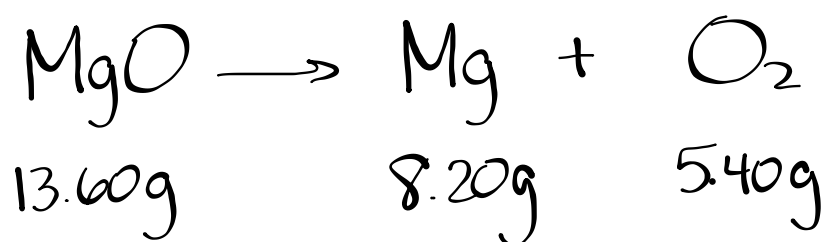
K - 40.3%

Cr - 26.8%

O - 32.9%

Percent Composition from Mass Data

When a 13.60 g sample containing only magnesium and oxygen is decomposed, 5.40 g of oxygen is obtained. What is the percent composition of this compound?



$$\% \text{Mg} = \frac{\text{mass Mg}}{\text{mass MgO}} \times 100\%$$

$$\% \text{Mg} = \frac{8.20\text{g}}{13.60\text{g}} \times 100\%$$

$$\% \text{Mg} = 60.3\%$$

$$\% \text{O}_2 = \frac{\text{mass O}}{\text{mass MgO}} \times 100\%$$

$$\% \text{O}_2 = \frac{5.40\text{g}}{13.60\text{g}} \times 100\%$$

$$\% \text{O}_2 = 39.7\%$$

Percent Composition from the Chemical Formula

Ex. Na_2CO_3

$$\hookrightarrow (2 \times 22.99) + (1 \times 12.01) + (3 \times 16.00)$$

$$\frac{105.99 \text{ g}}{1 \text{ mol}}$$

$$= \underline{105.99 \text{ g/mol}}$$

$$\% \text{Na} = \frac{(2 \times 22.99) \text{ g/mol}}{105.99 \text{ g/mol}} \times 100\%$$

$$\% \text{C} = \frac{(1 \times 12.01) \text{ g/mol}}{105.99 \text{ g/mol}} \times 100\%$$

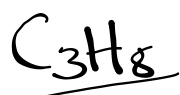
$$\boxed{\% \text{Na} = 43.4\%}$$

$$\boxed{\% \text{C} = 11.3\%}$$

$$\% \text{O} = \frac{(3 \times 16.00) \text{ g/mol}}{105.99 \text{ g/mol}} \times 100\%$$

$$\boxed{\% \text{O} = 45.3\%}$$

Calculate the percent composition of propane (C_3H_8).



$$\hookrightarrow (3 \times 12.01) + (8 \times 1.01) = 44.11 \text{ g/mol}$$

$$\%C = \frac{(3 \times 12.01) \text{ g/mol}}{44.11 \text{ g/mol}} \times 100\%$$

$$\%C = 81.7\%$$

$$\%H = \frac{(8 \times 1.01) \text{ g/mol}}{44.11 \text{ g/mol}} \times 100\%$$

$$\%H = 18.3\%$$

Homework

p. 306 #32, 33

p. 307 #34, 35

