Warm Up

Determine the volume of gas that 0.414 mol of chlorine will occupy at STP.

Check Homework

(8) $89\text{ g } Pb(CH_3COO)_4 \times \frac{1\text{ mol } Pb(CH_3COO)_4}{443.40\text{ g } Pb(CH_3COO)_4} = 0.20\text{ mol } Pb(CH_3COO)_4$

(9) $5.4\text{ mol } K_2SO_4 \times \frac{174.26\text{ g } K_2SO_4}{1\text{ mol } K_2SO_4} = 940\text{ g } K_2SO_4$

(17) $21.3\text{ mol } BaCO_3 \times \frac{197.34\text{ g } BaCO_3}{1\text{ mol } BaCO_3} = 4.20 \times 10^3\text{ g } BaCO_3$

(18) $88.4\text{ mol } NI_3 \times \frac{394.71\text{ g } NI_3}{1\text{ mol } NI_3} = 34\,900\text{ g } NI_3$

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?

MgO

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

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

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

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

%Mg = 60.3%

%O = 39.7%

Percent Composition from the Chemical Formula

Ex. Na_2CO_3

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

$= 105.99\ g/mol$

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

$\%Na = 43.4\%$

$\%C = \frac{12.01\ g/mol}{105.99\ g/mol} \times 100\%$

$\%C = 11.3\%$

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

$\%O = 45.3\%$

Calculate the percent composition of propane (C_3H_8).

Homework

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