

Name :

Honors Chemistry

Section :

Calculating Percent Composition

The percent by mass of an element in a compound is the number of grams of the element divided by the grams of the compound, multiplied by 100%:

$$\% \text{ mass of element E} = \frac{\text{grams of element E}}{\text{grams of compound}} \times 100\%$$

The percent composition of a compound has as many percent values as there are elements in the compound. These percentages must add up to 100%.

Problems For You To Try

1. Calculate the percent composition by mass of the following.
 - a) Arsenic (III) oxide, As_2O_3

b) NH_4NO_3

c) $\text{Mg}(\text{ClO}_3)_2$

Now let's try one from experimental data.

2. Analysis of a sample of an unknown is found to contain 5.41 grams of sodium, 3.79 g of nitrogen, and 11.29 grams of oxygen. What is the percent composition of the unknown?

3. Find the percent composition of the following compounds from the formula.

a) CaSO_4

b) $\text{Ca}_3(\text{PO}_4)_2$

4. Calculate the percent composition of copper (I) sulfide, a copper ore called chalcocite.

5. Compare the percent of copper in copper (I) chloride and copper (II) chloride.

6. A sample of a compound contains 4.86 g of magnesium, 6.42 grams of sulfur, and 12.8 grams of oxygen. What is the percent composition of the compound?

7. Determine the percentage of water by mass in sodium carbonate decahydrate, $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$.