

Percentage Composition/Empirical Formulae: W.S.-45

1) Find the percentage of iron (by mass) in the iron ore magnetite;
 Fe_3O_4 .

2) Find the percentage of silver in the compound; AgNO_3 .

3) A compound is found to be composed of copper and chlorine in the proportions; 64.2% and 35.8% (by mass) respectively. Find the empirical formula for the compound.

4) A compound is found to be composed of phosphorus and oxygen in the proportions; 56.4% and 43.6% respectively.

a) Find the empirical formula.

b) Find the molecular formula, if the molar mass is 220g.

5) Determine the empirical formulae.

a) carbon (74.9%) hydrogen (25.1%)

b) lead (62.6%) nitrogen (8.5%) oxygen (29.0%)

c) potassium (36.7%) chlorine (33.3%) oxygen (30.0%)

6) Some salts are hydrated. That is, a formula unit for a salt (ionic compound) will bind with several molecules of water. For example; CaCl_2 when hydrated, has the formula $\text{CaCl}_2 \cdot 2\text{H}_2\text{O}$. The water is lost when the compound is heated. Find the formula for a hydrated compound of magnesium sulfate ($\text{MgSO}_4 \cdot n\text{H}_2\text{O}$). It is found to contain 51.1 grams of water for every 100. grams of hydrated salt.

Answers: 1) 72.4%, 2) 63.5%, 3) CuCl , 4)a) P_2O_3 , b) P_4O_6 , 5)a) CH_4 , b) $\text{Pb}(\text{NO}_3)_2$, c) KClO_2 , 6) $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$.