

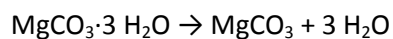
#80061 Chemistry, Other

A sample of  $\text{MgCO}_3 \cdot 3\text{H}_2\text{O}$  (magnesium carbonate trihydrate) is heated until 40.37 g of water are released. How many grams did the original hydrate weigh?

**Answer:**

When a hydrate salt is heated water is released and anhydrous salt is formed.

The balanced chemical equation for the reaction is



$M(\text{MgCO}_3 \cdot 3 \text{H}_2\text{O}) = 138 \text{ g/mol}$

$M(\text{H}_2\text{O}) = 18 \text{ g/mol}$

From the balanced chemical equation: 3  $\text{H}_2\text{O}$  is released from 1  $\text{MgCO}_3 \cdot 3 \text{H}_2\text{O}$ .

3 x 18 g of  $\text{H}_2\text{O}$  is released from 138 g of  $\text{MgCO}_3 \cdot 3 \text{H}_2\text{O}$ .

40.37 g of  $\text{H}_2\text{O}$  is released from  $138 \times 40.37 / (3 \times 18) = 103.168 \text{ g}$  of  $\text{MgCO}_3 \cdot 3 \text{H}_2\text{O}$

Answer provided by AssignmentExpert.com