

#79890 Chemistry, Other

A 3.6 gram sample of sodium hydrogen carbonate is added to a solution of acetic acid weighing 10.2 grams. The two substances react, releasing carbon dioxide gas to the atmosphere. After the reaction, the contents of the reaction vessel weighs 11.2 grams. What is the mass of carbon dioxide released during the reaction?

Answer:

The combined mass of initial reactants is $3.6 + 10.2 = 13.8$ g.

The reaction equation is: $2\text{NaHCO}_3 + 2\text{C}_2\text{H}_4\text{O}_2 \rightarrow 2\text{NaC}_2\text{H}_3\text{O}_2 + 2\text{H}_2\text{O} + \text{CO}_2(\text{g})$

After the reaction, all the products remain in solution except the CO_2 , which is given off as a gas.

The mass of remaining products is 11.2 grams.

So the mass of CO_2 given off is the difference between the mass of reactants and the mass of products:

$$m(\text{CO}_2) = 13.8 \text{ g} - 11.2 \text{ g} = 2.6 \text{ g}$$

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