

Can You Find the Mole Ratio?

In this experiment, baking soda (NaHCO_3) reacts with hydrochloric acid (HCl) to produce sodium chloride, carbon dioxide, and water. You will determine the moles of reactant used and moles of product produced using both the lab data and stoichiometry and compare the two.

Data Table:

mass of test tube and baking soda	19.46 g
mass of empty test tube	19.21 g
mass of baking soda	0.25 g
mass of test tube and sodium chloride	19.39 g
mass of empty test tube	19.21 g
mass of sodium chloride	0.18 g

Conclusion Questions:

1. Calculate the number of moles of baking soda used in the lab.

$$0.25 \text{ g NaHCO}_3 \left(\frac{\text{mole}}{84.01 \text{ g}} \right) = 0.00297 \text{ moles of NaHCO}_3$$

2. Calculate the number of moles of sodium chloride produced in the lab.

$$0.18 \text{ g of NaCl} \left(\frac{\text{mole}}{58.44} \right) = 0.0031 \text{ moles of NaCl}$$

3. What is the experimental mole ratio of baking soda (NaHCO_3) to sodium chloride (NaCl)?

$$1:1$$

4. Write a balanced equation for the reaction that took place in the experiment.



5. According to the balanced equation, what is the theoretical mole ratio of baking soda to sodium chloride?

$$1:1$$

6. Was the experimental mole ratio exactly the same as the theoretical mole ratio? If not, give some possible reasons.

Yes ~ if it wasn't some reasons

/ side reactions

— measurement

\ transfer

contamination