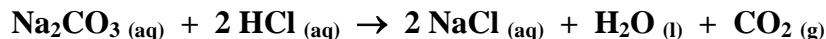


Summary of Stoichiometry Lab Calculations

Determine Molar Mass of Na₂CO₃

Determine Molar Mass of NaCl



Amount 6 M HCL is needed to completely react with 2.00 g Na₂CO₃

(6 M HCL means 6 moles of HCl per liter of solution ... we will discuss this in the solutions unit)

$$2.00 \text{ g Na}_2\text{CO}_3 \times \frac{1 \text{ mole Na}_2\text{CO}_3}{105.99 \text{ g}} \times \frac{2 \text{ mole HCl}}{1 \text{ mole Na}_2\text{CO}_3} \times \frac{1 \text{ L}}{6 \text{ moles HCl}} \times \frac{1000 \text{ mL}}{1 \text{ L}} = 6.28 \text{ mL}$$

So, you should not need to use more than ~ 6.5 mL of 6 M HCl in the experiment

1. Mass of sodium carbonate sample at the beginning of the experiment (Weighing by Difference):

Mass of Evaporating Dish + Watch Glass + sodium carbonate

- Mass of Evaporating Dish + Watch Glass

Mass of your sodium carbonate

Your Theoretical Yield
(Depends on your Na₂CO₃ mass)

2. Theoretical Yield of NaCl from 2.00 grams Na₂CO₃

$$2.00 \text{ g Na}_2\text{CO}_3 \times \frac{1 \text{ mole Na}_2\text{CO}_3}{\text{Molar Mass}_{\text{Na}_2\text{CO}_3} \text{ g}} \times \frac{2 \text{ mole NaCl}}{1 \text{ mole Na}_2\text{CO}_3} \times \frac{\text{Molar Mass NaCl g}}{1 \text{ mole NaCl}} = 2.21 \text{ g}$$



Your weight of Na₂CO₃ at the start of experiment gives your theoretical yield of NaCl

3. Mass of NaCl remaining (Actual Yield) at the end of the experiment (Weighing by Difference):

Mass of Evaporating Dish + Watch Glass + NaCl

- Mass of Evaporating Dish + Watch Glass

Mass of your NaCl sample remaining at end of experiment

Percent Calculation

4. Experimental Percent Yield of NaCl

$$\% \text{ Yield} = \frac{\text{Actual Yield NaCl}}{\text{Theoretical Yield NaCl}} \times 100$$

(Obtained in Experiment)
(Calculated Yield based on Stoichiometry)

5. Percent Experimental Error in NaCl Isolation

$$\% \text{ Error} = \frac{\text{Actual yield NaCl (g)} - \text{Theoretical Yield NaCl (g)}}{\text{Theoretical Yield NaCl (g)}} \times 100$$



Since Actual Yield is typically < Theoretical Yield
% Error should be a small, negative number