
Analysis of Soda Ash

Materials Required: Impure soda ash
 hydrochloric acid
 Bromophenol blue indicator

Safety Precautions:

Eye protection **MUST** be worn at all times in laboratory.

If you spill acid or base on your skin, immediately wash with water and notify the instructor

INTRODUCTION

Soda ash is commercial sodium carbonate. It generally contains from 40 to 90% sodium carbonate, the remainder being mostly sodium chloride. In this experiment a sample of soda ash will be analyzed for its sodium carbonate content by titrating with HCl.

Recall for a general reaction: $a A + b B \rightarrow \text{products}$

For a solution and a solid reacting: $(1/a) \times M_A \times V_A = (1/b) \times (\text{moles}_B)$

where B is the solid

You will perform the analysis twice (1st and 2nd runs).

EXPERIMENTAL PROCEDURE

Note: Record the molarity of the HCl solution on the data sheet below.

Analysis of Soda Ash

1. Weigh about 0.2 - 0.3 g of the soda ash into a small beaker the balance. Record the actual mass used on the data sheet below.
2. Transfer the soda ash to a flask.
3. Add 25 mL of deionized water (measuring cylinder) to the flask and swirl to dissolve the solid.
4. Add 6 drops of bromophenol blue to the flask and titrate with the HCl solution until a greeny-yellow color remains for 15 seconds.
5. Record the volume of HCl used.
6. Discard the solution down the drain.
6. Repeat steps 1-5 with one more sample of soda ash.

Analysis of Soda Ash

DATA SHEET & REPORT

Name _____

Lab Partner's Name _____

Date _____

DATA

Molarity of HCl solution:

1st run: Mass of soda ash:

Volume of HCl used:

2nd run: Mass of soda ash:

Volume of HCl used:

Calculations and Questions

Question 1: Write the balanced equation for the reaction between sodium carbonate and HCl.

Question 2: Calculate the moles of sodium carbonate in the soda ash.

For 1st run:

For 2nd run:

Question 3: Calculate the mass of sodium carbonate in the soda ash.

For 1st run:

For 2nd run:

Question 4: Calculate the % of sodium carbonate in the soda ash.

For 1st run:

For 2nd run:

Question 4: Average the two percents in Q3 to get your final % of sodium carbonate in the soda ash.