EXPERIMENT 2 STANDARDIZATION OF SODIUM HYDROXIDE WITH HCL

Objectives:

At the end of this session you should be familiar with the following:

i) The principles upon which volumetric analyses are based.
ii) The characteristics of primary standard solution.
iii) The mole concept.

Task:

In today's laboratory session you are required to perform the following:

1. Prepare a standard solution of anhydrous sodium carbonate.
2. Standardize a solution of hydrochloric acid using the sodium carbonate solution in A.
3. Standardize a solution of sodium hydroxide

A. Preparation of a Standard Solution of Sodium Carbonate

Procedure:

Weigh out accurately, approximately 1.3 g. of anhydrous sodium carbonate into a volumetric flask (250 mL). To do this, first weigh out approximately 1.3 g of the sodium carbonate in a sample bottle using the top loading balance provided. Then using the analytical balance weigh accurately to four decimal places, sample bottle and contents. Transfer quantitatively into volumetric flask by decanting small amounts of sample from bottle into a funnel and washing carefully into flask with distilled water. Shake to completely dissolve the sodium carbonate and then carefully make up to the graduation mark with distilled water. Re-weigh sample bottle, record all mass in your note-book and determine mass of sodium carbonate used by the method of difference.

Results

Mass of bottle and salt =

Mass of bottle =

Mass of salt =

B. Standardization of Hydrochloric Acid

Procedure:

Pipette 25 mL aliquots of the standard sodium carbonate solution prepared in Exercise A above into conical flasks (250 mL). Titrate these samples with the hydrochloric acid in the burette using methyl orange as indicator. Repeat until concordant results are obtained. Record your results in tabular form in your note-book, as indicated below.

BURETTE READINGS	ROUGH	1	11
Final volume (mL) Initial volume (mL) Volume acid used			

C. Standardization of Sodium Hydroxide using Hydrochloric Acid

Procedure:

Pipette 25 mL aliquots of the HCl used in Exercise B into conical flasks (250 mL). Fill a clean burette with the NaOH provided. Titrate the samples using phenolphthalein as indicator. Repeat until concordant results are obtained. Record your results in tabular form in your note book.

(Why is there need to standardize NaOH?)