Date 15-02-22

Expt. No. 04 Page No. 10

Aim :- Ravi Kumar 15/02/22

To perform the chemical assay of Sodium Bicarbonate.

Reference :-

Requirements:

(a) Glasswares :- Conical flask, beaker, burette, measuring cylinder, funnel, glass rod, dropper etc.

(b) Reagents :- Sodium carbonate (1.5g), 0.5N sulphuric acid and methyl orange indicator.

Reagent Preparation:

0.5N H_2SO_4 : Dissolve 14 ml of H_2SO_4 in 400 ml of water in a conical flask and make up the volume upto 1000 ml.

Principle :

Its assay is based on acid-base titration.

Sodium bicarbonate is very easily estimated by titrating with 0.5N sulphuric acid or hydrochloric acid using methyl orange as an

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Observation

S.No.	Initial reading	final reading	Volume Consumed
1	0	3.6	3.6 ml
2.	3.6	7.2	3.6 ml
3.	7.2	10.5	3.3 ml

$$\text{Average} = \frac{3.6 + 3.6 + 3.3}{3} = 3.5 \text{ ml}.$$

Calculation :

$$\% \text{ purity } w/w = \frac{\text{ml of acid required} \times \text{Normality of acid} \times 0.042 \times 100}{\text{Weight of Sample} \times 0.5}$$

$$= \frac{3.5 \times 0.5 \times 0.042 \times 100}{0.3 \times 0.5}$$

$$\% \text{ Purity } w/w = 49\%$$

indicator.

$2NaHCO_3 + H_2SO_4 \longrightarrow Na_2SO_4 + 2H_2O + 2CO_2$.

Procedure:-

1. Weigh 1.5 gm of substance and dissolve in 50 ml of water in 250 ml conical flask.

2. Titrate the content of flask with 0.5N of H_2SO_4. using methyl orange as an indicator until orange red colour appears.

Each 1 ml of 0.5N $H_2SO_4 \equiv 0.042g$ of $NaHCO_3$.

Result:-

The % purity of sodium bicarbonate by chemical assay was found to be 49 %.