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Aim:-

To prepare and standardization of 0.5N of $NaHCO_3$ (Sodium bicarbonate).

Reference:

Requirement:

Glasswaxe :- Beaker, Measuring cylinder, Burette, ~~Burette stand~~, Conical flask, stirring rod, Funnel.

Chemicals :- (i) $NaHCO_3$ (sodium bicarbonate)
(ii) H_2SO_4 (Sulfuric acid)
(iii) Methyl Red

Apparatus :- (i) Analytical weight Machine
(ii) Burette stand
(iii) Spatula

Theory:

Titration is a laboratory technique that can be used to determine the concentration of certain solutions by chemical reactions. Any chemical ~~rea~~

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that reacts in solution can be titrated with each other. Since acids and bases are usually found in solution. They are commonly involved in titration.

It is an acid-base titration. The sodium bicarbonate is an alkali whose strength changes over time and it can be effectively standardized utilizing primary standard viz. sodium bicarbonate and sulfuric acid. react with each other in the presence of phenopthalein indicator. The colour change from pink to colourless at the end point. Hence based on the above theory our aim is to prepare and standardise sodium bicarbonate using sulfuric acid.

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

Procedure:

(i) Preparation of 0.5 N solution (standard) of H_2SO_4.

(a) Wash and dry each glassware which are to be used in this experiment.

(b) Add about 2.45 g of sulfuric acid in 100 ml of distilled water and allow it to cool at room temperature.

Observation Table.

S. No.	Starting point	End point	Volume consumed
1.	0.0	1.1	1.1
2.	1.1	2.1	1
3.	2.1	3.0	0.9

$$\text{Avg consumption} = \frac{1.1 + 1 + 0.9}{3} = \frac{3}{3}$$

$$= 1 \text{ ml}$$

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(ii) Preparation of sample solution:

(a) Weigh about 4.2 gm of $NaHCO_3$ and dissolve it in 100 ml of distilled water.

(b) Mix solution thoroughly and allow it to cool at room temperature.

(iii) Add 50 ml of standard sol^n (H_2SO_4) in burette.

(iv) Take 10 ml of sample sol^n ($NaHCO_3$) in conical flask and add 2-3 drop of indicator (methyl red).

(v) Titrate it with standard sol^n to the production of permanent pink or red colour at end point.

Result:

Preparation and standardization of 0.5 N of $NaHCO_3$ (Sodium bicarbonate) studied successfully.

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