

## Assay Of Ammonium Chloride – By Ms. Lipsa Samal

### AIM:

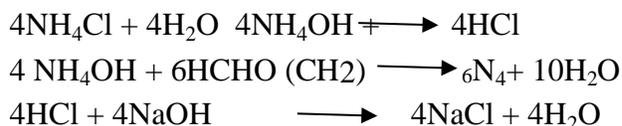
To determine the percentage purity of given sample of ammonium chloride.

### CHEMICALS USED:

Ammonium chloride, NaOH, Oxalic acid, formaldehyde

### PRINCIPLE:

Ammonium chloride is assayed by indirect assay method. The sample is dissolved in water and treated with previously neutralised formaldehyde solution. (Methyleneimine is formed which polymerises to form Hexamine). This results in the quantitative liberation of HCl equivalent to  $\text{NH}_4\text{Cl}$ . The liberated HCl is titrated with the standard solution of NaOH using phenolphthalein as indicator, appearance of pale pink colour is the indication of endpoint.



### PROCEDURE:

#### Standardisation of 0.1 NaOH

Weigh accurately 0.63 g of oxalic acid into a 100 ml volumetric flask and make up to 100 ml volume with distilled water. Pipette out 20 ml solution and titrated with 0.1 M NaOH using phenolphthalein as indicator. Continue the titration to get the concordant value.

#### Assay of $\text{NH}_4\text{Cl}$

Weigh 0.1gm of  $\text{NH}_4\text{Cl}$  dissolve in 20 ml of  $\text{H}_2\text{O}$  and add a mixture of 5 ml of previously neutralized formaldehyde solution and 20 ml water. After 2 minutes the contents of the conical flask is titrated against 0.1N NaOH using phenolphthalein as indicator. End point is the appearance of permanent pale pink colour.

Each ml of 0.1N NaOH is equivalent to 0.005349 gm of  $\text{NH}_4\text{Cl}$ .

Percentage purity can be determined by the following formula.

$$\% = \frac{\text{Titre value} \times \text{Equivalent wt factor} \times \text{Normality of NaOH(actual)}}{\text{Weigh of sample} \times \text{Normality of titrant (expected)}} \times 100$$

**Observation table –**

Sl. NO	Content of the Flask	Burette Reading (ml)				Indicator
		Initial reading	Final reading	Difference	Precision	
1	0.1 gm NH <sub>4</sub> Cl+ 20 ml Water + 5 ml formaldehyde solution	0.0	19.0	19.0	19.0	Phenolphthalein
2	0.1 gm NH <sub>4</sub> Cl+ 20 ml Water + 5 ml formaldehyde solution	0.0	19.0	19.0		Phenolphthalein

**Calculation :**

Percent Purity of Ammonium Chloride =

$$\% = \frac{\text{Titre value} \times \text{Equivalent wt factor} \times \text{Normality of NaOH(actual)}}{\text{Weigh of sample} \times \text{Normality of titrant (expected)}} \times 100$$

$$\text{Percent Purity of Ammonium Chloride} = \frac{19.0\text{ml} \times 0.005349 \times 0.1 \text{ N} \times 100}{0.1 \text{ gm} \times 0.1 \text{ N}}$$

**REPORT:** The percentage purity of the given sample of ammonium chloride is.....101%