

ANALYTICAL PROCEDURE – POLYALUMINIUM CHLORIDE (PAC).

- (1) Determination of Al₂O₃ : Weigh 0.5 to 1 Gram sample and transfer it into the 250 ml measuring flask make up to the mark with distilled water. Take 10 ml of this solution into 500 ml Conical flask and dilute to 200 ml with distilled water. Add 25 drops of Conc.H₂SO₄ and mix well. Pipette 25 ML of 0.025 M EDTA Solution into the prepared sample solution and swirl well. Add 25 ml of Ammonium Acetate buffer and mix well. Heat the contents to boiling and continue boiling for 2 to 3 minutes. Cool the solution to room temperature and add 2 drops of Xylenol orange indicator. Titrate the excess EDTA with 0.025 M Zinc Sulphate solution. End point Tan – Yellow to Red – Violet. Blank should be done.

$$\% \text{ Al}_2\text{O}_3 = \frac{(\text{Blank T.V} - \text{Sample T.V}) \times 3.1875}{\text{Wt. of Sample}}$$

- (2) Determination of Basicity : Weigh 5 to 6 Grams of sample and transfer it into the 250 ml Conical flask. Add 50 ml distilled water. Take another 250 ml Conical flask with 50 ml distilled water for Blank. Using Pipette add 50 ml of 1 N HCL to each Conical flask. Place both Conical flasks on Hot Plate and boil for 5 minutes. Immediately remove the flasks from the hot plate and cool to room temperature. Using Pipette, add 25 ml of 50% K F Solution to each flask and swirl liquid in flask to mix. Add 4 drops of Phenolphthalein indicator and titrate each flask with 10 N NAOH while stirring to a faint Pink end Point.

$$\% \text{ Basicity} = \frac{(\text{Blank T.V} - \text{Sample T.V}) \times 170}{\text{Wt. of Sample} \times \% \text{ Al}_2\text{O}_3}$$

- (3) Determination of Chlorides: Weigh 2 to 4 Grams of sample in 250 ml beaker, dilute to about 50 ml with distilled water and Acidify with 5 ml of Conc. Nitric Acid and boil for 5 minutes. Cool and transfer the sample to a 100 ml Volumetric flask and make up to the mark. Pipette 10 ml of this solution to a 250 ml stoppered Conical Flask and dilute to about 100 ml with distilled water. Add 25 ml of 0.05 N Silver Nitrate solution and swirl to mix. Add 10 ml of Benzyl Alcohol and shake vigorously for one minute. Add Ferric Alum indicator and titrate against 0.05 N KSCN solution until a faint red colour persist. Blank should be done.

$$\% \text{ Chloride as Cl} = \frac{(\text{Blank T.V} - \text{Sample T.V}) \times 1.773}{\text{Wt. of Sample}}$$
