Experiment No:03

Title: Corrosion Susceptibility of Aluminium Metal.

Aim: To compare the corrosion susceptibility of Aluminium metal in acid and alkali medium with respect to time.

Requirement: Aluminium plates, Hydrochloric acid , Sodium Hydroxide.

Theory: Aluminium is a silvery white metal. It is not soluble in water under normal circumstances. Aluminium is the most abundant metal in the Earth's crust, and the third most abundant element therein, after oxygen and silicon.

Corrosion, which is an inevitable problem faced by almost all industries can be considered as one of the worst technical calamities of our time. Besides from its direct costs in dollars, corrosion is a serious problem because it definitely contributes to the depletion of our natural resources. Corrosion studies have also become important due to increasing awareness of the need to conserve the world's metal resources. Now-a-days more attention has been paid to control the metallic corrosion, due to increasing use of metals in all fields of technology.

Corrosion studies of Aluminium and Aluminium alloys have received considerable attention by researchers because of their wide industrial applications and economic considerations Aluminium and aluminium alloys have emerged as alternate materials in aerospace and in some chemical processing industries. Due to their wide applications, they frequently come in contact with acids or bases during pickling, de-scaling, electrochemical etching and extensively used in many chemical process industries.

Procedure:

1) Two Aluminium plates are placed on your table, one plate each is to be used for acid medium and base medium, decide the respective plate for the medium. Interchange of plates in the medium is not permitted.

2) Record the weight of the plates

3) Fill the Beakers with 1N HCl and 1N NaOH solution respectively and label the beakers. Immerse the plates in the beakers such that the whole plate should submerge in the solution. Note the time.

4) At the end of 20 min record the temperature of the solutions and remove the plates from the solutions with the help of pair of thongs,wash with tap water, dry with filter paper followed by drying in oven for 2 min. Allow cooling of the plate and record the weight.

Observations:

Weight loss study for plate in Acid medium

Time in minutes	Weight before corrosion	Weight after corrosion	Weight loss
20	6.378 gms	6.370 gms	0.008 gm

Weight loss study for plate in base medium

Time in minutes	Weight before corrosion	Weight after corrosion	Weight loss
20	6.498 gms	6.058 gms	0.440 gm