

THE INHIBITIVE EFFECT OF HYDROXYETHYLCELLULOSE ON MILD STEEL CORROSION IN HYDROCHLORIC ACID SOLUTION

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ABSTRACT

The inhibitive effects of Hydroxyethylcellulose (HEC) as inhibitor for mild steel corrosion in 1.0M HCl and 1.5M HCl under atmospheric exposure have been investigated using weight loss technique. The study revealed that mild steel corrodes in HCl solution, but is inhibited in the presence of HEC. The corrosion rate decreased with increase in HEC concentration. The inhibition efficiencies increased with inhibitor concentration. The maximum inhibition efficiency of 69.617% and 58.145% were observed with mild steel corrosion in 1.0M HCl and 1.5M HCl respectively. This inhibition could be attributed to the molecules of the HEC adsorbed on the mild steel surface forming elastic film which reduces the surface area available for corrosion attack. The corrosion current was also determined. It was observed that corrosion current was higher in 1.5M HCl than 1.0M HCl. Also, the corrosion current decreased with increasing inhibitor concentration.

Keywords: Hydroxyethylcellulose; Mild steel; Inhibition efficiency; Corrosion current; Hydrochloric acid.