

Inhibitive action and synergistic performance of 2-aminoethanol and *N,N*-diethyl-ethanamine on copper in hydrochloric acid solution

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Abstract

The corrosion inhibition action of copper alloy in 1 M HCl solution in the presence of 2-aminoethanol (A) and *N,N*-diethylethanamine (D) at 298 °K was investigated using gravimetric and linear polarization method. Surface studies of the copper alloy sample were observed by the help of high resolution scanning electron microscope equipped with energy dispersive spectroscopy (SEM/EDS). The evaluations were taken after 48 h interval for 288 h while the concentration of the inhibitor was varied from 5 to 10% w/v. The result of the examination shows that 2-aminoethanol (A) and *N,N*-diethylethanamine (D) has a good corrosion inhibition effect for copper alloy in 1 M HCl solutions and its efficiency attains above 96% at 10% w/v concentration. The linear polarization result affirmed that 2-aminoethanol (A) and *N,N*-diethylethanamine (D) acts as a mixed type corrosion inhibitor. Their adsorption on copper alloy has been found to obey Langmuir adsorption isotherm at all the concentration of inhibitor applied. The outcomes from all approaches are in good agreement with each other.

KEY WORDS: Electrochemical oxidation, Inhibitor, Synergistic assessment, Adsorption, SEM/EDX