Inhibition Performance of Eugenol and Linalool on Aluminium Corrosion: A Comparative Study

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It is well known that corrosion inhibition performance of organic compounds in acidic media depend on their concentration and molecular structures. Therefore, the comparative study of inhibition efficiency of eugenol as aromatic and linalool as linear molecules on aluminium corrosion in 0.5 M HCl solution was performed. The study was done by weight loss, potentiodynamic polarization and EIS methods, while surface morphology of aluminium was examined by SEM method. All used methods confirmed inhibition efficiency of both investigated compounds on aluminium corrosion in acidic medium. From the obtained potentiodynamic polarization curves is evident that presence of eugenol and linalool in acid media cause a prominent decrease in current densities, and shift of the E_{corr} values to more cathodic direction in comparison with 0.5 M HCl without inhibitors. EIS method confirmed that the maximum inhibition was achieved with addition of 0.012 mol L⁻¹ eugenol (92.4%) and 0.035 mol L⁻¹ linalool (85.1%) in HCl solution. Thus, these concentrations can be assumed as optimum for corrosion inhibition of aluminium. SEM results are in accordance with the results obtained by weight loss and electrochemical measurements, confirming the existence of protective inhibitor film on the Al surface.

Keywords: aluminium, corrosion, eugenol, inhibition, linalool.

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