

Corrosion Inhibition Effect of Water Extract of Teak (*Tectona grandis*) Leaves on Mild Steel in 1M HCl

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Abstract

The study of mild steel corrosion phenomena has become important particularly in acidic media because of the increased industrial applications of acid solutions. Green organic compounds serve as effective inhibitors for corrosion and they are naturally synthesized chemical compounds that are environmentally acceptable, inexpensive, readily available and renewable source of materials. Inhibition effect of water and methanol extracts of raw Teak leaves and the effect of temperature on the corrosion of mild steel in 1M HCl medium were studied using weight loss measurements. It was found that water extract possess better inhibition effect than methanol extract of Teak leaves. The adsorption of the inhibitor on the surface of mild steel obeys the Langmuir adsorption isotherm. According to the estimated adsorption equilibrium constant, K_{ads} and standard Gibbs free energy change, ΔG°_{ads} of the adsorption process, adsorption of the Teak leave extract on mild steel surface mainly take place by chemisorption. The behavior of the inhibitor was investigated using potentiodynamic polarization techniques and it was revealed that the extracts contain mixed type corrosion inhibitors.

Keywords: Adsorption, Langmuir isotherm, corrosion inhibitor, weight loss measurements

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