

# Electrochemical Studies and Surface Characterization of Dipropyl Sulphide on Zinc Metal in 0.5N Hydrochloric Acid

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## Abstract

Electrochemical studies and surface characterization of dipropyl sulphide (DPS) has been carried out in zinc metal immersed in 0.5N of hydrochloric acid. The corrosion study has studied by mass loss and gasometric methods. The 100mM formulation of dipropyl sulphide produces 72.6 percent and 71.7 percent of strong inhibition performance, respectively. Electrochemical trials have been reported, such as polarisation and impedance. Polarization reveals, as a cathodic inhibitor, that this formulation regulates the cathodic reaction. AC spectrums suggest that on the Zinc metal surface, a protective film is formed. EIS data revealed that the charge transfer resistance ( $R_{ct}$ ) increased, on the other hand the capacitance double layer ( $C_{dl}$ ) decreased in the presence of inhibitor. The corrosion parameters obtained from mass loss method, polarization studies and impedance spectra shows this inhibitor offers good corrosion inhibition efficiency and control the corrosion. Electron Microscope (SEM), Energy Dispersive Analysis of X-rays (EDAX) and Atomic Force Microscopy (AFM).

## Key Words

Corrosion, Dipropyl sulphide, Electrochemical studies, AFM, EDAX, FTIR and SEM.