CORROSION INHIBITION OF ZINC BY ORGANIC INHIBITOR IN ACIDIC MEDIUM

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ABSTRACT

CORROSION INHIBITION OF ZINC BY ORGANIC INHIBITORS IN ACIDIC MEDIUM

This research investigates the effectiveness of organic inhibitors pyridine, diethylene glycol (DEG), and phenol on the corrosion inhibition of zinc in acidic media. The objective of this research are to determine the corrosion rate of zinc in HCl and H_2SO_4, to evaluate the corrosion inhibition efficiency of zinc by the organic corrosion inhibitor in both acids through weight loss method and to identify the corrosion inhibition effect of zinc through optical microscope. Fourier Transform Infrared (FTIR) spectroscopy was used to characterizes the inhibitors to confirm the presence of functional groups crucial for adsorption onto the zinc surface. Corrosion of zinc was studied in hydrochloric acid (HCl) and sulfuric acid (H_2SO_4) environments using the weight loss method. The inhibitors are evaluated based on their ability to reduce the corrosion rate and enhance surface protection. The highest efficiency for each selected inhibitor is 73.11% for diethylene glycol in HCl, 76.44% for pyridine in HCl and 71.28% for phenol in H_2SO_4. Surface morphology analysis further confirms the protective layer formation by the inhibitors. The findings highlight the potential of organic inhibitors as environmentally friendly alternatives to conventional methods, contributing to sustainable corrosion prevention strategies.

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