Short Communication

Synthesized N1, N2-bis (furan-2-ylmethylene)Benzene-1, 2-diamine as a Corrosion Inhibitor for 20# Carbon Steel in 1 M Hydrochloric Acid

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N1, N2-Bis (furan-2-ylmethylene) benzene-1,2-diamine (SB) was synthesized and investigated as a 20# carbon steel inhibitor in 1 M hydrochloric acid. Electrochemical and weight loss (WL) measurements were employed for evaluating the inhibition properties of SB. It was shown that SB acted as a mix-type corrosion inhibitor during the process, and the charge transfer resistance increased, while the double layer capacitance decreased with the increasing SB concentration. The results implied that the inhibiting effect of SB was attributed to the covering layer formed on the steel surface that replaced the water molecule. The thermodynamic adsorption parameters obtained from the WL measurements demonstrated that the adsorption process is exothermic and spontaneous, and the adsorption of SB obeys a Langmuir adsorption isotherm. The calculated values of $\Delta G_{\text{ads}}^{\circ}$ revealed that the adsorption mechanism of SB on the steel surface is a combination of physical and chemical processes.

Keywords: furfural; o-diaminobenzene; corrosion inhibitor; adsorption

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