Short Communication

Anticorrosive Activity of 2-Hydroxybenzaldehyde-thiosemicarbazone for AISI 1020 Carbon Steel in Acid Medium

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Thiosemicarbazones belong to a widely pharmacologically and technologically used class of compounds. The heteroatoms (N and S) and double bond in their structure enable them to act as inhibitory agents - an alternative to corrosion control. This work synthesised 2-hydroxybenzaldehyde-thiosemicarbazone (THIO-6) aiming at its anticorrosive activity against AISI 1020 carbon steel in acid medium; the electrochemical methods Potentiodynamic Polarization and Impedance Electrochemical Spectroscopy were used to investigate it. Results showed great anticorrosive efficiency (94%), even at low concentration ($40 \cdot 10^{-5}$ mol L⁻¹). This effect was confirmed by the determination of the double-layer capacitance (C_{dl}), which provided information about the protective film formed on the metal surface. The adsorption process obeyed the Langmuir adsorption isotherm and the K_{ads} value from the investigation of THIO-6 adsorption mechanisms on metal surfaces indicated that corrosion inhibition occurred through chemisorption, which identifies it as an effective corrosion inhibitor agent.

Keywords: Carbon steel, Electrochemical impedance spectroscopy, Potentiodynamic polarization, Acid corrosion

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