Evaluation of the effect of two Naproxen-Based Hydrazones on the corrosion inhibition of Mild Steel in 1.0 M HCl

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During the past years, there has been an increasingly important emphasis on the study of corrosion inhibitors because of their performance in inhibiting the dissolution of metals in various corrosive mediums, making research into the use of environmentally safer substances a goal for corrosion scientists. On this wise, the anti-corrosive performance of (E)-N'-(4-chlorobenzylidene)-2-(6-methoxynaphthalen-2-yl) propanehydrazide (CBMP) and ((E)-2-(6-methoxynaphthalen-2-yl)-N'-(4-methylbenzylidene) propanehydrazide (MMBH) for mild steel (MS) in 1.0 M HCl has been studied employing electrochemical methods, weight loss and SEM/EDX examinations. An increase in the concentration of the inhibitor up to an optimized level of 5×10^{-3} M has significantly improved the corrosion rate (i_{corr}) values. The preferential protective response of MMBH against corrosion has been investigated in a range of temperature settings of 303 K-333 K. It is strongly implied by the results of the PDP experiments that the selected inhibitors acted as mixed-type inhibitors with a more pronounced cathodic nature. The adsorption of both compounds follows the Langmuir isotherm. SEM/EDX confirmed the good inhibition performance of tested compounds.

Keywords: Corrosion inhibition; Mild steel; SEM/EDX; Electrochemical measurements.

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