β -amino Acid-Derived Triazols as Corrosion Inhibitors for API 5L X52 Steel Immersed in 1 M HCl

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The corrosion inhibition of API 5L X52 steel immersed in a 1 M HCl aqueous solution, due to three β -amino acid-derived triazols in stagnant conditions at 298 K, was evaluated using electrochemical impedance spectroscopy and polarization resistant techniques. The effect of triazol concentration and immersion time was evaluated. For all cases, it was found that the inhibition efficiency (η) increased with the triazol concentration. Compounds **1** and **2** exhibited η values ranging from 80% to 97%. An adsorption-type analysis was also performed on the metallic surface using the Langmuir isotherm, demonstrating that the process is combined for organic compounds **1** and **3**, whereas the process exhibits chemisorption when inhibitor **2** is evaluated. For long immersion times, the organic inhibitor (compound 1) showed good corrosion protection for 224 hours of immersion, with $\eta > 90\%$. Finally, it was demonstrated by SEM that the corrosion velocity is diminished using the compound **1** inhibitor at 50 ppm.

Keywords: β -amino acids, triazols, EIS, API 5L X52

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