Effects of thioureido imidazoline on the passivation and pitting corrosion of N80 steel in CO₂-saturated NaCl-NaNO₂ solution

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The effects of thioureido imidazoline (TAI) corrosion inhibitor on the passivation and pitting corrosion of N80 steel in CO₂-saturated NaCl-NaNO₂ solution were studied by potentiodynamic polarization, electrochemical noise (EN), and wire beam electrode (WBE) measurements. The results suggest that TAI showed two opposite effects, e.g., promoting the passivation of steel electrode while decreasing the pitting potential of N80 steel, possibly due to the adsorption and desorption of the inhibitor on/from the steel surface. TAI was able to slow down the general corrosion rate in the solution as an anodic inhibitor.

Keywords: Thioureido imidazoline; N80 steel; CO₂ corrosion; Passivation; Pitting corrosion

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