Effect of Inhibitor based on Emulsion on Mild Steel Corrosion in Acid Environment

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An inhibitor based on emulsion was prepared by anti-corrosion substances, crude oil and emulsifier in this paper. The inhibition behavior of this inhibitor based on emulsion on N80 steel in 10% HCl + 4% HBF₄ solution was investigated by electrochemical measurements and soaking experiments. Results of electrochemical impedance spectroscopy and surface analysis studies indicated that the inhibitor based on emulsion can effectively inhibit the corrosion reaction by forming an adsorption layer function as a barrier. Polarization curves indicated that it is mixed type inhibitor which can reduce anodic dissolution and cathodic hydrogen evolution reactions simultaneously. Experimental results indicated that the inhibitor based on emulsion has better anti-corrosion performance than that of composite inhibitor without crude oil and emulsifier even though with smaller application concentration.

Keywords: inhibitor based on emulsion, N80 steel, 10% HCl and 4% HBF₄ solution, weight loss method, electrochemical method

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