Study on S-4-methylbenzyl-O,O'-dithiophosphates as Corrosion Inhibitors for Q235 steel in HCl Solution

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Herein, S-4-methylbenzyl-O,O'-bis(4-nitrophenyl)dithiophosphate (SBOP-I) and S-4-methylbenzyl-O,O'-bis(4-t-butylphenyl)dithiophosphate (SBOP-II) were synthesized and characterized. Meanwhile, the new corrosion inhibitors for Q235 steel in HCl solution were evaluated by weight loss method and electrochemical measurements. Electrochemical measurements indicate that the inhibitors are mixed-type inhibitor, the inhibition efficiency increase with the concentration of inhibitor increase, decrease with the HCl concentration and temperature increasing. Weight loss measurement results show that the adsorption of SBOP-I and SBOP-II on Q235 steel surface obeys Langmuir isotherm, which belongs to chemical adsorption.

Keywords: Corrosion inhibitor; Electrochemical; Weight loss; Q235 steel; Langmuir.

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