Corrosion Inhibition of Q235 Steel in H₂SO₄ Solution by N,N-Diethylammonium O,O'-di(4-bromophenyl) dithiophosphate

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In sulfuric acid solution, the corrosion inhibition of synthesized compound of N,N-Diethylammonium O,O'-di(4-bromophenyl)dithiophosphate (Br-NOP) was investigated by electrochemical impedance spectroscopy, potentiodynamic polarization measurement, weight loss measurement and scanning electron microscopy. The results indicate that the Br-NOP is a mixed type inhibitor. The inhibition efficiency increases with Br-NOP concentration increasing, decreases with temperature and H₂SO₄ concentration increasing. The adsorption of Br-NOP on Q235 steel surface in H₂SO₄ solution belongs to chemical adsorption, and obeys Langmuir isotherm model. Br-NOP can act as an effective long-acting corrosion inhibitor, and the obtained maximum inhibition efficiency can reach up to 98.53% for Q235 steel in H₂SO₄.

Keywords: Corrosion inhibitor; O,O'-Dialkyldithiophosphate; Q235 steel; Sulfuric acid; Adsorption.

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