Int. J. Electrochem. Sci., 11 **(2016)** 2790 - 2798

International Journal of
ELECTROCHEMICAL
SCIENCE
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Electrochemical Studies of the Inhibition Effect of 4,6-dichloro-2-(methylthio) pyrimidine on the Corrosion of AISI Type 321 Stainless Steel in 1.0 M Hydrochloric Acid

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doi: 10.20964/110402790

Received: 7 January 2016 / *Accepted:* 21 January 2016 / *Published:* 1 March 2016

The corrosion inhibition effect of 4,6-dichloro-2-(methylthio) pyrimidine (DCMTP) on AISI type 321 stainless steel in 1.0 M hydrochloric acid solution at 30 ^{o}C was investigated using potentiodynamic polarization and electrochemical impedance spectroscopy (EIS) technique. Polarization curves showed that DCMTP acts as cathodic type inhibitor. The impedance response indicated that the corrosion process occurs under charge transfer control. Increasing inhibitor concentration led to significant reduction in the corrosion rate of stainless steel with achievable inhibition efficiency of 72% at 8 x 10^{-4} M DCMTP. Activation parameters E_a, ΔH^*, and ΔS^* were also calculated and discussed.

Keywords: AISI 321, Impedance, Polarization, inhibitor, activation parameters.

FULL TEXT

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