

THE EFFECT OF TEMPERATURE ON THE INHIBITION OF THE ACID CORROSION OF MILD STEEL BY SOME SULFONIUM BROMIDE DERIVATIVES

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Abstract: *The effect of temperature in the range (20 - 60)°C on the performs of sulfonium bromides at a fixed concentration of each of them on mild steel corrosion in 2.0N H₂SO₄, HCl of and H₃PO₄ acids solutions using chemical methods (HEM and MLM), was carried out. It was found that in 2.0N H₂SO₄ solution the corrosion of mild steel increases with rising temperature from 20°C to 60°C for all the studied compounds except compound F who give an increase in Inh.% with rising temperature. In 2.0N HCl and 2.0N H₃PO₄ solutions It was clear that for most compounds the Inh.% or acceleration of corrosion decreases with increasing temperature.*

A decrease in the corrosion rate or an increase in Inh.% with increasing temperature is occurred only in some compounds in all the three acids, when the temperature reached 50°C. The decrease in inhibition efficiency or in acceleration of corrosion with temperature indicates that most of these compound are physically adsorbed on the mild steel surface and it also indicates that the inhibited film formed on the metal surface is less protective in nature at higher temperatures. Desorption of the inhibitor molecules from the metal surface most probably occurs with faster rates at high temperatures. The values of apparent activation energy ΔE_{app} of the dissolution of mild steel in 2.0N of the three acids in absence and presence of the studied compounds were calculated.