

# INHIBITION OF ACIDIC CORROSION OF LOW CARBON STEEL BY SYMMETRICAL 1,3,4-OXADIAZOLES

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## ABSTRACT

The inhibitive effect of symmetrical 1,3,4-oxadiazoles on the corrosion of mild steel in 1M H<sub>2</sub>SO<sub>4</sub> was investigated by weight loss method, potentiodynamic polarization, electrochemical impedance spectroscopy (EIS) and scanning electron microscopy. The results showed that inhibition efficiency increases with increase in concentration of the inhibitors. The potentiodynamic polarization curves revealed that the oxadiazoles act as mixed type inhibitors. EIS measurements show an increase in charge transfer resistance with the inhibitor concentrations. The temperature effect on the corrosion behaviour of the steel in 1M H<sub>2</sub>SO<sub>4</sub> with and without the inhibitor was studied in the temperature range (303-333K). The thermodynamic parameter  $\Delta G^0$  and kinetic parameter  $E_a$  have also been calculated. The inhibition efficiency has been synergistically enhanced by the addition of halide ions. The percentage of iron in the corrodent solution was determined by atomic absorption spectroscopy. The surface morphology of the mild steel specimens were evaluated using SEM images.

**KEYWORDS:** Adsorption, Impedance, Polarization, 1,3,4-Oxadiazole inhibitors