THE EFFECTS OF SOME BOR'S COMPOUNDS ON ELECTROCHEMICAL PROPERTIES OF 304 L STEEL IN BASIC MEDIA

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In this study, the inhibition effect of boric acid (H₃BO₃), sodium metaborate (NaBO₂) and sodium tetraborate (Na₂B₄O₇) on corrosion of 304 L steel has been investigated in 3% and 5% KOH media. The experiments have been carried out using Na₂B₄O₇ since it has better inhibition efficiency than the other compounds investigated. Corrosion parameters have been determined using Tafel extrapolation and impedance spectroscopy methods by the addition of 1% – 7% Na₂B₄O₇ into both two concentrations of KOH solutions. The effect of temperature on corrosion rate of steel and the inhibition effect of Na₂B₄O₇ concentration have also been investigated by carrying out each experiment in four different temperatures, i.e., 25°, 40°, 55° and 70°C.

Corrosion rates have been found to increase with temperature and KOH concentration both in 3% and 5% KOH media. It has been found that the inhibition efficiency of Na₂B₄O₇ in both KOH media increases in 1% – 4% concentration range whereas it decreases in 5% – 7% concentration range.

In this study, H₂ flow in 3% and 5% KOH media has been investigated using gasometric measurement depending on the concentration of Na₂B₄O₇ by a flowmeter and it has been observed that H₂ flow rate decreases in 1% – 4% concentration range whereas it increases slightly and then remains fixed in 5% – 7% concentration range.

![Graph](image)

**Figure 1.** The curves of evolution gases with 304 L steel in 3% KOH solution.

**References**