Effect of Chloride Ions on the Corrosion Behavior of Al – Zn Alloy in NaOH Solution at Four Different Temperatures

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Abstract

This research involves study effect of chloride ions in concentration range (0.01 – 0.50 mol dm⁻³) on the corrosion behavior of Al-Zn alloy in basic media of 1x10⁻² mol dm⁻³ NaOH at pH=11 and four different temperatures in the range (298-313 K). Cathodic and anodic Tafel slopes (b_c & b_a) and transfer coefficients (α_c & α_a) were calculated and the results interpreted according to the variation of the rate-determining steps. The results also indicate that the chloride ions are bonded chemically in the interface as an initial step of formation of different mixed oxo-hydroxy – and chloro complexes. Polarization resistance (R_p) is calculated and used to determine the different polarization behavior because of addition of chloride ions to the basic media.

Keywords: Al-Zn alloy, Effect of chloride ion, Corrosion behavior in basic medium.