Short Communication

Effect of scan rate on polarization curves of a high strength Al alloy in 3.5 wt% NaCl solution

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Received: 21 June 2021 / Accepted: 9 August 2021 / Published: 10 October 2021

The cyclic polarization curve is usually used to characterize the corrosion property of alloys, from which many parameters including potential differences which is defined as ΔE ($E_{\text{sec,corr}} - E_{\text{corr}}$) can be determined and then to assess alloys' corrosion sensitivity. Scan rate is a key but controllable parameter for cyclic polarization scan of metals. However, the effect of scan rate on ΔE has rarely been reported. 7150 Al alloy is a typical type of high strength Al alloy which is sensitive to localized corrosion. In this work, we present the effect of scan rate on ΔE of 7150 Al alloy in 3.5 wt% NaCl solution. ΔE was found increases firstly and then decreases with the increasing of scan rate. Two contradictory factors that govern the value of ΔE were discussed and the appropriate scan rate for 7150 Al alloy cyclic polarization measurement in 3.5 wt% NaCl solution was determined.

Keywords: 7150 Al alloy; Localized corrosion; Potential difference; Scan rate

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