The Influence of Temperature and Dissolved Oxygen on the Electrochemical Properties of Three Al-Zn-In Series Sacrificial Anodes

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This paper investigates the corrosion behavior of three commercial anodes under different temperature and dissolved oxygen through a scanning electron microscope and electrochemical test. Our results show uniform corrosion in both environments, and the current efficiency at low temperature and low oxygen are higher than that of saturated oxygen at room temperature. Microtopography reveals that intergranular corrosion is more severe under the condition of low temperature and low oxygen. The polarization curves and electrochemical impedance spectrum tests at the initial stage of erosion illustrate that the activation dissolution resistance is more significant at low temperature and low oxygen. There are varying degrees of passivation tendency, especially Al-Zn-In-Si.

Keywords: Al alloy, temperature, dissolved oxygen, electrochemical property

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