"EFFECT OF HEAT TRATMENT ON ELECTROCHEMICAL ACTIVATION OF ALUMINUM ANODES"

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Introduction

Cathodic protection by sacrifical anodes has been widely used for protecting steel structures in marine environments. The most commonly used sacricial metals for cathodic protection systems are alloys of Mg, Zn, and Al. Nevertheless, the success of the Al anode depends upon the alloying of certain metals whose surface role is to ultimately prevent the formation of a continuous, adherent, and protective oxide film an the alloy, thus permitting continuous galvanic activity of the aluminum. It has been reported[(2)], that the heat treatment applied to as-cast ingots increase the dispersion of the τ phase in the matrix. The effect of heat treatment on the anodic efficiency of an Al-Zn-In anode has been studied[(1)]. The heat treatment affects the microstructure, which strongly influences the performance of the aluminum anode. The alloy Al-Zn-Mg-Li has been studied by means of electrochemical and microstructural methods giving at total efficiency of 67%.[(3,4)]

The activation of aluminun alloy (Al-5.3%at. Zn-5.5 %at. Mg) has been studied in chloride media by using potentiodynamic polarization, electrochemical impedance spectroscopy and scanning electron microscopy studies.

The aim of the present work is to study the relationship between electrochemical properties and microstructural of the alloy with different heat treatment.

Pitting corrosion potential has a variation with the different heat treatment time.
According to the different times of heat treatment, there is a better dispersion of the intermetallics and the electrochemical behavior.

References

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