Short Communication

Corrosion Behaviors of 5A06 Aluminum Alloy in Ethylene Glycol

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As a coolant, ethylene glycol solution can influence the corrosion processes of 5A06 aluminum alloys that are used for aerospace applications. The corrosion behavior of 5A06 in contact with pure ethylene glycol was investigated via 3D confocal laser scanning microscopy, scanning electron microscopy and electrochemical impedance spectroscopy. The results demonstrated that pure ethylene glycol may suppress the anodic dissolution of the aluminum alloy, thus decreasing the corrosion rate in pure ethylene glycol. Furthermore, the protective effect of oxidation films was enhanced as the result of a layer of Al-alcohol products that formed above the oxidation films in ethylene glycol.

Keywords: Aluminum alloy, corrosion mechanisms, ethylene glycol, organic, EIS

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