Short Communication

Effect of Oxidation Treatment on Microstructure and Electrochemical Properties of 6061 Aluminum Alloy

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In this paper, 6061 Al alloy was used as the matrix to prepare the anodic film by acidification. SEM, XRD and EDS were used to study the effect of oxidation treatment on the structure and corrosion resistance of 6061 Al alloy. The results show that the grain size of 6061 Al alloy is larger, and the second phase particles are distributed in the grain. After oxidation treatment, fine second phase particles were precipitated in the grains, resulting in the increase of the strength of 6061 Al alloy. The tensile and impact fracture of 6061 Al alloy treated by oxidation shows the characteristics of intergranular fracture. Surface anodic oxidation treatment can significantly reduce the mechanical property loss of 6061 Al alloy. Compared with bare materials, the initiation and expansion of intercrystalline corrosion can be effectively inhibited, and the strength and plasticity loss of 6061 Al alloy can be reduced, so that 6061 Al alloy anodized with sulfuric acid has better strength.

Keywords: 6061 Al alloy; Intergranular corrosion; Oxidation treatment; Organizational structure; Mechanical property

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