Short Communication

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

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The corrosion behavior of 6061 aluminum alloy under heat treatment at different temperatures and oxidation states was studied. The anode film was prepared by acidizing 6061 aluminum alloy as matrix. The effect of oxidation treatment on the microstructure and corrosion resistance of 6061 aluminum alloy was studied by SEM, XRD, and EDS. The results showed that the corrosion of 6061 aluminum alloy first decreased and then showed a general trend with the increase of temperature. Comparative analysis of the samples treated under different temperatures, in solution with pH=2 revealed that the corrosion resistance of the samples weakened with the increase of temperature, which was the weakest at temperature around 550°C. With the increase of temperature, the corrosion rate of 6061 aluminum alloy showed an increasing trend. The results showed that appropriate temperature treatment is beneficial to improve the corrosion resistance of 6061 aluminum alloy, and the corrosion sensitivity of 6061 aluminum alloy is: oxidation +550°C heat treatment > oxidation +350°C heat treatment.

Keywords: Heat treatment condition, corrosion morphology, surface scanning, line-surface scanning, 6061 aluminum alloy

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