Short Communication

Study on Corrosion Resistance of Superhydrophobic Film Prepared on the Surface of 2024 Aluminum Alloy

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Received: 8 October 2021 / *Accepted:* 18 November 2021 / *Published:* 5 January 2022

Superhydrophobic film was prepared on the surface of aluminum alloy by anodic oxidation, ammonium fluorotitanate sealing and perfluorooctanoic acid modification sequentially. The morphology and composition of the film were characterized and analyzed. Moreover, the surface wettability, stability and corrosion resistance of samples were tested. The results show that the density and corrosion resistance of porous anodic oxide film on aluminum alloy surface are improved after surface modification. After surface modification, the surface of anodic oxide film forms rough structure resulting in optimal superhydrophobicity performance with maximum droplet contact angle 155.6°. The superhydrophobic film has good corrosion resistance, while maintaining superhydrophobicity for a long time, which can effectively block the corrosive medium to inhibit the development of corrosion and provide stable corrosion protection for aluminum alloy.

Keywords: Superhydrophobic film; Corrosion resistance; Anodic oxidation; Sealing; Surface modification

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