Effect of Pretreatments on Throwing Power of Sacrificial Metallic Coatings

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Abstract

Sacrificial metallic coatings (e.g. Mg-Rich Primer [MgRP]) have been evaluated for protection of aircraft aluminum alloy AA2024-T351 in marine immersion and atmospheric conditions. MgRP is designed to create a galvanic couple between the Al substratum and the Mg pigment in the primer. The Mg acts as a sacrificial anode to the more noble underlying substratum and protects local and remote defects (Figure 1). MgRP effectiveness depends on coating and environmental characteristics. A recent effort quantified the contribution of each of these parameters to the mixed potential and throwing power that exists between the Mg and AA2024 using finite element computational modeling in the COMSOL Multiphysics® software. The effects of pretreatment resistivity and chromate inhibitor concentration on electrochemical boundary conditions and the resulting protection throwing power will be examined.

Figures used in the abstract

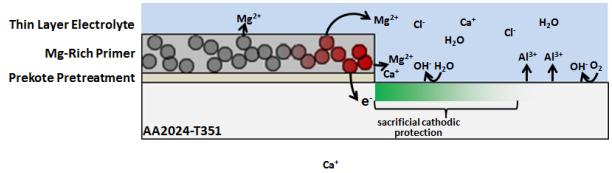

Figure 1