Investigation on the Corrosion Resistance of Trivalent Chromium Conversion Passivate on Electroplated Zn-Ni Alloy


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ABSTRACT

The corrosion resistance of electroplated Zn–Ni alloy using trivalent chromium conversion treatment in alkaline electrolyte was investigated. Among the Zn–Ni coatings electroplated on steel substrate with raising current densities, the Ni content and corrosion resistance increased accordingly. Further conversion treatment generated passivates which thickness increased with treatment durations. The passivation film showed Ni rich content comparing with its pristine Zn–Ni coating and mainly composed of Cr₂O₃, ZnO and NiO. The passivation film improved corrosion resistance. However, the 30-s treated specimen showed best corrosion resistance because of its moderate thickness and less dehydration voids and cracking in the passivation film.

Keywords: Electroplated Zn–Ni alloy
Trivalent chromium
Corrosion resistance
Nickel-rich

REFERENCES