

Electrodeposition of Nickel-Zinc Alloy on Stainless Steel in a Magnetic Field in a Chloride Environment

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Abstract : The objective of this work is to determine the appropriate conditions for a Ni-Zn deposit with good nickel content. The electrodeposition of zinc-nickel on a stainless steel is carried out in a chlorinated bath (NiCl₂.6H₂O, ZnCl₂, and H₃BO₃), whose composition is 1.1 M; 1.8 M; 0.1 M respectively. Studies show the effect of the concentration of NH₄Cl, which reveals a significant effect on the reduction and ion transport in the electrolyte. In order to highlight the influence of magnetic field on the chemical composition and morphology of the deposit, chronopotentiometry tests were conducted, the curves obtained inform us that the application of a magnetic field promotes stability of the deposit. Characterization developed deposits was performed by scanning electron microscopy coupled with EDX and specified by the X-ray diffraction.

Keywords : Zn-Ni alloys, electroplating, magnetic field, chronopotentiometry

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