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Study of Electroless Co-P Deposits on Steel

Authors : K. Chouchane, R. Mehdaoui, A. Atmani, A. Merati

Abstract : A Co-P layer was coated onto steel substrate using electroless plating method in alkaline media. Three temperatures were tested 70, 80 and 90 °C. Sodium hypophosphite was used as a reducer. The influence of addition of boric acid in the bath on deposits properties was studied. Different techniques such as scanning electron microscopy (SEM), energy dispersive X-ray (EDX) and hardness measures were employed to characterize the morphology, composition and the structural properties of the resulting films. The corrosion properties of the prepared coatings were tested in 3% NaCl media, by means of current-potential curves, potential transients. The results showed that the thickness increase with increasing of bath temperature. The addition of boric acid don't affect the thickness but has an influence on hardness. In fact, the hardness increases from 500 to 700Hv for the temperature of 90°C. The corrosion resistance is improved for all prepared layers.

Keywords : cobalt deposits, corrosion, electroless deposition, hardness
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