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STUDY OF ALLOY Zn-Fe ELECTRODEPOSITION FROM CHLORIDE ELECTROLYTE

SAMIA AMIRAT, RABAH REHAMNIA, Rachid Bensalem, Juan CREUS

Abstract : This study show that of the alloy zinc-iron electrodeposited on steel by electrodeposition from chloride acid electrolytes, the chloride electrolyte more advantages than the electrolyte sulphate. Furthermore the influence of various parameters(current densities, $[Zn(II)]/[Fe(II)]$ concentration ratio in electrolyte and the nature of additives: saccharin Na(S) and glycerol (J) ...) on the morphology and the structure of the deposits is discussed. EDS Analysis making it possible to determine the composition of alloysobtained gives an increase in Fe content with the density of current.For high $[Zn(II)]/[Fe(II)] \sim 1/9$ concentration ratio in solution, Fe content remains constant independently of current densities. In the presence of brightener "J.S", the deposit contains a weaker content iron, which is in agreement with measurements of the cyclic voltammetry showing that the " J.S " inhibits the electroreduction of iron. X-ray diffractograms realized for Zn-Fe alloys, lead to thepresence of the three phases of the alloy Zn-Fe: γ , δ and ϵ .

Keywords : electrodeposition, Alloy, Zn-Fe, micrograohy, XRD, additive, chloride, electrolyte