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ZHONGGUO YOUSEJINSHUXUEBAO XUEBAO

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镁合金化学镀中预处理氟化镁膜的特征与作用

国 栋, 樊占国, 杨中东, 赵 林, 高 鹏

(东北大学 材料与冶金学院, 沈阳 110004)

摘 要:对镁合金的表面前处理工艺进行研究, 探讨氟化镁在化学镀层中的存在形式及作用。结果表明: 酸浸使镁合金表面形成一层氧化物膜; 活化过程生成的氟化镁不具备反应活性, 对镁合金基体有保护作用, 使之免于受镀液的过度腐蚀; 对化学镀层断面进行SEM元素分布分析显示氟化镁层集中存在于镁合金基体与Ni-P镀层之间; 但过度活化会导致化学镀层孔隙率升高, 以3.5%NaCl溶液为介质的动电位极化测试表明, 过度活化会导致化学镀层耐蚀性下降。

关键字: 镁合金; 化学镀; 耐蚀性; 氟化镁

Effects and characteristics of MgF₂ during electroless nickel plating of magnesium alloys

GUO Dong, FAN Zhan-guo, YANG Zhong-dong, ZHAO Lin, GAO Peng

(School of Materials and Metallurgy, Northeastern University, Shenyang 110004, China)

Abstract: Pretreatment of magnesium alloy surface was studied. Effects of MgF₂ in Ni-P coatings were emphatically discussed. The results show that a magnesium oxide layer is formed after acid etching, and the potential differences of different phases of magnesium alloys are reduced due to the presence of oxide layer. MgF₂ layer is formed after activation which can protect magnesium substrate from corrosion of plating bath. The elemental distribution of cross section of Ni-P coating was investigated by scanning electron microscopy. The MgF₂ layer exists between the magnesium alloy substrate and the Ni-P coating. Excessive activation can raise the porosity of Ni-P coating, and the potentiodynamic polarization indicates that excessive activation can lead to deterioration of corrosion resistance of the Ni-P coating.

Key words: magnesium alloy; electroless nickel plating; corrosion resistance; MgF₂

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地 址：湖南省长沙市岳麓山中南大学内 邮编： 410083

电 话： 0731-8876765, 8877197, 8830410 传真： 0731-8877197

电子邮箱： f-ysxb@mail.csu.edu.cn