上海大学学报(自然科学版)
Journal of Shanghai University (Natural Science Edition)

上海大学学报(自然科学版) » 2013, Vol. 13 » Issue (5) :470-473 DOI: 10.3969/j.issn.1007-2861.2013.05.006

AZ31 镁合金表面锰盐-氟锆酸盐复合转化膜的制备及性能

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Preparation and Properties of Manganese-Fluorozirconate Composite Conversion Coating on AZ31 Magnesium Alloy Surface

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摘要 采用AZ31 镁合金为基体材料, 经机械抛光、碱洗、化学转化等工序, 在其表面形成致密的复合转化膜. 采用扫描电子显微镜(scanning electron microscope, SEM) 观察表面形貌和能谱分析(energy dispersive analysis, EDS) 转化膜的成分, 通过Tafel曲线和点滴腐蚀试验评定转化膜的耐蚀性. 结果表明, 转化膜由镁、铝、氧、磷、锌及少量的锰和锆元素组成, 转化膜结合力和耐蚀性较好.

关键词: 镁合金 转化膜 耐蚀性 电化学

Abstract: A new chromium-free conversion coating on magnesium alloy was prepared. A cast magnesium alloy AZ31 series was used as the raw material. Compact chemical conversion coating was formed on the surface after mechanical polishing, alkaline washing, and chemical conversion. Surface morphology and composition of the coating were analyzed with a scanning electronic microscopy (SEM). Energy dispersive analysis (EDS) Tafel curves and drop corrosion test were used to evaluate the corrosion resistance of the conversion coating. The results show that compositions of coating are magnesium aluminum, oxygen, phosphorus, zinc, manganese and zirconium, and the coating has good adhesion and corrosion resistance.

Keywords: magnesium alloy, conversion coatings, corrosion resistance, electrochemistry

收稿日期: 2013-04-19;

基金资助:

国家自然科学基金资助项目(21107067)

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引用本文:

.AZ31 镁合金表面锰盐-氟锆酸盐复合转化膜的制备及性能[J] 上海大学学报(自然科学版), 2013,V13(5): 470-473

.Preparation and Properties of Manganese-Fluorozirconate Composite Conversion Coating on AZ31 Magnesium Alloy Surface[J] J.Shanghai University (Natural Science Edition), 2013,V13(5): 470-473

链接本文:

http://www.journal.shu.edu.cn//CN/10.3969/j.issn.1007-2861.2013.05.006 或 http://www.journal.shu.edu.cn//CN/Y2013/V13/I5/470

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