

论文

用自腐蚀电位预测LY12CZ铝合金的腐蚀损伤

谢伟杰x,李获,胡艳玲

北京航空航天大学材料科学与工程系

摘要:

研究了LY12CZ铝合金在EXCO溶液中的自腐蚀电位和最大腐蚀深度随浸泡时间的变化关系。结果表明,LY12CZ铝合金在EXCO溶液中的腐蚀动力学可分为两个阶段:浸泡前期,腐蚀发展较快,但腐蚀动力学的规律不明显;浸泡后期,腐蚀发展稍慢,腐蚀动力学近似地遵循线性规律。其自腐蚀电位的变化经历了一个先正后负的过程,浸泡前其自腐蚀电位姑且浸泡时间的延期长而正移;浸泡后期自腐蚀电位随浸泡时间的延长而近似地按指数规律负移。自腐蚀电位和最大腐蚀度之间存在着对应关系,通过自腐蚀电位的测量,可以推测出最大腐蚀深度,从而能比较有效地预测LY12CZ铝合金在EXCO溶液中的腐蚀损伤。

关键词: 自腐蚀电位 铝合金 腐蚀 预测

APPLICATION OF FREE CORROSION POTENTIAL TO PREDICT CORROSION DAMAGE OF LY12CZ ALUMINUM ALLOY

Weijie Xie,,,

北京航空航天大学材料科学与工程系

Abstract:

Maximum corrosion depth measurement can evaluate corrosion damage of aluminum alloy precisely.Unfortunately,this kind of method is destructive.To find a non-destructive and in situ method which can be used as practical and accelerated corrosion test,an electrochemical method-free corrosion potential measurement was developed.EXCO test was carried out according to HB 5455 standard.Free corrosion potential and maximum corrosion depth of LY12CZ aluminum alloy were measured.The kinetics law of the aluminum alloy corroded in EXCO solution can be divided into two segments.In the earlier stage its corrosion rate is faster while in the later stage it becomes slower and keeps constant.Free corrosion potential of the alloy increases with immersion time at first,and then decreases exponentially.The relationships between free corrosion potential and maximum corrosion depth of the aluminum alloy was established.Where D is the maximum corrosion depth,E is the free corrosion potential and t is immersion time.Thus by measuring the free corrosion potential of LY12CZ aluminum alloy,the maximum corrosion depth can be evaluated and its corrosion damage can be predicted.

Keywords: free corrosion potential aluminum alloy corrosion predication

收稿日期 2005-07-19 修回日期 1900-01-01 网络版发布日期 1999-04-25

DOI:

基金项目:

通讯作者: 谢伟杰

作者简介:

本刊中的类似文章

1. 吕战鹏, 黄德伦, 杨武 .含重铬酸根硫酸溶液中磁场对铁自腐蚀状态及极化电阻的影响[J]. 中国腐蚀与防护学报, 2000,20(4): 230-236
2. 丁宝峰, 尉丹, 吴荫顺, 曹备, 张峥嵘 .304不锈钢SSRT过程中电位信号奇异性的小波分析[J]. 中国腐蚀与防护学报, 2004,24(2): 71-74

扩展功能

本文信息

Supporting info

PDF(106KB)

[HTML全文](1KB)

参考文献[PDF]

参考文献

服务与反馈

把本文推荐给朋友

加入我的书架

加入引用管理器

引用本文

Email Alert

文章反馈

浏览反馈信息

本文关键词相关文章

▶ 自腐蚀电位

▶ 铝合金

▶ 腐蚀

▶ 预测

本文作者相关文章

▶ 谢伟杰x

▶ 李获

▶ 胡艳玲