

 论文摘要

中国有色金属学报

ZHONGGUO YOUSEJINSHUXUEBAO XUEBAO

第14卷 第4期 (总第61期) 2004年4月

 [PDF全文下载]  [全文在线阅读]

文章编号: 1004-0609(2004)04-0562-06

铝阳极氧化膜在NaCl溶液中的电化学性能

赵旭辉¹, 左禹^{1, 2}, 赵景茂¹

(1. 北京化工大学 材料科学与工程学院, 北京 100029;
2. 中国科学院 金属研究所金属腐蚀与防护国家重点实验室,
沈阳 110015)

摘要: 采用交流阻抗法研究了工业纯铝L3阳极氧化膜在中性NaCl溶液中交流阻抗谱的变化规律, 比较了未封闭处理与沸水封闭处理后氧化膜的交流阻抗谱的差异, 并结合等效电路分析了氧化膜多孔层与阻挡层电化学参数的变化。结果表明, 未封闭的阳极氧化膜在NaCl溶液中浸泡初期存在一个自封闭过程, 封闭处理明显提高氧化膜多孔层的初始 R_p 值并降低初始 C_{PEP} 值; 溶液中侵蚀性离子浓度越高, 封闭处理提高铝阳极氧化膜的耐蚀性能作用越明显。

关键字: 交流阻抗; 阳极氧化膜; 封闭

Electrochemical properties of anodized aluminum films in sodium chloride solution

ZHAO Xu-hui¹, ZUO Yu^{1, 2}, ZHAO Jing-mao¹

(1. School of Materials Science and Engineering,
Beijing University of Chemical Technology,
Beijing 100029, China;
2. State Key Laboratory for Metals Corrosion and Protection,
Institute of Metal Research, The Chinese Academy of Sciences, Shenyang 110015, China)

Abstract: The electrochemical impedance behaviors of unsealed and sealed anodized aluminum films in sodium chloride solutions were studied by means of electrochemical impedance spectroscopy. The electrochemical parameters for the anodic film were analyzed by an equivalent circuit method. The results reveal that there is an auto-sealing process in sodium chloride solutions for the unsealed anodized aluminum. Boiling water-sealing process obviously increases the initial R_p value of the porous layer and decreases the initial C_{PEP} value. The higher the aggressive ion concentration in the solution, the more effectively the sealing process improves corrosion resistance of the anodized films.

Key words: electrochemical impedance behaviors; anodized film; sealed

版权所有: 《中国有色金属学报》编辑部 湘ICP备09001153号

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