化工学报 2007 58 (9): 2306-2312 ISSN: 0438-1157 CN: 11-1946/TQ

表面与界面工程

电解清除氧化皮的304不锈钢盘条耐蚀性的电化学评价

唐子龙，李国栋，魏军胜

天津大学材料科学与工程学院

收稿日期 2006-7-11 修回日期 2007-5-30 网络版发布日期 2007-8-20 接受日期

摘要

研究了电解清洗黑色和蓝黑色氧化皮304不锈钢盘条在盐酸和氯化钠介质中的耐蚀性能。动电位极化曲线方法测试了清洗后盘条的耐点蚀性能;恒电位充电曲线研究了不锈钢盘条的时间有效性。结果表明，电解清洗后不锈钢具有良好的耐蚀性。表面电子能谱测试表明清洗后不锈钢表面有显著的Mn元素富集，并探讨了Mn元素富集对耐蚀性的影响。

关键词

不锈钢 耐蚀性 电化学测试 电解清洗

分类号

Electrochemical evaluation of anti-corrosion performance of 304 stainless steel with oxide skin cleaned electrolytically

TANG Zilong, LI Guodong, WEI Junsheng

Abstract

In this work, the anti-corrosion performance of 304 stainless steel (304SS)in HCl and NaCl media was evaluated after the black and blue-black oxide skin was electrolytically cleaned.The dynamic potential polarization technique was employed to measure pitting breakdown potentials of 304 stainless steel in both solutions.The long-term anti-corrosion behavior of 304SS in 0.5 mol·L^{-1} HCl was evaluated with the potential step polarization technique.The result showed that 304SS demonstrated enhanced corrosion resistance.It was found that Mn element was enriched to a great extent about 10% (mass) which was 9 times larger than that in 304 stainless steel matrix based on the energy dispersive spectrum (EDS) analysis.At the end, the possible role of Mn richness in enhanced corrosion resistance of 304 stainless steel was discussed.

Key words

stainless steel corrosion resistance electrochemistry measurement electrolytically cleaned

DOI:

通讯作者 唐子龙 zlt633@tju.edu.cn