

论文

国产B10铜镍合金海水腐蚀行为研究

林乐耘,徐杰,赵月红

北京有色金属研究总院

摘要:

通过对B10铜镍合金(CDA706)国产管材\板材长期实海暴露腐蚀规律研究,并用金相、扫描电镜(SEM)等物理测试方法,分析观察该合金要海水中腐蚀敏感性差异的原因。结果表明,经过4年实海全浸暴露。强度较低的B10铜管在厦门站和舟山站腐蚀速度最高,表现为冲击腐蚀和沿晶腐蚀形貌。而强度较高的B10板材,其年均腐蚀速度表现出很大的温度敏感性。在榆林站暴露的两种材料局部腐蚀均明显偏高。通过腐蚀形貌观察及腐蚀产物膜分析,发现两种材料的不同腐蚀敏感性行为均是由合金的晶界缺陷所致,并探讨了这种合金具有优良抗污性能的机理。

关键词: B10铜合金 海水腐蚀 晶界缺陷 腐蚀敏感性

STUDY ON CORROSION BEHAVIOR OF B10(Cu:Ni=90:10) ALLOY EXPOSED TO NATURAL SEAWATER

Leyun Lin,,

北京有色金属研究总院

Abstract:

The rule of a long term, several interval seawater corrosion data of 90:10 Cu/Ni alloy (CDA706)tube and plate has been studied.Reaults showed that the alloy tube with relatively low tensile strength suffered severe corrosion in seawater of Xiamen and Zhoushan,exhibiting morphology of erosion and intergranular corrosion.But the alloy plate with relatively high tensile strength possessed bigger temperature sensitivity i.e. the corrosion rate was higher in Yulin than Yulin because of the higher seawater temperature.The detail of corrosion morphology and corrosion product film were observed and analyzed by using advanced metal physics methods of coloring metallographu (CM),scanning electron microscopy (SEM),electron dispersive of X-ray analysis(EDXA) etc.to find out the reasons of different sensitivities occurring on these alloy materials.It was found that corrosion sensitivities of the two kind materials were due to the grain boundary defects produced when the materials were processed.

Keywords: 90Cu:10Ni alloy seawater corrosion grain boundary defect corrosion sensitivity

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通讯作者: 林乐耘

作者简介:

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