

论文

一种新型Fe-Mn-Al-Cr奥氏体不锈钢的耐蚀性能

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摘要:

研究了一系列铬含量不同而锰含量都为15%的Fe-Mn-Al-Cr钢在几种典型酸、碱、盐水溶液中的耐腐蚀性能,并与锰含量为26%的Fe-Mn-Al-Cr钢和1Cr18Ni9Ti相比较,结果表明新型的Fe-Mn-Al-Cr钢在水溶液中的耐腐蚀性能比原来的Fe-Mn-Al-Cr钢的都要好,在有些溶液中的耐蚀性能比1Cr18Ni9Ti还要好。这种新型不锈钢的价格非常低,有较高的实用价值。研究还表明,对该钢种而言,铬含量升高并不意味着耐蚀性能提高,铬含量增至某一值时钢的耐蚀性能反而降低,此时组织中出現铁素体。用XPS对Fe-Mn-Al-Cr钢在0.5mol/L H2SO4中的钝化膜进行了研究。

关键词: Fe-Mn-Al-Cr钢 不锈钢 耐蚀性 水溶液

INVESTIGATION OF ELECTROCHEMICAL CORROSION BEHAVIOR OF A NEW TYPE OF Fe-Mn-Al-Cr STAINLESS STEELS

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Abstract:

A series of new type Fe-Mn-Al-Cr stainless steels, which were cheaper than the steel containing 26% Mn, were designed. Their anodic polarization curves in 0.5mol/L H2SO4, 1mol/L HNO3, 1mol/L Na2SO4 and 2mol/L NaOH showed that these new materials had better corrosion resistance than the former 26% Mn steel. The increase in chromium content did not monotonously improve their corrosion resistance. When the chromium content reached to a certain value ferrite appeared and the passivity of alloy decreased. XPS was applied to study the structure of passive film formed in 0.5mol/L H2SO4. From the tests we would conclude that the outer layer of the film was mainly composed of metal oxides and hydrates and its inner layer was metal oxides. Cr18Ni9Ti

Keywords: Fe-Mn-Al-Cr steel stainless steel corrosion resistance aqueous solution

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