

论文

稀土元素提高渗硼层耐锌液腐蚀性能的研究

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摘要:

采用固体法硼稀土共渗,研究了加稀土对渗层抗熔锌腐蚀性能的影响.结果表明,加入稀土后渗层抗熔锌腐蚀能力比不加稀土的提高3倍.主要原因是加入稀土后渗层致密、成分均匀、缺陷少、组织韧性好、裂纹扩展阻力大,致使裂纹不易扩展,难以形成锌蚀通道,从而材料的抗熔锌腐蚀能力增强.

关键词: 熔锌腐蚀 渗硼 铁硼化合物 抗腐蚀性

IMPROVEMENT OF CORROSION RESISTANCE OF BORONIZING LAYER IN MOLTEN ZINC BY ADDITION OF RARE-EARTH ELEMENT

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Abstract:

The layer of Fe-B compounds obtaining through boronizing method has very good corrosion resistance. But in boride coatings many physical defects exist, which limits the protective life of the coatings. In order to improve the corrosion resistance of the boride layer, this paper, which directs towards the problem of corrosion in molten zinc urgently to be desiderated in galvanizing industry currently, studies the effect of the rare- earth element on the corrosion resistance of boronizing layer in molten zinc. The boride coatings were investigated in molten zinc at 500°C. Results indicates the anti-corrosion ability of the co-cementation layer is 3 times more than that layer without rare-earth element, the reason is as follows: On one hand, the co-cementation can improve the homogeneous distribution of alloying elements and the surface condition of the layer and reduce the surface defect, as a consequence, the time of the crack nucleation was put off, it is difficult to form the pass of the zinc liquid. On the other hand, addition of rare -earth element can improve the toughness of boride coating, raise resistance of crack and make further improvement on its service life of corrosion resistance in molten zinc.

Keywords: molten zinc corrosion boronizing Fe-B compound corrosion resistivity

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