

Cr12MoV 堆焊层组织及耐磨性研究

摘 要

堆焊是一种拿来改变物体表面性质的方法，它能够把其他优异的金属性能转移到零件的表面，零件表面的硬度、耐磨性以及耐腐蚀性等得到了巨大的提升。工业生产中，大部分截面尺寸大的、有复杂形状的、负荷较重的模具和工具都是来源于 Cr12MoV。使用耐磨材料 D307 焊条和 SUPER7 焊条以及自制焊条，以焊条电弧焊的方式分别在以 Cr12MoV 为基板的材料上进行堆焊。对堆焊层进行了性能测试，包括金相显微分析、测试硬度、耐磨性能否达到使用的要求等。结果表明：三种材料都能与母材形成较好的熔合，但由于每种材料所含的 C、Cr 元素不同，焊后硬度也有一定差异，平均硬度分别为 58.6HRC、59.8HRC、62.2HRC，其中自制焊条含有的 Cr_7C_3 化合物更多，因此其耐磨性相对更好。

关键词：Cr12MoV；堆焊层；金相组织；材料性能

Abstract

Hardfacing is a method to change the surface properties of the object. It can transfer other excellent metal properties to the surface of the part. Measured the performance about hardness and wear resistance, also took photos about the microstructure of those materials. In industrial production, most of the large cross-section, complex shape and heavy load molds and tools are from Cr12MoV. The wear-resistant D307 electrode, super 7 electrode and self-made electrode were used to weld on the Cr12MoV base plate by arc welding. The properties of the hardfacing layer were tested, including metallographic analysis, hardness test and wear resistance. The results show that all the three materials can form a good fusion with the base metal, but the hardness of each material after welding is also different due to the different C and Cr elements. The average hardness is 58.6HRC, 59.8HRC and 62.2HRC respectively, among which the self-made electrode contains more Cr₇C₃ compounds, so its wear resistance is relatively better.

Keywords: Cr12MoV; hardfacing layer; metallographic structure; material properties

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