

Accepted Manuscript

Effect of molybdenum on the high-temperature properties of TiC-TiB₂ reinforced Fe-based composite laser cladding coatings

M. Zhang, S.S. Liu, S.X. Luo, K.L. Qu



PII: S0925-8388(18)30283-4

DOI: [10.1016/j.jallcom.2018.01.275](https://doi.org/10.1016/j.jallcom.2018.01.275)

Reference: JALCOM 44739

To appear in: *Journal of Alloys and Compounds*

Received Date: 28 November 2017

Revised Date: 19 January 2018

Accepted Date: 20 January 2018

Please cite this article as: M. Zhang, S.S. Liu, S.X. Luo, K.L. Qu, Effect of molybdenum on the high-temperature properties of TiC-TiB₂ reinforced Fe-based composite laser cladding coatings, *Journal of Alloys and Compounds* (2018), doi: 10.1016/j.jallcom.2018.01.275.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Effect of molybdenum on the high-temperature properties of TiC-TiB₂ reinforced Fe-based composite laser cladding coatings

M. Zhang^{1,*}, S. S. Liu², S. X. Luo², K. L. Qu²

(1. School of Mechanical Engineering, Shandong University, Jinan 250061;

2.School of Materials Science and Engineering, Shandong University, Jinan 250061)

* zhangmin2616@sdu.edu.cn

Abstract: Fe-Ti-B-Cr-Mo-C composite coatings with different molybdenum (Mo) content were in-situ fabricated on a 5CrNiMo die steel substrate by laser cladding. Effects of Mo on the microstructure and high -temperature properties of coatings were investigated by scanning electron microscopy (SEM), X-ray diffraction (XRD), high-temperature oxidation and high-temperature wear resistance test. Results showed that block-like or cuboidal TiB₂ and Mo₂B, as well as flower-like (Ti,Mo)C reinforced particles have been formed in the coatings. Amounts of martensite in the coating increased with the increasing of Mo. However, cracks are found in the coating while the addition of FeMo₇₀ exceeded 9 wt.%. Mo improved the high-temperature oxidation resistance and reduced oxidation rate. Besides, the coatings processed the better high-temperature wear resistance with 9 wt.% FeMo₇₀.

Keywords: Laser cladding; Molybdenum; High-temperature oxidation resistance; High-temperature wear resistance

Download English Version:

<https://daneshyari.com/en/article/7993316>

Download Persian Version:

<https://daneshyari.com/article/7993316>

[Daneshyari.com](https://daneshyari.com)