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Wear behaviour at 600°C of surface engineered low-alloy steel containing TiC particles (Article)

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Abstract

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The work aimed to develop surfaces that could resist wear at high temperatures, thus achieving a prolonged component life. Surface modification of a low-alloy steel by incorporating TiC particles has been undertaken by melting the surface using a tungsten inert gas torch. The dry sliding wear behaviour at 600°C of the original and modified surfaces was compared. Microscopic examination of both surfaces showed glazed layers across the wear tracks, with differing amounts of oxide and homogeneity. Extensive wear occurred on the steel surface, which showed deformation of the wear scar tracks and a steadily increased friction coefficient. The TiC addition reduced the wear loss, coinciding with a glazed layer 33% thinner than that on the low-alloy steel sample. © 2017 Institute of Materials, Minerals and Mining.

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dry sliding high-temperature wear low alloy steel oxide layer single and multipass tracks titanium carbide particles Tungsten inert gas torch

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Unpublished work

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