

Effet du niobium sur la résistance à l'usure d'une fonte au chrome traitée thermiquement

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Abstract: Chromium cast irons are well known for their wear properties. They are widely used in engineering practices such as mining, cement industries and many others. Their wear properties are mainly due to their microstructure which is constituted by netted M₇C₃ type eutectic carbide held in an austenitic or martensitic matrix. Several researchers investigated the possibility of improving the wear properties of these cast irons by acting on the microstructure, the morphology of the microstructural constituents as well as on their distribution. The present work consists in studying the effect of the niobium on the wear behaviour of a heat treated chromium cast iron. Characterizations by optical microscopy, abrasion and friction tests are realized in order to establish the wear resistance of this cast iron and also the type of microstructure having been at the origin of this improvement. The obtained results show that the studied material is a 15% chromium white cast iron. Niobium addition had an effect on the microstructure as well as on the abrasion and friction resistances of the heat treated high chromium white cast iron samples. The wear resistance increases with the increase of the niobium content.

Keywords : Chromium cast iron, wear, eutectic carbides, alloying elements