Revue de Métallurgie

Volume 108, Issue 2, 2011, Pages 83-88

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

K. BOUHAMLA, A. HADJI, H. MAOUCHE, H. MERRADI

Abstract: Chromium cast irons are well known for their wear properties. They are widelyused in engineering practices such as mining, cement industries and many others. Theirwear properties are mainly due to their microstructure which is constituted by netted M7C3type eutectic carbide held in an austenitic or martensitic matrix. Several researchers investigatedthe possibility of improving the wear properties of these cast irons by acting onthe microstructure, the morphology of the microstructural constituents as well as on theirdistribution. The present work consists in studying the effect of the niobium on the wearbehaviour 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 castiron and also the type of microstructure having been at the origin of this improvement. Theobtained results show that the studied material is a 15% chromium white cast iron. Niobiumaddition had an effect on the microstructure as well as on the abrasion and frictionresistances of the heat treated high chromium white cast iron samples. The wear resistanceincreases with the increase of the niobium content.

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