Etude de l'influence de la composition chimique sur laformation de la structure et la tenue à l'usure des fontes auchrome

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Abstract: The use properties modification of chromium cast iron can be insured by severalmethods as chemical composition variation, carbide former alloying, by heat treatment and bymechanical processing. Alloying elements have been used in many research works usinghypoeutectic, eutectic, hypereutectic compositions of weakly and high alloyed chromium castirons. The target is to obtain a cast iron with respect of services requirementsCement, mining and steel making industries, in their daily practices of grinding andcrushing, require parts having high wear resistance. These operations take place in a veryaggressive environment because the grinding and the crushing of raw materials take placeunder the influence of the requests of abrasion and of the friction.The object of the present work is aimed on « Study of the chemical compositioninfluence on the structure formation the wear behavior of a chromium cast iron". The usedmethodology consisted of forming element addition. It is about manganese, niobium,vanadium, molybdenum and titanium. At first the manganese was only added to the melt thencombined with one, two and three elements. The chemical analysis, optical and SEMmicroscopy was used to characterize the microstructure of the studied compositions. TheDRX was much more used to define the type and the proportion of the formed phases as wellas the effect brought by the carbide former addition the crystalline parameters of the formedphases. The DSC technique gave thermal behavior of studied compositions, the wear testsdefined the wear behavior and shown the effect of the addition of alloying elements

Keywords : fonte au chrome, microstructure, usure, Eléments d'addition