

# Etude de l'influence de la composition chimique sur la formation de la structure et la tenue à l'usure des fontes au chrome

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**Abstract:** The use properties modification of chromium cast iron can be insured by several methods as chemical composition variation, carbide former alloying, by heat treatment and by mechanical processing. Alloying elements have been used in many research works using hypoeutectic, eutectic, hypereutectic compositions of weakly and high alloyed chromium cast irons. The target is to obtain a cast iron with respect of services requirements. Cement, mining and steel making industries, in their daily practices of grinding and crushing, require parts having high wear resistance. These operations take place in a very aggressive environment because the grinding and the crushing of raw materials take place under the influence of the requests of abrasion and of the friction. The object of the present work is aimed on « Study of the chemical composition influence on the structure formation the wear behavior of a chromium cast iron ». The used methodology consisted of forming element addition. It is about manganese, niobium, vanadium, molybdenum and titanium. At first the manganese was only added to the melt then combined with one, two and three elements. The chemical analysis, optical and SEM microscopy was used to characterize the microstructure of the studied compositions. The DRX was much more used to define the type and the proportion of the formed phases as well as the effect brought by the carbide former addition the crystalline parameters of the formed phases. The DSC technique gave thermal behavior of studied compositions, the wear tests defined the wear behavior and shown the effect of the addition of alloying elements

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