ETUDE DE LA DÉFORMATION PLASTIQUE PAR LAMINAGE D'UN ACIER INOXYDABLE FERRITIQUE

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Abstract : The objective of this work is to propose a step, in order to analyze and to better include/understand, the influence of the plastic deformation on the microstructure, and the mechanical properties of a ferritic stainless steel type 430 "X8Cr17". The experimental study aims at characterizing material after plastic deformation before and after heat treatment. Mechanical and thermal treatments carried out for various degrees of temperatures and various rates of deformations. Once these test-tubes are request cut out samples and prepare to undergo the metallographic analysis, the analysis by DRX and a measurement of micro hardness. The results show an evolution of the microstructure (the grains lengthening-pieces with the direction of cold rolling deformation), an appearance of an intermetallic phase (sigma) in the range of temperature to 900°C from 1000°C. The mechanical behavior present a hardening increases with the increase in the rate of deformation, and an important softening when samples deformed and recrystallized at 700°C.

Keywords : ferritic stainless steel, intermetallic phase, sigma, Plastic deformation, microstructure