

ABSTRACT

THE EFFECT OF TEMPERATURES VARIATION HEATING WITH ANNEALING TOWARD BENDING TEST AND MICRO STRUCTURE IN LEAF SPRING STEEL AISI 5140

By

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A study was done concerning the effect of temperatures variations heating with annealing toward bending test and micro structure in leaf springs steel AISI 5140. The study was conducted to determine the chemical composition, microstructure and toughness leaf spring steel AISI 5140. The process of heat treatment was given temperatures variation heating 750 °C, 800 °C and 880 °C with holding time of 60 minutes and then cooled slowly. Test the chemical composition of leaf springs steel AISI 5140 included the category of medium carbon steel (0.42177% C). In the bending test with annealing process produced steels with higher levels of austenite ductility temperature but the greater level of the higher loaded the bearing strength and the tenacity decreased. The results of the micro structure sample of leaf spring steel with annealing, it produced grains of ferrite and pearlite, while the original steel was producing grains of martensite and pearlite pearlite grains which looked very smooth and less than the martensite phase.

Key words: leaf spring steel, heat treatment process, annealing, bending test, micro structure.