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MICROSTRUCTURES AND MECHANICAL PROPERTIES OF STEEL NITRIDED BY PLASMA

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Abstract : This paper presents microstructures and mechanical properties of low alloy steel 32CDV13 treated by plasma nitriding. This nuance is used for manufacture mechanical pieces greatly solicited in fatigue as the transmission gearings on the helicopters rotors and the rolling used in aeronautic. The structure and phases composition of the diffusion zone and compound layer were studied by X-ray diffraction, optical microscopy and scanning electron microscopy. Mechanical properties were studied by microhardness tests. A series of experiments were carried out to investigate the plasma nitriding of 32CDV13 low alloyed steel. It was observed that increasing nitrogen, at 773 K temperature during treatment time 4 hours conducted to the formation of a compound layer and increases significantly the diffusion layer thickness and the hardness.

Keywords : ion nitriding, steel 32CDV13