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Title: Improvement of the mechanical properties by gas nitriding of a form milling cutte

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ABSTRACT

For the production of machine-made weapon parts, we use cutting tools of a specialized class of HSS cutters that are best suited for mass production environments where lifetime is great and also for their ability to cut high hardness high speed materials. It is often used in the realization of complicated shapes in weapon parts, this kind of high speed steel is superior to old steels with a change of structure after a chosen treatment, it can withstand higher temperatures without losing its hardness. The essential compositional elements of high speed steels are based on carbon iron, chromium, vanadium, molybdenum or tungsten, or combinations thereof, chromium enhances hardenability and prevents chipping for tungsten offers better cutting efficiency and greater resistance to quenching, and increases hardness and resistance to high temperatures, molybdenum also improves cutting efficiency, vanadium, forms very hard carbides for wear resistance by abrasion, increases resistance to wear at high temperatures, as well as hardness retention.

In our case we have chosen a multiform milling cutter, this ordinary high speed steel milling cutter produced a quantity of 1400 pieces before the use of a thermochemical treatment, but after the treatment we produced 1800 pieces, this result is obtained with a conclusive test in a factory of course before re-sharpening

Keywords: *weapon parts; hardness; high speed steel; increases resistance; multiform milling cutter*

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