

Surface Modification of M2 HSS Parts Obtained by Metal Injection Moulding Process Using Concentrated Solar Energy

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Abstract

In this communication we present the surface modification by nitriding of M2 HSS parts obtained by metal injection moulding process. A novel nitriding method has been used because the process is done under concentrated solar energy. The nitriding behaviour has been examined under varying process conditions. The process variables studied include time, temperatures and different nitrogen partial pressure. The structure and properties of the nitrided parts were examined with regard to adhesion, microhardness and wear resistance, using analytical techniques such as optical and scanning electron microscopy, XRD and tribological tests. The relationship between the microstructure obtained and the mechanical properties was assessed. The results indicated that the treatment improve the properties of the parts and the tools made from PIM high speed steels and subsequently nitrided exhibited considerable life - time prolonging. Material surface processed by such a way consists of fine nitrides and carbonitrides that are distributed uniformly in metallic matrix.