As is known, currently very promising direction in improving the reliability of cutting tools is creating technologies that integrate the advantages of chemical-thermal processing. And in this work perspectivity of application of electrolytic-plasma technology for cutting tools hardening were shown. The new method of cutting tools working surfaces hardening made from high speed steels by electrolytic-plasma nitriding in the cathode mode, which allows for the surface modification of high-speed steels and provide high-kinetic efficiency of the diffusion saturation process. It is defined operational parameters for its implementation, which lead to a significant increase in hardness and wear-resistance of high-speed steels surface layers. The experimental results of influencing of electrolytic-plasma nitriding mode on the structure, microhardness and wear-resistance of surface layer of R6M5 high-speed steel were shown, also microstructure is studied and the nitried layer thickness is estimated. It is experimentally established, that after electrolytic-plasma nitriding on the surface of R6M5 high-speed steel is formed modified layer consisting of diffusion layer and layer with Fe₄N-monophasic nitride. It is shown that microhardness of R6M5 steel samples is increased to 1.5 times and abrasive wear-resistance is increased to 25% as a result of electrolytic-plasma nitriding. It is established, that after nitriding surface friction coefficient of the sample steel decreases from 0.90 to 0.65. Thus found that the wear-rate of the nitried sample is reduced up to 5 times comparing to original. On the basis of the obtained data, the was made conclusion that electrolytic-plasma nitriding can be effective for a wide range of high-speed steels. Thus, studies have demonstrated the feasibility and applicability of electrolytic-plasma nitriding in order to improve cutting tools work resource, working under friction and wear conditions.

Keywords
electrolyte-plasma nitriding
cutting tool
wear-resistance