

Nanostructured surfaces

The nanocomposite diffusion coating prepared of Boriding

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During the operation the most intense external actions are exposed of surface layers of parts and tools. Structure and properties of surface layers make it an important influence on the performance of products in general. One of the main ways of strengthening steel products are surface diffusion saturation surfaces. Its use is economically more profitable than obtaining alloyed steel with similar properties. Chemical-thermal treatment products can provide a range of performance properties, the achievement of which surround by doping is impossible or economically inefficient [1].

Among the processes of diffusion saturation Boriding is promising, due to its high durability and heat resistance of Borovan layer. Boriding is carried out mainly in order to increase surface hardness and wear resistance and corrosion resistance. For a large number of parts it is advisable to strengthen some parts of the surface. For this purpose, a promising technology development is perspective with strengthening Boriding paste (local Boriding), which occupies its place between the interim Boriding of powders and melts.

Based on the above theoretical research, we have developed a new method and technology to strengthen the wearing surfaces of machine parts and mechanisms [2-4].

Strengthening sample of carbon steel is made by drawing on previously cleaned and degreased surface coating and drying of the coating in air. Then reinforcing part of the image coating is heated at a temperature of 1150-1200°C by high frequency. The existing nanostructure was reinforced layer of white layers and contains borides and has a thickness of 200 microns and microhardness least 8 GPa.

1. *Stetsko A.E.* Technological support service life of manufactured and remanufactured parts: monograph. – Lviv: Publishing company «ARS», 2013. – 240 p.
2. UA 111440, C23C 10/02, C23C 8/70, C23C 8/68; 25.04.2016.
3. UA 110116, C23C 8/70, C23C 10/32; 25.11.2015.
4. UA 109096, C23C 8/68, C23C 20/08; 10.07.2015.