Research results and discussion. Molybdenosilication was performed in the combustion mode in the optimal SHS mixture containing Mo, cholesterol,, i2. Increasing the cooling rate of the reactor greater than Bi = 3 does not allow to obtain a protective layer, due to the low diffusion mobility of molybdenum and silicon, as well as the short period of time during which the surface is saturated with molybdenum and silicon.

The introduction into the mixture of more than 3% of the gas transport agent leads to a strong etching of the sample surface. The study of the microstructure of molybdenosilized coatings showed that a homogeneous layer is formed, which is a solid solution of molybdenum in iron. As a result of X-ray spectral microanalysis, it was found that the content of molybdenum on the surface is 56.4-57.9% and silicon 5.2-5.9%.

Obtaining chromo-titanium coatings under conditions of self-propagating high-temperature synthesis.

Conclusions. Analysis of coatings for corrosion resistance in 30% aqueous solutions of HNO3, H2SO4, HCl showed an increase in this indicator by 1.5-1.8 times compared to diffusion coatings obtained under isothermal conditions.

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OBTAINING DOPED MOLYBDENUM COATINGS UNDER CONDITIONS OF SELF-PROPAGATING HIGH-TEMPERATURE SYNTHESIS

Introduction An effective method for increasing the durability of various parts, as a result of which the chemical composition, structure and properties of the surface layers of the metal change, is diffusion siliconizing. The production of siliconized coatings under conditions of self-propagating high-temperature synthesis (SHS) is not well understood. Siliconized coatings of steels and alloys obtained by the method of self-propagating high-temperature synthesis can significantly increase wear resistance, corrosion resistance, and heat resistance, and, often, obtain the required combinations. [1, 2].

The aim of this work The aim of this work is to obtain silicified diffusion coatings under conditions of self-propagating high-temperature synthesis

Research materials.

The thickness of the hardened layers was studied using a Neophot – 21 and Neophot – 32 light microscope with an increase of ×150 – ×500. The microstructure was detected by etching in a 3 % alcoholic solution of picric acid (TU 6-09-08-317-80). To identify the grain boundaries of ferrite, a 4% alcohol solution of nitric acid was used.

The elemental composition was studied by X-ray microanalysis using a JEOL Superprob-733 microanalyzer. To calculate the equilibrium composition of the system products, the applied software packages "ASTRA 4" and "TERRA" were used [3].

Research results and discussion. Titanochromoaluminosilication in the combustion mode was carried out in the optimal SHS - a mixture containing XC, Ti, Si, I2.An increase in the cooling rate of the reactor greater than Bi = 3 did not allow the formation of a protective layer, which is explained by the low diffusion mobility of titanium, as well as the short time during which saturation with titanium, silicon, aluminum and chromium occurs. The introduction of more than 2% of a gas transport agent into the mixture leads to strong etching of the sample surface.Investigation of the microstructure of titanium-chromium-alumosilicated coatings showed that a uniform layer is formed, under which a pearlite layer and the following carbon-depleted zone are located. The protective layer consists of silicide (Ti, Fe) 5Si3 and α - a solid solution of titanium, silicon, aluminum and chromium. As a result of X-ray spectral microanalysis, it was found that the content of titanium on the surface is 47.3 - 49.2% and silicon 8.4 - 9.6%

Conclusions. The tests of coatings for corrosion resistance in 10% aqueous solutions of HNO_3, H_2SO_4, HCl showed an increase in this indicator by 1,8 – 1,2 times, compared with diffusion coatings obtained under isothermal conditions.

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