



IMPROVING THE WEAR RESISTANCE OF MINING EXCAVATOR BLADES

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Annotations

This article describes the technological processes of increasing the corrosion resistance of blades of mining excavators 3K4:D320/50 3K.4316190. It has a scientific and practical approach to increasing the wear resistance of excavator blades and extending the service life of its operational properties. An expedition for the production of corrosion-resistant steels was carried out in Uzbekistan at the Andijanmash plant and introduced into production.

Keywords: foundry, alloying, special steel, coal mine, geological mine, reserve, underground gas, flux, kaolin, ore, shale, blade.

Introduction

Today, it is important to create a new composition of materials produced in the country, to increase the performance of the national economy through the technology of obtaining products by efficient and cost-effective method of casting. One of the important tasks in this regard is the implementation of targeted research, including scientific research in the following areas: management of metal structures by the





method of metal alloying in foundries, which can ensure product quality, the creation of high quality steels; development of technology for the production of corrosion-resistant steels; improving the theoretical and technological basis of technological processes that contribute to improving the operational properties of metals; creation and production of new energy-efficient and special metal-special steels based on the latest achievements of science and technology, which allow to save on the creation of unique special-purpose steels and increase productivity.

For many years, Andijanmash OJSC has been manufacturing and exporting 3K4: D320/50 3K.4316190 excavator blades for Angren coal deposit from 40X steel.



Angren coal mine

Angren coal deposit is a brown coal deposit in the Ahangaron valley of Tashkent region. At the foot of Qurama and Chatkal mountains. Geological prospecting began in 1934. The first mine was commissioned in 1940. The area of the coal basin is about 70 km². The proven reserves are estimated at 1.9 billion cubic meters at a depth of 860 m. t (about 1/4 of all coal reserves in Central Asia). The coal is located between the Jurassic deposits, the layer is very loose, with a thickness of 20 m above the surface and a depth of 130 m. Coal belongs to B2 brand. Combustion heat 13.9 MJ / kg. Coal is mined mainly in the open pit (2.5 million tons) and partially underground (0.5 million tons). In addition, at the underground gas station, coal is converted into gas at a rate of 50 million cubic meters per year. m³ of gas is produced. Along with coal,



kaolin is also mined. Between the layers, Portland cement, flux, burt, and rock are used as raw materials for the production of sewer pipes.

Research method

In July 2018, Andijanmash OJSC agreed to the secrets of obtaining corrosion-resistant steel by alloying structural steels 110G13L steel with the addition of 13% manganese. The mechanical properties of the 3K4: D320 / 50 3K.4316190 excavator blade made by casting 110G13L steel have been doubled. The following main technological operations are performed for the manufacture of excavator blades: selection and preparation of shale materials; calculation of slag materials; preparation of drawings of excavator blades; modeling of excavator blades; preparation of molding materials for casting; adding, preparation of alloying elements in the required proportion to the casting materials for casting; take the cast of the tool. The cast-in-place steel is made of these special properties. The main advantage of high performance of steels of this class is that they prolong the life of the metal and reduce the workload of excavator blades.

Tooth bucket rotrnogo excavator 3K.4316190



Steel material 110 G13 L
Overall size 485/180/105

Conclusion and discussion

Expedition for the production of corrosion-resistant steels was carried out in Uzbekistan, in the conditions of JSC "Andijanmash" and was put into production. These studies have shown that the local production of 110G13L steel with the addition of 13% of manganese in the alloying of structural steels has a positive effect on the corrosion and erosion effects of the metal.



Excavator bucket blade

Steel production technologies of 110G13L brand have been developed. The analysis of the mechanism of formation of new alloys for various instruments and its specificity allows to predict the course of the technological process and the selection of technological conditions for alloying elements in a given property. The chemical composition of 110G13L steel is C 0,9-1,4%; Si 0,1-0,8%; Mn 11,5-15%; Ni-1%; S-0,05%; P-0,12 -1%; Cu-0,3%; Fe-83%. Excavator blades and train rails are made of corrosion-resistant steel. As can be seen in Figure 1 above, the Angren coal deposit is located in the foothills of the Qurama and Chatkal mountains in the Ahangaron valley of the Tashkent region. should be corrosion resistant, hard and impact viscous. 110G13L steel increases carbon hardness, copper impact strength, manganese corrosion resistance, and nickel corrosion resistance.

Conclusion

Conclusion In conclusion, the reliable and sufficient formation of high-quality steels 110G13 steel for Angiren coal mine 3K4: D320/50 3K.4316190 type excavator blade is a working element by the method of casting ourselves in the factory developed a technological basis for training. Figure 2 shows the dimensions of the 3K4: D320 / 50 3K.4316190 excavator blade. The high result achieved played an important role in the production of corrosion-resistant steels.

References

1. Norhudzhaev F.R. The current state of the problem of creating metal layered compositions (MSC) // III International Scientific and Practical Conference: "Modern materials, equipment and technologies in mechanical engineering" dedicated to the 20th anniversary of Uzavtosanoat JSC and the 5th anniversary of



the Andijan Mechanical Engineering Institute. Collection of scientific articles. April 19-21, 2016 - Andijan - p. 270-275.

2. Umarov E.O. Materials Science. Textbook. -T. : "Cho'lpon". 2014.
3. S.K. Atakhanova Improving the abrasion resistance of mining excavator blades. Thematic journal of applied sciences. 20.03.2021

