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DEVELOPMENT OF TECHNOLOGY FOR OBTAINING COMPOSITE THERMOSETTING EPOXY POLYMERIC MATERIALS OF MACHINE-BUILDING PURPOSES WITH HIGH ELECTROPHYSICAL AND ANTIFRICTION AND STRENGTH PROPERTIES

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ABSTRACT

Today in the world polymeric materials are widely used in many industries. Polymer materials applied in the form of thin films to metal surfaces withstand high loads, provide better heat dissipation and are less prone to dimensional changes than molded polymer parts. The use of composite polymer coatings with high electro physical and antifriction-strength properties in the working bodies of machines and mechanisms is of particular importance.

KEYWORDS: *Development, Epoxy, Composite, Thermosetting, Electro Physical, Strength.*

INTRODUCTION

The development of scientific and methodological principles for obtaining electrically conductive and antifriction and strength composite thermosetting epoxy materials and coatings based on machine-building purposes by one of the promising directions in the field of creating highly efficient production by composite thermosetting materials and coatings of them are the development of original technologies for their preparation, allowing to obtain composite thermosetting epoxy Polymeric materials using organic ingredients from local and secondary raw materials of engineering purposes. **[1]**

Consequently, composite polymeric materials operated by friction with fibrous materials should be distinguished by a number of features. Thus, they must primarily have high adhesive strength, microplace, electrical conductivity and, accordingly, low friction coefficient and electrical resistance, as well as high resistance to interactions to different temperature and abrasive media.

Adjusting electrophysical and antifriction and strength properties with the simultaneous provision of high adhesive strength, micro hardness, electrical conductivity due to the introduction into the polymer of various organic-mineral fillers made it possible to develop composite thermosetting epoxy polymer materials with high electrical conductivity, adhesion and antifriction properties, as well as hardness. **[2]**

We are based on numerous test results analyzes, scientific and methodological principles of obtaining composite thermosetting epoxy polymeric materials and coatings of them were developed using organic ingredients from local raw materials and waste production.

The calculated amount of Epoxy oligomer ED-16 and fillers is dried in a drying cabinet in order to remove moisture at a temperature of 373 K for 2 hours.

The oligomer is cooled to 323-333 K. The dosage procedure is then carried out, i.e. All components are weighed in the calculated quantity.

The first in the resin is adding a DBF plasticizer. The mixture is thoroughly mixed with the help of an electromotive to obtain a homogeneous mass. It is then added to the mass of graphite, kaolin, talc, iron powder, and dr. The mixture is also thoroughly stirred to completely wetting with binding fillers.

Complete wetting of particles of fillers is determined by the complete cessation of the exit of air bubbles from the mixture. To accelerate the process, the mixture is heated to a temperature of 353-360 k and a pap hardener is introduced. The mixture is thoroughly mixed to obtain a homogeneous mass for 10-15 minutes continuously. The viability time of the finished mixture is only 25-30 minutes. Therefore, the compositions are obtained by small batches from 2 to 5 kg and the mixture immediately differ in advance prepared and treated with an anti-adhesion substance form, having the form of structural elements, and coated on the work surfaces of the products. **[3]**

Malled or coatings polymer compositions are cured at a temperature of 350 K for 4-6 hours in thermoshkafe. Cooling compositions is carried out with thermoshkaph to room temperature. Then the structural elements or coating parts, or the products are removed from the mold and are packaged in polyethylene bags and are sent to test or use as intended.

Based on a comprehensive analysis of the above-mentioned theoretical and experimental studies, the problem of creating effective compositions and technologies for obtaining electrically conductive and antifriction and strength composite materials based on the use of thermosetting ED-16 polymers was solved.

An important characteristic for composite thermosetting epoxy polymeric materials used as coatings is preserving under the permissible limits of electrophysical and antifriction and strength properties, during operation during contact interaction with cotton raw. They differ in electrical conductivity, antifriction and strength properties, high adhesive strength, microhardness and one more important feature, technological in obtaining a composition of oligomers and applying machinery and mechanisms on the surface of the working bodies.

1. The developed production is an electrically conductive and antifriction and strength perspective, eliminates the formation of static electricity in the interaction of parts and the design of the working bodies of cotton processing machines and mechanisms with cotton rates when operating in a cotton factory and other industries in the temperature range from minus (-40˚) to plus (+ 120˚) S.

2. Electric conducting and antifriction and strength materials are recommended for use as anti-static antifriction materials in the manufacture of working bodies of cotton processing machines and mechanisms.

3. The results of a scientific research in the field of the creation of electro-thermal conducting and antifriction-strength composite epoxy polymeric materials and coatings and for other engineering industries.

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