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Development of technology for obtaining composite polymeric materials and antifriction-wear-resistant properties of the crutiums based on them.

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Annotation: The article provides a literary review of studies that the best physical, mechanical and tribological properties when interacting with raw cotton have composite thermoset polymer materials filled with organomineral fillers, which is associated with improving the conditions for contact interaction by increasing the strength electro- and thermophysical properties of the composition.

Key words: machine, mechanism, part, raw cotton, friction, coefficient, polymer composite materials, mineral fillers such as talc, kaolin, having a lamellar structure, reduce the coefficient of friction, but increase the intensity of wear of composite polymer materials.

The compositions were prepared in the following order: the oligomer ED-16 was heated to 360 K to isolate the available gas inclusions. At this temperature, the required amount of DBF plasticizer was injected into the oligomer with thorough mixing. The fillers were dried, and then mixed with each other in the desired proportion and introduced into the composition.

Parts made of polymer composite materials have become an integral part of the working bodies of various machines and mechanisms operated in conditions of frictional interaction of rubbing pairs. A wide range of developed anti-friction and antifriction-wear-resistant KPM allows you to manufacture parts with specified physical, mechanical and tribological properties.

In many cases, when mixing, it is desirable to avoid the ingress of various particles and air into the mixture, the presence of which leads to a decrease in the strength of the composition. From the extrusion mixer, the resulting mixture of the composition in the form of tablets enters the packaging chamber or enters the chopper after which the powdered composition is then loaded through the dispenser into the vibrating installation where it is applied to the surface heated to a temperature of 523-543 K of the part formed by a peddyo-liquid layer and pressure. It should be noted that the vibrating method of application makes it possible to obtain coatings on the surface of various parts of complex confeguration such as bearing slips of working bodies of machines and mechanisms having a curvilinear surface of composite polymer materials[3.4].

The scheme of the tribometer is shown in Fig. 2.

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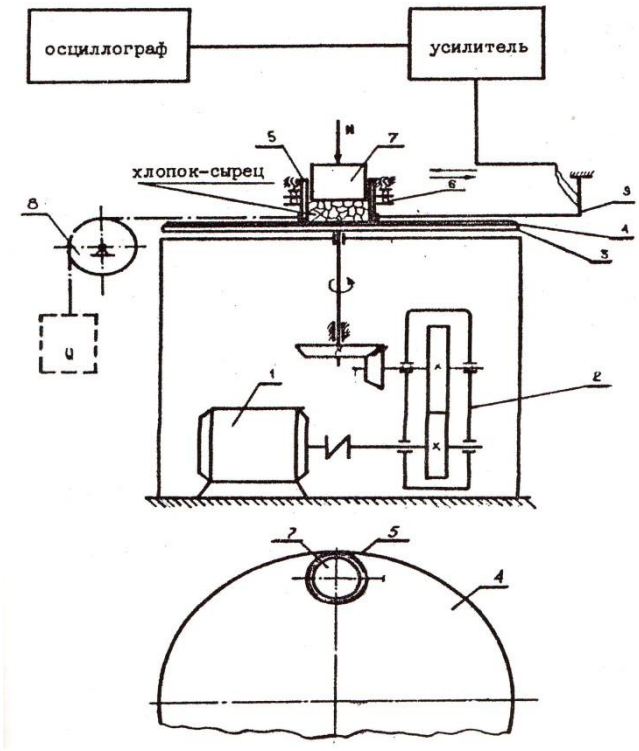

1 - electric motor; 2 - gearbox; 3 - disk;
4- sample with polymer coatings; 5 - box; 6- ball bearing;
7 - piston; 8 - block; 9 - measuring beam.

Fig. 2. Disc tribometer for determining the frictional force between polymer coatings and raw cotton

The tribometer comprises an electric motor 1, a gearbox 2, and a dic 3 mounted on the housing. The polymer-coated sample is fixed on disc 3. Cylindrical box 5, ball bearing 6, fixed together. Piston 7 is made of wooden material. There is a block 8 for hanging the load. To determine the frictional forces, the tribometer has a measuring beam 9.

The tribometer works as follows:From the electric motor 1 and the gearbox 2, a vertical shaft is driven with a horizontal disc mounted on it 3. A sample 4 of the tested material or coated is placed on the disc. To prevent axial and radial beating, the disc shaft is mounted on two radial and on one thrust bearing. Cylindrical box 5, located on eight deep groove ball bearings 6, moves in the longitudinal direction. The use of deep groove ball bearings reduces the friction force between the side walls of the box and the guide frame. The guide frame can be moved vertically if necessary.

However, in the manufacture of prototypes and small batches of parts from anti-friction-wear-resistant composite polymer materials (AICPM), the question of choosing the optimal processing mode for composite polymer materials inevitably arises. This is due to both technological and techno-economic reasons. The main parameters when choosing a method for processing composite polymer materials of composite polymer materials are their physical, mechanical and rheological properties that determine the possibility of processing materials in one way or another.

Conclusion

A scientifically based approach to the creation of modified composite thermosetting epoxy polymer materials has been developed through the introduction of activated organomineral fillers and ultrasonic processing into the composition, which make it possible to obtain effective antifriction-wear-resistant composite polymer coatings for parts and structures of the working bodies of cotton ginning machines. It is shown that the best effect is observed in the ultrasonic treatment of compositions before the introduction of a hardener into them. On the basis of a comprehensive study of the physical and mechanical properties of the composition, it was established that high adhesive and impact strength microhardness and strength are observed at an ultrasonic power of 90 W, and its duration is 25-35 minutes.

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Bibliography

1. Negmatov S.S., Dzhumaboev A.B., et al. Disc tribometer. Patent of the Republic of Uzbekistan No. 1389, Buell. Image.
2. Jalalov T. Issledovanie rasnteriy radii frictiona tribometera na tribotechnicheskie sofyaniya polimernykh platy.// Tez. etc. Mat. All-Union. Scientific. - Prak. Conf. "Scientists and specialists - in solving socio-economic problems." - Tashkent, 1990, P.225-226.
3. Negmatov S.S., Gulyamov G., Nazhmitdinov M.Zh., Khalimzhonov T.S. Antifriction-wear-resistant polymer composition. Patent of the Republic of Uzbekistan No. 5229 Bulletin of Isobr No. 3, 1998, S.
4. Negmatov S.S., Lysenko A.L., Negmatov N.S., Khalimzhonov T.S. Preliminary patent R Uz No.5202 // Dismembrator, Bulb. Izobr.1998 No.3, P.39.
5. Nigmatic S.S. Gulyamov G.G., Almataev T.A., Halimjonov T.S.Anti-Friction Polymernaia Composition» Pre. Patent RUz No. 04396, Bühl. 2000, No4, S.78.