

PROPERTIES OF COMPOSITES BASED ON POLYAMIDES

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It appears that an important specificity of modern polymer composites is that individual modifications are created for a specific application that predetermines their huge range.

Due to its properties of aliphatic PA are multifunctional structural materials, which in 6-7 times lighter than steel and bronze are used to replace the non-ferrous metals and their alloys with success.

In order to work in extreme conditions (at high static and dynamic loads in a wide temperature range, under intense friction) it is more useful products from aromatic PA-phenils.

The composite materials based on polyamides were studied, one of the most important advantages of which is the low friction lubricating oil (0.05–0.10) and increased wear resistance.

It appears that fiber-glass and basalt plastics based on polyamide are the most popular of the FGP at the present time, and especially PA 6 and PA 66. Compared to polymeric matrix FGP containing 15–30 % FG high hardness, toughness and resistance to thermo distouring and also have a lower coefficient of friction and wear. It has been established that the search for new, cheaper and more available to create cutting-edge TM PC is continuing, that turns us, in particular, to basalt fiber (BF) as substitutes in some cases FG. Basalt fibers have significant advantages on indicators of heat resistance, chemical resistance and water resistance compared to FG. They have much lower absorbability than

FG (about 10 times), which substantially reduces energy costs associated with the removal of moisture and reduces work production.

In the technology and the influence of technological parameters of molding under pressure on mechanical properties of BF based on PA-6 was developed. The authors of the work have shown the perspectives of that the surface treatment of BF in acidic media.

Considerable interest when working with complex systems such as BF and FGP is the study of stress relaxation, long-term strength, fracture mechanism and potential for the application of various techniques of increasing the strength of the PC data with a view to increasing areas of use. As a result of the carried out works shows that BF have physical-mechanical indicators, equal to fiber-glass palstics.

The carbon-fiber plastics based on polyamides were studied. Effective ways to improve the properties of PA is reinforcing their man-made fibers (F). And although the use of the F limits the choice of reinforcement, makes it difficult for manufacturing complex shapes, however, a complex of valuable properties specified PC and their variations, providing prospects of the use compensates these disadvantages.

It was shown that good effect to improve the properties of polyamide composite achieved and when used as a reinforcing TMS organic fibers (OF) compared to FGP have several advantages: good wetting of the polymers, high strength connection to the matrix, a lesser propensity to grinding. Since the density of the OF significantly lower than of the FGP, PC based on the OF - organoplastics (OP) have high values of specific strength and stiffness.

As a result of complex research it was found that the reinforcement of PA-6 poligeteroarilenovym VI vniivlon brand allows to enhance the thermal and thermal properties of OF.

The expediency of conducting research in the field of creation of polymer composites based on aliphatic and aromatic polyamides was shown. It is noted that the most effective method of improving the properties of polyamides is reinforcing their man-made fibers. Due to the high performance polyamide composites are the most appropriate to use as structural materials in the engineering industry.

Keywords: polymeric composites, polyamides, fillers, properties.

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