



MODIFICATION OF POLYMER BRICKS TO OBTAIN NEW PRODUCTS

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Abstract

The article describes how to process secondary polymer wastes by adding special fillers to them, changing their properties, obtaining new polymer composites with important properties such as fluidity, melting and thermal conductivity.

Key words: polymer, secondary polymer waste, basalt, filler, composite, compound, film, pipe, elasticity.

Introduction. With the development of urban planning in the world, the need for materials that increase the useful life of construction structures and protect them from the effects of external aggressive environment, including: sealants, mastics or pastes, films, porous elastic and profiled materials, is also increasing. Sealants are widely used in engineering, electrical engineering, aviation, and medicine along with the construction industry. Accordingly, oligomer-based sealants are very important for protecting construction structures from air oxygen and other aggressive environments, and for sealing cracks [1].

Currently, the demand for modified polymer brick products is increasing sharply. In recent years, sufficient progress has been made in the improvement of modified polymer materials. This is of great importance in opening new aspects of the physico-chemistry of composite materials [2].

In their work, the authors wrote that by adding fillers with special characteristics to the composition of thermoplastic polymers, they can change their properties, acquire important properties such as liquefaction, melting and thermal conductivity [3; pp. 168-171].

Research method. The secondary polymer waste was mechanically crushed to a size of 1-5 mm, heated in a porcelain mortar at a temperature of 1750C, melted, and a small amount of fillers were added to it with regular stirring.

Experience part. In this work, an overview of the substances and materials used as fillers is given to change the properties of polymers and to obtain composite materials based on them. developed. General characteristics of these filler groups are given and their division into mineral, organic and other subgroups is considered. For substances and materials, information about their application characteristics is given [4; pp. 459-465].





Basalt's unique properties have made it one of the most essential materials. Basalt is non-combustible and can withstand temperatures up to 9000C-15000C. is a filler that does not accumulate radiation in the wall. Basalt is an environmentally friendly material, harmless to humans and animals [5].

Basalt is one of the volcanic rocks with high strength and high density, as well as high chemical properties, fire resistance, strength, sound and thermal insulation properties [6].

Secondary polymer waste was mechanically crushed in a mill, cleaned of foreign substances, calcined at a temperature of 175 0C, liquefied, and basalt powder was added to it with constant stirring. When a thick viscous substance was formed, heating was stopped. The obtained results are presented in Table 1.

Table 1
Properties of composites obtained by adding fillers to secondary polymer waste

Compozite	Content	Color	Solubility	Temperature, °C
Bazalt-polietilen	1:5	Dark brown	Insolubly in heksan	175 °C
Bazalt-polistirol	1:5	Black	Insolubly in chloroform	175 °C
Bazalt-polipropilen	1:5	Black	Insolubly in ethilamin	175 °C

Due to the unique combination of properties of the obtained composites, such as high strength, low density, high electrical and thermal insulation properties, and resistance to chemically aggressive environments, it was found that fiber-reinforced polymer composite materials (PCM) are widely used in various fields. A monolithic material with high-strength fibers connected by a polymer matrix is a polymer composite. Fibers determine the strength and hardness of the material, the matrix ensures the completeness of their mechanical properties, as well as temperature behavior, resistance to environmental factors.

We must not forget about the third component, the interfacial layer - the interface between the fiber and the binder, because this is often the weakest point of the composition and its destruction begins. Therefore, the work is aimed at studying all three components of the composition. [7; -3-6 p.]





In this article, it is shown that the introduction of a dispersible filler into polyethylene allows to increase the whole range of thermal and physical properties, and the flammability indicators of the developed polymer matrix composites can also be improved [8. 74 b].

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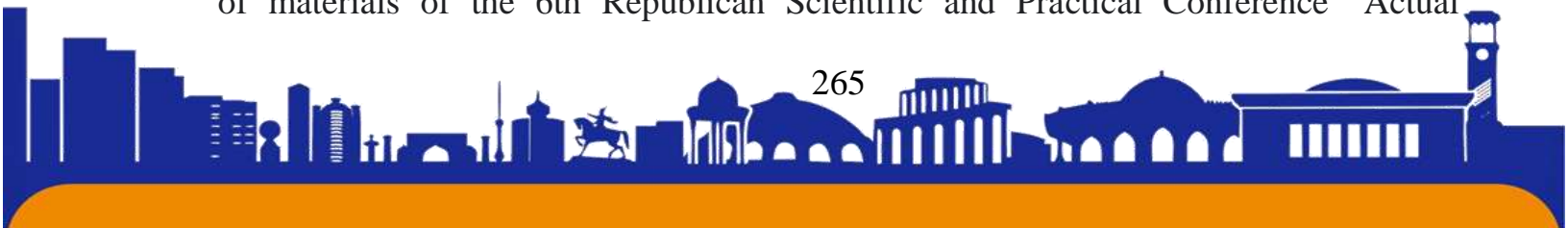
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