



Thematic section: Research into New Technologies.

Subsection: Polymer and Composite Technology.

Review

The Reference Object Identifier – ROI-jbc-A/21-2-3-14

The Digital Object Identifier – DOI: 10.37952/ROI-jbc-A/21-2-3-14

Received 29 July 2021; Accepted 30 July 2021

Basalt fiber and its application in polymer composite materials

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Keywords: basalt fiber, polymer composite material.

Abstract

The systematization of the properties of basalt fibers, as well as their application in various fields is given. The expediency and prospects of using basalt fiber as a reinforcing component for obtaining polymer composite materials with a high complex of physicomechanical and chemical properties, reduced abrasiveness, etc. are shown.

Various methods are described for modifying the surface of basalt fibers, contributing to the formation of functional groups necessary to increase the adhesive strength of the fiber-polymer bond. It is noted that the treatment with silanes, acids, compatibilizers, plasma improves the interfacial adhesion of the components and makes it possible to obtain basalt polymer composite materials with improved properties.

The systematization of publications on the creation of polymer composite materials using basalt fibers demonstrates the predominant use of epoxy resin as a polymer matrix. At the same time, composite materials based on polyurethane compare favorably with widely used epoxy polymers in resistance to alternating and shock loads. In this regard, it is advisable to investigate the possibility of obtaining PCM based on polyurethanes reinforced with basalt fiber in various forms: fabric, fiber, fiber, etc.

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For citation: Gulnara I. Amerkhanova, Elena A. Kiyanenko, Lyubov A. Zenitova. Basalt fiber and its application in polymer composite materials. *Butlerov Communications A*. 2021. Vol.2. No.3. Id. 21-2-3-14. DOI: 10.37952/ROI-jbc-A/21-2-3-14

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