



Examination of Wear Resistance of Polymer – Basalt Composites

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ABSTRACT

Olivine basalt, as a natural material, has excellent physical and mechanical properties such as hardness, compressive strength, wear resistance, color and gloss. On the other hand it is difficult for processing, because of its high values of mechanical properties. Retention of physical and mechanical properties of basalt and its formation is only possible by mixing basalt powder with polymers, which would enable the composite material that can be formed by the casting process into complex shapes. The mechanical properties of the obtained composites and production technologies are, to a great extent, unknown in both, local and foreign literature. Researchers conducted and presented in this paper show an overview of tribological behavior of the basaltic composite material, and some technological parameters of the production process. Based on the obtained results, it can be determine the best ratio of components in the composite. These data are important for the development of new composite materials based on basalt, which will have significant application in the future.

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1. INTRODUCTION

Research in this work is aimed to create a new composite material, which consists of basalt, polymers and additives.

The main goal of this research is to obtain a basalt-polymer base composite that has properties of basalt (good strength, hardness and toughness) and is also suitable for forming by casting process that is practically impossible for the pure basalt. The combination of these two materials should allow the obtaining of a new material that will keep the characteristics of

basalt (primarily high hardness, color, etc.) and polymers that allow its easy forming.

The long geological, mining and technological research tends to show that the basalt ore can be cost-effective for production of various products of basalt aggregates such as: basalt composites, basaltic glass, cast basalt, basalt fibers, and even jewelry whose value is similar to values of jewelry made of semi-precious stones. These researches included defining of the parameter of the process for obtaining composites of basalt and polyester resin (Polipol 357-C, 383, Polipol, BRE-325, etc.), by casting methods.

