

Effect of glass and carbon fibres on the compressive and flexural strength of the polymer concrete composite

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ABSTRACT

This article is focused on testing the mechanical properties of polymer concrete testing samples. After a thorough literature search, the basic conditions of the research were determined and under the standards, three types of samples of special new concrete mixtures were created as a building element for special CNC machines. The samples were subjected to the research of the influence of used fillers, binders and additives on their properties. Testing was carried out in a certified laboratory and included checking the dimensions of the test bodies, weighing on the calibrated weight, determining the volumetric weight, determining the maximum load of the testing samples using special devices and then determining the compressive strength, or flexural tensile strength according to the relevant formulas. The final part of the testing also examined the morphology and mapping of the chemical composition with a focus on carbon, oxygen and aluminum using an electron microscope. The obtained results clearly show an increase in tensile and compressive strength using dispersed carbon fibre reinforcement of approximately 4 MPa. The conclusion of the article provides an overall summary of the results obtained and a summary of the features.

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