

ДОСЛІДЖЕННЯ ВПЛИВУ ВМІСТУ ПІСКУ ТА МОДИФІКУЮЧИХ ДОБАВОК НА ВЛАСТИВОСТІ ПОЛІМЕРБЕТОННИХ КОМПОЗИЦІЙ

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The aim of this work was to determine the effect of sand content and modifying additives on the hardness, compressive strength and toughness of polymer concrete compositions.

Polymer concrete compositions based on CHROMOPLAST GP 2000 polyester resin, Luperox K1 hardener (organic peroxide for cold curing), cobalt stearate (cobalt salt of stearic acid), styrene and river sand in the form of round pancakes were used for the research. Samples of polymer concrete composites were obtained by mixing resin with sand with the gradual addition of hardener, styrene and cobalt stearate. Metal molds with bent sides were used to obtain the cured polyester composition; ceramic molds (not enameled); metal molds 2 cm high. Hardness, compressive strength and toughness of the developed compositions were investigated by standard methods.

The increase in sand content to 90% of the mass in the polymer-concrete composition leads to an increase in the hardness index by ~ 466%, as well as a decrease in the compressive strength by ~ 62% and toughness by ~ 50%. This is due to the fact that the sand has a higher hardness than polyester resin, and accordingly, increasing its content leads to an increase in the hardness of the composition. The decrease in compressive strength and toughness is due to a decrease in the amount of binder, which makes the composition more brittle. The developed polymer-concrete compositions can be used in construction, and also for repair of the damaged concrete surfaces and elimination of cracks.