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Durability of concrete made with natural granular granite, silica sand and powders of waste marble and basalt as fine aggregate

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Abstract

In this study, the durability of concrete made with natural granular granite, silica sand and powders of waste marble and basalt as fine aggregate, was taken into consideration. Limestone was used as coarse aggregate in the production of samples. The properties considered were the compressive strength, resistance to abrasion, freeze-thaw property, capillary water permeability and sulfate resistance. It was observed that the durability property of the concrete made with natural granular granite, silica sand and powders of waste marble and basalt as fine aggregate, was superior to the conventional control concrete. The effect of fine aggregate on the durability of concrete was evaluated. It is understood that the proposed mix provides a better condensed matrix. Moreover, it was observed that the fine aggregate type and its incorporation ratio, also, have great effect on the level of durability. Finally, the results show that addition of natural granular granite, silica sand and powders of waste marble and basalt yields a perfect less permeable concrete.

Keywords: Concrete, Natural granite, Silica sand, Waste marble, Garanule basalt

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