

عنوان مقاله:

The Study of Mechanical Properties of High Strength Concrete Containing Steel and Polypropylene Fibers

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خلاصه مقاله:

From industrial point of view, recently a great attention has been paid to the use of additives such as steel and polypropylene fibers in concrete and cement products. Investigations have revealed that the addition of steel and polypropylene fibers into normal concrete impart significant improvement in controlling its surface cracking, increase their tensile and flexural strength and durability. Considering the advantages of these additives, high strength concrete samples were produced with different mix design as well as using cement replacement materials such as silica fume according to a well-established experimental set up. The tests show that mixed use of steel and polypropylene fibers give good results in terms of improving structural characteristics of the concrete material developed. In all samples, the surface cracking was decreased significantly by adding suitable fibers in terms of sort, diameter, and length. However, the use of 1 kg polypropylene and 78 kg steel fibers in 1 cubic meter concrete was proposed as optimum mix design, regarding the improvement of compressive, tensile and flexural strength of concrete as well as scientific and practical points of view. So that, these newly developed structural concrete reveals promising potentials for further research and development as well as an structurally important building block material.

کلمات کلیدی:

High-Strength Concrete; Polypropylene Fibers; Steel Fibers; Silica Fume; Super Plasticizer

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