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Experimental Study to Improve the Flexural Behavior of Recycled Reinforced Concrete Beams Using Separate and Hybrid Fibers of Steel and Kortta

Given that in the last one or two decades, research on fiber concrete has developed well and is currently considered as one of the important research axes in concrete technology. Also the use of concrete with recycled aggregates for which research is increasing. Due to the use of recycled aggregates, some of their mechanical properties are weaker than concrete with natural aggregates, and therefore the use of fibers in concrete construction has strengthened some mechanical properties of concrete and the weaknesses of concrete in these mechanical properties have been eliminated to a large extent. In the present study, different fibers in terms of material and materials have been used separately and in combination in concrete with recycled aggregates and the flexural behavior parameters of these beams made with them have been investigated and compared. For this purpose, two types of steel fibers and Kortta were used separately and in combination in making beams with real dimensions (three beam samples). Also, to compare the results, two samples of beams without fibers with natural and artificial aggregates were made and the results of fiber beams with recycled aggregates were compared with them. Four-point flexural strength test was performed on the samples. Fracture mode and flexural behavior parameters of beams with recycled aggregates were investigated. The results showed that the addition of composite fibers has a much better effect on improving the flexural behavior of reinforced concrete beams than individual fibers and eliminates the weakness of using recycled aggregates in the flexural behavior of beams.

Keywords: Separate Fibers, Hybrid Fibers, Flexural Behavior, Reinforced Concrete Beam, Recycled Aggregate.

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