

The Effect of Combination between Crumb Rubber and Steel Fiber on Impact Energy of Concrete Beams

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Abstract

This paper presents the impact energy of steel fiber concrete beams at first crack and failure with different replacement ratios of crumb rubber. The test was carried out using simple low velocity drop weight test rig for both normal concrete (NC) and steel fiber concrete (SFC). The crumb rubber with particle size of 2 –1 mm was added with replacement ratios of 25% ,15% ,5%by volume of fine aggregate. Six batches consisting of 6 beams (100x100x500 mm) containing 0.5% of hooked end steel fibers were tested under impact load in accordance with ACI Committee 544. The results show a reduction in the compressive strength for both NC and SFC with the incorporation of crumb rubber with greater reduction at higher crumb rubber content. However, the measured impact energy for both NC and SFC was found increasing with the crumb rubber replacement.

Keywords

Rubberized concrete; hooked end steel fiber; impact energy; low velocity impact