Strength Prediction of Hybrid Fiber Reinforced High Strength Concrete

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Abstract: This paper presents the prediction of experimental results of high strength concrete of Grade M60 with hooked end steel fiber and combination of steel and polyolefin straight fibers (hybrid).The high strength concrete specimens were cast and considered as control specimens, high strength concrete added with steel fibers at 0.5%, 1.0%, 1.5%, and 2.0% volume fractions, and each volume fraction, hooked ends steel and polyolefin straight fibers were added at 80%- 20% and 60% -40% combinations to get steel and hybrid fiber reinforced high strength concrete specimens. All the specimens were tested under compression, splitting and flexural strength. Test results shown that by increase in fiber volume fractions, the strength values were increased and also resist the crack formations compare with control specimen. Empirical expressions were established by using regression analysis to predict the compressive, splitting tensile strength and modulus of rupture of all types of concrete specimens. The predicted values were compared with the experimental results of all specimens.

Keywords: High strength concrete, steel fibers, Polyolefin fibers, Hybrid fibers, Strength prediction.

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