A Study on Effect of Aspect Ratio of Steel Fibres on Mechanical Properties of Self Compacting Concrete.

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Abstract:

Self-compacting concrete (SCC) is a flow-able concrete which can consolidate under its own weight without the need of external vibration. The highly fluidic nature of SCC makes it suitable for placing in difficult environments like congested reinforcement and thinner sections. The addition of small closely spaced and uniformly dispersed fibres to concrete would act a crack arrester and substantially improve the post cracking ductility of brittle concrete. In the present study, the effect of steel fibres on fresh and hardened properties are studied by adding steel fibres of different aspect ratios (60 and 100) for different dosages of steel fibres such as 0%, 0.25%, 0.5% and 1% by volume of concrete for two grades i.e. M30 and M70 of SCC. From the experimental studies, it was founded that as the dosage of steel fibres increased from 0% to 1% there was substantial decrease in fresh properties but are within the EFNARC specifications. The compressive strength, split tensile strength, flexural strength of all mixes was tested at the age of 28 days. From the experimental results it is found that compressive strength increased marginally whereas, split tensile and flexural strengths increased with increase in the dosage of fibres increased.

Keywords: *Self-Compacting Concrete, Steel Fibres, Ductility, Reinforcement*