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Experimental Study on Toughness Property of Fiber Reinforced Self Compacting Concrete (FRSCC)

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ABSTRACT

The objective of this work is to investigate the toughness property of the fiber reinforced self-compacting concrete (FRSCC) through experimental studies. In this work, different (0.5%, 1.0%, 1.5%, and 2%) percent of steel fibers are added by volume of concrete and (0.5% & 1.0%) percent of poly-propylene are added by mass of binding material. To achieve the self-compacting concrete (SCC) mix design has been done according to the EFNARC guidelines. The limitations also achieved according to the European guidelines. By using different types of fibres the toughness property of the FRSCC has been studied. To find the toughness of FRSCC the JSCE SF-4 method is used. It has been observed that the toughness increased with increase in percentage (%) of fibres up to 1.5%. While, increase in percentage (%) fibre content beyond 1.5% resulted in lower toughness for the steel fibers. It give the only the limitation of steel fiber for SCC is up to 1.5% of volume of concrete. The comparative study also reported for mechanical properties of fiber reinforced self compacting concrete.

Keywords— JSCE SF-4, Poly-propylene fiber, Steel fiber, Self-compacting concrete, toughness property.



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