Behaviour of Hybrid Steel Fibre Reinforced High Strength Concrete

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Abstract : This paper presents results of an experimental investigation on the behaviour of Hybrid Steel Fibre Reinforced High Strength Concrete (HSFR-HSC) cylinder specimens (150 mm x 300 mm) under uniaxial compression. Three different combinations of HSFR-HSC specimens and reference specimens without steel fibres were prepared. The first combination of HSFR-HSC included 1.5% Micro Steel (MS) fibre and 1% Deformed Steel (DS) fibre. The second combination included 1.5% MS fibre and 1.5% Hooked-end Steel (HS) fibre. The third combination included 1% DS fibre and 1.5% HS fibre. The experimental results showed that the addition of hybrid steel fibres improved the ductility of high strength concrete. The combination of MS fibre and HS fibre in high strength concrete mixes showed best stress-strain behaviour compared to the other combinations and the reference specimens.

Keywords : high strength concrete, micro steel fibre (MS), deformed steel fibre (DS), hooked-end steel fibre (HS), hybrid steel fibre

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