

Mechanical properties and fracture energy Of steel fibres reinforced concrete

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ABSTRACT

Concrete is a brittle material with low tensile strength . The use of fibres can heal these potential defects while limiting and controlling cracking. When steel fibres are added to a concrete mix, they act as crack arrestors and concrete fracture requires more energy giving a toughness enhancement.

In this study, a short straight steel fibre has been added in concrete at several volumetric percentages and two different lengths, eventhough compressive strength has increased about 4.5% , but tensile strength has increased about 50%.The three point bending tests were performed on notched beams of 80x150x750 mm³ in order to determine the fracture energy GF and the stress intensity factor KIC. Experimental results show that the fracture parameters increase significantly by increasing the mixture fibre content and the length of fibre, this limits and controls cracking.

Key words: fracture energy, steel fibres reinforced concrete FRC, steel fibres

For the paper in Arabic see pages (63-71).

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