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A REVIEW PAPER ON MODIFICATION OF SHAPE OF FIBER

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Abstract: - Now a day high rise structures are becoming more popular due to land cost and vertical expansion of cities. For high rise structure, need of strength in terms of compression, flexural, tensile are increased. Use of steel fibers increased strength of concrete marginally. In this research we will try to modify shape of steel fibers to increase compression, flexural and tensile strength of concrete.

Keywords: Concrete, Steel fibers, Compression strength, flexural strength

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INTRODUCTION

Steel Fibers are generally distributed throughout a given cross section whereas reinforcing bars or wires are placed only where required.[1] Steel fibers are relatively short and closely spaced as compared with continuous reinforcing bars of wires. It is generally not possible to achieve the same area of reinforcement to area of concrete using steel fibers as compared to using a network of reinforcing bars of wires.

Steel Fibers are typically added to concrete in low volume dosages (often less than 1%), and have been shown to be effective in reducing plastic shrinkage cracking.[2] Steel Fibers typically do not significantly alter free shrinkage of concrete, however at high enough dosages they can increase the resistance to cracking and decrease crack width.[3]

PRASHANT Y PAWDE, NAGERNAIK B, PANDE M

It concludes that the more use of short and discontinuous fiber will prove beneficial to the properties of concrete. Here the fiber used are 0, 0.5, 1, and 1.5% of 0.5 mmdia.Steel fiber reinforced silica fume concrete is being studied by the ACI code. The result showed silica fume with steel fiber of 0.5%, 1%, and 1.5% by weight was 11.46%, 14.51% and 15.96% at 28 days increase in compressive strength.

AMIT RANA

In this research the steel fiber was replaced by 0,0.75,1,1.25,1.5,2,2.5,3,4,5,6% by weight respectively. And the type of fiber used was hook end fiber. The flexural strength of concrete when replaced by 1% of steel fiber had 6.46kn/mm square.[1]

The steel fiber gives maximum strength as compared to glassed polypropylene fiber [1]. The more the steel fiber used till 6% of replacement the strength had increased.

REMIJUS SALNA, GEDIMINIS MARCIUKAITIS

The different of estimation of fiber shape on strength of SFRC are analysed.the analysis shows that the authors estimate this effect differ only [2].Due to analysis of modes discussed the pullout test of four widely used steel fiber is made. The test showed all specimen failed by straitening the hooks and waves of fiber.

From the analysis of different modes and pullout test.The empirical anchoring coefficient estimating properties of material SFRC.[2].In some case the anchorage of steel fiber is enough and it fails when normal stress exceeds the strength of fiber otherwise the fiber can be pulled out of concrete matrix by deforming its anchorage and shape[2].

MILIND V. MOHOD

In this paper they determine by adding 0.5 percentage of steel fiber by volume of cement, the compressive strength is increase and by further increase in percentage of steel fiber the compressive strength will decrease. They also determine the workability of steel fiber reinforced concrete gets reduced as the percentage of steel fibers increases.

SHENDE A.M., PANDE A.M.

In this paper they observed that flexural strength from steel fibers are on higher side from 3% fibers as compared to that produced from 0%, 1% and 2% fibers. They also determine that the flexural strength increases from 13 to 48.35% through utilization of steel fibers.

JYOTI NARWAL, AJAY GOEL, DEVENDER SHARMA, D.R.KAPOOR, BHUPENDER SINGH

It concludes Conventional concrete loses its tensile resistance after the formation of multiple cracks. However, fibrous concrete can sustain a portion of its resistance following cracking to resist more loading the addition of steel fibers in the concrete mix resulted in improved structural performance measure in terms of ultimate load carrying capacity, crack widths, deflection and curvature ductility factor of beam specimens of all the series. The optimum fiber volume percentage for all the series was obtained as 1.5%. The further increase in fiber content reduced the load carrying capacity of the specimens due to poor compaction of concrete because of balling of fibers.

A.M. SHENDE, A.M. PANDE, M. GULFAM PATHAN

In this paper they determine the 3% use of steelfibre increase the compression strength, split tensile strength and flexural strength compared to use of 0%, 1%, 2%.They also determine that increase the compression strength, split tensile strength and flexural strength to 11-24%, 12-49% and 3-41% respectively by addition of steel fiber.

PATIL SHWETA, RUPALI KAVILKAR

In this paper the researcher has added binding wire or a steel fiber into the concrete

Significantly which increases the flexural strength. It is alsoobserved that at constant percentage of fiber=1.5%& by increasing aspect ratio of fiber from 40 to 70, it is observed that the flexural strength is increased from 36.7% to 58.65% as compared to plain concrete strength. It is determined that by addition of binding wire as a steel fiber to the concrete, it is observed that the compressive strength slightly decreased observed with the aspect ratio 70 & percentage volume of fiber of 1.5%. Also from load deflection curve, it is observed that as the

percentage of fiber increases with constant aspect ratio, the deflection of the beam is also increased before failure.

KISHOR S. SABLE, MADHURI K. RATHI.

In this paper it is observed that the SFRSCCs have a slump flow in the range of 660-715 mm, a flow time ranging from 2.89 to 5 sec, V- funnel flow in the ranging from 7.2 to 12.59 sec and 9.02 to 16.21 sec at T5minutes, a L-Box ratio ranging from 0.821 to 0.948 and a J-Ring test value ranging from 2 to 7 mm. It is possible to achieve self-compaction with different types of steel fiber with different aspect ratio. Also the SCC developed compressive strengths range from 17.98 to 22.60 Mpa at the end of 3 days, from 23.99 to 29.70 Mpa at the end of 7 days and from 32.50 to 46.00 Mpa, at the end of 28 days. It is seen that the SCC developed split tensile strengths range from3.82 to7.59 Mpa at the end of 28 days.

ABDUL GHAFFAR, AMIT, S. CHAVHAN AND DR.R.S.TATWAWADI

In this paper it is observed that workability decreases with increase in fiber content and the wet and dry density (7 and 28 Days) goes on decreasing as the percentage fiber volume fraction increases. It can be seen that the maximum percentage increase in compressive strength, flexural strength, achieved are 6.15, and 7.94, respectively at 3.0%, 4.0%, of fiber volume fractions.

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