

## International Journal of Innovative Research in Science, Engineering and Technology

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# Experimental Investigation of Concrete Using Recron Fiber

Bhavesh Sapariya<sup>1</sup>, Kishor Bhandare<sup>2</sup>, Suraj Shinde<sup>3</sup>, Shardul Mahajan<sup>4</sup>,  
Pramila Panchal<sup>5</sup>, Rahul Hodge<sup>6</sup>

B.E. Student, Department of Civil Engineering, Genba Sopanrao Moze College of Engineering, Balewadi,  
Pune, Maharashtra, India<sup>1,2,3,4,5</sup>

Professor, Department of Civil Engineering, Genba Sopanrao Moze College of Engineering,  
Balewadi, Pune, Maharashtra, India<sup>6</sup>

**ABSTRACT:** The significance of the utilization of fiber for the fortification of composite has increment amid the most recent six years as a mix of high quality solidness and warm obstruction. The quality attributes of the solid (M25) were utilized with fluctuating level of added substances was worked out giving certain extents by including Recron fiber in the level of 0%,1%, 1.5%,2% to the solid blend and changes in quality, quality get increments and functionality parameters were considered. As of now, concrete is an adaptable designing material utilized in the greater part of the structural building structure, so significant consideration is taken for improving the property of cement with particular to quality and sturdiness. Recron3s polypropylene monofilament, discrete, irregular short fiber that can be utilized in cement to control and capture breaks. It additionally exhibits the consequence of research about the mechanical properties of fiber utilizing quality just as snared steel fiber accessible in the area. Compressive quality of 3D squares were found on the 7th,14th and 28 days which was discovered that expansion of recron3s fiber effectively affect the mechanical properties of cement.

**KEYWORDS:** Recron3s fiber, strength, properties of concrete, arrest cracks, etc

### I. INTRODUCTION

Present days since low openness of regular assets, the common Portland bond and normal sand is being utilized quickly on the planet, due to development of ventures, private structures and other cement based structures .So, the generation and use of cement and sand has been quickly expanded, So because of that parcel of warmth is produced into the environment because of hydration activity of concrete. Fiber strengthened cement is concrete containing a consistently conveyed irregular short fiber which builds its auxiliary honesty. It contains short discrete filaments and arbitrarily situated. Strands incorporate steel filaments, manufactured filaments and characteristic filaments (coconut fiber) each may fluctuate as indicated by their individual property. Moreover, the character of fiber strengthened solid changes with materials, geometries, dissemination, direction, densities. Filaments are normally utilized in cement to control breaking because of plastic shrinkage and drying shrinkage. They likewise diminish the penetrability of cement and decrease seeping of water. All the more as of late miniaturized scale strands, for example, those utilized in customary composite materials have been acquainted into the solid blend with increment its strength, or capacity to oppose break development. In the present work polyester fiber have been utilized in light of the fact that, the benefits of utilizing holding attributes of polyester which is superior to nylon because of their practical side gathering present in the polymer structure. Polyester fiber planned explicitly to furnish concrete with security against early age split arrangement. Each fiber anticipates the little gaps that can happen when cement's rigidity is weakest. By diminishing early age break development, the quantity of debilitated planes and the potential for future split arrangement may likewise be decreased. Albeit each kind of fiber has been given a shot in bond and cement, not every one of them can be adequately and financially utilized. Each sort of fiber has its trademark properties and impediments. Some kind of

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strands gives more prominent scraped spot and imperviousness to fire. Surely, a few strands really diminish the quality of cement. The fiber with high viewpoint proportion gives high extreme rigidity, moderately high modulus of versatility, better similarity with standard Portland concrete, better partiality with water and no wellbeing dangers. An endeavor is made in the present work to explore of these added substances on the compressive Strength of bond concrete.

The principle motivation behind this examination to explore the impact of added substances Recron 3s (fiber). The quality attributes of the solid (M25) were utilized with differing level of added substances was worked out giving certain extents by including Recron fiber in the level of 0%,1%, 1.5%,2% to the solid blend and changes in quality, quality get increments and usefulness parameters were contemplated. In the present work, an exertion is made to utilize new added substances as the elements of cement and concentrate the impacts on M25 evaluation concrete. The extent of work is restricted to discover the conduct of cement in pressure and strain and results were obtain.

## II. PROBLEM STATEMENT

Since the solid is frail in pressure, overwhelming fortifications must be made the solid to build its pliable quality. This expands the expense of the structure to a bigger degree. Additionally the consumption of the fortifications is a noteworthy issue. Further concrete is fragile so its effect quality is likewise calm low. Fiber fortified cement is concrete containing a consistently conveyed irregular short fiber which builds its basic trustworthiness. It contains short discrete strands and arbitrarily situated.

## III. OBJECTIVES

- i. To make an economical and eco-friendly concrete by using fiber (waste product) gaining the same strength. To investigate on fiber reinforced concrete using Recron 3s for M25 mix proportions.
- ii. To found out Optimum dosage of Recron 3s fiber by volume of 1 %,1.5%, 2% of its total volume.
- iii. To analyze the Compressive strength of the various percentage fibre.
- iv. Improves homogeneity of the concrete by reducing segregation of aggregates.

## IV. METHODOLOGY

We have studied some research papers and then we made list of raw materials which can be used as a substituting material in the design of concrete. For that, the following methodology has been adopted which helped us to achieve over aim in production of Recron fiber of concrete.

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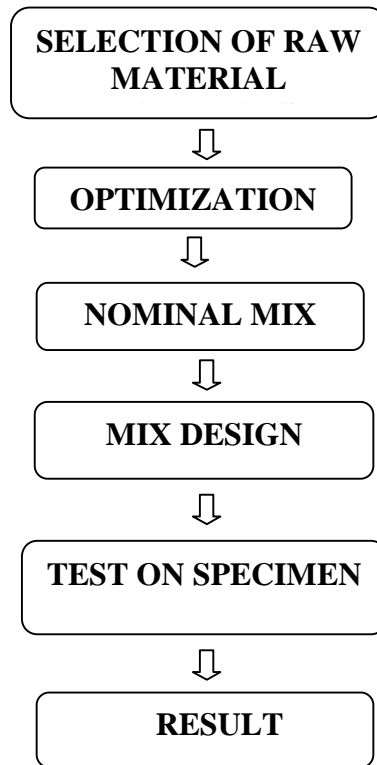


Fig -1: Flow chart of Methodology

## IV.1 Tests to Be Conducted

### IV.1.1 Compression Test

A compression test is any test in which a material experiences opposing forces that push inward upon the specimen from opposite sides or is otherwise compressed, “squashed”, crushed, or flattened. The test sample is generally placed in between two plates that distribute the applied load across the entire surface area of two opposite faces of the test sample and then the plates are pushed together by a universal test machine causing the sample to flatten. A compressed sample is usually shortened in the direction of the applied forces and expands in the direction perpendicular to the force.

Specimen Size: 150 X 150 X 150 mm

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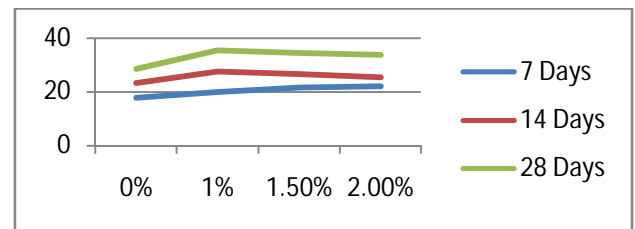


Fig -2: Compressive Testing Machine(CTM)

## V. RESULT

Table -1: Compressive Strength Results (N/mm<sup>2</sup>)

| Compressive test taken after days | Conventional M25 | 1% Fiber | 1.5% Fiber | 2% Fiber |
|-----------------------------------|------------------|----------|------------|----------|
| 7                                 | 17.78            | 20.00    | 21.48      | 22.07    |
| 14                                | 23.25            | 27.55    | 26.67      | 25.91    |
| 28                                | 28.59            | 35.41    | 34.57      | 33.65    |



Graph -1: Result Graph

## VI. CONCLUSIONS

From above calculations of the results and finding their compressive strength we had come to a certain conclusion about the project that mixing of Recron fiber can increase strength of the concrete as of the strength of the Recron fiber mixed concrete is more than normal concrete and can be used as an additive in the conventional concrete.

The above graph shows the change in strength of concrete as the proportion of fiber increases by 1%. The more increase of strength cannot be seen as we increase the fiber percentage. So adding of 1% of Recron fiber is effective for gaining higher strength of concrete.

## VII. ACKNOWLEDGEMENT

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