

Enhancing the Strength of Concrete by Using Human Hairs as a Fiber

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Abstract:- One of those innovations that provides an easy, useful, and affordable way to get over microcracks and other related flaws is fiber concrete. Human hair is a non-biodegradable substance that is inexpensive, readily available, and plentiful. Because of its breakdown, it also poses environmental risks. The performance of concrete is improved, its cost is decreased, and disposal issues are resolved and it is the most importance human hairs fiber.

Keywords:- Human Hairs and Fiber.

I. INTRODUCTION

Fiber concrete is made out of fibrous material, which strengthens the structure and makes it more significant. Its short, evenly dispersed individual fibers are orientated randomly. Concrete's mechanical qualities are greatly impacted by the kind, length, and percentage of fibers added to the material.

➤ Aim

The aim of the project is to added human hair in concrete and to check compressive strength of concrete when compare to conventional concrete.

➤ Objective

- To assess the concrete's compressive strength using human hair.
- To create lightweight and affordable products.
- To create environmentally friendly.

II. METHODOLOGY

➤ Collection of Raw Materials

➤ Analysis of Properties of Materials

➤ The Mix Ratio for Formation of Human Hair Fibers Concrete

➤ Moulding and Unmoulding

➤ Collection of Raw Materials

- PCC (Portland Pozzolana Cement): 43 grade cement
- Human Hairs Fiber: Human hairs fiber have been collected from salons .



Fig.1. Human Hairs

➤ Analysis of Properties of Materials

- Acetone has been used as a treatment to clean hair fiber.
- Water: The concrete lab's fresh tap water.
- Fine aggregate: Sand that is accessible locally and passes through a 4.75 mm screen.
- Coarse aggregate: 20 mm is the aggregate size.

➤ Mix ratio:

Concrete mixing ratio for all mixes are 1:1.7:3.6 and water cement ratios are 0.55.

➤ Moulding and Unmoulding

Filled the mold with the material, tapped it well to prevent any voids, and leveled it appropriately using a trowel.

After the mixture has solidified to the point where the slab is not likely to collapse, remove the mold.



Fig 2 : Concrete Setting

III. RESULT

The tests are required to ascertain the specimen's strength and, consequently, its eligibility for the task. This is the most crucial test performed on the concrete out of all of them, providing an optimal understanding of all the specimen's qualities. Notable are the compressive strength and water absorption.

Size of the square mould = 150 cm²

Ratio of mix = 1:1.7:3.6

➤ Compressive Strength Test

Table 1 For Conventional Concrete

SR .NO.	DAYS	COMPRESSIVE STRENGTH IN MPa
1	7	21.40
2	28	28.53

Table 2 For Human Hairs as Fiber (1.7%)

SR .NO.	DAYS	COMPRESSIVE STRENGTH IN MPa
1	7	22.59
2	28	30.12

Table 3 For Human Hairs as Fiber (2.3%)

SR. NO.	DAYS	COMPRESSIVE STRENGTH IN MPa
1	7	24.58
2	28	32.7



Fig 3: Testing Compressive Strength of Cubes

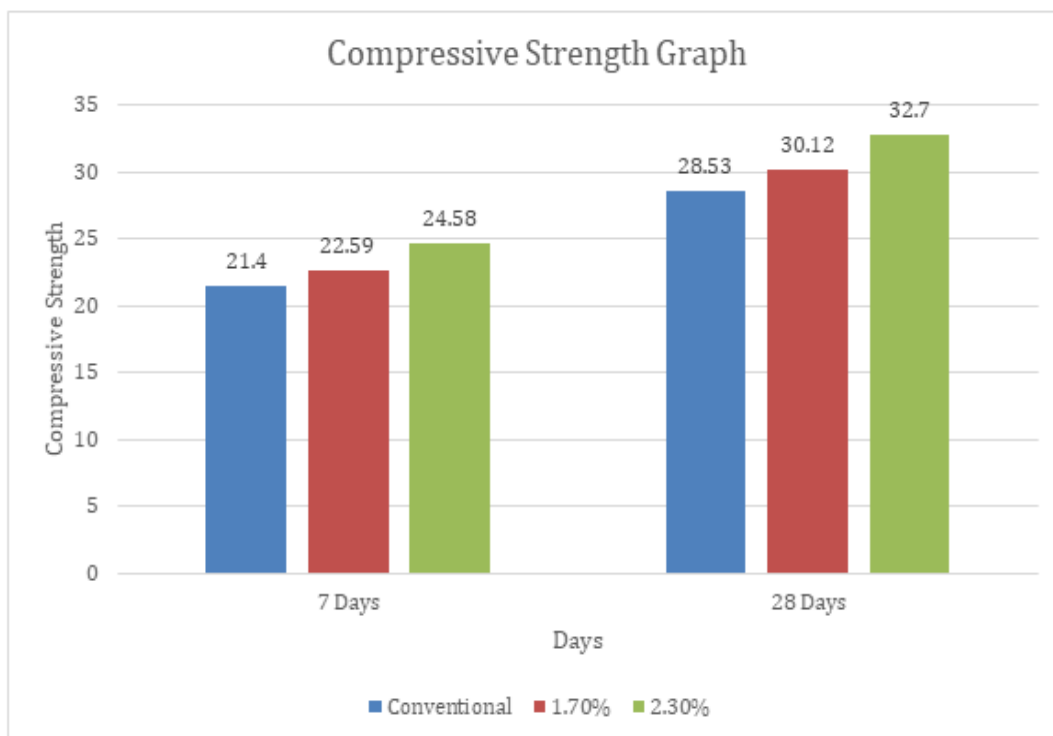


Fig 4 : Compressive Strength for 7 and 28 Days

IV. CONCLUSION

- Human hairs fiber concrete give more compressive strength when compared to conventional concrete.
- Those fiber concrete are light in weight and economic.
- The tests conducted On human hairs fibers in laboratory have shown good resistance for fibers .
- The major uses of human hairs fibers is for architectural building panels.
- In these buildings, fire resistance becomes an important factor in design.

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