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AN EXPERIMENTAL STUDY OF HUMAN HAIR IN CONCRETE AS FIBER REINFORCEMENT: A REVIEW

¹Mr. Vishwas T Lonkar, ²Ms. Shabina V Ansari, ³Ms. Sneha D Bante, ⁴Ms. Raksha D Manmode, ⁵Ms. Vaishnavi G Gotmare, ⁶Ms. Raksha R Kamble, ⁷Mr. Sudhir Kapgate

¹Civil Engineering Department, NIT, Nagpur, Maharashtra, India

²Civil Engineering Department, NIT, Nagpur, Maharashtra, India

³Civil Engineering Department, NIT, Nagpur, Maharashtra, India

⁴Civil Engineering Department, NIT, Nagpur, Maharashtra, India

⁵Civil Engineering Department, NIT, Nagpur, Maharashtra, India

⁶Civil Engineering Department, NIT, Nagpur, Maharashtra, India

⁷ Assistant professor, Civil Engineering Department, NIT, Nagpur, Maharashtra, India

Abstract: This study presents the human hair is a strong in tension and can be used as fibre reinforcement materials. It is a very cheap cost concrete as one of the most widely used building material, adding of both cement and human hair to reinforcement concrete in M20 grade cement. Human hair percentage is 0% to 10% by weight of cement and for each % of human hair added in concrete 8 cubes was tested for their respectively mechanical properties of curing periods 7 days and 28 days. The combustion of human hair creates unpleasant odour and produces hazardous gases like ammonia, sulphides, hydrogen sulphide, sulphur dioxide and produces hazardous gases like ammonia, sulphides, hydrogen sulphide, sulphur dioxide normal concrete.

Keywords: Fibre Reinforcement, Human Hair, Concrete

INTRODUCTION

Human hairs made up from the human beings. They made it by processing of chemical synthesis. The fiber is like as hair it manufactured from the source of animal hair and plant part. The human hair fiber control the cracks because of drying and plastic shrinkage. The hair fiber is low at cost and it forms in huge quantity. The Gupta's where discovered the idea of used in human hair in fiber in building construction. They noticed that human hair is good to use in mainly area's such as industrial, medicine and agriculture. The human hair shorter length it mixed in concrete decrease their probability and the building of water also.

Human hair is hard in tension therefore it is used in concrete reinforced material. It's also rescues our environment from the degradation by using the human hair and to enhance the tensile behavior of concrete are the important objectives of this research .

LITERATURE SURVEY

Anjana Manof et.al.

They compared the strength and durability of ordinary concrete with 0.5%, 0.57%, 1%, 1.5%, 2% adding of hair by weight of cement. The result shows adding of human hair fibre enhance binding property, micro crack control ductility and also increase sapling resistance air voids. increase compressive strength by 12% and 22%.

Hande Sezgin & Ipek Yalcin Enis

From their study it has been observe that an ever increasing know as composites the first usage of natural fibres in composite structure was straw reinforced clay wall in Egypt 3000 years ago human hair is composed three main structure called cuticle, cortex and medulla. The huge amount of human hair called environmental risk in open fields due to non-degradable characteristics, The most promising end use areas of cement based one are civil constructions in seismic zones.

P Vadivel & D. Jeyakumar

They studied the effect of human hair additives in compressive strength of asphalt cement mixtures as potential binder in road pavement. Human Hair is strong in tension and can be used as a fibre reinforced material utilizing these fibres in concrete mixtures may increase concrete workability and decrease shrinkage cracks.

Naraindar Bheel et.al

Cement production involves high amount of energy consumption of carbon dioxide emission. The purpose of this study is to analyse the characteristics of concrete by partially cement with RHS & FA.

A S Balaji & D. Mohan Kumar

Their study shows that many recycling plants across the world, but plastic is recycled they lose their strength with the number of recycling. This is useful in application requiring non-bearing light weight concrete. The strength has increased when compared to that of the conventional concrete specimen.

Narain Das Bheel et.al

They observed on testing for compressive strength that fibre reinforced concrete shows very less formation of cracks. The maximum increase in strength is noticed when 2% hairs are used in concrete. In our experience we also tried using 10% of human hairs by weight of cement. Therefore it can also be circulated that using higher % of hairs is also not feasible. An alternate method for not only hair waste management but also application in civil construction.

Tomas U. Ganiron Jr

They have concluded that the varying condition on road pavements greatly affects the strength of asphalt mixture. Another thing is that the addition of hairs to the asphalt cement mixture greatly improves its capability to bear more loads applied to it. Additional hair must range from 2 to 6% by mass of bitumen. The asphalt should be mixed and slightly cool to avoid awful odor of burnt hair. The required temperature must be strictly observed. It should try not only in horizontal construction but also in vertical construction.

Naraindas Bheel et.al

They showed that concrete is one of the most consumed human-made materials in the world, annually 10 million tons of concrete are manufactured. Its malleability, strength & durability made it usable in building. A human hair used as fiber in concrete by the volume of cement sustainable development goals meets current needs & requirements without risk to future generations.

T. Naveen Kumar et.al

From their study it is found that the optimum content of human hair fibre to be added to M40 grade of concrete is 1.5%, 2% shows improvement in the properties of M40 grade of concrete in terms of its volume that there has been compressive strength, flexural strength and split tensile strength corresponding to the percentage of hair by weight of cement in concrete.

Akarsh verma et.al

Their study clearly shows that human hair is the well-accepted choice as a composite fiber in the field of advanced engineering materials science. So an explanation of this area can be used to explain the human hair as a more economical biological composite fiber in the future.

Sakshi Gupta And Aakash Sharma

On the basis of the experimental results obtained in the laboratory, it is concluded that: At 0.25% human hairs when used in concrete then there is an increase of 10.71% & 3.65% in cubical compressive and splitting tensile strength respectively at 1:2:4 mix ratio with 0.50 water-cement ratio. At 1% human hair then there is a decrease of 10.89% in cubical compressive & 3.65% in splitting tensile strength 1:2:4 mix ratio with 0.50 water-cement ratio.

CONCLUSION

From the literature we have studied in this paper, we get that the people did research on the wastage of human hair from salons, temples etc. can be reused properly and used as a fibre material. It has been observed on testing for compressive strength the FRC shows less formation of cracks. Increase in compressive and tensile strength observed 4% hair used in concrete among will get cubes. Use of certain practices can help in reduction of human hair waste. At the same time can help in cost reduction.

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