

Recycling Of Waste Plastic In Manufacturing Of Tiles

An Experimental Study On Waste Plastic In Manufacturing Of Tiles

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Abstract: Plastic become as a most abundant material in human life now days, it made up of wide range of synthetic or semi-synthetic organic compounds that are malleable. Due to low cost, ease of manufacture, versatility, and imperviousness to water, plastic is used in a multitude of products of different scale, including paper clips and spacecraft utilisation of plastic increase by day to day life. The world is currently producing nearly 300 million tons of plastic each year- a significant amount of which will end up in the oceans. Unfortunately, although plastic is a useful product, many of these products are created for single use with an estimated 50 percentage of plastic used once and thrown away. A healthy and sustainable recycled use of plastic offers a host of advantages. Polyethylene bags with low density (LDPE) are collected, cleaned and dried up then plastic is heated at certain temperature and the sand is mixed with the plastic paste and mix properly with uniform colour and hence adds the coarse aggregate along with mix. The main motto of this project is to reduce cost of the construction with the recycled material. So we turned the waste plastic (LDPE) into the manufacturing of tiles.

Keywords- Waste Plastic, Low Density Poly Ethylene (LDPE), Tiles, Coarse aggregate, Sand.

1. INTRODUCTION

Plastic Tiles

Plastic is one of the most widely effected material which harms to the environment, it occupies the first place among all other waste things in environment impact because it does not disintegrate into the soil and leads to pollution and global warming. Usually the waste plastic collected in landfills and reduces the content through burning process such waste we use in construction purpose. Generally, high density polyethylene, low density polyethylene is major types of plastic which effect to the environment where we use in our daily life. For this reduction of the pollution we assemble a project to manufacture the tiles by using these harmful plastic products. We use plastic as a main source to our project and we consider sand and aggregates at certain ratio to manufacture the tile. The main advantage of this project is consumption of good soil will be decrease, it also reduce the pollution and the major aspect is very low expensive which compare to no

2. LITERATURE REVIEW

[1.] Dibya Jivan Pati, Riken Homma, Kazuhisaikt, "PLASTIC BOTTLES MANSONRY AS ALTERNATE SOLUTION TO HOUSING PROBLEMS IN URBANAREAS OF INDIA"-



Fine Aggregate

The aggregates whose size is less than or equal to 4.75 mm is known as fine aggregate. Locally available sand satisfying the requirements of ASTM C33-03 was used. The sand obtained

International Journal of Architecture, Planning and building Engineering.

[2.] Dinesh.S, Dinesh.A, Kirubakaran.K, "UTILIZATION OF WASTE PLASTIC IN MANUFACTURING OF BRICKS AND PAVER BLOCKS"-International Journal of Applied Engineering Research.

3. MATERIALS USE

Waste Plastic

Low Density Polyethylene (LDPE) plastic cover, bags. Accumulation of such wastes can be results in hazardous effects of human and plant life. Therefore, need for proper disposal, and, if possible, use of these waste in their recycled forms, occurs. This can be done through process of plastic management. Waste management in respect to plastic can be done by recycling. If they are not recycled then they will become big pollutant to the environment as they not decompose easily and also not allow the water percolate into the soil and they are poisonous.



from river beds or Quarries is used as fine aggregate. The fine aggregate along with the hydrated plastic paste fill the space between the coarse aggregate. The sand passing through 2.36 mm is used



Coarse Aggregate

Aggregates of size greater than 4.75 mm are known as the coarse aggregate. The maximum size of coarse aggregate is 80mm. 20mm size aggregates are used in this experimental work. Coarse aggregate occupies the maximum volume. Locally available crushed angular aggregates are used. The specific gravity of the aggregate is 2.7. The fineness modulus is determined by sieve analysis in the laboratory.

4. EXPERIMENTAL PROCEDURE

The waste plastic had collected i.e., Low Density Polyethylene (LDPE) bags are cleaned and dried up and burnt at temperature of 110°C, the LDPE plastic is melted at the temperature, then the state of plastic in pure liquid form, the collected medium sand is thoroughly mixed with the

plastic where the sand and plastic gets uniform mixture. After some time the coarse aggregates of size 20mm is added to the mixture and thoroughly mixed equally. The mixture is with different mix proportions of plastic, fine aggregates, coarse aggregates respectively. After the mix is prepare by using safety precautions by not touching mixture directly by hands. Grease is applied to the mould, then the mixture is taken into the mould with designed shape, compacted the mixture with 25 blows for every 5cm. Place the mould for 2-3 hours to get cool. Then remove the mould and check the laboratory tests like compressive and hardness tests after 24 hours of mixture prepared. These tiles can be used in different aspects like flooring, interior side walls of bathroom, etc... these possess good results when compare to normal sand.

Figures & Tables

Properties of LDPE

Tensile Strength	31
Elongation of Break	320
Melting Temperature	110°C



Mixture



Tile (30cm*30cm*2.5cm)

5. CONCLUSION

The plastic, fine aggregate and coarse aggregates tiles have advantages of gives the good results when compare to normal tiles with in very low expensive and reduces the greenhouse effect and pollution to the environment

ACKNOWLEDGEMENT

We would like to gratefully acknowledge of **Mr. M. V. Ramesh**, has been abundantly helpful and has

assisted us in numerous ways. Our sincere thanks to the college management for providing us excellent lab facilities and our friends for helping and encouraging us throughout the completion of the project.

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