Reformation of waste plastic into useful structure

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1 Introduction/Motivation

Waste plastic bottles as construction material reduces the plastic waste so This type of construction is more durable than that of brick construction.The strength of plastic bottle house is 20 time than the brick house.The construction cost reduce 33percent cost of the house of concrete and brick. Material required is easily available every places This type of construction not required more skilled labour.so,it provide Low cost and Non-brittle (unlike bricks).It is also Absorbs abrupt shock loads - Since they are not brittle, they can take heavy loads without failure.useful for Bio-climatic condition Reusable for next time. Less construction cost of material.Easy to use for construction for many big structure. Green construction - Building an average-size house as outlined below frees up 12 cubic meters of landfill.

2 Market Research/Literature Survey

Research paper [1] According to the Worldwatch Insitute, "From 1950 to 2012, plastics growth averaged 8.7 percent per year, booming from 1.7 million tons to the nearly 300 million tons of today." [Source: Worldwatch Institute. "Vital Signs, Volume 22: Trends that are shaping our future." 2015.] The recent rains in Chennai left us with haunting images of plastic trashed beaches.

Every year, about 8 million tonnes of plastic waste is dumped into our oceans. Floating bags of plastic are mistaken for jelly fish and consumed by whales and turtles. Brightly coloured plastic items attract sea birds and mammals that ingest them and die. Midway Atoll is 2000 miles from the nearest human settlement in the Pacific. But its beaches are littered with plastic trash. See this video to understand my cynicism with people who say recycling is the answer to plastic pollution.

Plastics dumped on land too break down into tiny pieces and are washed down water courses into rivers, lakes and seas. These microplastics are hugely problematic. They absorb other pollutants like legacy pesticides and carcinogenic hydrocarbons from the ocean or aquatic environment. These microscopic toxic bombs tend to be mistaken for food and ingested by zooplankton. Plank-

ton are the foundations of any aquatic food chain, and plastics has found a way to contaminate that.

3 TESTS OF CEMENT

1.Fineness of cement:- Fineness of Cement is measured by sieving cement on standard sieve. The proportion of cement of which the cement particle sizes are greater than the 90 micron is determined.

The following proportions are usually maintained in Cement: About 10percent of the cement of fine particles is smaller than 2 m, 10percent of wt of cement is made of particles larger than 50 m, and only a few weight percent is particles larger than 90 m.

4 RESULT

Wt. of cement sample (in gm) 100g Retained particle on 90 micron sieve (in gm) 00 g Collection of cement sample (in gm) 100 g

As per IS: 4031 (Part 1) – 1996. The cement of good quality should have less than 10percent of weight of cement particles larger than 90 m. (micron)

5 COMPRESSIVE STRENGTH OF CEMENT CUBE

The compressive strength of hardened cement is the most important of all the properties. Therefore, it is not surprising that the cement is always tested for its strength at the laboratory before the cement is used in important works. Strength tests are not made on neat cement paste because of difficulties of excessive shrinkage and subsequent cracking of neat cement. Dimenssion of cube:- 70.3mm*70.3mm*70.3mm

Figure 1: Brick without plastic

6 RESULT

Cube sample 1 (in 10 days) 75 Kn Cube sample 2 (in 10 days) 30 Kn Cube sample 3 (in 10 days) 85 Kn Avg compressive strength of cubes in 10 days-12.81 N/mm2

bla.PNG

Figure 1: Brick without plastic

7 COMPRESSIVE STRENGTH OF PLASTIC BASE MIXTURE

Materials Amount Unit

- Cement 128 gm
- Sand 500 gm
- Water 230 ml
- Plastic 50 gm

8 PICTURES

bricks.PNG

Figure 3: Plstic Bricks

9 RESULT

Area of tile = 112*112 $mm^2 Formula used Compressive strength = load applied/area of tile(l*b) Load applied = 90kN C.S = 90000/(112*112) C.S = 7.17Mpa$

10 Compressive strength of tile without plastic

Materials	Amount	Unit
Cement	120	gm
Sand	400	gm
Water	130	ml

11 PICTURES

Figure 5: brick

Figure 6: melting the brick formation

12 RESULT

Area of tile = 112*112 $mm^2 Formula used Compressive strength = load applied/area of tile(l * b) Load applied = 100kN C.S = 100000/(112 * 112) C.S = 7.97Mpa$

13 WORK DONE SO FAR

Tests of bricks. Tests of cements. Tests for checking compressive strength of plastic bottles. Tests and checking of compressive strength of plastic mixed cement and send mixture. Testing of non plastic mixture of sand and cement.

14 WORK TO DONE

Soundness test Final and initial setting time of cement. Checking compressive strength of cube after 28 days. Water absorbing test.

References

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[3] "Roads Made of Plastic Waste in India? Yes! Meet the Professor Who Pioneered the Technique". The Better India. 2 February 2016. Retrieved 23 October 2019.

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