

Production of Plastic Bricks

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Abstract - The decline in the availability of skilled in the construction industry led to a need for a brick that could overcome the problems of poor workmanship. This led to the development of Plastic bricks. Plastic brick is another type of brick which can be made from the plastic waste. This bricks are the solution of the pollution from the waste plastic. This bricks are easy to make and the pollution from the brick kilns can also be stopped using these bricks as there is no requirement further for the brick kilns. This brick have more strength than normal bricks and having light weight which can give further benefits to sustainable structures.

Key Words: Plastic Bricks, Sustainable Structure, Waste Plastic.

INTRODUCTION

Plastic is one of the daily increasing useful as well as hazardous materials. At the time of need plastic is found to be very useful, but after its use, it simply thrown away, creating all kind of hazards. Plastic is non-biodegradable, so it will continue to be hazardous for centuries. The idea of this paper is to use the Waste Plastic as a Building Materials such as Bricks. So as to reduce the Plastic Waste and Save the natural resources like Yamuna which is degrading due to Waste Plastic. As more the cities become industrialized surplus problem of the plastic waste management comes along with it. Technological and economic advancement has made the type and kind of plastic very diverse and their management much more complex. The Outbreak of disease like cholera, diarrhea etc. is becoming more due to this waste Plastic. Furthermore the changing economic trends and rapid urbanization disarrange plastic waste management in developing countries.

The Structure of plastic is nothing more than a chain of carbon – carbon bonds. Which all after combining make plastic.

The plastic is classified in 7 types all are written below:-

1. Polyethylene tere phthalate also Known as polyester (PETE).
2. High density Polyethylene (HDPE).
3. Polyvinyl chloride (PVC).
4. Low density polyethylene (LDPE).
5. Polypropylene (PP).
6. Polystyrene (PS)
7. Other type of plastic including acrylic, acrylonitrile, etc.

MATERIAL USED

The materials used in this is LDPE plastic as it is the only plastic which give strength and can be converted in semi liquid form.

EXPERIMENTAL STUDIES

In this experiment, 6 different samples of Plastic tile brick were prepared using the Injection moulding machine. The Brick specimen of size 19x 8.5 x3 cm was prepared. After 2days after the gases trapped inside the brick are released, they were tested for compressive strength in CTM machine.

METHODOLGY

The methodology is as follows:-

1. First we have collected the plastic waste.
2. We have crushed the waste plastic into granules using a crusher.
3. After crushing we have placed them in the injection moulding machine and set the temperature of the machine up to 400⁰ C.
4. Now then we have taken the injection area out to pour out the melted plastic.
5. After that we have left the plastic to cool and the gases can escape.
6. The images are shown as follows:-



Figure 1.1 Granules of plastic



Figure 1.2 Crusher



Figure 1.3 Casting of plastic bricks



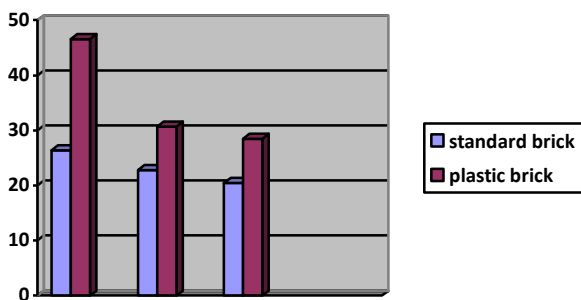
Figure 1.4 Tile brick

1 The above figure shows the final product

RESULTS

Table No. 2: Compressive Strength of plastic brick vs. standard brick

S.No.	Description	Load At Failure (KN)	Compressive Strength (N/mm ²)
1	Plastic tile brick 1	730	46.62
2	Plastic tile brick 2	525	30.68
3	Plastic tile brick 3	486	28.46
4	Standard brick sample 1	451	26.42
5	Standard brick sample 2	310	22.78
6	Standard brick sample 3	350	20.46



Graph 1: Compressive Strength of plastic tile brick vs. standard brick

As the bricks we made are of pure plastic so there is no water absorption in the brick and also there is nil efflorescence in the brick sample as compared to the standard brick

CONCLUSIONS

- It was observed that the compressive strength of the samples is more than that of the standard bricks.
- Also the efflorescence and the water absorption are nil. It gives us further more advantages of using the plastic brick over the standard brick.
- Using plastic in place of clay and other materials gives us economic and environmental benefits both.
- Other advantages of using the plastic tile brick is that it reduce more waste.

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