

Use of Waste Plastic in Paving Blocks

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Abstract: *Plastics are a wide range of synthetic or semisynthetic organic compounds that are malleable and so can be molded into solid objects. Polystyrene is just another form of plastic. Polystyrene (PS) is a synthetic aromatic hydrocarbon polymer made from monomer known as styrene. Polystyrene can be solid or foamed. General-purpose polystyrene is clear, hard, and rather brittle. It is an inexpensive resin per unit weight. It is a rather poor barrier to oxygen and water vapour and has a relatively low melting point. Polystyrene is one of the most widely used plastics, the scale of its production being several million tonnes per year. Polystyrene can be naturally transparent, but can be coloured with colour ants. Expanded Polystyrene (EPS) is a lightweight cellular plastic material consisting of small hollow spherical balls. It is 98% air and 2% plastic. It is this closed cellular construction that gives EPS its remarkable characteristics. EPS is produced in a wide range of densities providing a varying range of physical properties.*

Keywords: LDPE (Low density polythene), paver blocks, optimum utility, waste management

I. INTRODUCTION

Plastics are a wide range of synthetic or semisynthetic organic compounds that are malleable and so can be molded into solid objects. Polystyrene is just another form of plastic. Polystyrene (PS) is a synthetic aromatic hydrocarbon polymer made from monomer known as styrene. Polystyrene can be solid or foamed. General-purpose polystyrene is clear, hard, and rather brittle. It is an inexpensive resin per unit weight. It is a rather poor barrier to oxygen and water vapour and has a relatively low melting point. Polystyrene is one of the most widely used plastics, the scale of its production being several million tonnes per year. Polystyrene can be naturally transparent, but can be coloured with colour ants. Expanded Polystyrene (EPS) is a lightweight cellular plastic material consisting of small hollow spherical balls. It is 98% air and 2% plastic. It is this closed cellular construction that gives EPS its remarkable characteristics. EPS is produced in a wide range of densities providing a varying range of physical properties.

II. LITERATURE REVIEW

Pooja Bhatia Most of the developing nations lack a proper solid waste management system owing to the difficulties faced during the sample collection and treatment phases. Low-density polyethylene (LDPE) contributes as a major source of such pollution due to the widespread use of its products which include water sachets, thin bags, wrapping paper, etc. The waste plastic which is disposal in landfilling that will affect the ground water table as well as surrounding soil. A relatively simple technology has been proposed in this paper that produces LDPE-bonded sand blocks and pavers. The density and compressive strength were found to be increased as the particle size of the sand were decreased. The samples also exhibited far superior impact resistance as compared to traditional clay paver blocks

III. METHODOLOGY

This study has the following methodology for using recycled plastic used in the paving block

- Lest out material required for the study
- Check the properties of the collected material.
- Prepare a mix design for the recycled plastic used in the paving block.
- Making the paving block using proper mix and guidelines.

- Check the properties of the recycled plastic used in the paving block

Primary test

Compressive test on CTM Test on sample 70:30 proportion

TEST CALCULATION:- STEP 1:-

AREA OF BOTTOM SURFACE :- 150MMX15MM AREA OF TOP SURFACE :- 150MMX150MM

AREA OF MEASURED BY ORIGINAL PLAINMETER AVERAGE AREA :- 22500CM2

TEST ON CTM:- 6.75N/MM2

Calculation

FORMULA= LOAD / AVERAGE AREA =142/(22500) = 6.75 N/MM2

THEREFORE STRENGTH OF PLASTIC PAVING BLOCK IS 6.75 N/MM2

OVEN TEST

As the paver blocks have been made from plastic, to understand its melting factor through oven test method. The paver blocks have been stored in oven for 2hrs and after their conditions were noted as mentioned below:

Oven test calculation:-

Weight of sample before testing

Sample no 1 50:50 proportion:- 2 kg

Sample no 2 60:40 proportion:- 1.6kg

Sample no 3 70:30 proportion:- 1.2kg

Weight of sample After testing

Sample no 1 50:50 proportion:- 2 kg

Sample no 2 60:40 proportion:- 1.6kg

Sample no 3 70:30 proportion:- 1.2kg

Table I Conclusion is that there is no change in weight at oven test.

Specimen	Temperature(0C)	Remark
50:50	100	No change
60:40	100	No change
70:30	100	No change



IV. CONCLUSION

To determine the suitability of waste plastic bags in the development of pavement blocks for construction and to reduce the burden of waste plastic by reusing into pavement.

To evaluate the performance of plastic concrete for paver blocks for use in pavements and other application areas.

To evaluate compressive strength and durability for ordinary concrete paver blocks, the same have been studied for various plastic paver block.

The reduce the Co Emissions of Plastic Paver blocks

Cement is replaced by plastic.

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