PLASTIC WASTE USED IN PLASTIC PAVER BLOCK

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ABSTRACT

Plastic is a non-biodegradable material. The amount of plastic waste in municipal solid waste is extending quickly step by step. Plastic is produced using hydrocarbons found in various sources like oil, coal and some different minerals. At the period of scarcity, plastic is seen as helpful yet after its utilization, it is essentially discarded, making a wide range of perils Plastic is of various kinds, for example, High Thickness Poly-ethylene (HDPE), Low thickness poly-ethylene (LDPE). Subsequently, these waste plastics is to be successfully used in making paver squares. low thickness polyethylene are spotless included with the sand and aggregate at different rates to get high quality blocks that have warm and sound protection properties to deal with contamination and to decrease the general expense of development, this is probably the most ideal approaches to keep away from the collection of plastic waste which is a non- degradable toxin. The point of this task is to replace the cement and use the plastic waste as a binder which reduce the cost of paver blocks and also reduce the use of cement. Around 5.6 million tons of plastic waste is produced in the nation per annum. The degradation of plastic is extremely long process, it takes many years Therefore use of plastic waste in paver blocks is a good idea. In this process, we have utilized plastic waste in various proportion with fine and coarse aggregate. The paver squares were arranged and tried. The water retention limit of plastic paver square is less. The outcomes indicated more quality when contrasted with paver square.

Keyword: *plastic waste used in paver block.*

INTRODUCTION

Plastic is made from polymer chemicals and they are nondegradable.

Plastic is one of highly increasing useful as well as a hazardous material. At the time of need, Plastic is non-biodegradable that remains as a hazardous material for more than centuries. The quantity of plastic waste in Municipal Solid Waste (MSW) is expanding rapidly. It is estimated that the rate of expansion is double for every 10 years.

This is due to rapid growth of population, urbanization, developmental activities and changes in life style which leading widespread littering on the landsca. They are non- biodegradable and also researchers have found that the plastic materials can remain on earth for 4500 years without degradation In India approximately 40 million tons of the municipal solid waste is generated annually, with evaluated increasing at a rate of 1.5 to 2% every year. Plastics waste are to be effectively utilized. it is impossible for any vital sector to work efficiently without usage of plastic starting from agriculture to industries. Thus, we cannot ban the use of plastic but we can use plastic waste as a construction material in building constructions viz. bricks, road pavement

The plastic bricks are used for further in construction projects due to its light weight and economic purpose. The plastic use in the many From in the construction like bricks, tiles, road pavements etc. When plastic used for these construction the structures will be more economics and it has enough strength, durability.

OBJECTIVE

1. It takes many years to decompose.
2. Toxic substance are released into the soil, when plastic bags perish under sunlight.
3. When plastics bags are burned , they release a toxic substance into the air coughing airpollution.
4. The improperly disposed of food bags , when eaten by animals ,cause stomach andintestine related diseases which even lead to suffocation and death.
5. The scattering of plastic in open space creates unhygienic condition as it act as abreeding ground for insects and mosquitoes that cause deses like malaria and dengue.

PROPERTIESS OF PLASTIC

The properties of plastic are numerous.

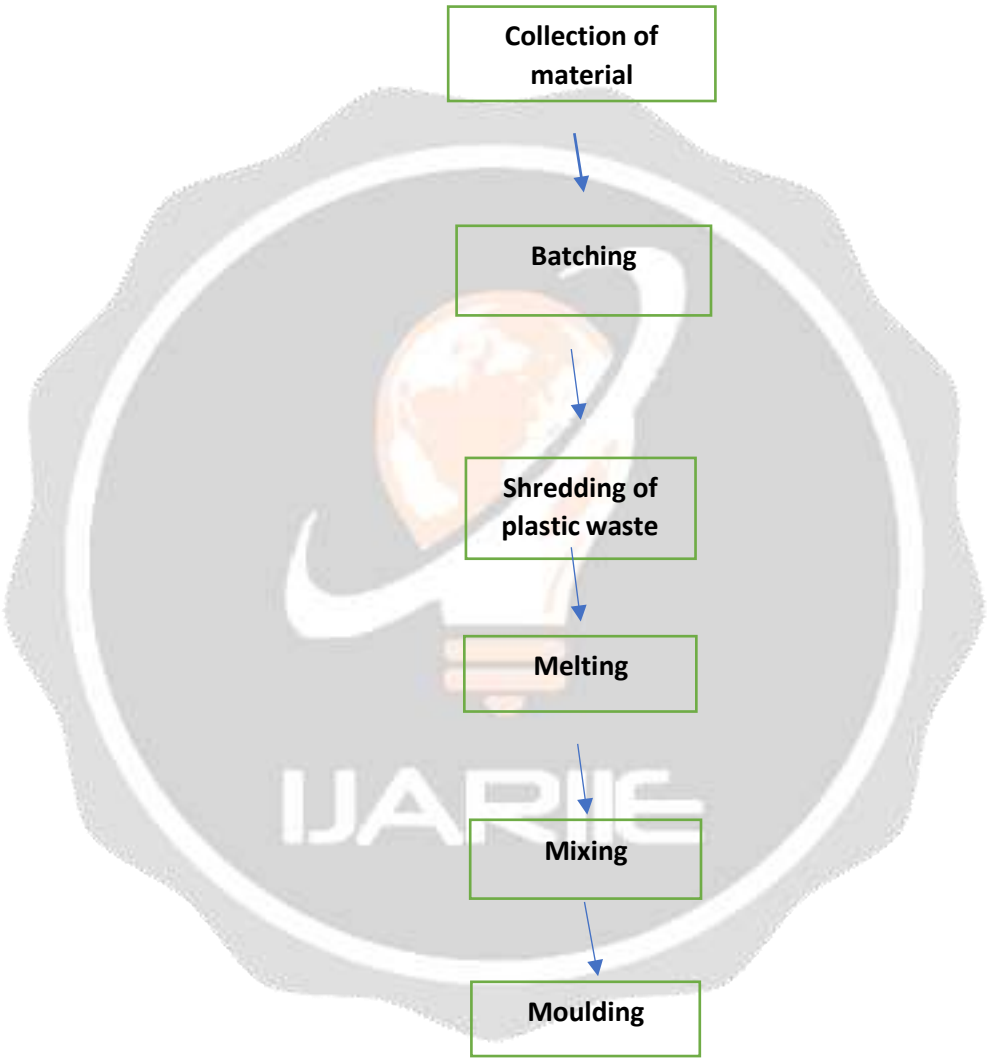
- Plastic is a synthetic material create organic.
- Plastics are lightweight with a high strength to weight ratio.
- Plastic can be manufactured inexpensively and mass produced.
- Water resistant.
- Shock resistant.
- Thermally and electrically insulating.

DUE TO THE CONSEQUENCES SOME OF THE PLASTIC FACTS ARE AS FOLLOW:

1. More than 20,000 plastic bottles are needed to obtain one ton of plastic.
2. It is estimated that 100 million tons of plastic are produced each year.
3. The average European throws away 36 kg. of plastics each year.

4. Some plastic waste sacks are made from 64% recycled plastic.
5. Plastics packaging totals 42% of total consumption and every year little of this is recycled. According to ENSO Bottles, in the 1960's plastic bottle production has been negligible but over the years there was an alarming increase in bottles produced and sold but the rate of recycling is still very low.

METHOD OF PLASTIC PAVER BLOCK:



COLLECTION OF PLASTIC MATERIAL:

The plastic material is collected from the college campus, hostel building ,institutes plastic wastes , food packages and plastic bottles this will come under the LDPE plastictype

HOSTEL WASTE

INSTITUTIONAL WASTE

BATCHING OF PLASTIC :

Measurement of materials for making brick is called batching. After collection of materials we separate the types of plastic and remove any other waste presented in the collected material and check that any water content in in sample collected ten proceed for burning.

SHEREDDING OF PLASTIC WASTE:

Waste plastics cut in two or more pieces are fed into a shredder for further cutting.The plastic is cleaned before shredding and sometimes gets further cleaning after shredding according to manufacturer demand. The shredder machine used for thin film plastics is different from that used for rigid plastics.

SHEREDDING OF PLASTIC WASTE

BURNING OF PLASTIC WASTE:

After completion batching the plastic waste was taken for burning in which the plastic bags are drop one by one into the container and allowed to melt. These would be done in closed vessel because to prevent the toxic gases released into atmosphere. These will be at the temperature of 120-150 degrees centigrade.

MIXING:

Mixing of materials is essential for the production of uniform and strength for brick. The mixing has to be ensuring that the mass becomes homogeneous, uniform in color and consistency. Generally, there are two types of mixing, Hand mixing and mechanical mixing. In this project, we adopted hand mixing. Until the entire plastic content required for making plastic brick of one mix proportion is added into it. Then these plastic liquids thoroughly mixed by using trowel before it hardens. The mixture has very short setting bags are turned to molten state; the river sand is added to it. The sand added is mixed time. Hence mixing process should not consume more time.

MOULDING:

After completion of proper mixing we place mix into required mould. In these projects we use the normal brick sizes (15*15*6 cm). After 2 days remove the brick from the mould and then done curing.

MOULD OF PAVER BLOCK (15*15*6 CM)

COMPARISION BETWEEN NORMAL PAVER BLOCK AND PLASTIC PAVERBLOCK

1) The major difference between plastic and normal paver block is replacement of cement due to which curing process is not required and can be used within two days of casting having same compressive strength

2) The use of waste plastic underway of paver square has gainful method of removal of plastic waste which can't be gain in normal paver block

3) Compressive strength of plastic paver block is quite similar to normal paver block

4) Compressive strength of plastic paver block is quite similar to normal paver block

5) plastic paver block is light weighted as compare to normal paver block

APPLICATIONS

1) The use of waste plastic underway of paver square has gainful method of removal of plastic waste.

2) It can be utilized in gardens, on foot way and cycle way and so on.

3) Being non water permeable, the danger of due, green growth and organism is nearly dispensed with.

4) it can be used in non-traffic and light traffic road

5) By using the plastics in paver block, reduces the weight by 15%.

6) It requires less an ideal opportunity to make,

ADVANTAGES OF PLASTIC PAVER BLOCK:

- It is strong and durable
- Lightweight
- Makes electrical installation easily
- Better thermal insulation
- Energy efficient
- Better sound insulation
- Less mortar consumption
- Allows more carpet area
- Cost effective
- Low maintenance
- Eco friendly

DISADVANTAGES OF PLASTIC PAVER BLOCK:

- Lower load bearing capacity
- Lesser density
- No fire resistance

CONCLUSIONS

1) It is observed that, the compressive strength of plastic paver block is increased with theaddition of plastic quantity**.**

2) It is observed that, the compressive strength of plastic paver block is more whencompared to concrete paver block.

3) The plastic paver block have low water absorption property.

4) The cost of plastic paver block is less when compared to the concrete paver block.

5) Being non water absorbent, the risk of due, algae and fungus is almost eliminated.

6) Plastic paver block does not require curing.

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