AN EXPERIMENTAL STUDY OF GEOPOLYMER BRICK BY USING OF WASTE PLASTICS

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ABSTRACT:- The rate of urbanization has led to increasing plastic waste in generation. This is increasing has plastic waste, in plastic bags, bottles etc.The present based on waste utilization in brick manufacturing has been studied. As per the statically study of post consumer plastic waste 14,000 tons per year in india.in that waste only 40% were recycling every year. Remaining 60% plastic waste are being land fill and floater in sewage even surface water bodies. So then the Progress on in solid waste managing resulted in replacement of construction materials as a replace with to conventional materials similar to brick. The mix proportions used to plastic binding martial are used through the various mixing of 0%, 5%, 10%, and 15%. To preserve the surroundings, efforts are being made for reprocess unlike wastes and utilized them in assessment further function. In this article, here position on making and utilization of both non-hazardous and hazardous solid wastes in India, their reprocess potentials and ecological suggestion are testimony and discuss in detail. Finally using the waste plastic materials recirculation, as well as to the protection of the environment.

Keywords; M-Sand, Fly Ash, Waste Plastic Bags, Stone Chips& Required of Brick Strength Test

INTRODUCTION

1.1GENERAL

The World Wide Scenario of Human Health and Disease are In over Risk Because Of the Population Development and Polluted Environmental in The Form of Land, Air, and Water by using of plastics. Every day at present India is produce 15,500 tonnes of plastic waste is being engendered per annum outcome is through manufacturing, mining, and other processes.

The Greater Over all Tamilnadu municipality's estimatated of plastic waste per day is 10,000 tones by using of carry back, biscuits covers, oil covers, and all the products. Now a day they out of this fragile plastic are 8.67% and industrial waste produce is 5.25%is hazardous of nature. Plastic is one of the toxic materials. This affects the humans and wildlife animals also.

In this study of progress is plastic waste replace to the construction materials like as bricks, paver, tiles, sewer pipe and cement etc.they for this article, here position to making and utilization of plastics in both hazardous and non hazardous solid waste management of in india.The generous expansion the use of plastic waste is experimental all over the world in past years, which has lead to enormous quantity of plastic manufacturing good waste. This waste is not eco friendly and will continue in a landfill lacking of difficult to environment pollutions and problem. So we are recycling to use again of this plastic waste. Plastic are tough and degrade very slowly. Since the science the 1950s, one billion tons of plastic have been useless and may preserve for most of even thousands of years. If brick is by most generally used for manmade building construction materials.

The advance brick manufacturing have paved way for the reutilization of waste materials in building bricks which help to prevent ecological contamination even as part of the design of more efficient building. The plastic brick is has developed into progressively most trend investigation of over the past 20 years. Due to the quantity of world wide, the grow thing of huge amount of plastic has return into a most important waste problem. Keeping in view of safe disposal issues of plastic waste, it is utilize in brick study and experimental by various researchers. They have worked out of use to plastic in brick as partial replacement of fine aggregate.

The test was conducted of various tests of samples casted specimens of by using plastic in the laboratory to analyze the various mix properties from normal brick. The behavior of brick study about Unger various combination mix of plastic waste material with regards to effect of various brick properties. The paper is discussed about utilizing various plastic materials in their brick.

1.1 Plastic Brick

Metals in general have a high surface energy and are easier to bond with brick, whereas plastics have a lower surface energy & are harder to bond with brick. Hence, the decrease in compressive strength has been absorbed as waste shredded plastic content increases in the brick mix.

1.2 Replacing Plastic Brick

Brick being the widely used construction material in the world estimated up to 11 billion metric tons every year. Typical brick ingredients are cement, sand and Fly ash which are used universally for producing brick. Due to the great utility of brick, with the passing of each day these materials are getting deficient thus demanding for the alternatives. It is off course a matter of serious concern for the civil engineers who are on the search of suitable materials which can fully or partially replace the typical construction materials.

1.3 objectives

- The main target of this study is to analyze the carbon dioxide free cementitious material, various properties and their effects on Geopolymer brick.
- The efficient usage of waste plastic in plastic bricks has resulted in effective usage of plastic waste and thereby can solve the problem of safe disposal of plastics, also avoids its wide spread littering.
- A Present Study aims at evaluating the Performance of Plastic for Bricks Use in Construction and Other application areas.
- As Properties for Plastic Bricks, the same have Been of Studied for Various Mixes varying % of Materials.

1.4 scope

- The reduce the Co_2 Emissions of Plastic Bricks.
- The Plastic are Using Show Many Problems, Effects Are Affected on Human&Animals.Plastic is a very Toxicity Materials.
- To Control the Environmental Pollution & Remove Waste Plastic On Society.

METHODOLOGY

2.1 FLOW CHART

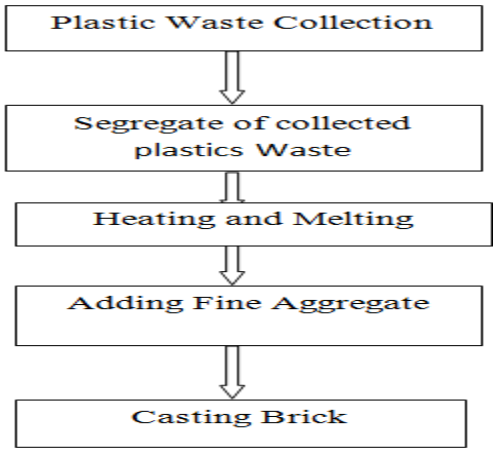

Fig: 1 methodology of project

2.1 Plastic Waste

Fig .2 Plastic Wastes

Plastic have become now integral part of the day today life. These non-biodegradable products are used and thrown out which lead to the environmental pollution. The plastic waste is low weight, flexible and corrosion resistance.

2.2 Physical Properties of Materials

Table .1 properties

Material	Specific Gravity	Water Absorption	Fineness Modulus
FLY ASH	1.5	0.5%	
M-SAND	1.77	1.6%	2.4
CHIPS	1.52	1.04%	6.5

2.3 PHYSICAL PROPERTIES OF PLASTIC:

- Coefficient of Thermal Expansion = $7x10^{3o}C$
- Long Term Service Temperature = 115^oC to 170^oC
- Melting point =120^oC to180^oC
- Specific Gravity = 1.3

TEST RESULTS & DISCUSSIONS

3.1 GENERAL

The investigation of plastic brick was carried out to testing and determining the optimal percentage of plastic brick .for the various proportions used in bricks and required brick test be following conducted and discussed.

- Water absorption test
- Efflorescence test
- Hardness test
- Soundness test
- Structure of brick test
- Compressive strength test

3.2 Testing Report of Plastic Brick

S.NO	BRICK TEST DESCRIPTION	RESULT
1.	Water absorption	0%
2.	Efflorescence	Nil
3.	Hardness	Good
4.	Soundness	Good
5.	Structure of brick	Rectangular shape

3.3 Compressive strength

It is the most common of all test of brick is the compressive strength test because of the intrinsic importance of the compressive strength of brick in construction. Three test specimens shall be made from each sample for tested. To the test specimens are placed compressive machine of capacity 2000KN. It could be seen from the figure that the compressive strength was reduced significantly by 15% when replacing of waste plastic

Table.1 which shows the compressive strength of Brick (without chip stones)

S.No	% plastic	Compressive Strength (N/mm²)
1.	0%	6.36
2.	5%	8.6
3.	10%	14.5
4.	15%	18.2

Table.2 Compressive Strength (With Chips)

S.No	% plastic	Compressive Strength (N/mm²)
1.	0 %	7.95
2.	5%	15.4
3.	10%	23.6
4.	15%	27.2

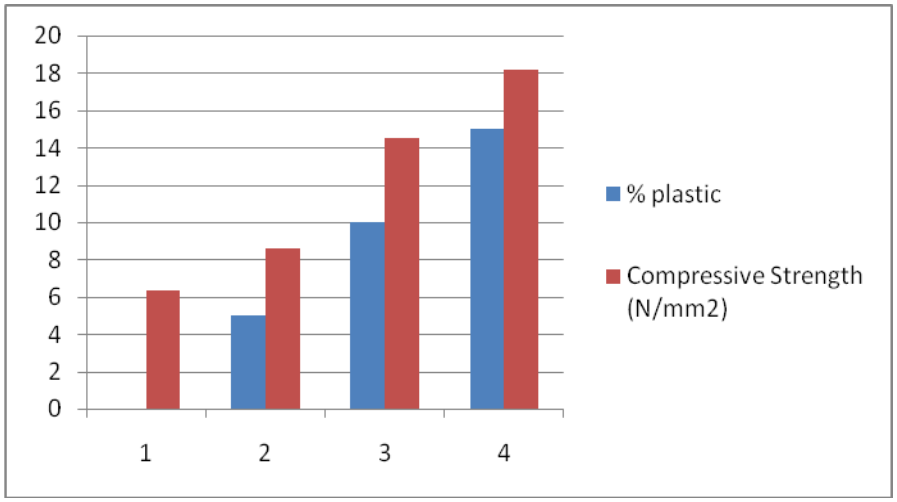

Fig 3 compressive strength of brick without chips

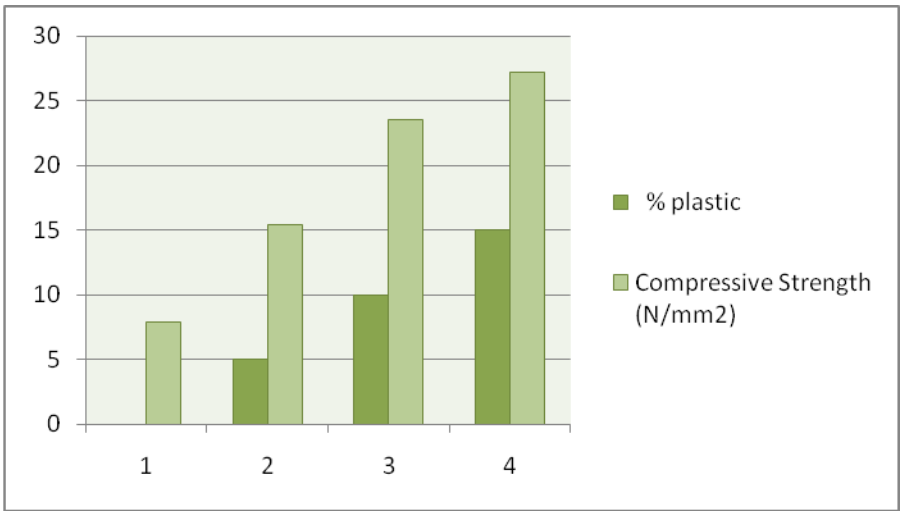

Figure 4 compressive strength of brick with chips

3.4 Advantage of plastic brick

- More economy.
- Low cost.
- Material easily available.
- Self compaction of brick.
- Skilled labour not required.
- High bonding strength.
- High durability.
- More elastic modulus.
- Curing is not necessary.

3.5 Disadvantages of Plastic Brick

- The temperature above 200° C Means Brick Was Melted.
- The Handlings are difficult and to wear safety production.

3.6 Applications (or) uses

- Used to marine work.
- Used to water tank construction.
- Construction the walls and building.
- Used to sewer pipe construction.

4.1 CONCLUSION AND RECOMMENDATION

From the results obtained from these studies the following conclusions can be drawn:

The strength of the specimen of brick was summarized. The other brick test is depended on the materials used for the brick proportions with replacement of fine aggregate as waste plastic material.

- From the experimental investigation we found that the compressive strength and other brick test while compare with normal bricks strength behavior.

- The compressive strength of waste plastic brick proportion of various percentage strength is maximum strength of 27.2 N/mm^2 increased.
- The other test results are compare with plastic brick is good conditions and behavior.
- In this brick more than the normal brick all the air voids can arrest by the cracks to the brick. The cost of brick cost is reduced.
- If the environmental pollution are reduced to direct and indirect manner. All the research investigation is doing on plastic brick has been given green original for using of construction of building.
- The method used to reduce the plastic and safe disposal. To control the global effects and environmental pollution.

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