" Eco bricks by using municipal solid waste and Agricultural waste"

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ABSTRACT:

Urbanization lead to a tremendous generation of strong waste and discharge of these waste substances grew to be a important problem. Dumping and landfilling of strong waste leads to environmental degradation i.e floor water infection thru leaching, which outcomes in soil air pollution and additionally impact on human health. In latest years, the utilization of strong waste as become greater possible to recycle the precious fabric and limit the quantity of strong waste, different pollutants and dumping cost. This paper is situation to reuse and recycle the reachable stable waste generated from paint industry. To discover a socio- economic, eco-friendly solution, waste trash can be recycled for the coaching of bricks, which preserve a cleaner environment. The elevated quest for sustainable and eco-friendly substances in civil building works. It is useful to grant sustainable and possible solution in the development field.

INTRODUCTION:

The massive requirement has been positioned on the building industry, specifically in the last decade due to extensive amplify in air pollution which motive a chronic scarcity of constructing resources. One absolute possibility is the use of municipal strong waste and agriculture waste as a building material. Bricks are viewed to be one of the most tremendous ancient building substances in the building industry. Due to the increase in population a fast increase in the demand for development building substances has occurred. In order to meet the needs of the increasing housing demand, there is an exponential need for the manufacturing of masonry bricks. The immoderate usage of the earth substances that are utilized for production of fired bricks consequences in huge depletion of the natural resources and also high power consumption. Use of municipal stable waste and agriculture waste in bricks extraordinarily reduces the proportion of clay in bricks through supplying suitable strength. The traditional substances which are predominantly used in construction process, such as concrete kind bricks, hollow type blocks, strong blocks, pavement type blocks and flooring tiles are generated from the already present naturally available resource.

Objectives:

- To minimize waste.
- To prepare eco bricks which is suitable for environment
- To reduce pollution.
- To overcome the agriculture waste and municipal solid waste problems.
- The strength of eco bricks is more than conventional bricks.
- To reduce the quantity of clay with natural waste material.

METHODOLOGY:

- At preliminary stage, the soil and waste is taken in proportion and mixed it in dry state then add water in it and mix it properly and put it for 24 hrs.
- After 24 hrs. the bricks are moulded with the help of mould of inside dimensions 19cm*9cm*9cm .
- After moulding process the bricks contain some amount of moisture in it. So drying is to be done for avoiding cracks while burning.

- Drying is done in two stages , up to 3 days the bricks is drying by hack process and after 3 days of bricks hack, the bricks is laid in stacks upto 3 to 10 days depending upon climatic condition.
- After the process of moulding and drying bricks are burnt in kilns to impart hardness, strength to the bricks and makes them dense and durable.
- After the burning of bricks, the kiln is allowed to cool down gradually for at least 7 days and the bricks are the taken out.
- Finally Eco bricks is obtained.

Fig 1. Plastic Waste

Fig 2.Agricultural Waste

Fig 3. Eco Bricks

EXPERIMENTATION:

Material Selection and its Properties:

For manufacturing Eco bricks, soil, plastic waste, solid & agricultural waste, bagasse and water is essential material. Here in case of ordinary bricks plastic waste and solid waste is not used and on other hand in Eco bricks plastic waste and solid waste is used

Soil : Bricks are mainly made from soil. Soil bricks require a soil with clay and sand combination of not less than 50% by weight. The three major types of soil found in India are Alluvial soil, Black cotton soil and Red soil. Alluvial soil contains around 20% to 30% clay and are good for brick making. The black cotton soil needs to be blended with other additives before being used. Red soils do not make good bricks due to their coarse and low plasticity.

Waste Plastic : which contains one or more number of polymers having large molecular weight. Solid in its finished state or same state will manufacturing or processing into finished articles is known as Plastic. Waste management in respect to plastic can be done by recycling. If they are not recycled then they will become big pollutant to the environment as they not decompose easily and also not allow the water to percolate to the soil and they are also poisonous. This plastic waste can be recycled and which are used for making Eco Bricks.

Municipal Solid Waste and Agricultural Waste : Municipal solid waste is any non- liquid waste that is created by an individual person, household, small business or institution. Agricultural waste is a waste produced as a result of various agricultural operations.

MIX PROPORTION:

Material quantity : For this we taken comparative study to get better and satisfactory results by using different material for variable mixture like soil, plastic waste, agricultural waste, etc.

% of Soil	% of Solid Waste	No of Bricks
70	30	15
80	20	15
90	10	15

(Water is used in suitable proportion guided by experienced labours on kiln.)

RESULT AND DISCUSSION:

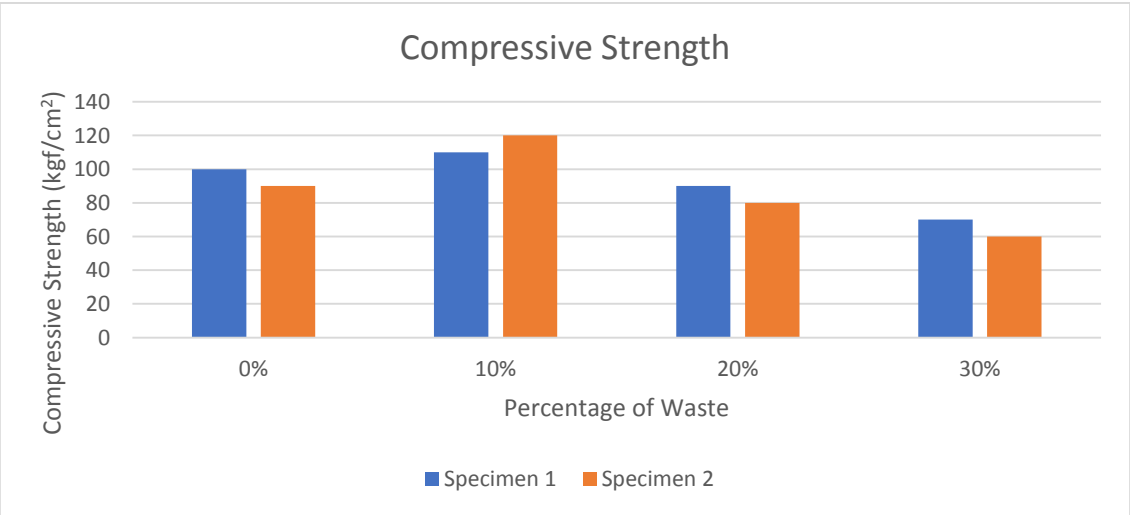

Table 1. Compressive strength

An analysis of the above results shows that, for adding 10% waste in the brick gives higher compressive strength with respect to conventional brick & other. After increasing the waste in the brick, the compressive strength decreases gradually.

(The remaining test have been taken but they have not been mentioned in paper.)

Conclusion:

- A Eco brick consists of recycled fabric and consequently cost is low compared to conventional bricks
- Eco bricks can be easily molded into any shape, bricks are an awful lot less complicated for anybody to raise to any preferred height and very proper surface finish can be achieved.
- The weight of this brick is nearly 2/3rd of conventional clay brick. Due to less weight of these bricks, the total dead load of the building will be reduced.
- These bricks are doubtlessly ideal cloth for earthquake prone areas as they are light-weight and flexible.
- The energy of eco bricks is more than conventional bricks.

Advantages:

- Compressive power is correct adequate for ordinary construction.
- Very low upkeep price is required
- Different orientations and sizes give different floor textures.
- Produces much less environmental air pollution at some stage in manufacturing process.
- The foremost gain of Eco brick is that they transform some thing that would have been dangerous to the environment into some factor that benefits neighborhood communities
- Eco bricks assist prevent hazardous material for being burnt or ending up in the ocean. When plastic is burnt, it emits CO2 growing carbon emissions and contributing to global warming.

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