

# Utilization of Waste Materials in Preparation of Bricks – A Review

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**Abstract:** In many cities, municipal wastewater is carried together with storm water, in a combined sewer system, to a sewage treatment plant. In some urban areas, municipal wastewater is carried separately in sanitary sewers and runoff from streets is carried in storm drains. Access to these systems, for maintenance purposes, is typically through a manhole. During high precipitation periods a combined sewer system may experience a combined sewer overflow event, which forces untreated sewage to flow directly to receiving waters. This can pose a serious threat to public health and the surrounding environment. In less-developed or rural regions, sewage may drain directly into major watersheds with minimal or no treatment. This usually has serious impacts on the quality of an environment and on human health. Pathogens can cause a variety of illnesses. Some chemicals pose risks even at very low concentrations and can remain a threat for long periods of time because of bioaccumulation in animal or human tissue. Wastewater from factories, power plants and other industrial activities is extensively regulated in developed nations, and treatment is required before discharge to surface waters. Some facilities such as oil and gas wells may be permitted to pump their wastewater underground through injection wells. Wastewater injection has been linked to induced seismicity. For the Utilization of waste water, it is necessary to take actions. We can reuse it in Construction industry. The waste utilization is a major crisis all over the world, for overcome it at some extent I'm trying to use waste materials like Sugarcane Husk, Boiler ash, Fly ash, etc. for in preparation of bricks.

**Keywords:** waste water, fly ash, sugarcane husk, boiler ash, reuse.

## 1. Introduction

Brick is one of the best significant building elements. Bricks have been mostly manufactured from shale and clay since years. The continuous mining of clay and the deduction of the topsoil for Derick developed because consider Dale reduction or Virgin proper very sight rate jolt. It is precise important to place these Wastes Ties. Also, the growth of unmanaged wastes has caused in landfill safely without disturbing health of human being environment Shortage as well as severe environmental pollution the waste is the very serious crisis we are facing now a days. So, we are utilizing these waste materials in our bricks. The materials include Waste water, Fly ash, Bagasse, Boiler Ash, etc.

These materials are sometimes toxic, hazardous and can cause damage to human health and environment. Proper disposal of such industrial waste materials is very essential for safety of mankind and to reduce environmental pollution. We can make use of these materials in construction.

In the development of pollution of water in rural as well as developed area in our country, within the waste water hazards impurities like inorganic particles and ceramic toxins such as pesticides, chemicals, soluble inorganic elements are present in the water. The waste water is global crisis now a days. The waste water from sugar treatment plants is normally subjected to extended aeration in ponds and is ultimately made to undergo intensive biological oxidation.

So, utilization of the waste materials in the construction industry is the best solution for minimization of waste. We have used the wastes like waste water from sugar and dairy industry, Bagasse, Boiler Ash, Fly Ash, etc. in the preparation of mud bricks.

It will reduce the consumption of natural materials used for bricks.

### A. Aim

- To Utilize the waste water and waste materials.
- To prepare eco- friendly bricks
- To reduce the cost of material, and make light weight bricks.

### B. Research Objectives

In order to overcome the environmental damage and to cater for the environmental threats related to waste, the following objectives were set in the study.

- Utilization of waste water from sugar and dairy industry.
- To prepare cost effective bricks and eco-friendly bricks.
- To increase the strength of the brick.
- Reduction of the waste in the environment.
- To make light weight bricks.

### C. Limitations

The water test results are above limits we should treat water

accordingly.

Testing of water must be done, for the testing availability of labs.

#### D. Problem Statement

Since the large demand has been placed on building material industry especially in the last decade owing to the increasing population which causes a chronic shortage of building materials, the civil engineers have been challenged to convert waste to useful building and construction material. Recycling of such waste as raw material alternatives may contribute in the exhaustion of the natural resources; the reuse of waste will improve in population health aspect.

Brick is a major material that is required in constructing any type of building or other constructing purposes. Due to the increasing demand for the availability of building material for constructional work few alternative approaches are being made for replacing the conventional bricks. Fly ash brick is one of those alternatives. These kinds of building materials are being made with the combination of Fly ash, Granite dust, sand, cement, etc. In addition to that, water is also added to this mixture at equal proportions. Fly ash bricks are very light in weight and stronger when compared with conventional bricks. By manufacturing these bricks, the pollution levels in the atmosphere can be minimized. This reviewed approach on bricks making from waste is useful to provide potential and sustainable solution.

Waste generation and management is becoming a worldwide challenge resulting into increased environmental concern. Waste management and recycle into a sustainable construction materials as proved to be an alternate for waste disposal helping call at the world environmental pollution and economic. In recent years various sort of waste has been used/reused within the development of sustainable construction materials. This study reviews various attempts that are made to use sludge from different plants in housing industry. The mechanical and physical properties of the products, the environmental effect of the products and possible recommendations for future research was presented in this review

Some of the features that attracted us to these topics are:

S. No.	Features
1	Eco-Friendly
2	Economical
3	Utilization of waste

## 2. Literature Review

Use of glass fiber and textile waste for the manufacturing of fly ash brick. By adopting same critical mix and replacing cement by GGBS, it is found that by increasing the percentage of GGBS; workability increases but strength decreases. In order to increase the strength cement is replaced by combination of GGBS and RHA. The maximum 28 days split tensile strength was obtained with 30% GGBS replaced with cement

Potential uses of waste sludge in Brick Manufacturing: A review. The of review various attempts that are made to use of sludge from different plants in housing industry. The water

treatment plant, sludge almost resembled the brick clay in its chemical composition. Brick can be successfully produced from water treatment plant sludge incorporated with clay minerals; which contain high silica content; under the conditions, mixing proportions, firing temperatures, and manufacturing methods used in this study.

An Experimental Study on Papercrete Bricks Manufactured using Paper Pulp, Lime and Fly Ash. Papercrete brick in which cement is replaced with 20% fly ash and 20% lime i.e., PBFL20 has the highest compressive strength i.e., 5.5 N/mm<sup>2</sup> than all the other papercrete bricks. Further, replacement of cement with fly ash and lime decreases the compressive strength. PBFL20 papercrete brick has the least water absorption than all the other papercrete bricks.

Effects of treatments on properties of cement – fiber bricks utilizing rice husk, corncob and coconut Coir. This paper has discussed the fabrication of cement- fiber bricks utilization of RH, CB and CC. In this research study, it was found that CC has shown the most potential fibers that have effect on the strength of the brick produced.

Use of paper mill waste for brick making. This paper presents the details of feasibility of replacing natural soil used in brick making by some extent with lime mud waste, as obtained from dumping site of a paper mill in Assam, India. Lime mud is a low-cost, calcium carbonate rich material that can be used as a binder cum inert filler material to improve the packing and densification of soil-based bricks. Since lime mud is a waste material and can be utilize free of cost for brick making, so brick manufacturing by using it is economical, beneficial to society, and environmentally friendly. The compressive strength of unburnt bricks increases with lime mud proportion.

Glass fibre reinforced gypsum (GFRG) Bricks. This paper represents the use of Gypsum (Industrial Waste), Glass Fibres in the brick preparation to minimize the use of cement, steel, sand, water, gravel etc. They will provide ecofriendly, light weight bricks. Minimization of Industrial waste (Gypsum) takes place. GFRG bricks are uniform in shape with smooth surface finish so does not requires plastering. The compressive strength of brick is found to be 5.5 KN/mm<sup>2</sup> which is less as compared to conventional bricks.

Development of Eco bricks and Concrete with the partially replacement of cow dung. These bricks are Lighter and Eco friendly. The brick obtained by partial 10% replacement of clay by cow dung results less strength as compare to conventional bricks.

An experimental study on bricks manufactured using M-Sand, Sawdust and Recycled Plastic. Plastic brick is found to have more strength than the normal brick. The settling time of plastic brick is find too low as compared to standard brick.

A review on production of fly ash bricks – an alternative to conventional bricks. Fly ash bricks are one of the best alternative sources to reduce the demand for the use of conventional bricks. The cost of production and the requirement of raw materials are very less and reasonable. It is very lightweight and stronger than conventional bricks. It has high rigidity and less water absorption.

Literature survey and study on steel fibred lime brick and their application on environment. When steel fibers of 0.2% to 1% are added to lime mortar, the strength of brick is increased from 25% to 35% - depending on the proportion of fibres added and the mix design.

### 3. Methodology

- We decided to select the environmentally friendly project. We discussed it with our guide and friends.
- We have studied from various sources like internet, websites, literatures etc. from this study We had chosen this topic.
- We have collected detailed information about it.
- We have selected the materials which are need to prepare bricks, for this We visited nearer Sugar Factory.
- Collection of material.
- Testing of water should be done.

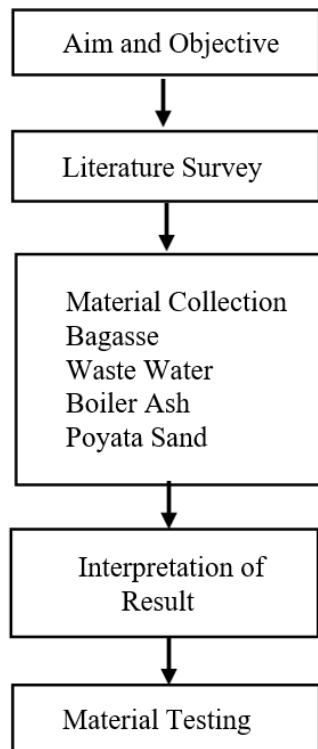


Fig. 1.

### 4. Scope of the Study

This project provides a sample amount of scope for the minimization of waste materials. It will help to develop the structures by utilizing wastes in the construction industry. A minimum of natural materials are used and maximization of using wastes will reduce the burden on the waste processing.

### 5. Conclusion

This is the partial completion of the project named as project Stage I. It is a research project for production of eco-friendly, light weight, economical bricks. The utilization of Industrial Waste takes place from this project.

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