

# A review on production of fly ash bricks - an alternative to conventional bricks

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**ABSTRACT:** 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.

**Keywords:** Fly ash, Granite dust, cement, Low CO<sub>2</sub> emission, Reasonable cost.

## I. INTRODUCTION

Fly ash bricks are one of the alternative approaches for the replacement of conventional bricks for construction use. In the conventional brick-making process, the brick has to undergo a burning process for rigidity. As a result of this process, there occurs a huge pollution in the atmosphere by the enormous amount of CO<sub>2</sub> emission. To overcome this hard situation, the concept of Fly ash brick has been made. The main ingredient of fly ash brick making is fly ash which is normally available in many thermal power plants in our country. Along with that, cement, sand, and water are also added at correct concentrations. The heating or burning process step is not required in fly ash brick production. So, on the whole the usage of fly ash bricks by replacing conventional bricks is the only solution for controlling the global warming and CO<sub>2</sub> foot prints entering into the atmosphere.

## II. FLY ASH SOURCE

The main raw material required for manufacturing fly ash brick is fly ash which is produced in thermal power plants. In our country, the major energy production is done from thermal power plants. Industrials that use coal for generating energy would produce fly ash and this fly ash can be treated by a cyclone converter and then it can be used as a raw material for fly ash brick manufacturing.

## III. FLY ASH BRICK MAKING PROCESS

The fly ash brick-making process is very simple. It is a slow setting of pozzolana cement mix. It is the same as the process of cement making in factories. The only thing in this is the clay and limestone are being burnt along with coal and gypsum. Then, it is mixed with the cement and kept for molding. The brick which is kept in molds is allowed to dry at room temperature without heating or burning. Later, the curing process was done for 28 days. After that, the bricks are removed from the molds and used as constructive building material.

### Merits of Fly ash bricks:

- It has uniformity in its size and shape.
- High durability when compared to conventional bricks.
- Cost-efficient
- Carbon dioxide emission is reduced in the atmosphere.
- Very light in weight and easy to transport.
- By constructively utilizing fly ash, the rate of disposal of harmful wastes is reduced.

## IV. REVIEW OF LITERATURE:

Basumajumdar *et al.*, in 2004 has studied that the fly ash and lime has some cementation properties when they react

together. He also observed that when lime mixed with oxides such as silica, alumina and iron oxides of fly ash it starts to form different bearing phases and these phases when reacted with water turns into hydrated forms.

Gadling *et al.*, has studied the comparison between the normal clay bricks and the fly ash bricks. By using the fly ash material which is waste product from nature there will be a chance for reducing solid waste disposal. By manufacturing these bricks with the composition of 40% fly ash material and 60% clay would be the best alternative source to replace the conventional bricks. The usage of fly ash as raw material can be an effective measure to replace the clay bricks because it can save the land by reducing the pollution.

Cengizler *et al.*, has studied the methods of fly ash brick production. In addition to that, it also been stated that the non-fired fly ash bricks were considered to be an advantage for environment and for ecological sustainable development.

Ravi Kumar *et al.*, 2014 has studied the behavioral properties of fly ash bricks by taking fly ash, cement, gypsum, sand and lime in various different concentrations. Various tests such as compression test, water absorption test, weight test were performed to compare these bricks with the normal bricks. While comparing, the fly ash bricks has shown more compressive strength than the normal conventional bricks.

## V. CONCLUSION:

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.

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