

Fly ash sand lime aerated blocks

In presence of moisture, fly ash reacts with lime at ordinary temperature and forms a compound possessing cementitious properties. After reactions between lime and fly ash, calcium silicate hydrates are produced which are responsible for the high strength of the compound.

Autoclaved Aerated Concrete Blocks

This is a light- weight building material produced by autoclaving a set mix of fine siliceous materials such as ground sand or flyash and a binder like portland cement or lime. Lightness is achieved by incorporating a large proportion of closed microscopic pores in the slurry with the help of entraining or foaming agent.

Advantages of autoclaved aerated concrete blocks:

High strength to weight ratio, Low thermal conductivity, Stability to variations in temperature and humidity, and resistance to fire.

Further, its low density permits use in larger building units which serves as a distinct advantage in pre fabrication. Appreciable savings are effected in foundation loads in multi-storeyed construction. It is therefore being used increasingly as walling units in some developed countries.

Proposal:

The cost fire clay bricks is going up making alternatives acceptable.

Large companies like DLF are already using light weight aerated concrete blocks in high rise buildings. Production units for aerated concrete blocks have been set up in the country. There is good scope for setting up this unit in proximity to cities like Hyderabad and vizag.

Capacity

Viable capacity of aerated concrete block project i is 150,000 m³/year.

Equivalent to 150 million ordinary bricks

Product Specification

General Specifications of Aerated Concrete Block

Length(mm)	Height(mm)	Width(mm)	
600	200	60	75
	250	120	100
	300	180	125
		240	150
		(increase by 60)	(increase by 25)

Manufacturing Process

Cellular (aerated) Light Weight Concrete (CLC) can be manufactured by a process involving the mixing of flyash, cement, coarse sand, fine sand and a forming agent in a mixer to form a thin slurry. The slurry is then poured in moulds and allowed to set. The blocks are then removed from the moulds and are cured by spraying water on the stack. They can be cured by Autoclaving with steam. The bulk density of the product varies from 400 to 1800 kg/cum. The process is carried out in the following steps.

1. Mixing fly ash and calcined gypsum
2. Mixing additives and cement
3. Mixing lime
4. Mixing blowing agent
5. Pouring into moulds
6. Cutting
7. curing
8. s. autoclaving

Market:

High rise buildings are the order of the day. Weight of the wall becomes an important load in these constructions. All such buildings are invariably planned with light weight materials. Marketing 150 000 Cu. M. involves catering to 15 high rise buildings (30 plus floors)

Technology:

Proven technology is available from multiple sources

Plant and Machinery:

Mixer, hydraulic press, tunnel dryer and autoclaves are the main machinery. All the machinery is indigenous.

Raw materials:

The raw materials required are fly ash, cement, sand and lime.

Utilities:

Main utilities required are Power, Steam (10 – 12 Kg / sq.cm pressure) and water. Steam generation using concentrated solar heat collectors may prove economical if land is available at low price.

Project cost

About Rs. 1200 lakhs

Turnover and profitability:

Annual turn over will be about Rs. 15 crores. Net profit margin will be 15 to 20 %

Suggested location:

Near a thermal power plant and close to a major urban center.

Entrepreneur profile:

Suitable for entrepreneurs associated with building and construction Industry.

Apitco's consultancy:

1. Technology tie-up
2. Project planning

PROCESS FLOW DIAGRAM

