

The Compressed Earth Block (CEB) technology offers a cost effective, environmentally sound masonry system. The product, a Stabilised Compressed Earth Block has wide application in construction for walling, roofing, arched openings, corbels etc. Stabilised Compressed Earth Blocks (SCEBs) are manufactured by compacting raw earth mixed with a stabiliser such as cement or lime under a pressure of 20-40 kg/cm² using a manual or mechanised soil press.

Equipment

A number of manual and hydraulic machines are available in India. The basic principle of all the machines is the compaction of raw earth to attain dense, even sized masonry units.

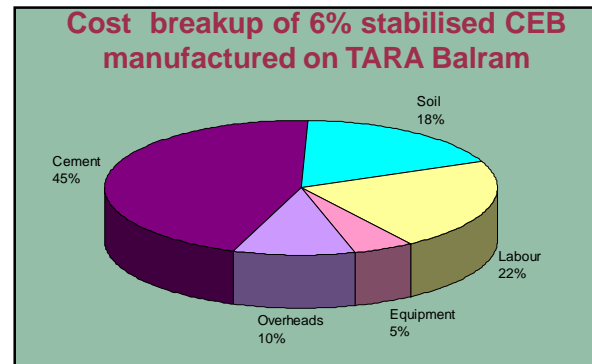


Business

The Compressed Earth Block technology package is a profitable business for micro and small scale building material producers and construction companies. A total investment of approximately Rs. 1,00,000/- for a manual scale production unit yields a net profit of Rs. 70,000/- per annum; while an investment of Rs. 6,50,000/- lakhs in a mechanised unit can yield upto Rs. 2,50,000/- per annum after the second year. The market for CEB technology is especially good in areas where soil of adequate quality is available and fired bricks are of poor quality.

Product

The Stabilised Compressed Earth Block is a masonry unit of cuboidal shape. This may be solid or hollow or interlocking. The shape and size of a block is defined by the equipment used in its manufacture. SCEBs can be used for load bearing construction upto 3 storeys. The cost of a block depends upon a variety of factors including quality and price of available soil, amount of stabilisation, labour productivity equipment and overhead costs. The degree of stabilisation has the maximum influence on the cost of the product.



Technical Specifications

The performance specifications of SCEB are based on B.I.S code **IS 1725, 1982** and tested in accordance with **IS 3495-1992**.

Techno-economic Characteristics	Specifications
Dimensional Variation	+/-2 mm
Wet compressive strength	20-30 kg/cm ²
Water absorption	<15% by weight
Erosion	<5% by weight
Expansion on saturation	<0.15% in block thickness
Surface characteristics	No pitting on the surface

Production process

The production of SCEB is based on the principle of densification of raw earth mixed with stabiliser (cement or lime) in small quantities ranging from 5-10% by weight of the mix. The production process incorporates 3 main stages.

Mix Preparation	Compaction	Post Production
Sieving	Filling the mould	Humid and wet curing
Batching	Moulding	Final storage
Mixing	Block ejection and stacking	Transportation

Man Power

6-10 persons are required to operate a manual machine. For hydraulic machines the manpower required is 6-8 persons. In both the systems 1 skilled worker is required while the rest are semiskilled. The workers can be trained to operate any machine in 10-12 days.

Raw Material

The primary raw material for the production of SCEB is raw earth or soil. OPC cement in small quantities and water are other constituents. Coarse sand or stone dust may be added depending on soil quality. Soil is made up of grains of various sizes. The grain size distribution of a soil determines its suitability for the manufacture of SCEB.

Soil Composition for use in CEB

Grain type	Grain size (mm)	Optimum (%)	Acceptable range
Fine gravel	2.0-4.0	7	0-10
Coarse sand	0.2-2.0	30	15-35
Fine sand	0.02-0.2	23	15-35
Silt	0.002-0.02	20	15-25
Clay	Below 0.002	20	10-30

Building with CEB

The Compressed Earth Block building system can be used in a variety of ways to construct buildings that are aesthetic, efficient and easy to build.

The basic design principles of a good SCEB building are :-

- Strong foundation with sufficient plinth height.
- Sufficient roof overhang and a strong wall finish.
- Careful detailing of joints and use of concrete elements where tensile stresses are active.

In India more than 5 million Stabilised Compressed Earth Blocks have been used to build residential and community buildings in both urban and rural areas. The benefits of this technology have been appreciated by the public sector and it is being promoted by HUDCO's network of Building Centres to build public sector housing and institutional projects.



Unique features of CEB

- Low energy and emissions
- Uniform size
- High strength
- Thermal insulation
- Versatile
- Cost effective



For more information contact :

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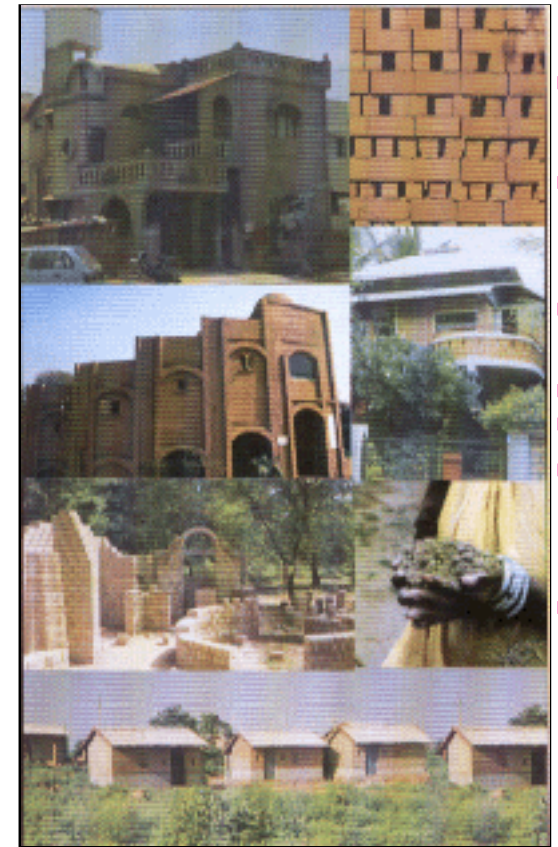
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Eco Building Advisory Unit



**An aesthetic, environment friendly,
cost effective option for building**

Compressed earth block technology



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