

UN-Habitat Sri Lanka

Sustainable Construction Using Alternative Technologies

Compressed Stabilized Earth Blocks (CSEB) for Wall Construction

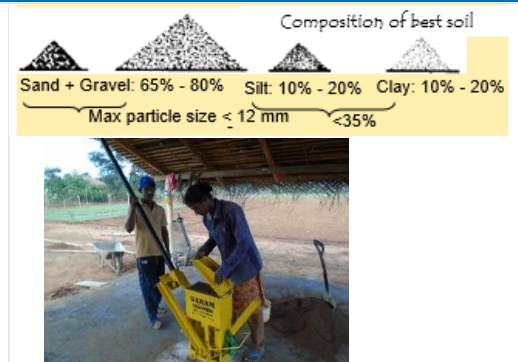


About CSEB

- CSEB is a relatively new eco-friendly building material to construct walls.
- It is produced with earth, stabilized by cement. It is a substitute to using burnt bricks or cement blocks for wall construction.
- CSEB requires no plaster. Hence it saves plaster, sand, cement, lime and labour costs.
- CSEB blocks can be cast in-situ using manually operated machines, if suitable soil is available, or purchased in the market from commercial producers.
- Commercially produced CSEB comes in two forms; as normal masonry blocks or interlocking blocks. Construction with interlocking blocks is faster.
- No cement mortar is required for bonding. Instead, a thin cement soil paste used for bonding.

Methodology

- **On-site production method:** Sand and gravel content should be over 65% and the silt and clay content should be less than 35% of earth to achieve the required strength and durability. If the composition of in-situ soil differs, it can be corrected by adding appropriate constituents.
- The ratio of cement by volume varies from 5 - 7%.
- Moderately wet cement-earth mix is compressed in a mould fixed to a lever operated machine.
- The blocks are stacked in the shade and cured by sprinkling water and covered by a polythene sheet for minimum of 14 days.
- It takes 28 days for the blocks to achieve its full strength.



Benefits

- CSEB is superior in engineering properties and thermal comfort.
- It is environmentally sustainable, as it prevents felling of trees for firewood and is free of harmful emissions.
- CSEB construction is less in cost compared to conventional bricks or cement blocks (when walls are without plaster).

More information and Related Resources

- **Sri Lanka Standard 1382:2009; Specification for Compressed Stabilized Earth Blocks.**
- **UN-Habitat Promotes Eco-Friendly, Compressed Stabilized Earth Blocks for Construction**
<http://unhabitat.lk/news/un-habitat-promotes-eco-friendly-compressed-stabilised-earth-blocks-for-construction/>
- **UN-Habitat helps families to construct environmentally-friendly houses in Sri Lanka's Northern Province**
<http://unhabitat.lk/wp-content/uploads/2015/01/case13g.pdf>
- **Compressed Earth Blocks: Manual of Production (GTZ):** <http://www.ecohabitar.org/wp-content/uploads/2012/01/04-57921.pdf>