

Unfired clay – the green construction material

E. D. Kristiansen and T. Gregersen

DTU Civil Engineering, Technical University of Denmark
s053486@student.dtu.dk, s072580@student.dtu.dk

UNFIRED CLAY – THE GREEN ALTERNATIVE

Unfired clay as construction material is an alternative to concrete or brickwork. The unfired clay is less annoyance for the environment, as it does not need a lot of energy to be processed before use.

In Denmark unfired clay can be excavated from below the mould.

Pisé and clay recipe

The wall for a house is constructed by the pisé method. A layer of the clay mixture into the mould and stamped a specified number of times using a fitting tool. Then another layer of the clay mixture is added and stamped again.

The clay mixture contains clay, water, sand and gravel. In this project we are trying different mixes of the clay mixture. One clay-sand mixture, one clay-sand-gravel mixture and one clay-sand-crushed tiles mixture. The project will answer how the aggregates effects the strength and the moisture-buffering effects and moisture content.

Environmental benefits

Compared to reinforced concrete unfired clay is a much greener material. The production of concrete demands cement which is burned at 1450 degree as well as machines to mix the cement with gravel, water and sand. Furthermore, vehicles are needed to transport the concrete from the concrete production site to the building site.

Concrete constructions need more reinforcement than clay constructions. The clay constructions only need reinforcement to strengthen the door- and window holes.

On the building site, less machines and less material to build with unfired clay are needed. So the conclusion is that buildings made of unfired clay are greener and also economical affordable compared to concrete buildings.