REUSE OF NATURAL WASTE MATERIAL FOR MAKING LIGHT WEIGHT BRICKS

ABSTRACT

Bricks are a widely used construction and building material around the world. Bricks are prepared from natural waste material which comprises of orange peels and coconut waste. Clay is used as a binding material for natural waste material and paper mill waste. The main objective of the present study is to reduce the quantity of clay with natural waste material. The orange peels and coconut waste which otherwise is land filled has been utilized to make construction bricks that serves a purpose of solid waste management. These wastes are used to reduce the quantity of clay as there is a greater shortage of clay in many parts of world. The bricks of prepared by orange peels and coconut waste with varying compositions of clay reduced the quantity of clay by (10% - 40% wt.) and (10% - 60%) respectively and tested as per Bureau of Indian (BIS) 1077:1992 (fifth revision) and ASTM C 67-03a standards. From experimentation it is observed that waste create bricks (WCB) prepared is light weight, shock absorbing and meets compressive strength requirements of ASTM C 67-03a and BIS. The brick making procedure being simple can be undertaken as rural entrepreneurship by unskilled labors of developing countries.

KEYWORDS: Bricks, orange peels, coconut waste, light weight, compressive strength.
INTRODUCTION:

BRICKS have been a major construction and building material for a long time. The dried-clay bricks were used for the first time in 8000 BC and the fired clay bricks were used as early as 4500 BC. The worldwide annual production of bricks is currently about 1391 billion units and the demand for bricks is expected to be continuously rising. Conventional bricks are produced from clay with high temperature kiln firing or from ordinary Portland cement (OPC) concrete. Quarrying operations for obtaining the clay are energy intensive, adversely affect the landscape, and generate high level of wastes.

The high temperature kiln firing not only consumes significant amount of energy, but releases large quantity of greenhouse gases. Clay bricks, on average, have an embodied energy of approximately 2.0 kWh and release about 0.41 kg of carbon dioxide (CO2) per brick. It is also noted that there is a shortage of clay in many parts of the world. To protect the clay resource and the environment, some countries such as China have started to limit the use of bricks made from clay. The OPC concrete bricks are produced from OPC and aggregates. It is well known that the production of OPC is highly energy intensive and releases significant amount of greenhouse gases.

ADVANTAGES:

- Saving the raw materials
- Considerably lower weight
- Thermal insulation
- Sound insulation
- Economical production
- Reduction of clayey content