

Development of Innovative Low Carbon Unfired Clay Bricks



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ABSTRACT

This study deals with an innovative way of developing low carbon unfired clay bricks. A further development of this research work could lead to the formulation of other masonry units (blocks and mortar). The obvious advantage of this product is its ability to minimise CO₂ within the wall of buildings with minimal heating or cooling. The bricks are composed mainly of stabiliser, clay and industrial hemp from crops. Apart from the additional attractions of utilising an industrial by-product and a renewable natural resource, the unfired process of brick manufacturing contributes directly to the reduction of CO₂ during the manufacturing process. This technology will eventually benefit the UK building industry and environment in general, by the industry's carbon footprint.

Laboratory tests were carried out on cylindrical specimens made with Lower Oxford Clay and industrial hemp bound with blended binders comprising of Portland Cement (PC) or Lime (L), each blended with Ground Granulated Blast-furnace Slag (GGBS), respectively. The specimens were moist cured at room temperature of about $20 \pm 2^\circ\text{C}$ for 3, 7 and 14 days before testing for unconfined compressive strength. Preliminary results suggest that there is potential in using clay, industrial hemp and GGBS blended with PC or lime for the manufacture of low carbon unfired clay building materials.

KEY WORDS :

Unfired bricks; Low carbon; Lime; Portland cement; Slag.