

Use of oil palm shell as an aggregate in cement concrete: a review

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ABSTRACT

The rapid development and increasing demand for construction materials have resulted in the underperformance of traditional construction materials. The production of traditional construction materials consumes considerable electricity and nonrenewable resources and causes emission of undesirable carbon dioxide (CO₂) gases in the atmosphere. Thus, new environmentally friendly materials in concrete manufacturing should be adopted during preparation to meet the required construction materials from available agricultural waste. This paper reviews the previous studies on the application of oil palm shell (OPS) as a construction material. Oil palm shell is one of the farming left over materials that has been extensively used in tropical countries. It has acceptable performance and can satisfy the minimum requirements for lightweight aggregate. A comprehensive review on earlier research studies related to the use of OPS and its influence on the fresh, hardened and durability properties of cement concrete are discussed. Based on a detailed review, the directions for subsequent exploration on the utilization of OPS in cement concrete are highlighted.

KEYWORDS

Oil palm shell; Agricultural waste; Non-renewable resources; Sustainability; Coarse aggregate

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