

Mechanical properties of concrete with coconut shell as partial replacement of aggregates

ABSTRACT

Coconut shell is one of the most prevalent agricultural solid wastes in several tropical countries. For coconut shell aggregate to be used efficiently for construction purposes, the mechanical properties are essential. Therefore, this study examined the effect of coconut shell as fine and coarse aggregate replacement in concrete with respect to the mechanical properties. The coconut shell concrete was designed for the characteristic strength of 30 MPa with the incorporation of coconut shell as a replacement for fine and coarse aggregate at 10%, 20% and 30% by weight respectively. The compressive, flexural, tensile strengths, as well as densities and water absorption of 96 cured concrete samples, were evaluated at 7, 14, and 28 days. The results showed that increases in replacement of coconut shell volume fractions will increase the workability and water absorption of the mixtures but will decrease the mechanical properties of the concrete.

Keyword : Coconut shell ; Agricultural solid wastes; Coconut shell concrete