Permeability properties of lightweight self-consolidating concrete made with coconut shell aggregate

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Abstract

Liquid substance intrusion into concrete is one of the issues that gradually damage its phys- ical and structural integrity. The permeability properties of lightweight self-consolidating concrete containing coconut shell aggregate was investigated in this study. A partial replace- ment of crushed rock (granite) with coconut shell from 0 to 100% in step of 25% was considered for the mixtures. Rice husk ash (RHA) and Silica fume (SF) were considered for developing binary and ternary blended self-consolidating concrete with total powder content of 450 kg/m3 and 550 kg/m3. The testing of concrete involved the saturated water absorption, sorptivity and chloride ingress, which were used to examine the permeability properties of the concrete developed. The laboratory investigations showed encouraging results with better performance up to 75% replacement of crushed granite with coconut shell aggregate.

Keywords

Self consolidating concrete, Coconut shell, Light weight concrete, Permeability, Silica fume