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ASSESSMENT OF STRENGTH PROPERTIES OF CASSAVA PEEL ASH-CONCRETE

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Abstract

Basic conventional building materials like cement and aggregates are becoming increasingly expensive due to high cost incurred in their processes, production and transportation. The utilization of locally available materials such as cassava peel ash that can either reduce or replace the conventional ones is being considered. This paper investigated the effect of partial replacement of cassava peel ash with ordinary Portland cement at 5, 10, 15, 20 and 25%. The cassava peel ash was obtained by calcinations of cassava peel to 700 ^{0} c temperature. Cube samples of size 150 x 150 x150 were prepared for concrete grade 30 and cured in water for 7, 14, 28, 90, 120 and 180 days after which they were subjected to compressive strength, tensile strength, durability, porosity, water absorption, slump, compact factor and shrinkage tests. The results showed that partial replacement of 10 and 15% gave compressive strength comparable to the control with 0% replacement and optimum replacement is 10%. It was discovered that the cassava peel ash contains all the main chemical constituents of cement though in lower percentage compared with OPC which shows that it can serve as a suitable replacement if the right percentage is used. However, its durability and sulphric acid resistance improved considerably at 10% replacement of cement with cassava peel ash. The study recommends that concrete made with cassava peel ash can be used for light construction works where high strength is not major requirement but where durability is a major concern.

Author Keywords

Cassava Peel Ash, Cement, Compressive strength, shrinkage, durability, Concrete

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