

INVESTIGATE THE USE OF EGG-SHELLS POWDER AS A PARTIAL REPLACEMENT OF CEMENT IN SCC CONCRETE.

ABSTRACT

The modern construction industry has aimed at identifying the most effective types of structures for both service, security, and durability. However, the types of materials of construction used has been the most determinant factor in the structure providing all these aspects. As a result, the process of juggling amongst the costs of construction material, ensuring the stability of structures from the establishment and linking of different elements by model simulations, types of construction materials and their characteristics after exposure to environment, and the physical erection of convenient, sustainable, and accountable structures, has been of high demand.

The over-dependence of cement and its properties in the manufacture of cement for use in most modern constructions has created depletion of the limestone ores. The search for materials with cementations properties that would partially reduce the amount of cement used in concrete production has been given an upper hand in modern construction industry. Different materials have been identified and still their short-comings have led to their less application in the extensive construction.

This research aims at carrying out an investigation on the use of eggshell powder as a partial replacement of cement in the production of SCC concrete for use in the establishment of modern sustainable structures. The scope of the project will be as follows:

- Introduction that will describe the problems that the realization of modern civil engineering structures has encountered due to ineffectiveness of the materials used, lack of sustainability, and the need to test new unexplored materials for partial replacements to be made.
- Selecting EGGHELLS powder to use as partial replacement of cement in SCC concrete production.
- Tackling the general research objective based on investigating the optimum eggshell powder that would partially replace cement in SCC and maintain both workability and Flexural strength of concrete.
- Verifying the specific objectives of testing the workability of SCC produced with ESP, testing the compressive strength of column elements fabricated after partial replacement, carrying material test on the ESP to determine the effects of SCC produced after partial replacement, to the

environment, and determining the maximum value of ESP that would ensure effective workability in this concrete in comparison with the normal SCC.

Material

Egg-shells, Ordinary Portland cement, Fine and Coarse aggregates, Water.

Equipment

Compression Test machine, Litmus paper, Vicat apparatus, Cube models, Coarse Aggregate Separating Apparatus, Mixer (manual equipment/electric-powered).