ABSTRACT

Considerable research has been done in the past to improve the strength and durability of concrete with the addition of various pozzolanic materials. However, concrete is very brittle as the strength increases. Extensive research has also been carried out to substantiate the desirable effects of pozzolanic materials on concrete by improving its ductility as well as its durability.

This dissertation is an account of experiments carried out to study the combined effects of silica fume, groundnut shell ash. A total of 18 mixes are made in this project. Tests carried out include compressive strength, ultrasonic pulse velocity test, initial surface absorption test, shrinkage, water absorption test.

Concrete produced using groundnut shell ash showed an average of 20%* decrease in initial surface absorption, 15%* decrease in water absorption, and 20%* decrease in shrinkage thus showing a more durable concrete compared with ordinary concrete.

Concrete mixes produced with a combination of silica fume and groundnut shell ash also shows a major reduction of an average of 28%* of shrinkage value and average of 30%* in water absorption value.

* Properties evaluated at 28 days after casting.