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Properties of lightweight bubbles aggregate (LBA) for the replacement of coarse aggregates in concrete

Abstract

The depletion of natural resources in the production of coarse aggregate are very crucial. Construction materials are solely depends on natural granite in the making of cement composite. Therefore , there is an urgency need to develop new alternatives material that can replace the usage of granite in concrete production. In this study, LBA have been produced to cater this problem. It is made from a mixture of bubbles from foam and ordinary portland cement. The ratio of the raw materials used is 1 part of bubbles and 2 part of ordinary Portland cement. Its manufacturing process does not involving any sintering process so it will part help to reduce energy comsuption at about 30%. The properties and characteristics of the LBA such as density, specific gravity, water absorption, strength were investigated. Results shown that the specific gravity of LBA was 1.00, water absorption was 19.44%, dry bulk density was between 730 – 800 kg/m^3 and dry loose bulk density was ranged from 700 to 730 kg/m^3 and the strength of aggregates is 14.00 MPa. It is found that the LBA can be used as a partial replacement of granite in the production of concrete.

Keywords;

Concrete, Density, LBA