

Assessment of Lightweight Aggregate Concrete Using Textile Washing Stone

Mujahid Ali
Universiti Teknologi PETRONAS, Malaysia

Abstract

Nowadays, lightweight concrete has many applications in the concrete and construction industry. This study aims to overcome the project's cost and re-use the waste material dumped by the textile industry known as a pumice stone. Besides, an attempt has been made to compare the conventional concrete and lightweight aggregate concrete using a mix ratio of 1:1.5:3 and determine the strength parameters of lightweight aggregate concrete. Lightweight concrete is made by Partial Replacement of Coarse Aggregate with different proportions of Pumice ranging from 10%, 20%, 30%, 50%, 75% and 100%. Furthermore, several tests have been conducted to investigate mechanical properties (Compressive strength and tensile strength) and power of hydrogen (PH). Each set comprised of 21 cylinders for both compressive and split tensile, and 27 cubes were casted for the PH. The experimental results show that the strength gradually decreases as the percentage of pumice stone

increases, and up to 30% of lightweight aggregate as a partial replacement gives the desired compressive strength. Besides, the split tensile strength decrease when the percentage of pumice stone increases and gives the desired strength up to 30% replacement. The PH density of concrete is decreased with the increase in percentage replacement of natural aggregate by pumice aggregate. It is concluded that 30% replaced concrete can be effectively used for structural purposes, whereas 50%, 75%, and 100% can only be suitable for the non-structural members..

Biography

Mujahid Ali studied in Civil and Environmental Engineering Department from Universiti Teknologi PETRONAS, 32610, Seri Iskandar, Malaysia.