

Acid Resistance of Oil Palm Shell Lightweight Aggregate Concrete Containing Palm Oil Fuel Ash

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ABSTRACT

Concern towards reducing waste disposed by Malaysian palm oil industry, palm oil fuel ash (POFA) and oil palm shell (OPS) that poses negative impact to the environment has initiated research on producing oil palm shell lightweight aggregate concrete (OPS LWAC) containing palm oil fuel ash. The present investigation looks into the effect of palm oil fuel ash content as partial cement replacement to compressive strength and acid resistance of oil palm shell lightweight aggregate concrete. Two types of mix, plain OPS LWAC and another one containing POFA as partial cement replacement have been used in this research. Cubes of 100 x 100 x 100 (mm) were water cured for 28 days before subjected to compressive strength test and acid resistance test. The findings indicate that suitable integration of POFA content would ensure occurrence of optimum pozzolanic reaction leading to densification of concrete internal structure which increases the compressive strength and better durability to acid attack. Integration of 20% POFA successfully assist concrete to achieve the highest compressive strength and exhibit superior resistance against acid attack compared to other mixes.

KEYWORDS: Acid Resistance; Durability; Oil Palm Shell Lightweight Aggregate Concrete; Palm Oil Fuel Ash; Partial Cement Replacement

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