

**UTILIZATION OF RECYCLED CERAMIC TILES AS SUPPLEMENTARY
FINE AGGREGATES IN CONCRETE MAKING**

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ABSTRACT

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The study was conducted from September 2017 to March 2018 at Cavite State University, Indang, Cavite to utilize recycled ceramic tiles as supplementary fine aggregate in the production of concrete. Specifically, it aimed to: 1. determine the workability of concrete using recycled ceramic tiles as supplementary fine aggregate; 2. determine the most economical proportion of sand and crushed ceramic tiles as supplementary fine aggregate in producing concrete; 3. establish the comprehensive strength of concrete from different proportions of crushed ceramic tiles in 7,14, and 28 days curing period; and 4. provide tarpaulin for the study.

A huge mass of ceramic tiles change into wastage, these waste materials are not reusable and recyclable due to their physical and chemical structure. Given the high amount of concrete production and the possibility of wastage materials in them, using ceramic wastage could be an effective measure in maintaining the environment and improving the properties of concrete. This research evaluates the possibility of using recycled ceramic tiles as supplementary fine aggregates in concrete making. The researchers designed the concrete mixtures with 0%, 25%, 50%, 75% and 100% substitution of ceramic tiles' wastes to fine aggregates. The resulting cylindrical specimens were compared to control specimens thru compressive strength tests using universal testing machine. Through this, the researchers were able to determine which percent substitution yields the highest compressive strength.

The compressive strength tests show that the samples of the 100% substitution of crushed ceramic tiles had the highest average compressive strength of 14.7 MPa, followed by the 0%, 25%, 50%, and 75% group. A brief study on workability and compressive strength for 7, 14 and 28 days of all mixes has been carried out and observed that increase in tiles powder leads to the increase in strength and workability of concrete. This proves that the wastes generated in the tile industry can be used as a partial substitution to aggregates in producing concrete mixes.

The researchers recommend the use of recycled ceramic tiles as supplementary fine aggregate in concrete making for concrete pavement for lightweight vehicles, path walks, porches, steps, and lean concrete.

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