



Effect of Recycled Homogeneous Ceramic Waste Aggregates on Water Absorption of Mortar

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Abstract

Nowadays, concern for environmental issues encourages the researchers to find a solution for reducing depletion of natural resources. Utilizing the industrial wastes as a construction material is a win-win situation which has two benefits; first, will solve the problem of the landfill and on another hand by recycling and reusing the waste will increase natural materials reservation life span. Ceramic wastes are one of the by-products of ceramic manufacturing, which is directly meant for landfill ends traditionally. There have been several studies on replacement of ceramic waste with concrete admixture. However, there is no research on the effect of the using high rate of ceramic waste replacement on the rate of water absorption. This experimental work focuses on utilizing the homogeneous ceramic wastes as recycled aggregates and partial cement replacement and verifies the effect of this replacement on water absorption of mortar. River sand fully replaced by recycled ceramic aggregates and 40% of cement was replaced by fine ceramic powder. The specimens were cast in 100 x 100 x 100 mm cube for compressive strength test and water absorption test. Mortar containing the recycled ceramic wastes shows lower water absorption in compared to control specimens where the rate value, at the age of 90 days, are 1.32% and 2.11%, respectively.

Keywords: Water absorption, homogenous ceramic wastes; mortar

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