Effect of using palm oil fuel ash on the durability of cement paste in ammonium nitrate solution

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ABSTRACT

Durability performance for concrete material is vital to determine the life cycle of structures. In general, the concrete durability focuses mainly upon resistance against properties such as sulfate, chloride, and acid corrosion solution. However, limited studies have been conducted on ammonium nitrate solution. In this paper, the durability of cement paste using 10 µm palm oil fuel ash (POFA) in ammonium nitrate solution has been investigated. Cement was partially replaced with 10 µm POFA up to 30%. Cubes of 50 × 50 × 50 mm were cast and treated in ammonium nitrate solution having concentration of 20% till 90 days. The main parameters of this study namely sorptivity, volume of permeable voids (VPV), thermo-gravimetric analysis (TGA) are tested on 28, 56 and 90 days. From the result, it is concluded that cement replace with 10% and 20% of 10 µm POFA shows better performance between the mixtures that have been studied

KEYWORDS: Durability, Thermo-gravimetric (TGA), Sorptivity, Volume of permeable voids (VPV), Palm oil fuel ash (POFA), Ammonium nitrate

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