

Properties of concrete containing rice husk ash under sodium chloride subjected to wetting and drying

Abstract

In this study, the influences of different replacement levels of RHA blended cement concrete subjected to 5% NaCl solution with drying-wetting cycles was evaluated. For parametric study, RHA was used as a Portland cement Type I replacement at the levels of 0%, 10%, 20, 30%, and 40% by weight of binder. The water-to-binder ratio was 0.49. The evolution of compressive strength, weight loss, and reduction in strength was monitored for up to 6 months. Generally, the compressive strength test has been shown that use of RHA in blended cement has a significant influence on chloride concentration. When increasing the replacement level of RHA, the strength of concrete also increases in comparison to OPC concrete (except RHA40) even subjected to sodium chloride. In addition, increasing the percentage replacement of RHA tends to reduce the compressive-strength loss due to increased pozzolanic reaction. It is concluded that the incorporation of RHA in cement significantly improved the resistance to chloride penetration of concrete.

Keywords; Compressive strength, Drying, Rice husk ash, Sodium chloride, Wetting