

Effects of Rice Husk Ash on the Properties of Scrap Tyre Steel Fiber Reinforced High Performance Concrete (RHA-STSF RHAC)

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Abstract : This research aims to investigate the effect of Rice Husk Ash (RHA) on Scrap Tyre Steel Fiber Reinforced High Performance Concrete (STSF RHAC). RHA was obtained by control burning of rice husk in a kiln to a temperature of 650-700°C and when cooled sieved through 75µm sieve and characterized. The effect of RHA were investigated on grade 50 STSF RHAC of 1:1.28:1.92 with water cement ratio of 0.39 at additions of Scrap Tyre Steel Fiber (STSF) of 1.5% by volume of concrete and partial replacement of cement with RHA at percentages of 0, 5, 10, 15 and 20. The fresh concrete was tested for slump while the hardened concrete was tested for compressive and splitting tensile strengths respectively at curing ages of 3, 7, 28 and 56 days in accordance with standard procedure. Results of RHA-STSF RHAC indicated a reduction in slump and compressive strength with increase in RHA content, while splitting tensile strength increased with RHA replacement up to 10% and reduction in strength above 10% RHA content. The 28 days compressive strength of RHA-STSF RHAC with up to 10% RHA attained the desired characteristic strength of 50N/mm² and therefore up to 10% RHA is considered as the optimum replacement dosage in STSF RHAC-RHA.

Keywords : compressive strength, high performance concrete, rice husk ash, scrap tyre steel fibers

Conference Title : ICCEABM 2015 : International Conference on Civil Engineering, Architecture and Building Material

Conference Location : San Francisco, United States

Conference Dates : June 07-08, 2015