Study of Mechanical and Durability properties of Concrete using Paper slude and Activated Charcoal Powder for suistanaible concrete.

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Abstract:
The global cement industry contributes about 5% of greenhouse gas emission to the earth's atmosphere. In order to reduce bad environmental effects associated with cement there is a need to develop alternatives which make concrete industry sustainable. The industrial waste paper sludge (PS) is used for study which is generally dumped to the nearest site which polluted the land and atmosphere as well as it also affects aesthetics of urban environment. The study examines the possibility of using waste paper sludge (PS) as partial replacement of cement in a quantity of 5%, 10%, 15% and 20%. Coconut shell based activated charcoal powder (ACP) is used as an additive in concrete with 1%, 2% and 3% by weight of cement. The target strength of concrete mix is 40 N/mm^2. Mechanical properties of combination and their individual performance were studied and compared with conventional concrete. Compressive strength, Split-tensile strength and flexural strength tests were conducted at the age of 3, 7 and 28th days and it has been observed that optimum value of PS is 10% and ACP is 1%. Durability test was conducted by Rapid Chloride Penetration Test (RCPT) confirming to ASTM C1202. PS 10% replacement results observed raise in 13.15% as compared to conventional concrete and addition of ACP observed raise in 10.58% as compared to conventional concrete. In Durability study it has been observed that combinationof PS10% + ACP 1% is more durable compared to conventional concrete

Keywords: Paper Slude, Activated charcoal Powder, durability.