

(54) Title of the invention : A Study on Bacterial Concrete and its Physical Properties

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(57) Abstract :
ABSTRACT The present experimental investigations are taken up to study the strength characteristics in ordinary grade concrete and standard grade of concrete with and without addition of Bacteria Bacillus Subtilis. Based on earlier research work 10 cells/ml concentration bacteria is selected. A technique is adopted in the formation of concrete by utilize microbiologically induced calcite caco precipitation. Microbiologically Induced Calcite Precipitation (MICP) Bacillus Subtilis is a common soil bacterium can induce the precipitation of calcite. The present works deal with the bacterial concrete. Based on earlier research work 10 cells/ml concentration bacteria is selected. M20 chosen in this work the mix design is prepared by IS: 10262-2009. In this present research 26 number of cubes, cylinders, and prisms are casted to get the performance of the bacterial concrete which is tested for compressive strength, split tensile strength and flexural strength. Addition of bacteria shows increase in compressive strength, split tensile strength and flexural strength. Experimental results on bacterial concrete show maximum increase in the mechanical properties, i.e. compressive strength, split tensile strength and flexural strength for both M20 Grade when 30% cement is partially replaced with fly ash and 30% fine aggregate is partially replaced with foundry sand, Bacteria concrete shows 36.5%, (ie) 29.79% increases in 28 days compressive strength when compared with normal concrete for M20 grade respectively. Keywords: Self- Healing, Bacillus Subtilis, Compressive Strength, Split Tensile Strength, Flexural Strength.

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