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Bacterial concrete: Development of concrete to increase the compressive and split-tensile strength using bacillus sphaericus

January 2015 · [International Journal of Applied Engineering Research](#) 10(3):7125-7132

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Abstract

Objective: Microbial induced calcium carbonate precipitation is a novel method for increasing the physical strength of the cement concrete. The objective of the present investigation is to study the potential application of bacteria, *Bacillus sphaericus* to improve the compressive and split-tensile strength of cement concrete after comparing with conventional concrete. **Methodology:** Conventional and bacterial concrete was prepared and its strength was evaluated using standard Indian Specifications. **Result and Discussion:** A significant increase of 30.84% and 31.11% compressive strength and 3.32N/mm² and 3.45N/mm² of split-tensile strength was observed for respective B1 and B2 cell concentrations after 28 days of bio-curing. The obtained results revealed that bacterial concreted showed more strength than the conventional concrete. Water which enters the concrete will activate the dormant bacteria which in turn will give strength to the concrete through the process of metabolically mediated calcium carbonate precipitation. **Conclusion:** The present study concludes that bacteria will not negatively affect the compressive and split tensile strength of the cement concrete.

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International Journal of Applied Engineering Research
ISSN 0973-4562 Volume 10, Number 3 (2015) pp. 7125-7132
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