

## Abstract Details

**Title:** Role of Bacillus Subtilis in Self-Healing Mechanism of Concrete

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**Abstract:** This study includes various demonstrations regarding the role of Bacillus Subtilis in self-healing mechanism of concrete, As use of Bacillus Subtilis in concrete is important for development for strong concrete section by controlling and repairing the cracking mechanism which may occurs due to a number of reasons/ Here, MICP ( Microbiologically Induced Calcite Precipitation )system is considered for the study by utilizing Bacillus Subtilis and its nutrients which later acts as the food for the micro-organisms or bacteria's such as Sodium Bi-Carbonate ( $\text{NaHCO}_3$  ), Ammonium Carbonate (  $\text{NH}_4\text{CL}$  ), Calcium Chloride Dehydrate (  $\text{CaCl}_2$  ). Generally, they are mixed in a proportion of 1:2.5:5, Liquid form of Bacillus Subtilis is also added to the proportion (35 ml approx.) with the cell concentration of approximately 100cells/ml. The tests are performed on a cubical concrete section of 150mmx150mmx150mm for calculating and testing the compressive and tensile strength. As a result, it is found that there is a considerable increase in the strength and quality of concrete with added bacteria's/ Bacillus Subtilis. Bacillus subtilis JC3 is a typical soil bacterium which can also instigate the precipitation of calcite (Kadian & pannu, Durability Performance of Bacterial Concrete, 2018).

**Keywords:** Bacillus Subtilis, Bacterial Concrete, MICP (Microbiologically Induced Calcite Precipitation).