

## A REVIEW OF BACTERIA-BASED SELF-HEALING CONCRETE

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### ABSTRACT

*This article examines the many kinds of bacteria found in concrete and how they may be utilized as healing agents. This article also includes a short explanation of the different characteristics of concrete that change when microorganisms are added. Concrete has micro-cracks by nature. This results in concrete degradation, which leads to the entrance of harmful chemicals into the concrete, causing structural damage. As a result, the concrete must be repaired. Self-healing methods are used to overcome these problems. Calcite precipitation in concrete is caused by the combination of urease-producing bacteria and a calcium supply. The use of bio-mineralization methods to seal micro cracks in concrete has shown to be effective. The continuous hydration process in concrete may cover up newly formed micro-cracks. The ureolytic bacteria *Bacillus Pasteurii* and *Bacillus Subtilis*, both of which may produce urea, are combined with the calcium source to seal the newly formed micro fissures with  $\text{CaCO}_3$  precipitation. The bacterial concentrations were adjusted for improved outcomes in improving pore structure in concrete. According to the literature, the encapsulation technique produces better results than the direct application method, and the employment of bacteria may improve the strength and durability of concrete.*

**KEYWORDS:** *Bacteria,  $\text{CaCO}_3$  Precipitation, Micro-Cracks, Micro-Organism, Self-Healing Concrete.*

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