

A Study on Self Healing Bacterial Concrete

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Abstract: Concrete is the foremost building material broadly used in building construction, but cracks formed in concrete are inescapable and one of the major reasons for the weakness of concrete. The major downside of concrete is its low tensile strength due to which micro crack occurs when the load applied is more than its limit and this paves way for the seepage of water and other salts. This initiates corrosion and makes the whole structure vulnerable and leads to the failure of structure. To remediate this type of failure due to cracks and fissures, an approach of using bio mineralisation in concrete has evolved in recent years. In this method, of enhancing the performance of concrete, the calcite precipitating spore forming bacteria is introduced into concrete. When water enters through the cracks, it reacts with bacteria and forms precipitates of calcium carbonate, as a by-product, which fills the cracks and makes crack free concrete. This type of concrete prepared with bacteria is called as bacterial concrete. Various researches have shown positive results by adding calcite precipitating bacteria in concrete. Here in this project, we are going to study the mechanical properties of self-healing bacterial concrete with varying quantities of Bacteria and Calcium lactate. Many researches shown that optimum result of Self-Healing bacterial concrete was obtained at 0.5% and 2.5% Calcium lactate along with 10 and 15ml bacteria. Here we have decided to conduct an experimental study on Self-Healing Bacterial concrete with addition of 10ml bacteria to 0.5% and 2.5% calcium lactate and 15ml bacteria to 0.5% and 2.5% calcium lactate. Here in this study, mechanical properties of SHBC were observed and compared with conventional concrete and also observed that healing of cracks are done.

Keywords: Cracks, Self-Healing Bacterial Concrete, Bacteria, Calcium Carbonate.

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