



# **SELF-HEALING CONCRETE**

Concrete Healing will create and develop a self-healing concrete solution by a new formulation that will solve the problem of concrete structures deterioration well before the end of their service life as it will convert nutrients into limestone.

# SELF-HEALING CONCRETE

Concrete will continue to be the most important building material for infrastructure, but most concrete structures are prone to cracking. Crack formation is a common phenomenon in many concrete structures that is related to durability. While structural integrity is compromised by larger cracks, durability issues may also arise from submillimeter-sized cracks, especially when connected cracks increase matrix permeability.



Concrete can withstand compressive forces very well but not tensile forces. When it is subjected to tension it starts to crack, which is why it is reinforced with steel; to withstand the tensile forces.

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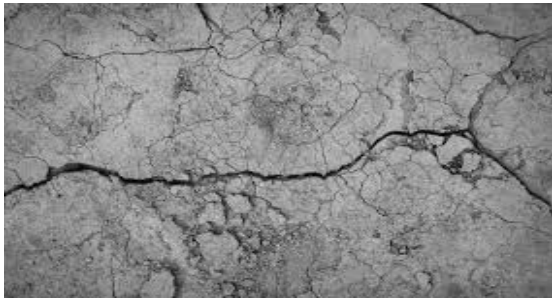
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It is also heavy on a budget to perform routine repair activities on buildings and structures. Hence, there is a demand to explore a sustainable method of healing cracking that comprises lesser cost and removes the physical need for involvement.

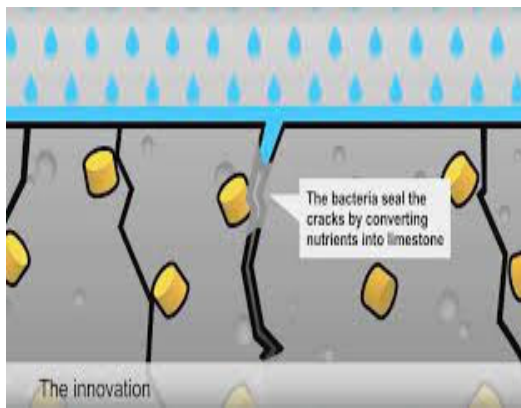
Repair of conventional concrete structures usually involves applying a concrete mortar which is bonded to the damaged surface. Sometimes, the mortar needs to be keyed into the



existing structure with metal pins to ensure that it does not fall away. Repairs can be particularly time consuming and expensive because it is often very difficult to gain access to the structure to make repairs, especially if they are underground or at a great height.



In addition, a variety of additives or replacements of cement can be applied in order to improve the durability of the final concrete product.

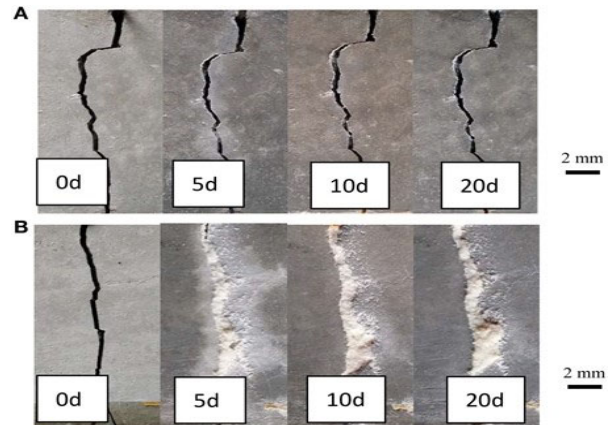
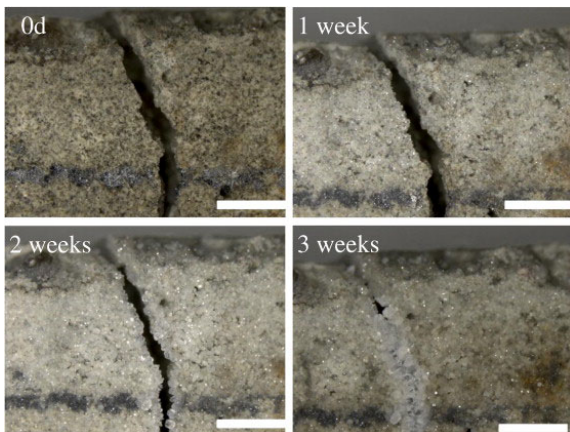


Self-healing concretes are being widely recognized as a remedial technique to improve the durability of concrete. Concrete strength has been enhanced by bio-technique based on calcite precipitation. Microbial cells achieved decent nourishment during the primary curing, as the binder mortar was porous. These microbial cells

were adjusting to a new environment.



Bio-mineralization techniques give promising results in sealing the micro-cracks in concrete. The freshly composed micro-cracks can be sealed up by perpetual hydration process in concrete.



A self-healing concrete solution that utilizes the spore-forming ability of the alkaliphilic *Bacillus Subtilis* and thus act as a self-healing agent that will solve the problem of concrete structures deterioration well before the end of their service life as it will convert nutrients into limestone.

