

Self-Healing Concrete

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Abstract: *Many concrete elements crack without there being any concern; some are even designed to crack. But for some elements, the avoidance, repair, or self-healing of cracks is of benefit. This is particularly true when steel reinforcement is present, such as in much large-scale infrastructure. In such concrete, the presence of unplanned cracks may raise the risk of corrosion of the reinforcement and subsequent deterioration of the concrete. Traditional concrete, if in contact with water, has a mechanism for self-healing called autogenous healing. It has this capacity because un-hydrated cement remains present in the matrix. When water contacts the un-hydrated cement, further hydration occurs and 'heals' the crack. Self-healing concretes reduce the need to detect and repair cracks and are one strategy to address corrosion risk. This has social, economic, and environmental benefits, as overcoming/reducing the need for maintenance and/or increasing longevity reduces disruption, as well as the cost and use of materials.*

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