The Durability of Reinforced Auto-Compacted Concrete

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Abstract: For conventional concretes without steel fibres, although this aspect is still controversial, there are several commonly used indicators of durability. Therefore, as part of a recent study-project to update SFRSCC mixed panels, tensile-strength tests were done to compare the specification of SFRSCC concrete and self-compacting concrete (SCC) samples. Nine different tests were used for SFRSCC and SCC to characterize their mechanical properties, electrical strength, chloride diffusion through unstable migration, and carbonization. The results for different concretes and curing times up to 28 days were presented and analyzed. Durability is one of the most important aspects of concrete due to its fundamental impact on the lifespan of the concrete. Structures must withstand the mechanical, physical, and chemical damage they are subjected to during their intended lifetime. In this regard, cracking plays a key role in the durability of concrete structures. Measures must therefore be taken to ensure that cracks do not exceed limits that pose a negligible threat to the durability of the elements. Increasing the permeability of the concrete after crack formation and propagation allows water, chlorides, and other corrosive substances to penetrate and promote their degradation report studied the effect of different amounts of steel fibers (0%, 0.5%, 1%) in cracked concrete. The specimens were cracked with a specified crack initiation offset (0, 100, 200, 300, 400, and 500 µm). After the cracks were induced, the samples were unloaded, and the cracks relaxed. The ruptured samples were then tested for low pressure water permeability. Two main conclusions can be drawn from these studies: For larger crack widths, steel fibers can repair the cracks, shorten the crack length and reduce the permeability of the crack surface.

Keywords: durability, steel fiber reinforced self-compacting concrete, corrosion. impact of modular construction, construction practices, housing market, earnings and profits, construction decisions, big data projects, new trends, projecting value chain

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