How can we make good concrete even better? - DTU Orbit (23/04/2019)

How can we make good concrete even better? New and traditional technologies for the concrete curing

It is known that some high-strength/high-performance concretes are prone to cracking at an early age unless special precautions are used. The paper deals with the methods of curing as one of the main strategies to provide both strength and performance. Curing by both external (conventional) and internal methods is reviewed and analyzed, among other methods of mitigating shrinkage and cracking of concrete. The focus is given on the mitigation of autogenous shrinkage of low water to binder ratio concrete by means of internal curing. The concepts of internal curing are based on using pre-soaked lightweight aggregate, super-absorbent polymers or water-soluble chemicals, which reduce water evaporation (so called "internal sealing"). These concepts have been suggested in the 90s, but still are not popular among users, engineers, contractors, concrete suppliers, researchers, and the rest of professionals who work for them. The differences between conventional methods of external curing and novel methods of internal curing are described. It is concluded that proper curing is a key factor to achieve durable concrete.