Effect of carbonation curing on the thermal evolution of hydrates in cementitious materials: An overview

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ABSTRACT

The CO_2 emissions responsible for the cement industry are considered to account for 5-8% of entire man-made CO_2 emissions, requiring a scenario to reduce CO_2 emissions (Goto et al. 2013). Accelerated carbonation curing (ACC) is an extensively used technique to actualize the carbon capture and storage (CCS) strategies (Kashef-Haghighi et al. 2015). ACC of the cementitious materials can lead to the enhancement of the mechanical properties with an increase in the amount of binder gel and the densification of the microstructure (Park et al. 2018). Moreover, the ACC of cementitious materials has been experimentally proven to affect thermal behavior (Park et al. 2018). This paper revisits the previous studies on the correlation between carbonation curing and thermal behavior of cementitious materials. In addition, a preliminary work pertaining to the thermal evolution of hydrates in carbonation-cured calcium sulfoaluminate (CSA) cement carried out by the authors will be briefly presented (Kim et al. 2021).

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