



STUDY OF FACTORS ACCELERATING CONCRETE SET TIME FOR A SUSTAINABLE BUILDING UP PROCESS

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Abstract

The present paper analyses the deficiencies of current technologies of concrete curing acceleration by heat treatment and based on the unused supplies of these methods, and also aims at designing new procedures of heat treatment with a significantly shortened treatment cycle in order to increase the efficiency of precast manufacturing plants.

It is well-known that in conditions of ordinary hardening, the mineral composition of concrete influences over time the speed of concrete strength gain through the ratio between the volumes of the cement stone's crystal component and gel component. It is demonstrated that the strength of the cement stone and the speed of increasing this strength depend on the mineral nature. Great initial strength (type I) and alumina cements, deemed to be high-quality, have higher hydration speed providing a significant gain of concrete strength in the first hours of placing, while slow-hardening cements provide concrete with long-term strength gains. It is also a known fact that cement batching up to 400 kg/m³ has a positive influence on the increase of concrete strength and concrete grade; above this level the influence of actual batching is not significant.

Key words: cement, interior temperature, grinding fineness, thermal treatment

Received: February, 2010; *Revised final:* June 2010; *Accepted:* July, 2010

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