

Effect of Local Temperature during Service on the Mechanical Properties of Concrete

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Extended Abstract

Concrete is one of the most widely used building materials. Extensive researches were accomplished the aggressive effect of very high temperature on the behavior of concrete. However, the effect of local service temperatures remains significant, even very important, if we consider the safety margins provided during the sizing of pieces in the warm regions and their severe climatic conditions of the setting and hardening. In this context, the data on the behavior of the concretes at service temperatures are necessary to predict the safety of the buildings and constructions in various regions. The main objective of this paper is to determine the sensibility of the concrete to its climatic environment, during the period of service in the Saharan regions. It has been shown, by using three different compositions of concrete based on local materials, that the performance of concrete fall considerably with the increase of the temperature until 60 ° C. A thermal enclosure was conceived; the evolutions of the strength are presented and compared with those obtained for the reference results at 20°C temperature. The consequences on the durability and the reliability of structures in these regions are important, which appeals to the necessity in a consideration the risks caused by geo-climatic conditions during the design of structures.

Keywords: temperature, concrete, mechanical, service, strength.

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