

Effect of curing methods on properties of plain and blended cement concretes

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June 2007

Abstract

This study was conducted to investigate the effect of curing methods on properties of plain and blended cement concretes. Curing of concrete is very essential for its strength gain and durability performance. Traditionally, concrete is cured by water ponding. However, the membrane-forming curing compounds are also utilized for this purpose. Though several studies have been conducted on the curing methods in general, the performance of curing compounds, particularly under hot weather conditions, has not been adequately evaluated.

Two groups of plain and blended cement concrete specimens were cast. In the first group, plain, silica fume, superpozz, and fly ash cement concrete specimens were cured at 25°C. In the second group, plain and silica fume concrete specimens were cured at 40°C.

The concrete specimens in both groups were cured as follows: 1- By covering them with wet burlap, 2- By applying two types of curing compounds. The effect of curing methods was assessed by measuring plastic and drying shrinkage, compressive strength, pulse velocity, and water retention.

The two curing compounds investigated were efficient in moisture retention and decreasing plastic and drying shrinkage strain. Although there was a reduction in the compressive strength and pulse velocity, this was marginal. The curing compounds performed well even under 40°C. However, the performance of acrylic-based curing compound was better than that of water-based curing compound. Therefore, it is recommended to apply acrylic-based curing compound.