

THE EFFECT OF SEAWATER ON SHRINKAGE PROPERTIES OF CONCRETE

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ABSTRACT

This research presents the effect of seawater on shrinkage properties of concrete. Concrete cubes of 150x150x150 (mm) with mix ratio 1:2:4 by weight of concrete 0.6 water-cement ratio were made in two batches. Half of the cubes (i.e. were made using fresh water and the other half were made using seawater. They were cured in fresh and sea water respectively for 90 days. Shrinkage at 90 days and ultimate shrinkage were analysed in accordance to American Concrete Institute manual on concrete and BS 8110: Part 2 respectively. Also coefficient that deals with concrete compositions such as slump, cement content, and aggregate size were varied so as to evaluate its effect on shrinkage. The findings revealed that shrinkage was interdependent on concrete composition and the result exhibited a higher shrinkage value for concrete with higher cement content and with higher slump value. However, reduced shrinkage values were noticed with higher aggregate sizes. It was also observed that concrete mixed or cured with seawater has higher shrinkage value than the control batches with dry shrinkage analysis value of 83.5% increase for concrete mixed with seawater (CSW) when compare to the shrinkage value of the control batches.

KEYWORDS: Concrete, Sea Water, Shrinkage