

THE EFFECT OF STEEL FIBER AND INTERNALLY CURING ON THE STRENGTH OF SELF-CONSOLIDATED CONCRETE

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Abstract

The main idea of this study is to find the effect of steel fiber on the strength and internally curing of self-consolidated concrete (SCC), by using lightweight aggregate (LWA) from available porcelain. The work includes two stages; the first stage involved making several experimental mixes and then choosing the one that corresponds to international standards with natural properties. The second stage was adding lightweight aggregate (LWA) by replacing 15% of sand with saturated fine lightweight aggregate (LWA) as internal curing material to study the change in the Mechanical properties of SCC. Four concrete mixes were used with different volume fractions of hooked steel fibers were incorporated 0%, 0.5%, 1%, and 1.5%. Results showed that adding steel fibers provides a slight increase in compressive strength while significant enhancement in tensile properties was observed. Furthermore, replacement of fine aggregate by (LWA) causes an increase in hydration which leads to higher compressive and tensile strengths. Results of the rate of absorption indicate that adding steel fibers has beneficial effects.