

EFFECT OF POLYPROPYLENE FIBERS ON SHRINKAGE OF SELF-COMPACTING CONCRETE

Iman Yadegaran, Mehrdad Mahoutian, Mohammad Shekarchi, Nicolas Ali Libre

Construction Materials Institute, Department of Civil Engineering, University of Tehran

Abstract

Self-Compacting Concrete (SCC) is a highly flowable, non-segregating concrete that can spread into place, fill the framework and encapsulate the reinforcement without any mechanical consolidation. The higher volume of paste and the lower aggregate content than the ordinary concrete, often results in an increase of shrinkage in SCC which has always been a great ordeal that the concrete practitioners have had to face.

Fibers are usually used to improve the different properties of concrete. Steel fibers are known to improve the mechanical properties, while other kinds of fibers like polypropylene have been widely used for reducing the shrinkage of the ordinary concrete.

Different studies have been performed to investigate the effects of steel fibers in SCC, while the usage of polypropylene fibers in SCC and its effects in reducing the shrinkage of this type of concrete has not been properly studied before.

In this paper, the shrinkage of SCC concrete with polypropylene fibers has been studied. Several samples with different fiber content were prepared. The results of the fresh properties, compressive and tensile strength and the shrinkage test on SCC concretes with and without polypropylene fibers were then compared together.