ICOCEE
3. International Conference on Civil and Environmental Engineering
Çesme - Turkey

3. ICOCEE – CESME, April 24-27, 2018
Editors: S. Sahinkaya, E. Kalipci, M.C. Bagdatli

Laboratory and Field Production of Polypropylene Fiber Reinforced Concrete in Different Ratio of Hyper-plasticizer

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ABSTRACT

In this study, concretes were produced in laboratory and concrete plants by using different ratios of hyper-plasticizer and polypropylene additive. Laboratory results and industrial environment results of concretes were compared. Eight (8) different types of polypropylene fiber were used in concrete admixtures. Polypropylene fibers were included in each mixture in three (3) different ratios. In order to protect the processability of the fresh concrete, the amount of hyper-plasticizer additive was increased as the rate of fiber is increased in mixtures. Hyper-plasticizer additives were included in %0.6, %0.8, %0.9 and %1.1 of the cement weight. Slump values of fresh concretes were analyzed. Slump values of concretes produced in concrete plants were lower than slump values of concretes produced in laboratory. 7 and 28 days of Compressive strengths of hardened concrete samples were compared. Compressive strengths of concretes produced in the plant gave better results than Compressive strengths of concretes produced in laboratory. Polypropylene fiber additive decreased Compressive strength of concrete. Upward wear and water absorbing characteristics of hardened concretes were analyzed as well. It was observed that concretes produced in the plant were more resistant against upward wear. It was determined that as polypropylene fiber additive increased, water absorbing values change.

Keywords: Hyper-plasticizer, polypropylene fiber, Compressive strength, wearing, water absorbing.