

**Re-use of polypropylene fiber admixed recycled aggregates in concrete**Ilker Bekir Topcu<sup>1</sup> and Hasan Baylavli<sup>2</sup><sup>1</sup>Eskişehir Osmangazi University, Turkey<sup>2</sup>Hittit University, Turkey

This research analyses recycle of polypropylene fiber admixed concretes. Study aims to research reuse of fiber admixed recycled aggregates in concrete. In this research eight types of polypropylene fibers are used. Polypropylene fibers were added to the mixture in three different ratios. The quantity of cement in the mixture is 300 kg/m<sup>3</sup>. Water-cement ratio is 0.52. For experiments, cylinder concrete molds with 150 mm diameter and 300 mm height were used. Samples were broken by jawbreaker at the end of 120 days. As a result of the break, recycled fiber aggregates were obtained with 0-4 mm, 7-15 mm and 16-22.4 mm sizes. Recycled aggregates' specific weight and unit weight were calculated. Values of specific weight and unit weight were decreased. By using fiber-reinforced recycled aggregates a new concrete mixture was made. To the new mixture, recycled aggregates with sizes of 7-15 mm and 16-22.4 mm were added. As fine aggregate, 0-4 mm natural sand is used. Ratio of cement in the new mixture is 350 kg/m<sup>3</sup> ratio of water-cement is 0.56. Compression strength of the obtained concrete is analyzed for 28 days. Compression strengths of fiber admixture concrete and fiber admixture recycled aggregated concrete are compared. Compression strength is decreased by 22.59% in some mixtures and increased by 11.14% in some others. It is concluded that by changing water-cement ratio and quantity of chemical admixture, it is possible to increase the compression strength. Therefore it is possible to use polypropylene fiber concretes in recycling.

**Biography**

Ilker Bekir Topcu is currently Professor in the Civil Engineering Department, Eskişehir Osmangazi University, Eskişehir, Turkey. He graduated from Engineering and Architecture of State Academy in 1980 and obtained his Master's degree from the Institute of Science, Anadolu University, Eskişehir, Turkey, in 1984 and joined the teaching profession as a research assistant in 1982 at the Anadolu University. He obtained his PhD from the Institute of Science, Istanbul Technical University, Istanbul, Turkey, in 1988. He has worked as a visiting Scientist at the Lehigh University, from 1990 to 1992, and Northwestern University, from 1996 to 1997. He has published 140 refereed papers in international and national journals, 156 proceeding papers in international and national congress and symposiums, one book chapter and 51 actual papers. His papers citation exceeded more than 3000. He supervised 12 PhD and 42 MS thesis. He is currently supervising 6 PhD and 11 MS thesis.

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