

Abrasion and water absorption properties of polypropylene fibre-reinforced recycle aggregated concreteHasan Baylavli^{1,2} and Ilker Bekir Topçu^{1,2}¹Hitit University, Turkey²Eskişehir Osmangazi University, Turkey

In this study, re-use of recycle aggregates obtained from polypropylene fiber-reinforced welded concretes in concrete is researched. Eight kinds of polypropylene fibers were used in the study. Polypropylene fibers were used within the admixture at three different rates. The amount of cement in the admixture is 300 kg/m³. Water-cement rate is 0.52. Cylinder samples in 150 mm diameter and 300 mm height were used for the tests. Samples were crushed in jaw crusher at the end of 120 days. Fibrous recycle aggregates in the size of 0-4 mm, 7-15 mm and 16-22.4 mm were acquired in the end of crushing. A new concrete admixture was acquired by using fiber-reinforced recycle aggregates. Recycle aggregates at the sizes of 7-15 mm and 16-22.4 mm were added to new admixture. 0-4 mm natural sand was used as fine aggregate. The fine obtained from recycle was not used in the new admixture. It was observed in the pretests carried out that recycle fine sand increase the amount of water and cement in the admixture. The amount of cement in new admixture is 350 kg/m³. Water-cement rate is 0.56. Cubic samples were prepared from new admixture in the size of 70x70x115 mm. Upward wear and water absorption tests were conducted on the samples at the end of 28 days. Welded concrete was compared with abrasion and water absorption values. Abrasion and water-absorption values have increased compared to welded concrete.

Biography

Hasan Baylavli is currently working at Hitit University Construction Technology and Building Audit Programs, in Çorum, Turkey as Research Assistant. He completed his Associate Degree program in 1997 from Gazi University Çorum Vocational School Construction Program. He graduated from Pamukkale University, Faculty of Engineering, Department of Civil Engineering in 2000. He did his Master's degree in Eskişehir Osmangazi University, Faculty of Engineering, Department of Civil Engineering Building Materials. He has completed his Doctorate in University, Faculty of Engineering, Department of Civil Engineering Building Materials. He works on subjects related to self-compacting concretes, fiber-reinforced concretes and recycling. Furthermore, he studies in the fields of university campus planning, green campus and energy-efficiency in buildings.

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