

عنوان مقاله:

Sustainable Use of Polypropylene Fibers as a Cement Mortar Reinforcement

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خلاصه مقاله:

Reinforcing cement mortars with fibers is an essential step to enhance their flexural strength. This study compares the fresh properties and mechanical characteristics of cement mortars reinforced with polypropylene fibers and recycled polypropylene fibers. The reinforcing fibers ratio were (0, 0.5, 1, and 1.5) % by weight of cement mortar for both types of fibers. The casted samples were tested by means of flow test for fresh mortar, compressive strength, flexural strength, and toughness for hardened mortars. The results from this experimental program show that both types of fibers caused a reduction in the mortar flow and enhanced its mechanical characteristics. The results were statistically tested to measure the significance of the difference. The cement mortar reinforced with recycled fibers exhibited approximately similar results as compared to the mixtures containing raw polypropylene fibers at 95% confidence level. However, it shows a significant increase in flexural strength when comparing to the mixtures with new polypropylene fibers.

کلمات کلیدی:

Polypropylene Fibers, recycled fibers, Sustainability, cement mortar, Mechanical properties, t-test

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