

The effects of adding waste pet fibers on the some mechanical properties of cement mortar under exposure to elevated temperature

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This research addresses the impact of rising temperatures on properties of reinforced cement mortar with Waste Plastic Fibers (WPF) resulting from cutting the bottles used to save soft drinks. These kinds of fibers were added as volumetric ratios of 0.5, 1, 1.5 and 2% as the reference mix was used for comparison. Each group of cement mortar specimens was heated to a wanted temperature and kept at that temperature for about 1 h before being gradually cooled to room temperature and then they were tested. Compressive strength and flexural strength tests were conducted at room temperature on some samples as others examined after exposing to elevated temperatures by electric ovens where temperatures were 100, 200, 400 and 700°C. The results show a noticeable decrease in both compressive strength and modulus of rupture values after exposure to temperature higher than 400°C of plain cement mortar and WPFM. Cement mortar samples which were heated to 200°C maintained their original color and no apparent visual discoloration occurred in the mortar whereas the specimens which were heated to elevated temperature equal to 400°C black spots appear on the top surfaces of both mortar cubes and prisms due to burning of PET fibers.