

Flexural behaviour of reinforced concrete beams containing waste plastic fibers

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This research was conducted to study the effect of adding waste plastic fibers (WPFs) on the behavior of reinforced concrete (RC) beams. Fifteen simply supported RC beams with a cross section of (100 * 150) mm and a clear span of (1100) mm was tested under two-point loads until failure. Three beams of the total samples were made from the reference mix, and the twelve beams remaining were made from concrete mixes containing WPFs with volumetric percentage ratios (V_f) varying from (0.5% to 2%) of the total volume. These beams were divided into three main groups according to the longitudinal steel reinforcement area ratio (ρ), and these ratios were approximately equal to (ρ_{max} , $0.75 \rho_{max}$, ρ_{min}). Test results established that the adding of WPFs, in addition, to decreasing the danger of PET wastes on the environment, leads to increasing the maximum applied load causing ultimate failure, an increment in ductility index and transformation of the mode of failure of the tested beams into a more ductile one for all beams contains such kind of fibers.