

Re-Use of Waste Plastic as Fibers in Production of Modified Foamed Concrete

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A study has been undertaken to enhance some properties of foamed concrete by adding fibers resulted from cutting waste plastic beverage bottles. Tests were conducted to investigate the effect of adding waste plastic fibers (WPF) on the fresh and hardened properties of foamed concrete. To achieve that, different foamed concrete mixtures were designed at constant water-to-binder ratio of 0.35 and 350 kg/m³ of cement content. To modify the strength of conventional foamed concrete, class F fly ash and silica fume were added as replacements of cement by 20% and 10% of cement weight, respectively as well as a superplasticizer was added as 1.5% of cement content. Eight contents of waste plastic fiber 0, 0.25, 0.5, 0.75, 1, 1.25, 1.5, and 1.75 by volume were examined. The consistency of mixes was performed to spread flow diameter for all investigated mixes with nominal density of 1500 kg/m³. Compressive and splitting tensile strengths at age of 7, 14 and 28 days were measured. The test results showed that waste plastic fibers addition has adverse effect on the fresh properties of foamed concrete; however an improvement of tensile strength was noticed.