

Effects of Waste Plastic PET Fibers on The Fresh and Hardened of Normal Concrete

Ali H. Allawi, Abdulkader Ismail Al-Hadithi, Akram S. Mohmoud

In this paper, the laboratory experiments works were conducted to study the effect of adding recycle waste plastic as polyethene terephthalate PET fibers on the fresh properties as the slump test and hardened properties as a compressive strength, splitting strength, elastic modulus, ultrasonic pulse velocity (UPV), density, absorption, voids, flexural toughness and flexural rupture for the normal concrete. The parameter of this paper included percentage of fibers content (0%, 0.5%, 1%, and 1.5%). The geometric design of the PET fibers was a strip with dimensions 4mm width, 70mm length, and 0.035mm thickness. The aspect ratio of the PET fibers in this work was about 50. The results showed that the PET fibers improving the most properties of the normal concrete and on the other hand there is negative effect on some properties of concrete. There is a significant increase in flexural toughness, about 21.2%, while the compressive strength and splitting were increased by 5% and 18.8%, respectively. Besides this improving, using PET fibers conform to the principle of sustainability, which is reducing the pollution and the cost of waste plastic disposal. It's observed that properties of concrete as a static modulus of Elasticity and density were decreased with the fiber percentage increased.