

Abstract

For a long time, plastic was considered as an important material in our life where it is used in a lot of our daily life aspects, but it caused a lot of environmental problems. For that, this project intends to use the plastic waste in concrete mixture hoping that to reduce the amount of plastic waste and to enhance some of the concrete properties mainly the compressive strength and the water absorptivity of the concrete.

This study aims to investigate the effects of utilizing poly-ethylene terephthalate (PET) as a partial substitute for coarse aggregate in concrete. A group of seven concrete mixtures containing waste PET bottle was prepared as a partial substitute for coarse aggregate with substitution levels 1%, 2%, 3%, 4%, 5%, 10% and 15% as a weight percent.

The compressive strength and water absorption of concrete with different recycled plastic percentages were measured and compared with plain concrete (without the recycled plastics) as a reference. The tensile strength of the concrete was also explored.

The results show that the compressive property and tensile property of concrete improved when adding plastic to up to 5 wt%. However, as the PET wt% increases, the water absorption property decreased while the density of concrete decreased.