

## **Utilizing waste plastic polypropylene and polyethylene terephthalate as alternative aggregates to produce lightweight concrete: a review**

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### **Abstract**

In recent times, there is an increasing need for the fabrication of mortar and concrete that can be characterised as sustainable and environmentally friendly. Ideally, this concrete should be inexpensive, lightweight, and outstanding in terms of its physical and mechanical specifications. Plastic materials have increasingly been used in the fabrication of different types of concrete admixtures and mortar constituents. These plastic materials take the form of fillers or shredded fibres derived from polypropylene and polyethylene terephthalate. The use of plastic materials presents the following benefits: (i) enhanced mixture quality and (ii) a reduction in the amount of accumulated single-use plastic materials that negatively impact the environment. This work reviews several previous studies on the utilisation and preparations of plastic materials and their effects on the physical and mechanical properties of concrete. Other topics, including hardened concrete, fresh concrete, application, and thermo-physical characteristics, are also elaborated.

### **Keywords**

PP wastes; PET wastes; lightweight concrete