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Testing Plastic-Sand Construction Blocks Made from Recycled Polyethylene Terephthalate (rPET)

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Abstract : Plastic pollution is a major threat to human and planetary health. In Low- and Middle-Income Countries, plastic waste poses a major problem for marginalized populations who lack access to formal waste management systems. This study explores the potential for converting waste plastic into construction blocks. It is the first study to analyze the use of polyethylene terephthalate (PET) as a binder in plastic-sand bricks. Unlike previous studies of plastic sand-bricks, this research tests the properties of bricks that were made using a low-cost kiln technology that was co-designed with a rural, coastal community in Kenya. The mechanical strength, resistance to fire and water absorption properties of the bricks are tested in this study. The findings show that the bricks meet structural standards for mechanical performance, fire resistance and water absorption. It was found that 30:70 PET to sand demonstrated the best overall performance.

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