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Concrete and bricks are fundamental to contemporary construction; however, their manufacturing processes generate significant carbon emissions. With the increasing demand for bricks, the construction sector requires sustainable alternatives. Mitigating plastic waste could represent a novel environmental remedy. Polyethylene Terephthalate (PET), a plastic utilised in water bottles, can potentially diminish waste and enhance brick performance as a sustainable additive.

This study investigated the incorporation of PET in concrete bricks to mitigate plastic waste and enhance durability. PET can partially substitute fine aggregate in bricks, enhancing their strength and environmental sustainability. Bricks were manufactured using an experimental method with different PET content levels (2.5%, 5%, 7.5%, and 10%) and subsequently cured for up to 28 days. Each variation underwent testing for compressive strength and water absorption to determine the optimal PET ratio for resilient, durable bricks.

The outcomes were encouraging. Bricks with 5% PET exhibited the highest compressive strength, exceeding that of the control samples, indicating that a moderate PET concentration enhances the material's strength. Furthermore, elevating the PET content to 10% markedly diminished water absorption, achieving values as low as 0.37% after 28 days. The water-resistant characteristics of PET diminish porosity, rendering bricks less susceptible to moisture damage. Integrating PET into concrete bricks reduces plastic waste and conforms to global sustainable development goals. Replacing a fraction of traditional materials with recycled PET allows the construction industry to reduce its carbon footprint and enhance environmental sustainability. This method represents a tangible progression in sustainable construction by generating resilient building materials that reduce environmental impact—one brick at a time.

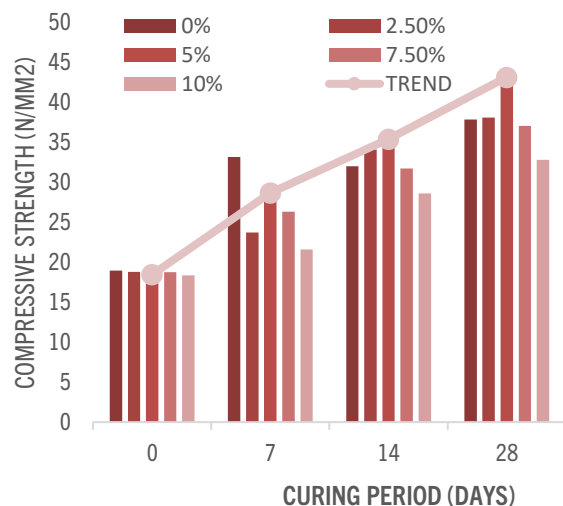


Brick Sample

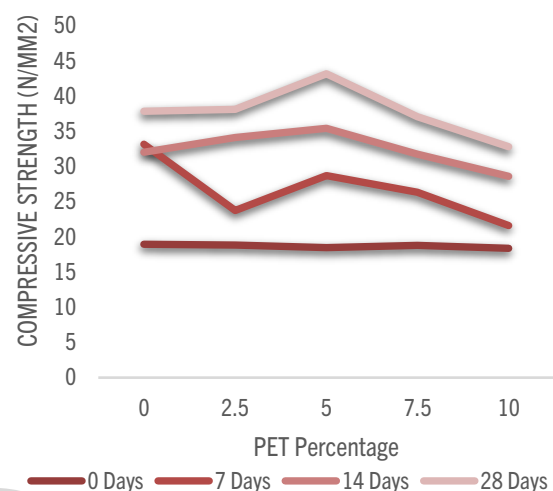
Building Greener Bricks with Polyethylene Terephthalate (PET)

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PET EFFECTIVENESS



CURING PERIOD EFFECTIVENESS



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