

demonstrated that when WTR loading increased, tensile strength and elongation at break dropped. With WTR loading, the tensile modulus and hardness significantly increased.

Keywords: Ground Tyre Particles, Natural Rubber Composite Material, And Mechanical Qualities; Morphological Studies.

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Investigation on testing and analysis of polypropylene fibre under tensile

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ABSTRACT

An extensively used thermoplastic polymer is polypropylene (PP). Premature failure of polymers and polymer composites is caused by the development of cracks and microcracks during the course of their lifetime. A material failure caused by the development of cracks and microcracks could be disastrous. To ensure the performance reliability, cost-effectiveness, and safety of polymer constructions, cracks and microcracks must be found and effectively repaired. This article examines the most recent methods for detection and observation and focuses on the beginning and growth of cracks in polypropylene structures. Due to its weak fracture behaviour, its usage as an engineering thermoplastic is somewhat constrained. Among scientists, there is still disagreement over the failure mechanism. This is because polypropylene fractures are complicated. Through the use of three-point bending tests, the fracture mechanism of polypropylene has been investigated in this work. The outcome of a three-point bending test reveals the presence of a large damage zone in front of the notch. Due to the significant plastic zone that is present in the area around the fracture tip, the elastoplastic fracture mechanics technique will be used.

Keywords: Polypropylene, Cracks, Three-Point Bend, Elasto Plastic Fracture Mechanics.