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An Approach of Nano-SiC-Filled Epoxy Nanocomposite Tensile and Flexural Strength Enriched by the Addition of Sisal Fiber

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Abstract

Natural fiber-developed composites possess a great potential for automotive panel applications because of their low specific weight, strength, and ease of recycling. Besides, these composites lack adhesive behavior and limited tensile and elongation behavior. The exploration of the current investigation is to produce the epoxy nanocomposite enclosures with 20 vol% of natural sisal fiber (5% NaOH treated) and its 3, 6, and 9 volume percentages of nano-silicon carbide (SiC) particles through thermally assisted injection molding route. The functional qualities of the hybrid epoxy composite are measured and related to epoxy composite manufactured by 20 vol% natural sisal fiber (SF). It outputs

experimental values of hybrid epoxy nanocomposite (epoxy/20 vol% SF/6 vol% SiC) exploited with excellent tensile stress of 54 MPa associated with 18% elongation percentage as well as maximum flexural strength of 76 MPa and greater than the measured value of epoxy composite with 20 vol% of SF.

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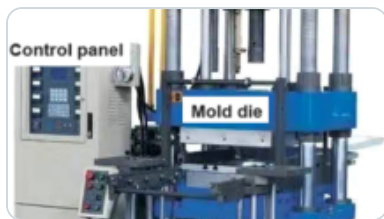
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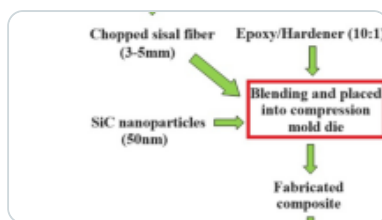
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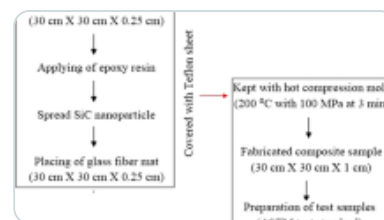
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Data Availability

All the data required are available within the manuscript.

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Ethics declarations

Conflict of interest

The authors have no competing interests to declare relevant to this article's content.

Ethics Approval

This is an observational study. An approach of nano-SiC-filled epoxy nanocomposite tensile and flexural strength enriched by the addition of sisal fiber: The Research Ethics Committee has confirmed that no ethical approval is required.

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