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Composites Part B: Engineering
Volume 56, 2014, Pages 68-73

Development of kenaf-glass reinforced unsaturated polyester hybrid composite for structural applications (Article)

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Abstract

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The main aim of this paper is to develop kenaf-glass (KG) fibres reinforced unsaturated polyester hybrid composite on a source of green composite using sheet moulding compound process. Unsaturated polyester resin (UPE) and KG fibres in mat form were used at a ratio of 70:30 (by volume) with treated and untreated kenaf fibre. The kenaf fibre was treated with 6% sodium hydroxide (NaOH) diluted solution for 3 h using mercerization method. The hybrid composites were tested for flexural, tensile and Izod impact strength using ASTM D790-03, ASTM D618 and ASTM D256-04 standards respectively. The highest flexural, tensile and impact strength were obtained from treated kenaf with 15/15 v/v KG fibres reinforced UPE hybrid composite in this investigation. Scanning electron microscopy fractography showed fibre cracking, debonding and fibre pulled-out as the main fracture mode of composites and kenaf treated 15/15 v/v KG reinforced hybrid composite exhibited better interfacial bonding between the matrix and reinforcement compared to other combinations. © 2013 Elsevier Ltd. All rights reserved.

Author keywords

[A. Fibres](#) [A. Hybrid](#) [B. Debonding](#) [D. Fractography](#)

Indexed keywords

[A. Hybrid](#)
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[Interfacial bonding](#)
[Izod impact strength](#)
[Sodium hydroxides](#)
[Structural applications](#)
[Unsaturated polyester](#)
[Unsaturated polyester resin](#)

Engineering controlled terms:

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[Hybrid materials](#) [Impact strength](#) [Kenaf fibers](#) [Reinforcement](#)
[Scanning electron microscopy](#)

Engineering main heading:

[Tensile strength](#)

ISSN: 13598368
CODEN: CPBEE
Source Type: Journal
Original language: English

DOI: 10.1016/j.compositesb.2013.08.019
Document Type: Article

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