

Characterization of the Tensile Strength Properties of Hybrid Sandwich Composites

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Abstract:

Hybrid composites are being growingly utilized in engineering applications, and their mechanical performance is a matter of concern with the employing of various types of reinforcements and matrices. In this paper, an experimental study was performed to characterize the tensile behaviour of new hybrid sandwich composites. The sandwich composites were prepared using reinforcements from woven fabrics for the skin layers and nonwoven fabric for the core layer and two types of matrices; polyester and epoxy resins. The tensile strength of the hybrid sandwich composites produced was examined in both warp and weft directions of fabrics. A particular interest was devoted to the influence of woven fabrics (skins) constructional parameters and the matrix properties on the tensile strength of these hybrid sandwich composites. The results indicated that, the hybrid sandwich composites exhibited high tensile strength in the weft direction of fabrics. The polyester/glass sandwich composites fabricated with epoxy matrix showed the highest tensile strength compared to the other composites. Hence, the reinforcement materials properties and the fiber/matrix interface are greatly affected on the behaviour of the sandwich composites towards tensile loads.

Keywords:

- *Hybrid composites*
- *Sandwich structures,*
- *Tensile strength,*
- *Woven fabrics,*
- *Polyester resin,*
- *Epoxy resin*

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