

Manufacturing and characterization of inter-ply hybrid polymeric biocomposite material reinforced with glass and carbon fibers

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Abstract.

The objective of this study was to investigate the mechanical properties of the hybrid polymer composite type "inter-ply" reinforced with GF glass fibers and CF carbon with the structure of the material consisting of: a. three CF:GF layers with the sequence [CF / GF / CF]; b. five CF:GF layers with the sequences: 1. [CF/GF/CF/GF/CF] and 2. [CF/CF/GF/CF/CF]. The hybrid polymeric biocomposite GF: CF type "inter-ply" was made using the working methodology based on the "Liquid resin Infusion" LRI "and" Vacuum infusion " techniques [1], [2], [3]. The general mechanical properties were evaluated experimentally using standard tensile and bending tests using five specimens made according to ASTM standards. Based on the experimental results and the diagrams obtained at the tensile and bending stresses of the hybrid polymeric biocomposite type "inter-ply", comparisons were made regarding the mechanical properties of the composite for each type of structure. The general results confirm, from a mechanical point of view, the usefulness of this type of composite for engineering and biomedical applications.