



MECHANICAL CHARACTERIZATION OF JUTE/SISAL NATURAL HYBRID POLYESTER COMPOSITE

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Abstract: With the increase of the use of composites reinforced with natural fibres mainly in the automobile, civil construction and sports equipment industries, the focus was increased in researches on the development of techniques that are capable of improving the mechanical properties of this type of composites. For this, several types of superficial chemical treatment and their effects on the improvement of the interfacial adhesion between matrix and fibre and, consequently, on the mechanical properties of the laminate were investigated. An alternative was the application of hybridization techniques in the natural fibre reinforced composites, in order to combine materials with different properties and thus to improve the mechanical properties of the composite. However, a large part of the research focused on the study of interlaminated hybrid composites reinforced with natural fibres (with layers of different types of fibres), giving little space to the investigation of the intralaminar composites (with different types of fibre present in the same layer / fabric). Therefore, this work aims to characterize the mechanical properties of jute/sisal intralaminar hybrid composite in polyester matrix. The jute/sisal composite has been treated with a mixed alkalization treatment followed by silanization process. After that, tensile, flexural and impact tests were performed, as well as the analysis of the fracture surface in Scanning Electron Microscope (SEM). The studied composite presented excellent mechanical properties, mainly in tensile strength, and better performance when compared to the non-hybrid jute composite.

Keywords: Hybrid composites, jute/sisal, mechanical properties, natural fibre composites.