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TENSILE PROPERTIES OF EPOXY MATRIX COMPOSITES REINFORCED WITH ALIGNED HEMP FIBERS

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Nowadays, it's noticeable that synthetic fibers have been gradually replaced by lignocellulosic fibers. This fact is justified by the comparison of synthetic fibers to the natural ones, natural fibers showed economic and environmental advantages presenting interfacial characteristics with polymeric matrices; that interfacial characteristic provides a better energy absorption by the composite structure. However, even now just little has been reported about the hemp fiber as reinforcement in polymeric matrices, such as tensile properties. The aim of this present work is to evaluate the resistance in tensile tests of epoxies composites reinforced with different volume fraction percentages of hemp fiber from 10% to 30%. Those specimens were prepared according the ASTM standard by laying down the hemp fibers into a dog bone-shaped metallic matrix with the addition of the fluid epoxy resin type diglycidyl ether of the bisphenol-A (DGEABA) mixed with stoichiometric triethylene tetramine (TETA) as hardener. After that, the specimens were prepared to an initial cure at room temperature, around 25°C, for 24 hours. For each percentage of hemp fibers incorporation, five specimens were fabricated. Then, the specimens were tested in Instron machine. According this test, could be observed that the tensile strength and deformation is substantially increased with the increased of hemp fibers amount incorporated into the polymeric matrix.