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STUDY OF MECHANICAL PROPERTIES FOR COMPOSITE MATERIALS WITH HYBRID MATRIX BASED ON DAMMAR AND NATURAL REINFORCERS

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Abstract

The production of "environmentally friendly" composite materials involves the use of natural reinforcements and natural or hybrid resins. The first part of this paper describes how is obtained a hybrid resin from Dammar natural resin, polymerized with acrylic resin. For this hybrid resin were determined some mechanical properties, such as: Young's static modulus, breaking strength, elongation at break, water absorption, shore hardness and damping factor per unit mass together with its own frequency corresponding to the first proper mode of vibration. From the point of view of static mechanical properties, it is found that the new hybrid resin has lower properties compared to similar ones that are already studied. Notes a decrease of 2-3 units in the value of breaking strength and 600 units in the static Young's modulus. But the advantage of the proposed hybrid resin is the reduced curing time compared to similar ones. In the second part, based on the hybrid resin obtained and by reusing some waste from the agri-food industry, two new types of composite materials were molded. The first was reinforced with chicken feathers and sheets of paper and the second was reinforced with corn leaves and sheets of paper. For the two composite materials the same mechanical characteristics were determined as in the case of the hybrid resin. Finally, based on the determined properties, it is proposed to use these composites for the making of medical devices (used to immobilize fractures), of some furniture components, or some constructions formwork.

Key words: chicken feathers, composite materials, corn leaves, hybrid resin, mechanical properties

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