

Kenaf fiber/Polypropylene composites as potential material for partitioning panels in buildings

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Combining kenaf fiber with different polymer matrices provides a strategy for producing advanced composite materials that take advantage of the properties of both types of materials. It allows the researchers to design materials in accordance to the end-use requirements within a framework of cost, availability, recyclability, energy use, and environmental considerations. Kenaf fiber is a potentially outstanding reinforcement in thermoplastic composites [1,2].

In this paper the research is focused on development of a lightweight, environmentally friendly, cost-effective composite material based on natural i.e. kenaf fibers applied as partitioning panels in buildings.

Kenaf/PP composite preforms of different fiber content have been fabricated by KEFI-Italy. Consolidation of the composite preforms was performed at $T=175^{\circ}\text{C}$, $P=180$ bar, $t=15$ min. Mechanical properties of Kenaf/PP composites have been characterized by tensile and bending test, as well as by DMTA. Water absorption was followed at room temperature.

The research has shown that high fiber/low matrix kenaf/PP composites can fulfill the end user requirements for partitioning boards in offices and dwelling houses to a greater extend. The results have shown that the obtained composites have exhibit average flexural strength of 30,1 MPa and modulus of 9,0 GPa, impact toughness of 43,1 kJ/m² and compression strength of 17,4 MPa.

Keywords: eco-composites, kenaf fibers, polypropylene

Reference

1. D.Feng, D.F. Caulfield, A.R.Sanadi, *Polym.Compos.*, 22, 4, 506-517 (2001)
2. G.Bogoeva-Gaceva, A.Grozdanov, A.Buzarovska, *Eco-comp* 2005, 20-21 June KTH Stockholm, Swedeen (2005)