Characterization of hybrid yarn/fabrics from of kenaf-kevlar fibers

ABSTRACT

In this work, new hybridization method used to fabricate different hybrid yarn by using untreated and treated kenaf fiber and Kevlar yarn until development of hybrid fabrics. The hybrid yarn consists of various combination of kenaf and kevlar fiber with the composition ratio of 70% kenaf: 30% kevlar, 50% kenaf:50% kevlar and 30% kenaf:70% kevlar were weaved and also 100% kenaf and 100% kevlar yarns were weaved as the control data to compared with hybrid fabric. The woven of Kenaf-Kevlar composition were carried out by the weaving of hybrid yarn in weft and warp direction. Tensile properties of kenaf fiber, kevlar fiber, hybrid yarn and hybrid fabric were measured by using Universal Testing Machine. Morphology of all fibers-treated and untreated kenaf and kevlar were analyzed by using scanning electron microscopy (SEM). The obtained result showed that 30%Kenaf:70%Kevlar hybrid yarn and fabric has the highest strength (48.511 cN/Tex) and modulus (1815.570 cN/Tex) among the hybrid but its value 70% lower than 100% Kevlar fabric. Both treated Kenaf and Kevlar fibers showed fine surface and light weighted as compared with untreated fibers. The preliminary research results have shown that development of hybrid materials from natural fibers has the potential to be utilized for high performance composite applications.

Keyword: Kenaf; Kevlar; Hybrid yarn; Hybrid fabric; Fabrication woven fabric