Effects of physical treatments on the hydrophobicity of kenaf whole stem paper surface using stearic acid.

ABSTRACT

Kenaf (Hibiscus cannabinus L.) is a relatively new industrial crop which has been identified as an alternative source of fiber in the papermaking industry in Malaysia. In this study, experimental unbleached kenaf kraft paper samples were used as a substrate to produce water-resistant paper by employing a special coating. In the preparation of the coating formulation, commercially precipitated calcium carbonate (PCC) was used as the filler, in addition to 0 to 0.32 w/w g of hydrophobic stearic acid (SA). Polymer latex (PL) was added at 0.4 to 0.16 w/w g into the coating compound to control the surface roughness of the samples. The paper morphology was examined by employing a scanning electron microscope (SEM). Hydrophobic kenaf kraft paper prepared in this study had water contact angle (θ) greater than 90°. Hydrophobic paper made with formulation PL4c resulted in the highest value contact angle of 147°. The process of surface coating by dipping increased the water contact angle and this treated paper achieved a high hydrophobic level. For mechanical properties, the coated kenaf paper showed decreasing tensile strength as the addition of stearic acid increased.

Keyword: Coating; Kenaf kraft paper; Water contact angel; Hydrophobic; CaCo3.