

Water absorbency and mechanical properties of kenaf paper blended via a disintegration technique.

ABSTRACT

In this study, blended paper was prepared by blending synthetic polyethylene (PE) via a disintegration technique. The produced paper was targeted to resist water or moisture. Unbleached kenaf whole stem pulp was used as the main source of fibre in making the paper. The pulp was blended with two types of PE: low-branched (LB) and high-branched (HB) polymers. To study the effect of PE addition to the paper, the water absorbency and mechanical properties were characterized. The pulp to PE mixtures were prepared at ratios of 9:1, 8:2, 7:3, 6:4, and 5:5. Scanning electron microscopy (SEM) showed that the PE was melted between the fibre linkages. The Cobb test determined that the blended paper absorbed less than 20 g/m² of water within 60 s. The best water contact angle successfully achieved was at 84°, which is almost hydrophobic. The mechanical properties, such as tensile strength and tear strength, were in the range of accepted standard requirements. The obtained results indicated that blending via a disintegration technique can be applied in the process of making water-resistant paper. The produced paper is suitable for the manufacturing of water-resistant corrugated packaging materials.

Keyword: Disintegration; Kenaf; Blending; Papermaking; Water-resistant paper; Polyethylene.