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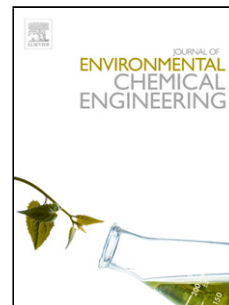
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PRODUCTION OF PAPER FROM PINEAPPLE LEAVES

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Highlights

- Pulping of pineapple leaf was done through soda pulping
- For comparative purposes, along with pineapple fibres, bagasse and paper were used
- The average thickness of all the papers produced ranged from 0.232 mm to 0.304 mm
- The most absorbent paper was found to be the 100 % pineapple
- Highest Tensile Index and Burst Index was 6.5 Nm/g and 0.84 kPa.m²/g for 100% fibre

ABSTRACT

Wood is used as the major raw material in paper production around the world and this has resulted in severe deforestations having direct negative impact on our environment. This has led to the need of finding alternative raw materials for paper production. Mauritius has around 300 hectares of land under pineapple cultivation resulting in agro-waste materials of the leaves. This paper aims at determining the feasibility of using pineapple leaf fibres for paper production. Samples of pineapple leaf fibre were mixed with cane-bagasse in different ratios namely, 20:80, 40:60, 60:40, 80:20, 100:0. Pineapple leaf fibres were also mixed with wastepaper in the same ratios. Pulping of pineapple leaf was achieved through soda pulping at a concentration of 15% w/v for 90 minutes at 90°C. The papers obtained were tested for their physical and mechanical properties. The average thickness of all the papers produced, ranged from 0.232mm to 0.304 mm showing an increase in paper thickness with increasing grammage from 58.19g/m² to 63.3g/m². The most absorbent paper(1.19s) was found to be the 100% pineapple which also demonstrated the highest Tensile Index and Burst Index (6.5 Nm/g and 0.84 kPa m²/g respectively). The bagasse and pineapple composite of ratio 40:60 was found to be the most abrasion resistant paper with 21 turns and a weight loss of 0.86% with the use of emery paper of grade zero as abradant and 200g load cells. The most crease resistant paper was the wastepaper and pineapple composite of ratio 80:20 with a crease recovery angle of 59.8°.

Keywords: Paper production; Pineapple leaves; Natural fibre; Cane bagasse; Mechanical properties

INTRODUCTION

Paper, is mainly produced from cellulosic fibres and possesses an array of specialised functions including educational, packaging and cleaning purposes. Wood, as the main raw material in global pulp and paper production, hugely contributes to depletion of forest resources, hence triggering an adverse impact on environment (Aremu, et al., 2015). Presently, around 45% of industrial timber production is used in pulp production industry, and in Europe this fraction amounts to 50%. The main pulp and paper manufacturer is USA accounting about 38% of the global production, followed by Canada with 15%, Japan 7.5% and Sweden 6% (Dudley, et al., 1996). Lately a rising

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