

N°592 / PC

TOPIC(s) : Waste valorization / Biomass conversion

Valuation of bagasse waste from the production of sugar and biodiesel through its use in the paper manufacturing.

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PURPOSE OF THE ABSTRACT

In recent years, the paper industry has undergone an important change, increasing the production of brown line paper for the production of packaging paper, cardboard, etc. The current problem in the use of plastics derived from petroleum has contributed directly to this increase. On the other hand, the sustainability of paper as a material for the substitution of materials currently manufactured from plastics leads to a higher rate of paper recycling. However, as reported by (M. A. Hubbe, Venditti, & Rojas, 2007), the processes of mechanical refining and drying of the paper lead to a morphological deterioration of the fibres, limiting the useful life of the recycled fibres. This important loss of mechanical properties requires the introduction of a large amount of virgin fibers and consequently a high consumption of natural resources (M. a. Hubbe, 2014).

On the other hand, the production of sugar and biodiesel generates a significant amount of bagasse waste. This fibrous material can be used for the production of paper by means of its correct treatment. The main objective of this work is the obtaining of paper fibre from bagasse waste and the evaluation of its properties for its application in the production of brown line papers such as test liner or flutting. In this sense, both the waste cooking process and its suitability for different techniques to improve the mechanical properties of the fibre have been studied, such as classical refining, the use of enzymes in biorefining (Delgado-Aguilar et al., 2015) or the addition of cellulose nanofibres (Boufi, González, Delgado-Aguilar, Tarrès, & Mutjé, 2017).

The results obtained show the feasibility of achieving the mechanical properties required in the manufacture of liner paper or flutting from fibers from bagasse residue. These results also demonstrate the feasibility of using alternative mechanisms to mechanical refining to increase the mechanical properties of the paper.

FIGURES

FIGURE 1

FIGURE 2

KEYWORDS

waste management | natural fibers | papermaking | cellulose nanofibers

BIBLIOGRAPHY

- [1] Hubbe MA, Venditti RA, Rojas OJ. What happens to cellulosic fibers during papermaking and recycling? a review 2007;2:739–88.
- [2] Hubbe M a. Prospects for maintaining strength of paper and paperboard products while using less forest resources: A review. *BioResources* 2014;9:1634–763.
- [3] Delgado-Aguilar M, Tarrés Q, Puig J, Boufi S, Blanco A, Mutjé P. Enzymatic refining and cellulose nanofiber addition in papermaking processes from recycled and deinked slurries. *BioResources* 2015;10:5730–43.
- [4] Boufi S, González I, Delgado-Aguilar M, Tarrés Q, Mutjé P. Nanofibrillated cellulose as an additive in papermaking process. 2017. doi:10.1016/B978-0-08-100957-4.00007-3.