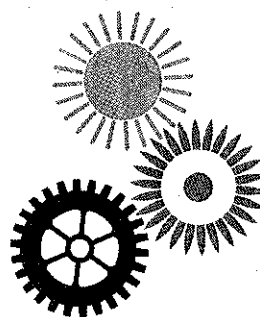


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DEFIBRATING OF HEMP BOOM FIBERS BY TWIN-SCREW EXTRUSION

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The aim of this research in the Laboratory of Agro-Industrial Chemistry is to obtain defibrated fibers, for various possible applications in composites materials. Although several defibration processes have already been developed, twin-screw extrusion offers the widest range of treatments with the combination of mechanical, thermal and chemical actions. The goal is to reduce the consumption of raw material, energy and economical expenses. Firstly, we have started experimenting with hemp boon fibers. Progress and good results achieved shall lead to deal with other natural fibres of similar characteristics. Our research is divided into two main parts. The first one consists of the natural fibre extrusion by means of a BC-45 extruder, in order defibrate the hemp boons. A variety of operating conditions and different parameters are applied so as to obtain different samples which will be subsequently analysed. The temperature, the liquid solid ratio and even the addition of basic solutions are considered to obtain the best fibers. Secondly, the samples undergo different analytical processes in order to verify their features. We compare the length of fibres by means of granulometry, fibers length and shape by image analysis and optical microscopy, hydrosolubles content and water vapour sorption for a better characterisation of the material. Moreover we have put forward the energetic evaluation of each process to verify the energetic feasibility. Last but not least, we make a decision on the optimal extruding conditions based on the samples and the results obtained. Hence, profitable and competitive fibers are achieved.