

# TECHNICAL UPDATES ON COIR AND COIR-BASED PRODUCTS RESEARCH AND DEVELOPMENT IN INDIA

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## 1. Extraction Process

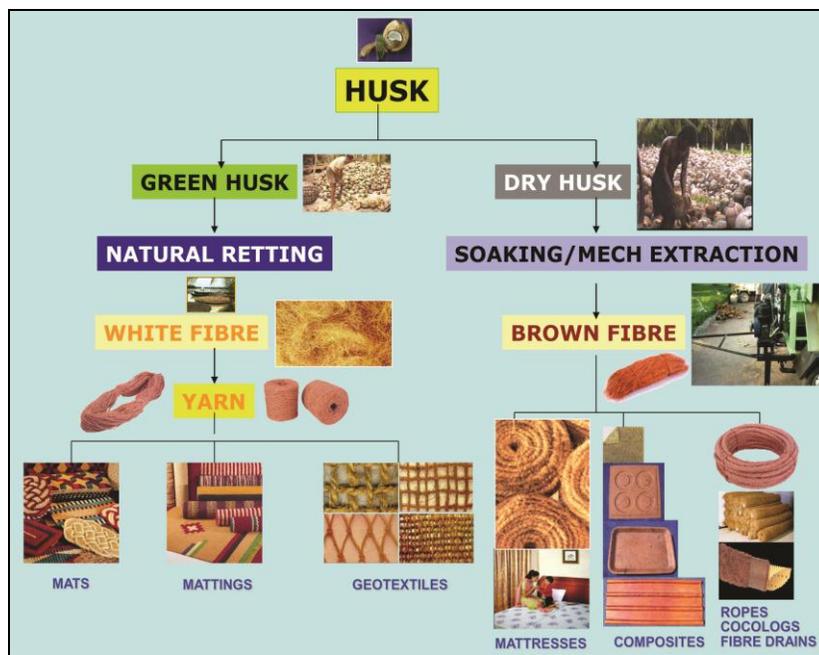
Coir fibres are extracted by two methods namely, Retting and Defibering machines.

### 1.1 Retting Process

Coir fibres are normally extracted from matured coconut husks after extraction of nut by the process of retting which takes about 6-11 months in backwaters. Retting being a slow process has its ramifications on the environment due to release of gases like methane, carbon-dioxide and hydrogen sulphide. In order to avoid the environment problems arising out of retting, the Central Coir Research Institute (CCRI) of Coir Board has come out with a process of applying a bacterial cocktail over the mass of husks so as to expedite the process of retting in the backwaters. It has been found that this process reduces the time of retting to merely 3 months. The bacterial cocktail named as COIRRET when applied on machine extracted fibres reduces the time of retting to only 72 hours. The process has been further improved by developing a spray formulation which takes only 24 hours to improve the quality of coir fibres equivalent to retted fibres.

### 1.2 Defibering machines

The coir fibres and pith are extracted using defibering machines where the process is carried out by soaking the husks initially for a period ranging from



4-8 hours depending upon the quality of husk. Then the husks are fed into the combing machine where the fibres of longest length, medium length and the bit fibres mixed with pith are separated in three compartments. The bit fibres are further passed through a revolving screen to separating from pith the finally the fibres are passed through a turbo cleaner. The process requires about 60 HP and generates effluent during the process of soaking. Further the process requires a land area of about 1 acre to set up these machines.

Considering huge demand of fibres, Coir Board has recently come out with a mobile coir fibre extraction machine which can be taken to the sites for extraction of coir fibres almost instantaneously from the husk without soaking.

## 2. Mechanical Processing of coir

### 2.1 Spinning

Coir yarn is normally spun on traditional ratts by the women workers in the country. However, the coir board has improved upon the traditional ratts by incorporating small ¼ HP motors due to which the drudgery in the process of spinning is substantially reduced. Further, the automatic spinning machines based on friction spinning method have also been developed which are quite popular in the industry. Different types of motorized ratts are also available in the coir industries which have been developed under the guidance of the Board.

### 2.2 Weaving

Weaving of coir is normally done in the cottage industry on the

## Anugraha handloom for weaving coir geotextiles



National Award Winner in 2004

wooden handlooms. The Board has developed semi-automatic looms, ANUGRAHA handlooms and ANUPAM Pneumatic looms which are metallic and give higher productivity.

### 2.3 Needled felt

The Board had imported one needled felting machine from Austria and has been producing non-woven felt from coir fibres. This machine can produce 2.2 meter width of needled felt with density ranging from 400-1400 g per square meter. The machine has been indigenized by the Board with much reduced price.

## 3. Wet processing of coir

### 3.1 Bleaching and dyeing

Bleaching of coir is carried out by the processes followed generally in the cotton industry using hydrogen peroxide. Coir fibres and yarn are dyed using direct, basic, acid, reactive (Procion) and natural dyes. A few shade cards have been developed by the Board based on these dyestuffs.

### 3.2 Coir polymer composite boards

Coir fibres or fabrics when impregnated with synthetic resins produce composite boards which have been found to be fire, boiling water and termite resistant. These have been used for manufacturing windows, door panels and kitchen cabinets etc. This technology has been brought to the commercial level by the Board and has been transferred to the industry for its commercial exploitation.



## 3.3 Coir geotextiles

Coir geotextiles are manufactured in the form of wovens and non wovens of different varieties. These products find uses in the field of soil bio-engineering which includes slope protection, stream/river bank protection, etc. Tailor made coir geotextiles like cocologs, cocolawns, drainage filters have been also developed to suit particular uses in the fields of soil erosion control.

## 4. Coir pith

Coir pith finds use in the field of horticulture as a pot mix due to its inherent property of water absorption and retention. The Board has developed a process of fast composting the coir pith using an edible mushroom spawn which converts it into 100% organic manure in 30 days. The value added product finds use as a growth promoter of different varieties of plants and crops.

## Conclusion

Coir industry is on a threshold of modernization in terms of its production and various processes. The Board has taken initiatives in the past for getting internationally funded projects from CFC and UNDP and has been pursuing with CFC, the Netherlands to sanction a regional project on further modernization of spinning industry. With eco-friendliness having its edge in the world market the coir industry has no doubt a very bright future.

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