



BAMBOO FIBRES

A
Boon
for Apparels

By:
Mrs. Ayodya Kavitha,
P.Madhuri, Varshitha

Bamboo Fibres - A Boon for Apparels

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Bamboo is a cellulose fiber extracted or fabricated from natural bamboo and is made from the pulp of bamboo plants. Bamboo is also called as cash crop because time for the cultivation is less and it can be grown in impoverished regions. It is also effective in controlling soil remediation, erosion control, watershed protective and environmental greening.

A bamboo fiber resembles cotton in unspun form, a puffball of light, airy fibers. To make bamboo fibers, bamboo is heavily pulped until it separates into thin component threads of fiber, and they are further spun and died for weaving a fabric.

PREPARATION OF BAMBOO FIBRE:

- Mechanical processing.
- Chemical processing.

MECHANICAL PROCESSING:

In mechanical ways of processing the machines are used to crush the woody parts of bamboo plant, natural enzymes are then used to break the bamboo into a mushy mass at which point the individual fibers are combed out and spun into a yarn, same as the process of Lenin and the process is known as bamboo Lenin. This process is more labor intensive and costly so less popular than chemical extraction but due to less usage of chemicals it is environment friendly process. Due to which it is not widely available.



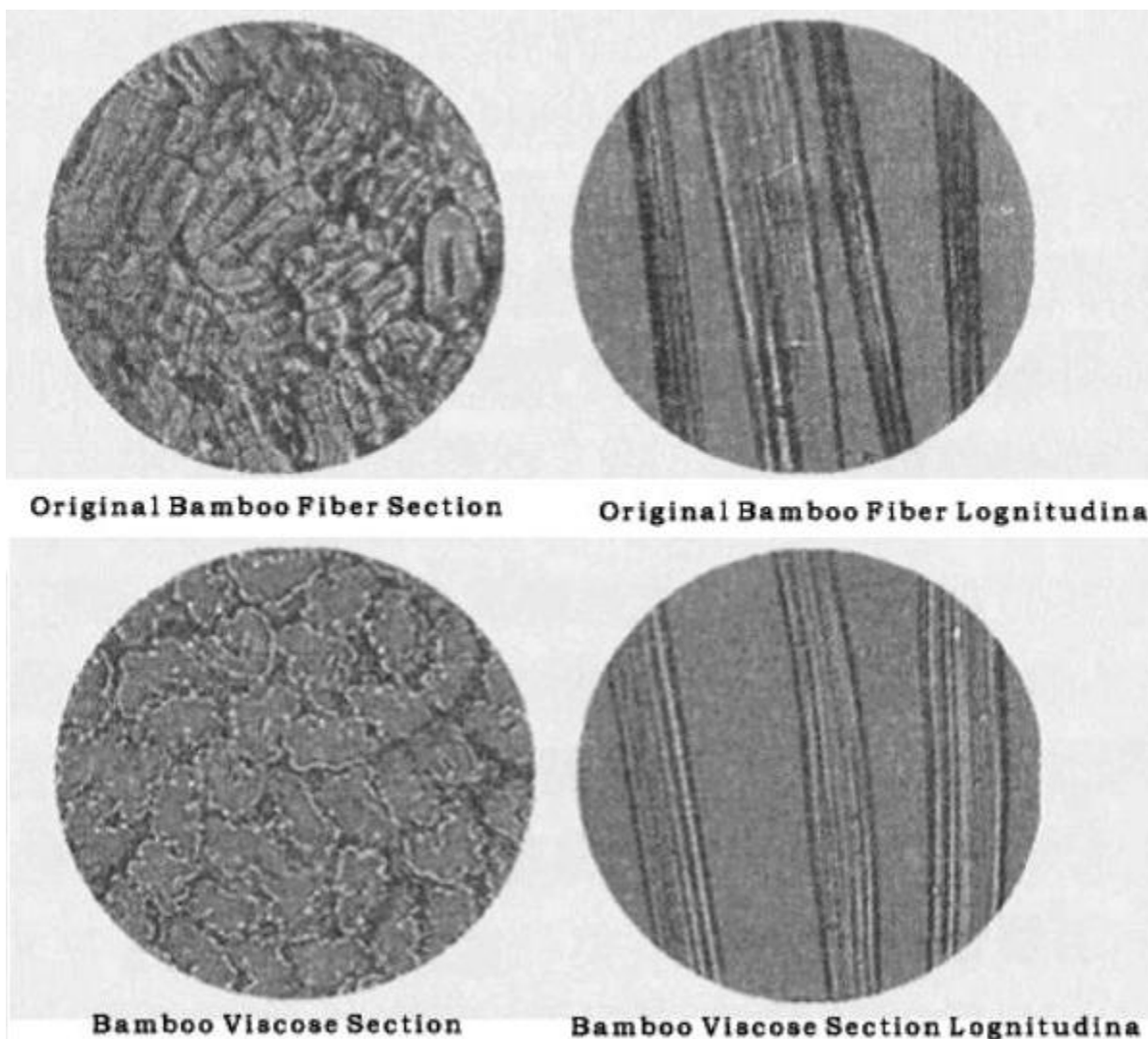
CHEMICAL PROCESSING:

Bamboo fiber is manufactured chemically by using chemicals just like viscose. General process for manufacturing bamboo fiber is by using hydrolysis alkalization with multiphase bleaching technology.

Regeneration of bamboo fiber through viscose route:

Soft inner pith of hard bamboo trunk are extracted, crushed and soaked in a solution of 15% - 20% NaOH at a temperature of 20- 25°C for 1- 3 hours to form alkali cellulose. It is then pressed to remove excess NaOH solution which crushed by a grinder and left to dry for 24 hours. Roughly a third as much carbon disulphide is added to bamboo alkali cellulose to sulfurize the compound causing it to jell. Remaining carbon disulphide is removed by evaporation and cellulose xanthogenate is formed. A diluted solution of NAOH is added to create a viscose solution consisting of 5% NaOH and 7-15% bamboo fiber cellulose. It is forced through the spinnerette nozzle into a large container of a sulphuric acid which hardens the viscose bamboo cellulose sodium xanthogenate and reconverts it to cellulose bamboo filament yarn or fiber threads which are spun into bamboo yarns to be woven into reconstructed and re-generated bamboo fiber.

STRUCTURE OF BAMBOO FIBER:



The scanning electron microscope, a vertical original bamboo fiber's cross section, thickness distribution is very uneven, with numerous micro-fiber surface grooves. Horizontal irregular oval, round waist, with the cavity filled with circumferential small gaps, the edge of crack and ramie fiber's cross section is very similar. Original bamboo fiber those gaps, cracks and grooves, like capillary, in an instant moisture absorption and evaporation, it was hailed as the experts "will breathe fiber", with this pure natural original bamboo fibers into textile fabrics and apparel processed and apparel products hygroscopicity strong, and good ventilation, coolness. The bamboo lenin is comprised of 73% cellulose, 12% hemi-cellulose, 10% lignin and small amounts of waxes, ash and pentosan.

- ❖ SEM images show that the cross-section of the bamboo fiber round with a small lumen and there is no node in the longitudinal surface. Most of the bamboo fibres have multilamellate cell walls with various layers. It is also shown that the cross section is filled with various micro-gaps and micro-holes with this special property it exhibits much better moisture absorption and ventilation.
- ❖ With this unparalleled micro-structure, bamboo fiber apparel can absorb and evaporate human sweat quickly thus by making it comfortable to wear in summer.
- ❖ Bamboo fiber is softer in texture than cotton and the smoothness of the fiber ensures that there is no irritation when worn next to the skin. Since bamboo doesn't need anti-bacterial chemical treatment garments made out of bamboo doesn't cause allergic conditions of the skin.

DYEING AND FINISHING OF BAMBOO TEXTILE:

Light surging, enzyme desizing, moderate bleaching and semi-mercerizing should be applied to the bamboo fabric during its dyeing and finishing process.

Desizing: It should be consolidating. Its efficiency should be 80%

Scouring: Pure bamboo usually needs no scouring. Sometimes wash it with a little alkaline soap. Scouring process should be made in terms of fiber blend. When pure bamboo fabrics are scoured, the alkali should not be over 10g/l, but it should be applied in accordance with the thickness of the fabric.

Bleaching: It should be made in terms of specification and thickness of fabrics.

Mercerizing: Bamboo fibers normally should not need mercerizing due to their sound luster and bad anti alkaline properties.

Dyeing: Ideally use active dye stuffs for dyeing alkali should not be over 20g/l and temperature should not be over 100°C. During dyeing low temperature and tension are applied.

Yarn dyeing: alkali should not be over 8g/l in yarn dyeing.

PROPERTIES OF BAMBOO FIBRE

Natural Anti-bacterial property:

Scientists have found bamboo has a unique anti-bacterial and bio agent named “bamboo Kun”. This is the substance which is not lost after bamboo is passed through series of process for extrusion. Bamboo fiber has particular and natural functions of anti-bacterial, bacteria-stasis and deodorization. It is validated by Japan Textile Inspection Association that, even after fifty times of washing, bamboo fabric still possesses excellent function of anti-bacterial, bacteria-stasis.

Breathable and Cool:

Bamboo fiber has its unusual breathability and coolness, due to its cross-sections filled with various micro gaps and micro holes and it has better ventilation and absorption. With its unparalleled micro-structure this can absorb and evaporate human sweat in a split second. It will never stick to skin even in hot summer. Bamboo apparels are 1-2°C lower than normal apparels in hot summer. Bamboo apparel is crowned as “Air Conditioning Dress”.

Green & Biodegradable:

Raw material bamboo is well-selected from non-polluted region. They are 3-4 years older than new bamboo. The whole distilling and producing process in plan is green process without any pollution. Bamboo fiber is biodegradable textile material and can be 100% biodegraded in soil by micro-organisms and sunshine. The decomposition process doesn't cause any kind of pollution to environment. “Bamboo fiber come from nature, and completely returns to nature in the end”. Bamboo fiber is praised as “the natural, green and eco-friendly new type textile material of 21st century”.

BAMBOO FIBER APPLICATIONS:



The mentioned salient features are seen in some of the end uses.

Bamboo intimate apparels:

These apparels have comfortable hand, special lustre, bright colors and good water absorbance like towels, blankets, sweaters, bath suits and mats. Due to its special function as anti-bacterial it can be used in underwear, tight T-shirts, scarves, skirts and socks. Bamboo is suitable in summer mainly to the pregnant ladies and children from getting affected by ultraviolet radiations due to presence of anti-ultraviolet character.

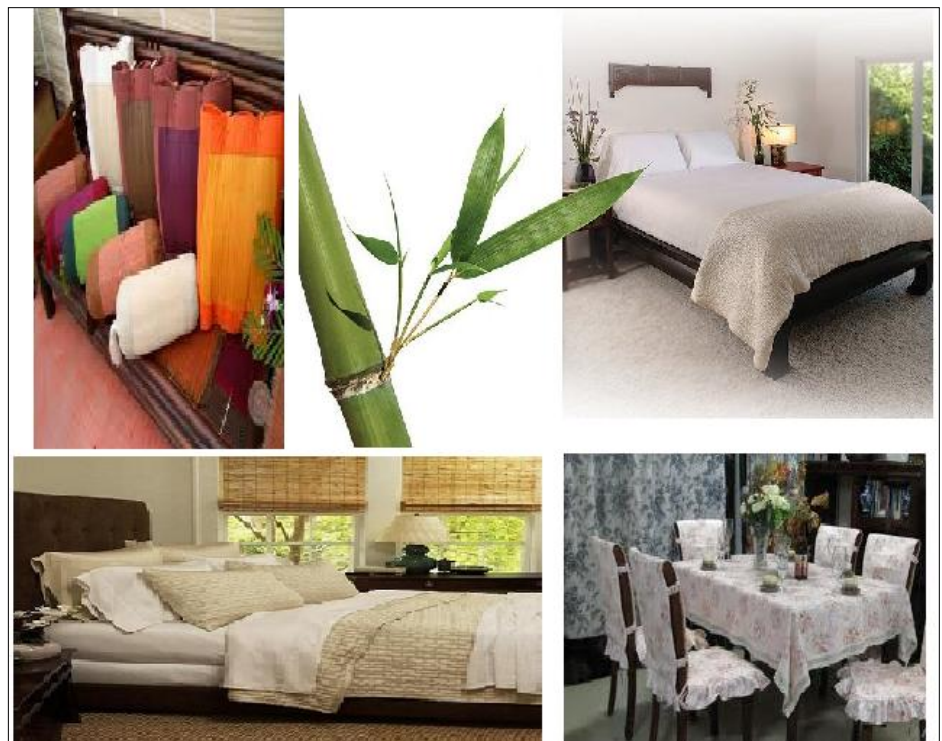
Bamboo non-woven fabrics:

They are made out of pure bamboo pulp and resemble the same properties of viscose fibers. Bamboo can be used in sanitary napkins, masks, mattress and food-packing bags due to wide prospective in the field of hygiene.



Bamboo decorative series:

Bamboo has an advantageous utilization in the decorating industry. It has the function of antibiosis, bacteria-stasis and ultraviolet proof, because of the deterioration of the atmosphere pollution and destruction to the ozonosphere, the ultraviolet radiations affects us more and more. Long time exposure to UV radiations leads to skin cancers. So the wallpapers and curtains absorb all the UV radiations in various wavelength, thus helps us in getting harmed. Bamboo decorating products won't go moldy due to the damp. Curtains, sofa covers, table covers, wall hangings, bed sheets etc. are made of bamboo fiber.



Bamboo bathroom series:

These are for their good moisture, soft feel and splendid colors as well as anti-bacterial properties. Bamboo towels, hand kerchiefs and bath robe have soft and comfortable handle and excellent moisture absorption function. It has a natural antibiosis function which keeps bacteria away and helps in not producing bad odor.



Bamboo baby wear:

Baby wear generally need comfort, softness, and they should not cause any type of allergies. Bamboo fiber which we use has all the properties required which the baby needs like its soft and it's a natural anti-bacterial protected. Bamboo fabrics used are generally knitted and terry towel fabrics.



Bamboo shoes:

It is unique among all bamboo fiber market due to its unparalleled advantages while comparing it with others. Appearance of the bamboo shoes are very advantageous to the patients suffering with foot diseases. The making of bamboo shoes include materials of bamboo, fiber & charcoal, adopting the modern high-tech means and optimizing the inside structure of shoes. The



inner environment of the shoes has been ameliorated so it plays a role of anti-bacterial, bacterio-stasis, anti-mite and deodorization. Due to its special features like soft, wear-resistant and good flexibility it is comfortable for the customer.

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