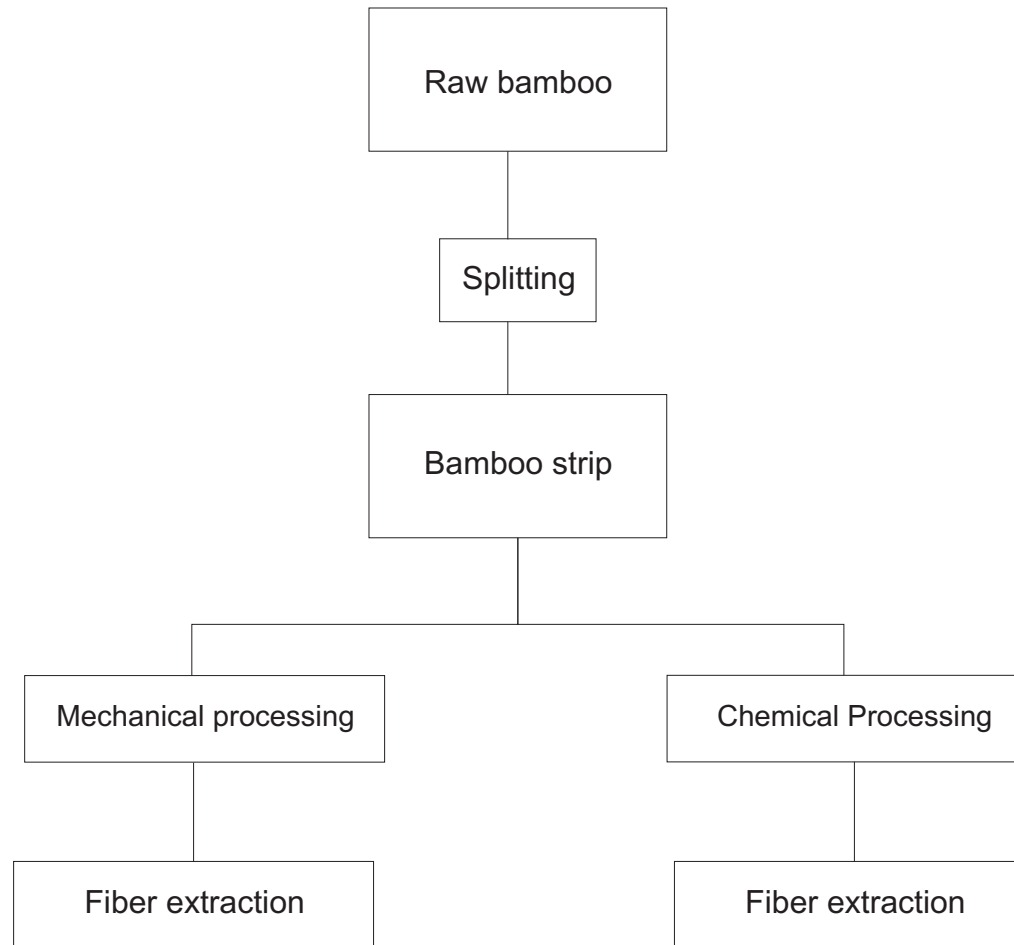


WHAT IS BAMBOO FIBER?

Bamboo Fibre is a regenerated cellulose fiber, which is produced from bamboo pulp processed from bamboo culms.

The bamboo fiber was developed by Beijing University.

BAMBOO FIBER EXTRACTION



Bamboo - thick pulp - fine pulp - bamboo fibre - bamboo yarn – fabric

PROCESSES:

Chemical Processing-hydrolysis alkalization:

Sodium hydroxide (NaOH- also known as caustic soda or lye) is used to 'cook' the crushed bamboo into a form of regenerated cellulose fiber.

Carbon disulfide is used for hydrolysis alkalization combined with multi phase bleaching.

Not environment friendly but mostly used process because of less time consuming.

Mechanical processing:

Crushed bamboo is treated with biological enzymes to break the bamboo into a mushy mass and individual fibers are combed out.

Expensive but eco friendly.

PHYSICAL APPEARENCE OF BAMBOO FIBRE:

Bamboo fiber resembles cotton in its un-spun form, a puffball of light, airy fibers. Many companies use extensive bleaching processes to turn bamboo fiber white, although companies producing organic bamboo fabric leave the bamboo fiber unbleached.

Bamboo fibre is thinner than hair. It has a round and smooth surface which makes it abrasion proof.

ATTRIBUTES OF BAMBOO FIBRE

Natural anti-bacteria

Green & Biodegradable

Breathable and Cool

Soft hand feeling

Luxurious shiny appearance

Bamboo fiber is strong, flexible, and can be softer than silk when spun into yarn.

ADVANTAGES OF BAMBOO OVER COTTON

Bamboo is drought tolerant and requires minimal rainfall to sustain it, unlike conventional cotton which is chemical and waterintensive to grow. Additionally, one acre of bamboo yields 10 times more than cotton.

Bamboo fabric is softer than cotton with a texture similar to silk.

Due to the natural luster of bamboo fibre mercerization not required.

Absorbency of bamboo fiber is 3-4 times more than that of cotton.

Bamboo doesn't need any pesticides to grow unlike cotton.

Bamboo also takes up dyes easier, which means less dye and water needs to be used.

Bamboo fiber is anti bacterial and UV protective.

BAMBOO-the natural, green and eco-friendly new textile material of 21st century" .

1)Bamboo fights global warming of the earth.

2)Bamboo takes in nearly 5 times the amount of greenhouse gases and produces 35% more oxygen than an equivalent stand of trees.

3)Bamboo fights deforestation.

4)Bamboo is the fastest 100% naturally growing plant on the planet, therefore can be harvested and replenished with virtually no impact to the environment- A RAPIDLY RENEWABLE RESOURCE

5)Bamboo improves watersheds, it's roots prevent erosion by reducing rain run off, restores soil by removing toxins due to its high nitrogen consumption.

6)Bamboo fabric is easy to dye and is done so without the use of harsh chemicals and using methods which use less water than conventional dyeing methods.

7)Bamboo also tolerates extreme rainfall, as well as droughts and hence can be grown naturally in various environments.

8)Bamboo provides shade, an acoustical barrier and a wind break.

BAMBOO FIBER IS ORGANIC

Bamboo doesn't need pesticides due to its inherent anti bacterial property.

Bamboo fiber can be dyed with natural dyes.

Bamboo fiber is a unique biodegradable textile material.

BAMBOO TEXTILES:

Bamboo clothing:

Bamboo's inherent antifungal and anti bacterial property makes it suitable to make underwear,t-shirt and socks.

Its anti-ultraviolet nature is suitable to make summer clothing.

Its softness, sheen and drapability make it suitable to be made into scarves.

Can be used to make jackets and dresses due to its nice drapability.

Good absorption and breathability makes it ideal for any garments to be worn in contact with the skin.

Since no artificial antimicrobial agent is added to bamboo fiber it doesn't cause any skin allergy when used against the skin.

A blend of 4% lycra with bamboo is used in sportswear. Good absorbency makes bamboo an ideal material.

The softness of bamboo yarn makes it an ideal material to be used in baby clothes.



bamboo yarn dresses.



scarf



kids wear



baby wear



stretchable tank top



bamboo t-shirts



bamboo shawls

Non woven fabric:

Made from bamboo pulp is used in hygiene materials such as sanitary napkin, masks, mattress, absorbent pads, food-packing bags due to its anti-bacteria nature and good absorbency.

Bamboo textile application in hygienic conditions:

Textiles for surgical practices such as masks, bandage, gowns etc. Also linens, towels and drapes in hospitals.

Home furnishing

Curtains, bedding and pillows, kitchen textiles.

Bamboo fiber is antibiotic, bacteriostasis and UV resistant.

Wallpapers and curtains made from bamboo fiber can absorb ultraviolet radiation. Good absorbency and breath ability makes it suitable for bamboo decorating product withstand damp and hence do not produce bad odor.

Commonly used home furnishing bamboo textiles are:

sheet sets

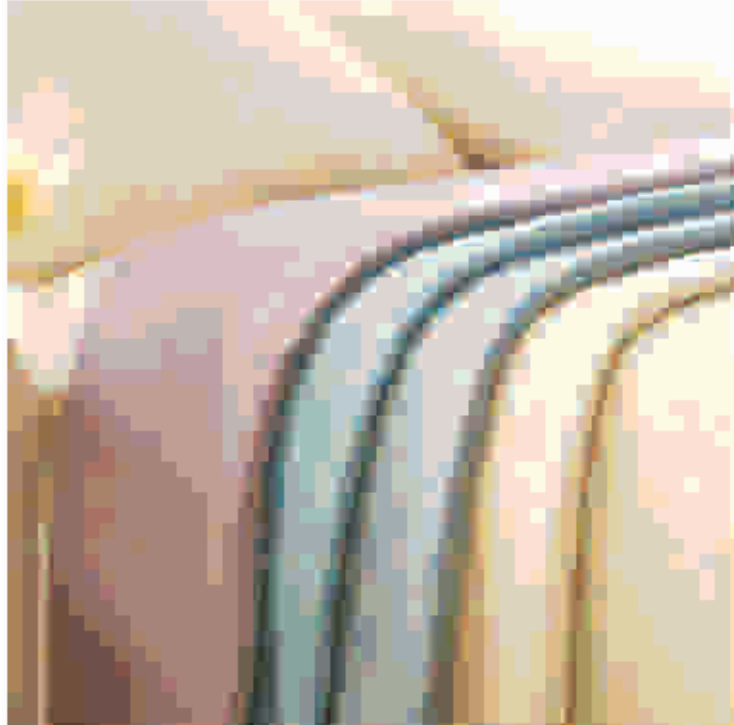
pillows

throws

Other products in which bamboo yarn can be used are:

Curtains and screens.

Upholstery fabrics in bamboo blend



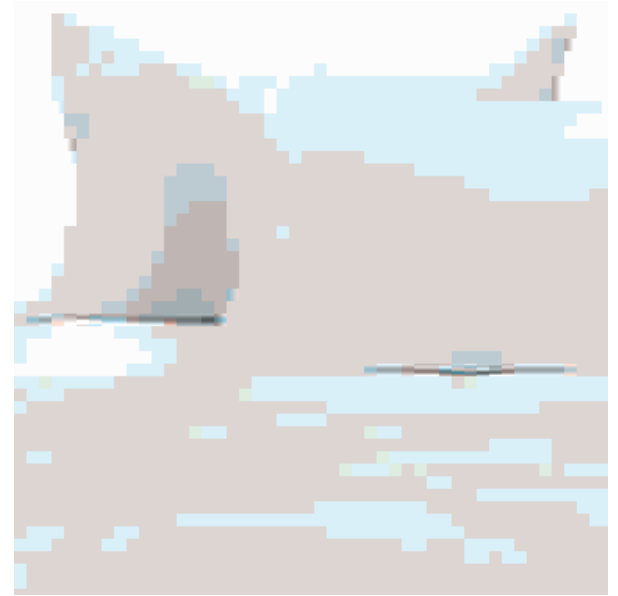
bamboo blankets



bamboo throws



bamboo bedding





cushions

Bedding consisting of pillow shams, throw, blanket and a duvet.

Bathroom textiles:

Bamboo towel and bath robe have soft and comfortable hand feeling and excellent moisture absorption function. Its natural antibiotic function prevents bad odour. Also suitable for bath mats due to good absorbency.



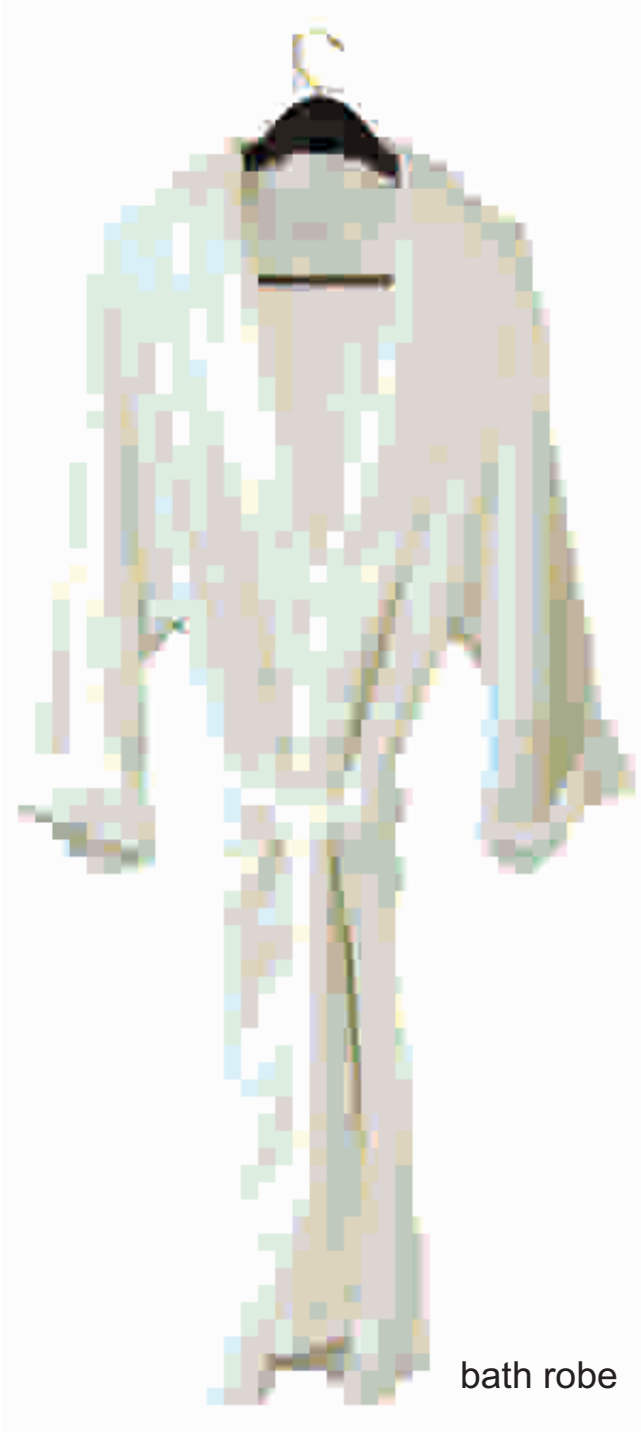
bath mats



towels



bathroom slippers



bath robe

BAMBOO YARN IN HANDLOOM WEAVING

1) Bamboo yarn used in handloom will help to create textile products which are organic and handmade and aimed at the high-end market. Natural dyed bamboo handwoven with indigenous techniques and traditional motifs has immense potential in the domestic as well as export market.

2) Bamboo yarn while weaving can be combined with other natural indigenous fibers such as abaca, maguey and pineapple in the weft to produce exclusive fabrics which cannot be produced by machine.

3) Almost all the indigenous fibers are coarse or stiff and hence unsuitable for daily use. When used in conjunction with soft and supple bamboo yarn fabrics produced will be wearable, functional and easy to care.

4) Bamboo yarn can be used in place of cotton in future when an indigenous technology for bamboo fibre production is developed in Philippines, since there is ample bamboo plantations here.

HANDWOVEN PRODUCTS FROM INDIA

India is known for handwoven textiles and many traditional techniques are available- cotton khadi, ikats, bandhni, banaras brocades, pashmina etc to name a few.

Bamboo is relatively a new material and has till now has been introduced in the powerloom sector. Bamboo yarn though has been used in handloom but very selectively.

On combination with silk the products have varied level of transparency and they make interesting combination.

Various weave combinations are used to create textures.

Traditional Indian textiles provide a rich repertoire of motifs and colours which when suitably modified in a new material such as bamboo with new contemporary colours and textures lead to products for the high-end niche market.

While china has a competitive edge in pricing of machine produced fabrics and garments India has held on to its skills in the handmade sector and still commands a fair share in the handmade market globally as well as in the domestic market.

Thus when it comes to natural dyed hand spun and handwoven or hand-embroidered textiles India has been on the top.

It is hoped that bamboo will increase the earning of the weavers as any organic fibre with natural dyeing fetches a higher price without increasing the price of the raw material. In india few companies have started producing bamboo yarn from bamboo fibre imported from China.

Advantages of handloom production:

Flexibility for limited high end production unlike industrial production thus by adding exclusivity to the product.

Combination of yarns.

Possibilities of quick sampling which will provide many designers to experiment and innovate in small batches.

Environment friendly.

Provides means for livelihood generation and small enterprise building.

PRODUCT DEVELOPMENT POSSIBILITIES WITH BAMBOO YARN IN HAND-WEAVING

- 1) Scarves
- 2) Throws.
- 3) Fabrics for apparel and home furnishing.
- 4) Cushion covers.
- 5) Table linen.
- 6) Bed linen.
- 7) Lampshade fabric and screens.

Home furnishing products in the US and Europe market.

The various home furnishing products that are sold in the US and the European markets, which can also be developed in handloom weaving and with bamboo yarn.

Quilts

Duvet

Comforter

Blanket

Throws

Table runner

Curtains

Table Cloth

Lampshades.

TRENDS AND THEME BOARDS

While designing for home furnishing and textiles certain trends are forecasts are to be followed for each approaching season. Trends and forecasts are directions for design development in each season and are formulated with market research reports after studying the buying pattern in the previous season which includes the colours, textures, materials, silhouettes, along with the upcoming colors, textures and looks based on the previous season.

Color plays a dominant role in deciding the buying preference.

Every retailers and designers in Europe and America tend to follow the trends and colour forecasts each season to minimise the risk of producing something which may be rejected by the market. However in the Indian domestic market the colours, textures and materials are governed by the climatic condition prevalent and religious festivities.

Natural earthy shades, beige and black are always in fashion and hence safe to work with. The season also decides the colours. For example autumn/winter will consist of darker earth colors, black and shades of grey while spring/summer may consist of whites, pastels and brighter shades.

Handwoven textiles always sell at a premium in the Western markets and in Japan.

While in US people mostly buy machine made fabrics in Europe there is a nice blend of consumers preferring machine made products as well as handmade.

Handmade textile has a huge market in Japan. Natural dyed textile also has a huge demand in Japan.

market potential

Bamboo fiber as the green healthy textile product is welcomed by customers from all parts of the world. Increasingly consumers are paying attention to issues of social responsibility as well as environmental issues.

Main markets for bamboo textiles comprise the USA, the EU and Asia.

"Buying goods with an organic label is already deemed good business sense at every retail level. And as organics become more commercially appealing, so new opportunities are opening up around the world for products which fit this brief"

"Already a buzzword in the food business, the term organic is now being attached to new style fabrics. And not only are weavers eager to assure customers that the components of their latest collections are '100% natural' in origin; the trend is to dramatically extend the range of raw materials on which the textile trade can base new products"

market in japan

Japan provides good marketing opportunities for handwoven and natural dyed textiles. Japanese high street companies too stock garments that are made of handwoven textiles which are slightly textured. In the following slides we will find some examples of clothing made from natural-dyed handwoven cotton from India. This is the market which will readily accept products made of natural dyed bamboo yarn.

The colours in this segment are indigos, earthy browns, off-white and shades of blue-black

POSSIBILITIES IN SUSTAINABLE INCOME GENERATION AND SUSTENANCE OF TRADITIONAL WEAVING

problems faced by the traditional weaving sector:

Unwillingness to change as per market needs has led to stagnation.

Deterioration of skill and switching over to synthetic materials has led to mass production of goods that compete directly with the machine produced thus by losing out in terms of quality and price.

Lack of government policies to support artisans in sustainable way

Lack of exposure to the market demands and colour trends.

Lack of knowledge in product costing leading to exploitation by traders and middlemen.

Suggested remedies:

Introduction of eco friendly new organic fibers and high end product development to cater to the affluent eco-conscious customer.

Exposure to new design trends and technologies and upgrade to improvised tools

Skill up gradation if required or training in design.

Exposure to markets through direct interaction with buyers through a buyer seller meet

Equip weavers with knowledge of costing and organisational skills to deliver larger orders.

They should develop products that would command a high price because of exclusivity and hand made and techniques that that cannot be replicated by a machine.

Disadvantages of bamboo yarn

The downside of bamboo as a textile is that it is subjected to the same kind of processing procedures as cotton or rayon, in that strong solvents are required to make it suitable for any textile use. These solvents affect the environment, as they are waste products of the manufacturing process. They find their way into groundwater when they are laundered out of the finished product. The health of processing-plant workers is also impacted by the solvents.

Though less harmful, mechanical methods are also available, they are less frequently used because they are more expensive. They work by crushing the bamboo into pulp, without adding the harmful solvents. More recently developed processes include closed-loop systems such as the Lyocell process used in making Tencel, and processes using safer solvents such as acetic acid. These may be used more frequently, as the demand for organically-processed bamboo textiles increases.

As a result of these factors, bamboo textiles are a mixed bag ecologically. While the crop itself so far gets high marks environmentally, the processing has the same negatives as cotton. Advances can be made in this area, but manufacturers have to feel the demand for this. Consumers can make their desires known, and as long as they are willing to pay the price, bamboo clothing can become a greener alternative.

Yet, what is the alternative? When assessing environmental impacts, we must always weigh the alternatives, one of which is traditional cotton. In the case of cotton, while in some cases the processing may be less chemical intensive (although not always) the growing is one of the most environmentally destructive crops in the world both in terms of water and pesticide use.

In addition, it appears there are some organic bamboo processing pioneers out there and more are on the way. I am certain that it is only a question of time before we develop environmentally friendly processes to transform the pulp into fine fibers. Consider the green progress made in household cleaning, lawn fertilizer and pesticide products. It is only a question of time before we discover greener methods for bamboo processing, too.

When knitting bamboo, it is important to start slowly. Bamboo yarn may split if it is not handled gently. When working with bamboo yarn, you need to use bamboo knitting needles. These needles are made from bamboo and have been described as having a warm, organic feel. They are also excellent needles for beginners because they are

Shrinkage is slightly higher in bamboo than cotton.

The process of after crushing and pulping, where they dissolve the bamboo and then recreate it into a viscose fibre is not as green as we would like, but, taken as a part of the whole, bamboo is still a massive good news story, with the yield being 10 times that of cotton, without using any fertilizers or pesticides at all being the big one point. In addition, even organic cotton uses a huge amount of water for growing, whereas bamboo grows without any irrigation, often on hillslopes where nothing else can be farmed. The fact that it's cut -being a grass- instead of uprooted, also helps with soil stability. So there are so many massively positive aspects that outweigh this part of the whole story, it doesn't give the real picture.