

SUSTAINABLE TEXTILES – PART XIII

REF: TT/ JULY 2022/ WK 4

Bio - fibers

With the advancement of technology and various researches, the fibers are produced from renewable sources which are known as bio-fibers. These bio-fibers are more biodegradable, compostable and eco-friendly. As resources of textile raw materials are diminishing, developing bio-fibers will prove to be an important step in expanding the market of sustainable textiles. A bio-fiber is a fiber derived from biological origin, whether produced naturally or by regenerated process.

The promise of bio-fibers is the preservation of natural resources with a focus on the utilization of renewable raw materials. Bio-fibers typically break down more quickly than polymers.

Different types of bio-fibers are:

- **Chitosan fiber** - Chitosan is a natural biopolymer which is derived from chitin. It is generally extracted from cell walls of shell of insects, crabs etc. It is very similar to cellulose. It forms a blended fiber with cotton and viscose which is very easy to dye. Chitosan fiber has a very strong anti-bacterial effect, high humidity absorption, completely biodegradable. These fibers are used in medical textile.
- **Algal fiber** - Algal fiber which is produced from algal seaweed, is completely eco-friendly and biodegradable. These can be dyed with nonchemical pigments such as crushed insect shells and knitted into the fabric for further end use of the garment. Sugar like powder is produced from algal seaweed. This powder is transformed into a water-based gel into which natural pigment is introduced and finally, this gel is extruded into long strands and finally woven or knitted into fabric.
- **Bacterial cellulose fiber** - Bacterial cellulose fiber is fiber produced from cellulose which is extracted from the bacterial cell wall. The cellulose used here is very similar to plant cellulose. This fiber is used in medical textile as it has good wound healing property.
- **Collagen Fiber** - Collagen is a protein fiber, obtained from renewable natural sources, bovine skin that is from ocean collagen peptides from recycled fish scales. Collagen extracts are used in fabric which has properties like antistatic, soft and cool feeling. These collagen extracts are used on fabric for bedding, sportswear, baby-wear etc.
- **Fiber made from spider silk** - Like silk, spider web fiber is also a protein fiber, which is extracted from the glands of a spider. Production of Natural spider web fiber is similar to the production process of silk from silkworm. It is stronger than steel of same diameter, elastic in nature and stretchable.



- **Milk-weed fiber** - This fiber is obtained from a perennial plant. It is a very shiny, slippery fiber with poor dinging ability. It possesses fire-resistant features. Milk-weed fiber is used as textile products in filling material in blazers and suits, pillows. It is also used in non-woven and Industrial applications.
- **Milk fiber or Casein fiber** - It is derived from casein protein, which is present in milk. It is regenerated protein fiber with a smooth surface, absorbs moisture well, also possesses anti-bacterial and anti-fungal characteristics can be dyed at normal temperature. These fibers are used as a blend in yarns of fabric in t-shirts, innerwear, sportswear and medical textile.
- **PLA Fiber (Poly-lactic acid fiber)** - PLA fiber is obtained from polymerization of lactic acid. The monomer of lactic acid is made from fermented plant starch such as corn or sugarcane. PLA fiber is produced by melt spinning process producing minimal process by-product waste. It is more hydrophilic than polyester having excellent crimp retention properties. PLA fiber is used in industrial pipes wipes, disposable products and hygiene products.
- **Bacteria based fiber** - It comes from bacterial microbes called Microbial Cellulose (MC). Cellulose is produced by microbes converting liquid bio-mass waste products from coconuts beer, sugar, and liquid food streams. Fibers are then converted into yarn and finally into the fabric.

References:

1. <https://www.the-sustainable-fashion-collective.com/>
2. <https://www.onlineclothingstudy.com/>
3. <https://www.sustainyourstyle.org/>
4. <https://fibre2fashion.com/>

.....To be continued.....

UNSCRAMBLE THE JUMBLE WORDS
ABCAIRTE
AGENLLOC
ENMFERDET
PISRED

Last week`s Answers: 1) PRODUCTION 2) MATERIAL 3) LEAVING 4) RESEARCH

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