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### Eco friendly fibres

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#### Abstract

Textile is the major part of the basic human needs. Environmental impacts occur at every stage of the life cycle of a product. Natural fibers are significantly elongated substances produced by plants and animals that can be spun into filaments, yarns and ropes. Like agriculture, textiles have been a fundamental part of human life since the dawn of civilization. In India, a growing shortage of natural fibre producers leads the researchers to develop new environmental friendly textile and its products. Natural fibres are at the heart of an eco-fashion movement that seeks to create garments that are sustainable at every stage of their life cycle, from production to disposal. Natural fibres have intrinsic properties such as mechanical strength, low weight and healthier to the wearer that has made them particularly attractive. Progressively, eco-textiles are being used for industrial purposes as well as in components of composite materials, in medical implants.

**Keywords:** Ecofriendly, regenerated fibres, organic fibre, natural fibres

#### Introduction

In the present era of environmental consciousness more and more materials are emerging worldwide, efficient utilization of plant species and utilizing the smaller particles and fibres obtained from various eco friendly materials.

Eco friendly fibres means that the fibres which have been made with a minimum use of chemicals and limited impact on the environment. Here a question is arising that, what all fibers is eco-friendly? We think that natural fibres are eco friendly but it's not true. Let's move on to first know, why all natural fibers are not environmental friendly.

#### All natural fibers are not Eco- friendly Fibers

Natural fiber, such as cotton fiber is free of impurities but only when no harmful pesticides or insecticides are used in its cultivation. If so, then it is environmental friendly. However, even if they are produced sans any of these harmful substances, they can become 'polluted' when processed for making yarns and fabrics because of all the textile chemicals used on them. Same is the case with animal fiber like wool which can get contaminated due to pesticides used in sheep dips or a variety of drugs used for treating the animal diseases. However, when the plant fiber, cotton for example once again, is cultivated without any harmful pesticides and with the help of composted manures and cover crops then only can it be said 'organic cotton' which is 100% eco-friendly fiber.

#### Man- made fibers can also be Eco- friendly Fibers

Natural fibers are obtained from plants (such as cotton, hemp, jute etc.), from animals (such as wool, fur etc.), or insects (such as silk). Man- made fibers can be divided into two categories- synthetic fibers and regenerated fibers. Synthetic fibers are completely made from chemicals like polyester fiber or nylon fiber. Regenerated fibers are made by transforming natural polymers through chemical-based process. These fibers again have two categories – one having protein origin and the other with cellulose origin. Regenerated fibers of protein origin come from plant protein such as corn, soy, peanut etc. or from animal protein such as casein from milk. Regenerated fibers of cellulose origin come from cellulose of wood pulp or leaves. Examples of such fibers are bamboo, rayon, lyocell, tencel, viscose etc. Thus these man- made regenerated fibers (some of which are sometimes called synthetic fibers like rayon), are also eco- friendly fibers.

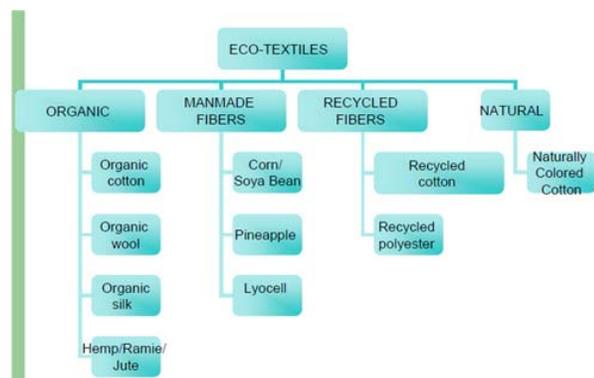
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However, if chemicals are used while processing of such fibers then they lose their identity of being eco- friendly. Natural fibers are obtained from plants (such as cotton, hemp, jute etc.), from animals (such as wool, fur etc.), or insects (such as silk). Man- made fibers can be divided into two categories- synthetic fibers and regenerated fibers. Synthetic fibers are completely made from chemicals like polyester fiber or nylon fiber. Regenerated fibers are made by transforming natural polymers through chemical-based process. These fibers again have two categories – one having protein origin and the other with cellulose origin. Regenerated fibers of protein origin come from plant protein such as corn, soy, peanut etc. or from animal protein such as casein from milk. Regenerated fibers of cellulose origin come from cellulose of wood pulp or leaves. Examples of such fibers are bamboo, rayon, lyocell, tencel, viscose etc. Thus these man- made regenerated fibers (some of which are sometimes called synthetic fibers like rayon), are also eco- friendly fibers. However, if chemicals are used while processing of such fibers then they lose their identity of being eco- friendly.

### Classification

Eco friendly fibres do not require the use of any pesticides or chemicals to grow. They are naturally resistant to mould and mildew and are the disease free. hemp, linen, bamboo, ramie are the eco friendly fibres.

Various types of eco friendly fibres can be shown by this chart:



**1) Hemp:** This fibre has many excellent properties being environmentally positive with no need of pesticides and insecticides; it actually improves the soil where it is grown. it is drought resistant and can be grown in most climates.

**2) Jute:** It is a fibre with high biological efficiency as it is carbon dioxide neutral and easily disposable. it can be easily used as a raw material for a variety of products

**3) Organic cotton:** It is grown without using pesticides and insecticides in a more sustainable conditions that enhance the quality of soil.

**4) Ramie:** Ramie/China grass is about 8times stronger than cotton and even. It is naturally resistant to bacteria mould and mildew as well as light damage or insect attack. it does not require pesticides and herbicides to grow healthier, stronger when wet. it is grown organically in eastern Asia.

**5) Corn fibre:** Corn fibre are bio degradable. it has good fastness with all classes of dyes. the energy required for production of corn fibres was low. it is completely biodegradable, composostable, burnable and recyclable

**6) Pineapple fibres:** One of the eco- friendly fibers gaining fast popularity is the pineapple fiber, the pina fiber. It is extracted from the pineapple leaves by hand scraping, decortications or retting. Decortications use a motorized machine with blades to scrape off the pulp in order to separate the fiber. In retting, the leaves are immersed in water for softening the plant gums. They are then dried in the open air, the fibers are waxed to remove any entanglements and then they are knotted and bind into yarns for weaving into fabric. The fibers are hand spun into ivory-white colored and naturally glossy fabric. Pineapple fabric is lightweight, soft, shinning, transparent and a little stiff fabric used for making clothes having elegant looks.

**7) Banana fibres:** The banana fibres are extracted by hand stripping and decortications. so it is 100% eco friendly fibre. it is strong, shiny, light weight and bio degradable. It can be even absorb moisture very efficiently. Banana fibers were used for making ropes and mats till recent past. With its many qualities getting popular, the fashion industry is also fast adopting this fiber for making various fashion clothing and home furnishings.

**8) Soy silk:** Soy silk is made of waste that accumulates during manufacturing of tofu hence requires no special harvesting as such. It is also soft and luxurious

**9) Organic linen:** It is refers to yarn and fabric made from flax plant that is organically grown without using any fertilizers and chemicals.

**10) Milk silk:** It is a very soft fibre with a velvety texture and is derived from milk hence easily obtainable without causing any hazards to ecology.

**11) Bamboo:** it is obtained from pulp of bamboo plants. it is regenerated cellulose fibre.it is eco friendly only when it is extracted with mechanical process. organic bamboo left unbleached by the manufactures It's chemical processing is not environmental friendly. When mechanically processed, the crushed bamboo is treated with biological enzymes which break it into a mushy mass after which individual fibers are combed out. Organic bamboo fabric is left unbleached by the manufacturers. Bamboo fibers make smooth, soft, antibacterial and luxurious fabric that have a very good absorption quality.

**12) Tencel:** Tencel is a fibre's brand name for lyocell.it is made with wood pulp cellulose from the eucalyptus tree; it uses a non toxic solvent during its production process. It uses much less water than the production of non organic cotton. which uses 100 times more water to produce.

### Why should we choose Organic or Eco Friendly fibres?

- **Social responsibility:** Chemicals and pesticides invade drinking water and groundwater, polluting its fish and even reaching human consumption. Organic and eco fibers grow without any pesticides or chemical fertilizers.
- **Biodegradable:** Eco and organic fabric biodegrade naturally over time. Synthetic fibers eventually become waste and let off harmful toxins when they degrade.
- **Health:** Many people are allergic or dislike wearing synthetic textiles. Eco fabrics have all the properties of the new synthetic breathable fibers with added softness and drape. They feel better against the skin.
- **Absorption:** Not only do its chemicals reach into the

groundwater, conventional clothing is worn next to the most porous organskin. Organic and eco fibers are natural and do not contain irritating chemicals. Many of them are also considered hypoallergenic and naturally antibacterial. popularity: Organic foods have been around for awhile and it is a natural evolution that organic and eco friendly rics will also gain popularity. Eco and Organic fabrics once considered an alternative are now entering into the mainstream.

#### **Use of Eco Textiles Fibers – Related Industries**

- Fashion and Apparel Industry
- Home Furnishing and Textile Industry
- Hygiene and Health Care Industry
- Packaging Industry – “Eco Packaging” an Important Feature
- Growing Recycling Industry- Generating Rural Employments
- Medical Textiles Industry – Growing Opportunity

#### **Factors that develops the need of eco freindly fibre**

Many of the clothes we wear today are made from synthetic materials such as NYLON & POLYESTER. Nylon and polyester are made from petrochemicals, which are very polluting to the environment, causing global warming. They are also non-biodegradable, which means they don't break down easily and so are difficult to dispose of. In order to manufacture nylon, nitrous oxide is released as part of the process. Nitrous oxide is a greenhouse gas that is 310 times stronger than carbon dioxide and causes global warming.

VISCOSE is another artificial fibre, made from wood pulp. To make viscose, wood pulp is treated with toxic chemicals such as caustic soda and sulphuric acid.

Natural fibres have their problems, too. NON ORGANIC COTTON uses more pesticide per cotton plant than almost any other crop in the world. This has serious impacts, causing illness and even death amongst cotton farmers who are exposed to dangerous pesticides every day. These pesticides also affect local eco-systems, killing certain plants and animals and causing an imbalance.

“While organic farming is more difficult, it saves lives from not using pesticides. We no longer have debt problems. Income is all profit at the end of season. Land and soil are preserved.” – Farmer Gera Paul, Benin

Hazardous chemicals are also used on wool – for example in sheep dips, where they have been linked with illness amongst sheep farmers.

CERTAIN DYES are thought to cause cancer. In many parts of the world, garments are dyed or bleached using toxic chemicals without proper precautions; the chemicals used can then affect workers and flow into sewers and rivers, damaging local ecosystems.

Virtually all POLLYCOTTON (especially bedlinen), plus all ‘easy care’, ‘crease resistant’, ‘permanent press’ cotton, are treated with the toxic chemical, form due to enormous impact of textile industry on environment there is a need to develop eco friendly fibres

#### **Conclusion**

Natural and organic clothing is charged more by the retailers, since the source of the fibre are free from herbicides, pesticides, or hereditarily modified for an environment and these fibers process are not practiced on a large scale. Because of all these they become a bit expensive. But, while wearing, one can feel the exotic luxury making its price immaterial. The

fabrics made out of eco fibers can be worn by any one as they do not have any irritating chemicals in them. Hence the usage of eco fibers and organic are the best solution to keep our earth clean and to minimize the global warming. At present, the use and disposal of the textile will be more of environmental sustainable to minimize harm to people and the environment.

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