

For B.A Part III

Natural Fibres: Types, Classification, Properties and Uses

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What is Natural Fibre????

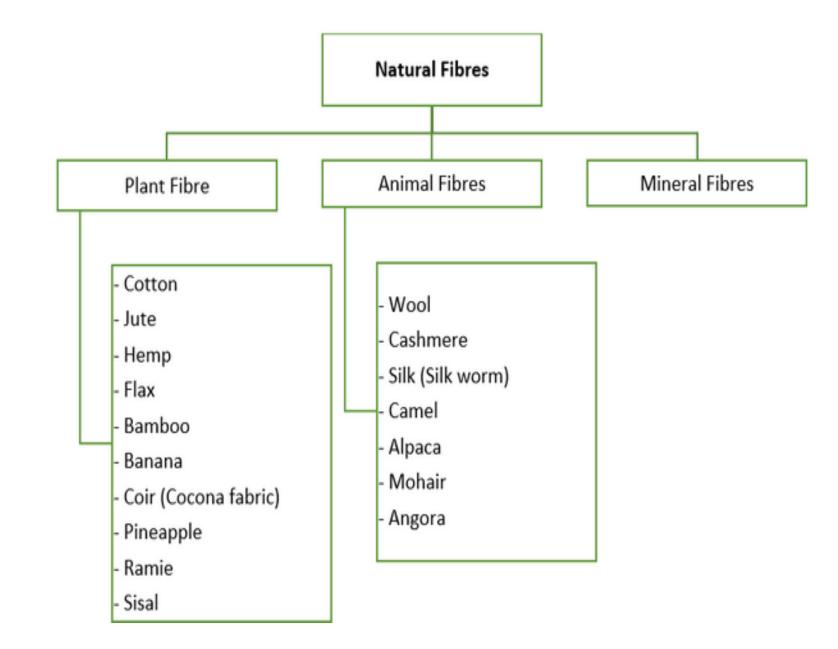


 Natural fibres are the fibres that are obtained from plants, animals or mineral sources.
Some examples are cotton, silk, wool etc.

• Natural fibres can again be divided into two types based on their source i.e., plants and animals.

Classification of Natural Fibers

 Natural fibres can be classified based on their origin, which includes plant, animal and mineral fibres.



Classification of Natural Fibers

Plant fibres: Plant fibres are obtained from the stem, leaves, and bark of various plants. Examples include cotton, hemp, flax, jute, ramie, bamboo, and sisal. Animal fibers: These fibres are obtained from the hair, fleece, or silk of various animals. Examples include wool, silk, alpaca, llama, and angora rabbit.

Mineral fibres: Mineral fibres are obtained from minerals. Examples include asbestos and glass fibres. Microorganism fibres: Those are obtained from microorganisms, such as algae and bacteria.

Cellulosic fibres: These fibres are made from cellulose, the main component of plant cell walls. Examples include cotton, flax, and hemp. Protein fibres: These fibres are made from protein and are typically obtained from animals. Examples include wool and silk. Natural composite fibres: Composite fibres are made from a combination of different materials, such as wood fibres mixed with resin, or coconut fibres mixed with rubber.

Types of Natural Fibres

- Cotton: One of the most widely used natural fibres, cotton is known for its softness, breathability, and absorbency. It is used to make clothing, home textiles, and industrial fabrics.
- □ Wool: Derived from the hair of sheep, wool fibres are naturally crimped, providing insulation and elasticity. It is used to make clothing, blankets, and carpets.
- □ Silk: Produced by silkworms, silk fibres are smooth and lustrous, making them popular for clothing and home textiles.
- □ Hemp: A strong, durable fibre made from the stem of the hemp plant, used for rope and other industrial applications.
- □ Flax: Fibres from the flax plant are strong and stiff and are used to make linen fabrics.
- □ Jute: Jute is a natural vegetable fibre which is produced from the stem of the plant *Corchorus olitorius* and *Corchorus capsularis*.
- **Ramie:** Ramie is a natural vegetable fibre which is made from the stem of the plant Boehmeria nivea.

Types of Natural Fibres

- **Coir:** Coir is a natural fibre that comes from the husk of coconuts.
- □ **Sisal:** Sisal is a natural fibre that comes from the leaves of the Agave sisalana plant.
- □ **Bamboo:** Bamboo fibres are strong and durable and are often used in textiles and building materials.
- □ Alpaca, Llama and Angora rabbit: Fibres obtained from these animals are used for making clothing, blankets, and other textile products.
- □ Wood: Fibres obtained from trees and other woody plants can be used to make a wide variety of products, including paper and building materials.
- □ Seaweed and Shells: Natural fibers can be obtained from seaweed and shells, used for making textiles, rope, and other products.

Properties of Natural Fibers



Biodegradable: Natural fibres can decompose naturally, reducing the environmental impact of disposing of them.



Renewable: These are produced from plants and animals that can be replenished.



Absorbent: Natural fibers can absorb moisture and release it again, making them comfortable to wear in warm and humid climates.



Strong and durable: They are strong and durable, making them suitable for a variety of applications.



Insulative: Natural fibres can provide insulation, helping to keep the body warm in cold weather.

Drawbacks of Natural Fibers



Shrinkage: Natural fibre can shrink when exposed to heat or moisture, leading to changes in the fit and shape of clothing and other products made from them.



Wrinkling: These fibres can wrinkle easily and may require ironing or steaming to restore their shape.



Pilling: Fabric from natural fibers can pill, or form small balls on the surface, after repeated wear and washing.



Cost: More expensive than synthetic fibres due to the cost of growing and harvesting them.

Uses of Natural fibers

Textiles: Natural fibres like cotton, wool, silk, and linen are commonly used to make clothing, bedding, and other textiles. They are also used in the production of nonwoven fabrics, technical textiles and industrial textiles.

Rope and twine: Hemp, jute, and sisal are strong and durable, making them ideal for use in rope and twine. Paper: Wood, bamboo, and hemp are used to make paper products, such as books, newspapers, and packaging materials.

Building materials: Bamboo, hemp, and flax fiber can be used to make building materials like insulation, flooring, and roofing materials. Biocomposites: Natural fibres can be used as reinforcement in biocomposites materials, like wood-plastic composites, natural fibre reinforced plastics, and natural fibre reinforced concrete. Agriculture: Coir and sisal fibers are used to make twine and rope for agricultural applications, such as tying plants to stakes or trellises, and for making biodegradable mulch mats.

Uses of Natural fibers

Automotive: Natural fibres like flax and hemp are used in the automotive industry as reinforcement in biocomposite materials in the body and interior of the cars.

Personal Care: Bamboo, hemp and cotton are used in the production of sanitary products, wipes, and other personal care items.. Industrial Products: Jute, sisal, and coir are used for making various industrial products such as mats, geotextiles, and abrasive products.

Home Textile: Bamboo, seagrass, and sisal are used to make home décor items like rugs, baskets, and placemats. **Fashion Accessories:** Silk, wool and alpaca are used to make fashionable accessories like scarfs, hats, and gloves. Sports and recreation: Hemp and bamboo are used to make gear such as skateboards, snowboards, and surfboards..

THANK YOU