

CHAPTER 03**ANIMAL FIBRE****FIBRE:**

Clothes rightly recognized as “The second skin.” At every stage of life and in every ceremony, clothes play an important role. They cover our body and protect us from adverse climatic conditions.

You know that fibres are what fabrics made of. A fibre is a thin thread like strand from which the cloth made. Fibres weaved to make fabrics. The source of fibers may be Natural or Man - made.

Natural fibres were the first fibres used to construct fabrics and mainly of two groups.

- I) Plant fibres
- II) Animal fibres

Plant fibres are cellulose based and animal fibres are protein based.

We get plant fibres from cotton, jute and coconut plants to make different kinds of fabrics.

How can we get animal fibres?

We get animal fibres like silk and wool from silk worms, sheep, goat etc.

Man made fibres made in laboratories using chemicals and these are of two types.

- i) Regenerated fibres and
- ii) Synthetic fibres.

FIBRE TO FABRIC

Fabric is a pliable, strong sheet made from fibres or yarns.

There are mainly three stages involved in creating a fabric.

Fibre → **Yarn** → **Fabric**

Different processes are involved in each stage and different combinations create a wide variety of fabrics.

Fibre is a long strand or thread, which is flexible. It is the base for constructing variety of fabrics. We can get fibres from plants or animals. This natural form of fibre continuously processed to form a yarn.



Yarn is made up of individual fibres twisted together to form a continuous length of interlocked fibres.



Fabric when natural or artificial fibres spun into yarns, a fabric creates by techniques like weaving, knitting etc.



Animal fibres made up of different types of proteins and are generally textile. Animal fibres generally produced from animal's fur, skin, hair or even secretion in the case of silkworm. The extracted fibres, woven or knitted to form beautiful animal fabrics.

The most common animal fibres in the clothing industry today are silk and wool.

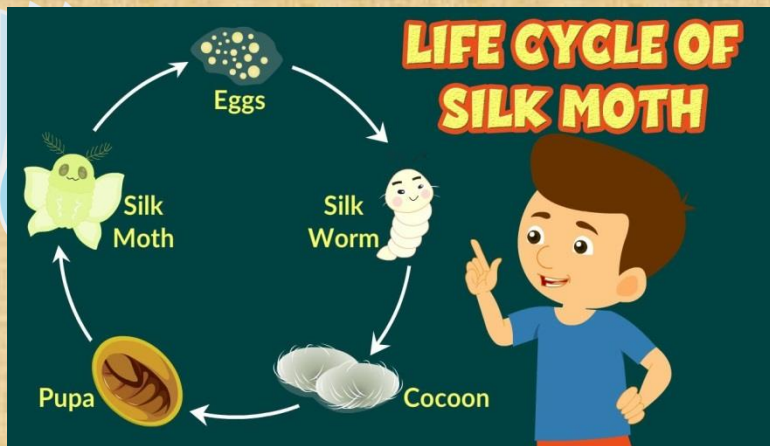
SILK:

Silk, is the queen of textiles for its luster, royal appeal, luxury and elegance. India is the second largest producer of silk in the world.

Mulberry silk is the most popular variety and contributes around 79% of the country's silk production.



Silk is an insect fiber, produced by silkworms belonging to the genus *Bombyx*. The silkworm, *Bombyx mori* produces the silk of commercial importance.



About *Bombyx mori*

- ✓ This silk moth is both blind and flightless.
- ✓ The female moth lays 500 eggs in one go and dies soon after.

- ✓ Approximately 30,000 silk worms need about a ton of mulberry leaves to eat before they start making their cocoons.
- ✓ From their cocoons, 5.4kg raw silk can be obtained.

Sericulture

It is the process of gathering the silk worms and harvesting the cocoon to collect silk.

The steps involved in sericulture are as follows.

Moth to egg

Female silk moths lay 300-500 eggs at a time. Eggs of silk moths called seeds and the seed growing centres called grinares. These eggs eventually hatch to form larvae (caterpillars) in a controlled environment.

Egg to cocoon

Mulberry leaves chopped into small pieces and arranged in large trays to feed larva. The silk worms feed on leaves and grow about 3 inches in 6 weeks. Then they stop eating and settle at particular place. During the larval stage, the worm wraps itself in a liquid protein secreted by two large glands in its head. Secreted proteins harden when it contacts air and forms a hard shell or cocoon.

The cocoons placed into boiling water to soften and dissolve the gum. The process of killing larvae inside by putting a lot of steam for 10-15 minutes to cocoons, called stifling.

Cocoon to fibre

Cocoons are boiled to get silk fibre. The fibre is made of two types of proteins -sericin and fibroin. It is very strong. The cocoons boiled to loosen the fibre to be able to reel it.

Fibre to yarn

Obtaining silk fibre from cocoon, called reeling and done with reelers and twistors. The silk fibres are wound together to make yarn. This yarn is cleaned, bleached and coloured.

Dyeing

Silk fibres washed, degummed, bleached and dried before the dyeing process. Traditional dyeing techniques involve dyes from natural resources. Advanced techniques use chemical dyes to give a great range of choices in colors and shades. The silk immersed in a dye bath soaks up the color.

The traditional spinners like spinning wheels or Charkhas are integral part of silk production process.

Weaving

Weaving is the process in which the final piece of silk comes and its finish depends on the type of weave. They get their names from the places where they made. Examples like Dharmavaram, Pochampally etc.

Importance:

China is the world's largest silk producer. Silk is not just useful for clothing. Various types of silk produced for a wide range of

applications like fashion apparel, furnishings, luxury paper, carpets and rugs.

Wool:

Wool is a natural fibre grown by animals that cover most of their body. The fleece (animal coat of wool) protects the body from cold conditions by insulating and holding in the heat. This raw material made up of protein **keratin** - the same protein found in human hair.

Wool, obtained from the fleece of domestic goats, sheep, rabbits, etc. The color of wool fibres may vary from off-white to light cream. Fabrics made from wool are soft, smooth, absorbent and do not wrinkle easily. These do not allow the body heat to go out and act as insulators. This is why the fabric made out of these fibres is used as winter wear. Most wool sheared during spring months. Wool is a weak fibre and is easily affected by common washing soaps, powders and friction.



Wool is one of the most common textiles in the world. Merino wool is the highest quality wool, sourced from Merino sheep. Its

fleece is 3-5 inches long and most valuable. These sheep produce finer wool than other breeds. There are different types of wool and depend on the animal it comes from like camel, goat etc.

How wool fabrics manufactured?

The following are the steps involved in wool manufacturing.

Shearing – It is the process of removing the fleece with shear or razor, just like a getting a haircut as the wool grows right back. Grease applied to prevent the damage to skin.



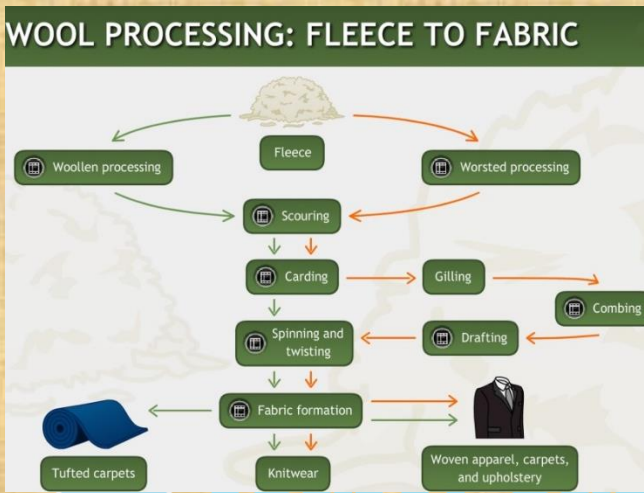
Scouring – The sheared skin washed and soaked in warm water or treated with chemical additives, to clean wool grease, dirt and dust. This process called as washing or scouring.

Sorting – Once scoured, the clean wool sorted into bales by separating piles of Coarse, long and broken ones.

Carding/ Combing – It is a process of separating and straightening of wool fibres to make it easier to spin into wool yarn. The wool fibres bleached and dyed with different colors. Then the fibres combed by using combing/carding machine.

Spinning – The next step is to spin the wool into yarn using a spinning machine. A machine rolls and pulls out into a thick rope and another twists it into a long thread.

Weave or knit the yarn – Now the yarn is ready to weave. Woolen fabrics, knitted easily by using needles. In looms, warp (vertical) threads and weft (horizontal) threads are important to weave any type of fabric.



Since ages, wool is appreciated as one of the most effective forms of weather protection known to mankind and also used for so much more.

GLOSSARY:

Animal fibre – Natural fibres, made of protein.

Bleaching – It is a process of decolorization of raw textile material.

Bombyx mori – Scientific name of silkworm.

Cocoon – A case produced in the larval stage of certain animals like moth.

Dyeing – It is the process of application of dyes on textile material.

Fleece – The outer coat of wool that covers a sheep, goat etc.

Knitting – Method of creating, textiles from yarn by using long needles to interlink them.

Mulberry – Mulberry leaves are the only leaves silkworms eat.

Reeling – Obtaining silk from cocoons with the help of reelers.

Scouring – Cleaning of fleece, to remove grease, dirt and dust.

Sericulture – Cultivation of silk worms to produce silk.

Silkworm – Larva or caterpillar of silk moth.

Shearing – Removal of fleece by using razors or blades.

Warp and weft – Two basic components used in weaving to turn thread into fabric.

Weaving – A method of textile production in which two distinct sets of threads are interlaced at right angles to form a fabric.

Woof – The threads that come side to side over and under the warp to create a fabric.