3 Fibre to Fabric

Prior Knowledge

In the previous classes, I have learnt that

- Clothes protect us from heat, cold and rains.
- Clothes keep us safe from dust and insects.
- We wear different clothes in different seasons and on different occasions.
- Clothes are made from fibres.
- Fibres can be of two types: natural and artificial.

Learning Objectives

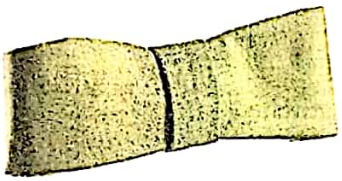
In this chapter, I will learn about:

- Different types of clothing materials
- History of clothes
- Types of fabrics
- Fibres
- Fibre to fabric

Let's Get Going

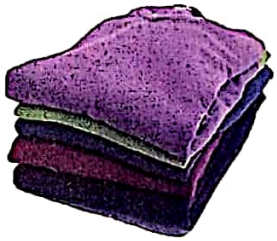
Identify the source of the items given below as plant or animal. Circle the items that are obtained from plant sources.

1



Linen bow tie

2



Woollen sweaters

3

Silk saris

4

Cotton saris

We need clothes to cover our body and protect us from harsh weather conditions. As we have learnt in previous classes, different clothes are preferred in different seasons and on different occasions. People in different regions wear different types of clothes.

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DIFFERENT TYPES OF CLOTHING MATERIALS

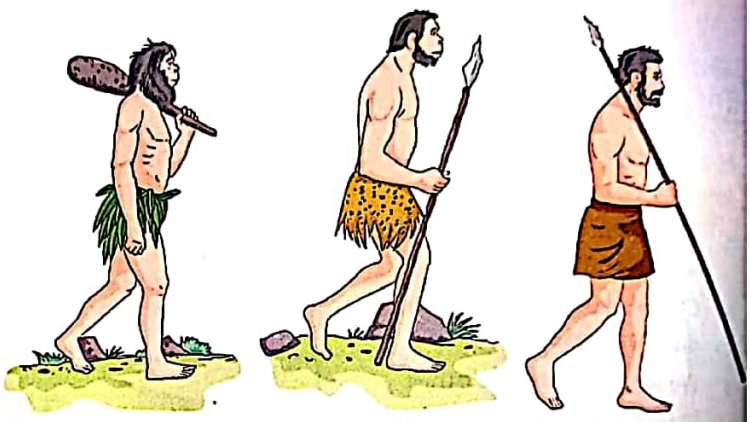
There is a large variety of clothing such as cotton, wool, rayon, silk and polyester. If we look at cotton material, we will find more than a hundred variations of it. The kind of fibre used, the type of weaving done, the colour and prints used, give us a large variety in clothing materials.

Fig. 3.1 Variety in clothing materials

HISTORY OF CLOTHES

Human beings started wearing clothes right from the Stone Age. Initially, human beings used to cover their body with bark or big leaves of trees, and animal skin or fur.

With the development in agriculture, man learnt to grow fibre crops such as cotton, linen and jute. As stitching was not known during early times, ancient men used to drape unstitched clothing around their body. Invention of sewing needle revolutionized the clothing history. Since then stitched clothes have undergone many changes. Today, stitched clothes come in many designs. Even with the advancement in garment industry, unstitched clothes such as dhoti and sari are still worn in many parts of the country.



Leaves as clothing | Animal skin as clothing | Unstitched garment as clothing

Fig. 3.2 History of clothing

TYPES OF FABRICS

With the globalization of fashion and garment industries, a huge variety of clothes are available to people. The choice of fabric is generally decided by different factors such as weather conditions, occupation, occasion, age, gender, lifestyle and culture.

Fig. 3.3 People wearing different types of clothes

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Apart from clothes, fabrics are also used in making items such as bags, blankets, curtains, carpets and shoes.

Bags can be made from jute, rexin and other clothing materials. Carpets are made from fabrics such as cotton, wool and nylon. Blankets are made from wool. Curtains are made from cotton, silk or synthetic fabrics.

Fig. 3.4 Things made from different fabrics

FIBRES

Fibres are thin strands that are spun (twisted) together to make yarn or thread. Yarns are woven together to make fabric.

Based on the origin, fibres may be classified as natural and synthetic.

Your Task

Many people use things such as shoes, bags and jackets that are made from animal skin. Do you think it is okay to kill animals for their skin? Does this habit have any negative environmental impact? Do some research on it.

Also, make a poster to motivate people to use more of plant fabric than animal skin.

Natural fibres

Fibres that are obtained from plants and animals are called **natural fibres.**

Natural fibres that are obtained from plants are called **plant fibres.** For example, cotton, jute, hemp, kapok and flax.

Natural fibres that are obtained from animals are called ***animal fibres.*** For example, silk and wool.

Wool mainly comes from the fleece of sheep and other hairy animals.

Silk is obtained from the cocoon of silkworm.

Let's Investigate

Find out why silk and wool keep us warm and cotton keeps us cool.

Synthetic fibres

Fibres that are made by human beings using chemical substances are called **synthetic** *or* **artificial fibres.**

Nylon, polyester and acrylic are a few examples of synthetic fibres. Synthetic fibres are cheaper, stronger and last longer than natural fibres. Clothes made of synthetic fibre are easy to maintain. Synthetic fibres are also used to make things such as carpets, ropes and curtains.

Tech Updates

Fabrics made by mixing two or more fibres together are called **blended fabrics.** Fabrics are blended to improve texture, feel and appearance. For example, cotton is breathable and comfortable to wear, but shrinks or wrinkles when washed. On the other hand, polyester is strong and does not shrink, but uncomfortable to wear. However, when cotton and polyester are blended together, a new fabric, polycot is obtained which is comfortable to wear and does not shrink or wrinkle when washed. Polywool, cottonwool and terywool are some other blended fabrics.

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Let's Try

Aim: To find the type of fabric by performing burning test

Note: *To be performed under adult supervision*

Materials required: Different types of fabrics, matchstick, candle and tongs

Principle involved: Different fibres show different properties when burnt. Synthetic fibres melt forming small beads and give burning plastic-like smell when burnt. However, natural fibres do not melt when burnt. Natural fibres give a characteristic smell based on the source from which that fibre is obtained. For example, cotton gives the smell of burning paper, wool burns to give burnt hair-like smell and silk a gives smell similar to charred meat.

Procedure:

1. Visit a tailor's shop and collect small pieces of different fabrics. You can also ask your mother to give you some leftover pieces of different fabrics.
2. Take a small piece of one of the fabrics.
3. Hold the fabric with a pair of tongs from one of its corners and bring it over the flame of a burning candle and observe how it burns and smells.
4. Record your observations in the table below and identify the type of fabric.

Observation table:

Fabric	Fabric melts on burning or not?	Fabric forms beads on burning or not?	Natural or synthetic	Type of smell given off	Cotton/wool/ silk/synthetic
1					
2					
3					
4					
5					

Fibres Obtained From Plants

There are many fibres that are obtained from plant sources such as cotton, jute, kapok, coir and linen.

Cotton

Cotton fabric is known since prehistoric times. Cotton plant grows well in black soil and warm climate. It needs moderate rainfall.

Cotton plant bears creamy-white flowers. Flowers of cotton plant fall off when dried, leaving behind green pods (fruits) called **cotton bolls**. Inside the cotton bolls, cotton seeds surrounded by fibre are present. When the fruit is ripe, these cotton bolls dry and burst open, exposing the white fibre and the black cotton seeds. The cotton bolls are collected from the plants. Then cotton fibre is separated from the seeds by a process called **ginning**. Earlier ginning was done by hand but now it is done by machines called **cotton gins**. After ginning, cotton fibre is baled into compact bundles known as **bales**.

These bales are then taken to textile mills and are spun into yarn. The yarn is then woven into fabric.

Fig. 3.5 Cotton plant

Real World

Cotton seeds are used to make cottonseed oil. Cottonseed oil is used in cooking. The residue, obtained from cotton seeds after extracting oil, is used as poultry and livestock feed.

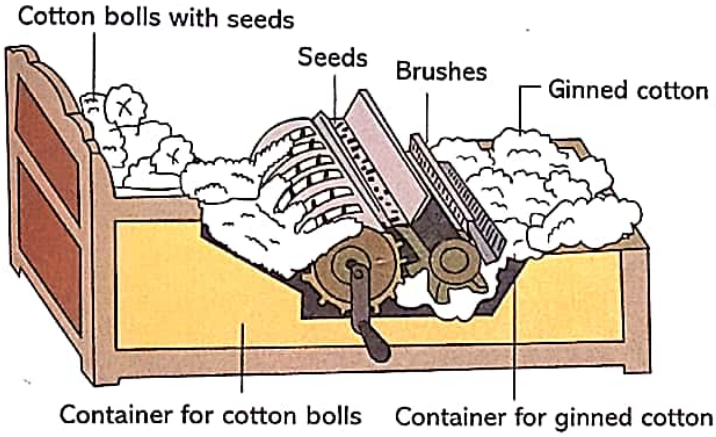

Fig. 3.6 Cotton gin

Fig. 3.7 Compact cotton bales

Jute

Jute is a bast fibre obtained from the stem of a jute plant. Jute is also known as golden fibre due to its golden and silky shine. It is the cheapest, long, soft and shiny natural fibre that can be spun into strong, coarse threads used for making gunny sacks, mats, ropes, carpets, shopping bags (Fig. 3.8) and clothes.

My Dictionary

Bast fibre: Fibre obtained from the outer part of the stem of a plant

Jute plant grows well in warm and humid climate. It mostly grows in clayey or alluvial soil, that is, the regions where it rains a lot. In India, jute is cultivated mainly in West Bengal, Bihar and Assam.

Bangladesh is the main exporter of jute.

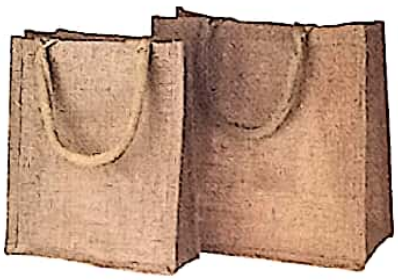

Fig. 3.8 Jute bags

Jute Production

1

The jute plants do not have branches and grow up to 10 feet in height.

2

Jute plants are harvested at the stage of flowering.

3

Jute fibre is glued to the jute plant stem by a stic substance. This sticky substance has to be removed t the fibre. Bundles of jute stems are immersed in wate allowed to rot. This causes the loosening of jute fib This process is called retting. Retting is faster in stag water than in the flowing water.

4

The jute fibres are separated from the stems by hand.

5

Jute fibres are then washed and allowed to dry.

Other useful plant fibres

There are a few more plant fibres. For example, flax, coir and kapok.

Flax: Flax fibre is obtained from the stem of a plant known as **common flax** or **linseed** (Fig. 3.9). Flax crop is mainly cultivated in cooler regions of the world. Flax fibre is used to make linen that is used to make bedsheets and table cloths or table covers.

Fig. 3.9 Flax plant

Coir: The fibre obtained from the dry husk of coconut covering is called **coir** (Fig. 3.10). It is used to make ropes, doormats, carpets and hand bags. It is also used in filling sofa seats and for making coir-foam mattresses.

Fig. 3.10 Coconut and coir

Kapok: Kapok is a cotton-like fibre obtained from the seed pods of a tree called **kapok** (Fig. 3.11). It is also called silk cotton due to its lustrous, silky-smooth texture. The process of harvesting and separating the fibre is labour-intensive. Due to its light-weight, kapok is used as fillings in mattresses, pillows and stuffed toys.

Fig. 3.11 Kapok plant

Let's Investigate

Find out two plant fibres other than those discussed in this chapter. Which part of the plant is used to get these fibres? Name the items made from these fibres.

Knowledge Check

Fill in the blanks using the words given in the box.

ginning	coir	stem	synthetic	unstitched

1. Earlier people wore _____ clothes.
2. The fibre obtained from the dry husk of coconut is called _____.
3. Separation of cotton fibres from its seeds is called _____.
4. Based on the origin, fibres can be classified as natural and _____.
5. Flax fibre is obtained from the _____ of the plant.

FIBRE TO FABRIC

Fibres are not directly converted into fabric or cloth. Fibres are first converted into yarns or threads which are woven together into fabric. *A yarn is a long continuous length of interlocked fibres.* Strands of fibres are brought closer to each other by twisting. Twists impart strength to the fibre strand which is then termed as a yarn.

Remember

A thread is a highly twisted strand of two or more yarns. It is used to sew garments.