3. SPECIALITY FIBRES AND MAN-MADE MINERAL FIBRES

Do You Know

Apart from Silk and Wool, which other fibres are included in the category of NaturaI Protein Fibres?

Is sheep the only animal which provides wool ?

Do you know any other animal which provides wool like fibres to be made into textile products?

Apart from sheep, there are a number of other animals like certain rabbits, goats, camels etc. whose body hair is used as wool fibre. These fibres are actually of a superior quality than regular sheep wool. They are available from special types of animals and hence are popularly known as **Speciality Fibres.** They are of two types –

1. The coarse long outer hair : used for interlining, upholstery and some types of coats.
2. Soft and fine hair : used in luxury apparels like coats, sweaters, shawls, suits and dress fabrics.

Some interesting facts !

Speciality Fibres are very soft and lustrous.

They have better capacity of providing warmth.

They are available in smaller quantities and so are usually very expensive.

The fibres are gathered by hunting or domesticating the animals or collecting fleece from live animals.

These fibres do not have much crimp and felting properties.

Table No. 3.1 Other animals providing wool like fibre

Name of the animal	Place where found
1. Goats – a. Mohair	Originally from Angora district in Turkey. Now South Africa and USA.
b. Cashmere	Originally from Kashmir, India. Now in many countries.
2. Llamas	Mainly South America.
3. Alpaca	Mainly South America.
4. Vicuna	Mainly South America.
5. Camels	North Africa, Middle East and China.
6. Rabbits -Angora	Originally from Angora district in Turkey. Now raised all over the world. More popular in Europe.
7. Musk Ox	Northern regions like Canada, Alaska.

A few examples of speciality fibres are as follows –

3.1 Speciality Fibre - Angora

This is a speciality fibre obtained from Angora rabbits. These rabbits are one of the oldest types of domestic rabbit, and are bred for the long fibers they provide which are known

as **Angora wool** . There are at least 11 distinct breeds of Angora Rabbits.

The fibres are very fine, fluffy and slippery. They are long and pure white in colour. They are especially suitable for making baby clothes because of two reasons –

a. The fibres are extremely smooth and soft.

b. They do not cause allergies.

A peek in history.

Angora is supposed to be named after Ankara, in Turkey but strangely, this species of rabbits are not found there anymore.

Europe has raised Angora rabbits for their fibre for centuries and French people made it popular.

Pic. No. 3.1 Angora Rabbit

Pic. No. 3.2 Angora Wool

3.2 Speciality Fibre - Mohair

This is a speciality fibre obtained from Angora goat. Angora goats are a breed of domestic goats which were found in Angora district in Asia Minor in ancient times. Nowadays, South Africa and USA are the largest producers of this speciality fiber.

Mohair is considered to be a luxury fibre. It has silk like lustre. It has smoothness better than other wool fibres. It is durable and resilient. Because of its exceptional luster and sheen, it is nicknamed as **"Diamond fibre"** and is often used in making blends with other fibres to add these qualities to the final product. It is used mainly for making scarves, hats, sweaters, coats, socks and home furnishing like carpets. Because of its resemblance with human hair, it is also used for making wigs and hair pieces.

Origin of Mohair.

The word Mohair is derived from the Arabic word Mukhayyar which means "fabric made from hair of goat".

Pic. No. 3.3 Angora Goat

Pic. No. 3.4 Mohair fabric

3.3 Speciality Fibre - Cashmere

This is also a speciality fibre obtained from Cashmere goat . These goats are of Indian origin. This fibre is six times finer than human hair. It is stronger, lighter, softer and approximately three times warmer than regular wool. It is used to produce high quality fabrics.

The fabrics made from this fibre are warm, have a buttery touch and have beautiful draping quality. This fibre is used to produce coats, hosiery, blazers, jackets, gloves, sweaters, socks, scarves etc.

It is majorly produced in China, Mongolia, Iran, India, Afghanistan and Turkey.

Something interesting!

The cashmere goat is a special type of goat originally found in Kashmir. The word ***Cashmere*** is an anglicisation of the word Kashmir. Today, this goat is bred in many different countries.

Pic. No. 3.5 Cashmere goat

Pic. No. 3.6 Cashmere sweater

3.4 Speciality Fibre - Vicuna

Vicuna speciality fibre is obtained from a South American camelid called Vicuna that lives in hilly areas of Peru. Vicunas are cousins of llamas.

Vicuna fibre is popular because of its softness, fineness, beauty and ability to retain heat. As it is sensitive to chemicals, it is never dyed and is used in its natural cinnamon colour. This fibre is in high demand in international market and is one of the most expensive wools in world because of the following reasons –

- The number of these animals is very limited.
- The fibre can be gathered only once in two or four years.
- Vicunas are not domestic animals. They have to be captured live from the hilly areas, sheared and then released back to the wilderness. If they are kept in captivity, they starve themselves to death!

This fibre is used for making high end woollen clothing like sweaters, socks, suits, dress, jackets, shawls, scarves etc.

Some interesting facts about Vicuna!

The pronunciation of the name is ***Vikunia*** or ***Vaikunia.***

It is the national animal of Peru. It is so protected and cherished that in olden times only royalty was permitted to wear clothing made from vicunas.

Before some years the number of vicunas had reduced drastically due to poaching but thanks to the strict laws made by the Peruvian government, now the number has grown more.

The fibre is very expensive and a pair of vicuna socks can cost up to $1000.

Pic. No. 3.7 Vicuna animal

Pic. No. 3.8 Vicuna sweater

Internet my friends

Find out about other speciality fibres, their origin, main characteristics and uses.

5 Man-made Mineral Fibres – Glass Fibre

Glass fiber (or glass fibre) is a **material consisting of numerous extremely fine fibers of glass.** Many ancient civilizations used to make and use glass fibre but those fibres were thick and used for decoration only. Mass manufacture of glass fiber was only made possible with the invention of finer machine tooling.

Do You Know ?

Glass fibre is a popular substitute for asbestos because it does not create any health hazard like asbestos. In many areas of our life, glass fibre has replaced asbestos.

Nowadays, glass fibre is used extensively in many fields.

Raw Materials : The main raw materials for making glass fibre is Sand, Silica and Lime stone.

Properties : It has certain special properties which make it a very useful material for industrial purpose as well as household purpose. Glass fibre is strong, flexible, non conductor of heat, electricity or sound. One major advantage of glass fibre is that it is non-combustible i.e. it does not catch fire. Because of this property, it can be used in place of asbestos.

Uses :

- Glass fibre and fabrics are used for thermal insulation, electric insulation, sound insulation in various machines.
- It is light weight and strong and so used for making aeroplane parts and car bodies.
- It is used to reinforce concrete (known as GFRC) and so extensively used in making buildings, roads and translucent roofing panels.
- It is used to reinforce plastic also (known as GFRP) and the resulting material has varied uses like doors, showers, swimming pools, bath tubs, helicopter blades, tent poles, water slides, boats, surf boards, tanks, pipes, handles of equipment, traffic lights etc.
- One important use of glass fibre is as curtains. In many countries, it is mandatory to have curtains made from glass fibre in public places like auditoriums, hospitals etc.

Internet my friends

Find out the full forms of GFRC and GFRP from internet. Also find out other uses of these materials.

Pic. No. 3.9 Tent poles

Pic. No. 3.10
Water slides

Pic. No. 3. 11
Surf boards

Pic. No. 3.12 Glass curtains

3.6 Man-made Mineral Fibres - Metallic Fibres

Metallic fibres are nearly 3000 years old. In fact, the first man-made fibers used in textiles were not nylon or rayon but silver and gold. Historically, the **metallic** thread was constructed by wrapping a metal strip around a **fiber** core (cotton or silk), often in such a way as to reveal the color of the **fiber** core to enhance visual quality of the decoration. As they are used directly for weaving into a fabric, they are technically **Metallic Yarns** and not fibres.

Such yarns made of gold and silver have been in use since ancient times as decoration in the clothing for royalty and noble people. Many of such elegant textiles can be found in museums around the world.

In India, these metallic yarns are known as Zari. They are used for weaving and embroidery the most intricate designs and attractive patterns.

Zari work means weaving zari yarns into fabrics while Zardozi means surface embroidery on fabrics.

Most of the Indian traditional textiles about which you learnt in XI standard are having zari as their core component. The leading Indian markets for zari products are Kolkata in east, Mumbai & Nagpur in the west; Jaipur, Amritsar, Delhi & Varanasi in north and Mysore, Bangalore, Salem, Chennai, Madurai, Kanchipuram & Kumbakonam in the south. Surat nowadays is the world's largest producer of all types of zari threads, ribbons, borders, laces etc.

A peek in history.

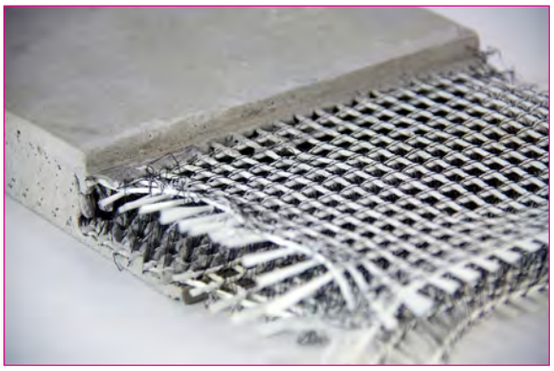
It is believed that the word **Zari** originated in a village by the same name in ancient Persia (Iran of today) where artisans used to weave gold and silver threads onto silk fabrics. The art was brought to India around 1700-1100 BC- the period of ***RigVeda***. However it really flourished during the Mughal era. It has now been recognised by the Government of India as one of the most ancient forms of handicraft.

Care & Maintenance.

Zari fabrics need special care in handling and storage. They have to be wrapped in muslin cloth to avoid friction and effect of natural elements. They can get damaged if washed at home and so need to be dry cleaned. Spray of perfumes should be avoided as it may tarnish the metal.

Pic. No. 3.13 Zari saree

Pic. No. 3. 14 Brocade



Pic. No. 3. 15 Metal reinforced concrete

The zari threads are mainly of three types –

1. **Real Zari** : Made from pure gold and silver. Nowadays made to order only as it turns out to be very costly.
2. **Imitation Zari** : This is copper wire coated with silver. This is cheaper than real zari. It can get dull or tarnished if proper care is not taken.
3. **Metallic Zari** : A metallic film is coated with polyester on both sides and then cut into thin strips and used as yarn. This known as **Mylar**. This is cheaper, lighter and more durable. The polyester coating saves the metal from getting tarnished and so this type of zari maintains its original look for a longer period of time.

Do You Know ?

In modern times, metallic yarns have made their way into fields other than textiles. Iron, steel and other metal yarns are used for building constructions, for making roads, bridges, ports, airports, tunnels, mines, in pre-cast concrete (like Glass fibres). They not only provide strength but also make the building more flexible thus making it earthquake proof

Use Your Brain Power !

I. Who am I ?

1. I am a wool like fibre available from a type of rabbit _____
2. I am a man-made mineral fibre used for making tanks and pipes. _____
3. I am polyester coated metallic yarn. _____
4. I am the largest producer of zari in world. _____
5. I am also known as Diamond Fibre. _____
6. I am the national animal of Peru. _____

II. Make meaningful words from the following jumbled words :

1. I N V A U C - _____
2. R A I M H O - _____
3. L Y R M A - _____
4. O A R N G A - _____
5. E M C E H A S R - _____

EXERCISE

Objective Type Questions

1. Match the following :

	A		B
1.	Angora goat	a.	Domestic animal
2.	Metallic zari	b.	Angora
3.	Electric insulation	c.	Wild animal
4.	Vicuna	d.	Glass fibre
5.	Baby clothes	e.	Polyester coated
		f.	Mohair

2. Select and write the most appropriate answer from the given alternatives for each question :

1. The most expensive wool in the world
   a. Angora b. Mohair c. Vicuna
2. This is known as Diamond Fibre.
   a. Angora b. Mohair c. Vicuna
3. Fibre being used as a substitute of asbestos
   a. Angora b. Glass fibre
   c. Metallic fibre
4. Fibre used to reinforce plastic
   a. Angora b. Glass fibre
   c. Metallic fibre
5. Biggest producer of zari in the world
   a. Nagpur b. Chennai c. Surat

3. Write whether the given sentences are True or False :

1. Cashmere fibre is obtained from a type of goat.
2. Imitation zari does not have metal in it.
3. Glass fibres are used for making car bodies.
4. Metallic fibre is used for building construction.
5. Mohair is obtained from a type of rabbit.

Short Answer Type Questions

1. Give Reason:

1. Mohair is known as “Diamond fibre”.
2. Angora is used for making baby clothes.
3. Vicuna is the most expensive wool in the world.
4. Glass fibre is used for making car and aeroplane parts.
5. Perfume should not be sprayed on zari fabrics.
6. Angora, mohair, vicuna etc. are called “Speciality fibres”.

2. Write short notes on the following :

1. Uses of glass fibre
2. Vicuna fibre
3. Types of zari
4. Uses of Angora
5. Other uses of metallic fibre
6. Cashmere
7. GFRP
8. Metallic zari

Self Study Project

- **Find out about the various other speciality fibres available in the world.**
- **Find out the various fields of life where man-made mineral fibres are being used nowadays.**