

## Textile fibers

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A textile or cloth is a manufactured product made up of natural or artificial fibers, commonly threads or yarns, woven each other in several ways. Yarn is a collection of raw fibers of wool, flax, cotton twisting up to reach a considerable length.

Fibers come from main sources: animal (wool, silk), plant (cotton, flax, jute), mineral (asbestos, glass fiber), synthetic (nylon, polyester, acrylic) and artificial (acetate, rayon).

## Animal fibers

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They are generally made from hair or fur.

Wool is produced with the hair of various animals, it may be all wool or combined with other different wools. It results from the hair of domestic sheep (pure wool, merino, lamb's wool), goat (cashmere and mohair), rabbit (angora), alpaca, vicuña, llama, camel. Sheep's wool distinguishes itself from other types by lanolin: a wax mixture secreted by the sheep's skin, it protects animals against ravages of climate and environment; it is waterproof and dirt proof. Its extraction occurs by squeezing wool between rollers. Wool may be used widely both in clothing (carded and worsted textiles) and in soft furnishing. Cashmere and mohair are universally renowned for their softness. All types of wool are generally employed to produce warm clothing.

Silk is made from the cocoons of silkworms, especially *Bombyx mori*. Silkworms secrete a filament 1/1,5 Km long which they form their cocoon with and it will protect them during metamorphosis. You need 8 cocoons to produce a floss silk: shiny and sleek, it's a very prized texture. Several yarns are obtained by silk: organzine, crêpe, bourette, tus-sah etc., and textiles too: taffeta, georgette, chiffon, satin, organza, velvet and so on. Silk is employed in clothing (ties, blouses, foulards, lingerie) and soft furnishing (curtains and tapestry). Silk has been used for recent years in medicine by making prosthesis and repairing damaged human tissues.

## Plant fibers

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Plant fibers are obtained by fibers in the shanks and all around the seeds of some plants: cotton, flax, jute, raffia, hemp. They have various morphological features depending on the part of the plant they result from.

Cotton is absolutely the most widely produced fiber. It consists in thick hair covering seeds retained in the fruit of the homonymous plant. It is easy to work, it's well lent to dye and starch, it can be washed without any particular care and mixed to other fibers. Cotton is used in many productive sectors. Cloths, towelling, table cloth, velvet, poplin, fustian, muslin and the well-known blue jean are all cotton textiles. Thanks to its absorbance cotton can be used in health care too (gauzes, bandages, absorbent cotton). Cotton fibers are finally used to produce fine and high priced paper.

## Mineral fibers

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Mineral fibers are very special. They are rarely used in textiles but in other sectors in material composite. Asbestos and glass fiber are crushproof, unalterable, acid-proof and not inflammable.

Asbestos is a very abundant rock, especially in Canada. Its particularly filamentous surface makes it suitable to be spun and woven. As mineral asbestos doesn't go up in flames and fuses only at very high temperatures. It is moreover acoustic and thermal insulating. That's why asbestos has always been used to produce fireproof equipment. Nowadays it is however forbidden because of its verified toxicity: it is carcinogenic.

## Synthetic fibers

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Synthetic fibers result from oil through synthetic processes. Nylon as well as the others is flexible, light and resistant, it doesn't shrink neither wrinkle, it is very elastic and shouldn't be ironed. Nylon was the first synthetic fiber produced by chemical industry. It is used most of all to produce tights, bathing suit, sportswear, lingerie, handbags, umbrellas and flooring (with large yarns).

## Artificial fibers

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These fibers are often confused with synthetic ones, but artificial fibers arise from chemically processed cellulose, they are therefore little more transpiring. Acetate is obtained by melting wood cellulose in a solvent (acetone). It is produced in the form of continuous yarn. It's a very light, shiny and elastic textile and is mainly employed in women's clothing and soft furnishing.

## Activities

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### True (T) or False (F)?

- T  F 1) Fibers have only animal origin.
- T  F 2) Sheep's wool contains lanolin.
- T  F 3) Silk is produced by silkworms' secretions.
- T  F 4) Cotton is a fruit fiber and not a plants one.
- T  F 5) Mineral fibers can be used in material composite.
- T  F 6) Asbestos is a highly inflammable mineral.
- T  F 7) Synthetic fibers are not very transpiring.
- T  F 8) Once melted in acetone cellulose gives rise to acetate.

### Tick the correct answer

#### 1) Wool is used most of all:

- a) to produce warm clothing.
- b) in material composite.
- c) for fire equipment.

#### 2) Thanks to its absorbance cotton:

- a) is weatherproof.
- b) is used in health care.
- c) doesn't shrink.

#### 3) Asbestos shouldn't be used in clothing:

- a) because it is too heavy to wear.
- b) for it can't be spun.
- c) because it is carcinogenic.

### Complete the sentences with the correct word

- 1) A textile consists in ..... woven each other in many ways.
- 2) The production of floss silks asks for the use of many .....
- 3) Thanks to its properties ..... can be used to repair damaged human tissues.
- 4) Blue jean is a cotton .....
- 5) Asbestos has a ..... that makes it suitable to be spun.
- 6) Synthetic fibers don't wrinkle so they shouldn't be .....
- 7) Large ..... yarns are used in flooring.
- 8) Chemically treated cellulose constitutes the basis of ..... fibers.

## Keys

### True (T) or False (F)?

- T  F 1) Fibers have only animal origin.
- T  F 2) Sheep's wool contains lanolin.
- T  F 3) Silk is produced by silkworms' secretions.
- T  F 4) Cotton is a fruit fiber and not a plants one.
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### Tick the correct answer

#### 1) Wool is used most of all:

- a) to produce warm clothing.**
- b) in material composite.
- c) for fire equipment.

#### 2) Thanks to its absorbance cotton:

- a) is weatherproof.
- b) is used in health care.**
- c) doesn't shrink.

#### 3) Asbestos shouldn't be used in clothing:

- a) because it is too heavy to wear.
- b) for it can't be spun.
- c) because it is carcinogenic.**

### Complete the sentences with the correct word

- 1) A textile consists in YARNS woven each other in many ways.
- 2) The production of floss silks asks for the use of many COCOONS.
- 3) Thanks to its properties SILK can be used to repair damaged human tissues.
- 4) Blue jean is a cotton TEXTILE.
- 5) Asbestos has a FILAMENTOUS SURFACE that makes it suitable to be spun.
- 6) Synthetic fibers don't wrinkle so they shouldn't be IRONED.
- 7) Large NYLON yarns are used in flooring.
- 8) Chemically treated cellulose constitutes the basis of ARTIFICIAL fibers.