

Properties of Wool

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WOOL –

Wool is natural fibre of animal origin which is hygroscopic in nature, is crimped, elastic and grows in clusters. its a fibre of cylindrical structure and basically protein in nature. Structurally it consists of cortex and cuticle, it is devoid of a medulla.



MOHAIR-

Natural fibre obtained from angora goats has approx 25-45 microns diameter and durable. It is notable for its high lustre and sheen, mohair has scales as wool but the scales are not fully developed, hence it doesn't felt like wool. Like wool mohair has no medulla.

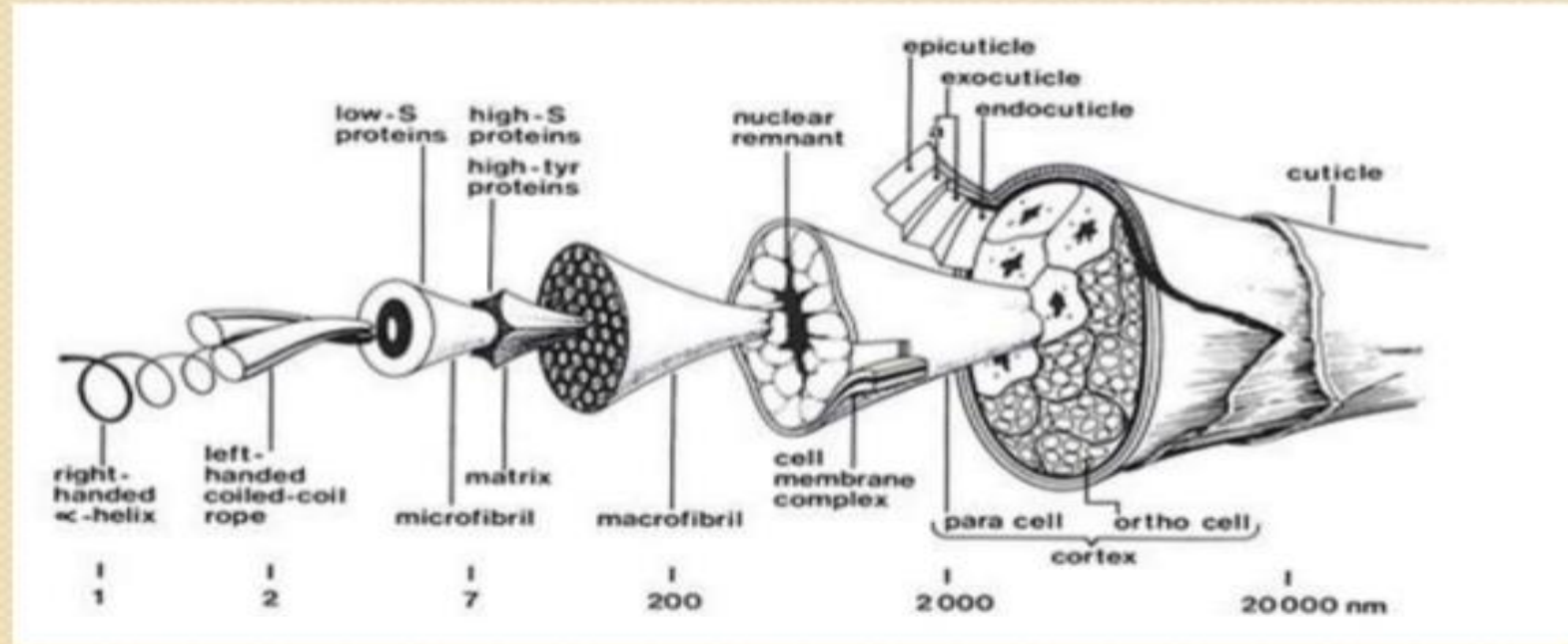


FUR/HAIR

A synonym for non-human hair. The term is sometimes used to refer to the body hair of an animal as a complete coat, also known as pelage. Structurally it is similar to hair and it consists of cuticle, cortex and medulla.

PHYSICAL STRUCTURE OF WOOL

A protein fibre made up of keratin. It contains sulphur containing amino acid, cysteine.



PHYSICAL STRUCTURE OF WOOL

CUTICAL-Outer most protective layer of scales.it has waxy coating which makes it resistant to water.

CORTEX-Internal cell of the fibre,contains two type of cell.(a)ortho-corticle cell
(b)para-corticle cell

CELL MEMBRANE COMPLEX-It contains protein and waxy lipids which runs through out the whole fibre.

MACEO-FIBRILS=Long rod like filament present inside the cortical cells.

MATRIX=It consists of sulphur containing protein the matrix is region responsible for wool fibre resistance and anti-static property.

MICRO-FIBRILS= The basis supporting system of the wool fibre.it gives strength and flexibility to the fibre.

HELICAL COIL =

It is the smallest part of the fibre. It consists of twisted molecular (protein) chains that are coiled in helical shape. This structure is stiffened by hydrogen and di sulphide bonds. These bond link each coil of the helix helping to prevent stretching .

PHYSICAL PROPERTIES

1. Cylindrical in structure.
2. Devoid of medulla
3. Shows curliness/crimpiness
4. Durable and elastic, up to 30% of its normal length
5. Hygroscopic nature and light weight, water proof, non - inflammable
6. Strong, can be felted or matted easily
7. Exposed to cold water wool fiber diameter is seen to increase .

CHEMICAL PROPERTIES =

- (1) Wool burns slowly, insoluble in water
- (2) Continuous boiling of wool causes breakage of its macromolecules, causing decomposition. Wool softens on soaking in cold water. No harm occurs to wool when exposed to cold or boiling solutions of mineral acids.
- (3) Wool is sensitive to alkalis. Complete destruction and dissolution of wool occurs when boiled with 5% solution of caustic soda.

WOOL QUALITY = PARAMETRES

1. Fibre - fineness
2. Fibre length and staple length
3. Crimp frequency
4. Medullation percentage
5. Scouring yield
6. Burr content
7. Colour

MEDULLATION PERCENTAGE =

Volume occupied by medulla in a fibre.

Medullated fibres are of lower density.

They are stiff and less elastic.


SCOURING YIELD = The process of cleaning of wool is called scouring.

Scouring detergent(sodium carbonate) @ 0.3-0.6% is added to water.

BURR CONTENT = Amount of vegetable content present in a fleece is known as burr content.

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It is estimated by dissolving wool in NaOH solution. The process of removal of burr is known as carbonization.

A top-down view of a yellow envelope with its flap open, resting on a matching yellow surface. A white, torn-edge note is placed inside the envelope, featuring the words "thank you" written in a black, cursive script. Both "thank" and "you" are underlined. A black pen lies horizontally to the right of the envelope. The entire scene is set against a plain white background.

thank you