

WOOL – THE ANIMAL FIBER – CONCLUDING PART

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Chemistry of Wool

Wool fiber is composed of a protein named Keratin. Keratin proteins are actually crystalline copolymers like nylon, where the repeating units are amino acids. They also crosslink through disulphide bonds present in the cysteine amino acid. Through X-Ray diffraction, it has found that wool has two structures. One is alpha-keratin and second is beta-keratin.

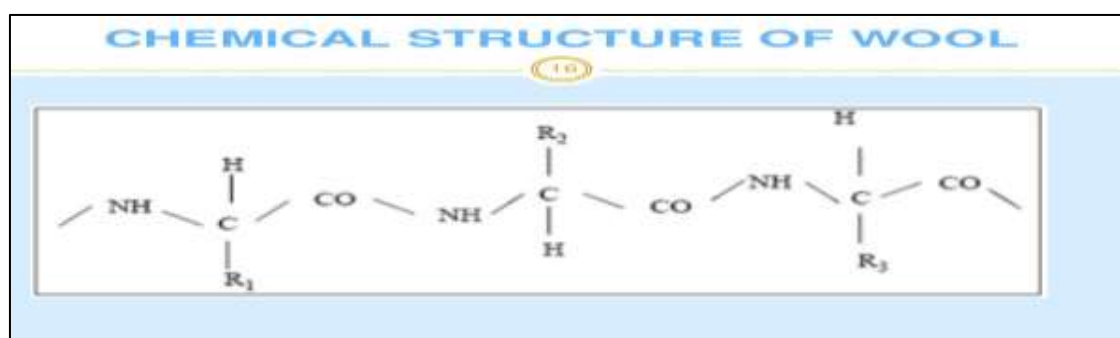
70% of the fiber contains unnecessary substances.



Chemical Composition of Wool Fiber:

Keratin	33%
Dirt	26%
Suint	28%
Fat	12%
Mineral matter	1%

It has a heterogeneous composition where the protein is made up of amino acids and acidic carboxyl groups. These are responsible for its flexibility, elasticity, resilience, and good wrinkle recovery properties. It also allows it to absorb both moisture and dyes better.





Micro Structure of Wool Fiber

The microstructure of wool fiber consists of three main components, the cuticle, the cortex and medulla.

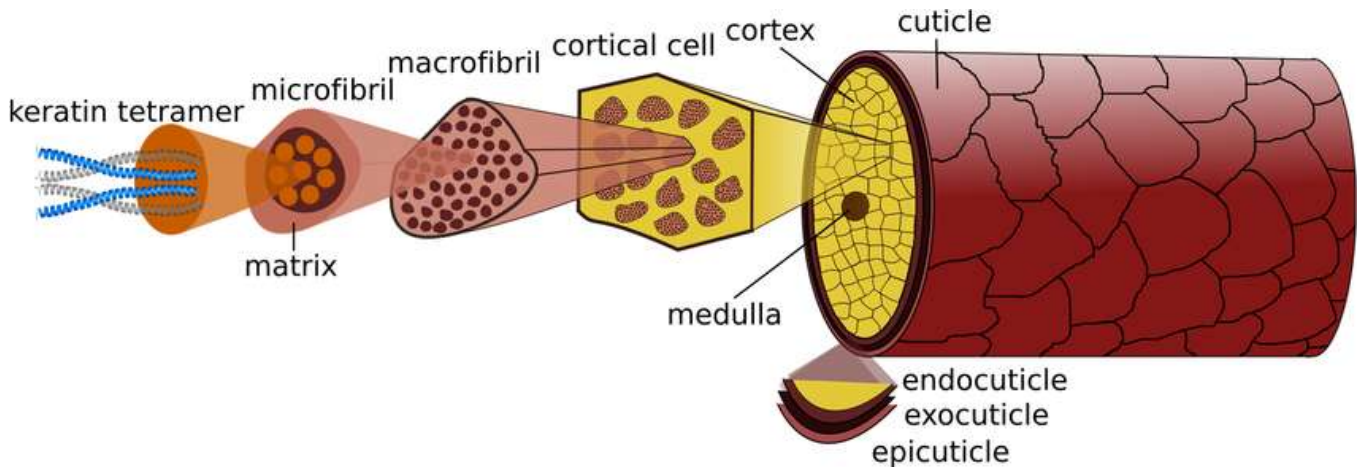


Fig 1.1 Structure of Wool

Dyeing of Wool

Dyeing of wool can be done at various stages of the wool processing. However, the two most common stages are after washing or after spinning wool into skeins of yarn.

Besides acid, metal complex dyes; **wool and its blends can be dyed using reactive dyes.**

Wool is dyed by the exhaust dyeing technique in a strongly acidic medium with reactive dyes. The dyestuff molecule should have at least one vinyl sulfonyl group, which, under fixing conditions, reacts with the fiber.

Wool is dyed in many forms 1) package form 2) hanks form 3) Loose fiber form. Various types of machines are used for dyeing wool fibers in loose form. Like conical pan, pear-shaped and radial flow machines. Loose fiber is typically packed into these machines manually. In the majority of cases all chemical and dyestuff additions are made manually to the open dyeing machine.

Finishing of Wool

- 1) Milling or Felting –It is done to change the appearance, elasticity and strength of the body.
- 2) Crabbing – It is done to bring stability, eliminate distortions like crows foot pattern.
- 3) Decatising – It is done to relax the stresses developed during spinning, weaving.

Wishing you a great week ahead!

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