Topic: TEXTILE AND CLOTHING

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Wool

Wool is a natural protein fiber and considered as Man's **best friend**. Sheepskin, including the hair, was probably used long before it was discovered that fibers could be spun into yarns or even felted into fabric. The earliest fragments of wool fabric have been found in Egypt but **Mesopotamia** is the birth place of wool. Wool can be sheared from the living animal or pulled from the hide after the animal has been slaughtered for its meat. Sheared wool is called **fleece** or **clipwool** and wool taken from the hides of slaughtered animal is called **pulled wool** which is inferior in quality to fleece or clip wool. The quality of wool is expressed by numbers. The higher the numbers, the finer the wool and better the quality. The finest wool is from young sheep. Very fine wool of excellent quality is shorn from lambs when eight months old.

Manufacture

Once the raw wool reaches the mills, it has to pass through many processes before it finally emerges as woolen cloth. Sorting, Scouring, Carbonizing, Carding, Spinning, Bleaching, Dyeing, Weaving, Knitting and Finishing.

Sorting: When the bales are opened, the fleece is graded. It may be separated into sections such as shoulders, sides etc.

Scouring : The raw wool is washed in successive troughs of soapy alkaline water of decreasing strength to remove dirt and grease.

Carbonizing : Straw, burrs and other vegetable matter are removed by treatment with acid, heat and pressure of rollers.

Carding: The wool is passed through machine rollers with sharp steel wires which separate the fibers and mix them thoroughly

Spinning: The mass of carded wool is drawn out and twisted or spun into woolen yarn which is soft and fluffy thread.

Properties

Microscopic Appearance

Wool appears in longitudinal as solid rod with its surface covered with horny scales. The cross- section reveals the cellular internal structure with spindle like ceils in the cortex, which are smaller than those in the medulla

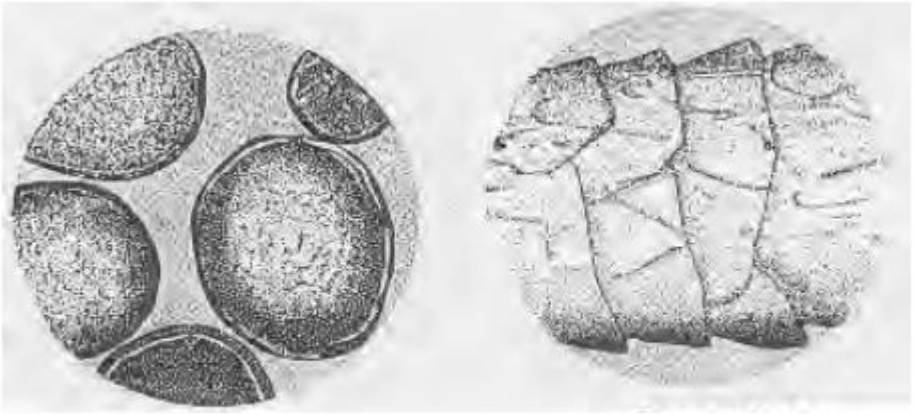

Fig. 4 - Microscopic Appearance of wool

Physical

1. Wool fibers varies in length from 1½ -15 inches
2. Wool after scouring is yellowish - white or ivory in colour. Other wool may be grey, black, tan or brown.
3. Fine & medium wool have more luster than coarse wool.
4. Wool has a natural crimp. The crimp increases the elasticity and elongation properties of the fiber.
5. Wool is weak but has exceptionally good resilience and moisture absorption.

Thermal

1. Wool bums slowly with a slight sputtering and is self-extinguishing.
2. A crisp, black, bead-shaped residue is formed and gives a burning hair smell when removed from flame.
3. Wool scorches easily.

Chemical

1. Wool is susceptible to damage by alkaline solution. Even 5% of NaOH will dissolve wool.
2. It is resistant to mild acid but strong concentrated sulphuric acid decomposes wool fibers.
3. Solvents have no damaging effect on wool fibers.

Biological

1. Wool is resistant to bacteria and mildew but if moisture is present both may destroy wool fiber.
2. Wool being protein fiber is a good food source for carpet beetle and the larvae of clothes moth.

Uses

Woolen and worsted fabrics are used throughout the world. They are crease resistant, flexible, elastic, absorbent, warm and comfortable. A major problem with wool fabric is the tendency to shrink. Crimp decreases when wet and increases when dry. Wool can be dry-cleaned but laundering is difficult. Wool can be dyed and has good colour fastness property.