

Topic: TEXTILE AND CLOTHING

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Silk

Silk has been considered as one of the most elegant and luxurious of fibers. It is popularly known as the **Queen of fabrics**. The method of raising silk worms and removing the silk filaments from the cocoons, and of using the silk in weaving for garments was discovered by **Hsi-Ling-Chi**, a little Empress of China. Commercial silk is produced by the cultivated silkworm, *Bombyx mori*, a caterpillar, that feeds on mulberry leaves. The eggs laid by the moth are stored in winter and spread out on trays to hatch in a warm shed. Mulberry leaves are placed as soon as the worms appear, for them to eat.

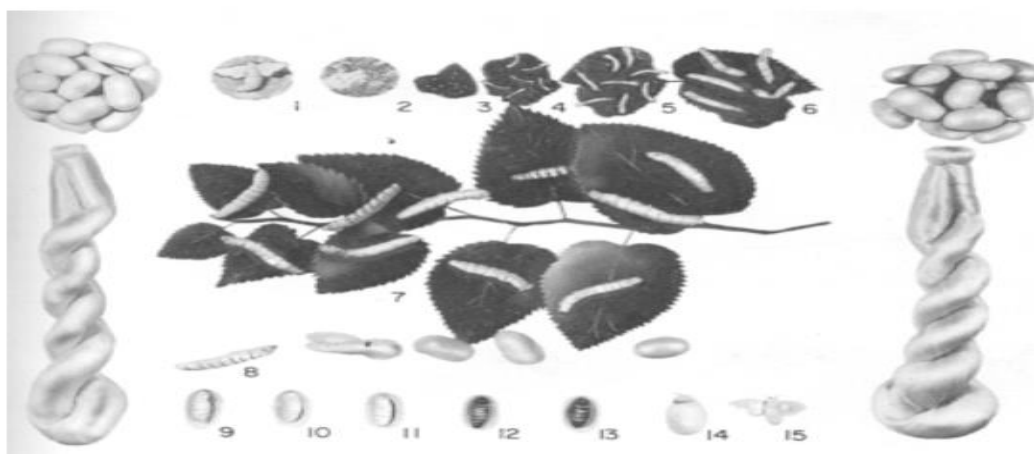


Fig. 2- The life Cycle of Silkworm

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|--|----------------------------|
| 1. Laying of eggs | 2. Hatching |
| 3. First age | 4. Second age |
| 5. Third age | 6. Fourth age |
| 7. Fifth age silkworm feeding on mulberry leaves | |
| 8. Spinning cocoons | |
| 9, 10, 11, 12- Stages of pupa | 13, 14, 15- Stages of moth |
- (Courtesy International Silk Guild, Inc)

When the worm is fully grown, it starts spinning its cocoon on straw placed on the trays. The silk fluid from special glands issues from two holes, one on either side of the head, called **spinnerets**. The fluid hardens as it comes in contact with the air and two long fibers which are stuck together with silk gum are formed. The cocoons are heated to kill the pupa inside, otherwise the moths would destroy some of the silk. Some are allowed to become moths to provide eggs.

Manufacture

The manufacturing process involves Reeling, Throwing, Degumming, Weaving, Dyeing and sometimes Weighting.

Reeling: This is a process of unwinding the silk filament from the cocoon. The cocoons are

boiled in water to soften the gum so as to unwind the filaments

Throwing: Throwing is a process of combining several reeled strands to make a yarn. The number of strands is twisted together to form a strong yarn.

Degumming: The gum left on the fibers to protect them are now removed by boiling in soap and water. Sometimes degumming is left until the fabric is woven. Weaving is carried out the same way as for other fibers.

Weighting: Weighting is the process of treating silk with certain metallic salts to give weight and body to the product.

Properties

Microscopic appearance

Longitudinally, degummed silk appears as a smooth, lustrous, translucent filament like a glass rod. In cross-section silk show triangular fibers with no markings.

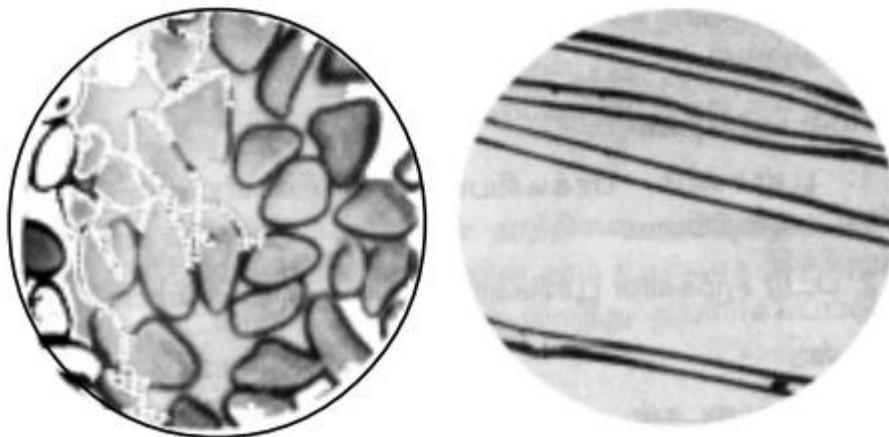


Fig.3 - Microscopic appearance of silk

Physical

1. Silk filaments are very fine and long.
2. It is one of the strongest fibers.
3. It has good elasticity and moderate elongation and resilience.
4. Silk fabrics have good resistance to stretch & shrinkage when dry-cleaned.

Thermal

1. Silk burns directly in the path of flame.
2. It extinguishes itself when removed from flame and gives an odour of burning hair.
3. Silk scorches if ironed at too high temperatures.

Chemical

1. Silk is damaged by strong acids and alkalis.
2. Silk is not affected by cleaning solvents.

Biological

1. Silk is resistant to attack by mild dew, bacteria and fungi.
2. Carpet beetles will eat it.

Use

Silk fabrics are noted for their soft, luxurious handle, rich luster, warmth, resilience, and

crease resistance, strength and excellent draping quality. A wide range of fabrics are made ranging from sheer chiffon to firmer dress and suiting material, to heavy brocades to the rich pile velvet. Silk serves best for ceremonial occasions, evening or day wear and lingerie.