

SILK SPINNING

Dr.H.B.Mahesha, Yuvaraja's College, University of Mysore, Mysore.

There are two types of silk yarns used in the weaving sector. One is raw silk – which is comparable to filament yarn in synthetic textiles.

Second one is spun silk – which is comparable to staple fiber in synthetic textiles.

The process of producing spun silk yarn is known as silk spinning. Silk reeling is a wet process where as the silk spinning is a dry process.

The various steps involved in spun silk production are as follows:

1. Degumming

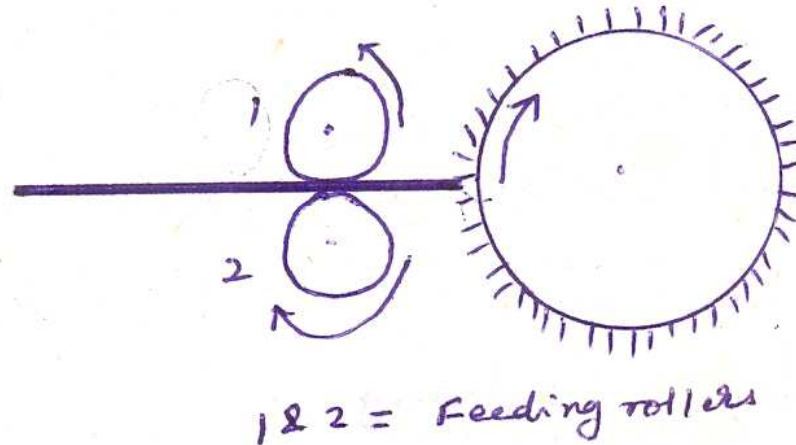
The wastes are collected and put in to the machine having large drums with water. It is boiled at 90-95 °C for 1 hour depending upon the sericin content is to be removed. The wastes are then washed in washing drum (degumming is done either with soap and soda solution or by enzymatic reaction). for mulberry cocoons generally soap 22. 5% and soda 6.25% is used. The washing drum will have wooden pad like structures. This exerts pressure while washing and this process is called stumping to remove the soap and soda it is washed repeatedly with water. It is then hydro extracted and squeezed. The silk then dried in hot air drying machine. After drying the next step is conditioning. It means while drying the silk is completely dried and therefore, they are made to regain the moisture. It is kept in conditioning room for 15 days, during this period it absorbs 11% moisture. Up to conditioning, all the different types of wastes are kept separately. After conditioning, the different types of silk will become uniform.

2. Mixing and Ball Making

The next process is mixing and ball making. To get uniform silk, different silk wastes are mixed in order to get good process performance, economy and quality. While ball making, the degummed silk will be weighed and 200-250 gm of silk is taken in the form of a ball.

3. Opening

This is done in machine called opening machine. This consists of fork like structure. The ball is fed to the machine and fork opens the tangled mass of silk fiber and ball becomes like a ribbon structure, in which filaments are more or less parallel.

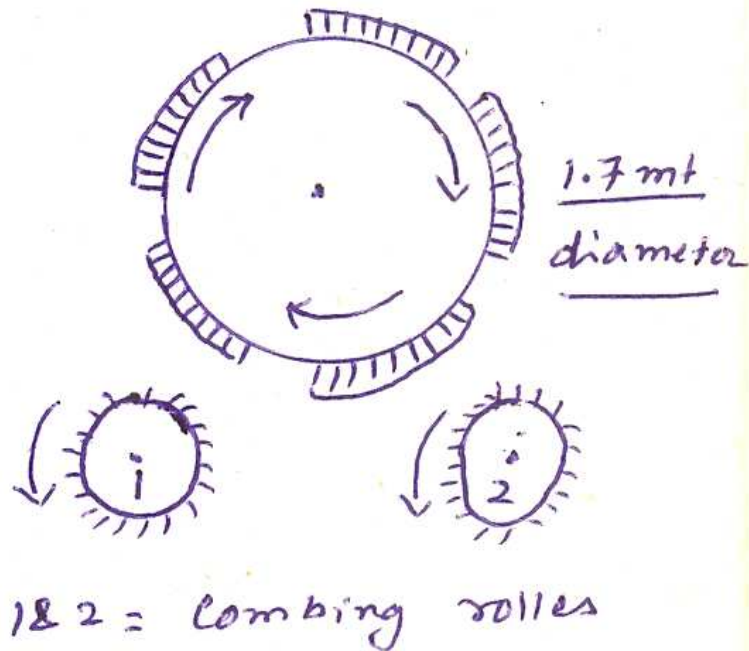


4. Filling and Pegging

The mat or web from the opening machine is transferred to the drum of a similar machine called a filling or pegging machine. The surface of this drum is studded with rows of combs spaced at different intervals (combing action rather than opening action). The material delivered from the machine is called slivers.

5. Combing or Dressing

The main purpose of dressing or combing is to eliminate the short fibers and to parallelize the long fibers. The short fibers which are removed in 2-4 dressing will be utilized for the production of noil yarns. Parallelized fiber drafts (long fibers) obtained from the drum are called slivers.



6. Cleaning of Slivers

The dressed material is subjected to visual cleaning on a glass, below which light is provided. Foreign matters are removed to improve the quality of yarn.

7. Drawing

The series of preparatory drawing operations takes the ribbon or slivers through six different drawing machines in each of which it is submitted to extension (drafting) varying from 1:6 to 1:10. From the final drawing frame the slivers is reduced to a fine slubbing.

In drawing frame, doubling and drafting takes place simultaneously, so sometimes blending of different slivers belonging to different fibers may be employed viz., 4 silk + 2 Terylene etc.,

8. Roving

This is done in a roving frame. The sliver from the drawing frame is further subjected to attenuation, parallelization and twisting. The slightly twisted roving is wound on a bobbin which is used for spinning frames.

9. Spinning

Roving will be converted in to a required size twisted are wound on a bobbin. As the material is thin and also the number of fibers will be less, so in order to bind them, twisting is necessary.

10. Winding and Doubling

Two or three single spun yarns are doubled and twisted.

11. Gassing

The protruding fibers on the surface of yarn are burnt-out by passing the yarn through a clear flame at a speed of 500-600 meters per minute to improve the luster and appearance of yarn.

12. Cleaning

After gassing, the thread is passes between rotating steel rollers which remove the adhered, burnt particles from the thread.

After this process, the yarn is taken for reeling to make standard sized hanks. Then it is made to skeining, bundling and bales. The spun silk bundles weigh 5 kg and bale 45 kgs. Before going for skeining, imperfections are manually removed.

Noil Yarns

The waste obtained at various stages of spun silk yarn manufacture is utilized for the production of coarser varieties of yarn which are known as Noil Yarns. The process for production of noil yarn is similar to that of waste cotton system. Noil Yarns are used for the manufacture of carpets.

Uses of Spun Silk Yarns

Matka (hand Spinning) yarns are used for the production of dhothis, sarees, kurthas *etc.*, Usually the matka yarns are used in weft direction.

The machine spun yarns are used either in warp or weft or in both directions. They are used for the production of suiting's and shirting's from fines quality yarns. The coarser type of spun silk yarns are used for embroidered bed covers, curtains, table covers, inferior sort of shirting's *etc.*,

Some type of spun silk fabrics can also be produced in combination with raw silk yarn in weft direction. Such fabrics are used for lungies, shirting's *etc.*, course spun silk and noil silk yarns are used for the manufacture of carpets. Blended silk

yarns are also being produced by blending silk with cotton, wool, polyester *etc.*, to get desired functional properties.

Spun Silk Industry in Karnataka

Karnataka, apart from producing raw silk, also produces more than 14 lakh kgs of silk wastes as bye product in silk reeling, twisting, weaving *etc.*, Apart from this waste is consumed by the government spun silk mills at Channapatna, operating under public sector since 1938 to manufacture spun silk and noil yarn. The capacity of this mill is 8700 spindles in spun silk and 630 spindles of noil yarn. In private sector, there are two 2 spun silk mills viz., Nova silk at Bangalore with 3000 spindles under spun silk yarn and 1000 spindles under noil yarn. They produced about 60 tonns of spun silk yarn and 70 tonns of noil yarn during 1984-85. Apart from these, two more spun silk mills are located in the state. One in Chikkaballapura and another in Nanjanagud.
