



Spinning and Weaving

Spinning is the process of making yarn from loose fibers. The most crucial part of spinning is the insertion of twist into a continuous strand of overlapping fibers to form a yarn. Twisting is preceded by many operations, such as carding, drawing, etc., which also form part of the spinning process.

Cotton was first spun by use of machinery in England in 1730. Developments in spinning machinery in 1730 and saw gins in 1793 paved the way to make cotton the most important natural fiber in the world.

SPINNING METHODS

Fiber bundles can be twisted in many ways. The three main technologies used on a commercial scale are ring spinning, rotor spinning and air jet spinning.

Ring spinning is the process of inserting twist by means of a rotating spindle. In ring spinning, twisting the yarn and winding it on a bobbin take place simultaneously and continuously. Ring spinning is a comparatively expensive process because of its slower speed; however, yarn quality is better. The additional processes (roving and winding) required in ring spinning make the process slower. Most of the yarn produced in the world is ring spun.

Rotor Spinning (Open-end Spinning) inserts twists by means of a rotating conical receptacle into which the fiber is admitted. In open-end spinning, air current and centrifugal force carry fibers to the perimeter of the rotor where they are evenly distributed in a small group. The tails of the fibers are twisted together by the spinning action of the rotor, and the yarn is continuously drawn from the center of the rotor. The process is very efficient and reduces the cost of spinning.

Open-end spinning eliminates the need for making a roving. At a speed of 60,000 revolutions per minute, the production rate of open-end rotors is 3-5 times higher than that of ring spinning. The yarn from open-end spinning is much more uniform compared to that from ring spinning. However, it is considerably weaker and has a harsher feel. Thus, low micronaire but stronger cottons are desirable for open-end spinning. Dust and trash that accumulate in rotor groves and interfere with spinning is the major problem of open-end spinning.