**Spinning process requirements of Bamboo Fiber**

**and Dope Dyed Bamboo Fiber**

Bamboo fiber is made of Hebei Jigao chemical fiber by bamboo pulp

processing, and Dope Dyed bamboo fiber is made by original solution coloring

method. Bamboo fiber is characterized by strong hygroscopicity but lower dry and

wet strength than normal viscose fiber.

In recent years, the vast number of technicians of Jigao chemical fiber have

worked hard to tackle key problems, and the quality of bamboo fiber has been

significantly improved. the dry and wet strength of the fiber has reached

2.30cN /dtex, the wet strength is above 1.1cN/dtex, and the dry elongation at

break of the fiber has reached 19 percent. Below the defect 0.5mg/100g, the

whiteness of the fiber is about 78%.

The dry strength of dope dyed fiber is 2.20CN/dtex, the wet strength is above

1.0CN/dtex, the elongation at break of fiber is up to 18%, the defect 1.0mg/100g is

below, and the spinnability of fiber is improved. after many years of use, this

manual has been formulated.

 **I. The Cotton Assorting of Melange, color spinning**

1. Melange yarn.

Deep Melange: to white fiber secondary carding into sliver reuse, generally

controlled below 15%.

Light Melange: to black fiber secondary carding into sliver reuse, generally

controlled below 15%.

The main purpose is to reduce the black and white spots in Melange yarn.

2. colored yarn (light color).

The dope dyed bamboo fiber needs 2 times carding, made into sliver and then

use, generally controlled at 20%.

3. colored yarn (monochrome or multicomponent colored fibres).

When the proportion of colored fiber exceeds 20%, the colored fiber sliver

accounts for 20%, and the excess part is pre-opened and loosened to make a large

bundle of fibers for reuse.

 **II. spinning process**

**1. Blowing (Opening and Cleaning).**

It is suggested that the technological principle of less grasping should be

adopted to ensure the running efficiency of the cart of cotton grabbing machine to

reach more than 90%, at the same time, the speed of each part of the hitter should

be properly reduced to ensure the fiber damage.

Cotton grabbing machine beater speed: 780 r/min;

Fine cotton opener beater speed: 600 r/min;

Feed cotton box hitter speed: 720 r/min.

It is suggested that the opening and cleaning process should be fully mixed, as

little as possible, and the main function should be opening and carding.

**2. carding.**

(1)spacing of various parts.

Cylinder cover spacing: 10, 9, 9, 9, 10;

Cylinder Licker in distance: 7;

Cylinder-doffer interval: 4;

The speed of cylinder is 300 r/min;

Licker-in speed 650 r/min;

The speed of doffer was 35-40 r / min;

Strip speed 136m/min.

(2) Cylinder screen adopts the principle of less falling.

(3) Cylinder , doffer and flat wire should be cotton style.

(4) Carding dry weight.

Ring spinning 25g/5m;

Siro, Siro-compact 21g/5m.

**3. drawing.**

The drawing process adopts the technological principles of heavy pressure,

large spacing, medium quantity and moderate speed, and adopts 2-3 mixing

channels (2 solid colors, 3 Melange and 3 color spinning) to increase the pressure

of the cots while increasing the drafting multiple in the back area, In order to

control the movement of fibers in the drafting area, it plays an important role in

improving the sliver dryness and reducing cotton knots.

(1) combined channel number.

Two parallel bars and three parallel bars were fed with 8 pieces

(2) drafting ratio.

a. Two drafting processes: the first is mainly combined, the drafting multiple

of the back area is greater than two; the second is mainly finishing drafting, and the

drafting multiple of the back area is less than one.

The total drafting multiple of the first track is controlled about 8.6 times, and

the speed is 320 m / min.

In the second lane, the total drafting multiple is controlled below 9.2 times

and the speed is 310 m/min.

b. Three drafting processes: the first is merging, the second is drafting, and the

third is finishing.

The total drafting multiple of the first track is controlled 8.0 - 8.6 times, and

the speed is 330 m to min.

The second total drafting multiple is 8.5 - 9.0 times and the speed is 320 m /

min.

The total drafting multiple of the third lane is controlled 8.3 - 8.8 times, and

the speed is 310m/min.

(3) Roller spacing: 10\*25mm.

(4)Quantitative analysis: ring spinning:18.2g/5 m;

Siro, Siro-compact: 15.3g/5m.

**4. roving**

The technological principles of large spacing, small posterior zone drafting

and heavy pressure are adopted. In order to reduce the unexpected drafting of

roving during unwinding, the twist coefficient of roving should be increased

properly under the condition of ensuring that the spinning does not produce hard

head. The rear area Roller spacing is enlarged and a small drafting multiple of the

back area is adopted to improve the evenness of the strip.

(1) main process parameters.

The interval between Lola and Lola is 8\*28\*mm;

The drafting multiple of the posterior area was 1.31-1.15;

Spindle speed 900 r/min

(2) roving dry weight.

Ring spinning 5.5 g/10 m;

Siro, Siro-compact: 3.8g/10m.

(3) roving twist coefficient: 83-85.

**5. spinning process**

Adopting the principle of large rear area spacing, small rear area drafting

multiple and small clamp mouth, the matching between steel ring and wire ring is

optimized. the wire ring is drawn in India, the bearing steel ring is selected for steel

ring, and the high elastic cots with medium and low hardness are selected.

(1) main process parameters.

The drafting multiple of the posterior area was 1.15-1.20;

Roller spacing 18\*35mm (roller diameter 27mm);

The clamp spacing is 2.5 mm above 40s;

Spindle speed 14000-14500 r/min.

(2) spinning twist coefficient: according to different customers and varieties, it

is controlled at 280-410.

(3) the control of strength and evenness shall be based on the national

standard.

1000--1300 r/min；

**6. Spooling**

Use Murata automatic spooler.

Winder production speed control:

1000--1300 r/min;

**7. temperature and humidity control**

Temperature and humidity control principles: pre-spinning moisture

absorption, yarn moisture release, winding moisture absorption.

Moderate control range of each process:

Carding: 55-65%; Drawing and roving: 55%-60%; Spinning: 50%-60%;

Winding: 65%-70%.