

COTS



2.1. PRODUCTION PARAMETERS CONSTITUTING COT QUALITY

Today the main raw material for cots is rubber (caoutchouc). The know-how and production capability of the raw material manufacturer plays a great role in good quality products. The importance rank of these parameters are as follows:

- Quality of the raw material
- The accuracy of the blending ratios and a homogenous mixture
- Correct and repeatable production methods
- Evaluation of the customer and R&D (Research and development)



Quality of the raw material

For the continuity of the material quality, it is necessary to make long term contracts with the suppliers. A rubber blend consists from 14 different types of raw material. If we consider hundreds of companies are producing thousands of rubber and rubber chemical sorts, the importance of standardization will be better understood.



The accuracy of the blending ratio of the components and a homogenous mixture

For a general rubber compound, it is used hundreds of different types of rubber and chemicals.



Choosing the right one, to mix them in right percentages and applying the right process affects the product quality significantly. In order to documentate these works and to be able to better control the process, it is necessary to have a well equipped physical and chemical laboratory.

Correct and reproducible production methods

Technology used in blending raw materials and extruding of cots have a big quality influence on the finished product. The adequacy of production methods and human resources allow repetition in production process.

Manufacturer - Customer cooperation and R&D

To develop a new type of cot through changing the ratios of some components is a time consuming work. The samples of a new type should not only be checked at laboratory conditions, but also under industrial conditions in a long time of period. Such a trial in cooperation with the R&D department of the customer can last several years, because different fiber types, machine constructions, climatic conditions and different yarn counts have to be examined separately in different cot types.



2.2. WHY SHOULD ALU-FIT COTS BE PREFERRED ?

In order to avoid slipping of the cot from iron core, the inner diameter of the cot must be tighter than the iron core. For example: During mounting a cot with 17 mm inner diameter to an iron core with 19 mm diameter an inner stretch will result in tight fitting.

The stretch applied by cot to the iron core is called "cot inside stretch". It is possible to see the inner stretch with a simple test:

- Fit a cot with 17 mm inner diameter to an iron core with 19 mm diameter.
- After that, cut the cot with a knife as can be seen in figure.
- The cot will spread out so much that the inner stretch of the rubber will vanish.

17 mm cot inside circumference is :

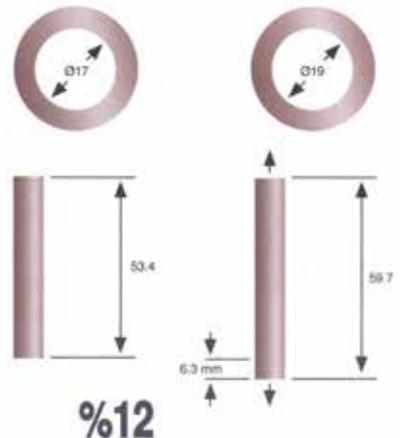
$$17 \times 3.1416 = 53,4 \text{ mm}$$

outer circumference of 19mm diameter cot is :

$$19 \times 3.1416 = 59,7 \text{ mm}$$

Spreading distance is

$$59,7 - 53,4 = 6,3 \text{ mm}$$



That means the cot becomes a stretch force equal to this distance. In other words, if we accept these distances as a flat surface, the cot will stay after fitting permanently under a stretch force of 12 %.

Problems caused by inside stretch of a cot:

- In the course of time the borders of the cot gets cracked.
- After long periods of machine shut down, the traces of the fluted bottom rollers will not disappear easily.
- Due to inner stretch, the wounds caused by hooks tend to spread.
- Unsmoothness of the cot after grinding.

All knowledges gained through experiments and trials led us to develop Alu-Fit cots. Thus all the negativities mentioned above is being eliminated and thus the Alu-Fit cots with its economical, qualitative and troubleless features have gained reliance of the customers.

2.3. SPECIFICATIONS OF ALU-FIT COTS



Technical features:

- Alu-Fit cot is absolutely stretchless after fitting, all of the stretch will be prevented by aluminium core
- Stretchless fitted cot eliminates probability of cracking and an ideal grinding surface will be reached
- No slipping danger of cots from iron core
- Fitting of cots can be realised faster
- By conventional fitting methods, the borders of cots will become uneven, through that balanced rotating will take place, whereas due to aluminium shell, fitting of Alu-Fit cots can be realised easily and no balance problem will accure.

Economical superiorities:

- No more need for glueing
- No waiting time for grinding after glueing
- No more need for cleaning the leftovers on iron core
- Saving on working time

2.4. PARAMETERS FOR THE CHOICE OF COTS

It is very important to choose the right type of cot, because it affects the yarn quality directly. Before making a decision, following factors should be taken into consideration:

- Type of the fiber to be processed
- Yarn count
- End use of the yarns, quality requirements
- Machine constructions
- Experience of the company
- Tests that have been practiced under industrial conditions



E-631 / 63 Shore

First of all, the end use and quality requirements of yarn must be determined. According to that, a preference between quality yarn and economical production should be made.

Fiber type and yarn count determines how soft the selected cot should be. Cots with low Shore degrees control the fibers in drafting system better, and the yarn quality values will be better. On the other side, soft rubber cots have to be ground more often than the hard ones, and the running life of the cots will be shorter. Today, many spinners prefer soft rubber cots in order to be competitive. Paralell to that, rubber cot suppliers are trying to manufacture cots with low Shore degrees.

By the choice of cot, considering the fiber type, yarn count and machine construction, it is advisable to utilize from the experiences of the technical units of cot manufacturers. The manufacturers are always equipped with experiences both at the R&D stage of manufacturing and during usage in the mills .

We believe that, such a technical exchange of knowledge between manufacturers and customers is very useful. But we also believe, every spinning mill has its own experiences in this aspect. Therefore, to make performance tests of a cot type under industrial conditions is by all means necessary.

It is possible that the rubber cots manufactured by different suppliers, even when they have the same Shore degrees, might show different performances. Also, this characteristic has to be taken under consideration while selecting a type.

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Quality	Colour	Shore A	Characteristics	Usage
E-631	Blue	63	Soft cot, developed for fine count cotton yarns with electrolytic (fiber repellent) properties. Due to its high resilience, has longest grinding cycles in its quality range, low CV% values, thin and thick places. Suitable for producing cotton yarns Ne 40 and finer.	R-SPINNING COMBING
				

Quality	Colour	Shore A	Characteristics	Usage
E-682	Brick Red	68	Most preferred cot for short staple spinning products. Can also be used for yarn counts Ne 30 and finer, in front and back line positions or by fine count cotton / synthetic blends.	R.SPINNING COMBING
				

Quality	Colour	Shore A	Characteristics	Usage
K-751	Brown	75	A quality with medium hardness, high resilience, resistant to abrasion. With its electrolytic features having excellent antistatic properties, can be used for medium and coarse count cotton and medium and coarse count synthetic blends.	R.SPINNING S.FRAME D.FRAME
				

Quality	Colour	Shore A	Characteristics	Usage
E-833	Dark Grey	83	Due to its electrolytic character, can be used for synthetics and wool yarn productions without being affected by climatic conditions. Lap resistant. Shows excellent running performance by short staple synthetic or wool and wool blends in worsted systems. Can also be used as draw and speed frame cots.	R.SPINNING S.FRAME D.FRAME COMBING INTERSECT
				

Quality	Colour	Shore A	Characteristics	Usage
N-831	Grey	83	Abrasion resistant, excellent electrolytic values. A general purpose cot. Excellent resistance to ozone and cracking. Can be used in worsted systems for acrylic yarn production.	R.SPINNING
				

Quality	Colour	Shore A	Characteristics	Usage
OE-851	Green	85	Due to its electrolytic properties will be used on drawframes. By producing yarns with elastane (Lycra) can be used on ring spinning machines. Provides controlled yarn delivery, high resistance to abrasion. Due to these characteristics it can be used as delivery cots on OE machines.	OE R.SPINNING D.FRAME
				

Quality	Colour	Shore A	Characteristics	Usage
K-751	Brown	75	Very good collapse and abrasion values. Provides long grinding cycles. Will be used on texturizing machines as yarn delivery cot.	TEXTURIZING
				

2.5. FITTING OF THE COTS

In order to get good results from cots, using high quality of raw material and convenient production methods are not enough. The fitting and grinding processes in the spinning mills have also to be practiced perfectly.

To have a long running life and good running performance, cots must be fitted properly. To that aim, manual, pneumatic or hydraulic presses will be used. By the choice between those three alternatives, the diameter and length of the cot is decisive.



Manuel (El ile)



Hidrolik Pres

Generally, for the short staple cots manual, for the long staple and drawframe-combing machine cots, hydraulic presses can be used. By the decision of press-type, number of spindles play a great role. For example, for a small short fiber spinning mill a manuel press might be sufficient.

For fitting Alu-Fit and drawframe-combing machine cots, a hydraulic press is definitely necessary.



Pnömatik Pres



2.5.1. Basic principles of cot mounting

- The press must be placed vertically
- Suitable adapters to mount and dismount the cot to and from iron core must be available
- The press should have a rubber cot centering device
- The center of the cot and the center of the core must be on the same axis
- The core, during practicing pressure on it, should not move anyway
- During pressing the cot on the core, the rubber cot should not be compressed between two surfaces (to avoid this, maximum length of the rubber cot must be appr. 1-2 mm shorter).



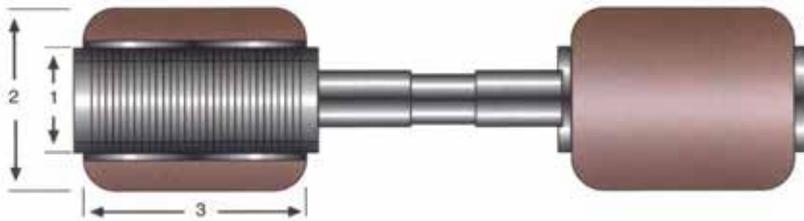
True



Wrong

2.6. DIMENTIONING METHODS FOR ALU-FIT COTS

1- Diameter of the iron core: The outer diameter of a cot will be measured (in mm) by a compass. When ordering, it is important to give the outer diameter of iron core, not the inside diameter of the cot (Giving inside diameter must be avoided. Otherwise if the tolerance is less, the tightness of the fitting will be less, the cot can slip out and if too much, the inside stretch of the cot will be higher. For that reason inner diameter of the cot will be determined by the manufacturer according to the raw material used.)



2- Outer diameter of the cot: Required diameter must be given in mm. It is the end diameter after the first grinding.

3- The width of the cot: It is the overall width of the cot in mm. (By Alu-Fit System, maximum cot width is 1-2 mm less then the iron-core itself.)

4- Required shore A hardness: According to the place of use and material to be processed, a certain Shore hardness will be determined. It is advisable also to give information about the fiber type to be processed.

By cot orders, the original measurements which are given in the manuals of the machinery is to be used. In case of trial of another measurements, it is advised to try the new measurements before ordering a complete lot.

It is not recommended to narrow the width in order to spare costs or to enlarge the outer diameter to extend the grinding period, because those can cause to various problems.