



Clothing technology

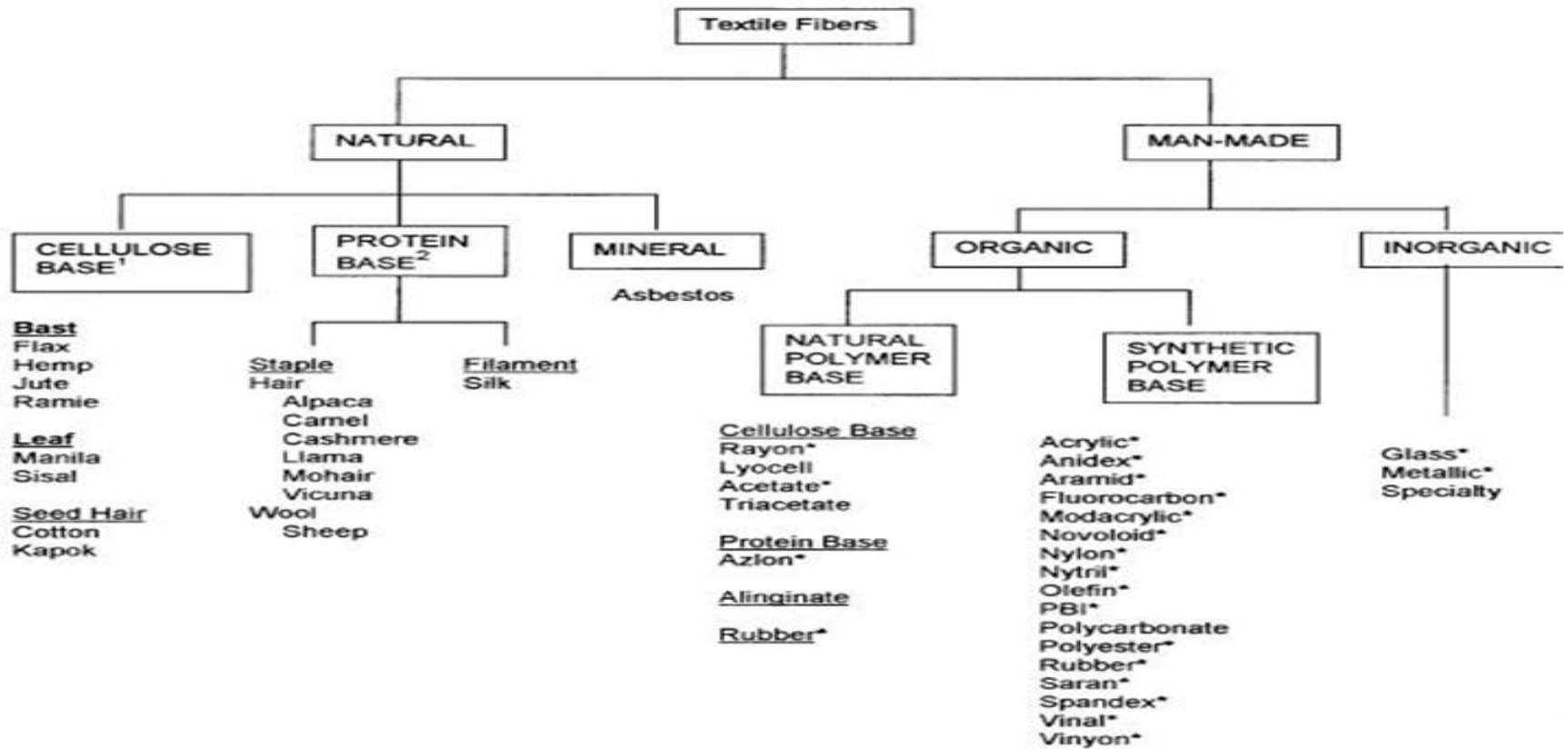
Clothing Technology
Lecture 1
Adnan Mazari, Ph.D

CLOTHING TECHNOLOGY

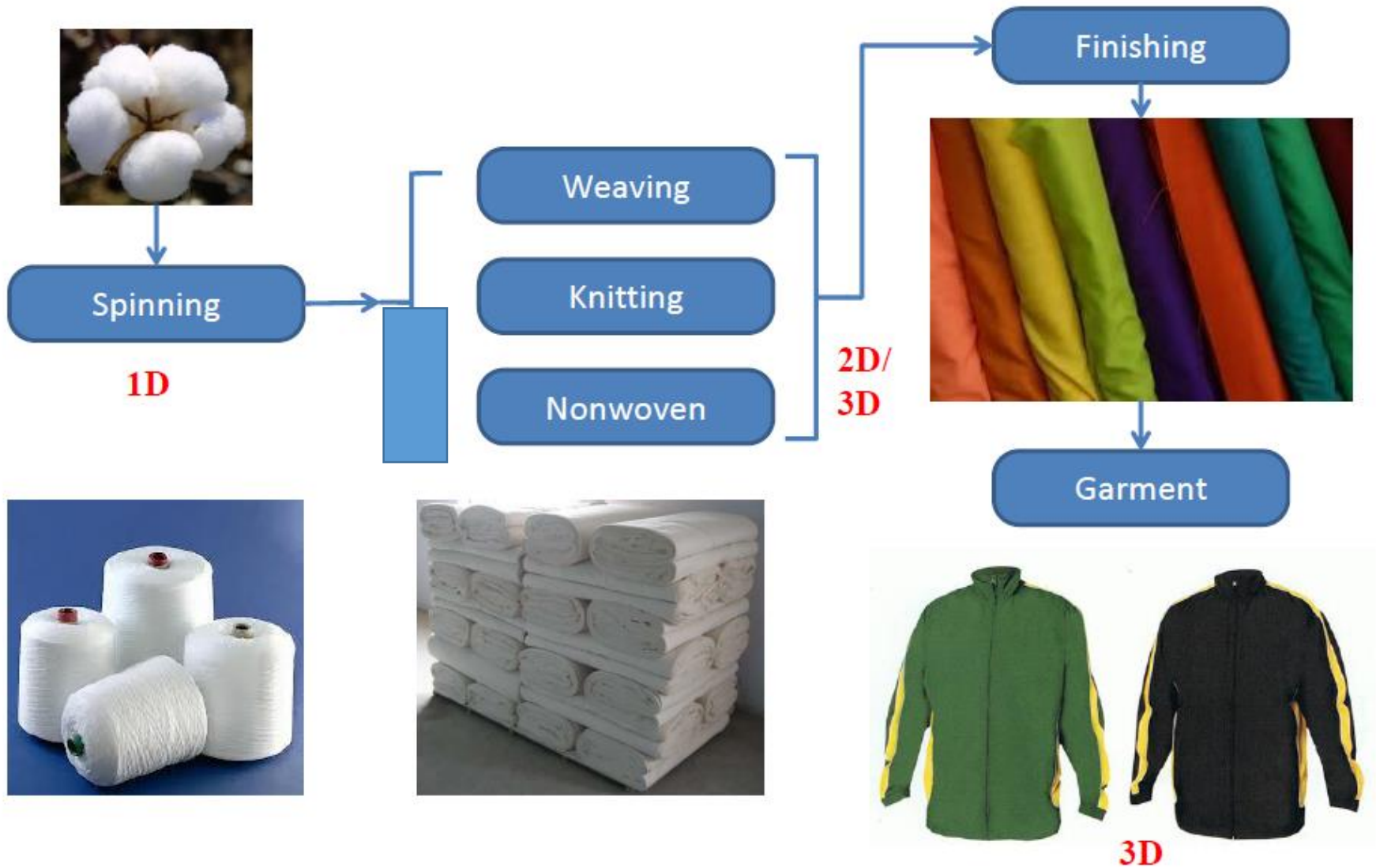
- Two Lesson with combined exercises
 - Lesson 1
 - Flow Chart of Clothing production
 - Sewing needle and Sewing threads
 - Exercise Home work (Marker efficiency)
 - Lesson 2
 - Sewing process
 - Garment Production System
 - Exercise Costing

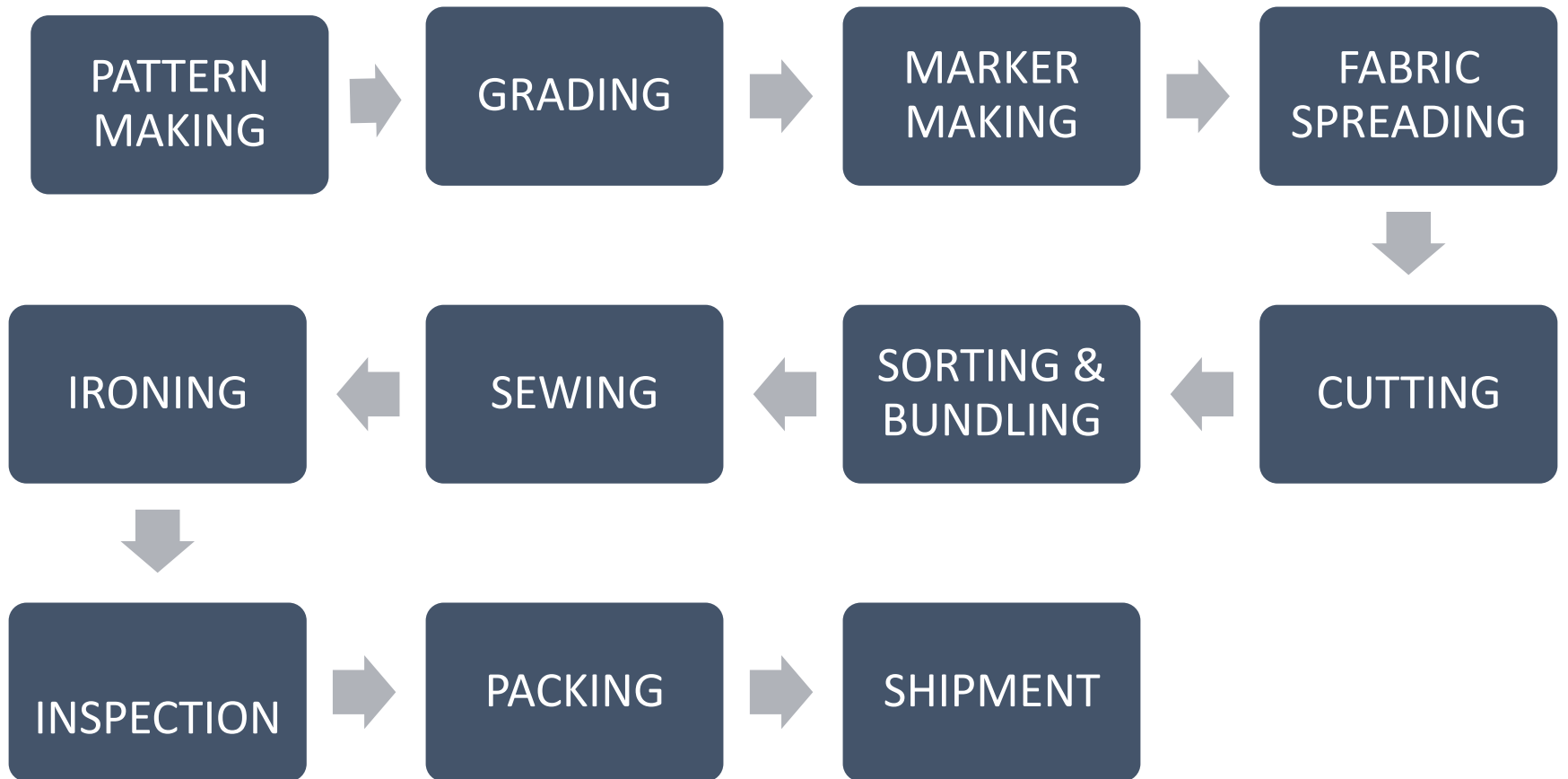
- A fibre is a material which is several hundred times as long as its thick.

General Classification of Textile Fibers



Textile Production Flow





Costing

- Production costs are mutually determined by the manufacturer and contractor.
- Elements include:
 - Materials
 - Trimmings
 - Production patternmaking, grading and marking
 - Spreading and cutting
 - Assembly
 - Finishing
 - Freight
 - Duty and quota



Pattern Making

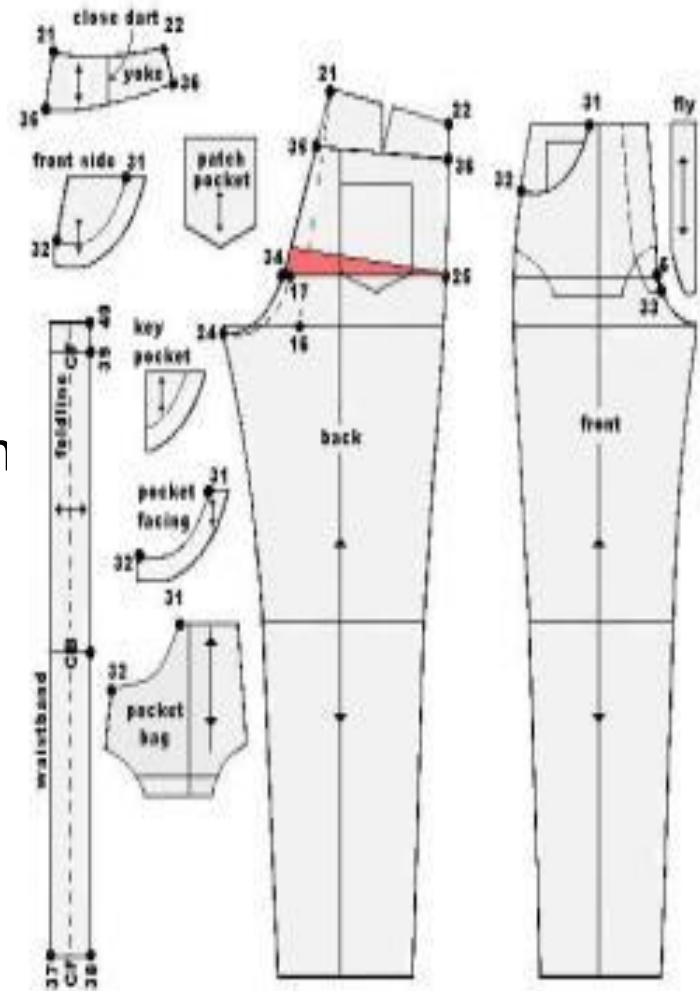


Pattern Making

Patternmaking is the science of designing patterns.

Pattern

A template from which the parts of a garment are traced onto fabric before cutting.





Pattern Grading & Marker making

Pattern Grading

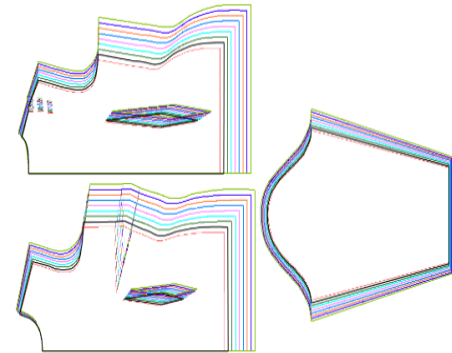
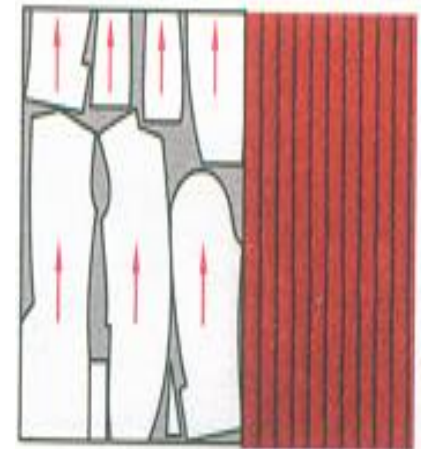
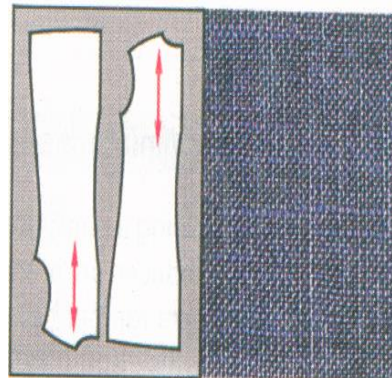
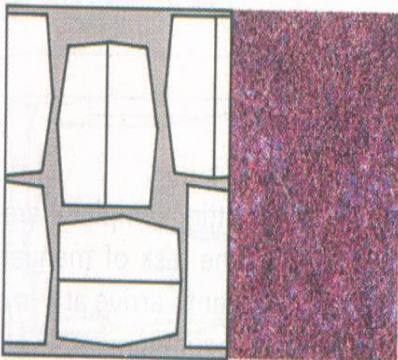
Increasing the pattern dimension according to garment Size like S,M,L,XL,XXL

What is a Marker?

The Marker is a diagram of a precise arrangement of pattern pieces for the sizes of a specific style that are to be cut from a single spread.

There are three basic types of orientation:

- i. **Nonwovens**= neither the orientation nor the direction
- ii. **Cretonne**= orientation is important
- iii. **Corduroy**= orientation and direction are both important(knitted)





Spreading



Fabric spreading is very important part of the production process because it is basic for obtaining a high quality final product. Spreading is the process of unwinding large rolls of fabric onto long, wide tables in preparation for cutting each piece of a garment. The number of layers of fabric is dictated by the number of garments desired and the fabric thickness. Fabric Spreading Machines are used for bulk production.

Types of Lay

- **Single Ply** is a single layer of fabric generally to make samples
- **Multiple Ply** is a number of fabric layers stacked on one top of other
- **Stepped Lay** is multiple lay in which groups of layers have different lengths generally used for getting best utilization and consumption of fabric.



Cutting



Cutting

It is the second section of apparel manufacturing. The main purpose of this section is to cut the fabric according to the pattern of approved sample.

Methods of fabric cutting:-

There are mainly three methods of cutting are as follow

1. Fully manual:

Hand operated scissor

2. Manually operated power knife:

Straight knife

Band knife

Round knife

Die cutting

Notcher

Drill

3. Computerized methods of fabric cutting:

Computer controlled knife cutting

Cutting by Laser beam

Cutting by Water jet

Cutting by Plasma torch





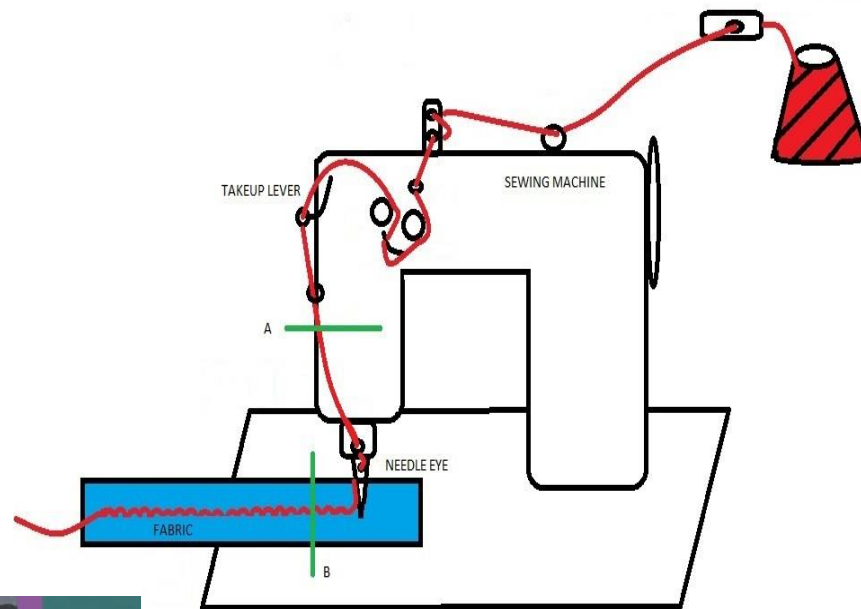
Sewing



A basic sewing machine consists of the fundamental parts required to form a stitch, sew a seam or stitching or to perform a particular sewing operation.

- The major components of a basic sewing machine include;

1. The casting
2. Lubrication system
3. Stitch forming system
4. Feeding system





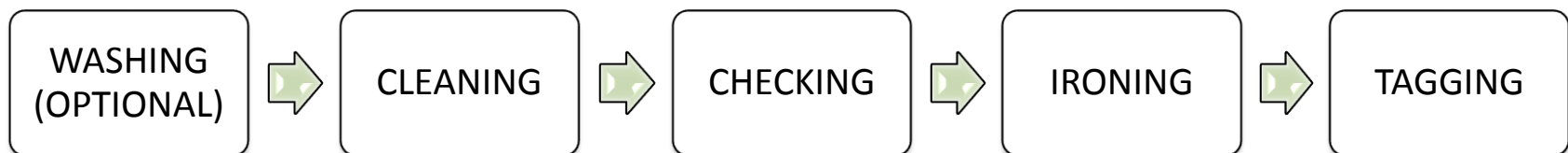
Finishing section:



It is the last step of garment making. All of the finishing processes are done here. Let yourself know what kinds of work are to be carried out in this segment-

- a) Pressing/ Ironing
- b) Packing
- c) Cartooning &
- d) Arranging final inspection and shipment

After completion of sewing garments are sent to the finishing section. This section does the following things.





Defects in Garments



For the textile and apparel industry, product quality is calculated in terms of quality and standard of fibers, yarns, fabric construction, colour fastness, designs and the final finished garments. Quality control in terms of garment manufacturing, pre-sales and posts sales service, delivery, pricing, etc are essential for any garment manufacturer, trader or exporter. Certain quality related problems, often seen in garment manufacturing like sewing, color, sizing, or garment defects should never be over looked.





Inspection



of the garment, erroneous thread tension and raw edges are some sewing defects that could occur so should be taken care of.

Color defects - Color defects that could occur are difference of the color of final produced garment to the sample shown, accessories used are of wrong color combination and mismatching of dye amongst the pieces.

Sizing defects - Wrong gradation of sizes, difference in measurement of a garment part from other, for example- sleeves of XL size body of L size.

Such defects do not occur has to be seen too.

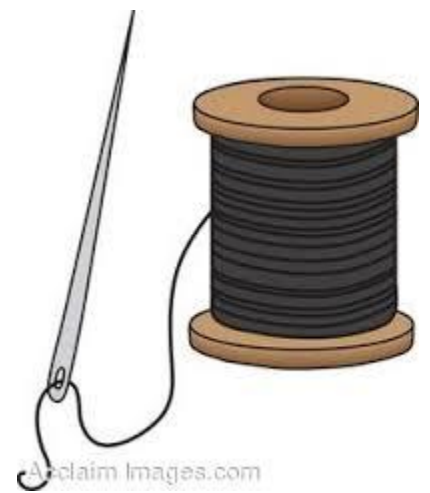
Garment defects - During manufacturing process could occur like faulty zippers, irregular hemming, loose buttons, raw improper button holes, uneven parts, inappropriate trimming, and difference in fabric



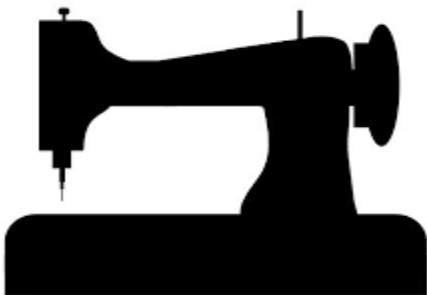
Sewing Threads

ASTM standard :

sewing thread is a flexible small diameter yarn or strand usually treated with a surface coating, lubricant or both, intended to be used to stitch one or more pieces of material or an object to a material.



© lemon squeeze home

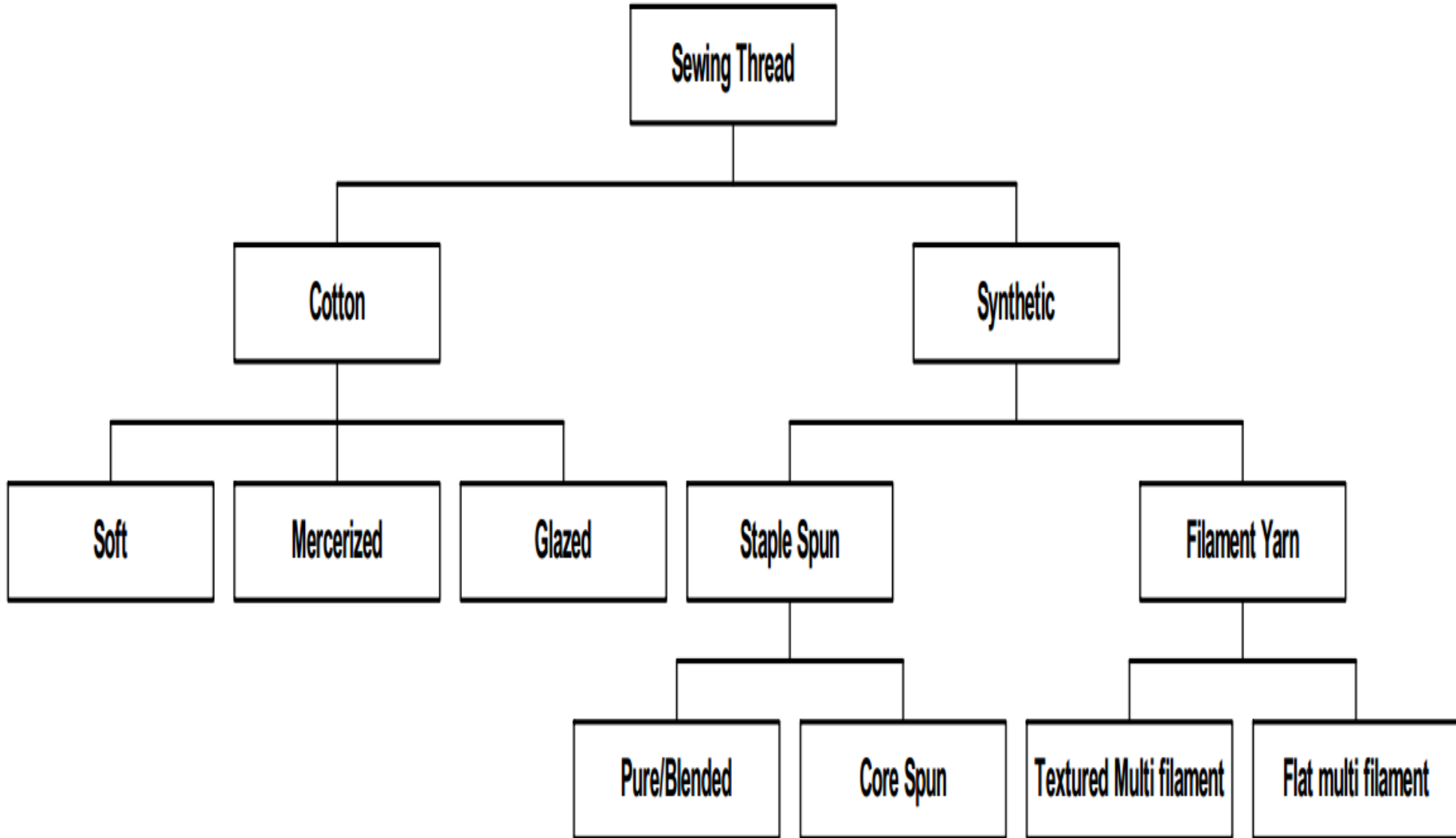


Thread classification

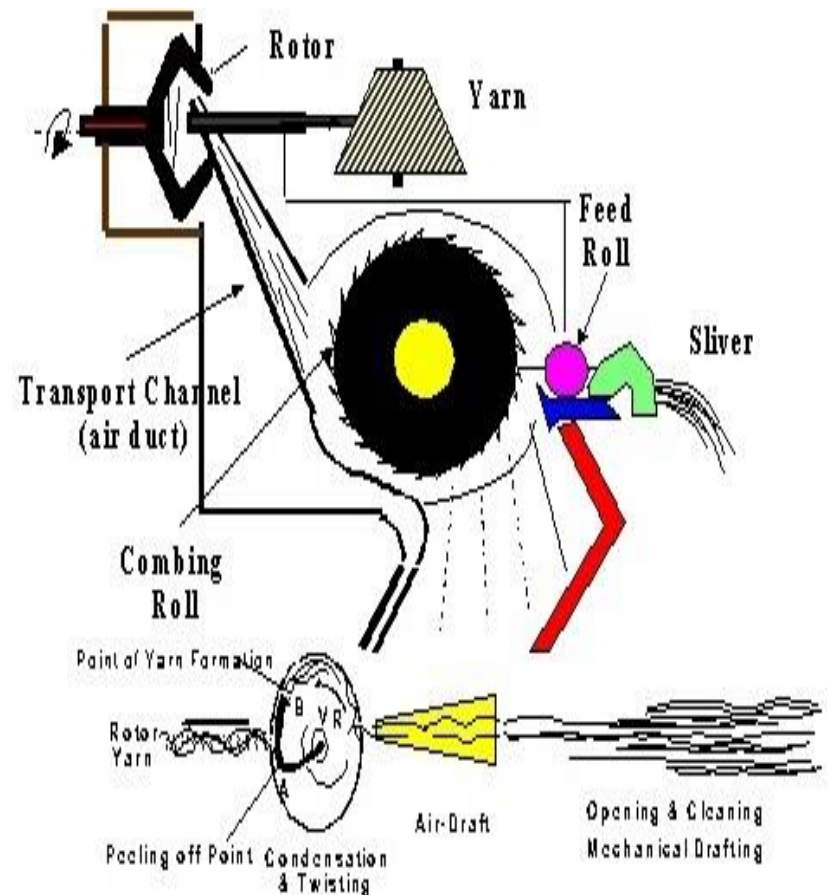
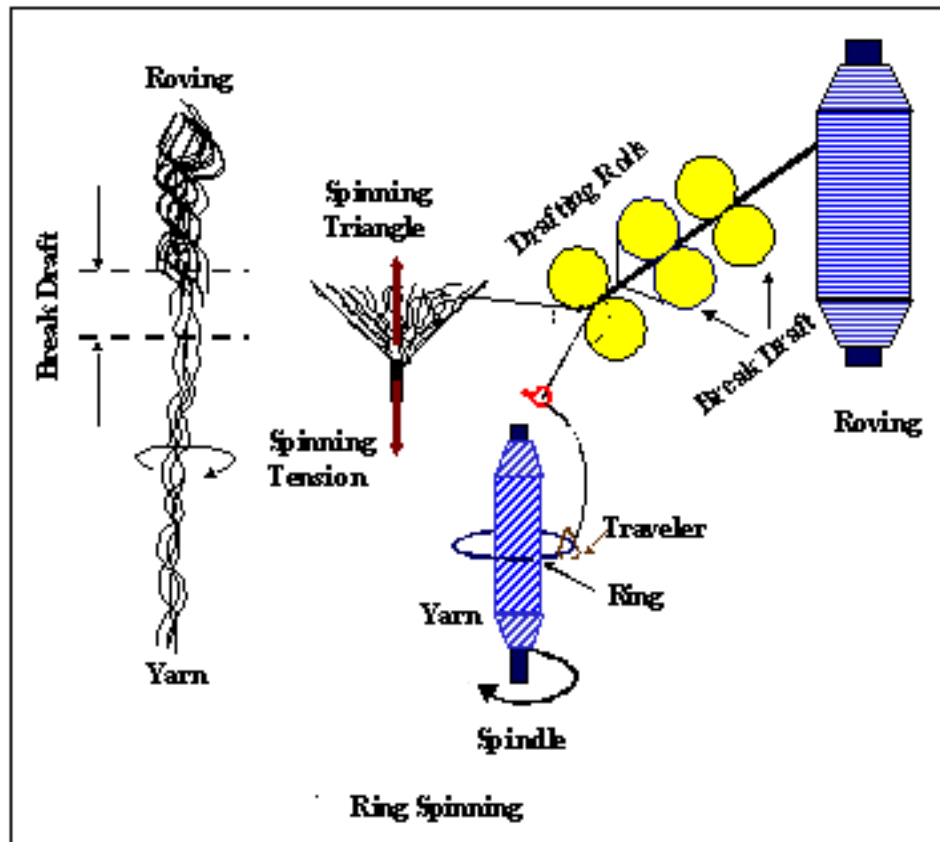
Thread can be classified in different ways. Some common classifications are those based on:

- Substrate
- Construction
- Finish

Types of Sewing Threads



Rotor spinning and ring spinning



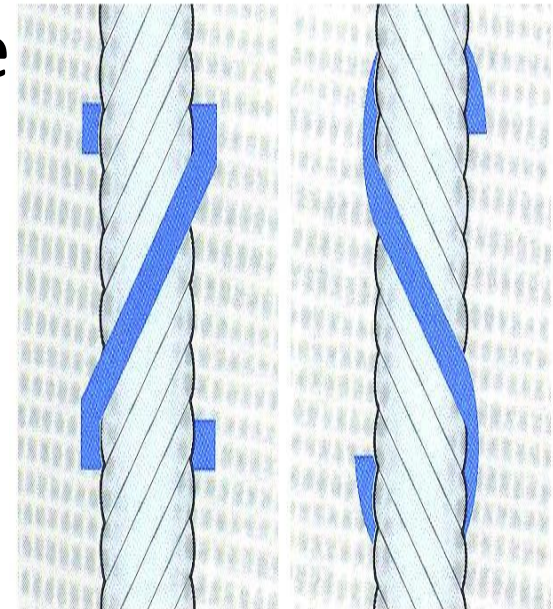
- **Twisting**

The above types of thread constructions that involve twisting (such as spun, core, and twisted multifilament) are twisted in the following directions:



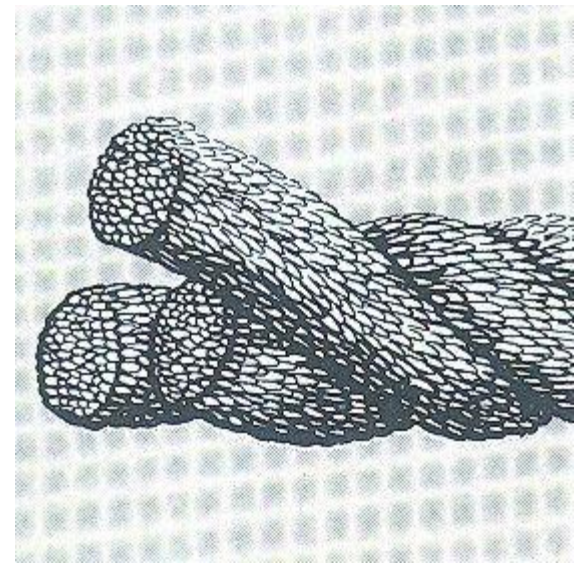
- **"S"** direction or right twist for single strand yarn (such as spun)

- **"Z"** direction or left twist for ply yarn (such as core and twisted multifilament)

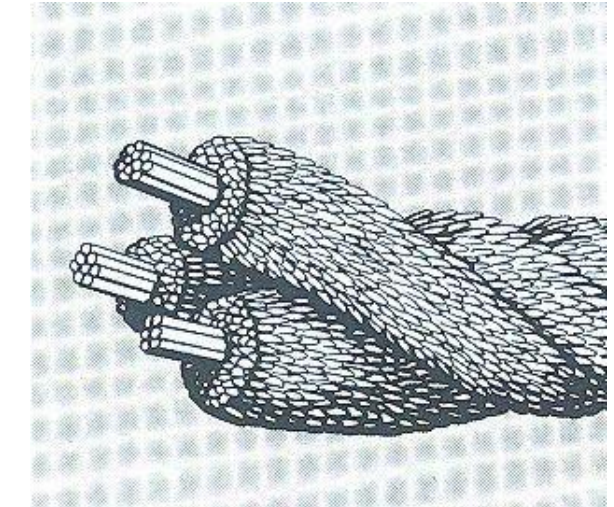


Thread Construction

Spun Threads – are made from staple fibers that are spun into single yarns and then two or more of these yarns are plied to make a sewing thread. Spun threads have a fibrous surface giving them a soft hand and good lubricity characteristics. Spun threads are used in everything from women's lingerie to heavy leather gloves.

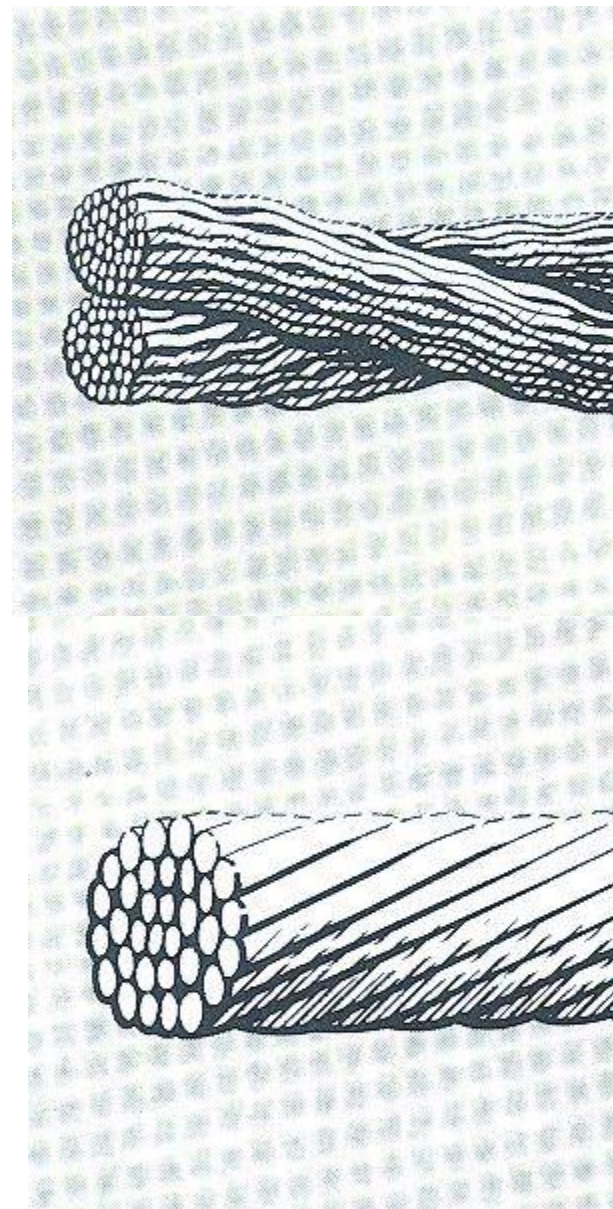


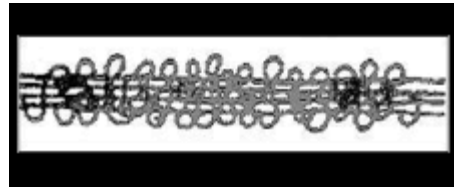
Core Threads - are made by spinning a staple wrapper of cotton or polyester around a continuous filament of polyester fibers. Afterwards, two or more of these single yarns are twisted together to form the thread. Core threads have a fibrous surface giving them good lubricity characteristics and also a continuous filament core that contributes to high strength and durability. When wrapped with a cotton wrap, core threads have very good needle heat resistance. When wrapped with polyester wrap, core threads have excellent chemical resistance and colorfastness.



Textured Threads – are made from continuous filaments of polyester or nylon that have been textured and then heat set to insure proper bulk-retention. Textured threads are ideal for overedge, chainstitch, and coverstitch operations offering a soft seam and good seam elasticity and coverage. Textured threads are generally less expensive than other thread constructions of the same size.

Twisted Multifilament Threads - are made from continuous filaments of polyester or nylon that are twisted together into a cohesive bundle and then plied to make the thread. They are then dyed, stretched, and heat set to achieve the desired physical characteristics. Twisted Multifilament threads are available either soft or with an additional bond for better ply security and abrasion resistance. They are exceptionally strong for their size and have excellent abrasion resistance and durability. These threads are used for seaming everything from boat sails to automobile upholstery.

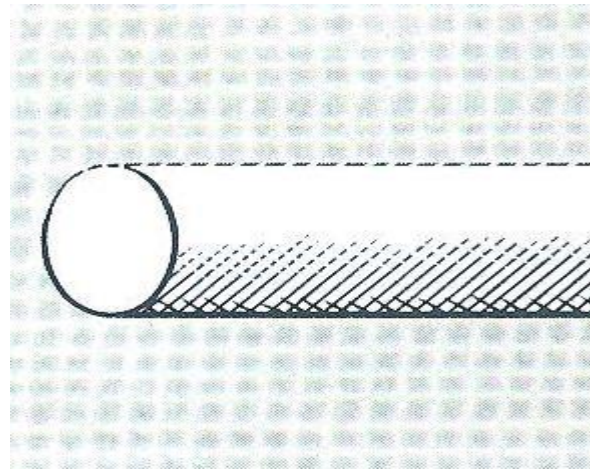




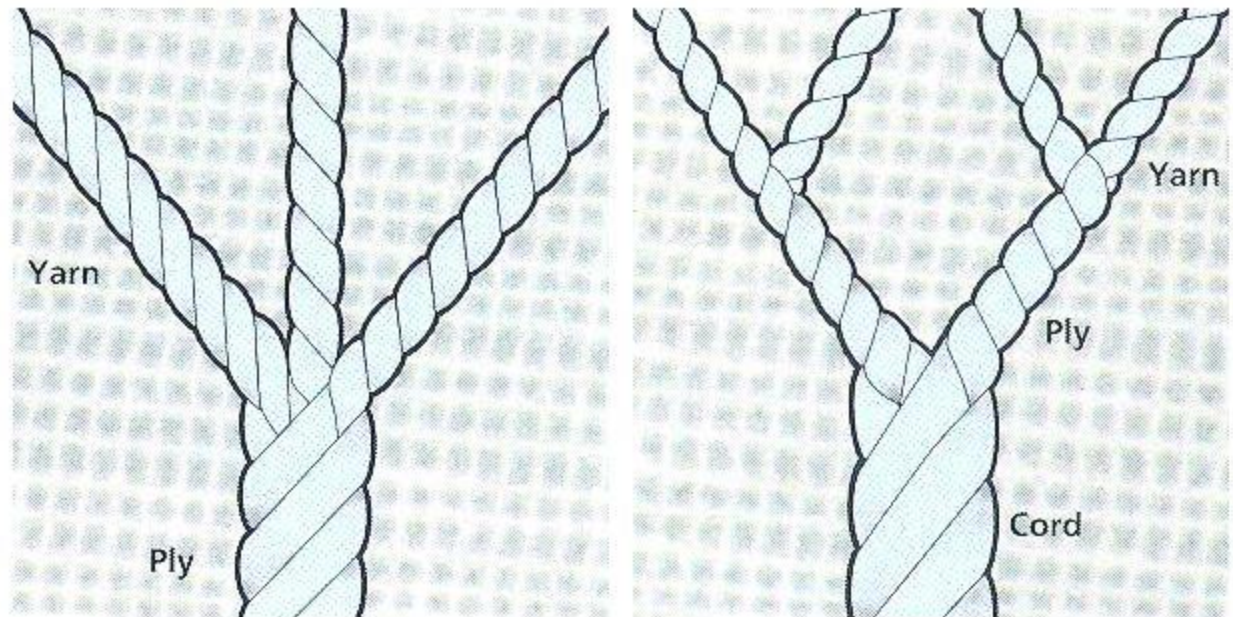
Air Entangled Threads - are made from continuous filaments of polyester that are entangled as they pass through a high pressure air jet. This yarn is then twisted, dyed, and wound on cones with lubricant. Air entangled threads are used in everything from quilting mattresses to sewing heavy denim jeans.

Monofilament Threads - are made from single continuous filaments of nylon that resemble fishing line. Monofilament threads are translucent and blend in with many colors. Because it has a tendency to be stiffer than other filament products, monofilament threads are not recommended for seams that may lay adjacent to the skin. Monofilament threads are used in quilting operations on quilts and bedspreads

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Ply and cord Threads - are made from continuous filaments of polyester or nylon that have been bonded together. They have very little twist so that they look like a single cord of yarn. Because of the way these threads are made, they appear to be flat and ribbon-like, which provides a low-seam profile and therefore a high degree of resistance to abrasion and are used in the manufacturing of furniture, shoes, and other heavy duty applications.



Fixed Weight Systems

In this system, unit weight is taken as fixed and its length is measured.

Systems under fixed weight:

- English Count (Ne) = Number of hanks of 840 yards/lb
- Metric Count (Nm) = Number of hanks of 1000 metres/kg

Example:

- Ne 1 – In one pound of yarn weight, there are 840 yards of yarn length
- Ne 5 – In one pound of yarn weight, there are 4200 (840x5) yards of yarn length

In fixed weight systems, the yarn becomes finer as the count number increases

Fixed Length Systems

In this system, unit length is taken as fixed and its weight is measured.

Systems under fixed length:

- Denier = Weight in grams of 9,000 metres
- Tex = Weight in grams of 1,000 metres
- Decitex = Weight in grams of 10,000 metres

Example:

- Tex 40 – A length of 1,000 metres gives 40 Grams of weight
- Tex 100 – A length of 1,000 metres gives 100 Grams of weight

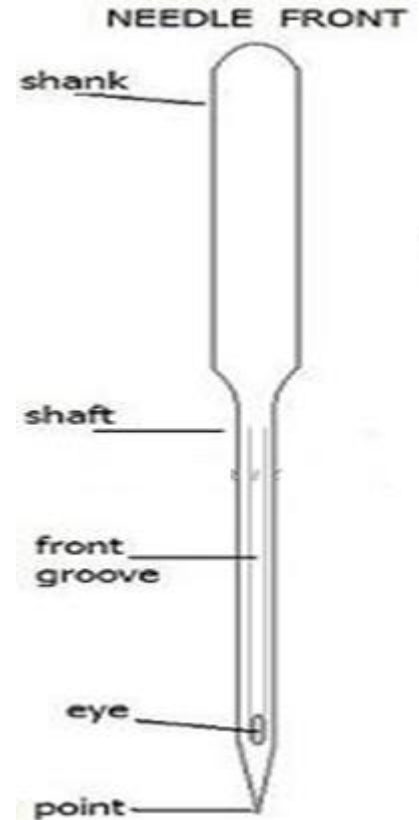
In fixed length systems, the yarn becomes coarser / heavier as the count number increases

Shank:

It is thick upper portion that fits into the needle bar

Shaft:

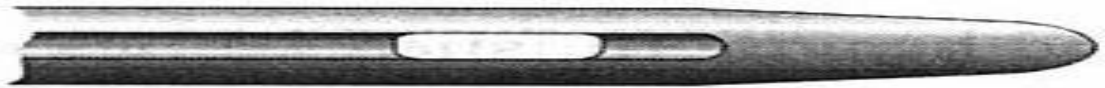
Long thin part of the needle that extends from shank to the top of eye.



universal



**jersey /
ballpoint**



stretch



**jeans /
denim**



**Microtex /
sharp**



Thank you