

FABRIC MANUFACTURING TECHNOLOGY

Md.Azmeri Latif Beg
MSc. in Textile Engineering(DIU)
BSc. in Textile Engineering(CU)

Textile:

A general term used from the latin textere “to weave.”
Now a day it is used to describe all woven and knit
ted materials.

Fabric:

Textile fabric may be define as an assembly of fiber,
yarn or combination of these. There are several ways
to manufacture a fabric.

Weaving Preparation

Content

WINDING

- Flow chart for weaving .
- Introduction to yarn preparation .
- Winding requirements , Different winding mechanism, Precision & non-precision winding.
- Yarn tensioning devices.
- Winding efficiency, Winding defects & remedies.
- Calculation related to winding.

WARPING

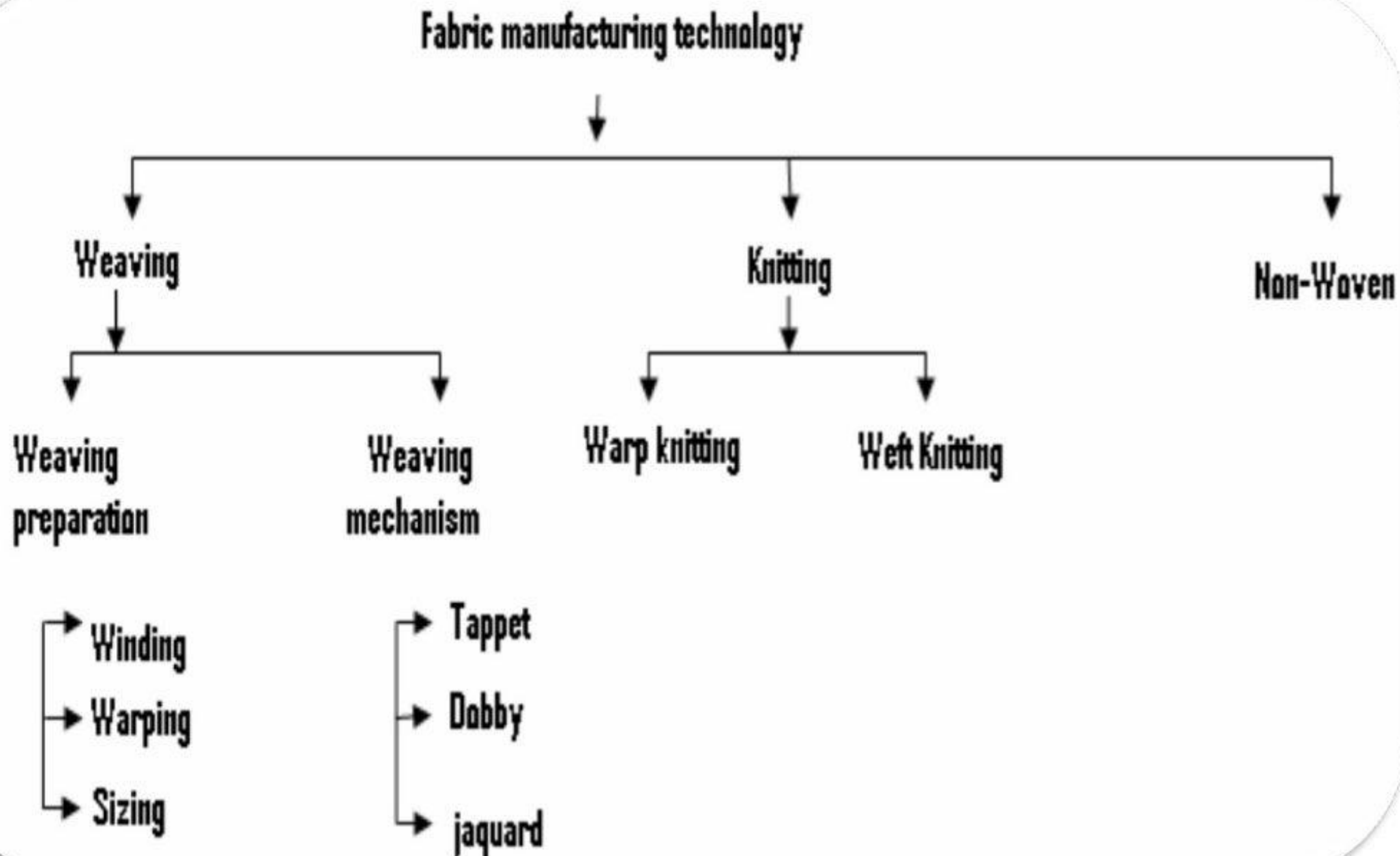
- Warping techniques, Direct warping & sectional warping
- Essential parts of warping machines & their function.
- Faults in warping & their remedies.
- Calculation related to warping.



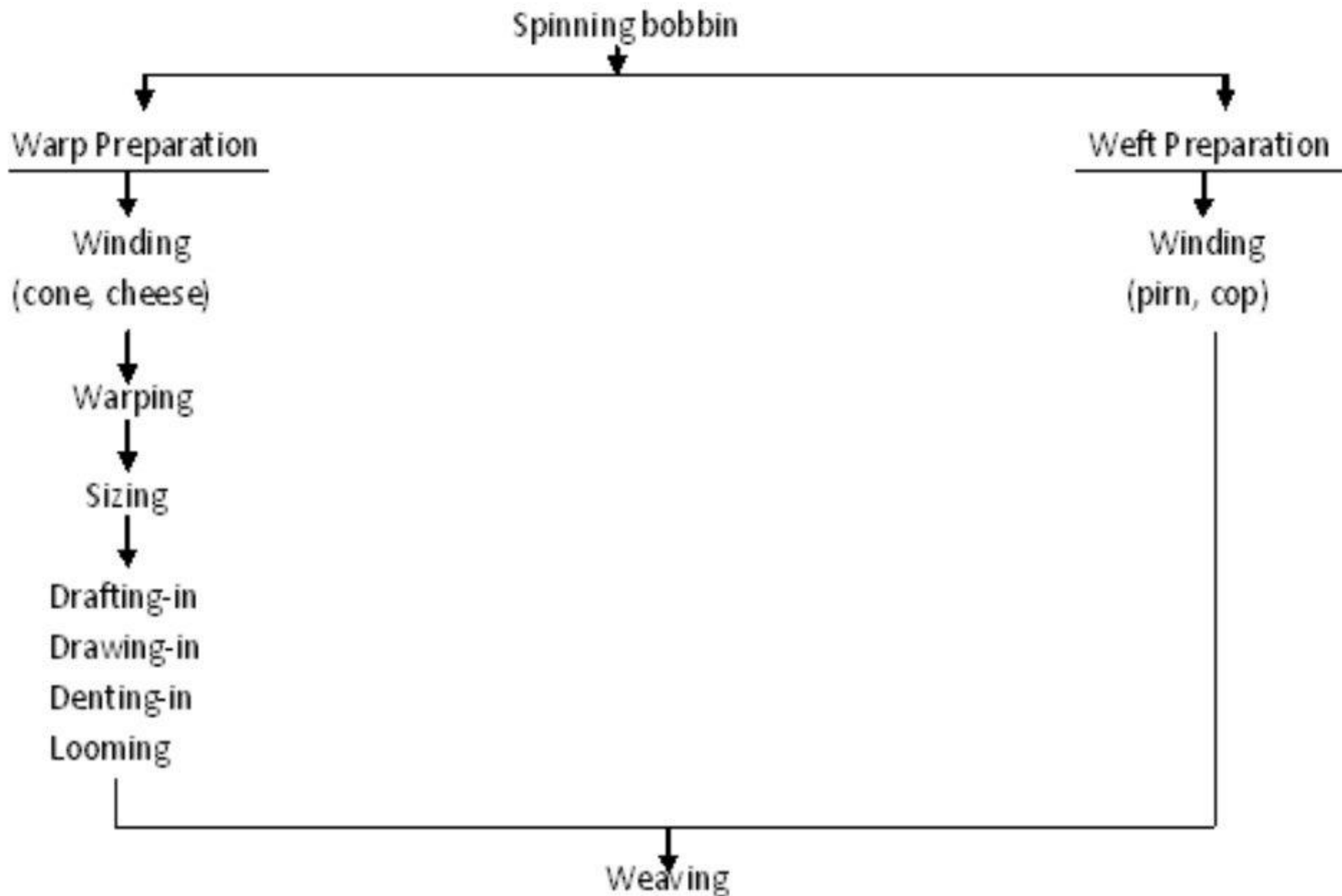
SIZING

- Sizing & Dressing, Ingredients of a size mixture & their function.
- Technological changes due to sizing, Choice of sizing ingredients.
- Size cooking, Short description of different techniques of sizing.
- Method of drying, Defects in sizing & their remedies.
- Calculations related to sizing.
- Classification of loom, Classification & definition of motions of loom.

Flow chart of fabric manufacturing technology:



Flow Chart of Weaving:



Weaving:

Weaving is the process of fabric manufacturing technology. The final product of weaving i.e. cloth or fabric is obtained by interlacing of warp & weft yarns disposed in perpendicular direction. The warp yarns are placed in the longitudinal in woven fabrics & the weft yarns are used for cross wise interlacing with the warp yarns. Cloth is produced on loom or weaving machine.

Fabric or Cloth:

Fabric is a technical term and cloth is a commercial term. A fabric is a manufactured assembly of fibres or yarns that has substantial surface area in relation to its thickness and sufficient cohesion to give the assembly useful mechanical strength.



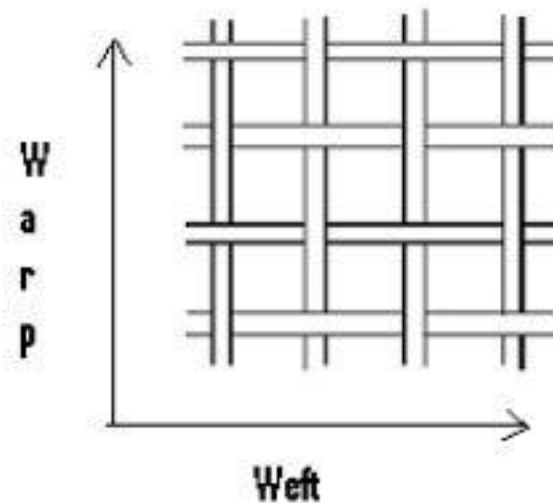
Types of fabric manufacturing:

Generally three types of fabric are produced namely-

1. Woven fabric
2. Knitted fabric
3. Non woven Fabric.

Woven Fabric :

Woven fabric are composed of longitudinal or warp threads and transverse or weft threads interlaced with one another according to the class of structure and form of design that are desired.



Knitted fabric:

The fabric which is produced by one set of yarn by interlooping are called knitted fabric.

Non woven fabric:

Here fabrics are produced by connecting yarns with gummy substances or bonded material. Non wovens are flexible porous products consisting of one or more fibre layers. They are bonded by chemical or mechanical process into textile products.



Woven fabric
(Check design)



Stripe Fabric

Yarn Preparation:

The yarn which is collected from spinning section cannot be used in loom directly. Before using it in loom it is processed by many ways. These all are known as yarn preparation.

Necessity of yarn preparation:

1. To remove yarn fault.
2. To transfer the yarn from spinners package to a convenient form of package that will facilitate weaving.
3. To clean the yarn for better appearance & performance.
4. To have desired length of yarn on the package.
5. For better quality fabric.
6. To make the yarn suitable for the next process.

Quality of a good warp:

The essential features of a good warp are as follows:

1. Sufficiently & uniformly strong.
2. Uniform in cross section.
3. Less hairy & clean.
4. Minimum number of knots.
5. Standard size & types of knots.
6. Parallel arrangement of warp yarn in the weavers beam.
7. Free from neps, slubs & loose fibres.
8. Uniform warp tension.

Winding

Winding:

This is the process of transfer yarns from ring, bobbin, hanks etc. into a convenient form of package containing considerably long length of yarn. This simple transfer of yarn from one package (bobbin) to another package (cone, spool, pirn) is called winding.

OBJECTS OF WINDING:

1. TO IMPROVE THE QUALITY OF YARN.
2. TO GET A SUITABLE PACKAGE.
3. TO GET A QUALITY FABRIC.
4. TO EMPTY SPINNERS BOBBIN SO THAT IT CAN BE USED AGAIN.
5. TO CLEAN THE YARN.
6. TO STORE THE YARN.
7. TO IMPROVE THE EFFICIENCY OF YARN FOR THE NEXT PROCESS.

Requirement of winding:

The requirement of winding may be summarized as follows-

- * The fault level in the yarn must be removed to an acceptable level.**
- * The yarn must not be damaged in any way in the winding process.**
- * The yarn must be wound in such a way as to permit unwinding in the following process with a minimum of difficulty at the requirement speed.**
- * The package size, shape, & build must be the most technologically suitable for the particular end use.**
- * The package size should be controlled to meet the particular economic requirement.**
- * The package hardness should be standard.**

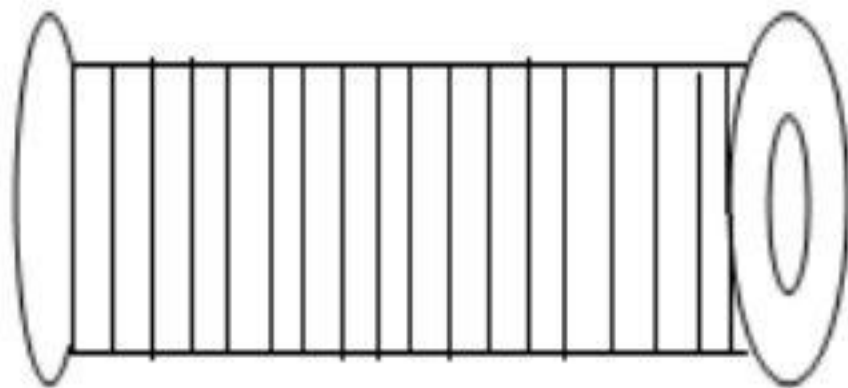
a) Cone, b) cheese, c) Spool, d) Pirn,
e) Cop, f) Beam , g) Flanged bobbin.

Types of Package Winding:

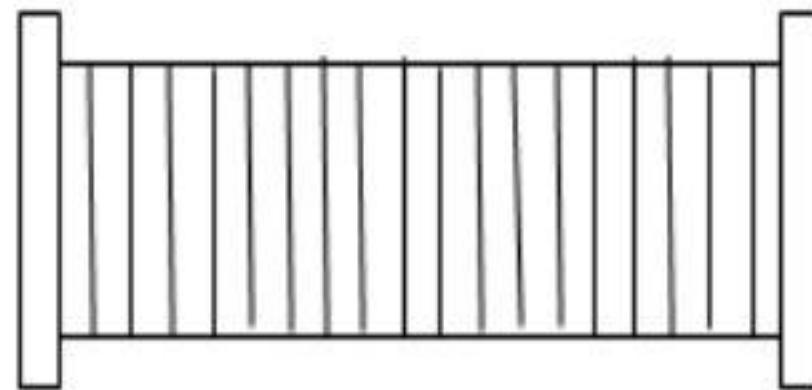
1. Parallel winding. e.g- a) Warp beam,
b) Weavers beam.
2. Near parallel winding. e.g- a) Pirn, b)
Cop,
c) Flanged bobbin.
3. Cross-winding. e.g- a) Cheese, b) Cone,
c) Spool.

Parallel winding:

Two flanged contain both side of the package & yarns are wound parallel. In this process there is no necessity of traversing.



Warp beam



Weavers beam

Advantage:

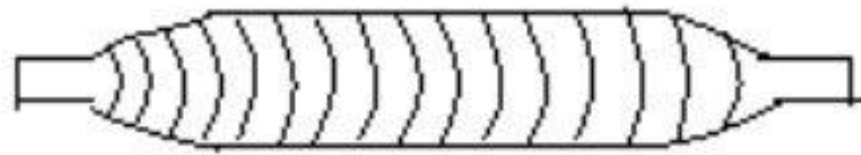
1. Many yarns can be wound at same time.
2. No need of traversing mechanism.
3. No change of yarn twist.
4. Package is stable.
5. Side way withdrawal is possible.

Disadvantage:

1. Two sides of package need flange.
2. For yarn unwinding need separate mechanism.
3. Cannot be over withdrawal.

Near parallel winding:

This package contains only one yarn & yarn is wound near parallel. Layers contain continuously inner side of the package.



Pirm



Cop

Advantage:

1. No need of flange.
2. Possible over-end withdrawal.
3. No change of yarn twist.

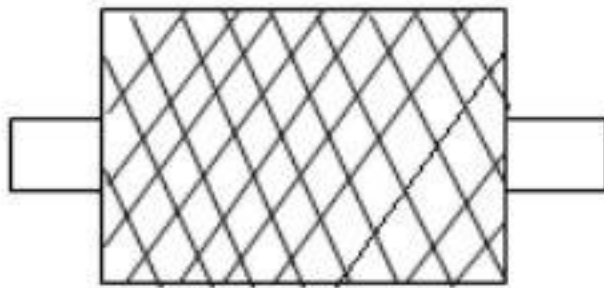
Disadvantage:

1. Cannot be side withdrawal.
2. This is not more stable.

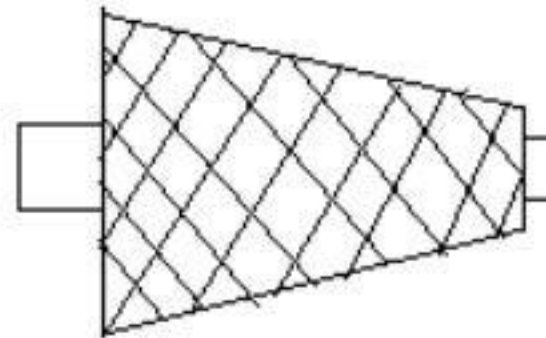


Cross wound package:

This is wound crossly by single yarn.



Cheese



Cone

Advantage:

1. No need of flange.
2. Yarn package is very stable.
3. Over-end withdrawal.

Disadvantage:

1. Yarn twist is change.
2. Balloon formed during unwinding.
3. Need traversing mechanism.