

Subject: Fabric Studies

Unit 3 - Special weaves and fabrics

Quadrant 1 – e-Text

Learning Objectives

The learning objectives of this unit are:

- Describe weaves and fabrics.
- Describe Dobby Fabrics, Double Cloth, Extra Yarn Fabrics and Jacquard Fabrics.
- Understand various special weaves such as Leno Weave, Pile Weaves and Pique Weaves.

3.1 INTRODUCTION

Certain fabrics are produced with special features, which may be patterned woven designs, surface textures, openwork etc. Usually, these specialized woven fabrics are made using an additional mechanism attached in the conventional weaving loom. These interesting effects on the fabric allow them to be used effectively in specific categories of apparel and furnishings. They are also produced in varying widths including narrow fabrics, which are used as trims for a garment etc. The weaving techniques of these fancy fabrics are complex and hence, they are available at a higher cost than usual woven fabrics.

Some of the common fancy weaves are discussed in detail below:

3.2 DOBBY FABRICS

These are fabrics produced with small woven designs or motifs. Designs are usually geometric patterns. They have not more than 25 warp yarns in a repeat to create the patterns in the fabric.

They are manufactured in looms having a special mechanism called as dobby looms.

Dobby fabrics are popular shirting and furnishing fabrics.

Some of the dobby fabrics having specific features are, Huck-a-back weave, waffle cloth etc.

- **Huck-a-back** is a dobby fabric having rough pebble surface.

The fabric is usually made of cotton spun yarns.

It is widely used as towel fabric owing to its absorbency created by weft floats.

- **Waffle cloth** is a dobby fabric having three dimensional honeycomb effects.

It is widely used in home furnishing especially as dishcloths, napkins, upholstery etc.

3.3 DOUBLE CLOTH

The fabric is comprised of two layers.

Each layer is made of two set of yarns and hence, the double cloth is made of two warp yarns and two weft yarns, stitched together, by a third set of warp yarns.

The fabric is costlier and more flexible than single fabric.

In certain cases, the double cloth is split into two layers and used as fabrics with surface fibres.

They are generally produced as fabrics with two different surfaces and hence, are used in reversible garments.

They are widely used as suiting fabric, blankets, uniforms etc.

3.4 EXTRA YARN FABRICS

Fabrics are produced with additional set of yarns introduced along with the base fabric either in the warp or weft direction.

These extra yarns in the fabric create patterned designs on the fabric.

They are generally made of different colours or textures to add aesthetic appeal to the fabric.

They run as floats on the backside of the fabric, which are sheared and found as fringes.

Extra yarn fabrics are widely used in apparel especially, for women's wear and as home furnishing fabrics.

3.5 JACQUARD FABRICS

These are fabrics produced with intricate complicated designs. They have more than 25 patterns of warp yarns in a repeat .They are manufactured with the jacquard mechanism in a regular loom.

They are widely as decorative fabrics in apparel and upholstery.

Popular jacquard fabrics include Damask, Brocade, brocatelle etc.

- **Brocade** is a luxurious jacquard woven fabric with rich heritage.

It usually has classic designs with additional threads.

It is made of Silk and has additional threads with various colours along with gold and silver threads.

The extra yarns make satin or twill floats on any weave background. Some brocade fabrics are also embellished with sequins or semi-precious stones.

End Uses: It is widely used for luxury apparel and home furnishings like shawls, curtains, cushion covers etc.



- **Brocatelle** is a luxurious jacquard fabric similar to brocade, but has raised patterns.

They are characterized by thicker weft yarns, which make it a heavy fabric with prominent patterns.

They are widely used as furnishing fabrics.

- **Damask** is a jacquard fabric with Satin floats on a Satin background. The designs are found to reverse in direction as the background float.

It has flat and soothing designs. The fabric is smooth and lustrous, owing to the satin weave.

The fabric is usually of monotone or of limited colours unlike brocade, which is multicoloured jacquard fabric.

The damask fabric is given special finish to retain the flat look. They are made in varying thicknesses with different compositions and are used in both home furnishing and apparel.

They are widely used as tablecloths.

3.6 LENO FABRICS

These are fabrics characterized with open spaces giving a net like effect.

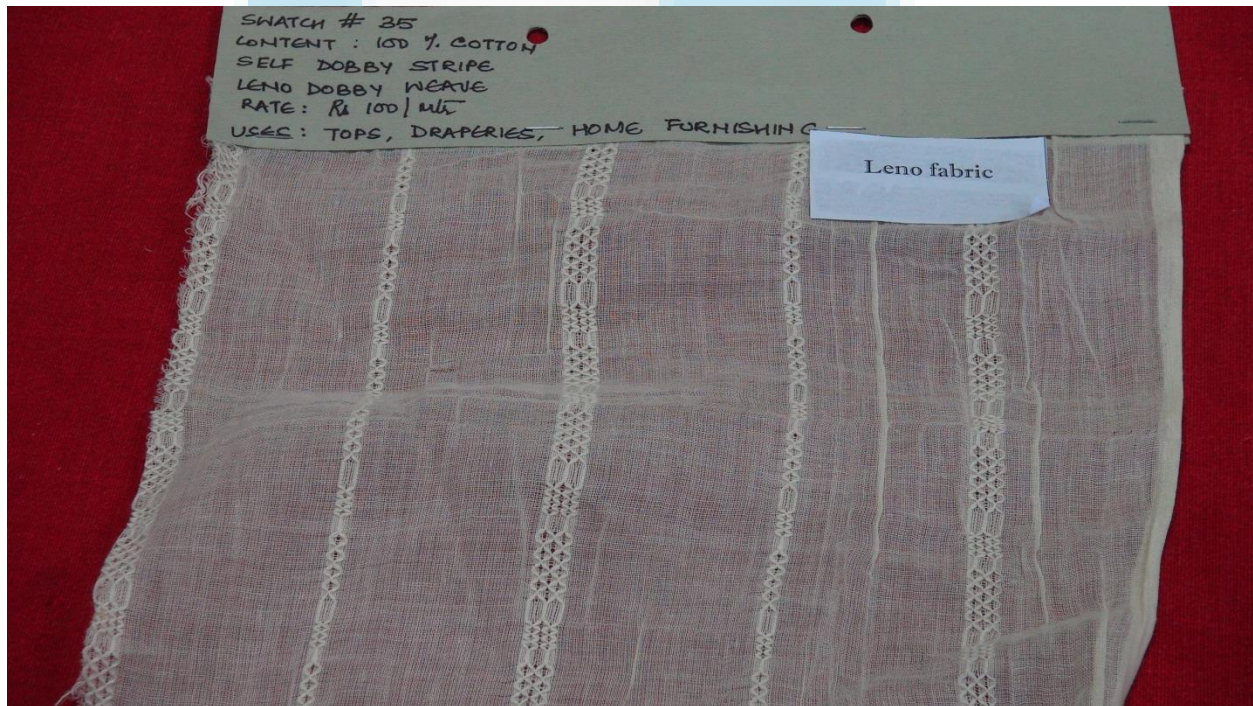
The warp and weft yarns do not interlace with each other, but rather a pair of warp yarns twist around the weft yarns. This creates an open constructed fabric, which is firm and strong without much yarn slippage.

The fabric is woven using a special mechanism, either using a plain or a dobby loom.

They are ideal fabrics for summer wear.

They are also widely used as mosquito nets, curtains, packaging materials, etc.

- **Marquisette** is sheer leno woven fabric widely used in mosquito netting.



3.7 PILE FABRICS

These are fabrics produced with loops or cut fibre ends on the surfaces.

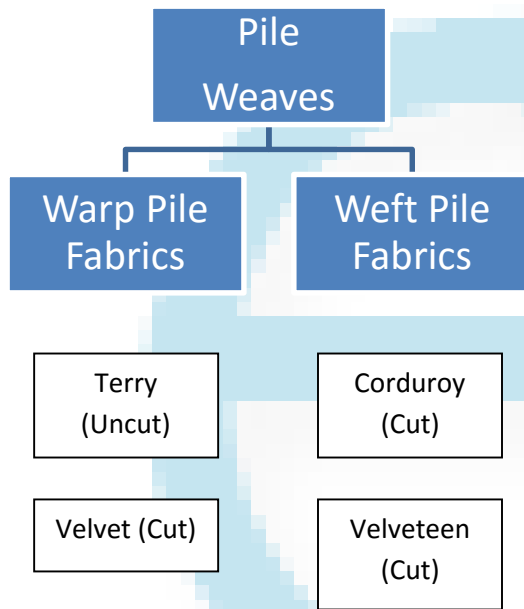
They are made by introducing additional set of yarns, either in the warp or weft direction hence, they are called as warp pile fabrics and weft pile fabrics, respectively.

Pile fabrics are used for both functional and decorative purposes.

They may be used as uncut or cut piles.

They are thick, and bulky creating a three-dimensional effect.

Typical examples of pile weaves are Terry Cloth, Velvet, Corduroy, Velveteen etc.



TERRY

It is an example of uncut pile fabric. It is made of special weaving arrangement called as slack tension method with two sets of warp and one set of weft. The extra warp forms loops on the fabric. The fabric has distinct loops on one side or on both sides.

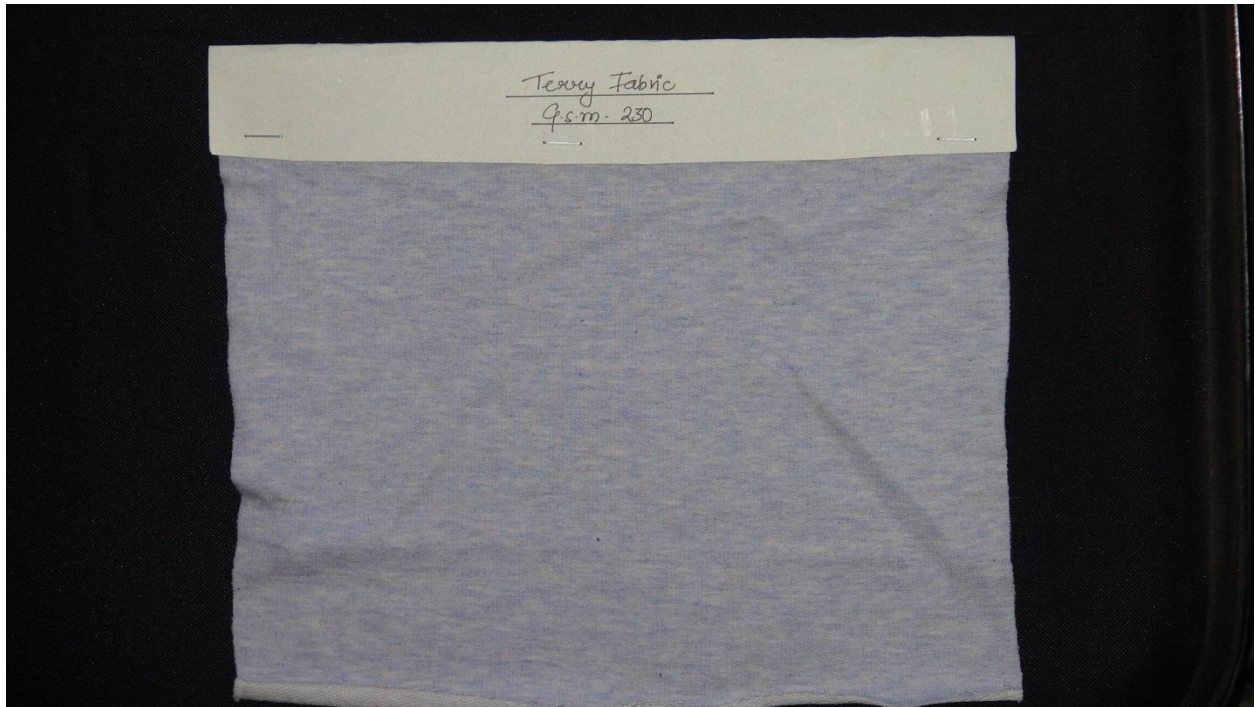
Slack tension method involves beating up after insertion of three picks. The fabric may be made of carded or combed cotton yarns.

The usual varieties of terry cloth are two pick or three pick Terries.

Terry fabrics are made more durable with Polyester/Cotton blend ground fabric and cotton pile loops.

The loop yarns are made with low twist cotton yarns thus, contributing to fabric absorbency.

It is widely used as towels, bath robes etc.



VELVET

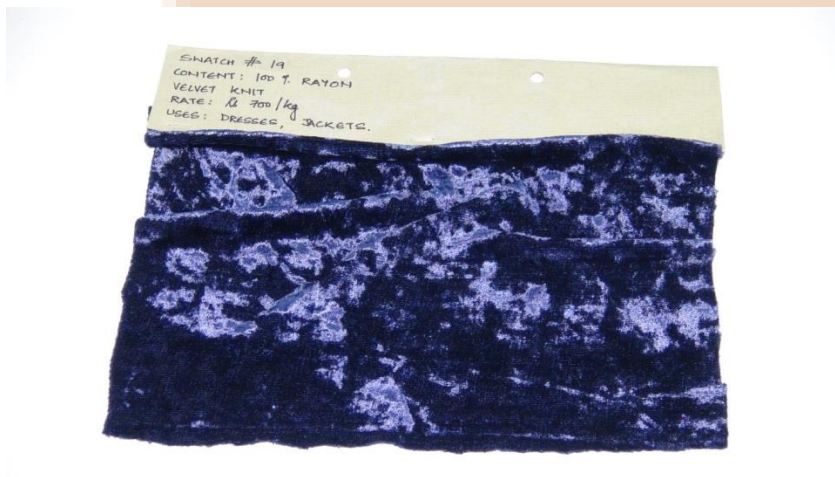
It is warp faced cut pile fabric.

It is usually made of filament yarns of silk or any manufactured fibre.

The fabric has lustrous and soft pile surface texture.

The fabric is identified by unraveling a warp. The pile sticks onto it, giving an appearance as caterpillar.

It is widely used in luxurious applications, owing to its sheen soft look in dresses, jackets, suits and interior furnishings.



3.8 WEFT PILE FABRICS

These are fabrics produced with additional set of yarns in the weft direction along with the base fabric. Weft pile fabrics are always sheared.

The extra weft threads in the fabric make surface loops, which are cut and brushed to give the pile texture.

They are usually made as cotton fabric, but are also available as Polyester/Cotton blend with Polyester giving strength to the fabric.

The base fabric may be made of plain or twill weaves. Weft pile fabrics made of twill weave have denser piles.

Corduroy and Velveteen are examples of weft pile fabrics.

Corduroy

Corduroy has distinct lengthwise stripes called wales made of short fibres.

They are widely used for making slacks and jackets.

Corduroys are available in solid colours or as printed fabrics.

They are classified based on the wales per inch in the fabric and meant for various end uses accordingly.

	Wales/inch
Featherwale	18 - 19
Pinwale	14 - 16
Midwale	11
Widewale	3 - 9

Featherwale and pinwale corduroys are flexible and have shallow pile hence, they are used for making tops, gloves and bottoms. Midwale corduroys are used for making outerwear like jackets, bottoms and upholstery. Widewale corduroy is heavy and less flexible hence, they are used for making trousers, coats and upholstery.

Velveteen

It is an example of cut weft pile fabric, in which floats are distributed all over the base fabric. Thus, they do not form a distinct pattern like Corduroys.

They are compact and stiffer than velvet.

The pile is shallower than velvet and has almost flat surface.

They are widely used as jackets and dresses.

3.9 PIQUE WEAVES

These are fabrics produced with raised effect either in warp or weft direction.

These fabrics are usually characterized by cords running along the length of the fabric formed by floats or stuff yarns.

They may be produced in either dobby or jacquard loom.

Pique fabrics have better wrinkle resistance.

They are generally made of spun cotton yarn.

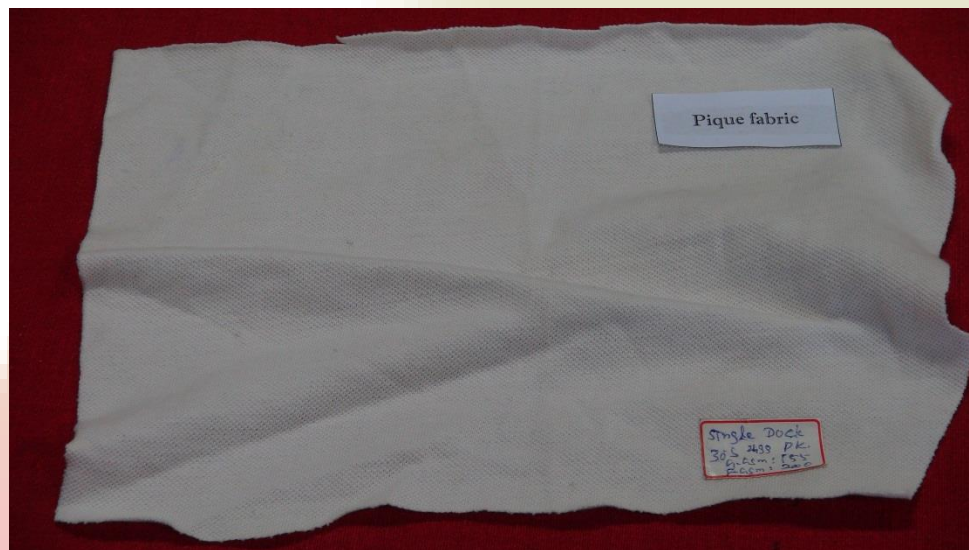
Bird's eye pique has small cord design along the fabric width using stuffer yarns.

Bull's eye pique has big cord design. They have cords running across the width of the fabric.

Bedford cord is a type of pique fabric, which has bold cords running along the fabric length.

It is heavy and durable.

It is widely used in upholstery, trousers, uniforms etc.



3.10 TAPESTRY

Tapestry fabrics have rich heritage woven in traditional vertical looms.
It is a heavy fabric with distinct ribs, generally made with thick cotton spun yarns.
It is weft faced plain-woven fabric. They are handmade or machine made.
The fabric is usually made of multi coloured patterns using weft yarns of various colours.

The weft yarns are discontinuous in the fabric; as they do not run along the entire fabric width, rather they change in colour as the pattern changes. Weft yarns are much thicker than warp yarns hence, the warp yarns are completely covered in the fabric and hardly visible in the fabric. The weft yarn of a particular colour interlace front and back as in plain weave, until the pattern requires change of colour. Sometimes, they also interlace inclined at an angle with the warp yarns. Figured tapestries are popular as wall hangings, doormats, rugs, handbags etc.

3.11 Conclusion

To summarize, in this unit, you have been introduced to specialized woven fabrics. These interesting effects on the fabric make them suitable for effective use in specific categories of apparel and furnishings.