

Subject: Fabric studies

Unit 5 - Other textile fabrics

Quadrant 1 – e-Text

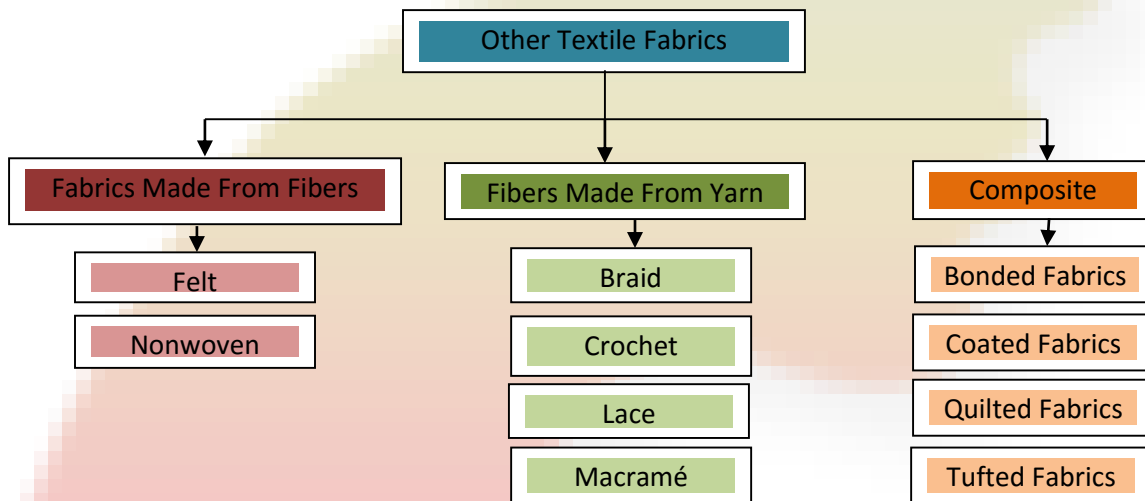
Learning Objectives

The learning objectives of this unit are:

- Understand fabrics made from fibres and yarns.
- Understand composite fabrics.

5.1 INTRODUCTION

Various processes other than the conventional methods of weaving or knitting produce textile fabrics. The two popular techniques of making fabric i.e. weaving and knitting involve making fabric from yarns. Other methods include, fabrics made from fibres, yarns, fabrics or other than textile materials. Manufacturing of these fabrics range from simple to complicated methods and usually have unique fabricating tools and machines. These fabrics find applications in clothing, home furnishing and industries.



5.2 FABRICS MADE FROM FIBRES

Two popular fabrics made fibres directly are felt and nonwovens.

Felt

Felt fabrics are the oldest known textile. Usage of felt dates back to primitive humankind, as their form of clothing. Felt is made of wool or animal fibres or their blends.

Now, man-made fibres are blended with wool to produce felt. However, wool constitutes major proportion of felt. Fibres are laid in sheet form, and sprayed with water. The wet fibre sheet is beaten up which entangles the fibres.

Felt is made in wide range of thickness according to the end use.

Since it is made of interlocked fibres, felt fabrics do not ravel. They have no grain.

It is stiff and possesses less strength. They have poor drape and do not stretch.

They are widely used in filtration, insulation, clothing decorates, hats, pennants etc.

Felt is found to have good shock and sound absorbing property. Hence, it is widely used as industrial and auditorium paddings.

Nonwoven fabrics

Nonwovens are the most popular class of fabrics produced directly from fibres. Introduction of nonwoven fabrics marked the spread of textile structures in industrial sectors.

The beginning of the 21st century witnessed the growth of these fabrics worldwide, especially with the advent of other materials like foams etc.

They may be defined as textile materials produced by bonding fibres by means of mechanical, thermal, chemicals or combinations of them. They are categorized as needle punched, thermal, spun laced or spun bonded nonwovens based on their bonding methods.

Common fibres, are used as raw materials for nonwovens, and include Polypropylene, Polyester, Rayon, Cotton etc.

They are produced with various characteristics according to the fibre type, bonding method ranging from light to heavy, thick to thin, pliable to stiff, strong to soft etc.

They have wide range of uses in agriculture, apparel, automobiles, civil engineering, household, industries, health and personal care etc.

Nonwoven fabrics may also be categorized as Disposable and Durable fabrics.

- Disposable nonwovens: These are nonwoven fabrics intended for one time use. Examples – wipes, diapers, surgical accessories, packaging etc.

- Durable nonwovens: These are nonwoven fabrics used for repeated applications over a period.
Examples – apparel interlinings, filters, carpet backing, roofing etc.

5.3 FABRICS MADE FROM YARNS

Braid

It is fabric made by interlacing yarns diagonally and lengthwise.

Braids have good stretch and are pliable.

They are usually produced as narrow fabrics.

Braids are available in flat or three-dimensional forms.

They are used as trims, shoelaces, industrial hoses etc.



Crochet

Crochet is a type of openwork fabric made by interlooping threads using a special type of needle with hook.

Most crochets are made using thick smooth cotton yarns.

Crocheting is similar to knitting where the fabric is formed by looping a continuous thread.

Crochet is firm. It is generally made into shapes like caps and hats.

Other popular uses of Crochet include bags, sweaters, decorates for garments and furnishings.



Lace

Lace is an open textured fabric with interesting designs made of yarns. Lace making is a complex method of fabric production. It involves a combination of various techniques like knotting, looping, twisting, intertwining. Laces may be delicate or heavy.

Lace was an important element of European fashion during the 18th century. Lace making machines were introduced across Europe producing a variety of laces. Lace fabrics still occupy their niche presence in fashion as trims for clothing, especially in women wear.

Lace fabrics are generally made of cotton, silk and rayon threads.

It may be hand made or machine made. Raschel knitting also produces lace fabrics.

It is produced as full width fabric or narrow fabrics. Most of the laces are fragile structures hence, they are prone to snag or tear.

Full width laces are used as dresses, evening wear etc. Narrow laces are widely used as beautifying elements in garments, veils etc.



Macramé

It is a durable fabric made by knotting coarse threads.

It involves tying knots in different patterns. These patterned knots create lace like fabric with interesting textures.

Macramé are marvelous textiles made with cords without any tools.

They are generally made with no much combination of colours.

Macramé are great adornments for garments.

They are widely as fringes for towels, edgings for upholstery like cushion covers, pillows etc.



5.4 COMPOSITE FABRICS

These include fabrics made by combinations of primary textile materials like films, fibres, yarns or fabrics into a single textile structure. They may be flat or three-dimensional structures. These composite fabrics are made to adapt into specific end uses and are widely used as industrial fabrics.

Bonded fabrics

It is a layered fabric structure.

Bonded fabrics are fabrics made of two or more fabrics combined with adhesives or foams. Lightweight low cost fabrics are subjected to bonding. Low quality fabrics, which are unsuitable when used alone, are bonded to attain strength and durability of premium fabrics.

Varieties of fabrics may be bonded producing fabrics with optimized properties.

Bonded fabrics give warmth without bulk.

They do not hold creases and wrinkles. They are used as protective clothing, automobile upholstery, shoes etc.

Coated fabrics

Coated fabrics are textile fabrics combined with polymer film. The base material may be woven, knitted or nonwoven fabric. Polyurethane, Polyvinyl chloride and Neoprene are the usual polymers used for coating.

The polymer film is attached to the fabric using adhesives. They may also be stuck to the fabric by slightly melting the film before pressing onto the fabric.

Coated fabrics are strong and durable. They have self-cleaning property.

Neoprene coated fabrics are used in chemical protective clothing.

PVC coated fabrics are used in upholstery and wall coverings, shoe linings, leather like coats and jackets; waterproof wear.

Heavy coated fabrics are used in roofing, tarpaulins etc.



Quilted fabrics

Quilt is a composite fabric made of two layers of fabric sandwiched with fiberfill or foam.

Face and back fabrics are selected based on their end uses. If the product is reversible, both the fabrics are fashionable. However, if the product is lined for upholstery, cheaper fabric is used as under layer.

The three layers are attached together either by stitching or bonding. The filler material gives warmth and bulk; hence, quilted fabrics are widely used in insulation.

Most quilts are made by stitching with threads forming patterns. They are also good as home furnishing decorates.

The fiberfill usually is Polyester. When foam is used, the quilt is stiff and not drapeable.

Down feathers are also used as quilting material in luxury products.

Common uses of quilted fabrics include comforters, sleeping bags, upholstery, ski jackets etc.



Tufted fabrics

These are heavy fabrics with three-dimensional pile texture.

Tufted fabrics are fabrics stitched with extra yarns to create interesting patterns.

The base fabric may be woven, knitted, or nonwoven.

The process of tufting started as a cottage industry, especially to make bedspreads. Tufting machine has series of needles, which inserts yarns from creel along the fabric width. For every insertion of needles, a row of loops stitches into the fabric. This process repeats as the fabric moves forward.

They are available in both cut and uncut pile form. Tufting is done at high speed hence, has become one of the fastest methods of making carpets.

Tufted fabrics available in various pile patterns like colours and pile height. They are widely used as carpets, rugs, blankets etc.

5.5 Conclusion

To summarize, in this unit you have learnt about fabrics that are made from fibres and yarns.

You have also learnt about composite fabrics such as bonded fabrics, coated fabrics, quilted fabrics and tufted fabrics.

