

Fiber- Notes

Fibers

Fibers are threadlike strands that can be made directly into fabric or spun into yarns to make fabrics by weaving, knitting, or some other fabric-making process. Fibers can be separated into two major groups: Natural fibers (made from plants and animals) and Manufactured Fibers (made in factories from raw materials).

Natural fibers

The major natural fibers are cotton, flax, ramie, wool, and silk. These fibers are produced by natural processes carried on in plant and animal life.

Cotton, ramie, and flax are familiar fibers. Cotton fibers are formed in the seed pods of the cotton plant as it ripens. Flax fibers are made in the stalk of the flax plant. Flax fibers are made into linen fabric. Similar to flax, ramie fibers are formed in the stalk of the ramie plant. Fibers made by plants are known as cellulosic fibers.

Wool and silk fibers are produced by animal life. Wool comes from the coat of sheep and goats that can be sheared from the animals without harming them. Silk fibers are the filaments (very long, continuous strands of fiber) produced by silkworms as they make cocoons during one stage in their life cycle. Silk can also be produced from the web filament of the silk spider.

Each fiber has individual characteristics that make it suitable for certain uses. For example, wool fibers have insulating qualities, which means that wool cloth is warm. Wool clothing is generally a good choice in cool climates. Cotton is absorbent and relatively strong. Cotton is a good choice of fabric for garments that are worn and washed often. Flax is absorbent and strong like cotton, but linen garments are generally more expensive than cotton garments. Silk is a soft, luxurious fiber that is the only natural **filament fiber**. This means that silk fibers are produced in one long continuous strand measured in km whereas all other natural fibers are produced as **staple fibers** produced in shorter strands the length of inches and spun into longer strands.

Ramie is a luxurious, durable fiber with outstanding strength and luster (shine). However, it is also stiff and brittle; for its use in clothing it is always blended with another fiber.

Manufactured Fiber

Manufactured fibers are synthesized, or formed, from raw materials through planned manufacturing processes in factories. Manufactured fibers may be divided into groups according to their composition and general characteristics. Each group of fibers has a generic name. The list below contains the generic names of manufactured fibers. Some of them are:

Acetate	Metallic	Rayon
Acrylic	Nylon	Rubber
Anidex	Modacrylic	Saran
Aramid	Novoloid	Spandex
Azlon	Nytril	Triacetate
Glass	Olefin	Vinyl
Lastrile	Polyester	Vinyon



Yarns

Fibers can be twisted together in many ways to make a variety of yarns. Short fibers may be twisted together loosely or tightly; so may long fibers. Thick fibers and thin fibers may be twisted together with thin fibers.

Simple Yarns

A single strand of fibers twisted together is called a single yarn. Simple yarns may consist of a single yarn. A simple yarn may also be made up of more than one yarn. When two or more yarns are twisted together, the resulting yarn may be referred to as a two ply-yarn, a three-ply yarns, and so on. **Ply** refers to the number of yarns twisted together. When a simple yarn is a ply yarn, or is made up of two or more yarns, the yarns making up to the ply are identical.

Complex Yarns

A **complex yarn** is a yarn that is made up of at least two different yarn may be twisted together. A base yarn and a decorative yarn may be twisted together to form the complex yarn. A base yarn and more than two other yarns may also be twisted together to form a complex yarn.

Questions:

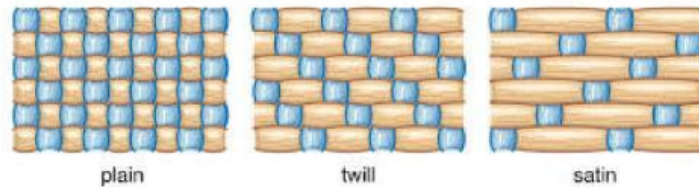
1. Define fiber, generic name, and ply. 3pts
2. How does each natural fiber affect clothing characteristics? 3pts
3. What is the difference between a simple yarn and a complex yarn? 1pt.

Fabrics

Fibers and yarns can be held together in various ways to make fabric or cloth. The two most common methods for manufacturing cloth are weaving and knitting but fabric can also be made by crocheting. Other methods include bonding, felting, braiding, and lace-making. Most clothes are made of either woven fabrics or knitted fabrics.

Weaving

Woven fabrics are made by interlacing, or weaving, yarns at right angles to each other. The loom is the machine used in the weaving process. The fabric is made up of two threads the warp- these lay lengthwise threads (up and down), and weft threads- lay widthwise (left to right). The warp threads are laid first then the weft thread are woven in an over under method over the warp threads at right angles. Every woven fabric has a grainline which runs both lengthwise and crosswise. Lengthwise grainlines refer to the warp yarns and the widthwise grainline refers to the weft yarns. There are three types of weaved fabrics: plain (over one under one), twill (over two under two) and satin (over four under one) weaves.



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Knitting

Knitted fabrics are made by interlooping one or more yarns. Knitting machines are used to make knitted fabrics; circular machines for tube-like knits, flat machines for knitted fabrics. Loops in knitted fabrics run both length and width wise. Lengthwise loops are called wales, widthwise loops are known as courses.

The two types of knits:



Fabric Finishes

Fabric Finishes are treatments or processes used to improve fabrics in various ways. Some finishes improve the appearance of fabrics, while others make the fabric easier to care for. Fabric finishes can be permanent, durable, temporary, or renewable. A permanent finish lasts the life of the garment. A durable finish lasts through several launderings or dry cleanings but has a tendency to lose some of its effectiveness over a long period of time. A temporary finish lasts until the fabric is washed or dry cleaned. A renewable finish is temporary but can be replaced.

Fabric finishes that improve the way a fabric works for you can also be added. Performance finishes can be grouped according to the ways they affect fabrics. For example wrinkle-resistant, flame-resistant, shrink-resistant, moth-resistant, soil-release, water repellent, water-proof, and crisp finish.

Besides performance finishes, there are other methods of improving fabrics. Colour can be added to change the appearance of fabrics. Two major methods of applying colour are by dyeing (color added to fibers) and printing (a colour design added by hand or machine). Regardless of how the colour is added, the color has to be colorfast. Colorfastness is determined by the ability of the dye to maintain its exact color throughout the life of the garment.

Questions:

1. Define woven fabric, grainline, knitted fabric and fabric finish. 4pts
2. How do the characteristics of woven and knitted fabric differ? 2pts
3. Why is it useful to know how durable a fabric finish is? 1pt

Unit Review Fill in the Blank.

Instructions: Use each of the following vocabulary words to complete the sentences.

generic name	grainline	woven fabric	fiber
trademark name	fabric finish	knitted fabric	ply
colorfastness	synthesized	yarn	

1.