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FABRIC FINISHES

Marie-Ann and some of her friends had joined a hobby class to learn fabric painting. While evaluating individual articles, they noticed that the colours of some of the articles were not uniform despite the fact the same colour had been used to paint all of them. When they asked the instructor about it, they were told that the cotton fabrics with uneven colour-spread had been given some finish which needed to be washed before using fabric painting colours. What does this mean? Do colours behave differently on different types of materials? You have learnt about starching and heard terms like dyeing, printing, mercerization, etc. What are these processes and how do these influence the functions of fabric? In this lesson we will try to answer these and many similar questions.

OBJECTIVES

After studying this lesson you will be able to do the following:

- explain the meaning and importance of finishes given to fabrics;
- classify various finishes according to their properties;
- describe the effect of the application of basic finishes on fabrics;
- enumerate special finishes and explain the ways of employing them;
- elaborate the methods of dyeing and printing;
- evaluate different techniques of decorative dyeing and block printing on fabrics.

11.1 TEXTILE FINISHES

You know that the word "textile" means the complete study of fibres, yarns and fabric. Certain treatments are applied to improve the look and qualities of textile goods. These treatments are called finishes. **A finish is a treatment given to a fabric, to change its appearance, handling /touch or performance. Its purpose is to make the fabric more suitable for its end use.**

A series of treatments are given in mills to finish textiles goods, for example: a fabric is washed, bleached, dyed or printed, starched and ironed before it is sent to the market.

When a fabric is given a finish, it is known as a finished textile. But it is not a must that all the textile-products are finished before use. When no finish is applied on the textiles, these are termed as **gray goods or unfinished textiles**. This does not mean that the fabric is gray in colour. It implies that no finishing treatment has been given to it.

Gray goods lack customer appeal and you will not like to buy these for your dress or shirt. Can you say why? Yes, you are right. It is because in the absence of any finish, fabrics has dull and shabby appearance.

Different colours or prints on fabrics are also finishes and these make fabrics look attractive.

Gray goods are the term used for fabrics that come directly from the loom and are used as such. These are not actually gray in colour but are 'unfinished'.

Finish includes any general treatment given to clean and iron fabrics and create exclusive variations of them by using chemical treatments, dyeing, printing, etc. to make fabric attractive and appealing.

Some major differences between 'Unfinished and finished fabrics' are as follows:

Unfinished / Gray fabric	Finished fabric
Dull looking, available only in natural colours- off white, brown, black, etc.	Lusterous, attractive, available in different tints and shades of colours, prints, etc.
Wrinkled, stained, with broken threads, uneven in width, etc.	Smooth and wrinkle-free, no defects on the surface, even width, free from stains, etc.
Relatively less expensive.	Cost of fabric depends upon the type of the fibre along with the number and type of finishes applied.
Lack customer appeal, are purchased only for rough work, backing, packaging, etc.	Customers get attracted and buy.

11.1.1 Importance of Textile Finishes

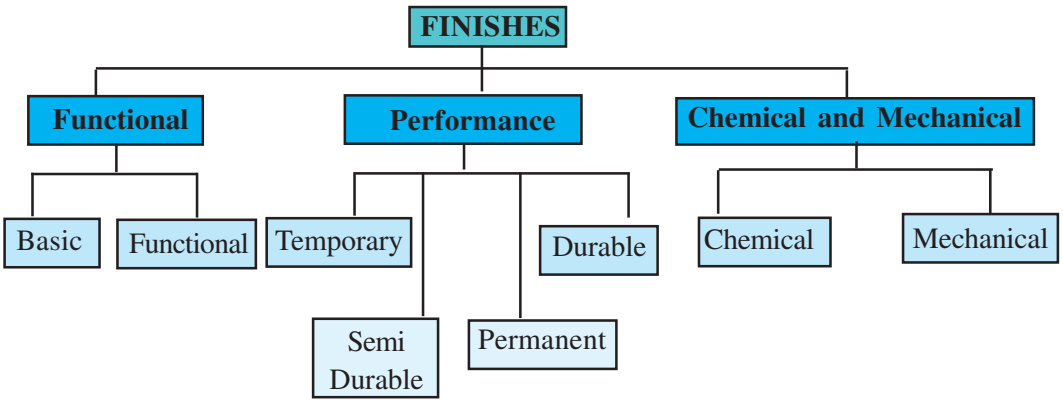
Textile finishes are important because of the following reasons. The finishes help to:

- improve the appearance of fabric and enhance its looks;
- produce variety in fabrics through dyeing and printing;
- improve the feel or touch of fabric;

- make the fabric more useful;
- improve the draping ability of light weight fabrics;
- make fabric suitable for an end (specific) use.

11.2. CLASSIFICATION OF FINISHES

Finishes can be classified in several ways depending upon their functions, performance and nature.



11.2.1 On the basis of function

The finishes may be basic or functional

i **Basic** or common finishes are applied to almost all the fabrics, with an aim to improve their appearance, feel and body. Pale white cotton fabrics may be bleached to improve their whiteness. For better look of a thin cotton fabric, starch is applied to increase its weight and shine. Steam Ironing, Calendaring (industrial ironing) is a basic finish. These are also known as aesthetic finishes.

Dyeing and printing are also considered as finishes as they enhance the aesthetic appearance of fabrics.

ii **Functional** or special finishes are applied to improve the performance of a fabric for some specific purpose, for example-

- fireproof finish prevents the burning of fabrics used by fire brigade personnel,
- waterproof finish makes fabrics water repellent for making umbrellas and raincoats,
- bulletproof finish on fabric saves the people from bullets and is generally used by defence and police personnel for their safety, and
- crease-resistant finish makes cotton / wool fabric wrinkle resistant.

11.2.2 On the basis of degree of performance

On the basis of performance, finishes are temporary, semi durable, durable and permanent.

i **Temporary** finishes are not durable and run off after first washing or dry-cleaning. Many of these are renewable and can be reapplied at home, e.g. starching and blueing of white fabrics.

ii **Semi durable** finishes stay on the fabric surface for several washings, e.g. bleaching and certain dyes used on cotton.

iii **Durable** finishes last through out the life of a fabric or a garment but may lose its effectiveness after many washes, e.g. permanent pleats, wrinkle resistant, etc.

iv **Permanent** finishes are is usually given by a chemical treatment. It changes the fibre structure and remains as such on the fabric for the entire life of a fabric, e.g. waterproofing, fire proofing, etc.

11.2.3 Chemical and Mechanical Finishes / Wet and dry finishes

On the basis of processes involved in application of finish, there are two types – chemical (wet) and mechanical (dry) finishes.

i **Chemical finishes:** These are also known as wet finishes. In these, chemical treatment is given to fabric, either to change its appearance or basic properties. These finishes are usually durable and permanent or wet finishes. Examples are: fire proof, crease resistance, etc.

ii **Mechanical finishes**: These are also known as dry finishes. Here the process consists of application of moisture, pressure and heat or a mechanical device to finish a fabric. Beating, brushing, calendaring, filling, etc. are some of the finishes included in this group. These finishes are either temporary or semi durable and do not last long.

We will learn more about these finishes further in the chapter.

INTEXT QUESTIONS 11.1

1. Fill in the blanks after unscrambling the clues in the brackets:
   i. The treatment given to fabrics to enhance their appearance, performance or handling is known as _____ (N I F S I H E).
   ii. When no finish is applied on a fabric's surface, it is known as _____ fabric (R A Y G).
   iii. _____ and _____ produce variety in fabric (Y E D I N G, N I N G P R I T).
   v. A chemical finish is also known as _____ (E T W - I S H F I N).
   vi. Waterproof finish is a_____ finish. (N C F U T I O N A L).

11.3. BASIC FINISHES AND THEIR TYPES

Now that you know about different types of finishes, lets us learn a little more about basic finishes. Different types of basic finishes are –

(i) Scouring / Cleaning

Fabric, as it comes from the loom, is dull in appearance. It may have stains of oils as well as starches, waxes, etc., that are applied to yarns to make weaving easier. Once the fabric is woven, the presence of these additives hinders further finishing processes such as bleaching, dyeing, printing, etc. Therefore, these need to be removed before sending the fabric for further processing. Scouring is the process of washing fabric with soap solution. **Scouring is the process of industrial cleaning of fabrics with the help of warm water and soap solution. It cleans the fabric and makes them more absorbent.** The method of washing a fabric is chosen according to the nature of fibre. Cottons are boiled in soap solution for cleaning. Silks are boiled to remove silk gum (degumming) while the wool fibres are boiled with soap solution to remove grease and oils. Fabrics made from man-made fibres are given normal washing. After cleaning, the fabric becomes smooth, neat and more absorbent.

ACTIVITY 11.1

Carry out this experiment and note your observations

Take two fabric pieces of 4// x 4// size of white colour, one of theses should be new and the other old and washed. Put both the pieces of fabric in water. What do you observe? The old one will sink faster because it is more absorbent as it has no finishes or starch on the surface. The new fabric will first float on the water. Gradually water penetrates through the starch applied on the fabric surface, and the fabric sinks.

(ii) Bleaching

At home you use lemon, milk, curd and facial bleach to remove sun-tan. A similar treatment is also given to fibres. Many a times natural fibres like cotton, silk and wool are available in pale / light brown colour. Suppose you have to paint some thing in light pink colour, unfortunately the brush was not washed properly and had remains of brown in it. What do you think will happen? You will not get the pink you wanted. This becomes a problem as light shades of dyes do not come out well on such fibre colours. To get exact light shade of the colour, the existing colour has to be removed. **Bleaching is a chemical treatment given to fibres, yarns or fabric to remove paleness or colour and make them white.** Suitable bleaching agents such as hydrogen peroxide for protein fibres and sodium hypochlorite for cottons, are used. Man-made fibres do not need bleaching. Fabrics have to be carefully bleached as bleach can harm the fabric if used in high concentration.

(iii) Starching / Stiffening

Starch is generally applied to fabric of fine quality and light weight or loosely woven fibres. Starching makes the fabric heavier, stiff, and crisp. It also adds shine and smoothness to the fabric. Cottons – muslin, poplin, cambric and thin silks are generally starched.

Sometimes the loosely woven cotton fabric is starched heavily so that their quality looks better but the starch comes out with the first wash and the basic loosely woven structure of the fabric becomes prominent. Therefore, starched fabric should be examined properly before purchasing.

ACTIVITY 11.2

- Take the starched cotton fabric. Try to look through it. You will notice that light can not pass through the fabric surface.
- Place a black sheet of paper on table. Hold the starched fabric in your hands and rub it.

Starch particles will fall on the black paper in the form of white powder. Now hold this fabric against light. Yes, you can see light through the open spaces in the weave.

Based on your experience above, answer the questions given below. Give reason.

– Will you use this fabric as a fall for a saree?

– Will you use this fabric to make a shirt?

– Will you use this fabric as a backing for a blouse?

(iv) Calendering

Why do you iron the garments at home? It is to remove wrinkles and make them look better. This is the simplest and the common finish used to improve the looks of any gray or finished fabric. Similarly, through the process of **Calendering or industrial ironing a fabric is passed through a series of smooth hot rollers to remove wrinkles and to make it smooth.** It makes the fabric smooth and lustrous, thereby improving its appearance.

11.4. SPECIAL FINISHES

(i) Pre-shrinking

You must have heard your mother saying that the cotton kurta that she bought has shrunk and become smaller after the first wash. **Shrinkage** is the reduction of a fabric or a garment in size (length and width) after it is washed or dipped in water**.** A marked

reduction in size takes place after washing certain cottons, linens and woollens. It is all due to shrinkage. Good quality cottons, linens and wools are pre-shrunk before marketing them. This pre-shrinking is called sanfronisation. Fabrics that are treated for pre-shrinking are labeled as 'sanfronised' or 'anti-shrink' or 'shrink-proof.' All these mean that the fabrics have received a finish for shrinkage control and will not shrink on washing. **Sanforisation is the pre-shrinking treatment given to certain fabrics made from natural fibres to prevent further shrinkage after washing.**

ACTIVITY 11.3

Sujata was very angry and disappointed because a printed cotton suit she had bought so fondly had shrunk so much that it did not fit her at all. Before buying she had asked the shopkeeper repeatedly if the material was shrink proof. The shopkeeper had assured her that it was

Let us see if the same happens in this experiment

Take a gray cotton fabric of 10″ x10″. Dip it in water for at least 3-4 hours. Dry and iron it. Measure all sides of the sample again. You will notice a change i.e. reduction in the measurements because the fabric has shrunk.

Discuss the following in a Personal Contact Programme or with friends:

- Best way to ensure that the material of the suit is shrinkproof.
- What else does one need to check about the quality before buying the material?
- Where can one look for such information?

(ii) Mercerization

Cotton is basically a dull fibre. The fabric made from cotton wrinkles easily and is difficult to dye. It is, therefore, treated with sodium hydroxide to make it strong, lustrous and absorbent. This process is called mercerization. It also improves the dye uptake of fabrics. Now-a-days this finish has become a routine finish for all cottons. Even sewing threads which are used for stitching are mercerized. You will find the word 'mercerized' on the labels of cotton fabrics and reels of sewing threads denoting that the goods have been mercerized.

(iii) Parchmentization

Have you heard of a fabric called organdie? Take a piece of organdie fabric and carefully observe it. The fabric is different from other cotton fabrics. Yes, it is a thin, transparent, light weight and stiff fabric and seems to be heavily starched. But unlike starched fabric, its stiffness remains intact even after washing. It is not due to a starch but because of application of a finish called parchmentization. In parchmentization, the

cotton fabric is treated with a mild acid that partially eats away the fabric, resulting in a transparent and stiff fabric called organdy. You don't need to apply starch to organdy fabric.

(iv) Wash 'n' Wear

Bhanwari works as a security guard in a school in Bikaner, Rajasthan. The temperature goes as high as 40-42 degrees C. She does not get enough time to maintain her uniform which comprises of cotton clothes that are most comfortable to wear specially in summers. You must have noticed that all the cotton fabrics get crushed very easily. What should Bhanwari do? There is a finish called wash 'n' wear which when applied on cotton fabrics completely changes its nature. The fabric thus treated does not wrinkle too much and becomes easy to maintain. If dried and stored properly, wash 'n' wear fabrics can be worn without ironing or with a little ironing. So, Bhanwari should select a wash 'n' wear fabric for her uniform. Besides cotton, wash 'n' wear finish is also given to linen and wool.

(v) Dyeing and Printing

In the market you see a number of fabrics in plain colours or having colourful designs on them. The process of producing colours and designs on a fabric is called dyeing and printing, respectively. Dyeing gives a solid colour to the fabric whereas printing is the application of dye on specified areas to create designs. It is very important for the dyed and printed fabric to be 'colourfast', i.e. the colour should not come out or fade easily. If the colour runs on washing, rubbing or ironing, the fabric looks shabby and old and its design becomes dull or smudged. The colour may also spoil other fabrics during washing. Has this ever happened to you?

INTEXT QUESTIONS 11.2

1. State True or False and explain if the answer is false.

(True / False) (i) Scouring is a finish used to clean the fabric.

_____

(True / False) (ii) Bleaching has no damaging effect on fabric.

_____

(True / False) (iii) Shrinkage control can be done at home also.

_____

(True / False) (iv) Organdy is a permanently stiff fabric.

_____

(True / False) (v) Mercerized thread should be used for stitching.

_____

2. Fill the blanks with the suitable word given at the end of each sentence

(i) Mercerisation is a _____ finish. (renewable / durable).

(ii) Shrinkage control is indicated as _____ on the label. (sanforised / parchmentisation)

(iii) Wash n wear is a _____ finish. (routine / special)

(iv) If the colour does not bleed on washing, it means fabric is _____ _____. (water proof / colour fast)

11.5. DYEING AND PRINTING OF FABRIC

Can you imagine wearing a plain white dress or one having same print every day? No, never, even the very thought is unwelcome. It is very difficult to think of fabric without variation in colours, prints or designs.

In the market, you will find fabric in all tints and shades of colours, small and big prints, woven in colourful designs. All these are possible because of dyeing and printing. Dyeing and printing improve appearance of fabric and add diversity to our dresses through colours and designs. We usually distinguish one fabric from another by its colour, print and texture.

11.5.1 Types of Dyes Used for Textiles Finishing

Dyes are used for dyeing and printing of textiles. Dyes are divided into two major categories – natural and synthetic dyes.

(i) Natural Dyes – These were the first dyes known to mankind. These are obtained from natural sources – vegetables, animals or minerals. These are eco-friendly and do not pollute water or land. The residue of these dyes can be safely used as fertilizer in the fields. But the process of dyeing with natural dyes is slow, difficult and expensive. Major natural dyes obtained from plants are turmeric (*haldi*), henna (*mehndi*), madder (*manjishta*) and indigo (*neel*). While tyrian purple and lac dyes are obtained from animal sources. *Khakhi* dye comes from a mineral source.

(ii) Synthetic Dyes – These dyes are prepared synthetically with the help of different chemicals. These differ in their chemical composition and behaviour. Popular classes of synthetic dyes are – direct, basic, acid, disperse, azo, vat and reactive dyes. These dyes cause a lot of pollution and skin allergies etc. Some of these dyes such as azo are very harmful for human health and their use has been banned. Synthetic dyes are very easy to use and have better fastness than natural dyes. These also give a brighter and larger colour range.

11.5.2 Application of Dyes

In the market, we find it is not only fabrics, which are colourful, but sewing threads, knitting yarns and cords, etc. are also available in various colours. Therefore, the process of dyeing is carried out on textiles at the fibre, yarn or at fabric stage. Different stages at which textiles are dyed include –

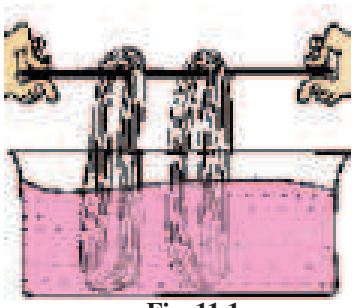


Fig. 11.1

(i) **Fibre Stage** – Though all types of fibres can be dyed at this stage, the method is more popular for dyeing man made fibres. It gives uniform dyeing and it is colourfast. There is a lot of wastage of coloured fibres during subsequent processing.

(ii) **Yarn Stage** – Colour can be applied or rendered (popular term used in textile dyeing) on fibres after spinning into yarns, especially when they have to be sold as such. Knitting yarns and all types of threads – sewing, embroidery, crocheting, etc. are dyed at this stage.

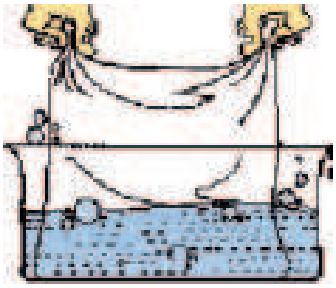


Fig. 11.2

(iii) **Fabric Stage** – Most of the dyeing in the textile industry is done at this stage, and fabrics are dyed in one solid colour. It gives uniform colouring. Colour matching becomes easier at this stage. This method is also suitable for dyeing blended fabric. Blends are made by mixing two fibres together and then made into a yarn and fabric.

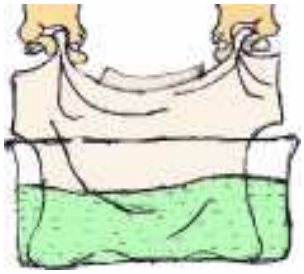


Fig. 11.3

(iv) **Garment Dyeing –** Sometimes dyeing is done at this stage i.e. after the garments have been stitched. This is also known as piece dyeing. Since a garment is dyed, there is no fabric wastage. But the colour may not be uniform, especially around seams, pleats and gathers. If you have a garment which has been dyed just now, open one pleat or seam. You will find that fabric inside the seam will be lighter or darker depending on the time and exposure of fabric to the dyeing medium.

11.5.3 Decorative Dyeing

You already know about simple dyeing. When the process of dyeing is carried out in a selective way to get different designs, it is called decorative or resist dyeing. The term resist dyeing is used because in these techniques, some resist materials (threads, yarns or wax) are used on specific areas to prevent them from being dyed. A number of beautiful designs can be created in this manner. The two most popular techniques of

decorative or resist dyeing are –

(i) Tie and Dye

(ii) Batik

(i) Tie and Dye

In tie and dye, threads are used as a resist material to stop the dye from entering the selected areas of the fabric. Tying of the fabric is done according to the design to be made. There are many ways in which you can create designs using tie and dye technique. These are –

a) **Marbling**: Take the fabric and crumble it to form a ball. Tie it with a thread at different areas, randomly. Then dye the fabric. Open it and dry. The dyed fabric will have a marble effect.

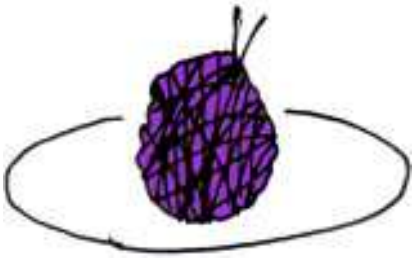


Fig.11.4 : Marbling

b) **Binding**: Pick up the fabric (*Duptatta*, table cloth or bed sheets) from one point and tie with a thread at intervals and dye it.

Fig.11.5 : Binding

c) **Knotting** : Put knots on the fabrics wherever desired and dye it.

Fig.11.6: Knotting

d) **Folding :** Put the fabric flat on a table. Pleat and fold it uniformly in lengthwise direction. Tie it with a yarn at regular intervals, to get widthwise lines after dyeing. For horizontal lines, pleat and fold the fabric widthwise. Roll the fabric from one corner to the diagonally opposite corner and tie at regular intervals to get diagonal lines.

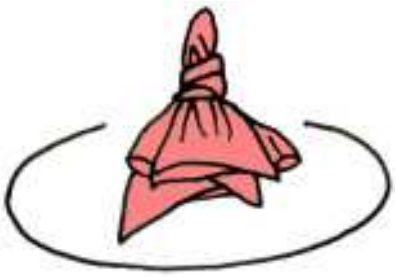


Fig.11.7 Folding

e) **Peg Tying**: You can also use cloth pegs or clamps as resist materials. Fold the fabric and put pegs at regular interval.

f) **Tritik** : Make a design of your choice on the fabric with running stitch, pull the thread tightly and tie it.

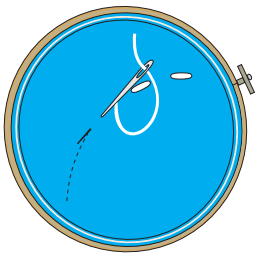


Fig.11.8 Tritik

Tied and Dyed Fabrics

Patola fabrics of Gujarat and **bandhani** of Rajasthan are two famous traditional textiles of India made by tie and dye technique. Both are usually dyed in two or more dyes by resist dyeing techniques. But there is a difference between the stages at which they are tied and dyed.

In Patola the yarn is tied and dyed according to the design before weaving and are then woven to form intricate multi-coloured designs.

On the other hand, woven fabric is tied and dyed to have innumerable dots and lines (*laheria* -wavy pattern) in Bandhni.

ACTIVITY 11.4

Dipti was happy as she was finally able to buy a saree with beautiful tie and dye design on it. She was happy also because her saree was much cheaper than her friend Nidhi's saree. She proudly exhibited her possession to everybody at home and she also bragged that it is so inexpensive. However her mother asked her to think about the possible reason for her saree being priced so low.

Discuss the following:

– What could be the reasons for Nidhi's saree being more expensive?

– How can you differentiate between a genuine and a fake piece of tie and dye?

– Could the place of production and/or sale outlet also influence the price of Dipti's saree?

(ii) Batik

Batik is also a method of resist dyeing. Here, wax is used as a resist material to prevent the dye from colouring certain areas. On selected areas of the fabric, a mixture of Bees' wax and paraffin wax is filled with a brush or a block, according to

Fig. 11.9

the design. These areas do not get coloured when dyed giving a patterned effect. The wax is later removed.

11.5.4 Printing

Let's us see and understand how printing of fabrics is carried out? Keep two fabrics side by side, one a red coloured fabric and the other a fabric having red print. Observe the difference between the two carefully. Though both the fabrics have red colour, but the dyed fabric is red all over while in the printed one, only certain areas are of red colour. This clearly shows the difference between dyeing and printing. You already know that dyeing is the process of colouring the fabric. Printing is also a process of colouring the fabric but here colour is applied only in selected areas, to create designs which decorate the fabric surface.

The major difference between dyeing and printing is that dyeing is carried out in fibre, yarn or at fabric stage but printing is done only on the fabric surface. This is also known as selective dyeing.

Popular methods or techniques of printing are –

- Block printing
- Screen printing
- Roller printing
- Stencil printing

Block printing and batik are two traditional printing methods. Here, we will learn the details of only one type of printing i.e. Block Printing.

Sanganer in Rajasthan (near Jaipur) is famous for Block Printing.

Shantinektan in West Bengal is known for Batik.

Block Printing

Have you ever gone to a post office and observed letters or parcels being stamped. The stamp is first pressed into an ink pad and then onto the letter or parcel. Block printing is similar to this. Here a wooden block, which has a design engraved on it, is pressed into a thick dye paste and then stamped onto the fabric. Do not worry if you do not have a wooden block.

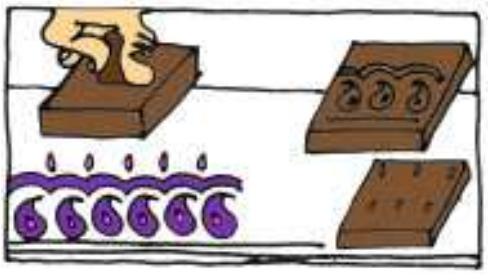


Fig. 11.10

You can follow the same procedure for printing at home using easily available objects in place of a blocks. Take any vegetable like ladies' finger or onion or gourd (*torai*),

cut and use it as a block. Even bowl, glasses leaves and flowers can also be used for printing.

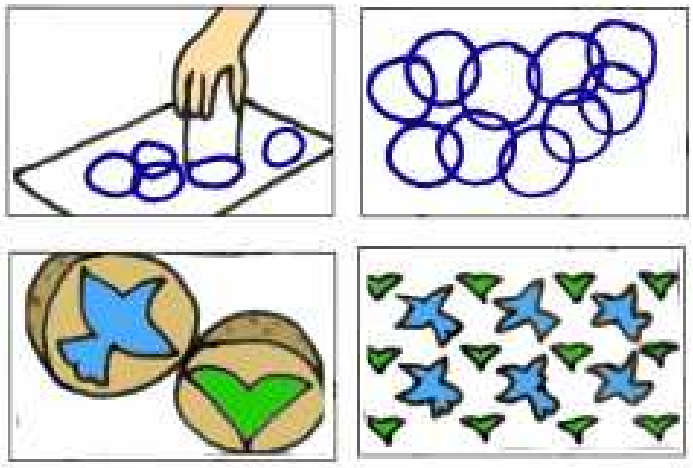


Fig. 11.11

ACTIVITY 11.4

To make a block printed article at home, take a few pieces of ladies' finger, onion and a few leaves to be used as blocks. Spread a 10″ x 10″ fabric on a flat and padded surface. Pour fabric paints in a small flat container. Dip your home made blocks in paint and press them on the fabrics. You can make different designs with the same block by changing its placement.

INTEXT QUESTIONS 11.3

1. Fill in the blanks :

   (i) Vegetables and animal dyes are known as _____.(natural/ artificial)

   (ii) Tyrian purple dye is obtained from _____ source. (natural/animal)

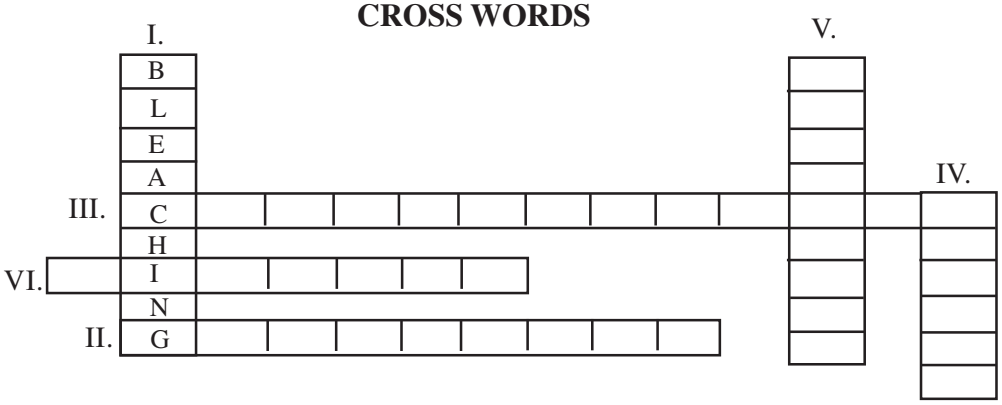
   (iii) Fibre dyeing is more popular in _____ fibres. (man-made/synthetic)

   (iv) Tie and dye is _____ dyeing. (resist/discharge)

   (v) At home fabric can be decorated easily by _____ printing. (bolck/ roller)

2. Look at the grid given below, followed by statements. The answer to each statement is in a single word. Fill the word in the grid at its respective number. The first one is done for you.

CROSS WORDS



I. It is a chemical treatment given to a fibre, yarn or fabric to remove yellowing.
II. The term used for fabrics that come directly from loom.
III. Also known as wet finishes.
IV. It makes fabric heavier, stiff and crisp.
V. It makes cotton fabrics easy to maintain.
VI. It is one of the tie and dye technique.

WHAT HAVE YOU LEARNT

For your convenience, here are the main points of the lesson:-

Textile Finishes ⟶

-Meaning
-Importance in relation to textiles
-Classification of finishes on the basis of their-
- Basic functions
- Degree of performance
- Nature (wet and dry)

Basic finishes:-

i) Scouring
ii) Bleaching
iii) Starching
iv) Calendering

Special finishes:-

i) Pre-shrinking
ii) Mercerization
iii) Parchmentisation
iv) Wash 'n' wear
v) Dyeing and printing
- Natural and synthetic dyes
- Stages of dye application
- Decorative dyeing
- Printing

TERMINAL EXERCISE

1. What is a textile finish? Why is it necessary to apply on fabric?
2. How does a gray fabric differ from a finished fabric?
3. Describe any two basic finishes and their application.
4. The sewing thread Ritu brought had the label mercerized? Give the advantages of 'mercerization' and explain the process of mercerization to Ritu.
5. "Dyeing is finishing with colour". Explain.
6. Differentiate between natural and synthetic dyes.
7. You have just brought a shirt that has a label "Piece dyed". What do you understand from it? What are the other methods of dyeing textiles?
8. Describe batik and block printing.

ANSWERS TO INTEXT QUESTIONS

11.1 i) Finishes ii) Gray iii) Dyeing and printing
iv) Wet finish v) Functional

11.2

1. i) True, scouring is washing fabric with soap and chemicals to remove all impurities
   ii) False, Bleaching has to be done very carefully. It destroys the colour. Strong bleach can damage the fabric to some extent.
   iii) True, soaking the fabric overnight and drying it causes shinkage.
   iv) True, this is due to a permanent finish called Parchmentisation.
   v) True, mercerization makes cotton smooth, shiny and strong.
2. i) Durable ii) Sanforised iii) Special iv) Colourfast

11.3

1. i) Natural dyes ii) Animal iii) Man-made
   iv) Resist v) Block.
2. i) Bleaching ii) Gray goods iii) Chemical finish
   iv) Starch v) Wash 'N' Wear vi) Binding