

NIOS lesson adaptation project

By EMBRACE Volunteers

(A community initiative of Harchan Foundation Trust)

Chapter 11

Fabric Finishes

(Printable Version)

- **Simplified Lesson**
- **Previous Year Questions With Answers**
- **Terminal Questions**

This project is aimed at supporting children with different needs. Information provided is adapted to the best of knowledge by the volunteers. For complete information please refer to the NIOS resources in <https://www.nios.ac.in/online-course-material/secondary-courses.aspx>.

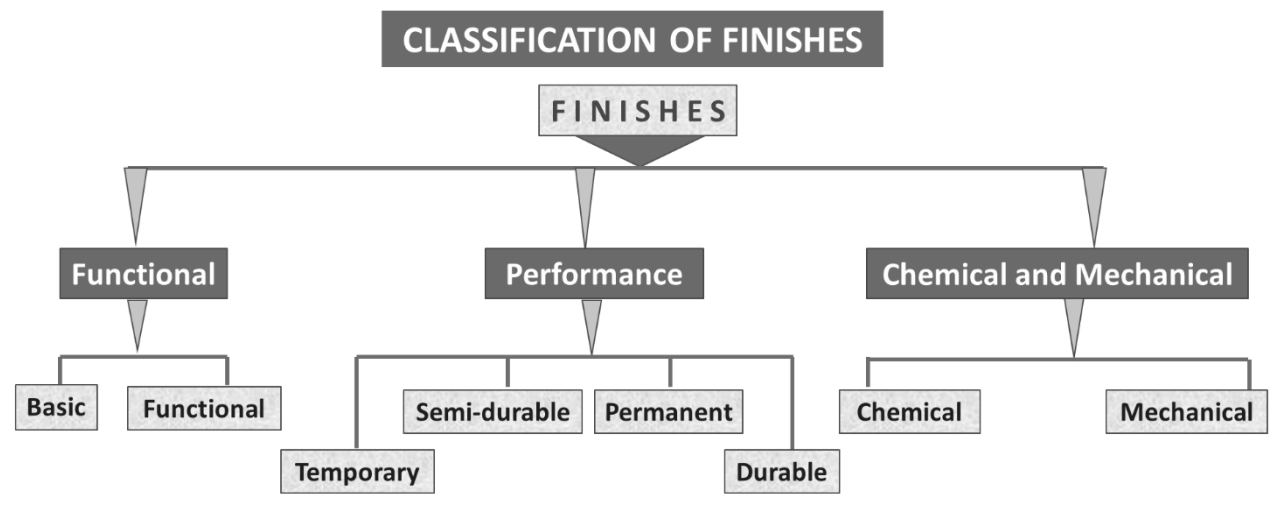
LESSON 11

Fabric Finishes

CONTENTS

MAJOR DIFFERENCES BETWEEN UNFINISHED AND FINISHED FABRIC

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



FUNCTIONAL FINISHES – A COMPARISON

BASIC	FUNCTIONAL
<ul style="list-style-type: none"> ➤ Applied to almost all finishes to improve their appearance, feel and body; ➤ Bleaching is done to improve the whiteness; ➤ Starch is applied to increase its weight and shine; ➤ Steam ironing, Calendaring (industrial ironing) is a basic finish; ➤ Dyeing and printing is also done to enhance the aesthetic appearance of the fabrics 	<ul style="list-style-type: none"> ❖ Special finishes to improve the performance of the fabric – E.g., fireproof finish prevents burning of fabrics used by fire brigade; - waterproof finish makes fabric water repellent for umbrellas and raincoats; - Bulletproof finish saves people from bullets – used by defence and police; - Crease-resistant finish makes cotton/wool fabric wrinkle-resistant.

PERFORMANCE FINISHES

Temporary finishes which are not durable and run off after first washing. E.g., Starching, bluing.

Semi-durable finishes stay on the fabric for several washings. E.g. bleaching.

Durable finishes last throughout the life of the fabric or garment. E.g. permanent pleats.

Permanent finishes are usually given by a chemical treatment. It changes the structure of the fabric permanently. E.g. water-proofing.

CHEMICAL/WET FINISH: It is given on fabrics, either to change its appearance or basic properties. They are usually durable and permanent. E.g. fire proof, crease resistance, etc.

MECHANICAL/DRY FINISH: The process consists of application of moisture, pressure and heat or a mechanical device. These finishes are temporary or semi-durable. Beating, brushing, calendaring, filling are some of the finishes.

TYPES OF BASIC FINISHES:

Scouring/cleaning: 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.

Bleaching: is a chemical treatment given to fibers, yarns or fabric to remove paleness or colour and make them white.

Starching: makes the fabric heavier, stiff, and crisp. It also adds shine and smoothness to the fabric.

Calendaring: or industrial ironing is a process whereby the fabric is passed through a series of smooth hot rollers to remove wrinkles and to make it smooth.

SPECIAL FINISHES:

Pre-shrinking/Sanforisation:

- Almost all fabrics or garments made of natural fibre reduce in size (length and width) after it is washed or dipped in water.
- The pre-shrinking of good quality cottons, linens and wools is called **sanforisation**.
- It is done to prevent further shrinkage after washing.
-

Mercerization:

- The fabric is treated with sodium hydroxide to make it strong, lustrous and absorbent.
- It also improves the dye uptake of fabrics.
- Cotton is basically a dull fibre which wrinkles easily and is difficult to dye.
- So, now-a-days Mercerization has become a routine finish for all cottons.
- Sewing threads which are used for stitching are also mercerized.

Parchmentization:

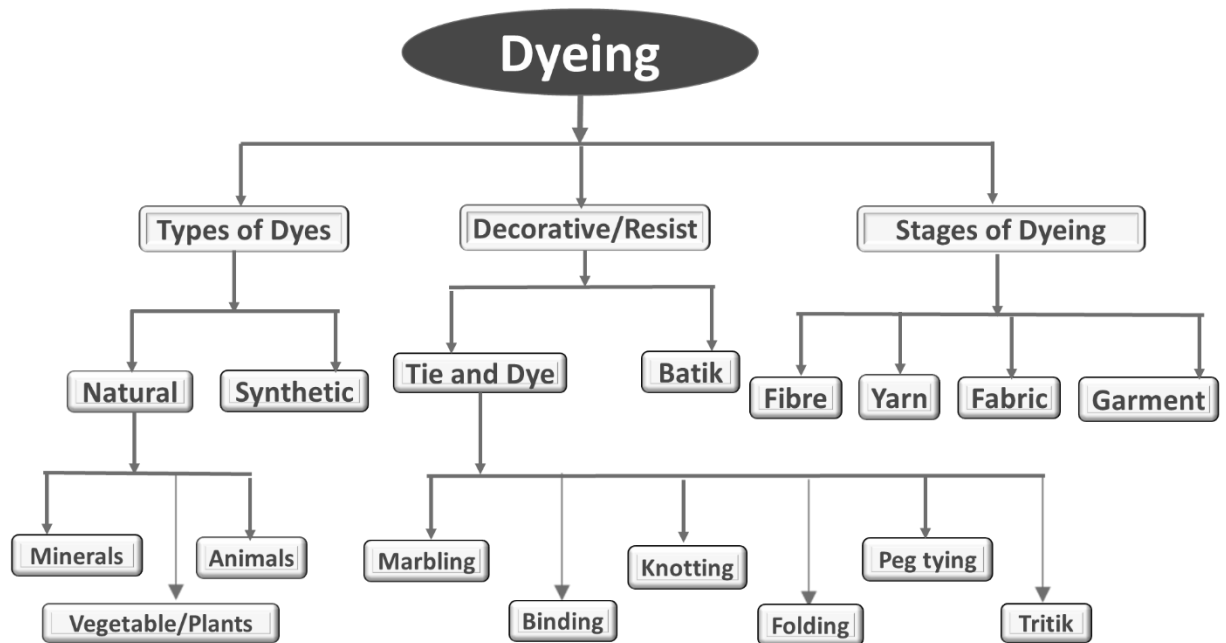
- Organdie is different from other cotton fabrics.
- It is a thin, transparent, light weight and stiff fabric and seems to be heavily starched, even after washing.
- It is because of application of a finish called parchmentization.
- The cotton fabric is treated with a mild acid that partially eats away the fabric.
- The resulting transparent and stiff fabric is called organdy.

Wash 'n' Wear:

- ❖ All cotton fabrics get crushed very easily.
- ❖ Wash 'n' wear finish, when applied on cotton fabrics completely changes its nature.
- ❖ If dried and stored properly, wash 'n' wear fabrics can be worn without ironing or with a little ironing.
- ❖ Besides cotton, wash 'n' wear finish is also given to linen and wool.

Dyeing and Printing:

- To 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, etc.
- Different types of dyes are used for textiles finishing.



NATURAL DYES:

- These eco-friendly dyes are obtained from natural sources, i.e., from
- Vegetables/plants: E.g., turmeric, henna (mehndi), indigo (neel), etc.,
- Animals: E.g., Tyrian purple, lac, etc.,
- Minerals: E.g., khaki
- The residue of these dyes can be safely used as fertilizer in the fields.

SYNTHETIC DYES:

- These are prepared by using different chemicals.
- These dyes, like azo cause a lot of pollution and skin allergies, etc.,
- Synthetic dyes are very easy to use and have better fastness than natural dyes.
- They also give a brighter and larger colour range.

Stages at which textiles can be dyed:

- (i) **Fibre stage:** Most popular method for dyeing man-made fibres. It gives uniform dyeing and it is colourfast.

- (ii) **Yarn stage:** on fibres after spinning into yarns. Knitting yarns and all types of threads – sewing, embroidery, etc., are dyed at this stage.
- (iii) **Fabric stage:** Most of the dyeing in the textile industry is done at this stage. It gives uniform colouring. This method is suitable for dyeing blended fabrics.
- (iv) **Garment/piece dyeing:** i.e., after the garments have been stitched. Since a garment is dyed, there is no wastage. However, the colour may not be uniform around seams, pleats, etc.

Decorative/Resist 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.

The two most popular techniques of **decorative or resist dyeing** are:

- (i) Tie and Dye
- (ii) Batik

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.

Patola fabrics of Gujarat and **bandhani** of Rajasthan are two famous traditional textiles of India made by tie and dye technique.

Batik:

A mixture of Bees wax and paraffin wax is used as resist material on the fabric to prevent the dye from coloring certain areas according to the design. The wax is later removed.

There are many ways of creating designs using this technique:

- a) Marbling:** Take the fabric and crumple 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.

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

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

- 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 while dyeing.

For horizontal lines, pleat and fold widthwise.

e) Peg tying: You can use cloth pegs or clamps as resist materials.

Fold the fabric and put the pegs at regular intervals.

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

Printing:

This is a process of colouring the fabric .The colour is applied only in the selected areas to create designs which decorate the fabric Surface.

- Dyeing is done in fibre,yarn or at fabric stage
- Printing is done only on the fabric surface.
- This is also called as selective dyeing.

Popular methods or techniques of printing are:

- Block printing.-Wooden blocks are used which has a design engraved on it, which is pressed into a thick dye paste and then stamped on to the fabric.
- Screen printing.
- Roller printing.
- Stencil printing.

PREVIOUS YEARS QUESTIONS

	<u>1 Mark questions:</u>		
1.	What is the source of Tyrian purple dye?		1
	(A) Animal (B) Plant	(C) Metal (D) Minerals Answer (A)	
2.	Muslin is a fabric which is:		1
	(A) Light weight and loosely woven (B) Transparent and crisp	(C) Heavy weight and thick (D) Medium weight and plain Answer (B)	
	<u>2 Marks questions:</u>		
1.	What do you understand by Tie and Dye? How is it done?		2
	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.		
2.	Give two points of difference between stiffening and calendaring fabric finishes.		2
	<u>Starching/Stiffening</u> : makes the fabric heavier, stiff, and crisp. It adds shine and smoothness to the fabric. <u>Calendaring</u> 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 lustrous, and improves its appearance.		
3.	Name any four job opportunities are available after studying Dress and Textile designing.		2
	The four job opportunities are: i) Batik works ii) Printing iii) Tie and Dye iv) Mercerized cotton industry		
4.	'Grey goods/Unfinished textiles' are much cheaper than finished fabric, yet customers do not prefer to buy them. Why? Explain giving four reasons.		2
	i) Grey fabrics are dull looking. ii) They are wrinkled. iii) They are less expensive. iv) They lack customer appeal.	i) Finished fabrics are lustrous. ii) They are wrinkle-free iii) Cost of fabric depends upon the type of fibre and finishes applied. iv) Customers get attracted and buy	

5.	What is the difference between temporary finish and permanent finish? Give one example for each.	2
	<p><u>Temporary finishes</u> are those which are not durable and run off after first washing. E.g., Starching, blueing.</p> <p><u>Permanent finishes</u> are usually given by a chemical treatment. It changes the structure of the fabric permanently. E.g., water-proofing</p>	
6.	List any four performance finishes.	2
	<ul style="list-style-type: none"> i) They improve the appearance of fabric. ii) They produce variety through dyeing and printing iii) They improve the feel or touch of fabric iv) They make the fabric more useful. 	
7.	What is resist dyeing? Name two colour finishes that are applied on fabrics based on the principle of resist dyeing.	
	<p>When the process of dyeing is carried out in a selective way to get different designs, it is called <u>decorative</u> or <u>resist</u> dyeing.</p> <p>The two colour finishes that are applied on fabrics based on the principle of resist dyeing are: - (i) Tie and Dye (ii) Batik</p>	
8.	Mention any four environment-friendly dyes which can be used for dyeing fabrics	2
	<ul style="list-style-type: none"> i) Turmeric ii) Indigo iii) Tyrian Purple iv) Khaki 	
9.	Enumerate any four characteristic features of grey fabrics	2
	<ul style="list-style-type: none"> i) Grey fabrics are dull looking. ii) They are wrinkled. iii) They are less expensive. iv) They lack customer appeal. 	
10.	Define: (a) Calendaring (b) Sanforisation	2
	<p><u>Calendaring</u> 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 lustrous, and improves its appearance.</p> <p><u>Sanforization</u> is the process pre-shrinking of good quality cottons, linens and wools. It is done to prevent further shrinkage after washing.</p>	
11.	Identify the four stages at which textiles can be dyed.	2
	<p>The four stages at which textiles can be dyed are:</p> <ul style="list-style-type: none"> (i) Fibre stage (ii) Yarn stage (iii) Fabric stage (iv) Garment dyeing 	

12.	List four basic finishes applied to fabrics	2
	i) Temporary finishes ii) Semi-durable finishes iii) Durable finishes iv) Permanent finishes	
13.	Mahima is a fashion designer. She wants a fabric which is shrink proof, stiff, lustrous and wrinkle-free. Suggest four finishes which can give these qualities to one fabric.	2
	i) Mercerized Cotton ii) Organdy iii) Pre-shrunk iv) Wash'n'Wear	
14.	Mention the purpose of giving chemical finishes and mechanical finishes.	2
	<p><u>Chemical finish</u> is given on fabrics, either to change its appearance or basic properties. They are usually durable and permanent.</p> <p><u>Mechanical finish</u> process consists of application of moisture, pressure and heat or a mechanical device to finish a fabric. These finishes are temporary or semi-durable.</p>	
15.	What do you understand by Gray fabrics? Mention two more features of such fabrics.	2
	<p>When no finish is applied on the textiles, they are termed as <u>gray fabrics</u> or unfinished textiles.</p> <p>These fabrics have a dull appearance.</p> <p>They are purchased only for rough work.</p>	
16.	How is tie and dye done? What is this technique called in Rajasthan?	2
	<p>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.</p> <p>This technique is called bandhani in Rajasthan.</p>	
<u>3 Marks Questions:</u>		
1.	Your friend who is short and thin, needs to make a special dress for wedding and needs your help. What are the three points you would suggest to her to keep in mind regarding its design and colour?	3
	1) The dress should have small prints. 2) The dress should be of single colour or few colours. 3) The dress should have less of sequencing work.	
2.	What is mercerizing? Mention the two advantages of mercerizing cotton fabrics	3
	Cotton is basically a dull fibre which wrinkles easily and is difficult to dye.	

	<p> Mercerizing is a process where the fabric is treated with sodium hydroxide to make it strong, lustrous and absorbent. It improves the dye uptake of fabrics.</p>	
3.	State three effects of mercerization finish in cotton fabrics	3
	<p>Cotton is basically a dull fibre which wrinkles easily and is difficult to dye.</p> <p> Mercerizing is a process where the fabric is treated with sodium hydroxide to make it strong, lustrous and absorbent. It improves the dye uptake of fabrics.</p>	
4.	You have to design a special dress for your friend, who is tall and thin. What are the three points you will keep in mind and what three points you will avoid?	3
	<p>The three points to be kept in mind are:</p> <ol style="list-style-type: none"> 1) Fabrics with horizontal design; 2) Dark coloured fabrics; 3) Fabrics which are thicker. <p>The three points to be avoided are:</p> <ol style="list-style-type: none"> 1) Fabrics with vertical stripes; 2) Light coloured fabrics; and 3) Fabrics which are thin. 	
5.	How the technique of batik is used colour fabric?	3
	<p>Batik is a method of resist dyeing. A mixture of Bees wax and paraffin wax is used as resist material on the fabric to prevent the dye from colouring certain areas according to the design. The wax is later removed.</p>	
6.	What are functional finishes? Which special finish should be applied to make a security guard's uniform maintenance free? Why?	3
	<p>Functional or special finishes are applied to improve the performance of a fabric for some specific purpose.</p> <p>The fabric used for the security guard's uniform should be wrinkle-resistant. So, a crease-resistant finish is given on the fabric.</p>	
7.	Your brother wants to open a Dyeing and printing unit. Explain the three varied ways he can decorate his fabrics along with the principles of each method.	3
	<ol style="list-style-type: none"> 1) 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. 2) Binding: Pick up the fabric (table cloth or bed sheets) from one point and tie with a thread at intervals and dye it. 3) Knotting: Put knots on the fabrics wherever desired and dye it. 	

8.	Compare basic finishes with special finishes. Give two examples of each.		3
	<p style="text-align: center;">BASIC</p> <ul style="list-style-type: none"> It is applied to almost all finishes to improve their appearance, feel and body; Bleaching is done to improve the whiteness; Starch is applied to increase its weight and shine; <p>Steam ironing, Calendaring (industrial ironing) is a basic finish; Dyeing and printing is also done to enhance the aesthetic appearance of the fabrics</p>	<p style="text-align: center;">FUNCTIONAL</p> <p>Special finishes to improve the performance of the fabric. E.g.,</p> <ul style="list-style-type: none"> - Fireproof finish prevents burning of fabrics used by fire brigade; - Waterproof finish makes fabric water repellent for umbrellas and raincoats; - Bulletproof finish saves people from bullets – used by defence and police; - Crease-resistant finish makes cotton/wool fabric wrinkle-resistant 	
4 Marks questions:			
1.	Describe the process of mercerization and parchmentization. Why are they done?		4
	<p>Cotton is basically a dull fibre which wrinkles easily and is difficult to dye. Mercerizing is a process where the fabric is treated with sodium hydroxide to make it strong, lustrous and absorbent. It improves the dye uptake of fabrics.</p> <p>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.</p>		
2.	Describe any four techniques of tie and dye.		4
	<p>a) Binding: Pick up the fabric (Dupatta, table cloth or bed sheets) from one point and tie with a thread at intervals and dye it.</p> <p>b) Knotting: Put knots on the fabrics wherever desired and dye it.</p> <p>c) Peg tying: You can use cloth pegs or clamps as resist materials. Fold the fabric and put the pegs at regular intervals.</p> <p>d) Tritik: Make design of your choice on the fabric with running stitch, pull the thread tightly and tie it.</p>		
3.	Explain the mercerization process, giving its advantages		4
	<p>Cotton is basically a dull fibre which wrinkles easily and is difficult to dye. Mercerizing is a process where the fabric is treated with sodium hydroxide to make it strong, lustrous and absorbent. It improves the dye uptake of fabrics.</p>		

TERMINAL QUESTIONS

1. What is a textile finish? Why is it necessary to apply on fabric?

ANS: Textile 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. It 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.

It is necessary to apply on fabric because: -

- It makes the fabric lustrous, attractive, available in different tints and shades of colours, prints, etc.
- It makes the fabric smooth and wrinkle-free, no defects on the surface, even width, free from stains, etc.
- Customers get attracted and buy.

2. How does a gray fabric differ from a finished fabric?

ANS:

Unfinished / Gray fabric	Finished fabric
Dull looking, available only in natural colours- off white, brown, black, etc.	Lustrous, 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, packaging, etc.,	Customers get attracted and buy.

3. Describe any two basic finishes and their application.

ANS: Scouring/cleaning: 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.

Bleaching: is a chemical treatment given to fibres, yarns or fabric to remove paleness or colour and make them white.

4. The sewing thread Ritu brought had the label mercerized? Give the advantages of 'mercerization' and explain the process of mercerization to Ritu.

ANS: Mercerization: The fabric is treated with sodium hydroxide to make it strong, lustrous and absorbent.

Advantages of Mercerization:

- It improves the dye uptake of fabrics.
- Cotton is basically a dull fibre which wrinkles easily and is difficult to dye.
So, now-a-days Mercerization has become a routine finish for all cottons.

5. “Dyeing is finishing with colour”. Explain.

ANS: Dyeing is done to improve appearance of fabric and add diversity to our dresses through colours and designs.

Different types of dyes are used for textiles finishing to distinguish one fabric from another by its colour, print, etc.

6. Differentiate between natural and synthetic dyes.

ANS: NATURAL DYES:

- These eco-friendly dyes are obtained from natural sources, i.e., from
- Vegetables/plants: E.g., turmeric, henna (mehndi), indigo (neel), etc.,
- Animals: E.g., Tyrian purple, lac, etc.,
- Minerals: E.g., khaki
- The residue of these dyes can be safely used as fertilizer in the fields.

SYNTHETIC DYES:

- These are prepared by using different chemicals.
- These dyes, like azo cause a lot of pollution and skin allergies, etc.,
- Synthetic dyes are very easy to use and have better fastness than natural dyes.
- They also give a brighter and larger colour range.

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?

ANS: Garment/piece dyeing: is done after the garments have been stitched. Since a garment is dyed, there is no wastage.

The process of dyeing is carried out on textiles at different stages, i.e., (i) Fibre stage; (ii) Yarn stage; & (iii) Fabric Stage.

8. Describe batik and block printing.

ANS:

Batik: A mixture of Bees wax and paraffin wax is used as resist material on the fabric to prevent the dye from colouring certain areas according to the design. The wax is later removed.

Block printing: A wooden block, which has a design engraved on it, is pressed into a thick dye paste and then stamped onto the fabric.