

# **BASIC TEXTILE OPERATION**

**NTQF Level - I**

## **Learning Guide -70**

**Unit of Competence: carry out dyeing of textile material**

**Module Title: Carrying-out Dyeing of Textile Materials**

**LG Code: IND BTO1 M18 LO4-LG-70**

**TTLM Code: IND BTO1 TTLM 0919v1**

**Lo 4: Check Dye Outcomes**



<b>Instruction Sheet</b>	<b>Learning Guide # 70</b>
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This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Checking the quality of dyed yarn or fabric
- Assessing dyed yarn or fabric faults and non-conformances
- Rectifying or reporting yarn or fabric dyeing faults

This guide will also assist you to attain the learning outcome stated in the cover page.

Specifically, upon completion of this Learning Guide, you will be able to:

- Check dyed yarn or fabric quality against specification
- Assess dyed yarn or fabric faults
- Rectify or report dyed yarn or fabric faults



### **Learning Instructions:**

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below
3. Read the information written in the “Information Sheets”. Try to understand what are being discussed. Ask your teacher for assistance if you have hard time understanding them.
4. Accomplish the “Self-checks” in each information sheets.
5. Ask from your teacher the key to correction (key answers) or you can request your teacher to correct your work. (You may get the key answer only after you finished answering the Self-checks).
6. If you earned a satisfactory evaluation proceed to “Operation sheets and LAP Tests if any”. However, if your rating is unsatisfactory, see your teacher for further instructions or go back to Learning Activity.
7. After you accomplish Operation sheets and LAP Tests, ensure you have a formative assessment and get a satisfactory result;
8. Then proceed to the next information she



<b>Information Sheet-1</b>	<b>Checking the Quality of Dyed Yarn or Fabric</b>
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### 1.1. Quality definition

Conforming to specification is quality. Quality can also mean, meeting or exceeding customer's expectation all the time. The customer expectation can be of different types. Then expectation of quality and the ability to distinguish various quality characteristics also vary of customer. E.g. more educated customer's requirements are very specific and less educated customer's requirements for quality are less.

### 1.2. Quality control

Quality control is concerned with the evaluation of test data and its application to control of textile process, raw material, intermediate products and final products. It is concerned not only with the quality level and cost of maintaining this quality level but also concerned with presentation of tangible values to measure quality and changes in quality. In order to control quality one must know about the consumers expectation.



Fig: 1.1. Quality specification guidelines

#### 1.2.1. Objectives of quality control

- Selection of raw material.
- Specification test.
- Product testing.
- To insure the product desired quality.
- To fulfil requirements for quality.
- Process control and development.
- To control and different techniques will be required by different conditions.
- Quality assurance and so no.
- To evaluate accurately of the end product.



- To research and development
- Quality assurance and so no.

### 1.3. Quality management system

Quality assurance procedure may be provided by the following two major parts:

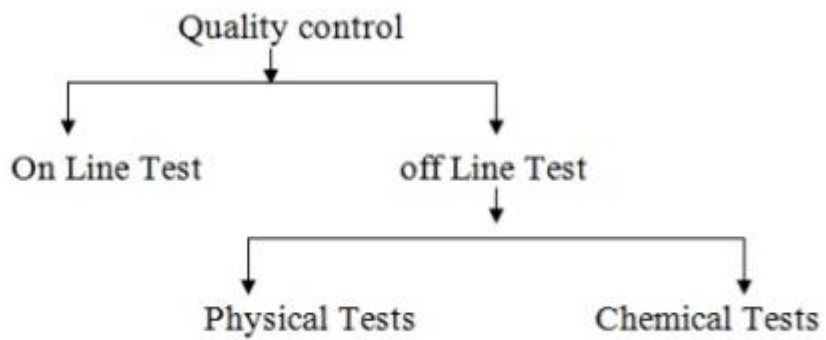


Fig: 1.2. Quality management system

### 1.4. Chemical tests

2. Shrinkage and spirality or twisting
3. Fastness to washing
4. Fastness to perspiration
5. Fastness to chlorine
6. PH test



<b>Self-Check -1</b>	<b>Written Test</b>
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**Directions:** Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What does quality mean?( **2marks**)
2. What is the concentration of quality control?( **2 marks**)
3. What are the objectives of quality control?( **3marks**)



**Note: Satisfactory rating – 4 and above**

**Unsatisfactory - below 4 points**

**Answer Sheet**

Score = _____
Rating: _____

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Short Answer Questions**

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<b>Information Sheet-2</b>	<b>Assessing Dyed Yarn Or Fabric Faults And Non-Conformances</b>
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## 2.1. Dyed fabric Faults

Major dyeing faults which occur during dyeing process are mentioned below:

- Uneven Dyeing
- Batch to Batch Shade variation
- Patchy dyeing effect
- Roll to roll variation or Meter to Meter variation
- Crease mark
- Dye spot
- Wrinkle mark
- Softener Mark

### 2.1.1. Uneven Dyeing:

#### Causes:

- Uneven pretreatment (uneven scouring & bleaching).
- Improper color dosing.
- Using dyes of high fixation property.
- Uneven heat-setting in case of **synthetic fibers**.
- Lack of control on **dyeing m/c**

#### Remedies:

- By ensuring even pretreatment.
- By ensuring even heat-setting in case of synthetic fibers.
- Proper dosing of dyes and chemicals.
- Proper controlling of dyeing m/c

### 2.1.2. Batch to Batch Shade Variation:

#### Causes:

- Fluctuation of Temperature.
- Improper dosing time of dyes & chemicals.
- Batch to batch weight variation of dyes and chemicals.
- Dyes lot variation.
- Improper reel speed, pump speed, liquor ratio.
- Improper pretreatment.





## Remedies:

- Use standard dyes and chemicals.
- Maintain the same liquor ratio.
- Follow the standard pretreatment procedure.
- Maintain the same dyeing cycle.
- Identical dyeing procedure should be followed for the same depth of the Shade.
- Make sure that the operators add the right bulk chemicals at the same time and temperature in the process.
- The pH, hardness and sodium carbonate content of supply water should check daily.

### 2.1.3. Patchy Dyeing Effect:

#### Causes:

- Entanglement of fabric.
- Faulty injection of alkali.
- Improper addition of color.
- Due to hardness of water.
- Due to improper salt addition.
- Dye migration during intermediate dyeing.
- Uneven heat in the machine, etc.

#### Remedies:

- By ensuring proper pretreatment.
- Proper dosing of dyes and chemicals.
- Heat should be same throughout the dye liquor.
- Proper salt addition.

### 2.1.3. Roll to Roll Variation or Meter to Meter Variation

#### Causes:

- Poor migration property of dyes.
- Improper dyes solubility.
- Hardness of water.
- Faulty m/c speed, etc

#### Remedies:

- Use standard dyes and chemicals.
- Proper m/c speed.



- Use of soft water.

#### **2.1.4. Crease Mark**

##### **Causes:**

- Poor opening of the fabric rope
- Shock cooling of synthetic material
- If pump pressure & reel speed is not equal
- Due to high speed m/c running

##### **Remedies:**

- Maintaining proper reel speed & pump speed.
- Lower rate rising and cooling the temperature
- Reducing the m/c load
- Higher liquor ratio

#### **2.1.5. Dye Spot**

##### **Causes:**

- Improper Dissolving of dye particle in bath.
- Improper Dissolving of caustic soda particle in bath.

##### **Remedies:**

- By proper dissolving of dyes & chemicals
- By passing the dissolved dyestuff through a fine stainless steel mesh strainer, so that the large un-dissolved particles are removed.

#### **2.1.6. Wrinkle Mark**

##### **Causes:**

- Poor opening of the fabric rope
- Shock cooling of synthetic material
- High temperature entanglement of the fabric

##### **Remedies**

- Maintaining proper reel speed & pump speed.
- Lower rate rising and cooling the temperature
- Higher liquor ratio

#### **2.1.7. Softener Mark**

##### **Causes**

- Improper mixing of the Softener.



- Improper running time of the fabric during application of softener.
- Entanglement of the fabric during application of softener

### Remedies:

- Maintaining proper reel speed & pump speed.
- Proper Mixing of the softener before addition.
- Prevent the entanglement of the fabric during application of softener

## 2.2. Nonconformance

Nonconformity is the nonfulfillment of a specified requirement. Nonconforming Product is a product that does not fulfill its specified requirements. Nonconformance can occur in both product and process. If the Specification of the material or product inspection is 6 +/- 1 inch but the Inspection result reads 8 inch, this is a nonconforming product. Manufacturing Temperature range should be 300 ± 10° F. But Temperature set on bonding machine reads 280° F, This is a nonconforming process. Nonconforming processes can lead to nonconforming product.

### Process Flow non-conforming

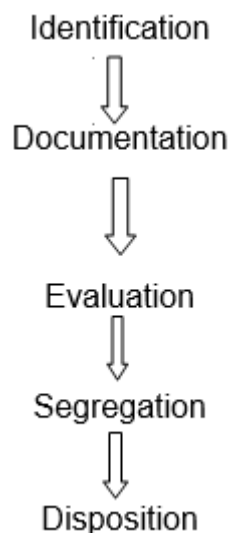


Fig: 2.1. Nonconformance process flow



<b>Self-Check -2</b>	<b>Written Test</b>
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**Directions:** Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. List at list five defect of dyed fabric?(**2.5 marks**)
2. What is the cause and remedies of softener mark?(**3 marks**)
3. What is the cause of dye spot?(**2marks**)



**Note: Satisfactory rating - 3 points**

**Unsatisfactory - below 3 points**

**Answer Sheet**

Score = _____
Rating: _____

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Short Answer Questions**

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<b>Information Sheet-3</b>	<b>Rectifying Or Reporting Yarn Or Fabric Dyeing Faults</b>
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### 3.1. Fault records

Record means that compile a data or datum of something; either production, quality, raw material, absenteeism, faults or other. And it can be recorded indifferent ways. Let see the following hourly fault record interims of table.

- record the quality of product
- record the amount products
- record specification of product against to standards
- record the limitation of products
- record the strength and weakness of products
- confirm the products against to all quality parameters

Table: 3.1: daily fault record and report format

Faults	Working hours								Total product
	1 <sup>ST</sup> Hr	2 <sup>nd</sup> Hr	3 <sup>rd</sup> Hr	4 <sup>th</sup> H Hr	5 <sup>th</sup> Hr	6 <sup>th</sup> Hr	7 <sup>th</sup> Hr	8 <sup>th</sup> Hr	
Shade variation									
Dye spot									
Wrinkle mark									
Softener mark									
Crease mark									



<b>Self-Check –3</b>	<b>Written Test</b>
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**Directions:** Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What is fault record means? **(2marks)**
2. Create a table which helps to record weekly production of seven printing machines?  
**(5marks)**



**Note: Satisfactory rating - 5 points**

**Unsatisfactory - below 5 points**

**Answer Sheet**

Score = _____
Rating: _____

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Short Answer Questions**

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## References

1. Dr.c.v.koushik & Mr. Antaolrwin josico,2003,***Chemical Processing Of Textiles Preparatory Process And Dyeing***, Delhi
2. Klaus Hunger,2003, ***Industrial Dyes***, VCH Verlag Gmbh
3. Peter J. Hauser, ***Textile Dyeing***