



Faculty of Engineering

Department of Textile Engineering

**A Report on fabric inspection, faults, causes and remedies of frequently occurring 100% polyester fabric.**

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Submitted by

Md. Abdullah Al Mamun ID: 161-23-4617

Md. Prince Munsif ID: 161-23-4618

Supervised by

Asit Ghosh

Assistant Professor

A thesis submitted in partial fulfillment of the requirements for the degree of  
**Bachelor of Science in Textile Engineering**

Advance in Fabric Manufacturing

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## **DECLARATION**

We herewith declare that, this report on Project (Thesis) has been done by us beneath the superintendence of Asit Ghosh, assistant professor, Department of Textile Engineering, faculty of Engineering, daffodil International University. We tend to additionally declare that, neither this report nor any a part of this report has been submitted elsewhere for award of any degree or certification.

**Md. Abdullah Al Mamun**

ID:161 -23-4617

Department of TE

Daffodil International University

**Md. Prince Munsu**

ID: 161-23-4618

Department of TE

Daffodil International University

## **LETTER OF APPROVAL**

This project (Thesis) report ready by Md. Abdullah Al Mamun (ID: 161-23-461) and Md. prince Munsu (ID: 161-23-4618), is approved in Partial Fulfillment of the need for the Degree of BACHELOR OF SCIENCE IN TEXTILE ENGINEERING. The aforesaid students have completed their project work beneath my supervising. Throughout the analysis amount I found them sincere, diligent and warm.

Asit Ghosh

ASSISTANT PROFESSOR

DEPARTMENT OF TEXTILE ENGINEERING

FACULTY OF ENGINEERING

DAFFODIL INTERNATIONAL UNIVERSITY

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## **DEDICATION**

*This Industrial attachment report is dedicated to my Teachers*

## **ABSTRACT**

The aim of industrial apply is to create us conversant in any weaving industry, the complete method happening the industry, its atmosphere and conjointly with the management system of the industry. As a student of Textile Engineering Department, the target of any student is to grasp the production method and also the management system. It's due to the actual fact that, to run any industry not solely production department is apparent however conjointly the capability of managing the complete system is an evident matter. It's conjointly a responsibility of an engineer to develop the continuing method into a more robust system to deal with the current competition. Therefore a distributed challenge emerges in front of the manufacturer and alternative organizations. With a read to overcome this consequence a replacement generation of engineering graduates with leadership skills and management capabilities altogether are in demand. We the students of Textile Engineering Department were sent to different industries and assigned to different tasks. We were assigned to **EAST WEST SUITING MILL**. (An Enterprise of **EAST WEST INDUSTRIAL PARK LTD**). This report is a presentation of our experience gathered in the weaving mill and also a detailed presentation of our works in that industry. We have tried our greatest to offer our complete effort on the woven fabric defects that are caused by the various producing method likes spinning, warping, dyeing, sizing, weaving, finishing etc.

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# **Chapter-1**

## **Introduction**

In textile industry, woven materials are units created by interlinking warp yarn. Faulty woven fabric damages the whole quality of woven garments like shirt, pant, suit, jacket etc. As a textile engineer you should understand the main woven fabric faults that are created throughout woven fabric producing. As its importance this project report has shown those woven fabric faults with their pictures.

### **1.1 Background:**

In the garments industry fabric inspection section is one of the most very important section. Fabric fault is a serious problem for production or produce garments. So fabric inspection section plays a very important role to produce best quality fabric. In another section quality is also checked but all type of fault is only checked in the fabric inspection section. Because inspection will start after weaving, dyeing and finishing. So here we can find yarn, weaving, dyeing and finishing faults. That's why we have selected this topic.

#### **1.1.1 What I have done in this:**

1. Check some fabric.
2. Prepare finish fabric inspection report.
3. Create an inspection report after weaving.
4. Compare between weaving and finish fabric inspection report
5. Statistical description of every report individually.
6. Statistical description of all reports.
7. Discusses about inspection method
8. Loss percentage after cutting

## **1.2 Objectives:**

1. The object of this project is to evaluate the contributions of fabric inspection section.
2. The object of this project is to know about different types of fabric inspection.
3. The object of this project is to know about different types of fabric faults and its remedies.
4. The object of this project is to know about different types of fabric rejection & its remedies.
5. The object of this project is to know the effect of fabric faults on production.

## **1.3 Importance:**

Fabric inspection sections are one of the most important and biggest sections in a garments industry. Fabric inspection can be defined as the visual examination of fabric, according to some standards, specification or requirement. It is a separate section of garment industries. Fabric inspection is widely used in garments industries. During fabric inspection in the inspection floor, there happens many fabric faults for which many fabrics are considered as rejected. There is no industry where rejected fabrics are not produced. Rejected fabrics increase the production cost for a given order. This paper will have to give a clear about rejected fabrics and their causes and remedies of a garments industry. This paper has been made for those people who require an introductory knowledge about fabrics faults, their causes & remedies and rejected fabrics and their percentage for a given order. This paper will be helpful for all textile students, especially for those who will work in fabric inspection section. Again, this paper will help those students who will research later with same topic. For many students whose main subject is Garments Technology, this paper will be more useful because it contains some important and practical information. It will be helpful for such readers in their day to day problems of production planning, quality control and development of garments industries.

#### 1.4 Limitations:

Though our research work was not influence by any desirable factor, there were some limitations for completing this research task. The research had been completed based on one industry. It would be better if we could perform our job in more than one industry. So, we could not be able to find out a clear result for our experiment. Again, we were given by only 14 days in the fabric inspection section for completing our research job which was not sufficient at all for competing it properly. During our experiment, we were not provided some important data and information exactly for industry's internal policy which were required for our research accuracy. In our research tenure, we could not get enough aid from industry's people for completing our task efficiently. In some cases, we needed some technical information but we did not get it due to lack of technical person in the industry.

#### 1.5 Woven fabric production problems in Bangladesh

**Table: 1.1** Woven fabric production problems in Bangladesh

| General problems                          | Current problems             | Psychological problems         | Others problems          |
|---|------------------------------|--------------------------------|--------------------------|
| Investment Capacity                       | Power Consumption            | Lack of Confidence             | Horizontally Integration |
| Improper Utilization of technical persons | Power consumption            | Confidence                     | Fabric Development       |
| Difficult process                         | Space requirement            | High profit achieving Tendency | Condition of Machine     |
| Policy of environment                     | Condition of Buyer           | Don't want to risk             | Factory Evaluation       |
|   | Woven dyeing facility is low |                                | Modern design of Machine |

## **Chapter-2**

### **Literature Review**

#### **2.1 Weaving**

Weaving is that the intersection of 2 sets of straight yarns, warp and weft, that cross and interlace at right angles to every alternative. The lengthwise yarns are referred to as warp yarns and width wise yarns are referred to as weft or filling yarns and also the fabric made is understood as woven fabric. The machine used for weaving fabric may be a loom. It's a complex work. Variety of faults occurs in fabric throughout weaving method. Weaving is the most popular way of fabric manufacturing. It is primarily done by interlacing two orthogonal sets (warp and weft) of yarns in a regular and recurring pattern. Actual weaving process is preceded by yarn preparation processes namely winding, warping, sizing, drawing and denting and looming.

#### **2.2 Fabric Defects**

##### **2.2.1 Definition**

Fabric defect is nothing but an undesirable fault in the fabric which deteriorates the quality of fabric and makes it inferior.

##### **2.2.2 Woven fabric defects**

Fabric defects are any abnormality in the fabric that hinders its acceptability by the consumer. Due to the increasing demand for quality fabrics, high quality requirements are today greater since customer has become more aware of poor quality problems. To avoid rejection of fabric, it is necessary to avoid defects. Price of fabric is reduced by 25%-45% due to the presence of defects.

They are 2 types: **warp way** and **weft way**



### **2.2.3 Faults in Weaving**

#### **Major faults in weaving**

1. Rediness
2. Weft crack
3. Thick and thin place
4. Weft loop
5. Box marks
6. High incidence of warp breaks
7. Weft breaks
8. Bad selvedge
9. Broken picks
10. Bullets
11. Half picks
12. Broken end
13. Coarse end
14. Coarse pick
15. Thick and thin place
16. Double end
17. End out
18. Fine end
19. Jerk- in
20. Knot

21. Loom bar
22. Loom barre
23. Miss draw
24. Miss pick
25. Reed mark
26. Reed streak
27. Set mark
28. Shade bar
29. Stop mark
30. Tight mark
31. Pilling
32. Float
33. Pin marks
34. Contamination of Fluff

1. **Reediness:** It's terribly fine cracks or lines between teams of warp threads, caused thanks to excessive warp tension, late shedding, use of coarse reed with additional range of ends per dents, bent reed wires, improper spacing of reed wires, wrong drawing, and short toughing of shed, i.e. tension distinction between prime and bottom shed lines throughout beat up.
2. **Weft crack:** It's a skinny place or missing thread across the body of the material. the most reasons are improper setting of opposed crack motion, loose fitting of reed, loose or done in crank, done in crank arm, done in crank shaft bearings, loose belt, done in duck bills and beaters, thread fork not functioning properly, faulty take up, brake motion not acting instantly, shuttle putting on the thread fork

thanks to weak choosing, swing rail done in, weaver not adjusting the fell of fabric properly at the time of beginning a loom, and gripper not holding the thread firmly.

3. **Thick and thin places:** These are just like thread bar, however in contrast to thread bars, it repeats at intervals. they're chiefly thanks to irregular let-off, incorrect setting of holding and cathartic pawls on the wheel of take-up motion, gears of take-up motion not meshing properly, and equipment wheel teeth done in or broken.
4. **Weft loops:** Loop project from the surface textile of fabric of material either on one or each side of a fabric due to a tiny low portion of weft obtaining caught by the warp yarn. The most reasons are late shedding, low warp tension and use of dangerous temples.
5. **Box marks:** Box mark is thanks to one thing bruising or staining the thread whereas it's in or close to the box. Main causes are dirty boxes, shuttle riding over the thread, oil from shuttle tongue, dirty shuttles, thread flying regarding too freely, oil splashes from loose cranks, oily spindles and buffers and dirty choosing stick for below decide.
6. **High incidence of warp breaks:** Excessive warp tension, blunt or loose shuttle tip, rough shuttles, too tiny or too huge shed formation, bottom shed line beating down on hit race, jerky movement of heald too early or too late shedding, race board badly done in, heald catching one another, sharp or rigid reed wires, warp size accumulation on reed, pirn projected higher than or below shuttle, improper size, improper humidness within the loom shed, a weaker warp yarn, the next speed of loom, additional range of ends per in. for the count getting used, less air area in reed are the most causes for excessive warp breaks.
7. **Weft breaks:** High thread tension, improper build of pin, knots at the nose or chase of pins, back stitches in cones fed as thread in shuttle less looms, rough and broken surface of pins, shuttle tongue not in level, rough places within the shuttle, broken nylon loops, biological process off or loosely designed thread package, shuttle eye broken or broken, thread at bay within the box, selvedge ends cutting

the thread, thread fork too so much through the grate, rough box fronts or shuttle guides, improper alignment of cone in thread feeder, lower twist in thread leading to thread gap call at air-jet looms, grippers missing the picks, Improper knotting of tail ends, and rough handling of cones are the most reasons for higher thread breaks.

8. **Bad selvedge:** Improper shuttle wire tension, bent shuttle jaw, shuttle crack, additional tension on selvedge yarns, late shedding leading to rubbing of shuttle to the selvedge and improper choice of selvedge weave for the material being plain-woven is that the main reasons for bad selvedge.
9. **Broken picks:** A filling yarn that's tamed the weaving of a material seems as a defect. Improper functioning of thread stop motion ends up in broken picks undiscovered and stepping into to the material.
10. **Bullet:** Bullets are low twisted double yarn seen thread wise in materials. Those are usually zero twisted parallel yarns. Sensible causes of faults are improper functioning of bunch motion, incorrect yarn path through spindle, loose tension, capsule and spring operating, short yarn as bunch and knot isn't applied when removing bunch yarns.
11. **Half pick:** Just in case of brand looms, if the second brand doesn't collect the thread, it shall stop in between, and that we get half decide.
12. **Broken end:** A defect in cloth caused by a warp yarn that was broken throughout weaving or finishing.
13. **Coarse end:** If warp yarn that includes a diameter overlarge, too irregular that contains an excessive amount of foreign material to form a good, swish fabric.
14. **Thick end and thick picks:** Higher diameter in yarn for a brief distance will be thanks to improper piecing at spinning preceding or drop by pressure on the drafting rollers for a brief time. It's conjointly happen thanks to not removing of spinners double, not piecing the top properly by removing the lapped materials, accumulation of fluff in condensers, cradle necks of the highest rollers.

15. **Double end:** 2 ends that weave jointly. This happens due to migration of a broken finish to the adjacent reed area in conjunction with the neighboring finish.
16. **End out:** A warp yarn that was broken or missing throughout weaving.
17. **Fine end:** Usually this defect in silk warp yarn consisting of skinny places that occur once a number of the filaments that ought to be within the warp yarn are absent, usually caused by improper reeling. Warp finish of abnormally tiny diameter, i.e. long skinny places of sophistication I1 and I2 are also referred as fine finish.
18. **Jerk-in:** An additional piece of thread yarn jerked by the shuttle into the material at the side of an everyday chooses of filling.
19. **Knot:** Knot is outlined as a knob or lump fashioned by interlocking parts of 1 or additional versatile strands or a amount of yarn, or thread, that varies with the fiber. It consists of a group of coils. Management in pin winding, the winding to binding coils magnitude relation will solve this drawback.
20. **Loom bar:** A modification in shade across the dimension of a material, ensuing from a buildup of tension within the shuttle before a filling modification.
21. **Loom barre:** Repetitive selvedge-to-selvedge unevenness in plain-woven material sometimes attributed to a mechanical defect within the let-off or the take-up motion.
22. **Miss draw (Color):** In plain-woven materials the drawing of colored yarns through the loom harness contrary to the color pattern or style weave is termed as miss draw. Just in case of warp knits miss draw is that the drawing of colored yarns through the guide bars contrary to the pattern style.
23. **Miss pick:** A defect in plain-woven material caused by a missing or out-of sequence yarn.
24. **Reed mark:** A crack between teams of warp ends, either continuous or at intervals, which may happen thanks to broken reed or improper spacing of dents.

25. **Reed streak:** A warp wise defect due to a foul reed like uneven reed house, bent reed wire, slant wire, broken reed wire etc.
26. **Set mark:** Defect in plain-woven material ensuing from prolonged loom stoppage. For the wet weather and therefore the fine mud gift within the atmosphere, the fabric exposed shall get slightly totally different color and conjointly some relaxation takes place. A combined result provides a line in thread direction.
27. **Shade bar:** A definite shade modification of short period across the dimension of the material. This can be unremarkably thanks to a mixture of thread with totally different property.
28. **Stop mark:** Slim band of various weave density, across the dimension of a plain-woven material, caused by improper warp tension adjustment when a loom stop. A well trained weaver will scale back this sort of defects.
29. **Tight end:** Warp yarn in a very plain-woven material that was below excessive tension throughout weaving or shrank quite the traditional quantity.
30. **Pilling:** Fiber filaments that break in yarn thanks to friction going tiny clumps of loose fibers on the surface.
31. **Float:** Slack warp and Faulty Pattern Card are the most reasons for a float in a very plain-woven material.
32. **Pin marks:** 2Poorly adjusted temple pins or broken pins will result in pin marks.

### **2.3 Fabric inspection system:**

The objective of fabric review is to establish whether or not the material received. I he expected Quality normal or not. The most objective is detection of material defects and unorthodoxy as early as attainable. So the time and cash don't seem to be wasted within the producing, process. The last word goal of any quality control activity in clothing' industry is to satisfy the purchasers.

### **2.3.1 Inspection of Fabric:**

Fabric inspection can be defined as the visual examination of fabric, according to some standards, specification or requirement. It is a separate section of garment industries. Inspection is an important aspect followed prior to garment manufacturing to avoid rejects due to fabric quality and facing with unexpected loss in manufacturing. Fabric inspection is done for fault/defect rate, fabric construction, fabric weight, shrinkage, end to end or edge to edge shading, color, hand feel, length/width, print defect and appearance. Fabric inspection ensures to minimize the rejection of cut panels or rejected garments due to fabric faults Cutting inspected and approved fabric ensures not only finished garment quality but also reduce rejects, improves efficiency and timely deliveries.

### **2.3.2 Objectives:**

The main objectives of the inspection are the –

- 1) Detection of defects
- 2) Correcting of defects

### **2.3.3 Sequence of gray fabric inspection**

From weaving fabric come to the inspection section

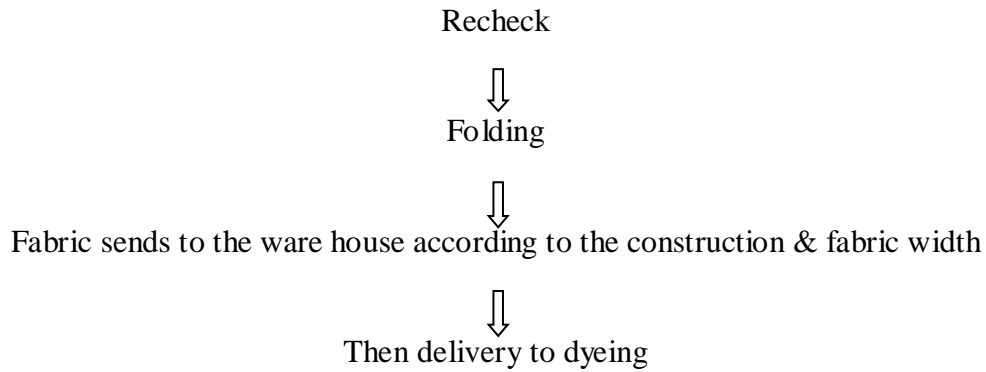


Mending

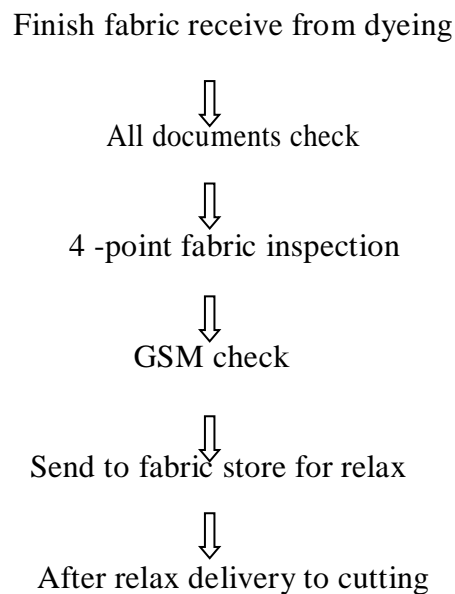


Line check





#### **2.3.4 Finish Fabric Inspection Flowchart:**



#### **2.3.5 Importance of fabric inspection:**

As we all know that fabric is the most and costly raw materials of a garment. Thus it's vital to use fabric expeditiously and management wastage of fabric. On the opposite hand fabric defects are the maximum defects of garments, that many-unexpected downside could occur during a covering industry. Such as- short shipment, discount,

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low value etc. To avoid all higher than issues and to require preventive measures material examination is extremely vital for a covering industry. It's additionally vital for the subsequent aspects: Developed product quality

1. Decrease waste
2. Decrease the cost
3. Avoid short shipment
4. Improve productivity
5. Use to grading system

### **2.3.6 Fabric Inspection Method:**

- ❖ 4 point system
- ❖ 6 point system
- ❖ 10 point system
- ❖ Graniteville system
- ❖ Dallas point system

### **2.3.7: 4- point system**

Most of the apparel/woven industry prefers four point rating system for determinant fabric quality and it's certified by the American Society of quality control (ASQC) likewise because the American apparel manufacturers (AAMA). The 4-Point System assigns 1, 2, 3 and 4 penalty points consistent with the scale, quality and significance of the defect. No over four penalty points is appointed for any single defect. Defect will be measured either length or breadth direction, the system remains a similar. Solely major defects square measure thought of. No penalty points square measure appointed to minor defects.



**Figure2.1:** Fabric inspection machine

### **2.3.8 Advantages of 4 point system:**

- By 4 point system labor can easily understand
- In 4 point system it has no width limitation

### **2.3.9 How to use 4 Point System in Fabric Inspection?**

- 4 Point system for fabric inspection is widely used in apparel industry for fabric quality inspection. To use this system you have to know following things.
- Fabric inspection method or preparation.
- Criteria of giving penalty points based on defects and defect length.
- Calculation method of total penalty points for total defects found in a fabric roll.

- A Check sheet or format for recording data.
- Knowledge of different types of defects (how a defect looks and its appearance).
- Fabric inspection method or preparation.
- Details of selection method of fabric rolls and checking of fabric have been explained in our previous post. Please read one of our guest articles for the method fabric inspection.
- Criteria for giving penalty points.
- In the following table the penalty evaluation points has been given for different length of fabric defect and dimension of holes.

### 2.3.10 Fabric Faults Points Values:

**Table2.1:** Fabric Faults Points Values

| <b>INCHES ( " )</b>                   | <b>(MM)</b>             | <b>POINTS</b>   |
|---------------------------------------|-------------------------|-----------------|
| <b>From 0 &gt; 3" length/width</b>    | <b>Up to 75mm</b>       | <b>1 point</b>  |
| <b>From 3.1" &gt; 6" length/width</b> | <b>75mm &gt; 150mm</b>  | <b>2 points</b> |
| <b>From 6.1" &gt; 9" length/width</b> | <b>150mm &gt; 230mm</b> | <b>3 points</b> |
| <b>More than 9" length/width</b>      | <b>More than 230mm</b>  | <b>4 points</b> |

| <b>Holes and openings(largest dimension)</b> |          |
|--|----------|
| ➤ <b>1 inch or less</b>                      | <b>2</b> |
| ➤ <b>Over 1 inch</b>                         | <b>4</b> |

### 2.3.11 Tools for fabric inspection:

The person who is responsible for fabric inspection must have the following facilities equipments in good working condition.

- Inspection frame with counter.
- D - 65 light source (sunlight) / TL - 84 light sources at the inspection frame as per the requirement of the customer.
- Measuring tape & pair of scissors.
- Stickers or masking tape to identify the faults.
- Pick glass.
- Digital Camera for taking reference snaps.
- Master fabric sample or customer's reference sample.

### 2.3.12 Calculation

Calculation of total points per yards.

In 4 point system fabric quality is evaluated by unit points/100 sq. yards.

Points / 100 sq. yd. = (Total points in roll \* 36 \* 100)/ (Fabric length in yards \* Fabric width in inches)

Normally fabric roll containing 40 points per 100 square yard are acceptable.

**Example:** A fabric roll 120 yards long and 50 inch wide contains following defects

**Table2.2:** 4-point system

|                                   |       |          |
|-----------------------------------|-------|----------|
| 4 defects up to 3 inch length     | 4 x 1 | 4 points |
| 3 defects from 3 to 6 inch length | 3 X 2 | 6 points |
|                                   | 2 X 3 | 6 points |
| 2 defects from 6 to 9 inch        |       |          |

|                             |                                      |           |
|-----------------------------|--------------------------------------|-----------|
| length                      | 1 X 4                                | 4 points  |
| 1 defect over 9 inch length | 1 X 4                                | 4 points  |
| 1 hole over 1 inch          |                                      |           |
| Total defect points         |                                      | 24 Points |
| Therefore,                  | $= (24 \times 3600)/(120 \times 50)$ |           |
| Points/ 100 sq. yards       | $= 14.4$ points                      |           |

For below items classified for a point fabric, fabric supplier should compensate for all defective garment cutting panels or pieces.

|                                     |                              |
|-------------------------------------|------------------------------|
| ➤ Synthetic woven linear yards      | average of 15 points per 100 |
| ➤ Twill, cotton, linen linear yards | average of 20 points per 100 |

### 2.3.13 Notable points of this system are describing below:

Four point system is based on penalty points given to a defect found when inspecting fabric.

Rule is as below:

- ✓ Not more than four penalty points may be given for any single defect.
- ✓ No more than four penalty points may be given to one linear yard/meter regardless of the number of defects found within one yard/meter.
- ✓ For continuous defects such as shading between side, centre side, side to side shading,

### **2.3.14 Limitations of Fabric Inspection:**

Actually the percentage of limitations for fabric inspection is very poor. But problem can be occurred if the inspection will not be done correctly. When the inspectors inspect the fabric, at that time if they don't inspect the fabric correctly, don't mark the faults. Then many problems will occur. It is a big responsibility of this section to deliver fabric to cutting which fabrics are properly checked. Otherwise it will hamper the work of cutting. And also kill the time of production. So productivity will decrease. It is necessary to use the time properly for better production and for timely shipment. And also have to use proper grading system. The grading must be done in right way. Grade the fabric according to faults. If the grading will wrong it has chance of replacing the good fault less fabric with the faulty fabric. And also always try to report to the other section about the faults. So they can aware about the faults. Which are happening in the fabric? So it is important to give report to other section.

## **Chapter-3**

### **Experimental Details/Methodology**

In this chapter, we are going to present experiment data. We have collected some grey fabric inspection report and some finish fabric inspection report for analyzing fabric faults after weaving means grey fabric inspection. And also analyze the fabric faults after finishing by using the 4-point system. In order to collect various information about fabric defects. We have visited to **EAST WEST SUITING MILL**. This mill has introduced many new concepts to the commerce and trade industry of Bangladesh. With its diversification policies, this mill has conquered many different arenas along with textile, although textile remains the core focus of the group activity. This fabric mill generally produces suits, pocketing fabric & all synthetic fabric. **EAST WEST SUITING MILL** is produced only woven fabrics. During the time of factory visit we found, there is lots of fabric faults occur during production in different section.

### **3.1 Fabric Defects:**

#### **3.1.2 Warp Way Defects Their Causes & Remedies**

#### **3.1.3 Definition:**

Fabric defect is nothing however a undesirable fault within the cloth that deteriorate the standard cloth and create it inferior.

#### **3.1.4 Warp way Defects**

As it is thought that within the case of woven cloth there square measure 2 sets of yarn that square measure lattice like with one another; direction those sets of yarn square measure referred to as warp and thread. The yarns within the cloth that square measure running on the length square measure known as warp ends and also the defects in direction the defects caused by the warp square measure known as warp manner defects. So, let's have a glance at cloth defects causes and remedies.

## 1. Crack between stripes

A crack is seen on the length of the material between the stripes woven with totally different weaves.



**Figure3.1:** Crack between stripes

### ❖ Causes

- Crack between stripes occur owing to variations in wrap unleash because of uneven beam surface.
- The distinction in crimp relationship of ends classified in separate dents within the reed and in weaves as a result it's occur.

### ❖ Remedies

- To take away this fault avoids uneven build of beam surface by a correct system of denting at the size machine.
- To take away this fault ensures that denting at weaving is such ends of the 2 weaves don't seem to be separated by a reed dent.



## 2. Double ends

More than one finish operating in an exceedingly heald eye while not the adjacent end missing.



**Figure3.2:** Double end

### ❖ Causes:

- It is occur due to sticky ends on weavers beam.
- It is occur due to wrong drawing of ends through heald.

### ❖ Remedies:

- To take away this fault takes preventive measures throughout size.
- To take away this fault brings the defect to the notice of the drawing operator.
- To take away this fault instructs weavers and supervisors to sporadically check cloth to get rid of double ends.

## 3. Floats

A defect in an exceedingly woven Fabric wherever wrap and filling threads don't interlace as desired.



**Figure3.3:** Flots

❖ **Causes:**

- It is occur due to broken finish obtaining entangled with the adjacent warp ends. The breaks between reed and healds are a lot of vulnerable to type floats, particularly once the warp loses its snap thanks to over stretching or over-backing throughout size.
- It is occur due to knots with long tail ends resulting in the trap of ends.
- It is occur due to fluff with long tail ends resulting in the trap of ends.
- It is occur due to fluffs or foreign matter at bay within the shed.
- It is occur due to broken heald unable to carry or lower the thread.
- A lighter variety of warp stops motion pins used on the loom.

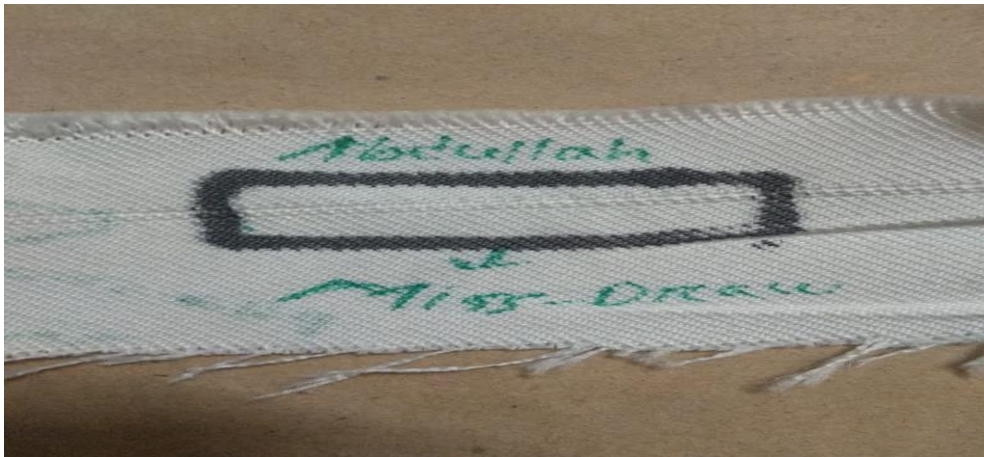
❖ **Remedies:**

- To take away this fault attend to broken ends at once on looms equipped with warp stop motion; guarantee correct functioning of an equivalent.
- To take away this fault avoids long tail ends in knots in weaving proceeding and weaving.
- To take away this fault ensures cleanliness of loom.
- To take away this fault takes most potential care whereas processing the looms.
- To take away this fault use screens to avoid fluff flying to adjacent looms.

- To take away this fault inspects the heald for wear before golf stroke on a brand new beam.
- To take away this fault ensures correct choice of drop pirn.

#### 4. Miss draws

Incorrect positions of ends within the fabric inflicting sizeable injury in materials with woven style.



**Figure3.4:** Miss draw

##### ❖ Causes:

- It is occur due to faulty drawing of the beam.
- It is occur due to faulty drawing of broken ends by the weaver.

##### ❖ Remedies:

- To take away this fault brings the defect to the notice of the drawing operator.
- To take away this fault ensures periodic scrutiny of the material on a loom by the super ordinate stuff.

## 5. Miss end

Miss finish of a missing warp thread within the cloth..



**Figure3.5:** Miss End

### ❖ Causes:

- It is occur owing to failure of the weaver in planning to warp breaks.
- It is occur owing to warp stop motion not acting properly.

### ❖ Remedies:

- To take away this fault missing the incidence of lappers throughout size.
- To take away this fault Use spare ends on loon as a substitute for the missing ends.
- To take away this fault instructs the weaver to attend to warp breaks forthwith.
- To take away this fault discourages the weaver's habit of watching for the broken finish of the beam to advance sufficiently for knotting.

- To take away this fault examines the drop pins whereas golf stroke on a brand new beam and comb out the defective ones.
- To take away this fault check the warp stop motion assembly.

#### **6. Broken ends or warp:**

A defect within the plain-woven cloth caused by a warp yarn that was broken throughout weaving.



**Figure3.6:** Broken ends or warp

#### **7. Loose warp:**

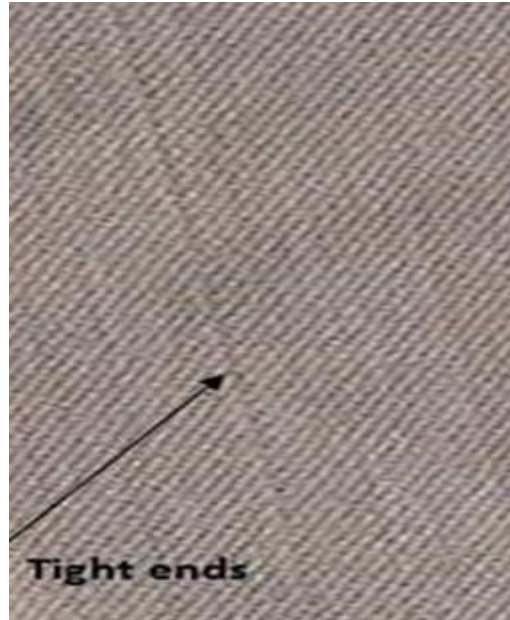
This type of fault is made in plain-woven cloth once the strain of warp yarn is slow.



**Figure3.7:** Loose warp

### 8. Tight ends:

If the tension of warp yarn is more than the other ends present in the loom then this type of fault is produced in woven fabric.



**Figure3.8:** Tight ends

### 9. Wrong end color:

It is produced in woven fabric due to the wrong drawing of colored yarn.



**Figure3.9:** Wrong end color

## **3.2 Weft way Defects-Causes & Remedies**

### **3.2.1 Definition:**

The fabric defects that square measure within the direction of filling or caused by the filling square measure known as Weft way defects. Fabric defect is nothing however associate degree undesirable fault within the cloth that deteriorates the standard of material and makes it inferior. As you may have scan our 1st post on cloth defects causes and remedies – (Read) Warp approach Defect. This can be our connected post on cloth defects causes and remedies – Weft way Defects (fabric defects with images).

### **3.2.2 Weft Way Defects**

#### **1. Cut Weft**

A defect usually every which way distributed over the material, not clearly visible within the grey stage, however becomes pronounced within the finished cloth.

##### **❖ Causes:**

- It is occurred due to associate degree improper condition or quality of mineral roller covering.
- It is occurred due to viscose yarn from associate degree recent ton or of lower strength is employed.

##### **❖ Remedies:**

- To take away this fault checks the mineral roller covering.
- To take away this fault ensures correct check on the standard of amalgamated yarn.



## 2. Slub

An abnormal thick place within the yarn finally showing within the cloth. If the yarn contains sudden roughness in it then those roughness are appeared within the cloth as a fault.



**Figure3.10: Slub**

### ❖ Causes:

- It is occurred due to the undrafted portion within the yarn.

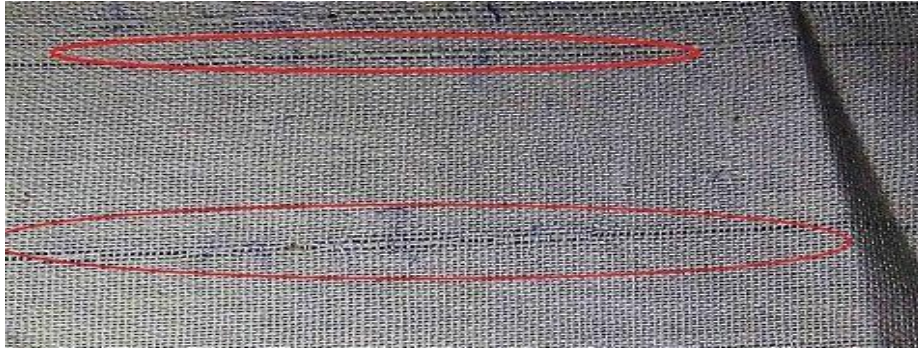
### ❖ Remedies:

- To take away this fault minimizes the incidence of slubs throughout spinning.
- To take away this fault clears the yarn effectively throughout winding.

## 3. Broken-Pick

The filling is inserted just for some of choose. Broken choose defect are often known because the filling inserted to solely a partial portion of choose.





**Figure3.11:** Broken-pick

❖ **Causes:**

- It is occurred due to filling break or filling exhaustion on normal looms.
- It is occurred due to filling break or improper size of the bunch on auto-pirns.
- It is occurred due to the improper functioning of filling fork.
- It is occurred due to filling modification accomplished through filling fork mechanism on automatic looms.

❖ **Remedies:**

- To take away this fault check the shuttle for loose fitting of pirn or roughness of the surface as these cause additional filling breaks.
- To take away this fault ensures conjointly the shuttle boxes for settings and surface condition to stop cutting of filling.
- To take away this fault checks the shuttle and shuttle boxes.
- To take away this fault ensures correct size of the bunch on auto-pirns.
- To take away this fault maintains the filling fork mechanism in smart operating condition.

- To take away this fault resort to pirn modification by filling feeler.
- To take away this faults the resort conjointly to select finding before restarting the loom.

#### 4. Gout

Foreign matters like lint or waste or items of harness burly and animal skin accessories area unit plain-woven into the material. Look of foreign matter or contamination like lint, waste, etc plain-woven into the material.



**Figure3.12: Gout**

##### ❖ Causes:

- It is befallen due to indiscriminate throwing of waste by weavers.
- It is befallen due to foreign matter moving into the shed throughout weaving.

##### ❖ Remedies:

- To eliminate this fault guarantee cleanliness of machines and surroundings within the loom shed.

- To eliminate this fault keep the frequent check on harness strappings and animal skin accessories for undue wear and replace them, if necessary.

## 5. Snarl

It is a brief length of yarn, principally pick that has impromptu doubled back on itself. The snarling tendency is latent in extremely twisted yarns. In some materials, the snarls area units found to be arbitrarily touch the dimension of the material, whereas in another cases, they're restricted to an area at a set distance from one in the entire selvedge.



**Figure3.13: Snarl**

### ❖ Causes:

- It is befallen due to extremely twisted pick.
- It is befallen due to low pick tension.
- It is befallen due to shuttle rebounding either thanks to harsh choosing or poor checking.
- It is befallen due to centre pick fork not set right.

❖ **Remedies:**

- To eliminate this fault condition the pick before weaving by steam learning, CMC learning.
- To eliminate this fault offer appropriate drag the shuttle.
- To eliminate this fault guarantee sleek choosing and adequate checking of the shuttle within the boxes.
- To eliminate this fault check the setting of center pick fork.

**6. Starting Marks**

A thick or skinny place is made within the material thanks to variation in choose density whereas beginning the loom. Thick or skinny places occurring in material thanks to choose density variation once beginning the loom, inflicting beginning marks.



**Figure3.14:** Starting marks

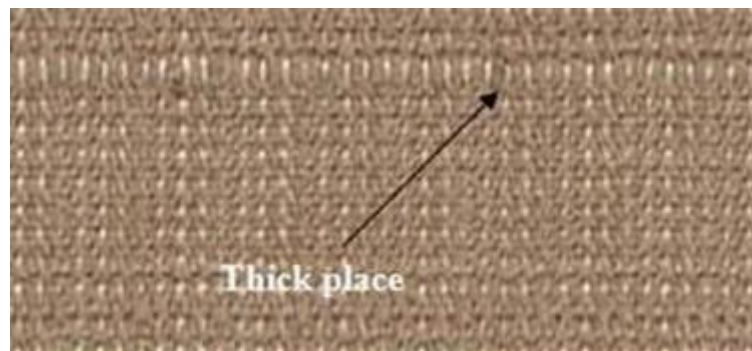
❖ **Causes:**

- It is befallen due to weaver holding back the fell of the material too about to the reed by faulty adjustment of take-up motion.

- It is befallen due to faulty functioning of anti-crack motion.
- To eliminate this fault instruct the weavers regarding the proper procedure.
- To eliminate this fault guarantee correct functioning of the motion.

## 7. Thick and thin place

Weft bars differing in look and continuation many times on the material. Material defect within which material count varies over a fixed share from the supposed count. If the thick or skinny place is over one in. (2.54cm) wide then it's thought-about as a significant defect in material grading.



**Figure3.15:** Thick Places

### ❖ Causes:

- It is befallen due to irregular let-off.
- It is befallen due to faulty take-up.
- It is befallen due to irregular let-off.

### ❖ Remedies:

- To eliminate this fault set the let-off and/or take-up motion properly.

### 3.3 Other Fabric Defects

#### 1. Hole or Tear In cloth

A defective portion of the material marked by distortion or cutting of warp and thread.



**Figure3.16: Hole**

#### ❖ Causes:

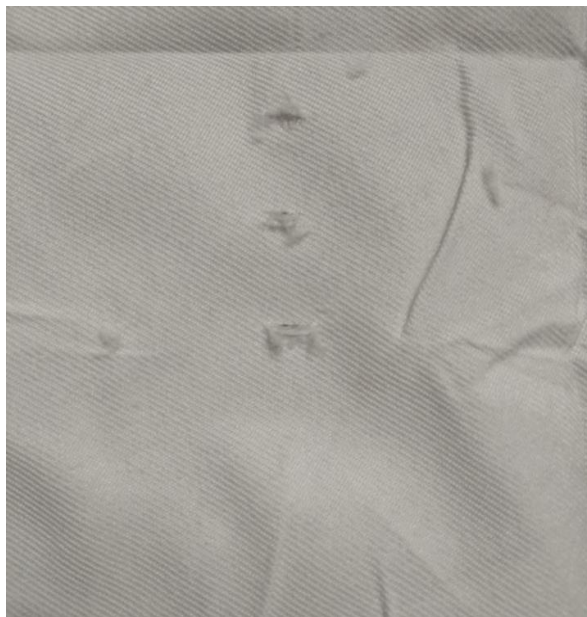
- It is befallen due to mechanical faults within the loom.
- Weavers sound the material with the shuttle tip or pirn on the front rest once inserting a replacement pirn.
- It is befallen due to carelessness of the weaver in removing gout.
- It is befallen due to holes from throughout the finishing processes because of the presence of foreign matter.

❖ **Remedies:**

- To eliminate this fault rectify the mechanism faults.
- To eliminate this fault build the weaver quality acutely aware.
- To eliminate this fault take precautions in weaving to avoid the incidence of woven foreign matter.

## **2. Temple marks**

Small pin holes showing close to the selvage zones and being a lot of outstanding in fine and superfine varieties. If the position of ring within the temple bar is wrong or the pressure of temple to the materials is just too high then this kind of fault is created.



**Figure3.17:** Temple marks

❖ **Causes:**

- It is befallen due to incorrect choice of temples.
- It is befallen due to improper setting of temple cap.



- It is befallen due to temple rings not moving freely.

❖ **Remedies:**

- To eliminate this fault choose the temples to suit the standard of the material.
- To eliminate this fault make sure that the cap isn't set too getting ready to the temple which there's decent gap for swish passage of material over the temples.
- To eliminate this fault guarantee cleanliness of temple assembly.

### 3. Crease Mark



**Figure3.18:** Crease mark

❖ **Sources & Causes:**

- It is befallen because of poor opening of the fabric rope.
- It is befallen because of shock cooling of synthetic material.
- It is befallen because of if pump pressure & reel speed is not equal.



- It is befallen because of Due to high speed m/c running.

❖ **Remedy:**

- To eliminate this fault maintaining proper reel sped & pump speed.
- To eliminate this fault lower rate rising and cooling the temperature.
- To eliminate this fault reducing the m/c load.
- To eliminate this fault higher liquor ratio.

**3.4 Process responsible for different fabric faults:**

**Table 3.1:** Faults occurred in spinning section

| <b>Responsible process</b> | <b>Name of fabric faults</b> |
|----------------------------|------------------------------|
| Spinning section.          | Broken warp                  |
|                            | Ball                         |
|                            | Slub                         |
|                            | Hairy fibre                  |
|                            | Thick and thin place         |
|                            | High twisted yarn            |
|                            | Oil stained yarn             |
|                            | Knot                         |

**Table3.2:** Faults occurred in Warping

| <b>Responsible process</b> | <b>Name of fabric faults</b> |
|----------------------------|------------------------------|
| T<br>Warping section       | Tight end                    |
|                            | Double warp                  |
|                            | Knot                         |
|                            | Loose warp                   |
|                            | Lot mixing of warp yarn      |

**Table3.3:** Faults occurred in weaving section

| <b>Responsible process</b> | <b>Name of fabric faults</b> |
|----------------------------|------------------------------|
| s<br><br>Weaving section   | Gout                         |
|                            | Reed mark                    |
|                            | Cut or torn selvedge         |
|                            | Tails out                    |
|                            | Temple mark                  |
|                            | Temple pierced hole          |
|                            | Starting mark                |
|                            | Float of warp                |
|                            | Broken pick                  |
|                            | Miss pick                    |
|                            | Snarl or loose weft          |
|                            | Ball                         |
|                            | Weft bar                     |
|                            | Oil spot                     |
|                            | Tails out                    |
|                            | Temple mark                  |
|                            | Temple pierced hole          |
|                            | Double pick                  |
|                            | Knot                         |

**Table 3.4:** Faults occurred in dyeing and printing section

| <b>Responsible process</b>  | <b>Name of fabric faults</b> |
|-----------------------------|------------------------------|
| Dyeing and printing section | Oil spot                     |
|                             | Shade variation              |
|                             | Color spot                   |
|                             | Uneven printing              |

**Table 3.5:** Faults occurred in finishing section

| Responsible process | Name of fabric faults |
|---------------------|-----------------------|
| Finishing section   | Holes                 |
|                     | oil spot              |
|                     | crease mark           |

### 3.5 Inspection Reports

#### 3.5.1 Fabric Inspection Report

We are going to present experiment data. We have chosen some grey fabric inspection report and some finish fabric inspection report for analyzing fabric faults after weaving means grey fabric inspection. And also analyze the fabric faults after finishing by using the 4 point system.

**Table 3.6:** Inspection report

**Fabric Inspection Report**

Project No: E/w      Report No: 14307      Total Roll Meter of 2000 Y07  
 Project Name: PC-A COVE      Total Treatment: 100%      Total Wash: 100%  
 Date: 07/06/16

| Roll No. | Color | Grade | Width (cm) | Weight (gsm) | Defects |         | Total Defects | Defects per Meter | Remarks |
|----------|-------|-------|------------|--------------|---------|---------|---------------|-------------------|---------|
|          |       |       |            |              | Defects | Defects |               |                   |         |
| 101      |       |       | 60"        |              | 10      | 10      | 10            | 0.17              |         |
| 102      |       |       |            |              | 10      | 10      | 10            | 0.17              |         |
| 103      |       |       |            |              | 10      | 10      | 10            | 0.17              |         |
| 104      |       |       |            |              | 10      | 10      | 10            | 0.17              |         |
| 105      |       |       |            |              | 10      | 10      | 10            | 0.17              |         |
| 106      |       |       |            |              | 10      | 10      | 10            | 0.17              |         |
| 107      |       |       |            |              | 10      | 10      | 10            | 0.17              |         |
| 108      |       |       |            |              | 10      | 10      | 10            | 0.17              |         |
| 109      |       |       |            |              | 10      | 10      | 10            | 0.17              |         |
| 110      |       |       |            |              | 10      | 10      | 10            | 0.17              |         |
| 111      |       |       |            |              | 10      | 10      | 10            | 0.17              |         |
| 112      |       |       |            |              | 10      | 10      | 10            | 0.17              |         |
| 113      |       |       |            |              | 10      | 10      | 10            | 0.17              |         |
| 114      |       |       |            |              | 10      | 10      | 10            | 0.17              |         |
| 115      |       |       |            |              | 10      | 10      | 10            | 0.17              |         |
| 116      |       |       |            |              | 10      | 10      | 10            | 0.17              |         |
| 117      |       |       |            |              | 10      | 10      | 10            | 0.17              |         |
| 118      |       |       |            |              | 10      | 10      | 10            | 0.17              |         |
| 119      |       |       |            |              | 10      | 10      | 10            | 0.17              |         |
| 120      |       |       |            |              | 10      | 10      | 10            | 0.17              |         |

**Defects Classification**

| Size of Defect               | Penalty |
|------------------------------|---------|
| 3 inches or Less             | 1 point |
| Over 3 But Not Over 4 inches | 2 point |
| Over 4 But Not Over 5 inches | 3 point |
| Over 5 inches                | 4 point |

A Maximum of Four Holes is Allowed per Meter Yard  
According to 4 points system 40 penalty points is acceptable in 500 yds.

**Formula for Calculation**

Total Penalty Points in Sample (30" x 100") = Penalty Points / 100 Square Yds.  
Sample Weight (Lower number better)

Inspector: [Signature]      Date: 07/06/16

Above this inspection sheet we can calculate the fault point that helps us to find that that fabric is acceptable or rejected. From EAST & WEST SUTTING MILL we collect above sheet where inspected 16 rolls, all blue color fabric and every roll have 150 yards fabric.

Buyer: H&M

Total rolls: 16

Yards: 150 (every roll)

Color: Blue

Find faults:

1. Slub
2. Knot
3. Spot
4. Hole
5. Thick yarn
6. Miss pick
7. Starting mark
8. Color bar
9. Crease mark
10. Bad selvedge

### 3.5.2 Calculation of number 1 rolls by 4 point inspection system:

Example: A fabric yards roll 120 long and width 55 inches

**Table 3.7:** point inspection system

|                                   |       |          |
|-----------------------------------|-------|----------|
| 4 defects up to 3 inch length     | 4 x 1 | 4 points |
| 3 defects from 3 to 6 inch length | 3 X 2 | 6 points |

|                                   |  |           |
|-----------------------------------|--|-----------|
| 2 defects from 6 to 9 inch length | 2 X 3  | 6 points  |
| 1 defect over 9 inch length       | 1 X 4  | 4 points  |
| 1 hole over 1 inch                | 1 X 4  | 4 points  |
| Total defect points               |  | 24 points |
| Therefore, points/100 sq. yards   | $=(24 \times 3600) \div (120 \times 55)$ $=13.09 \text{ points}$ |           |

Result: The roll is acceptable. Because rejected plenty point is 25.

#### 4.5.3 Calculation of number 1 rolls by 4 point inspection system:

**Table3.8:** Inspection results

**Defect Classification**

| Size of Defect               | Penalty |
|------------------------------|---------|
| 3 inches or Less             | 1 Point |
| Over 3 But Not Over 6 inches | 2 Point |
| Over 6 But Not Over 9 inches | 3 Point |
| Over 9 inches                | 4 Point |

**Formula for Calculation**  
 Total Penalty Point in Sample (20' x 100') = Penalty Points/100 square yds.  
 Sample Size = 100 square yds.

Buyer: H&M

Total rolls: 09

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Yards: 150 (every roll)

Color: Olive

Find faults:

1. Slub
2. Knot
3. Spot
4. Hole
5. Thick yarn
6. Miss pick
7. Starting mark

Example: A fabric yards roll 150 long and width 56 inches

**Table3.9:** 4 point inspection system

|                                   |   |           |
|-----------------------------------|---|-----------|
| 4 defects up to 3 inch length     | 4×1   | 4 points  |
| 3 defects from 3 to 6 inch length | 3×2   | 6 points  |
| 2 defects from 6 to 9 inch length | 3×3   | 9 points  |
| 1 defect over 9 inch length       | 4×4   | 16 points |
| 1 hole over 1 inch                | 1×4   | 4 points  |
| Total defect points               |   | 39 points |
| Therefore, points/100 sq. yards   | $= (39 \times 3600) \div (150 \times 56)$<br>$= 15.43 \text{ points}$ |           |

Result: The roll is acceptable. Because rejected plenty point is 25.

## Chapter-4

### Discussion of Results/Findings

This study has been performed in the **East West Suiting Mills Ltd** and some required values are taken for research initiatives only. In data analysis part, we have discussed about the grey fabric inspection, finish fabric inspection, loss percentage of fabric in cutting. Some fabric faults data after weaving and after finishing has been taken and analyze to get an idea about fabric faults.

#### 4.1 Types of Faults:

From our project work we can found that there are some common defects and there are some different defects occur in **East West Suiting Mills Ltd**. There are some different defects occurs for **East West Suiting Mills Ltd** according to their different process.

#### 4.2 Faults of factories:

The following faults are occurred in **East West Suiting Mills Ltd**.

- Starting mark
- Loose warp in fabric
- Double warp
- Broken warp
- Tight end
- Float of warp
- Broken pick
- Miss pick
- Snral or loose weft
- Oil spot
- Tails out

- Reed mark
- Slub
- Crease mark.
- Knots

From the discussion we can say that, to produce a fabric many types of fault may be occurred from different section. From our survey we can clearly say that most of the fabric faults occurred in weaving section. So weaving section is more responsible for fabric faults. To produce excellent quality of fabric the weaving section must be improved.

### 4.3 Relation between Fabric defect and Fabric quality:

Fabric defect depends on fabric quality should be produced; during our project we have visited **East West Suiting Mills Ltd.** From our project work we can say that if we produced different types of fabric like coarser fabric and finer fabric then without above fault different types of faults may be occurred which we don't observed during project work.

**Table4.1:** Inspection result

Fabric Inspection Report

Supplier: E/W Region No: \_\_\_\_\_ Total Roll Base on: \_\_\_\_\_ Date: 07/06/16  
 Buyer: Hem Total Amount in: 22500 Total Roll No: \_\_\_\_\_  
 Designation: PC-A-Care Total Check Roll No: \_\_\_\_\_

| Roll No. | Color | Roll No. | Yards | Main Defect | Fault Detail |   |   |   |   |   |   |   |   |    | Total Faults | Remarks |  |  |
|----------|-------|----------|-------|-------------|--------------|---|---|---|---|---|---|---|---|----|--------------|---------|--|--|
|          |       |          |       |             | 1            | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |              |         |  |  |
| 101      |       | 101      | 100   | 101         |              |   |   |   |   |   |   |   |   |    |              |         |  |  |
| 102      |       | 102      | 100   | 102         |              |   |   |   |   |   |   |   |   |    |              |         |  |  |
| 103      |       | 103      | 100   | 103         |              |   |   |   |   |   |   |   |   |    |              |         |  |  |
| 104      |       | 104      | 100   | 104         |              |   |   |   |   |   |   |   |   |    |              |         |  |  |
| 105      |       | 105      | 100   | 105         |              |   |   |   |   |   |   |   |   |    |              |         |  |  |
| 106      |       | 106      | 100   | 106         |              |   |   |   |   |   |   |   |   |    |              |         |  |  |
| 107      |       | 107      | 100   | 107         |              |   |   |   |   |   |   |   |   |    |              |         |  |  |
| 108      |       | 108      | 100   | 108         |              |   |   |   |   |   |   |   |   |    |              |         |  |  |
| 109      |       | 109      | 100   | 109         |              |   |   |   |   |   |   |   |   |    |              |         |  |  |
| 110      |       | 110      | 100   | 110         |              |   |   |   |   |   |   |   |   |    |              |         |  |  |
| 111      |       | 111      | 100   | 111         |              |   |   |   |   |   |   |   |   |    |              |         |  |  |
| 112      |       | 112      | 100   | 112         |              |   |   |   |   |   |   |   |   |    |              |         |  |  |
| 113      |       | 113      | 100   | 113         |              |   |   |   |   |   |   |   |   |    |              |         |  |  |
| 114      |       | 114      | 100   | 114         |              |   |   |   |   |   |   |   |   |    |              |         |  |  |
| 115      |       | 115      | 100   | 115         |              |   |   |   |   |   |   |   |   |    |              |         |  |  |
| 116      |       | 116      | 100   | 116         |              |   |   |   |   |   |   |   |   |    |              |         |  |  |
| 117      |       | 117      | 100   | 117         |              |   |   |   |   |   |   |   |   |    |              |         |  |  |
| 118      |       | 118      | 100   | 118         |              |   |   |   |   |   |   |   |   |    |              |         |  |  |
| 119      |       | 119      | 100   | 119         |              |   |   |   |   |   |   |   |   |    |              |         |  |  |
| 120      |       | 120      | 100   | 120         |              |   |   |   |   |   |   |   |   |    |              |         |  |  |

**Defect Classification**

| Size of Defect               | Penalty  |
|------------------------------|----------|
| 3 inches or Less             | 3Penalty |
| Over 3 But Not Over 6 inches | 3Penalty |
| Over 6 But Not Over 9 inches | 3Penalty |
| Over 9 inches                | 6Penalty |

A Maximum of Four Penalties Allowed for One Linear Yard  
According to 4 points system 40 penalty points is acceptable in 100 yds.

**Formula for Calculation**

Total Penalty Points in Sample (0.5% of 100) = Penalty Points / 100 Square Yds

Sample Size (Square Yards) = 100

Inspector: [Signature] Remarks:  U.S. Manager



Buyer: H&M

Total rolls: 16

Yards: 150 (every roll)

Color: Blue

Find faults:

1. Slub
2. Knot
3. Spot
4. Hole
5. Thick yarn
6. Miss pick
7. Starting mark
8. Color bar

#### 4.4.1 Calculation of number 1 rolls by 4 point inspection system:

Example: A fabric yards roll 120 long and width 55 inches

**Table4.2:** 4 point inspection system

|                                   |       |           |
|-----------------------------------|-------|-----------|
| 4 defects up to 3 inch length     | 4 x 1 | 4 points  |
| 3 defects from 3 to 6 inch length | 3 X 2 | 6 points  |
| 4 defects from 6 to 9 inch length | 4 X 3 | 12 points |
| 1 defect over 9 inch length       | 1 X 4 | 4 points  |
| 1 hole over 1 inch                | 1 X 4 | 4 points  |
| Total defect point                |       | 30 points |

|                                 |  |
|---------------------------------|--|
| Therefore, points/100 sq. yards | $= (30 \times 3600) \div (120 \times 55)$ $= 16.36 \text{ points}$ |
|---------------------------------|--|

Result: The roll is acceptable. Because rejected plenty point is 25.

**Table 4.3:** Inspection results

*Grey Fabric*

**EAST WEST SUTING MILLS LTD**  
(Dyeing & Finishing)  
Visual Fabric Inspection / Roll

Date: 07.06.18

H&M order : Insp. report No : Fabric supplier: East West Suting Mills Ltd. Garments supplier: Inspector:-

| Roll No.         | 1      |     |     |     | 2      |     |     |     | 3      |     |     |     | 4      |     |     |     | 5      |     |     |     |
|------------------|--------|-----|-----|-----|--------|-----|-----|-----|--------|-----|-----|-----|--------|-----|-----|-----|--------|-----|-----|-----|
| MTR/YDS          | 250    |     |     |     | 248    |     |     |     | 251    |     |     |     | 250    |     |     |     | 249    |     |     |     |
| Cutable Width :  | Ticket | Beg | Mid | End | Ticket | Beg | Mid | End | Ticket | Beg | Mid | End | Ticket | Beg | Mid | End | Ticket | Beg | Mid | End |
| Defective Points | 1      | 2   | 3   | 4   | 1      | 2   | 3   | 4   | 1      | 2   | 3   | 4   | 1      | 2   | 3   | 4   | 1      | 2   | 3   | 4   |
| Miss End         |        |     |     |     |        |     |     |     |        |     |     |     |        |     |     |     |        |     |     |     |
| Miss Pick        |        | 1   |     |     |        |     |     |     |        |     |     |     |        |     |     |     |        |     |     | 1   |
| Filling Bar      |        |     |     |     |        |     |     |     |        |     |     |     |        |     |     |     |        |     |     |     |
| Wefl Bar         |        |     |     |     |        |     |     |     |        |     |     |     |        |     |     |     |        |     |     |     |
| Coarse End       |        |     |     |     |        |     |     |     |        |     |     |     |        |     |     |     |        |     |     |     |
| Coarse Pick      |        |     |     |     |        |     |     |     |        |     |     |     |        |     |     |     |        |     |     |     |
| Foreign Fibre    |        |     |     | 1   |        |     |     |     |        |     |     |     |        |     |     |     |        |     |     |     |
| Hole             |        |     |     |     |        |     |     |     |        |     |     |     |        |     |     |     |        |     |     |     |
| Slub / Knots     | 1      |     |     |     | 1      |     |     |     | 1      |     |     |     | 1      |     |     |     | 1      |     |     |     |
| Stains / Dirts   |        |     |     |     |        |     |     |     |        |     |     |     |        |     |     |     |        |     |     |     |
| Crease Mark      |        |     |     |     |        |     |     |     |        |     |     |     |        |     |     |     |        |     |     |     |
| Oil Spot         | 1      |     |     |     |        |     |     |     |        |     |     |     |        |     |     |     |        |     |     |     |
| White Spot       |        |     |     |     |        |     |     |     |        |     |     |     |        |     |     |     |        |     |     |     |
| Colour Spot      |        |     |     |     |        |     |     |     |        |     |     |     |        |     |     |     |        |     |     |     |
| Drops Mark       |        |     |     |     |        |     |     |     |        |     |     |     |        |     |     |     |        |     |     |     |
| Joint Mark       |        |     |     |     |        |     |     |     |        |     |     |     |        |     |     |     |        |     |     |     |
| Starting Mark    |        |     |     |     |        |     |     |     |        |     |     |     |        |     |     |     |        |     |     |     |
| Reed Mark        |        |     |     |     |        |     |     |     |        |     |     |     |        |     |     |     |        |     |     |     |
| Line Mark        |        |     |     |     |        |     |     |     |        |     |     |     |        |     |     |     |        |     |     |     |
| Knots            |        |     |     |     |        |     |     |     |        |     |     |     |        |     |     |     |        |     |     |     |
| Sub-Total        | 6      |     |     |     | 8      |     |     |     | 9      |     |     |     | 8      |     |     |     | 6      |     |     |     |
| Roll Points      | 1.85%  |     |     |     | 2.54%  |     |     |     | 2.03%  |     |     |     | 1.85%  |     |     |     | 2.09%  |     |     |     |
| Remarks:         |        |     |     |     |        |     |     |     |        |     |     |     |        |     |     |     |        |     |     |     |

Prepared By: [Signature] Checked By: [Signature] Approved BY: [Signature]

Buyer: H&M

Total rolls: 16

Yards: 150 (every roll)

Color: Blue

Find faults:

1. Slub
2. Knot
3. Spot
4. Hole

5. Thick yarn
6. Miss pick
7. Starting mark

#### 4.4.2 Calculation of number 1 rolls by 4 point inspection system:

Example: A fabric yards roll 150 long and width 48 inches

**Table 4.4:** 4 point inspection system

|                                   |   |           |
|-----------------------------------|---|-----------|
| 4 defects up to 3 inch length     | 4 x 1   | 4 points  |
| 3 defects from 3 to 6 inch length | 3 X 2   | 6 points  |
| 3 defects from 6 to 9 inch length | 3 X 3   | 9 points  |
| 1 defect over 9 inch length       | 1 X 4   | 4 points  |
| 1 hole over 1 inch                | 1 X 4   | 4 points  |
| Total defect points               |   | 27 points |
| Therefore, points/100 sq. yards   | $= (27 \times 3600) \div (150 \times 48)$ $= 13.5 \text{ points}$ |           |

**Result:** The roll is acceptable. Because acceptable plenty point is 20.

## Inspection Reports

**Table 4.5:** Inspection results of 4-Point system of next buyer and Black style

| Roll no. | Color | Fabric length(yards) | Fabric width(yards) | Total defects | Total point | Point defects per 100 yards | Remarks  |
|----------|-------|----------------------|---------------------|---------------|-------------|-----------------------------|----------|
| 1        | Black | 213                  | 60                  | 34            | 42          | 11.83                       | Ok       |
| 2        | Black | 140                  | 60                  | 20            | 27          | 11.55                       | ok       |
| 3        | Black | 150                  | 59                  | 42            | 51          | 20.74                       | rejected |
| 4        | Black | 230                  | 60                  | 33            | 45          | 11.83                       | ok       |
| 5        | Black | 150                  | 59                  | 22            | 28          | 11.36                       | ok       |
| 6        | Black | 105                  | 60                  | 35            | 45          | 25.72                       | rejected |
| 7        | Black | 215                  | 60                  | 21            | 27          | 7.56                        | ok       |
| 8        | Black | 180                  | 59                  | 23            | 29          | 11.77                       | ok       |
| 9        | Black | 145                  | 60                  | 25            | 33          | 13.49                       | ok       |

Above this table we check 9 rolls. Every roll have 60 inch width. This fabric next buyer, fabric color black.

Buyer acceptable plenty point: 20

Every roll remark: OK

**Table 4.6:** Inspection results of 4-Point system of TESCO buyer and Blue style

| Roll no. | Color | Fabric length(yards) | Fabric width(yards) | Total defects | Total point | Point defects per 100 yards | Remarks  |
|----------|-------|----------------------|---------------------|---------------|-------------|-----------------------------|----------|
| 1        | blue  | 151                  | 60                  | 25            | 31          | 12.31                       | ok       |
| 2        | blue  | 150                  | 60                  | 20            | 26          | 10.4                        | ok       |
| 3        | blue  | 154                  | 60                  | 21            | 29          | 11.29                       | ok       |
| 4        | blue  | 146                  | 60                  | 23            | 29          | 11.91                       | ok       |
| 5        | blue  | 152                  | 60                  | 17            | 22          | 8.68                        | ok       |
| 6        | blue  | 151                  | 60                  | 21            | 28          | 11.25                       | ok       |
| 7        | blue  | 179                  | 60                  | 41            | 65          | 21.79                       | rejected |
| 8        | blue  | 153                  | 50                  | 23            | 27          | 10.58                       | ok       |
| 9        | blue  | 150                  | 60                  | 18            | 22          | 8.08                        | ok       |

Above this table we check 9 rolls. Every roll have 60 inch width. This fabric TESCO buyer, fabric color blue.

Buyer acceptable plenty point: 20

Every roll remark: OK

**Table 4.7:** Inspection results of 4-Point system of H&M buyer and Olive style

|                |       |   |   |   |      |   |   |   |      |   |   |   |      |   |   |   |      |   |   |   |
|----------------|-------|---|---|---|------|---|---|---|------|---|---|---|------|---|---|---|------|---|---|---|
| Roll no        | 1     |   |   |   | 2    |   |   |   | 3    |   |   |   | 4    |   |   |   | 5    |   |   |   |
| Color          | Olive |   |   |   |      |   |   |   |      |   |   |   |      |   |   |   |      |   |   |   |
| Length(yards)  | 150   |   |   |   | 180  |   |   |   | 175  |   |   |   | 140  |   |   |   | 130  |   |   |   |
| Width(yards)   | 60    |   |   |   | 60   |   |   |   | 60   |   |   |   | 60   |   |   |   | 60   |   |   |   |
| Defects points | 1     | 2 | 3 | 4 | 1    | 2 | 3 | 4 | 1    | 2 | 3 | 4 | 1    | 2 | 3 | 4 | 1    | 2 | 3 | 4 |
| Knot/Slub      | 5     |   |   |   | 5    | 1 |   |   | 6    |   |   |   | 5    |   |   |   | 5    |   |   |   |
| Spot           | 1     |   |   |   | 3    |   |   |   | 2    | 1 |   |   | 3    |   |   |   | 2    |   |   |   |
| Hole           |       |   |   |   |      |   |   |   |      |   |   |   |      |   |   |   |      |   |   |   |
| Thick Yarn     |       |   |   |   |      |   |   |   |      |   |   |   |      |   |   |   | 1    |   |   |   |
| Miss pick      |       | 1 |   |   |      |   |   |   | 1    |   |   |   | 2    |   |   |   | 1    |   |   |   |
| Miss End       |       |   |   |   |      |   |   |   |      |   |   |   |      |   |   |   |      |   |   |   |
| Starting Mark  |       |   |   |   | 1    | 1 |   |   | 1    |   |   |   | 2    |   |   |   |      | 1 |   |   |
| Total point    | 8     |   |   |   | 13   |   |   |   | 12   |   |   |   | 12   |   |   |   | 11   |   |   |   |
| Roll points    | 1.125 |   |   |   | 5.23 |   |   |   | 4.15 |   |   |   | 5.14 |   |   |   | 5.07 |   |   |   |
| Remark         | ok    |   |   |   | ok   |   |   |   | ok   |   |   |   | ok   |   |   |   | ok   |   |   |   |

Above this table we check 5 rolls. Every roll have 60 inch width. This fabric H&M buyer, fabric color Olive.

Buyer acceptable plenty point: 20

Every roll remark: OK

In Bangladesh most woven dyeing industries are suffering from these above inspection faults. So they face high production cost & not fulfill the target of production. We observed the grey & finished inspection process at our intern period .We also tried to observe the grey & finished inspection faults, causes of the faults & tried to find out the remedies of the faults. If an industry follows these above remedy measures, it can minimize its production cost and improve quality, productivity and acceptability.

## **Chapter-5**

### **Conclusion**

Though majority of the fabric faults occurred in the weaving section, all the other processes are also very important to get the excellent quality faultless fabric. If the spinning process contains any fault, we could not expect to get the quality fabric from the healthy dyeing, weaving, finishing and other section. As a result it has to be sold at lower prices, which creates a huge values loss to the company .To minimizes the value loss due to variety of defect occurring in the fabric, a manufacturer should try to minimize fabric defect from every processing steps. An automated defect detection and identification system can enhances the product quality and results in improved productivity to meet both customer demands and to reduce the costs associated with off quality. From our project work we can say that, every processing step from spinning to finishing are responsible for different kind of fabric defect. We have done project work is very careful with successfully. We found in the industry every person is very helpful and positive attitude. We also found the fabric faults with its remedies in every division. The project is very essential in our job life.



## Reference/Bibliography

1. <http://textilelearner.blogspot.com/2013/11/inspection-of-fabric-major.html>
2. <http://apparel-source.blogspot.com/2013/05/some-important-fabric-faults-causes.html>
3. <http://Fibre2Fashion.com>
4. <http://The Indian Textilejournal.com>
5. <http://Cotton Incorporated.Desales.com>
6. <http://www.slideshare.net/sheshir/woven-fabric-faults>
7. Book:

Weaving Machine Mechanism Management

By: Dr. M K Talukdar