



Faculty of Engineering

Department of Textile Engineering

**“Study on Frequently Occurring Fabric Inspection
Faults and Causes & Remedies”**

Course code: TE-4214 Course Title: Project (Thesis)

Submitted By:

Ayesha Ahmed	ID: 113-23-2638
Shafiqul Islam	ID: 113-23-2697
Tanver Ahmed Chowdhury	ID: 113-23-2707

Supervised By:

Md. Mominur Rahman
Senior Lecturer, Dept. of TE

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

Advance in Apparel Manufacturing Technology

August, 2015

Letter of Approval

July 29, 2015

To

The Head

Department of Textile Engineering

Daffodil International University

102, Shukrabad, Mirpur Road, Dhaka 1207

Subject: Approval of project report of B.Sc. in TE Program

Dear Sir

I am just writing to let you know that this project report titled as **“Study on Frequently Occurring Fabric Inspection Faults Causes & their Remedies”** has been prepared by the student bearing ID 113-23-2638, 113-23-2697 and 112-23-2707 is completed for final evaluation. The whole report is prepared based on the proper investigation and interruption through critical analysis of empirical data with required belongings. The students were directly involved in their project activities and the report become vital to spark of many valuable information for the readers.

Therefore it will highly be appreciated if you kindly accept this project report and consider it for final evaluation.

Yours Sincerely



Md Mominur Rahman

Senior Lecturer

Department of Textile Engineering

Faculty of Engineering

Daffodil International University

©Daffodil International University

DECLARATION

We hereby declare that, this project has been done by us under the supervision of **Md. Mominur Rahman , Senior Lecturer, Department Of Textile Engineering,** Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

Submitted By:

Student Name	ID	Signature
Ayesha Ahmed	113-23-2638	
Shafiqul Islam	113-23-2697	
Tanver Ahmed Chowdhury	113-23-2707	

Supervised By:

Md. Mominur Rahman

Senior Lecturer

Department of Textile Engineering

Daffodil International University

ACKNOWLEDGEMENT

We would like to thank Senior lecturer **Md. Mominur Rahman** for his leadership and guidance in helping us find our niche in fabric faults. Without his help we would not have been able to learn the intricate Subject.

We would like to thanks **Mr. Mizanur Rahman** EVP of RobinTex Group, **Mr. A.J.M Abdul Wazed** GM of Robintex for their continued support and for giving us the opportunity to work on the study on different types of rejection for fabric faults where many of the ensuing ideas were created. We would like to thank the members of the production department who kept us honest in our manufacturing idealism.

We would like to thanks **Md. Wahiduzzaman** Merchandising Manager of knit concern Ltd. Whose insight and ideas helped me to see how to apply different types of fabric fault in fabric inspection floor.

We would like to thank our entire course mate in Daffodil international University, who kept us sane & took part in this discuss while completing the course work.

Finally, we must acknowledge with due respect the constant support and parents.

ABSTRACT

Fabric inspection process is most important stages in garments sector. Whether fabric faults is an important parameter for rejection of fabrics. We have gathered a large experience about this project. We have increased our knowledge about how the inspection is done, problems of inspection & how those problems are minimized. This study investigated the knit fabric inspection process in a garment industry for the reasons of increasing faults and the priorities were determined for the improvement studies regarding rejection percentage. During data collection, the fabric inspections faults were determined. As a result, the knit fabric production process was concluded statistically. In addition, there was a statistically significant relation the faults amounts in term of rejection. Finally some suggestions are made for improving the quality of fabric inspection by minimizing the fabric inspection faults.

Table of Content

Declaration.....	ii
Acknowledgement.....	iii
Abstract.....	iv
Table of Content.....	v-vii
List of Table.....	viii
List of Chart.....	viii-ix

CHAPTER: 01 INTRODUCTION

1.0 Introduction.....	1
1.1 Background.....	1
1.2 Research Objectives.....	1
1.3 Importance of Research.....	2
1.4 Limitation of Research.....	2

CHAPTER: 02 LITERATURE SURVEY

2.1 Inspection of fabric.....	3
2.2 Reasons why inspection is carried out.....	3
2.3 Objectives of fabric inspection.....	4
2.4 Fabric inspection flow chart.....	5
2.5 Fabric inspection method.....	6
2.6 4 point system.....	6-7
2.7 Fabric inspection procedure.....	8
2.8 Tools of fabric inspection.....	8
2.9 Eligibility criteria for the quality inspector.....	9
2.10 General inspection procedure.....	9
2.11 4 point system to textile inspection.....	10
2.12 Importance of fabric inspection.....	10
2.13 Limitations of fabric inspection.....	10-11
2.14 Different types of fabric inspection faults and their causes and remedies.....	11-28
2.15 Photo gallery	29-31

CHAPTER: 03 EXPERIMENTAL DETAILS

3.1 Fabric inspection reports and description.....	32
3.1.1 Data table of grey fabric inspection.....	32
3.1.1 Data chart of grey fabric inspection.....	33
3.1.1 Data table of finish fabric inspection.....	34-35
3.1.1 Data chart of finish fabric inspection.....	36
3.1.1 Data chart of finish fabric faults.....	37
3.1.2 Data table of grey fabric inspection.....	38
3.1.2 Data chart of grey fabric inspection.....	39
3.1.2 Data table of finish fabric inspection.....	40-41
3.1.2 Data chart of finish fabric inspection.....	42
3.1.2 Data chart of finish fabric faults.....	43
3.1.3 Data table of grey fabric inspection.....	44
3.1.3 Data chart of grey fabric inspection.....	45
3.1.3 Data table of finish fabric inspection.....	46-47
3.1.3 Data chart of finish fabric inspection.....	48
3.1.3 Data chart of finish fabric faults.....	49
3.1.4 Data table of grey fabric inspection.....	50
3.1.4 Data chart of grey fabric inspection.....	51
3.1.4 Data table of finish fabric inspection.....	52-53
3.1.4 Data chart of finish fabric inspection.....	54
3.1.5 Data table of grey fabric inspection.....	55
3.1.5 Data chart of grey fabric inspection.....	56
3.1.5 Data table of finish fabric inspection.....	57-59

3.1.5 Data chart of finish fabric inspection.....	60
3.1.5 Data chart of finish fabric faults.....	61
3.1.6 Data table of grey fabric inspection.....	62
3.1.6 Data chart of grey fabric inspection.....	63
3.1.6 Data table of finish fabric inspection.....	64-65
3.1.6 Data chart of finish fabric inspection.....	66
3.1.6 Data chart of finish fabric faults.....	67
3.2 Loss Percentage in Cutting.....	68

CHAPTER: 04 RESULT AND DISCUSSION

4.1 Data Table of Grey Fabric Inspection (All).....	70-73
4.1 Data Chart of Grey Fabric Inspection (All).....	74
4.2 Data Table Finish Fabric Inspection (All).....	75-77
4.2 Data Chart Finish Fabric Inspection (All).....	78
4.3 Comparison Between Grey Fabric & Finish Fabric Inspection – 1.....	79
4.4 Comparison Between Grey Fabric & Finish Fabric Inspection – 2.....	80
4.5 Comparison Between Grey Fabric & Finish Fabric Inspection – 3.....	81
4.6 Comparison Between Grey Fabric & Finish Fabric Inspection – 4.....	82
4.7 Comparison Between Grey Fabric & Finish Fabric Inspection – 5.....	83
4.8 Comparison Between Grey Fabric & Finish Fabric Inspection – 6.....	84

CHAPTER: 05 CONCLUSION

Conclusion.....	87
-----------------	----

CHAPTER: 06 REFERENCES

References.....	88
-----------------	----

List of Table

- 3.1.1 Data table of grey fabric inspection
- 3.1.1 Data table of finish fabric inspection
- 3.1.2 Data table of grey fabric inspection
- 3.1.2 Data table of finish fabric inspection
- 3.1.3 Data table of grey fabric inspection
- 3.1.3 Data table of finish fabric inspection
- 3.1.4 Data table of grey fabric inspection
- 3.1.4 Data table of finish fabric inspection
- 3.1.5 Data table of grey fabric inspection
- 3.1.5 Data table of finish fabric inspection
- 3.1.6 Data table of grey fabric inspection
- 3.1.6 Data table of finish fabric inspection
- 4.1 Data table of grey fabric inspection (All)
- 4.2 Data table of finish fabric inspection (All)

List of Chart

- 3.1.1 Data chart of grey fabric inspection
- 3.1.1 Data chart of finish fabric inspection
- 3.1.1 Data chart of finish fabric faults
- 3.1.2 Data chart of grey fabric inspection
- 3.1.2 Data chart of finish fabric inspection
- 3.1.2 Data chart of finish fabric faults
- 3.1.3 Data chart of grey fabric inspection
- 3.1.3 Data chart of finish fabric inspection
- 3.1.3 Data chart of finish fabric faults
- 3.1.4 Data chart of grey fabric inspection
- 3.1.4 Data chart of finish fabric inspection
- 3.1.4 Data chart of finish fabric faults
- 3.1.5 Data chart of grey fabric inspection
- 3.1.5 Data chart of finish fabric inspection
- 3.1.5 Data chart of finish fabric faults
- 3.1.6 Data chart of grey fabric inspection
- 3.1.6 Data chart of finish fabric inspection
- 3.1.6 Data chart of finish fabric faults
- 4.1 Data chart of grey fabric inspection (All)
- 4.2 Data chart of finish fabric inspection (All)
- 4.3 Data chart of the comparison of grey & finish fabric inspection
- 4.4 Data chart of the comparison of grey & finish fabric inspection
- 4.5 Data chart of the comparison of grey & finish fabric inspection
- 4.6 Data chart of the comparison of grey & finish fabric inspection
- 4.7 Data chart of the comparison of grey & finish fabric inspection
- 4.8 Data chart of the comparison of grey & finish fabric inspection

01. INTRODUCTION:

1.1 Background:

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

1.1.1 What I have done in this:

1. Inspect some fabric
2. Make finish fabric inspection report
3. Make an inspection report after knitting
4. Compare between knitting and finish fabric inspection report
5. Statistical description of every report individually.
6. Statistical description of all reports.
7. Description about inspection method
8. Loss percentage after cutting

1.2 Objectives:

1. To evaluate the contributions of fabric inspection section.
2. To know about different types of fabric inspection.
3. To know about different types of fabric faults and its remedies.
4. To know about different types of fabric rejection & its remedies.
5. To know the effect of fabric faults on production.
6. To increase consciousness about different types of faults.
7. To know the causes of different types of defect & rejection and their effect.

1.3 Importance:

Fabric inspection section is 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. There was no enough scope for us to negotiate with responsible people in some key points for

carrying out the job spontaneously. But, we tried our best to complete this research job with real data and information.

2.0 LITERATURE SURVEY:

2.1 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, colour, 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.

2.2 Reasons Why Inspection Carried Out:

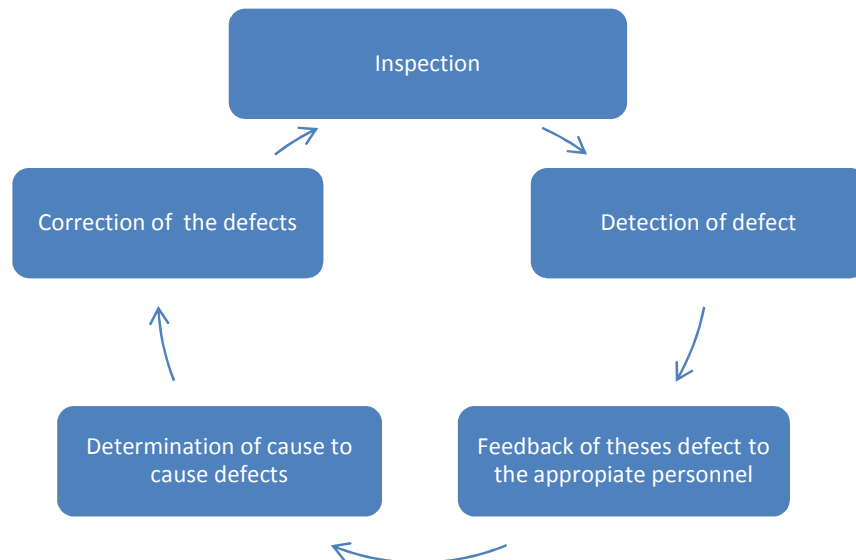
- To remove defects.
- To minimize the future reoccurrences of the defect.
- To determine quality and hence the price of the fabric.
- To supply information to proper levels of management as to the qualities being produced.

2.3 Objectives:

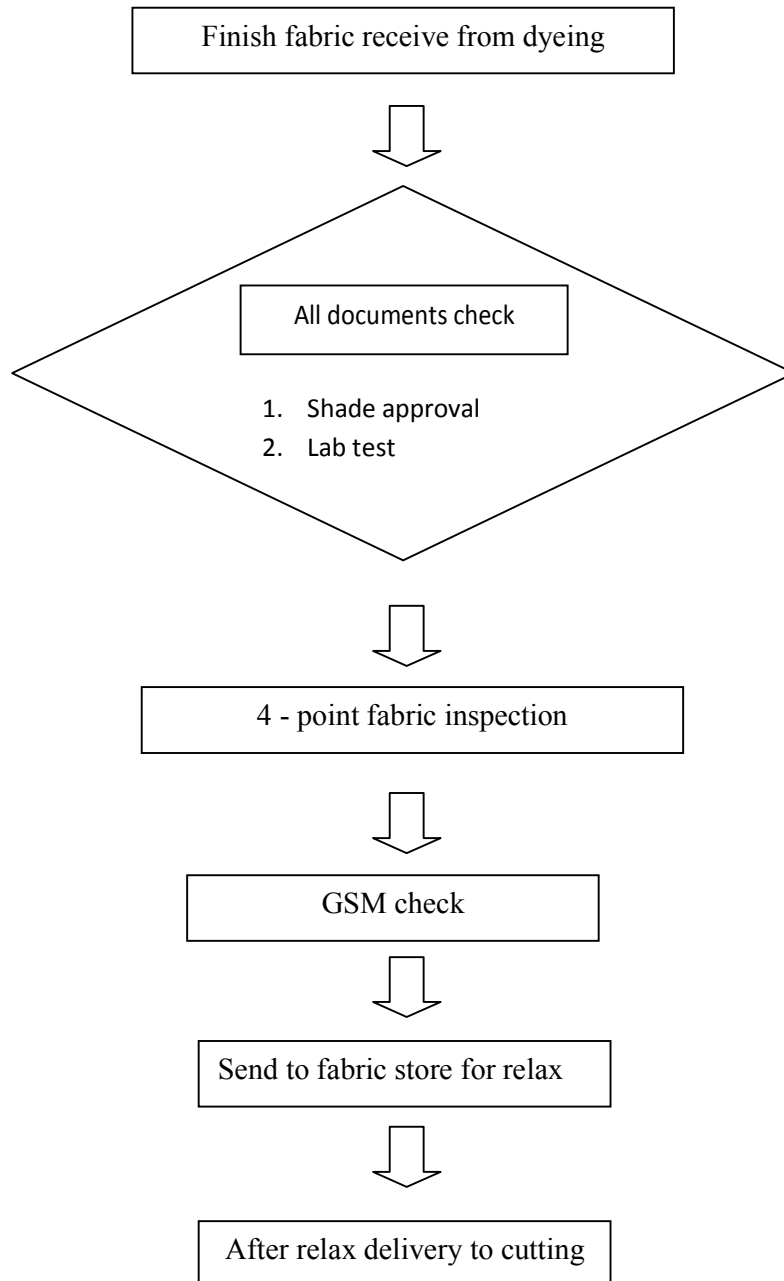
The objective of fabric inspection is to ascertain whether the fabric received is of the expected Quality standard or not. The main objective is detection of fabric defects and nonconformance as early as possible. So that the time and money are not wasted in the manufacturing process. The ultimate goal of any quality control activity in clothing industry is to satisfy the customers.

The main objectives of the inspection are the –

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



2.4 Fabric Inspection Flowchart:



2.5 Fabric Inspection Method:

- a) 4 point system
- b) 6 point system
- c) 10 point system
- d) Graniteville system
- e) Dallas point system

2.6 Four Point System: The system in which the penalty point of defect is maximum 4 is called 4 point system.

4 point system for fabric inspection is widely used in apparel industry. Most buyer require that all production fabric be inspected according to the 4-point system. So most of the apparel industry prefers 4 point rating system.

- It is the most popular point system.
- It was published in 1959 by the National Association of Shirt Pajama Sportswear Manufacturers.
- The 4-point system, also called the American Apparel Manufacturers Association (AAMA) point grading system for determining fabric quality.

Points to be considered in 4 point system:

- Faults are scored with penalty points of 1, 2, 3 and 4 according to the Size and significance of defect. No more than 4 penalty points can be assigned for any single defect.
- No linear yard or meter can contain more than 4 points, regardless of the number of defects within that yard or meter.
- Each full width defect should assign 4 points.

noticeable and severe defects are to be assigned 4 points for each yard or meter in which they occur, regardless of size.

Advantages of 4 point system:

- Worker can easily understand it

- It has no width limitation

The Grading Range:

Point	Grade
Points up to 0 to 20	A
Points up to 21 to 28	B
Points 28 above	Rejected

Fabric Faults Points Values:

Up to 3 inch	1
Over 3 - upto 6 inch	2
Over 6 - upto 9 inch	3
Length Of Defects	Point Allocated
Over 9 inch	4
Less than equal 1 (Holes)	2
Over 1	4

Calculation of 4 points system:

$$\text{Points / 100 sq.yds.} = \frac{\text{total defected points}}{\text{total fabric length (yards)}} \times \frac{100}{1} \times \frac{36"}{\text{Inspected fabric width}}$$

2.7 Fabric Inspection Procedure: This procedure shows the steps necessary to ensure an effective fabric inspection quality control program:

1. Determine the fabric quantity to be inspected.
2. Select the fabric rolls for inspection.
3. Place the fabric roll / bale on inspection frame / table.
4. Cut off a 6-inch piece across the width of the fabric from the beginning of the roll. Mark this piece so that the inspector will know the right and left side of the fabric. Use the strip to check the shading side-to-side and end-to-end by checking it at least against the middle of the
5. roll and once at the end of the roll.
6. Inspect for visual defects at a speed slow enough to find the defects.
7. Check that the roll contains the meters as stated by the Fabric Supplier.
8. Check for bowing & skewing in the fabric.
9. Major fabric defects are to be flagged by the Fabric Supplier. However, if any fault is not flagged already then it must be marked with a sticker or masking tape during inspection for its trace- ability and corrective action at cutting stage.
10. Record the faults of the fabric on the Fabric Quality Report.

2.8 Tools for fabric inspection:

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

1. Inspection frame with counter.
2. D - 65 light source (sunlight) / TL - 84 light source at the inspection frame as per the requirement of the customer.
3. Measuring tape & pair of scissors.
4. Stickers or masking tape to identify the faults.
5. Pick glass.

6. Digital Camera for taking reference snaps.
7. Master fabric sample or customer's reference sample.

2.9 Eligibility Criteria for the Quality Inspector:

1. The person must be at least Graduate.
2. He or she must have a minimum of two year experience in the textile industry
3. He or she must be well versed with the 4-point fabric inspection system.
4. He or she must be active and physically fit.
5. He or she must not be colorblind

2.10 General Inspection Procedures:

Fabric inspection is done in suitable and safe environment with enough ventilation and proper lighting.

Fabric passing through the frame must be between 45-60 degree angles to inspector and must be done on appropriate Cool White light 2 F96 fluorescent bulbs above viewing area. Back light can be used as and when needed.

Fabric speed on inspection machine must not be more than 15 yards per minute.

All fabric inspection must be done when 80% of good or lot is received.

Standard approved bulk dye lot standards for all approved lots must be available prior to inspection.

Approved standard of bulk dye lot must be available before starting inspection for assessing colour, hand, weight, construction, finish and visual appearance.

Shade continuity within a roll by checking shade variation between centre and selvage and the beginning, middle and end of each roll must be evaluated and documented.

Textiles like knits must be evaluated for weight against standard approved weight.

Fabric width must be checked from selvage to selvage against standard.

All defects must be flagged during inspection

The length of each roll inspected must be compared to length as mentioned on supplier ticketed tag and any deviation must be documented and reported to mill for additional replacement to avoid shortage.

If yard dyed or printed fabrics are being inspected the repeat measurement must be done from beginning, middle and end of selected rolls.

2.11 Four Point System of Textile Inspection:

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, end to end shading no penalty points are assigned but the roll is graded as second quality and must be reported to mill for replacement.

2.12 Importance of Fabric Inspection:

As we know that fabric are the main and costly raw materials of a garment. So it is very important to use fabric efficiently and control wastage of fabric. On the other hand fabric defects are the maximum defects of garments, for which many-unexpected problem may occur in a clothing industry. Such as- short shipment, discount, low price etc.

To avoid all above problems and to take preventive measures fabric inspection is very important for a clothing industry. It is also important for the following aspects:

- 1) Improve product quality
- 2) Minimize waste
- 3) Reduce the cost
- 4) Avoid short shipment/Order cancellation
- 5) Increase productivity
- 6)) Use grading system

2.13 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. If the reports are don't send to others fault percentage may not decrease. Shade variation is one of the major thing in the fabric inspection section. There are many types of shade variation. Like – running shade, roll to roll, batch wise shade variation. Shade variation must be checked in the fabric inspection section. If the check will not correct there will be a great chance of rejection. Rejection is a great loss for any factory. Buyer will reject the wrong shade fabric. It is also about the reputation of a factory.

2.14 Different Types of Fabric Inspection Fault and their Causes and

Remedies: There are many types of fabric faults and their causes and remedies has given below.

Slub:

Causes:

- Usually caused by a thick or heavy place in yarn or by ling getting on to yarn feeds.

Remedies:

- By using good quality yarn.

Lycra Out:

Causes:

- Fail to catch the lycra yarn by needle.
- Low tension of lycra yarn.
- Lycra yarn breakage.
- Faulty auto spot motion.

Remedies:

- Ensure the feed of lycra yarn to every needle.
- The tension of lycra should be uniform.

- Auto stop motion should work properly.

Stains or oils line:

Causes:

- Grease or oil stains from the ungaured moving machine part.
- Fabric touching the floors & other solid places during transportation in the trolleys.

Remedies:

- Wash & clean the dyeing machine thoroughly after dyeing every lot.
- All the lubricated moving machine parts should be protected with safety guards.

Sinker mark:

Causes:

- sinker not clean
- Defect/broken sinker.
- c). When dirt deposited in sinker it is rised & causes this faults.

Remedies:

- Sinker has to be clean
- Replacement of defected sinkers.

Pin Hole:

Causes:

- Improper tension
- Same drive for both knit & tuck stitch.
- Curved needle latch.

Remedies:

- Different drive has to maintain needle has to change.
- Needle has no change.

Hole:

Causes:

- Presence in knot in yarn.
- Weak places in yarn.
- Yarn tension too high.

- Yarn too dry.
- Yarn guide not properly set.

Remedies:

- Use of flat knots.
- Yarn regularity control.
- Use of protective filter creel.

Drop Stitches:

Definition:

Drop Stitches are randomly appearing small or big holes of the same or different size which appear as defects in the Knitted fabrics.

Major Causes:

- High Yarn Tension
- Yarn Overfeed or Underfeed
- High Fabric Take Down Tension
- Defects like Slubs, Neps, Knots etc.
- Incorrect gap between the Dial & Cylinder rings.

Remedies:

- Ensure uniform yarn tension on all the feeders with a Tension Meter.
- Rate of yarn feed should be strictly regulated as per the required Stitch Length.
- The fabric tube should be just like a fully inflated balloon, not too tight or too slack.
- The yarn being used should have no imperfections like; Slubs, Neps & big knots etc
- The gap between the Cylinder & the Dial should be correctly adjusted as per the knitted loop size.

Barriness:

Definition:

Barriness defect appears in the Knitted fabric in the form of horizontal stripes of uniform or variable width.

Causes:

- High Yarn Tension
- Count Variation
- Mixing of the yarn lots
- Package hardness variation

Remedies:

- Ensure uniform Yarn Tension on all the feeders.
- The average Count variation in the lot should not be more than + 0.3
- Ensure that the yarn being used for Knitting is of the same Lot .
- Ensure that the hardness of all the yarn packages is uniform using a hardness tester.

Streakiness:**Definition:**

Streaks in the Knitted fabrics appear as; irregularly spaced & sized, thin horizontal lines.

Causes:

- Faulty winding of the yarn packages.
- Yarn running out of the belt on the Pulley

Remedies:

- Winding of the yarn package should be proper.
- The yarn should be running between the belt and around the pulley.

Imperfections:**Definition:**

Imperfections appear on the fabric surface in the form of unevenly placed or randomly appearing Knots, Slubs & Neps, Thick & Thin places in the yarn.

Causes:

- Big Knots, Slubs & Neps in the yarn, Thick & Thin yarn.

Remedies:

- Specify the quality parameters of the yarns to be used for production to the yarn supplier.

Snarls:**Definition:**

Snarls appear on the fabric surface in the form of big loops of yarn getting twisted due to the high twist in the yarn.

Causes:

- High twist in the yarn.

Remedies:

- Twist in the yarn should be in required TPM.

Contaminations:**Definition:**

Contaminations appear in the form of foreign matter such as; dyed fibers, husk, dead fibers etc. in the staple spun yarn or embedded in the knitted fabric structure.

Causes:

- Presence of dead fibers & other foreign materials, such as; dyed fibers, husk & synthetic fibers etc.
- Dyed & other types of fibers flying from the adjacent Knitting machines cling to the yarn being used for knitting & get embedded in the Grey Fabric.

Remedies:

- Use rich fiber mixing for the yarns to be used for Knitting in order to have less dead fibers appearing in the fabric.
- Rigid control measures in the Blow Room to prevent the mixing of foreign matters in the Cotton mixing.
- Segregate the Spinning & Knitting Machines, with Plastic Curtains or Mosquito Nets, to prevent the fibers flying from the neighboring machines, from getting embedded in the yarn / fabric.

Spirality:

Definition:

Spirality appears in the form of a twisted garment after washing. The seams on both the sides of the garment displace from their position & appear on the front & back of the garment.

Causes:

- High T.P.I. of the Hosiery Yarn
- Uneven Fabric tension on the Knitting machine.
- Unequal rate of Fabric feed on the Stenter, Calender & Compactor machines.

Remedies:

- Use the Hosiery yarns of the recommended TPM level for Knitting.
- Ensure uniform rate of feed of the dyed fabric on both the edges while feeding the fabric to the Calender, Compactor or Stenter machines.

Needle Lines:

Definition:

Needle lines are prominent vertical lines along the length of the fabric which are easily visible in the grey as well as finished fabric.

Causes:

- Bent Latches, Needle Hooks & Needle stems
- Wrong Needle selection (Wrong sequence of needles, put in the Cylinder or Dial)

Remedies:

- Inspect the grey fabric on the knitting machine for any Needle lines.
- Check the Needle filling sequence in the Cylinder / Dial grooves (tricks).

Horizontal lines:**Causes:**

- Fault in bobbin
- Irregular tension on cams.

Remedies:

- Replace that bobbin.
- Check cams positioning

Broken Needles/ Laddering:**Definition:**

Defects caused by the broken needles show prominently as vertical lines parallel to the Wales. There are no loops formed in the Wale which has a broken needle.

Causes:

- High Yarn Tension
- Bad Setting of the Yarn Feeders
- Old & Worn out Needle set
- Cylinder Grooves are too tight restricting needle movement
- Breakage of hook or butt in needle.

Remedies:

- Ensure uniform & the right Yarn tension on all the feeders.
- Keep the recommended gap between the Yarn Feeders & the Needles.
- Periodically change the complete set of needles.
- Remove fly or blockage from groove.
- Replace defective needle.

Sinker Lines:

Definitions:

Sinker lines are prominent or feeble vertical lines appearing parallel to the Wales along the length of the knitted fabric tube.

Causes:

- Bent or Worn out Sinkers
- Sinkers being tight in the Sinker Ring grooves

Remedies:

- Replace all the worn out or bent sinkers causing Sinker lines in the fabric.
- Sinker lines are very fine & feeble vertical lines appearing in the fabric.
- Remove the fibers clogging the Sinker tricks (Groove)

Oil Lines:

Definitions:

Oil lines are prominent vertical lines which appear along the length of the knitted fabric tube. The lines become permanent if the needle oil used is not washable & gets baked due to the heat during the finishing of the fabric.

Causes:

- Fibers & fluff accumulated in the needle tricks which remain soaked with oil.
- Excessive oiling of the needle beds.

Remedies:

- Fibers accumulated in the needle tricks cause the oil to seep into the Fabric.
- Some lubricating oils are not washable & can not be removed during Scouring.
- Remove all the Needles & the Sinkers of the machine periodically.
- Clean the grooves of the Cylinder & Dial of the machine thoroughly with petrol.
- Blow the grooves of the Cylinder Dial & Sinker ring with dry air after cleaning.

Broken Ends:

Definition:

Broken ends appear as equidistant prominent horizontal lines along the width of the fabric tube when a yarn breaks or is exhausted.

Causes:

- High Yarn Tension
- Yarn exhausted on the Cones.

Remedies:

- Ensure correct yarn tension on all the feeders.
- Ensure that the Yarn detectors on all the feeders are working properly.
- Depute a skilled & alert machine operator on the knitting machine.

Fabric Press Off:

Definition:

Fabric press off appears as a big or small hole in the fabric caused due to the interruption of the loop forming process as a result of the yarn breakage or closed needle hooks.

Press off takes place, when the yarn feeding to both the short butt & long butt needles suddenly stops due to the yarn breakage.

At times complete fabric tube can fall off the needles if the needle detectors are not functioning or are not properly set.

Causes:

- End breakage on feeders with all needles knitting.
- Yarn feeder remaining in lifted up position due to which the yarn doesn't get fed in the hooks of the needles.

Remedies:

- Needle detectors, should be set precisely to detect the closed needles & prevent the fabric tube from completely pressing off.
- Proper yarn tension should be maintained on all the feeders.

Surface Hairiness & Piling:

Definition:

Surface hairiness appears in the form of excess superfluous fibers, on the surface of the knitted fabrics, which have either been reprocessed, or tumble dried.

Pilling appears as, small fiber balls formed on the fabric surface, due to the entanglement of loose surface fibers.

Factors such as, the fiber staple length, low T.P.M. & fabric construction (with long yarn floats) etc. also contribute to pilling.

Causes:

- Abrasion due to the contact with rough surfaces
- Excessive surface hairiness caused, due to the abrasive tumbling action
- Fabric friction in the Tumble Dryer
- Rough Dyeing process & abrasive machine surfaces (Soft Flow Machine tubes, Tumble Dryer drum etc.)
- Reprocessing of the fabric is, also a major cause of piling.

Remedies:

- Avoid using the Tumble Dryer.
- Control shrinkage by maximum fabric relaxation & over feed in the processing.
- Regularly inspect the fabric contact points on all the machines, for any rough & sharp surface.
- Avoid repeated reprocessing of the fabrics.
- Use anti pilling chemical treatments for the fabrics prone to pilling.

Snagging:

Definition:

Snagging appears on the knitted fabric surface as a pulled up yarn float showing up in the form of a large loop.

Causes:

- Caused by the pulling or the plucking of yarn from the, fabric surface, by sharp objects.

Remedies:

- Inspect & rectify the fabric contact points on all the machines (Soft Flow Dyeing, Tumble Dryer & Centrifuge etc), on which snagging is taking place.

Bowing:**Definition:**

Bowing appears as rows of courses or yarn dyed stripes forming a bow shape along the fabric width.

Causes:

- Uneven distribution of tensions across the fabric width while dyeing or finishing the fabric.

Remedies:

- Bowing can be corrected by reprocessing the fabric by feeding it from the opposite end.
- A special machine (MAHLO) is also available for correcting the bowing in the knitted fabrics.

Dyeing Patches:**Definition:**

Dyeing patches appear, as random irregular patches on the surface of dyed fabrics.

Causes:

- Inadequate Scouring of the grey fabric is one of the primary causes of the dyeing patches.
- Improper leveling agent is also one of the causes of dyeing patches.
- Correct pH value not maintained.
- Dyeing machine stoppage due to power failure or the fabric entanglement in the dyeing machine are a major cause of the dyeing patches.

Remedies:

- Scour the grey fabric thoroughly to remove all the impurities from the fabric before dyeing.
- Use appropriate leveling agents to prevent patchy dyeing.
- Maintain the correct pH value during the course of dyeing.

- Use a power back up (Inverter) for the dyeing operation to be completed uninterrupted.

Softener Marks:

Definition:

Softener marks appear as distinct irregular patches in the dried fabric after the application of softener.

Causes:

- Softener not being uniformly dissolved in water

Remedies:

- Scour the grey fabric thoroughly to remove all the impurities from the fabric before dyeing.
- Ensure that the softener is uniformly dissolved in the water & doesn't remain undissolved as lumps or suspension.
- Use the right softener & the correct procedure for the application.
- Maintain the correct pH value of the softener before application.

Stains:

Definition:

Stains appear as spots or patches of grease oil or dyes of different color, in a neat & clean finished fabric surface.

Causes:

- Dyeing Machine not cleaned thoroughly after dyeing a lot.
- Grease & Oil stains from the unguarded moving machine parts like; Gears Shafts Driving Pulleys & Trolley wheels etc.
- Fabric touching the floors & other soiled places during transportation, in the trolleys.
- Handling of the fabric with soiled hands & stepping onto the stored fabric with dirty feet or shoes on.

Remedies:

- Wash & clean the dyeing machine thoroughly after dyeing every dye lot.
- Follow the dyeing cycle of Light- Medium- Dark shades & then the reverse the cycle while dyeing the fabric.
- All the lubricated moving machine parts should be protected with safety guards.
- Make sure that the fabric is neatly packed in or covered with Polythene sheets while transporting or in storage.
- Handle the fabric carefully with clean hands & do not let anyone step onto the stored fabric.

Color Fading (Poor Color Fastness):**Definition:**

The color of the garment or the fabric appears lighter & pale in comparison to the original color of the product after a few uses.

Causes:

- Dyeing recipe i.e. the poor fixing of the dyes is a major cause of color fading.
- Using the wrong combination of colors in a secondary or tertiary shade.
- Use of strong detergents & the quality of water are also the common causes for color fading.
- Prolonged exposure to strong light will also cause the colors to fade.
- High level of acidity or alkalinity in the perspiration of individuals also causes color fading.

Remedies:

- Use the correct dyeing recipe i.e. the appropriate leveling, fixing agents & the correct combination of dyes.
- Follow the wash care instructions rigidly.
- Use mild detergents & soft water for washing the garments.
- Don't soak the garments for more than 10- 15 minutes in the detergent prior to washing
- Turn the wet garments inside out while drying.
- Dry in shade & not in direct sunlight.

- Protect the garments against prolonged direct exposure to strong lights (show rooms or exhibitions etc.).

Shade Variation:

(Roll to roll & within the same roll)

Definition:

Sometimes there appears to be a difference in the depth of shade between the roll to roll & from place to place in the same roll. The defect will show up clearly in the garments manufactured from such fabric.

Causes:

- Shade variation can be as a result of mixing of the, fabrics of two different lots.
- Shade variation is also caused, by the variation in the process parameters i.e. Time, Temperature & Speed etc. from one fabric roll, to the other.
- Shade variation can appear to be, in fabrics with GSM variation, caused due to the uneven stretching, unequal fabric overfeed % etc.

Remedies:

- Ensure that the grey fabric used for one shade is knitted from the same lot of the yarn.
- Ensure that the same process parameters (Width, Overfeed, Temperature & Machine Speed etc.) are used for each roll of a dye lot.

Tonal Variation:

Definition:

Roll to roll or within the same roll difference in the color perception i.e. Greenish, Bluish, Reddish or Yellowish etc. is attributed as tonal variation in the shade.

Causes:

- Wrong Dyeing recipe
- Wrong leveling agent selection or wrong dyes combinations.
- Improper fabric Scouring.
- Impurities like Oil & Wax etc. not being completely removed in Scouring
- Level dyeing not being done due to the inappropriate leveling agents.
- Variation in the process parameters, e.g. Temperature, Time & Speed etc .

Remedies:

- Use appropriate leveling agents to ensure uniform & level dyeing.
- Scour the grey fabric thoroughly to ensure the removal of all the impurities.
- Ensure that the whole lot of the dyed fabric is processed under uniform process parameters.

Wet Squeezer Marks:**Definition:**

The fabric on the edges of the fabric tube gets permanent pressure marks due to the hard pressing by the squeezer rolls. These marks appear as distinct lines along the length of the fabric & can't be corrected.

Causes:

- These marks are caused due to the excessive pressure, of the squeezer rolls of the Padding Mangle, on the wet fabric, while rinsing.

Remedies:

- Use the Padding mangle only for the application of the softener.
- Use a hydro extractor (Centrifuge) for the extraction to avoid the squeezer roll marks.
- Soon after extraction open the fabric manually to prevent crease marks in the damp fabric.

Folding Marks:**Definition:**

Fold marks appear as distinct pressure marks along the length of the fabric.

Causes:

- High pressure of the fabric Take Down rollers of the Knitting machine on the grey fabric is one of the main causes.
- Too much pressure of the feeding rolls of the Calander & Compactor is the primary cause of the folding marks in the knitted fabric.

Remedies:

- Adjust the gap between the two rolls as per the thickness of the fabric sheet .
- Gap between the two Calander rolls should be just enough to let the rolls remove the wrinkles in the fabric but put no pressure on the fabric sheet especially in the case of Pique & structured fabrics.

Crease Marks:

Definition:

Crease marks appear in the knitted fabric, as dark haphazard broken or continuous lines.

Causes:

- Damp fabric moving at high speed in twisted form, in the Hydro extractor (Centrifuge)

Remedies:

- Use anti Crease, during the Scouring & the Dyeing process .
- The use of anti Crease, swells the Cellulose & prevents the formation of Crease mark.
- Spread the fabric in loose & open form & not in the rope form, in the Hydro Extractor.

High Shrinkage:

Definition:

The original intended measurements of the Garment go, haywire, during storage or after the very first wash.

Causes:

- High Stresses & strains exerted on the fabric, during Knitting, Dyeing & Processing & the fabric not being allowed to relax properly, thereafter.
- High shrinkage is primarily due to the fabric being subject to high tension, during the Knitting, Dyeing & the Finishing processes

Remedies:

- Keep the Grey Fabric in loose plated form, immediately after the roll is cut.

- Store the finished fabric also in the plated form & not in the roll form.
- Allow the fabric to relax properly, before it is cut.
- Give maximum overfeed to the fabric, during the processing, on the Stenter, Compactor & the Calendering machines.

GSM Variation:

Definition:

The fabric will appear to have a visible variation in the density, from roll to roll or within the same roll of, the same dye lot.

Causes:

- Roll to roll variation in the, process parameters, of the fabric, like; Overfeed & Width wise stretching of the dyed fabric, on the Stenter, Calender & Compactor machines.
- Roll to roll variation in the fabric stitch length.

Remedies:

- Make sure that all the fabric rolls in a lot, are processed under the same process parameters.
- The Knitting Machine settings, like; the Quality Pulley diameter etc. should never be disturbed.

Fabric Width Variation:

Definition:

Different rolls of the same fabric lot, having difference in the finished width of the fabric.

Causes:

- Grey fabric of the same lot, knitted on different makes of Knitting Machines, having varying number of Needles in the Cylinder.
- Roll to roll difference, in the Dyed Fabric stretched width, while feeding the fabric on the Stenter, Calender & Compactor.

Remedies:

- The whole lot of the grey fabric should be knitted on the same make of knitting machines.
- For the same gauge & diameter of the knitting machines, there can be a difference of as high as 40 needles, from one makes to the other make of the machine.
- This difference, in the number of needles, causes a difference of upto 2"-3" in the finished width of the fabric
- The stretched width of the grey fabric should remain constant, during finishing on the stenter.

Measurement Problems:**Definition:**

The measurements of the garments totally change after, a few hours of relaxation & after the first wash. The arm lengths or the front & back lengths of the garments may vary, due to the mix up of the parts.

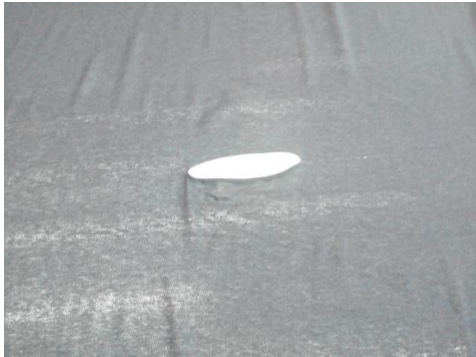
Causes:

- Shrinkage caused due to the inadequate relaxation of the knitted fabrics, before cutting.
- Mixing of the garment parts cut from, different layers or different rolls of the knitted fabric.

Remedies:

- Use a trolley, for laying the fabric on the table, to facilitate a tension free, laying.
- Let the fabric relax for a few hours, before cutting, especially the Lycra fabrics.
- Ensure the numbering of the different layers of the fabric, to prevent the mix up of the components.

2.15. PHOTO GALLERY: Different types of fabric fault images are given in the below.



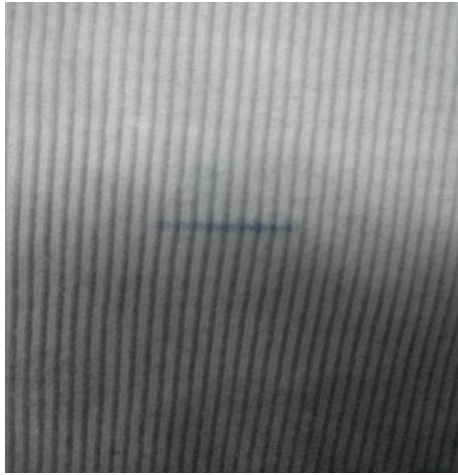
Setup



Lycra Out



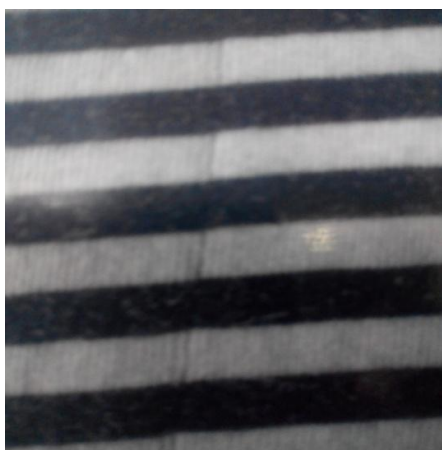
Stenter Pin Hole



Slub



Oil spot



Drop needle



Joint

3.0 EXPERIMENTAL DETAILS: In this chapter, 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 knitting means grey fabric inspection. And also analyzing the fabric faults after finishing by using the 4 point system.

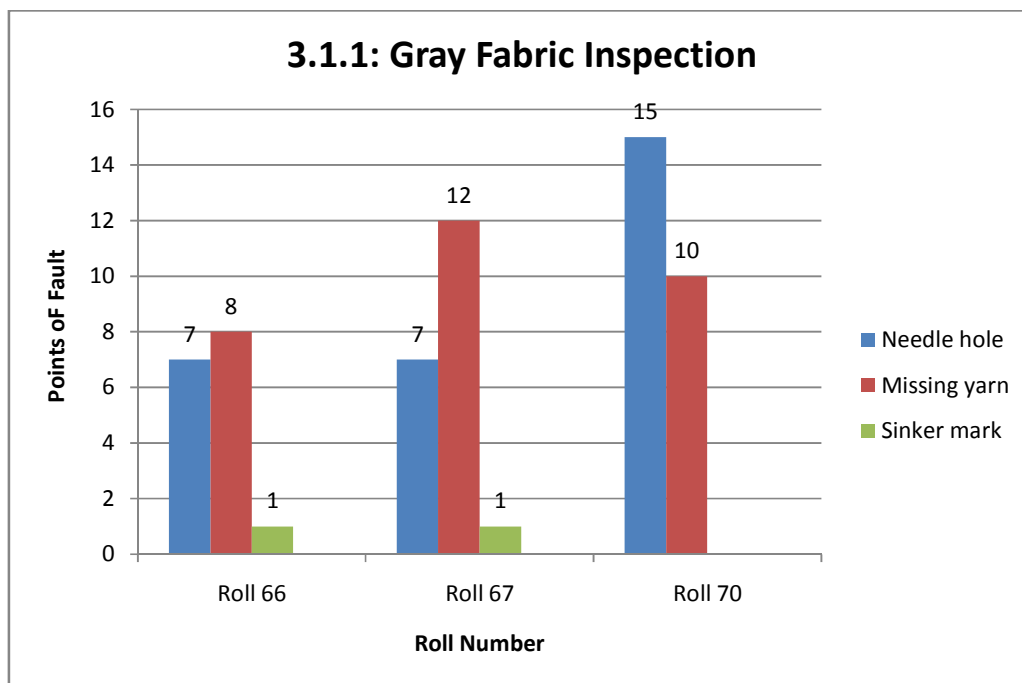
3.1 Fabric Inspection Reports and Description:

3.1.1 Gray Fabric and Finish Fabric Inspection Report – 1

Table 3.1.1 Grey Fabric Inspection:

										Defects							
Buyer	Order NO.	Roll No.	Color	M/C dia	Req. Dia	Gauge	Fabric type	GS M	Stitch length	Needle hole	Sinker mark	Oil stain	Loop	Lycra out	Missing yarn	Stripe	Yarn conta
H & M	221870	66	Black	36	66"		S / J	120		7	Y				8		
H & M	221870	67	Black	36	66"		S / J	120		7	Y				12		
H & M	221870	70	Black	36	66"		S / J	120		15	Y				10		

In the above table no. 3.1.1 we can see that there is a grey fabric inspection report. This inspection report is made in knitting section. The report is about the faults, dia, gsm, color, stitch length, gauge, fabric type etc. Only knitting faults can be found here. The faults which can find are – needle hole, sinker mark, oil stain, loop, lycra out, missing yarn, stripe, yarn contamination, slub, barrie, press of, lycra drop. After inspecting the fabric, fabric will grade by grading system after counting the total point. It will help to select the good and bad fabric. In this report buyer name is H & M. Order number is 221870. Here we have observed three rolls – 66, 67, 70. And the fabric type is single jersey. And the gsm of these fabrics roll is 120. All fabrics are in black color. Required dia for these fabrics are 66". Here we have find three types of fault – needle hole, sinker mark, missing yarn. In roll no. 66 we have found 15 points for faults so it's grade is A. In roll no. 67 we have found 19 points for faults so it's grade is A. In roll no. 70 we have found 25 points for faults so it's grade is B.



It is observed from graph no. 3.1.1 that, we have selected some rolls of fabric. These fabrics are gray fabric which has the roll number. In this graph (3.1.1) we have selected 3 rolls – roll 66, roll 67 and roll 70. In this rolls we have found some types of faults – needle hole, missing yarn, sinker mark. And also we can see the faults point. Here horizontal axis shows the roll number and vertical axis shows the points of fault. How many points can be found for each fault from each roll are given. In roll number 66 we have found 7 needle hole, 8 missing yarn, have sinker mark. In roll number 67 we have found 7 needle hole, 12 missing yarn, have sinker mark. In roll number 70 we have found 10 needle hole, 10 missing yarn, have no sinker mark.

3.0 EXPERIMENTAL DETAILS: In this chapter, 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 knitting means grey fabric inspection. And also analyzing the fabric faults after finishing by using the 4 point system.

3.1 Fabric Inspection Reports and Description:

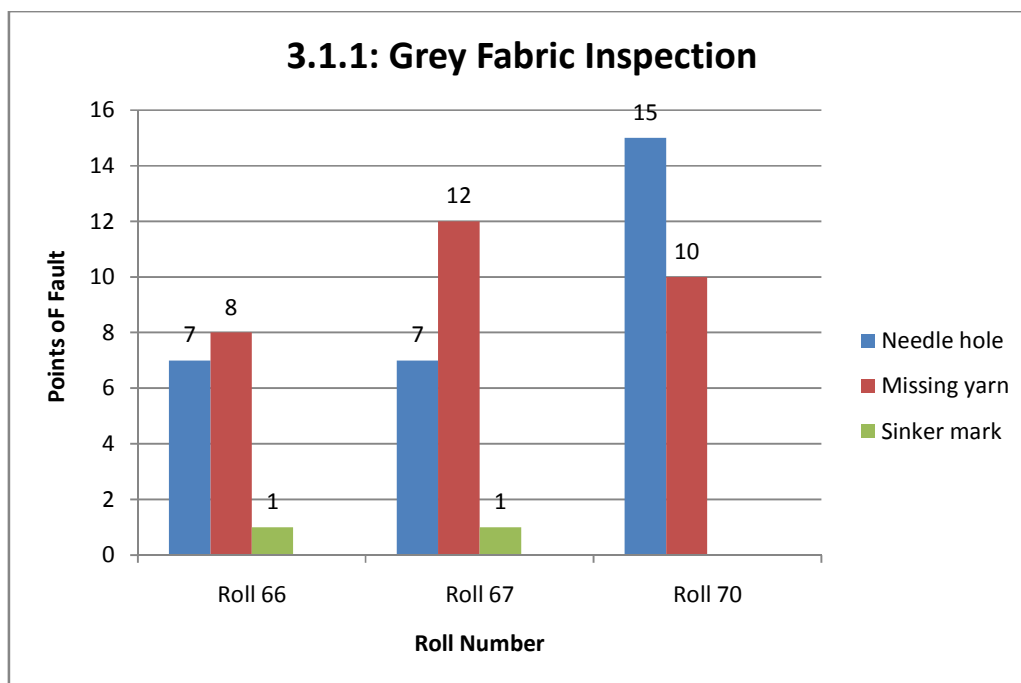
3.1.1 Gray Fabric and Finish Fabric Inspection Report – 1

Table 3.1.1 Grey Fabric Inspection:

										Defects														
B u y e r	Or de r N o.	R o l l N o.	C o l o r	M / C d i a	R e q . D ia	G a u g e	Fa b r i c t y p e	G S M	St i t c h l e n g t h	N e e d l e h o l e	Si n k e r m a r k	O i l s t a i n	L o o p	L y c r a o u t	Mi s s i n g y a r n	St r i p e	Y a r n c o n t a	S l u b	B a r r i e	P r e s s o f	L y c r a d r o p	T o t a l p o i n t s	G r a d e	
H & M	22 18 70	6 6	B l a c k	3 6	6 6 ”	18	S / J	1 7 0	2. 6 5	7	Y				8								1 5	A
H & M	22 18 70	6 7	B l a c k	3 6	6 6 ”	18	S / J	1 7 0	2. 6 5	7	Y				12								1 9	A

H & M	22 18 70	7 0	B l a c k	3 6	6 6 "	18	S / J	1 7 0	2. 6 5	15	Y					10							2 5	B

In the above table no. 3.1.1 we can see that there is a grey fabric inspection report. This inspection report is made in knitting section. The report is about the faults, dia, gsm, color, stitch length, gauge, fabric type etc. Only knitting faults can be found here. The faults which can find are – needle hole, sinker mark, oil stain, loop, lycra out, missing yarn, stripe, yarn contamination, slub, barrie, press of, lycra drop. After inspecting the fabric, fabric will grade by grading system after counting the total point. It will help to select the good and bad fabric. In this report buyer name is H & M. Order number is 221870. Here we have observed three rolls – 66, 67, 70. And the fabric type is single jersey. And the gsm of these fabrics roll is 120. All fabrics are in black color. Required dia for these fabrics are 66". Here we have find three types of fault – needle hole, sinker mark, missing yarn. In roll no. 66 we have found 15 points for faults so it's grade is A. In roll no. 67 we have found 19 points for faults so it's grade is A. In roll no. 70 we have found 25 points for faults so it's grade is B.



It is observed from graph no. 3.1.1 that, we have selected some rolls of fabric. These fabrics are gray fabric which has the roll number. In this graph (3.1.1) we have selected 3 rolls – roll 66, roll 67 and roll

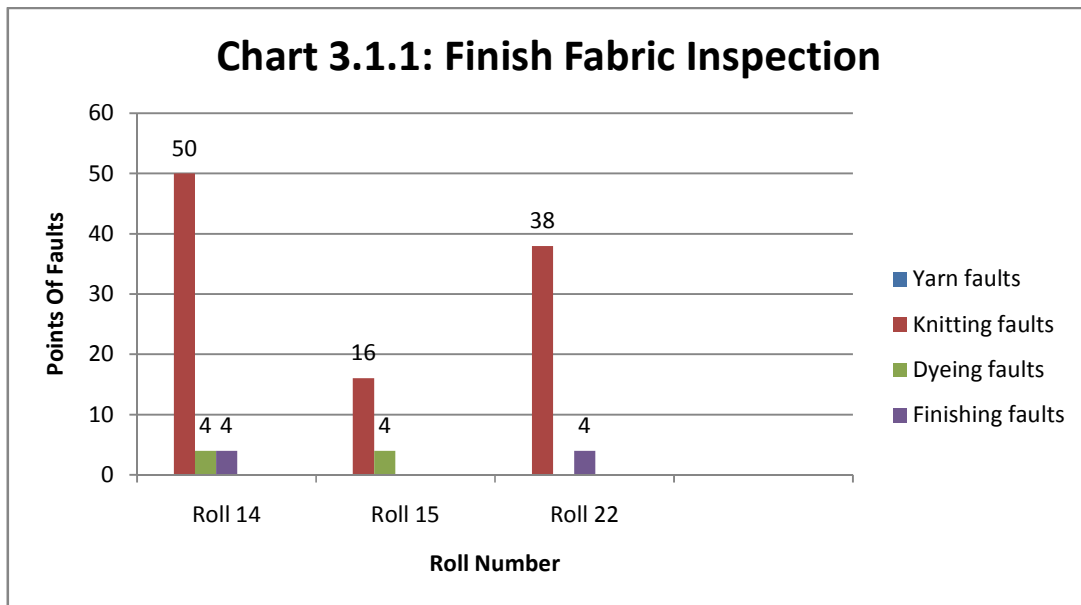
70. In this rolls we have found some types of faults – needle hole, missing yarn, sinker mark. And also we can see the faults point. Here horizontal axis shows the roll number and vertical axis shows the points of fault. How many points can be found for each fault from each roll are given. In roll number 66 we have found 7 needle hole, 8 missing yarn, have sinker mark. In roll number 67 we have found 7 needle hole, 12 missing yarn, have sinker mark. In roll number 70 we have found 10 needle hole, 10 missing yarn, have no sinker mark.

Table 3.1.1 Finish Fabric Inspection:

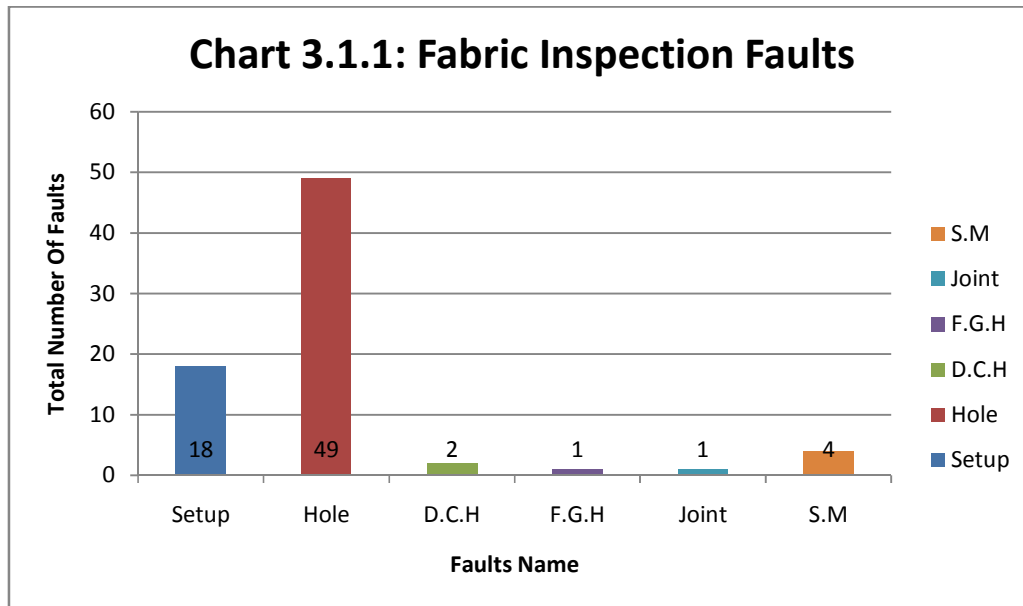
BUYER		H & M		Fabric Composition				Total Fabric Roll			3 Rolls			No. Rolls Of Inspection			3 Rolls		
ORDER NO.		221870		Fabric Construction		S/J		No. Of Rolls Accepted			3 Rolls			No. Rolls Of Rejected			No Rolls		
BATCH NO.		53193		Fabric Weight		549		Accept			Y			Reject					
COLOUR		Black		REQD. GSM		170													
REQD. WITH (DIA)		66”		CUTTABLE DIA															

KNITTING ROLL NO#	DYEING ROLL NO#	WEIGHT (KG)	LENGTH (YDS)	FABRIC WIDTH	ACTUAL GSM	YARN FAULTS			KNITTING/CONSTRUCTION FAULTS									DYEING FAULTS					FINISHING FAULTS							TOTAL POINT	POINTS PER 100 LINIER YD	RESULTS		REMARKS		
						SLUB	THICK & THIN	YARN CONTAMINATION	SETUP	LOOP	SINKER MARK	OIL SPOT	HOLE	STRIPE	PATTA	DIA MARK	KNOT	DROP NEEDLE	LYCRA OUT	DYEING SPOT	CREASE MARK	SOFTNER SPOT	DYEING HOLE	DYEING CUTTING HOLE	JOINT	ABRATION MARK	STENTER PIN HOLE	DIRTY/SOIL/STAIN	FINISHING SHRINKAGE HOLE			FINISHING GSM	INSPECTOR GSM		PAS S	FAI L
66	15	19.60	97.06	68”	126				16		Y									4									20	11.41	A					
70	14	22.40	121.77	66”	120				20		Y		30							4					4			58	27.65	B						
67	22	25.40	129.69	68”	124				24		Y		14								1							39	16.91	A						
SUB TOTAL																																				
COMENTS:-Dia,plus,66” (67-70),setup=15, hole=22, D.C.H=2,F.S.H=1,Joint=1,S.M=3,Hand fell hard, Total faults = 44																																				

In the above table no. 3.1.1 we can see that there is a finish fabric inspection report. This inspection report is made after knitting, dyeing and finishing. In this report many important information has been included. Like – buyer name, order number, fabric type, fabric color, batch number, required dia, required gsm, faults points etc. Yarn, dyeing, knitting, finishing faults can be found in this report because this inspection report is made after knitting, dyeing and finishing. Yarn faults like – slub, thick and thin, yarn conta. Knitting faults like – setup, loop, sinker mark, , knot, hole, oil spot, stripe, patta, dia mark, drop needle, lycra out. Dyeing faults like – dyeing spot, crease mark, softner spot, dyeing hole, dyeing cutting hole. Finishing faults like abrasion mark, stenter pin hole, finishing holes etc. can be found in this inspection. These faults have points. Then use the grading according to points. The grading range is 0-20 points are consider as grade A. 21-28 points are consider as grade B. Above 28 are consider as rejected. In the comments total fault number for each fault are given.



It is observed from graph no. 3.1.1 that, we have selected some rolls of fabric. These fabrics are gray fabric which has the roll number. In this graph (3.1.1) we have selected 3 rolls – roll 14, roll 15 and roll 22. In this rolls we have found some types of faults – needle hole, missing yarn, sinker mark. And also we can see the faults point. Here horizontal axis shows the roll number and vertical axis shows the points of fault. How many points can be found for each fault from each roll are given.



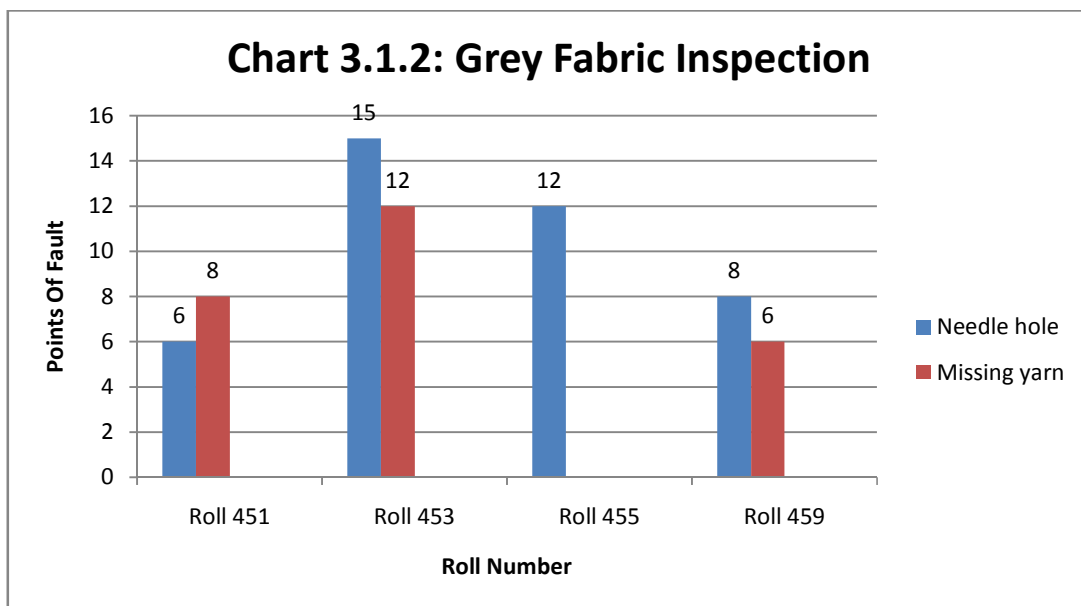
It is observe from graph no. 3.1.1 that, we have selected some fabrics and inspect the fabrics. Then we make a fabric inspection report. From this we get different types of fault. In this graph (3.1.1) horizontal axis shows the different types of fabric fault. And the vertical axis shows the total number of fault for each fault.

3.1.2 Grey Fabric & Finish Fabric Inspection Report – 2

Table 3.1.2 Grey Fabric Inspection:

										Defects													
Buyer	Order N0.	Roll No.	Color	M/C dia	Req. Dia	Gauge	Fabric type	GSM	Stitch length	Needle hole	Sinker mark	Oil stain	Loop	Lycra out	Missing yarn	Stripe	Yarn conta	Slub	Barrie	Press of	Lycra drop	Total points	Grade
H & M	524332	451	Black	36	62''	18	1×1 rib	150	2.65	6					8							14	A
H & M	524332	453	Black	36	62''	18	1×1 rib	150	2.65	15												15	A
H & M	524332	455	Black	36	62''	18	1×1 rib	150	2.65	12												12	A
H & M	524332	459	Black	36	62''	18	1×1 rib	150	2.65	8					6							14	A

In the above table no. 3.1.2 we can see that there is a grey fabric inspection report. This inspection report is made in knitting section. The report is about the faults, dia, gsm, color, stitch length, gauge, fabric type etc. Only knitting faults can be found here. The faults which can find are – needle hole, sinker mark, oil stain, loop, lycra out, missing yarn, stripe, yarn contamination, slub, barrie, press of, lycra drop. After inspecting the fabric, fabric will grade by grading system after counting the total point. It will help to select the good and bad fabric. In this report buyer name is H & M. Here the order number is 524332 for all rolls in the table. We have observed four rolls – 451, 452, 455, 459. All these fabrics are in black color. Fabric construction is 1×1 rib. Required dia is 62'' and required gsm is 150. We found two types of fault – needle hole, missing yarn. Total points for roll no. 451 is 14 so it is considered as A grade fabric. Total points for roll no.453 is 15 so it is considered as A grade fabric. Total points for roll no.455 is 12 so it is considered as A grade fabric. Total points for roll no.459 is 14 so it is considered as A grade fabric.



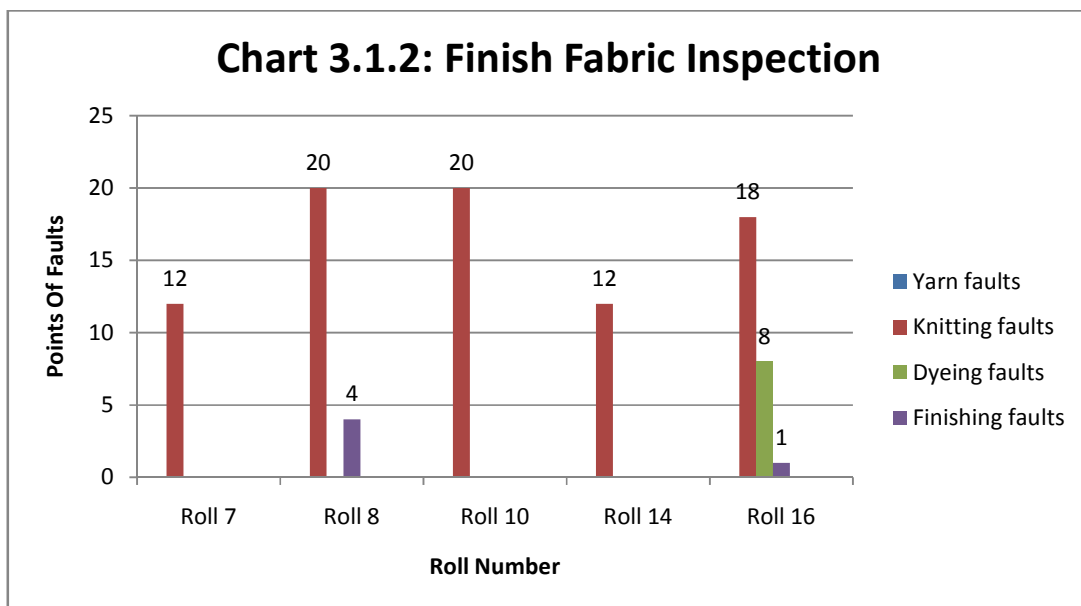
It is observed from graph no. 3.1.2 that, we have selected some rolls of fabric. These fabrics are gray fabric which has the roll number. In this graph (3.1.2) we have selected 4 rolls – roll 451, roll 453 and roll 455, roll 459. In this rolls we have found some types of faults – needle hole, missing yarn. And also we can see the faults point. Here horizontal axis shows the roll number and vertical axis shows the points of fault. How many points can be found for each fault from each roll are given. In roll number 451 we have found 6 needle hole, 8 missing yarn and found same in the roll no. 459. In roll number 453 we have found 15 needle hole, 12 missing yarn. In roll number 455 we have found only 12 needle hole.

Table 3.1.2 Finish Fabric Inspection:

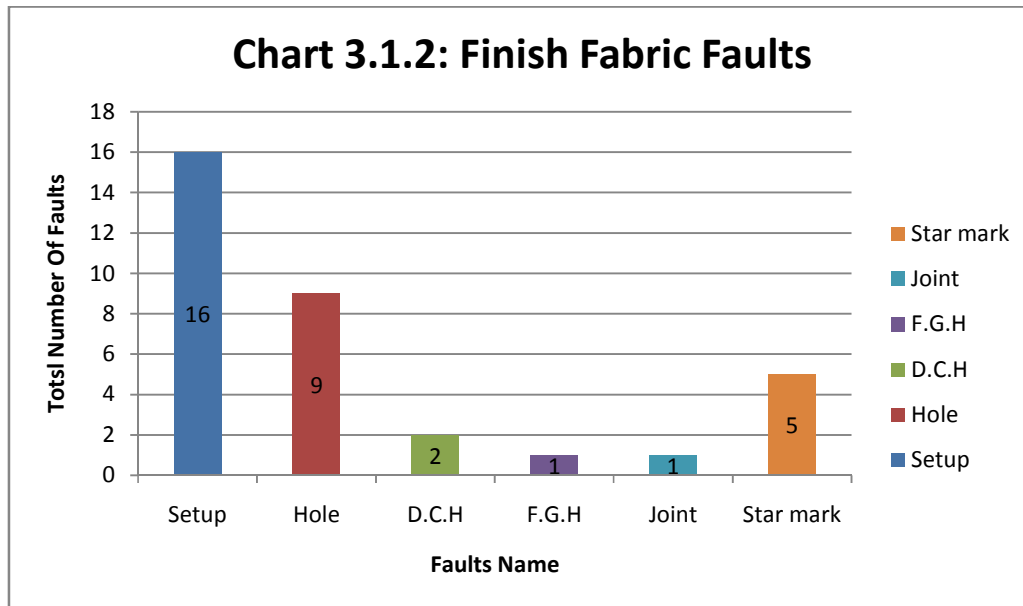
BUYER				H & M		Fabric Composition		1×1 rib		Total Fabric Roll				4 Rolls				No. Rolls Of Inspection				4 Rolls			
ORDER NO.				524332		Fabric Construction				No. Of Rolls Accepted				4 Rolls				No. Rolls Of Rejected				No Rolls			
BATCH NO.				53238		Fabric Weight		324		Accept				Y		Reject									
COLOUR				Black		REQD. GSM		150																	
REQD. WITH (DIA)				62”		CUTTABLE DIA																			

KNITTING ROLL NO#	DYEING ROLL NO#	WEIGHT (KG)	LENGTH (YDS)	FABRIC WIDTH	ACTUAL GSM	YARN FAULTS			KNITTING/CONSTRUCTION FAULTS										DYEING FAULTS					FINISHING FAULTS						TOTAL POINT	POINTS PER 100 LINIER YD	RESULTS		REMARKS		
						SLUB	THICK & THIN	YARN CONTAMINATION	SETUP	LOOP	SINKER MARK	OIL SPOT	HOLE	STRIPE	PATTA	DIA MARK	KNOT	DROP NEEDLE	LYCRA OUT	DYEING SPOT	CREASE MARK	SOFTNER SPOT	DYEING HOLE	DYEING CUTTING HOLE	JOINT	ABRATION MARK	STENTER PIN HOLE	DIRTY/SOIL/STAIN	FINISHING SHRINKAGE HOLE			FINISHING GSM HOLE	INSPECTOR GSM HOLE		PASS	FAIL
453	08	23.10	104.09	65”	147				20																	4		24	13.60	A						
455	7	19.30	82.29	66”	153				8				4															12	8.46	A						
459	14	24.70	106.23	65”	153				8				4															12	6.62	A						
451	10	15.80	68.77	63”	157				12				8															20	17.74	A						
SUB TOTAL																																				
COMENTS:-Dia (59”-67”). Setup=12, hole=8, F.G.H=1, Total faults= 21																																				

In the above table no. 3.1.2 we can see that there is a finish fabric inspection report. This inspection report is made after knitting, dyeing and finishing. In this report many important information has been included. Like – buyer name, order number, fabric type, fabric color, batch number, required dia, required gsm, faults points etc. Yarn, dyeing, knitting, finishing faults can be found in this report because this inspection report is made after knitting, dyeing and finishing. Yarn faults like – slub, thick and thin, yarn conta. Knitting faults like – setup, loop, sinker mark, , knot, hole, oil spot, stripe, patta, dia mark, drop needle, lycra out. Dyeing faults like – dyeing spot, crease mark, softner spot, dyeing hole, dyeing cutting hole. Finishing faults like abration mark, stenter pin hole, finishing holes etc. can be found in this inspection. These faults have points. Then use the grading according to points. The grading range is 0-20 points are consider as grade A. 21-28 points are consider as grade B. Above 28 are consider as rejected. In the comments total fault number for each fault are given.



It is observed from graph no. 3.1.2 that, we have selected some rolls of fabric. These fabrics are gray fabric which has the roll number. In this graph (3.1.2) we have selected 5 rolls – roll 7, roll 8, roll 10, roll 14 and roll 16. In this rolls we have found some types of faults – needle hole, missing yarn, sinker mark. And also we can see the faults point. Here horizontal axis shows the roll number and vertical axis shows the points of fault. How many points can be found for each fault from each roll are given.



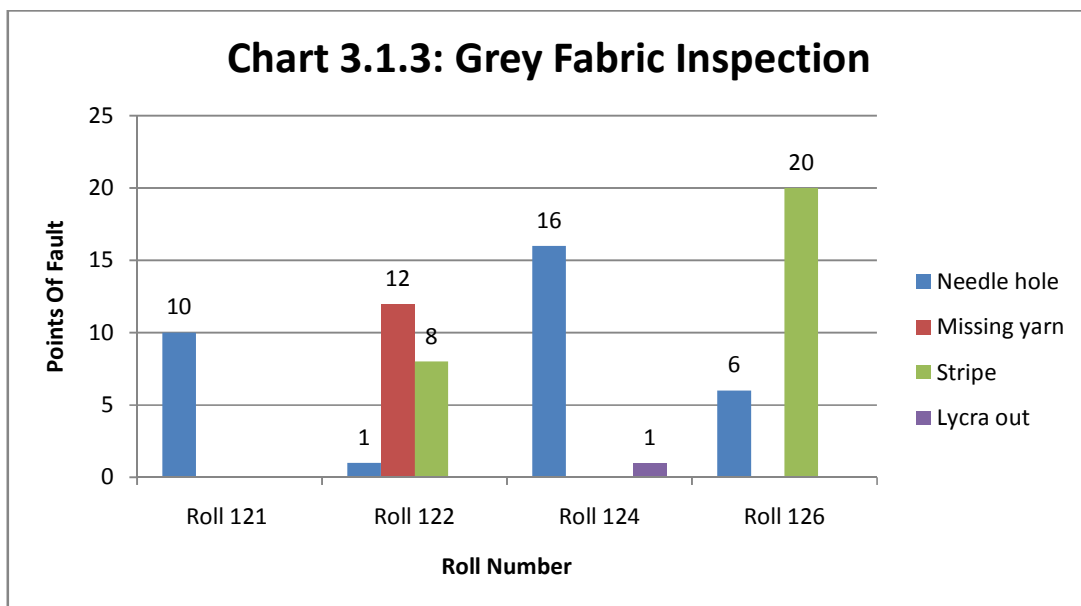
It is observe from graph no. 3.1.2 that, we have selected some fabrics and inspect the fabrics. Then we make a fabric inspection report. From this we get different types of fault. In this graph (3.1.2) horizontal axis shows the different types of fabric fault. And the vertical axis shows the total number of fault for each fault.

3.1.3 Grey Fabric & Finish Fabric Inspection Report – 3

Table 3.1.3 Grey Fabric Inspection:

										Defects													
Buyer	Order N0.	Roll No.	Color	M/C dia	Req. Dia	Gauge	Fabric type	GSM	Stitch length	Needle hole	Sinker mark	Oil stain	Loop	Lycra out	Missing yarn	Stripe	Yarn conta	Slub	Barrie	Press of	Lycra drop	Total points	Grade
H & M	400672	121	Black	36	72''	18	Ly S/J	200	2.50	10												10	A
H & M	400672	122	Black	36	72''	18	Ly S/J	200	2.50	1					12	8						21	B
H & M	400672	124	Black	36	72''	18	Ly S/J	200	2.50	16				1								17	A
H & M	400672	126	Black	36	72''	18	Ly S/J	200	2.50	6						20						26	B

In the above table no. 3.1.3 we can see that there is a grey fabric inspection report. This inspection report is made in knitting section. The report is about the faults, dia, gsm, color, stitch length, gauge, fabric type etc. Only knitting faults can be found here. The faults which can find are – needle hole, sinker mark, oil stain, loop, lycra out, missing yarn, stripe, yarn contamination, slub, barrie, press of, lycra drop. After inspecting the fabric, fabric will grade by grading system after counting the total point. Which will help to select the good and bad fabric. In this report buyer name is H & M. Fabric type is ly s / j. Req. dia is 72''. Color of the fabric is black. GSM of these fabric rolls is 200. Order no. for this – 400672. These information is required for roll no. 121, 122, 124, 126.



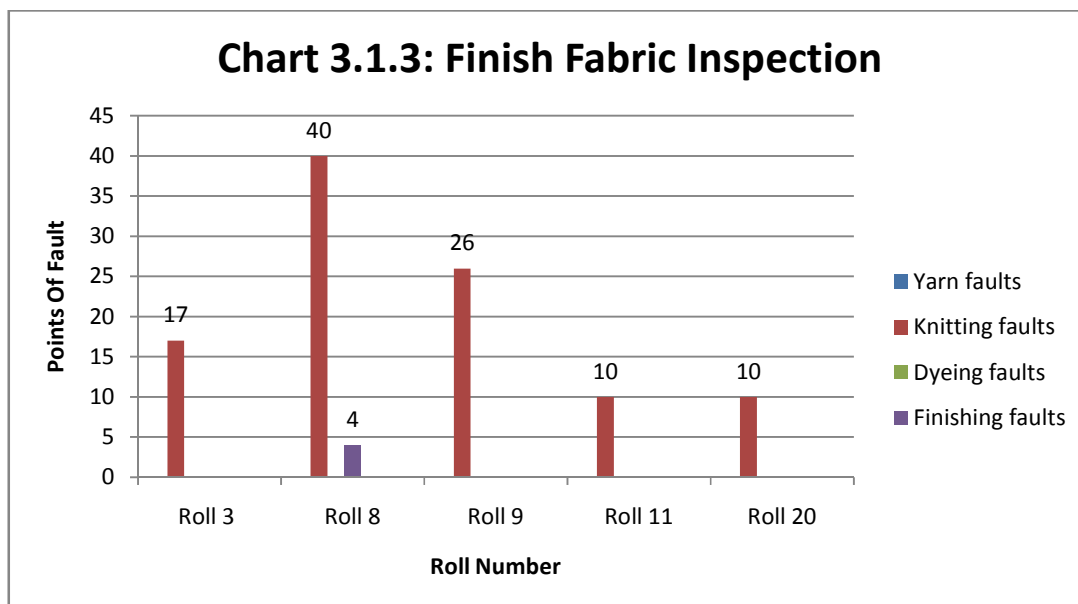
It is observed from graph no. 3.1.3 that, we have selected some rolls of fabric. These fabrics are gray fabric which has the roll number. In this graph (3.1.3) we have selected 4 rolls – roll 121, roll 122 and roll 124, roll 126. In this rolls we have found some types of faults – needle hole, missing yarn, stripe, lycra out. And also we can see the faults point. Here horizontal axis shows the roll number and vertical axis shows the points of fault. How many points can be found for each fault from each roll are given. In roll number 121 we have found only 10 needle hole. In roll number 122 we have found 1 needle hole, no missing yarn, 8 stripe. In roll number 124 we have found 16 needle hole, 1 lycra out. In roll number 126 we have found 6 needle hole, 20 stripe.

Table 3.1.3 Finish Fabric Inspection:

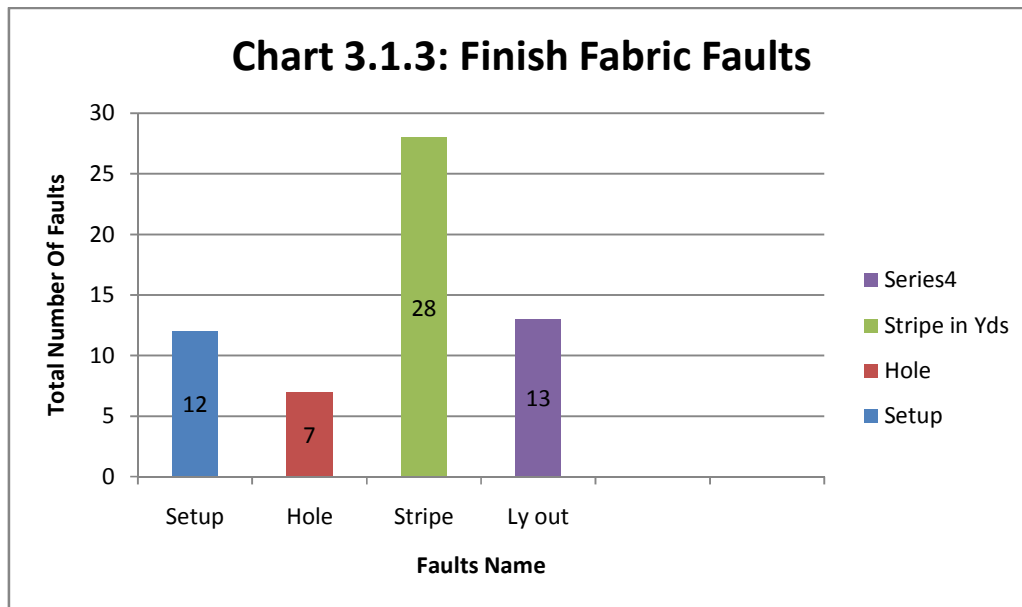
BUYER	H & M	Fabric Composition	
ORDER NO.	400672	Fabric Construction	Ly S/J
BATCH NO.	53217	Fabric Weight	533
COLOUR	Black	REQD. GSM	200
REQD. WITH (DIA)	72”	CUTTABLE DIA	

KNITTING ROLL NO#	DYEING ROLL NO#	WEIGHT (KG)	LENGTH (YDS)	FABRIC WIDTH	ACTUAL GSM	YARN FAULTS			KNITTING/CONSTRUCTION FAULTS										DYEING FAULTS					FINISHING FAULTS							TOTAL POINT	POINTS PER 100 LINIER YD	RESULTS		REMARKS			
						SLUB	THICK & THIN	YARN CONTAMINATION	SETUP	LOOP	SINKER MARK	OIL SPOT	HOLE	STRIPE	PATTA	DIA MARK	KNOT	DROP NEEDLE	LYCRA OUT	DYEING SPOT	CREASE MARK	SOFTNER SPOT	DYEING HOLE	DYEING CUTTING HOLE	JOINT	ABRATION MARK	STENTER PIN HOLE	DIRTY/SOIL/STAIN	FINISHING SHRINKAGE HOLE	FINISHING GSM HOLE			INSPECTOR GSM HOLE	PASS		FAIL		
126	8	30.30	90.87	74"	194				8		Y		6	20					6											32	18.11	A						
124	3	25.10	75.83	75"	190				16									1												9	6.01	A						
122	9	25.50	76.08	74"	195				12					8				6												30	20.27	A						
121	11	16.40	48.19	74"	198				4				6																	14	14.04	A						
COMENTS:-Dia plus 72" F(73"- 77"),setup=12, hole=6, stripe=28Y,Ly out=13,Sinker mark, total fault= 59																																						

In the above table no. 3.1.3 we can see that there is a finish fabric inspection report. This inspection report is made after knitting, dyeing and finishing. In this report many important information has been included. Like – buyer name, order number, fabric type, fabric color, batch number, required dia, required gsm, faults points etc. Yarn, dyeing, knitting, finishing faults can be found in this report because this inspection report is made after knitting, dyeing and finishing. Yarn faults like – slub, thick and thin, yarn conta. Knitting faults like – setup, loop, sinker mark, , knot, hole, oil spot, stripe, patta, dia mark, drop needle, lycra out. Dyeing faults like – dyeing spot, crease mark, softner spot, dyeing hole, dyeing cutting hole. Finishing faults like abrasion mark, stenter pin hole, finishing holes etc. can be found in this inspection. These faults have points. Then use the grading according to points. The grading range is 0-20 points are consider as grade A. 21-28 points are consider as grade B. Above 28 are consider as rejected. In the comments total fault number for each fault are given.



It is observed from graph no. 3.1.3 that, we have selected some rolls of fabric. These fabrics are gray fabric which has the roll number. In this graph (3.1.3) we have selected 5 rolls – roll 3, roll 8, roll 9, roll 11 and roll 20. In this rolls we have found some types of faults – needle hole, missing yarn, sinker mark. And also we can see the faults point. Here horizontal axis shows the roll number and vertical axis shows the points of fault. How many points can be found for each fault from each roll are given.



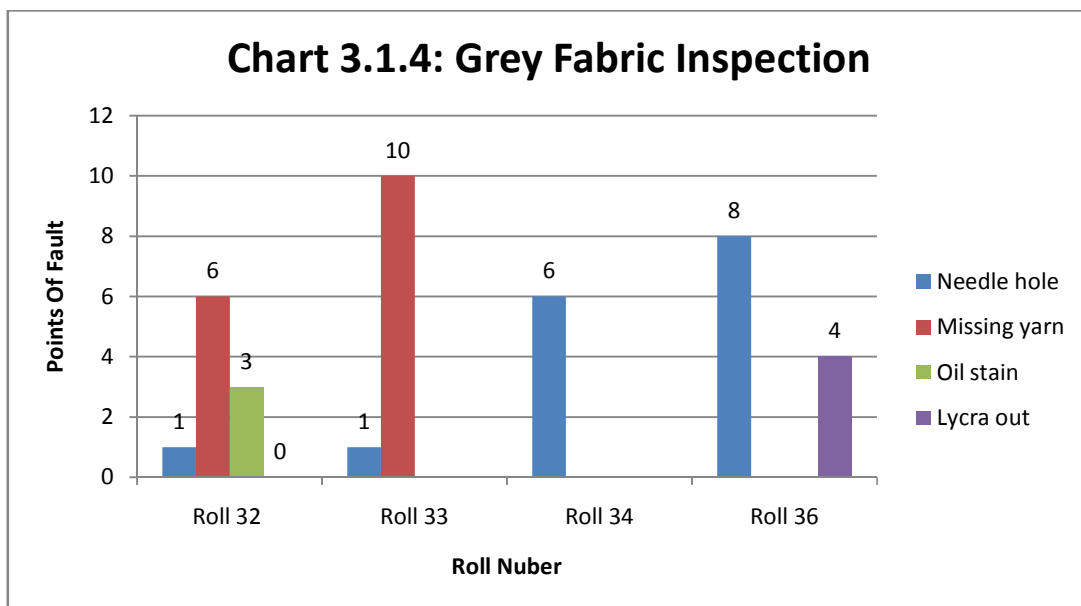
It is observe from graph no. 3.1.3 that, we have selected some fabrics and inspect the fabrics. Then we make a fabric inspection report. From this we get different types of fault. In this graph (3.1.3) horizontal axis shows the different types of fabric fault. And the vertical axis shows the total number of fault for each fault.

3.1.4 Grey Fabric & Finish Fabric Inspection Report – 4

Table 3.1.4 Grey Fabric Inspection:

											Defects													
Buy er	Orde r N0.	Rol l No.	Colo r	Act ual GS M	M/ C dia	Req . Dia	Gaug e	Fabric type	GSM	Stitch length	Needle hole	Sinker mark	Oil stain	Loop	Lycra out	Missing yarn	Stripe	Yarn conta	Slub	Barrie	Press of	Lycra drop	Total points	Grad e
H & M	281217	32	Blac k	260	36	66''	18	Ly S/J	260	2.10	1		3			6							10	A
H & M	281217	33	Blac k	262	36	66''	18	Ly S/J	260	2.10						10							10	A
H & M	281217	34	Blac k	262	36	66''	18	Ly S/J	260	2.10	6												6	A
H & M	281217	36	Blac k	262	36	66''	18	Ly S/J	260	2.10	8				4								12	A

In the above table no. 3.1.4 we can see that there is a grey fabric inspection report. This inspection report is made in knitting section. The report is about the faults, dia, gsm, color, stitch length, gauge, fabric type etc. Only knitting faults can be found here. The faults which can find are – needle hole, sinker mark, oil stain, loop, lycra out, missing yarn, stripe, yarn contamination, slub, barrie, press of, lycra drop. After inspecting the fabric, fabric will grade by grading system after counting the total point. Which will help to select the good and bad fabric. In this report buyer name is H & M, order number is 281217, fabric color is black, required gsm is 260 for roll number 32,33,34 where the actual gsm is also 260,262,262, required dia is 66". Machine dia is 36, fabric type is lycra single jerssy. Gauge is 18, stitch length is 2.10. In this table we can see that all the fabric are in grade A. from this grade we can understand that quality of this fabrics are very good. There are some grading range which are use to grade the fabrics. Like – from 0-20 points are consider as grade A, from 21-30 points are consider as grade B. Above 30 points consider as reject fabric.



It is observed from graph no. 3.1.4 that, we have selected some rolls of fabric. These fabrics are gray fabric which has the roll number. In this graph (3.1.4) we have selected 4 rolls – roll 32, roll 33, roll 34 and roll 36. In this rolls we have found some types of faults – needle hole, missing yarn, oil stain, lycra out. And also we can see the faults point. Here horizontal axis shows the roll number and vertical axis shows the points of fault. How many points can be found for each fault from each roll are given. In roll number 32 we have found 1 needle hole, 6 missing yarn, 3 oil stain. In roll number 33 we have found 1 needle hole, 10 missing yarn. In roll number 34 we have found only 6 needle hole. In roll number 36 we have found 8 needle hole, 4 lycra out.

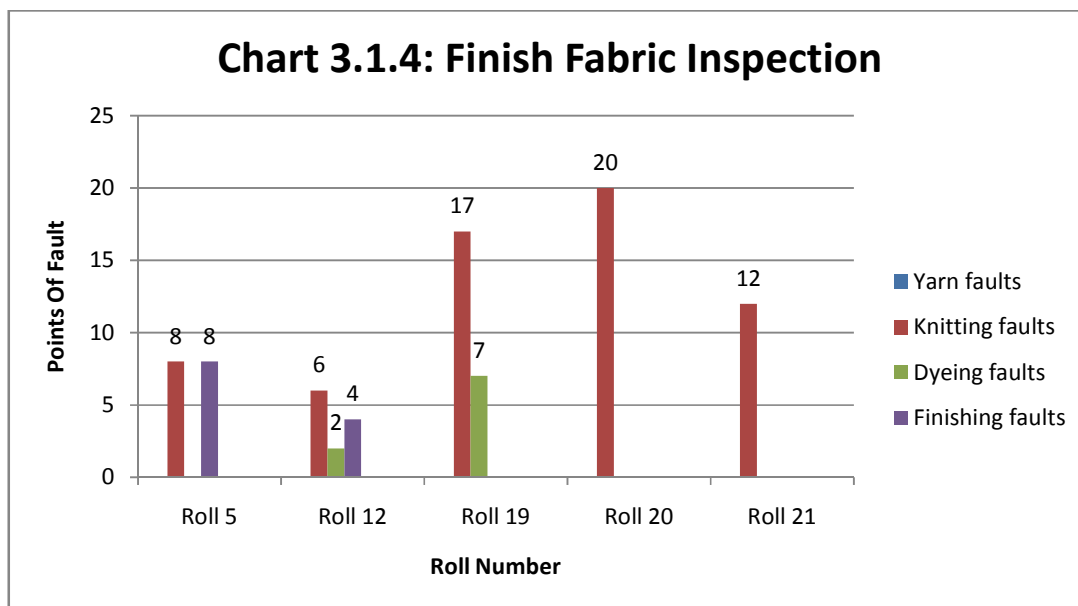
Table 3.1.4 Finish Fabric Inspection:

BUYER		H & M		Fabric Composition			
ORDER NO.		281217		Fabric Construction		LY.SI	
BATCH NO.		53425		Fabric Weight		399.60	
COLOUR		BLACK		REQD. GSM		260	
REQD. WITH (DIA)		66’’		CUTTABLE DIA			

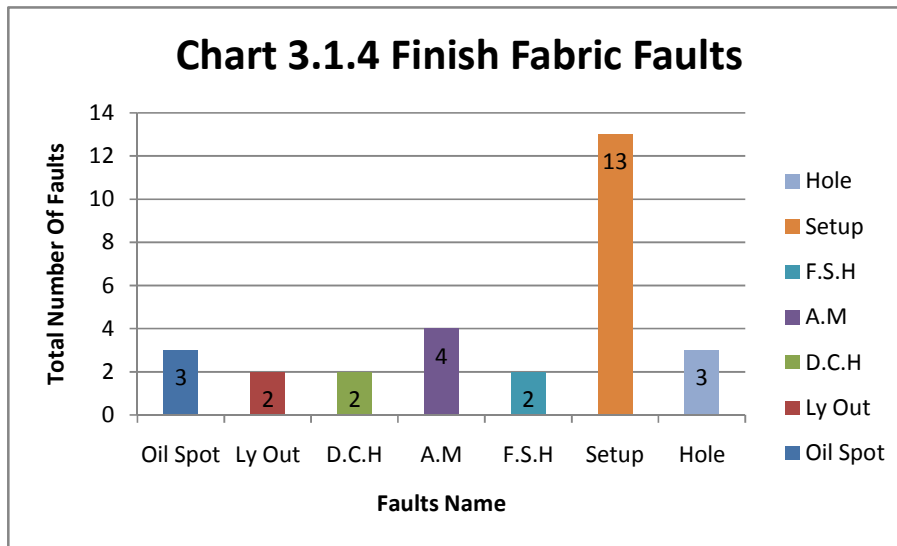
Total Fabric Roll			4 Rolls			No. Rolls Of Inspection			4 Rolls		
No. Of Rolls Accepted			3 Rolls			No. Rolls Of Rejected			1 Rolls		
Accept			Reject								

KNITTING ROLL NO#	DYEING ROLL NO#	WEIGHT (KG)	LENGTH (YDS)	FABRIC WIDTH	ACTUAL GSM	YARN FAULTS			KNITTING/CONSTRUCTION FAULTS									DYEING FAULTS					FINISHING FAULTS								TOTAL POINT	POINTS PER 100 LINIER YD	RESULTS		REMARKS	
						SLUB	THICK & THIN	YARN CONTAMINATION	SETUP	LOOP	SINKER MARK	OIL SPOT	HOLE	STRIPE	PATTA	DIA MARK	KNOT	DROP NEEDLE	LYCRA OUT	DYEING SPOT	CREASE MARK	SOFTNER SPOT	DYEING HOLE	DYEING CUTTING HOLE	JOINT	ABRATION MARK	STENTER PIN HOLE	DIRTY/SOIL/STAIN	FINISHING SHRINKAGE HOLE	GSM HOLE			GSM INSPECTOR HOLE	PAS S		FAI L
33	20	23.70	56.66	69’’	261				20																					20	19.54	A				
34	21	10.00	23.54	69’’	265				8				4																	12	28.23	Reject				
32	19	26.00	62.81	71’’	251				12			3	2							8										25	21.38	B				
36	05	20.00	48.24	69’’	256				8													4			4					16	18.18	A				
UB TOTAL																																				
COMENTS:-Dia plus (66-71’’),Setup-12, Oil=3,Hole-03, Dyeing cutting hole-02, Abration mark-(4y), F.S.H-01,Total faults = 22																																				

In the above table no. 3.1.4 we can see that there is a finish fabric inspection report. This inspection report is made after knitting, dyeing and finishing. In this report many important information has been included. Like – buyer name, order number, fabric type, fabric color, batch number, required dia, required gsm, faults points etc. Yarn, dyeing, knitting, finishing faults can be found in this report because this inspection report is made after knitting, dyeing and finishing. Yarn faults like – slub, thick and thin, yarn conta. Knitting faults like – setup, loop, sinker mark, , knot, hole, oil spot, stripe, patta, dia mark, drop needle, lycra out. Dyeing faults like – dyeing spot, crease mark, softner spot, dyeing hole, dyeing cutting hole. Finishing faults like abrasion mark, stenter pin hole, finishing holes etc. can be found in this inspection. These faults have points. Then use the grading according to points. The grading range is 0-20 points are consider as grade A. 21-28 points are consider as grade B. Above 28 are consider as rejected. In the comments total fault number for each fault are given.



It is observed from graph no. 3.1.4 that, we have selected some rolls of fabric. These fabrics are gray fabric which has the roll number. In this graph (3.1.4) we have selected 5 rolls – roll 5, roll 12, roll 19, roll 20 and roll 21. In this rolls we have found some types of faults – needle hole, missing yarn, sinker mark. And also we can see the faults point. Here horizontal axis shows the roll number and vertical axis shows the points of fault. How many points can be found for each fault from each roll are given.



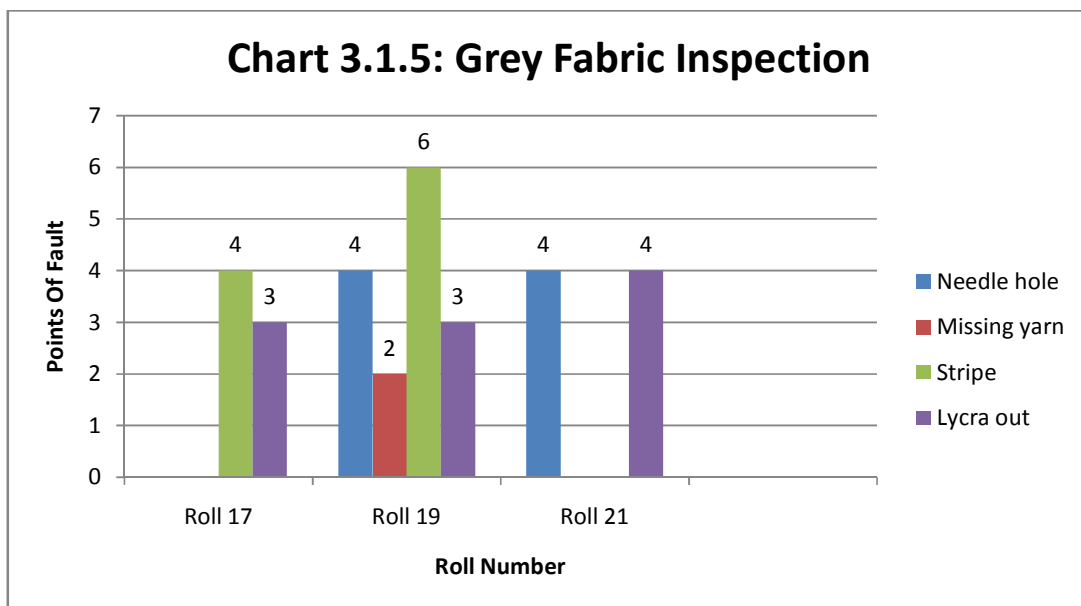
It is observe from graph no. 3.1.4 that, we have selected some fabrics and inspect the fabrics. Then we make a fabric inspection report. From this we get different types of fault. In this graph (3.1.4) horizontal axis shows the different types of fabric fault. And the vertical axis shows the total number of fault for each fault.

3.1.5 Grey Fabric & Finish Fabric Inspection Report – 5

Table 3.1.5 Grey Fabric Inspection:

											Defects												Totaltl points	Grade
Buyer	Order N0.	Roll No.	Color	Actual gsm	M/C dia	Req. Dia	Gauge	Fabric type	GSM	Stitch length	Needle hole	Sinker mark	Oil stain	Loop	Lycra out	Missing yarn	Stripe	Yarn conta	Slub	Barrie	Press of	Lycra drop		
H & M	847741	17	Blue	162	36	66”	18	Ly S/J	160	2.2					3		4						7	A
H & M	847741	19	Blue	158	36	66”	18	Ly S/J	160	2.2	4				3	2	6					8	23	B
H & M	847741	21	Blue	156	36	66”	18	Ly S/J	160	2.2	4				4								8	A

In the above table no. 3.1.5 we can see that there is a grey fabric inspection report. This inspection report is made in knitting section. The report is about the faults, dia, gsm, color, stitch length, gauge, fabric type etc. Only knitting faults can be found here. The faults which can find are – needle hole, sinker mark, oil stain, loop, lycra out, missing yarn, stripe, yarn contamination, slub, barrie, press of, lycra drop. After inspecting the fabric, fabric will grade by grading system after counting the total point. Which will help to select the good and bad fabric. In this report buyer name is H & M, order number is 847741, fabric color is blue, required gsm is 160 for roll number 17,19,21 where the actual gsm is also 162,158,156, required dia is 66”. Machine dia is 36, fabric type is lycra single jerssy. Gauge is 18, stitch length is 2.20. There are some grading range which are use to grade the fabrics. Like – from 0-20 points are consider as grade A, from 21-30 points are consider as grade B. Above 30 points consider as reject fabric. From this table we can see that some roll of fabric are in grade A and some are in grade B. From this we can understand that percentage of faults in B grade fabrics are more than A grade fabrics.



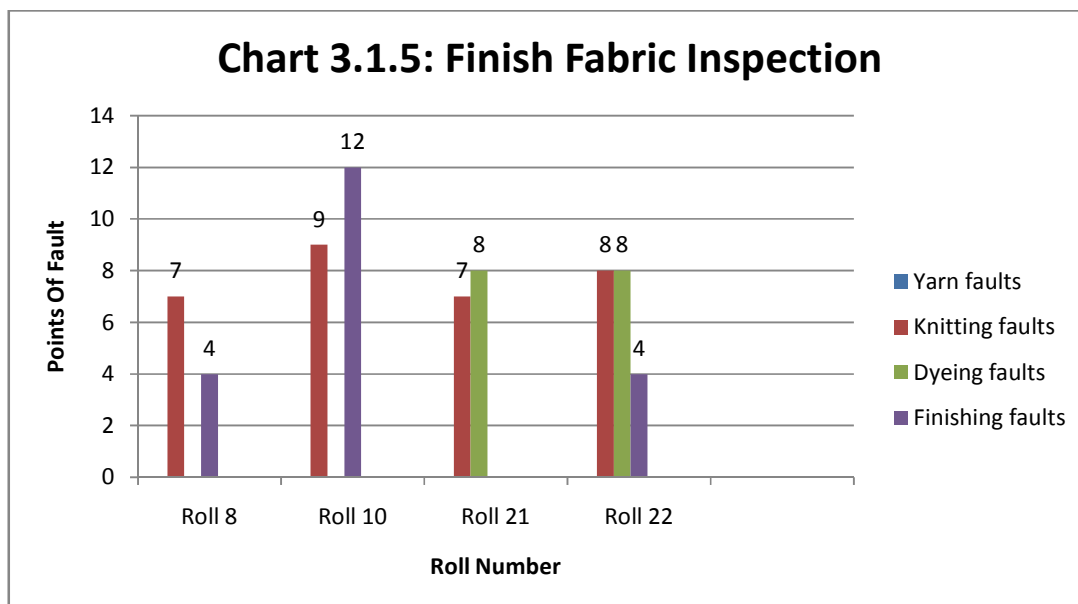
It is observed from graph no. 3.1.5 that, we have selected some rolls of fabric. These fabrics are gray fabric which has the roll number. In this graph (3.1.5) we have selected 3 rolls – roll 17, roll 19 and roll 21. In this rolls we have found some types of faults – needle hole, missing yarn, stripe, lycra out. And also we can see the faults point. Here horizontal axis shows the roll number and vertical axis shows the points of fault. How many points can be found for each fault from each roll are given. In roll number 17 we have found 4 stripe, 3 lycra out. In roll number 19 we have found 4 needle hole, 2 missing yarn, 6 stripe, 3 lycra out. In roll number 21 we have found 4 needle hole, 4 lycra out.

Table 3.1.5 Finish Fabric Inspection:

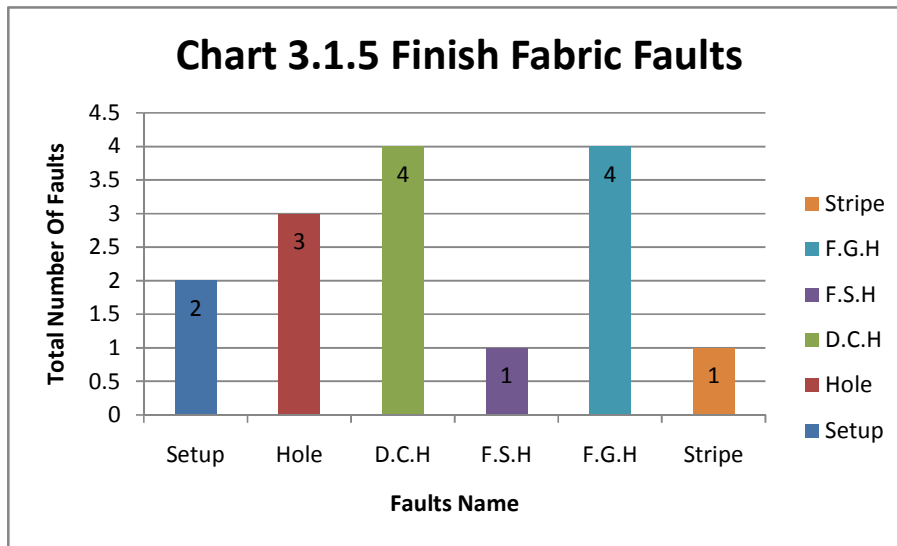
BUYER	H & M	Fabric Composition		Total Fabric Roll	3 Rolls	No. Rolls Of Inspection	3 Rolls
ORDER NO.	847741	Fabric Construction	Ly.Si	No. Of Rolls Accepted	3 Rolls	No. Rolls Of Rejected	No Rolls
BATCH NO.	53016	Fabric Weight	796.560	Accept	yes	Reject	
COLOUR	BLUE	REQD. GSM	160				
REQD. WITH (DIA)	66’’	CUTTABLE DIA					

KNITTING ROLL NO#	DYEING ROLL NO#	WEIGHT (KG)	LENGTH (YDS)	FABRIC WIDTH	ACTUAL GSM	YARN FAULTS			KNITTING/CONSTRUCTION FAULTS										DYEING FAULTS					FINISHING FAULTS							TOTAL POINT	POINTS PER 100 LINIER YD	RESULTS		REMARKS	
						SLUB	THICK & THIN	YARN CONTAMINATION	SETUP	LOOP	SINKER MARK	OIL SPOT	HOLE	STRIPE	PATTA	DIA MARK	KNOT	DROP NEEDLE	LYCRA OUT	DYEING SPOT	CREASE MARK	SOFTNER SPOT	DYEING HOLE	DYEING CUTTING HOLE	JOINT	ABRATION MARK	STENTER PIN HOLE	DIRTY/SOIL/STAIN	FINISHING SHRINKAGE HOLE	FINISHING GSM HOLE			INSPECTOR GSM HOLE	PASS		FAIL
21	22	18.40	76.64	68’’	152								4						4					8						4		16	11.74	A		
19	10	28.70	119.55	68’’	152				4				2						3							4	8		18	8.46	A					
17	08	25.50	101.30	68’’	160									4					3								4		11	6.10	A					
SUB TOTAL																																				
COMENTS:- Dia plus =66’’F (68-73’’), Setup=01, hole=3, Dyeing cutting hole=2, Finishing shrinkage hole=01, Finishing gsm hole=4, Stripe=01y,Lycra out- 10 Total faults=22																																				

In the above table no. 3.1.5 we can see that there is a finish fabric inspection report. This inspection report is made after knitting, dyeing and finishing. In this report many important information has been included. Like – buyer name, order number, fabric type, fabric color, batch number, required dia, required gsm, faults points etc. Yarn, dyeing, knitting, finishing faults can be found in this report because this inspection report is made after knitting, dyeing and finishing. Yarn faults like – slub, thick and thin, yarn conta. Knitting faults like – setup, loop, sinker mark, , knot, hole, oil spot, stripe, patta, dia mark, drop needle, lycra out. Dyeing faults like – dyeing spot, crease mark, softner spot, dyeing hole, dyeing cutting hole. Finishing faults like abrasion mark, stenter pin hole, finishing holes etc. can be found in this inspection. These faults have points. Then use the grading according to points. The grading range is 0-20 points are consider as grade A. 21-28 points are consider as grade B. Above 28 are consider as rejected. In the comments total fault number for each fault are given.



It is observed from graph no. 3.1.5 that, we have selected some rolls of fabric. These fabrics are gray fabric which has the roll number. In this graph (3.1.5) we have selected 4 rolls – roll 8, roll 10, roll 21 and roll 22. In this rolls we have found some types of faults – needle hole, missing yarn, sinker mark. And also we can see the faults point. Here horizontal axis shows the roll number and vertical axis shows the points of fault. How many points can be found for each fault from each roll are given.



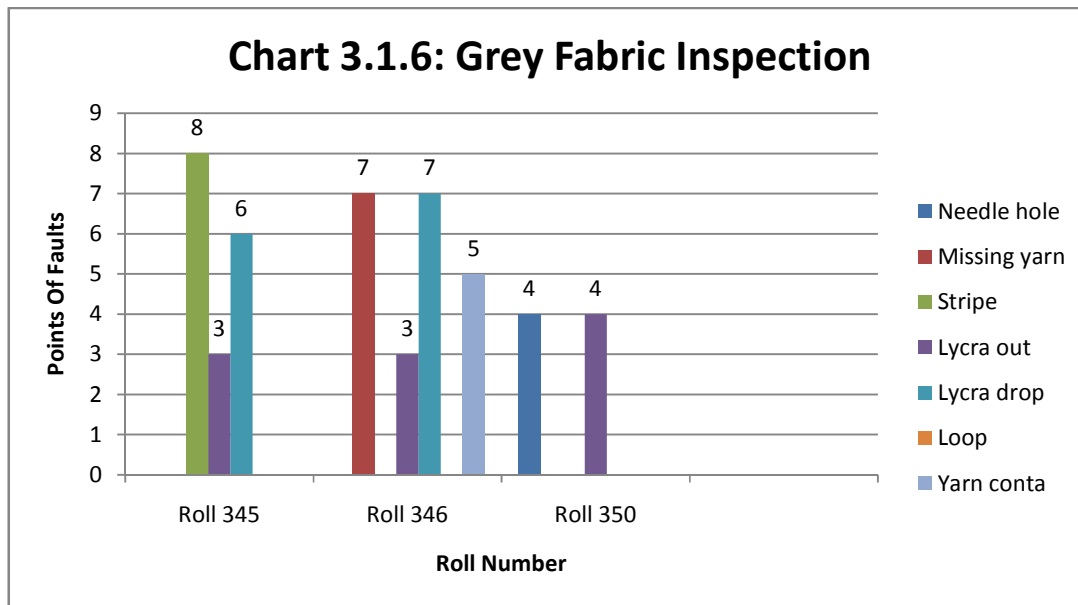
It is observe from graph no. 3.1.5 that, we have selected some fabrics and inspect the fabrics. Then we make a fabric inspection report. From this we get different types of fault. In this graph (3.1.5) horizontal axis shows the different types of fabric fault. And the vertical axis shows the total number of fault for each fault.

3.1.6 Grey Fabric & Finish Fabric Inspection Report – 6

Table 3.1.6 Grey Fabric Inspection:

											Defects													
Buyer	Order N0.	Roll No.	Color	Actual GSM	M/C dia	Req. Dia	Gauge	Fabric type	GSM	Stitch length	Needle hole	Sinker mark	Oil stain	Loop	Lycra out	Missing yarn	Stripe	Yarn conta	Slub	Barrie	Press of	Lycra drop	Ttl points	Grade
H & M	765332	345	Blue Dk	195	36	72”	18	Ly S/J	190	2.40					7		8					6	21	B
H & M	765332	346	Blue Dk	192	36	72”	18	Ly S/J	190	2.50				8		7		5				7	26	B
H & M	765332	350	Blue Dk	190	36	72”	18	Ly S/J	190	2.50	4				6								10	A

In the above table no. 3.1.6 we can see that there is a grey fabric inspection report. This inspection report is made in knitting section. The report is about the faults, dia, gsm, color, stitch length, gauge, fabric type etc. Only knitting faults can be found here. The faults which can find are – needle hole, sinker mark, oil stain, loop, lycra out, missing yarn, stripe, yarn contamination, slub, barrie, press of, lycra drop. After inspecting the fabric, fabric will grade by grading system after counting the total point. Which will help to select the good and bad fabric. In this report buyer name is H & M, order number is 765332, fabric color is blue dk, required gsm is 190 for roll number 345, 346, where the actual gsm is also 195, 192 required dia is 72”. Machine dia is 36, fabric type is lycra single jerssy. Gauge is 18, stitch length is 2.50. There are some grading range which are use to grade the fabrics. Like – from 0-20 points are consider as grade A, from 21-30 points are consider as grade B. Above 30 points consider as reject fabric. From this table we can see that fabrics are in grade B. So from this we can understand that percentage of faults in this rolls is little high.



It is observed from graph no. 3.1.6 that, we have selected some rolls of fabric. These fabrics are gray fabric which has the roll number. In this graph (3.1.6) we have selected 3 rolls – roll 345, roll 346 and roll 350. In this rolls we have found some types of faults – needle hole, missing yarn, stripe, lycra out, lycra drop, loop, yarn conta. And also we can see the faults point. Here horizontal axis shows the roll number and vertical axis shows the points of fault. How many points can be found for each fault from each roll are given. In roll number 345 we have found 8 stripe, 3 lycra out, 6 lycra drop. In roll number 346 we have found 7 missing yarn, 3 lycra out, 7 lycra drop, 5 yarn conta. In roll number 350 we have found 4 needle hole, 4 lycra out.

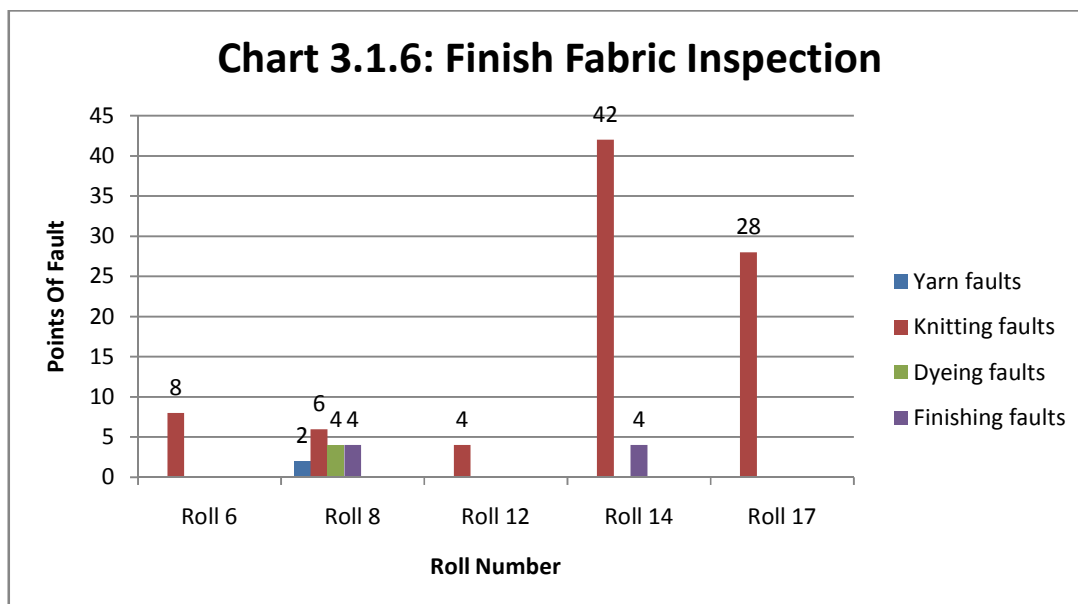
Table 3.1.6 Finish Fabric Inspection:

BUYER	H & M	Fabric Composition	Ly S
ORDER NO.	765332	Fabric Construction	
BATCH NO.	53403	Fabric Weight	551
COLOUR	Blue Dk	REQD. GSM	190
REQD. WITH (DIA)	72	CUTTABLE DIA	

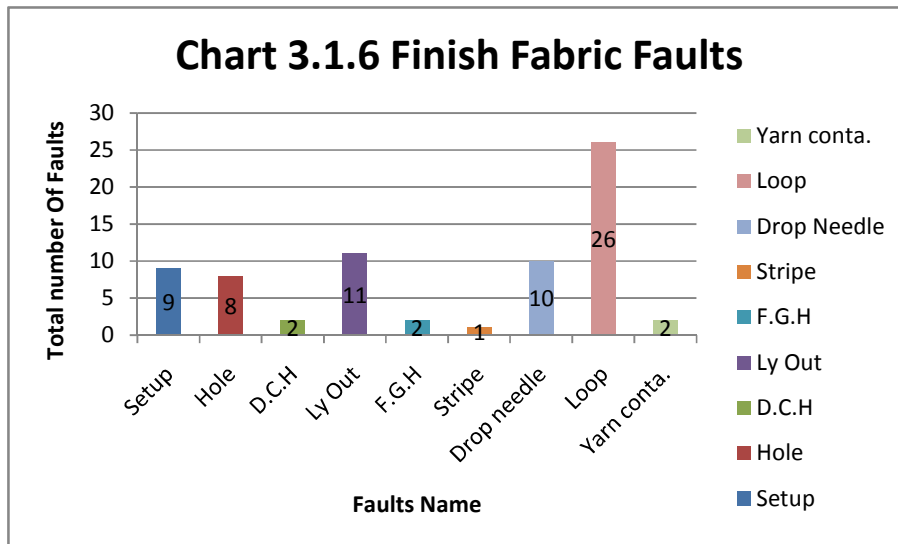
Total Fabric Roll			3 Rolls		No. Rolls Of Inspection		3 Rolls	
No. Of Rolls Accepted			3 Rolls		No. Rolls Of Rejected		No Rolls	
Accept	yes	Reject						

KNITTING ROLL NO#	DYEING ROLL NO#	WEIGHT (KG)	LENGTH (YDS)	FABRIC WIDTH	ACTUAL GSM	YARN FAULTS			KNITTING/CONSTRUCTION FAULTS										DYEING FAULTS					FINISHING FAULTS							TOTAL POINT	POINTS PER 100 LINIER YD	RESULTS		REMARKS	
						SLUB	THICK & THIN	YARN CONTAMINATION	SETUP	LOOP	SINKER MARK	OIL SPOT	HOLE	STRIPE	PATTA	DIA MARK	KNOT	DROP NEEDLE	LYCRA OUT	DYEING SPOT	CREASE MARK	SOFTNER SPOT	DYEING HOLE	DYEING CUTTING HOLE	JOINT	ABRATION MARK	STENTER PIN HOLE	DIRTY/SOIL/STAIN	FINISHING SHRINKAGE HOLE	FINISHING GSM HOLE			INSPECTOR GSM HOLE	PASS		FAIL
345	12	32.00	98.52	76''	184									4				10y	3											47	23.85	B				
350	17	32.90	107.20	73''	181				16				12																	28	13.62	A				
346	08	35.20	103.04	77''	191			2	4								4					4					4			14	6.70	A				
SUB TOTAL																																				
COMENTS:- Di plus -72'' F(73''-78''), Yarn conta-2, setup-5,hole-6, stripe-04y, Drop needle-10y, Lycra out-7, D.C.H -1, F.G.H-01, Total fults-36																																				

In the above table no. 3.1.6 we can see that there is a finish fabric inspection report. This inspection report is made after knitting, dyeing and finishing. In this report many important information has been included. Like – buyer name, order number, fabric type, fabric color, batch number, required dia, required gsm, faults points etc. Yarn, dyeing, knitting, finishing faults can be found in this report because this inspection report is made after knitting, dyeing and finishing. Yarn faults like – slub, thick and thin, yarn conta. Knitting faults like – setup, loop, sinker mark, , knot, hole, oil spot, stripe, patta, dia mark, drop needle, lycra out. Dyeing faults like – dyeing spot, crease mark, softner spot, dyeing hole, dyeing cutting hole. Finishing faults like abrasion mark, stenter pin hole, finishing holes etc. can be found in this inspection. These faults have points. Then use the grading according to points. The grading range is 0-20 points are consider as grade A. 21-28 points are consider as grade B. Above 28 are consider as rejected. In the comments total fault number for each fault are given.



It is observed from graph no. 3.1.6 that, we have selected some rolls of fabric. These fabrics are gray fabric which has the roll number. In this graph (3.1.1) we have selected 5 rolls – roll 6, roll 8, roll 12, roll 14 and roll 17. In this rolls we have found some types of faults – needle hole, missing yarn, sinker mark. And also we can see the faults point. Here horizontal axis shows the roll number and vertical axis shows the points of fault. How many points can be found for each fault from each roll are given.



It is observe from graph no. 3.1.6 that, we have selected some fabrics and inspect the fabrics. Then we make a fabric inspection report. From this we get different types of fault. In this graph (3.1.6) horizontal axis shows the different types of fabric fault. And the vertical axis shows the total number of fault for each fault.

3.2 Loss Percentage in Cutting:

Order No.	Roll No.	Weight	Color	Req GSM	Actual GSM	Req, Dia	Actual Dia	Booking Con.	Loss %
847741	12	25.50	Blue	160	160	66	68	1.983	
	19	28.70		160	152	66	68		5.69 %
	21	18.40		160	152	66	68		
		Total = 72.60kg							

For 72.60 fabric we get = $(72.60 \div 1.983) \times 12 = 439$ pcs.

But after cutting short = 20 pcs

So loss % = $(439 \div 20) \times 100 = 5.69 \%$

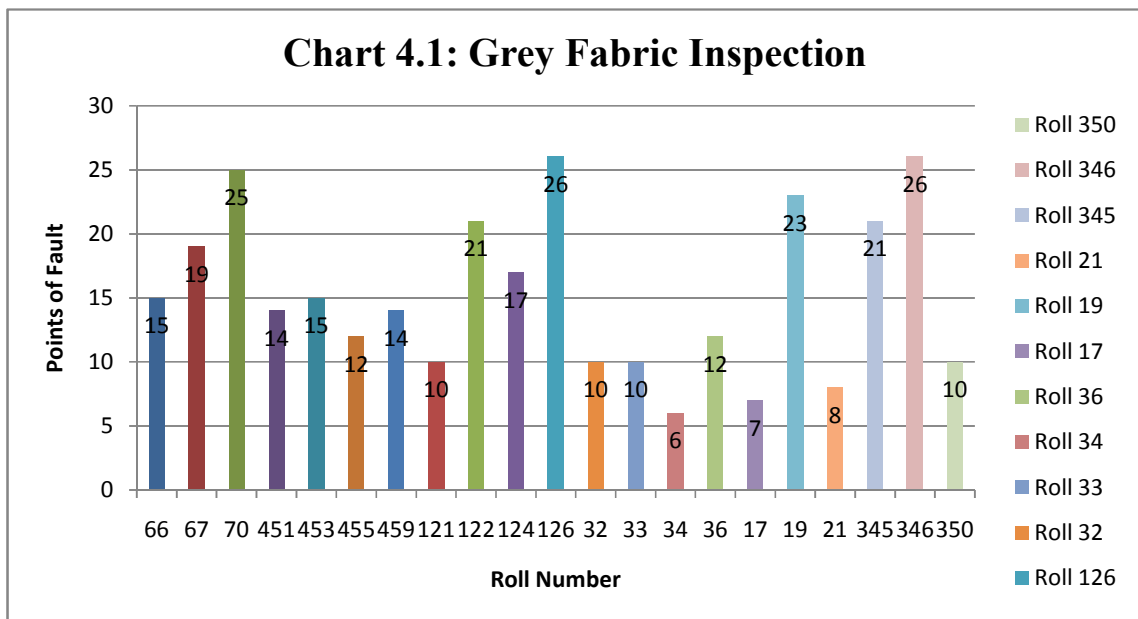
4.0 RESULT AND DISCUSSION:

This study has been performed in the **Robintex Group 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 knitting and after finishing has been taken and analyze to get an idea about fabric faults.

4.1 Grey Fabric Inspection Report: Here the all grey fabric inspection reports are given below.

Buyer	Order NO.	Roll No.	Color	M/C dia	Req. Dia	Gauge	Fabric type	GSM	Stitch length	Needle hole	Sinker mark	Oil stain	Loop	Lyc out
H & M	221870	66	Black		66"		S / J	120		7	Y			
H & M	221870	67	Black		66"		S / J	120		7	Y			
H & M	221870	70	Black		66"		S / J	120		15	Y			
H & M	524332	451	Black		62"		1×1 rib	150		6				
H & M	524332	453	Black		62"		1×1 rib	150		15				
H & M	524332	455	Black		62"		1×1 rib	150		12				
H & M	524332	459	Black		62"		1×1 rib	150		8				
H & M	400672	121	Black		72"		Ly S/J	200		10				
H & M	400672	122	Black		72"		Ly S/J	200		1				
H & M	400672	124	Black		72"		Ly S/J	200		16				1
H & M	400672	126	Black		72"		Ly S/J	200		6				

H & M	281217	32	Black	36	66"	18	Ly S/J	260	2.10	1		3		
H & M	281217	33	Black	36	66"	18	Ly S/J	260	2.10					
H & M	281217	34	Black	36	66"	18	Ly S/J	260	2.10	6				
H & M	281217	36	Black	36	66"	18	Ly S/J	260	2.10	8				4
H & M	847741	17	Blue	36	66"	18	Ly S/J	160	2.2					3
H & M	847741	19	Blue	36	66"	18	Ly S/J	160	2.2	4				3
H & M	847741	21	Blue	36	66"	18	Ly S/J	160	2.2	4				4
H & M	765332	345	Blue Dk	36	72"	18	Ly S/J	190	2.40					7
H & M	765332	346	Blue Dk	36	72"	18	Ly S/J	190	2.40				8	
H & M	765332	350	Blue Dk	36	72"	18	Ly S/J	190	2.40	4				6



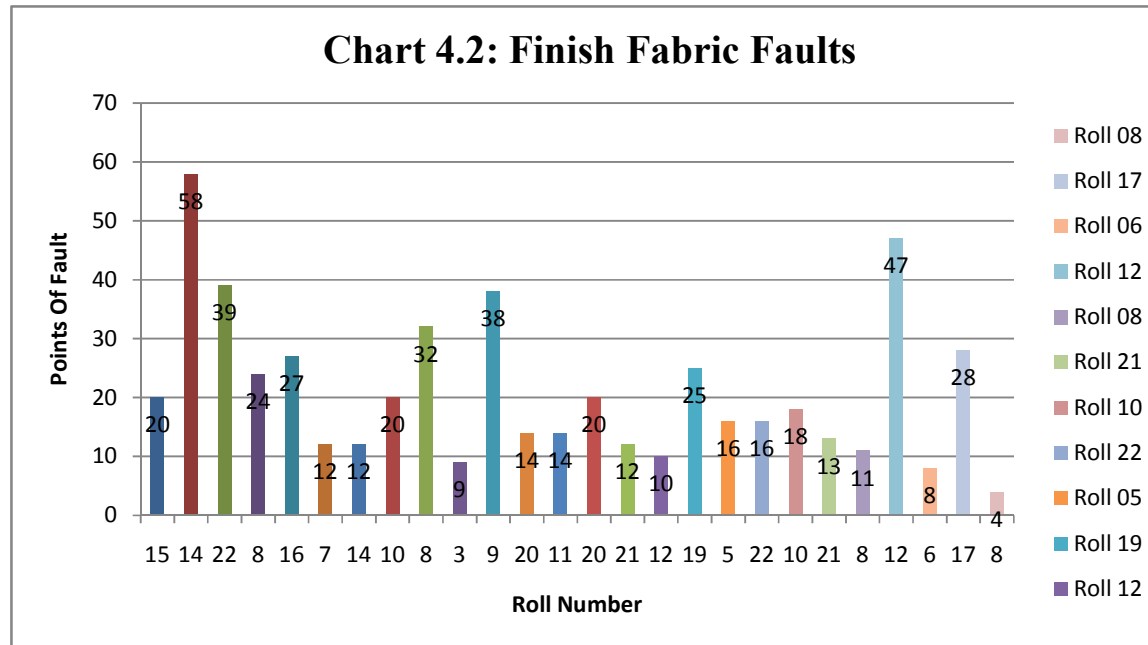
From the above chart no. 4.1 we can see that it is a grey fabric inspection chart. Here horizontal axis show the roll number and vertical axis shows the points of fault according to roll. We can see that highest amount of fault are in roll no.126 and roll no. 346. And the point for these rolls is 26. The lowest amount of fault are in roll no. 34. The point is only 6. If faults point is low for any roll so this roll is consider as good because amount of fault is very low. If the fault point is high then the fabric consider as not so good. Some times there is chance of rejection of fabric because of high points of fault.

4.2 Finish Fabric Inspection:

KNITTING ROLL NO#	DYEING ROLL NO#	WEIGHT (KG)	LENGTH (YDS)	FABRIC WIDTH	ACTUAL GSM	YARN FAULTS			KNITTING/CONSTRUCTION FAULTS										DYEING FAULTS					FINISHING FAULTS					
						SLUB	THICK & THIN	YARN CONTAMINATION	SETUP	LOOP	SINKER MARK	OIL SPOT	HOLE	STRIPE	PATTA	DIA MARK	KNOT	DROP NEEDLE	LYCRA OUT	DYEING SPOT	CREASE MARK	SOFTNER SPOT	DYEING HOLE	DYEING CUTTING HOLE	JOINT	ABRATION MARK	STENTER PIN HOLE	DIRTY/SOIL/STAIN	FINISHING SHRINKAGE HOLE
	10	27.40	142.40	68"	122				12		Y		14																
66	15	19.60	97.06	68"	126				16		Y										4								
70	14	22.40	121.77	66"	120				20		Y		30								4					4			
67	22	25.40	129.69	68"	124				24		Y		14									1							
453	08	23.10	104.09	65"	147				20																				4
456	16	16.70	69.68	67"	154				16				2								8	1							
455	7	19.30	82.29	66"	153				8				4																
459	14	24.70	106.23	65"	153				8				4																
451	10	15.80	68.77	63"	157				12				8																

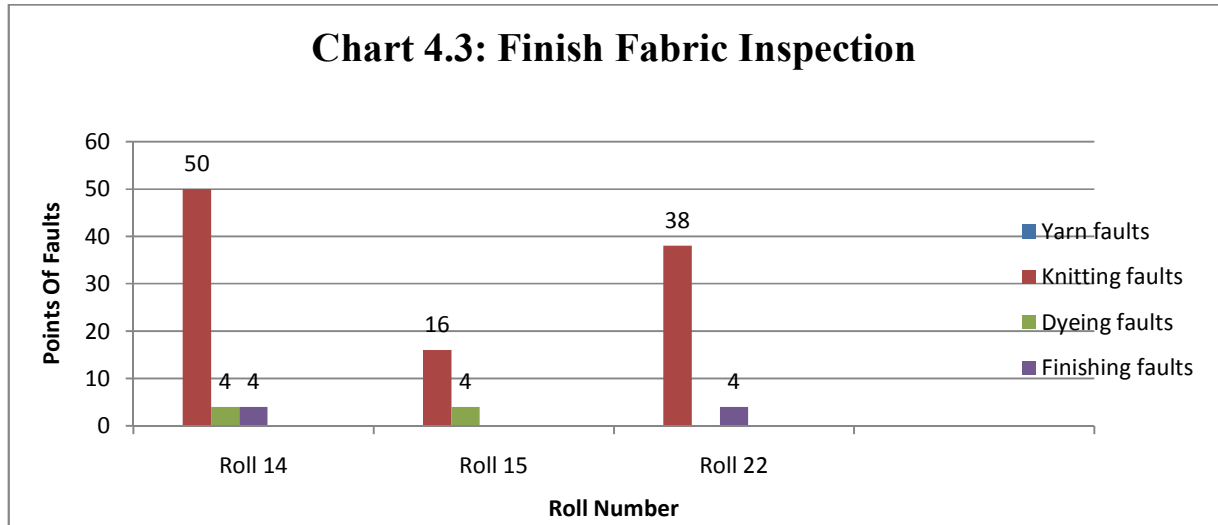
126	8	30.30	90.87	74"	194				8		Y		6	20					6										
124	3	25.10	75.83	75"	190				16									1											
122	9	25.50	76.08	74"	195				12					8				6											
117	20	29.20	84.94	74"	200				8				2																
121	11	16.40	48.19	74"	198				4				6																
33	20	23.70	56.66	69"	261				20																				
34	21	10.00	23.54	69"	265				8				4																
19	12	15.00	36.27	69"	258				4								2											4	
32	19	26.00	62.81	71"	251				12		3	2										7							
36	05	20.00	48.24	69"	256				8															4			4		
21	22	18.40	76.64	68"	152							4					4					8						4	
19	10	28.70	119.55	68"	152				4			2					3										4	8	
13	21	26.50	106.87	68"	157				4								3					8							

[illegible]



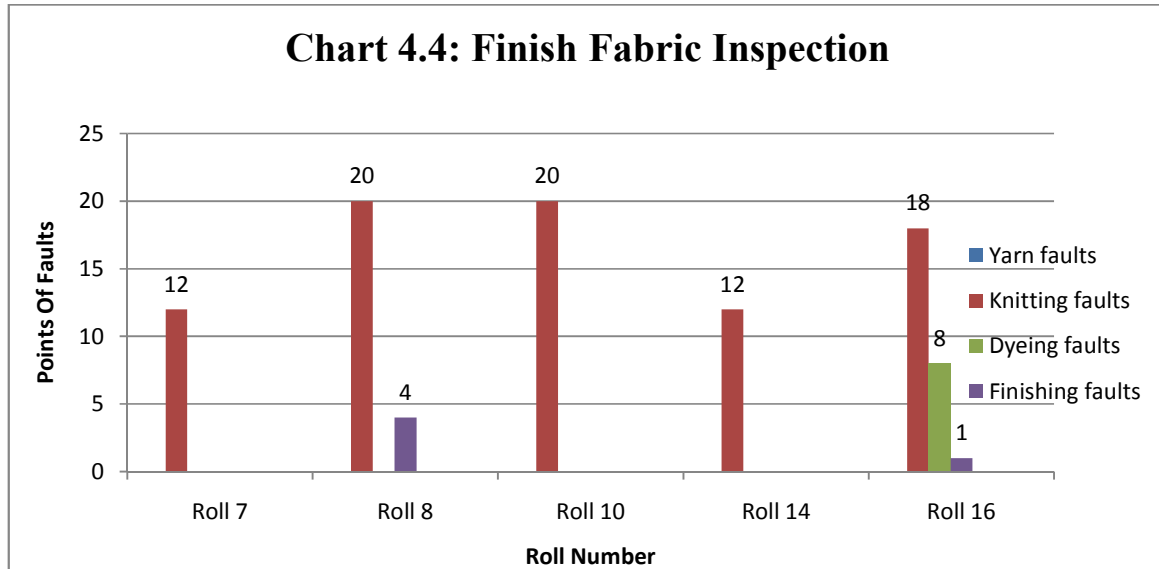
From the above chart no. 4.2 we can see that it is a finish fabric inspection chart. Here horizontal axis show the roll number and verticle axis shows the points of fault according to roll. We can see that highest amount of fault are in roll no.14. And the point for these rolls is 58. The lowest amount of fault are in roll no. 08. The pont is only 4. If faults point is low for any roll so this roll is cosider as good because amount of fault is very low. If the fault point is high thn the fabric consider as not so good. Some times there is chance of rejection of fabric because of high points of fault.

4.3 Comparison Between Grey Fabric & Finish Fabric Inspection – 1:



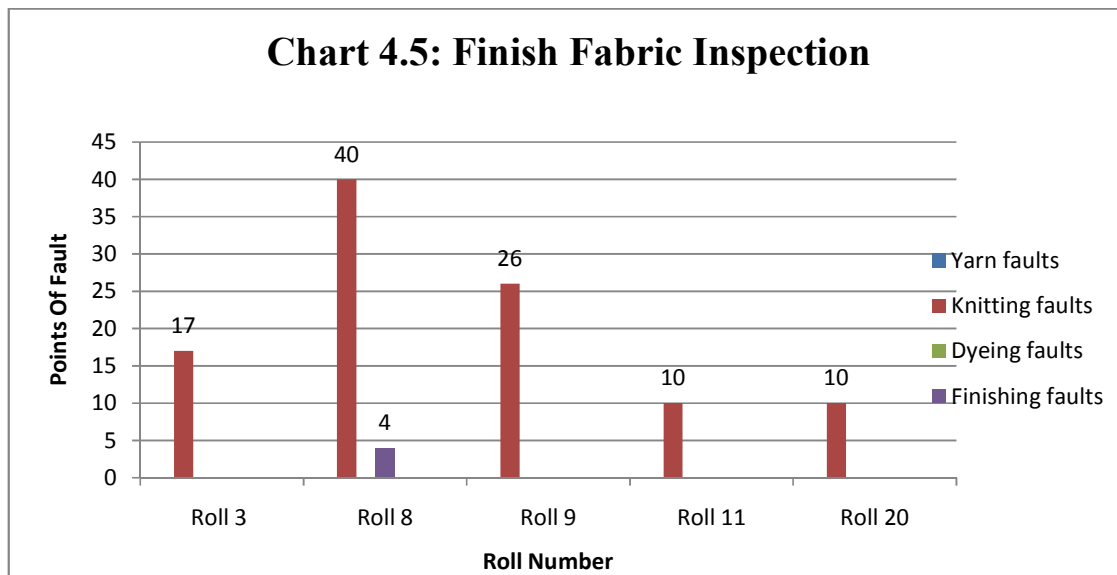
In the above there is one chart. Chart no. 4.3.1 is for grey fabric inspection and finish fabric inspection. In the grey fabric inspection chart horizontal axis show the roll number and vertical axis shows the total points of fault. From these charts we can know about the faults which are found in the fabric in the time of inspection. And also we can understand about the points for fault. But the main difference between two chart is in grey fabric inspection we can find only knitting faults – knitting hole, hole, lycra out, lycra drop, press of, missing yarn, oil spot, etc. But in finish fabric inspection report we find four types of fault – yarn fault, knitting fault, dyeing fault, finishing fault. So we can easily understand that percentage of fault in grey fabric inspection is less than finish fabric inspection.

4.4 Comparison Between Grey Fabric & Finish Fabric Inspection – 2:



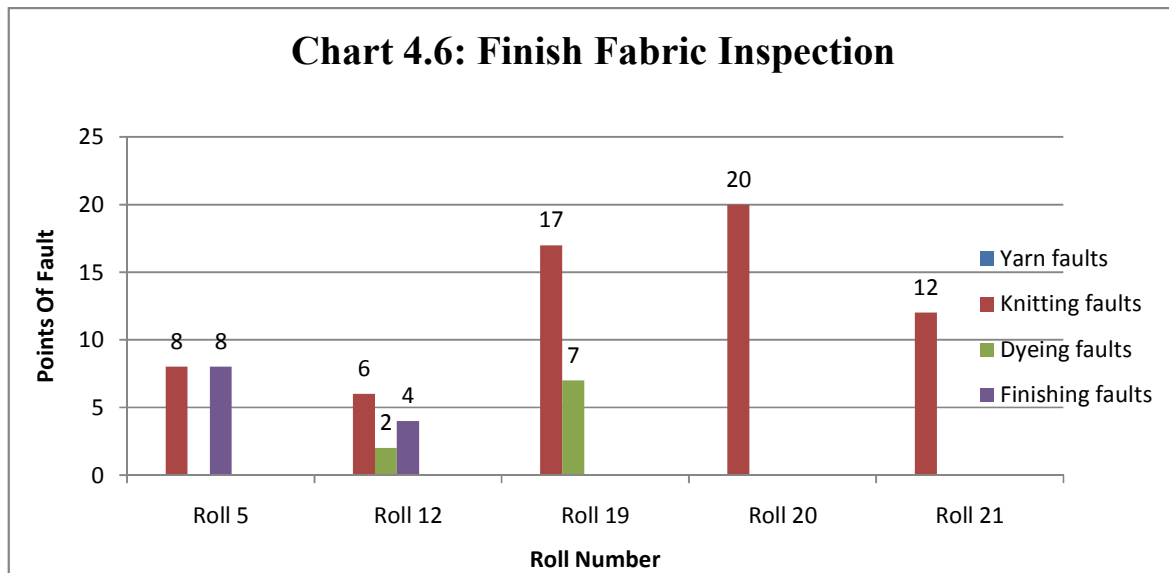
In the above there is one chart. Chart no. 4.4 is for grey fabric inspection and finish fabric inspection. In the grey fabric inspection chart horizontal axis show the roll number and vertical axis shows the total points of fault. From these charts we can know about the faults which are found in the fabric in the time of inspection. And also we can understand about the points for fault. But the main difference between two chart is in grey fabric inspection we can find only knitting faults – knitting hole, hole, lycra out, lycra drop, press of, missing yarn, oil spot, etc. But in finish fabric inspection report we find four types of fault – yarn fault, knitting fault, dyeing fault, finishing fault. So we can easily understand that percentage of fault in grey fabric inspection is less than finish fabric inspection.

4.5 Comparison Between Grey Fabric & Finish Fabric Inspection – 3:



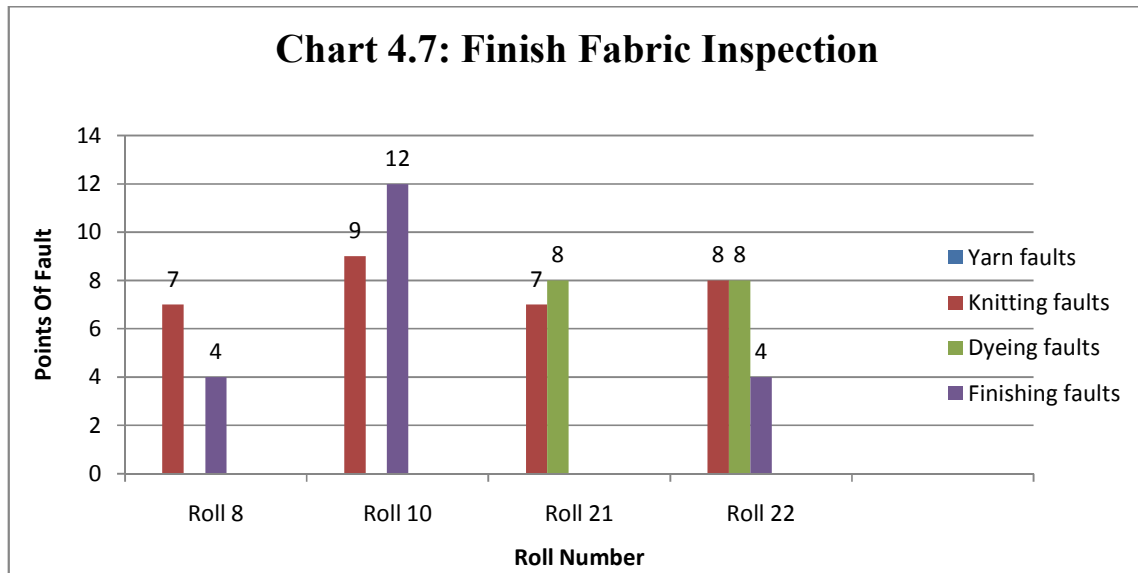
In the above there is one chart. Chart no. 4.5 is for grey fabric inspection and chart finish fabric inspection. In the grey fabric inspection chart horizontal axis show the roll number and vertical axis shows the total points of fault. From these charts we can know about the faults which are found in the fabric in the time of inspection. And also we can understand about the points for fault. But the main difference between two chart is in grey fabric inspection we can find only knitting faults – knitting hole, hole, lycra out, lycra drop, press of, missing yarn, oil spot, etc. But in finish fabric inspection report we find four types of fault – yarn fault, knitting fault, dyeing fault, finishing fault. So we can easily understand that percentage of fault in grey fabric inspection is less than finish fabric inspection.

4.6 Comparison Between Grey Fabric & Finish Fabric Inspection – 4:



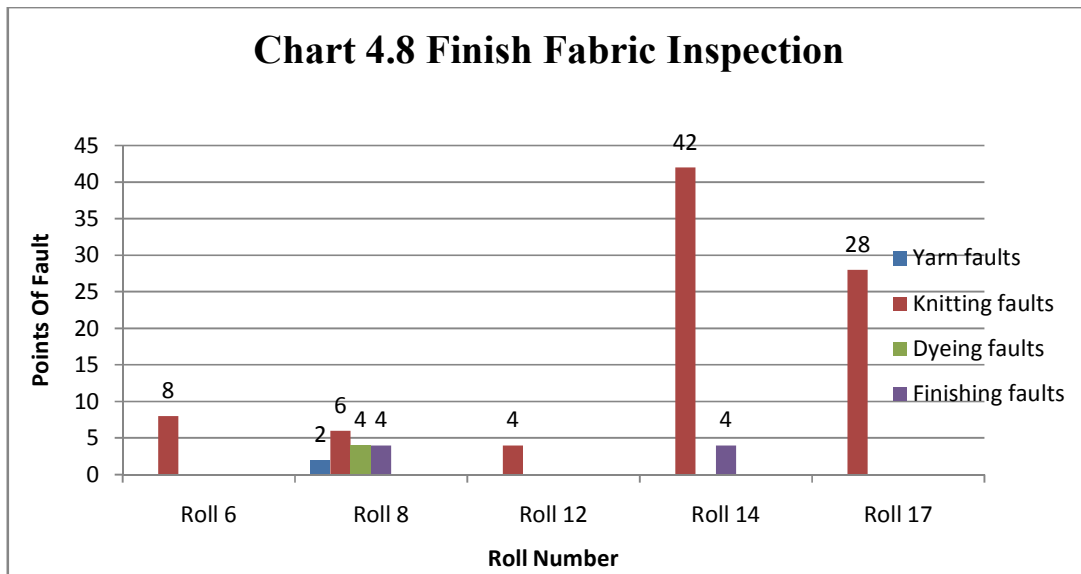
In the above there is one chart. Chart no. 4.6 is for grey fabric inspection and finish fabric inspection. In the grey fabric inspection chart horizontal axis show the roll number and vertical axis shows the total points of fault. From these charts we can know about the faults which are found in the fabric in the time of inspection. And also we can understand about the points for fault. But the main difference between two chart is in grey fabric inspection we can find only knitting faults – knitting hole, hole, lycra out, lycra drop, press of, missing yarn, oil spot, etc. But in finish fabric inspection report we find four types of fault – yarn fault, knitting fault, dyeing fault, finishing fault. So we can easily understand that percentage of fault in grey fabric inspection is less than finish fabric inspection.

4.7 Comparison Between Grey Fabric & Finish Fabric Inspection – 5:



In the above there is one chart. Chart no. 4.7 is for grey fabric inspection and finish fabric inspection. In the grey fabric inspection chart horizontal axis show the roll number and vertical axis shows the total points of fault. From these charts we can know about the faults which are found in the fabric in the time of inspection. And also we can understand about the points for fault. But the main difference between two chart is in grey fabric inspection we can find only knitting faults – knitting hole, hole, lycra out, lycra drop, press of, missing yarn, oil spot, etc. But in finish fabric inspection report we find four types of fault – yarn fault, knitting fault, dyeing fault, finishing fault. So we can easily understand that percentage of fault in grey fabric inspection is less than finish fabric inspection.

4.8 Comparison Between Grey Fabric & Finish Fabric Inspection – 6:



In the above there is one chart. Chart no. 4.8 is for grey fabric inspection and finish fabric inspection. In the grey fabric inspection chart horizontal axis show the roll number and vertical axis shows the total points of fault. From these charts we can know about the faults which are found in the fabric in the time of inspection. And also we can understand about the points for fault. But the main difference between two charts is in grey fabric inspection we can find only knitting faults – knitting hole, hole, lycra out, lycra drop, press of, missing yarn, oil spot, etc. But in finish fabric inspection report we find four types of fault – yarn fault, knitting fault, dyeing fault, finishing fault. So we can easily understand that percentage of fault in grey fabric inspection is less than finish fabric inspection.

CONCLUSION: In this thesis we discuss about the grey fabric and finish fabric inspection and also we discuss about the comparison between grey fabric and finish fabric inspection. From these inspections we get some ideas about yarn, knitting, dyeing & finishing faults. This thesis paper is concluded as-

- i) Amount of knitting faults is higher than any other faults.
- ii) Amount of yarn faults is lower than any other faults.
- iii) Amount of dyeing & finishing faults are average.
- iv) Types of fault in finish fabric inspection are more than grey fabric inspection.
- v) Total amount of faults in finish fabric inspection is more than grey fabric inspection
- vi) Yarn fault percentage is very low.
- vii) Knitting fault percentage is very high.

Further study about fabric inspection faults and remedies can facilitate the factory a lot.

REFERENCES:

1. <https://www.linkedin.com/grp/post/4145613-119341285>
2. <http://www.apparel-merchandising.com/2012/03/fabric-inspection-4-point-system.html>
3. <http://texhelpline.blogspot.com/search/label/Fabric%20inspection%20Faults%20and%20their%20causes>.
4. <http://www.slideshare.net/sheshir/knitted-fabric-faults-and-their-?related=1>
5. <http://textilelearner.blogspot.com/2013/11/inspection-of-fabric-major.html>