UGC & Govt. Approved
Sonargaon University (SU)
সোনারগাঁও ইউনিভার্সিটি (এসইউ)

FACULTY OF ENGINEERING DEPARTMENT OF TEXTILE ENGINEERING

REPORT ON

Industrial Attachment

At

Fariha Knit Textile LTD.

VOLAIL, WEST MASDAIR, BSIC INDUSTRIAL AREA

Submitted By

Submitted by	ID Number	Group
Md Maskat Sharif	Tex-1803015072	G
Md.Eshak Ali	Tex-1803015077	G
MD Helal Uddion	Tex-1803015073	G

Academic Supervised Kamrul Hassan Bhuiyan

Coordinator & Lecturer

Department of Textile engineering Sonargaon University (SU).

146 Mohakhali, Wireless Gate. Dhaka.

This report we have presented in partial fulfillment of the requirement for the Degree of Bachelor of Science in Textile Engineering.

Advance in Apparel Manufacturing Technology

Duration: From 20 February 2021 to 25 May 2021.

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DECLARATION

We hereby declare that, this Industrial Attachment on Viyellatex Limited, of Bangladesh is done by us under the supervision of Kamrul Hassan Bhuiyan, Coordinator & Lecturer, Department of Textile Engineering, Sonargoan University (SU), Dhaka. We also declare that, this Industrial Attachment report has not been submitted anywhere for award, degree or diploma. We ensure that, any part of this attachment has been presented anywhere.

Md.Maskat Sharif

Tex-1803015072

Md. Eshak Ali

Tex-1803015072

Md.Helal Uddin

Tex-1803015072

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PERMISSION OF INDUSTRIAL TRAINING

LETTER OF APPROVAL

This is to certify that Md. Maskat Sharif- Tex-1803015072, Md. Eshak Ali- Tex1803015077, Md. Helal Uddin-Tex1803015073 BSC Engineering Textile program, 15B Batch have successfully completed their Industrial Internship on Apparel Manufacturing Technology under my supervision. I do hereby approve their report. I also recommend accepting their report for partial fulfillment of Bachelor of Science in Textile Engineering (B.SC) Degree.

……

Kamrul Hassan Bhuiyan

Coordinator & Lecturer

DepartmentofTextile Engineering

Sonargaon University (SU), Dhaka

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Sonargaon University (SU)
সোনারগাঁও ইউনিভার্সিটি (এসইউ)
147/I, Green Road, Panthapath, Dhaka
Department of Textile Engineering

SU/Textile/Int. Letter/2021/Fall/15
Date: 14/11/2021

To
Executive Director
Fariha knit tex Ltd (Asrotex group)
Baroibhogh, west masdair, Enayetnagar, fatullah, Narayongonj

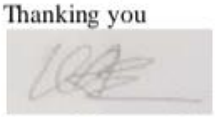
Subject: Request for permission to undertake industrial training in your industry.

Dear Sir,
It is for your kind information that, Sonargaon University (SU) is a private University approved by the Ministry of Education (MOE), & UGC of Bangladesh.
The student(s) named below with the Identification Number is very close to complete 4 years B.Sc in Textile Engineering of Sonargaon University (SU).
As industrial training is one of the important core courses of 4 years B.Sc in Textile Engineering program, therefore the university seeks your kind help and cooperation in order to impart practical knowledge to our students. Duration of this program would be 12 weeks and it is advised to accommodate the students at your production unit from 15th November, 2021.

SL No.	Student Name	Specialized	Student ID	Contact No.
01	Md Aual Hossain	Apparel manufacturing	TEX1803015022	01844049746
02	Md. Eshak Ali	Apparel manufacturing	TEX1803015077	01742944747
03	Md. Maskat Sharif	Apparel manufacturing	TEX1803015072	01928106944
04	Md. Helal Uddin	Apparel manufacturing	TEX1803015073	01318593600

Therefore, I am requesting you to provide them with opportunity to conduct the industrial training in your well reputed industry. It will also be highly appreciated if you kindly consider them for training in your Industry.

Your Co-operation will be highly appreciated.
Thanking you



Kamrul Hassan Bhuiyan
Coordinator
Department Of Textile Engineering. Sonargaon University (SU).
Cell Phone: 01955-529892

Copy to: For necessary information:
1. Dean, Faculty of Engineering, Sonargaon University (SU).
2. Office Copy.

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ACKNOWLEDGEMENTS

All pleasure goes to the Almighty Allah who has given me the ability and strength to complete this project.

I am grateful to" Kamrul Hassan Bhuiyan" Coordinator & Lecturer of Sonargaon University (SU), Dhaka. Textile Engineering my Academic Supervisor.

As well as to "Md. Mahabub Hossain'' Q. in-charge of my factory supervisor of The Asrotex Group of Ltd. Bangladesh.

Being working with them I have not only earned valuable knowledge but was also inspired by their innovativeness which helped to enrich my experience to a greater extent. Their ideas and way of working was truly remarkable. I believe this report could not be finished if they did not help me continuously.

I would like to thanks the Chairman, General Manager, Production Manager, Sample Manager, Finishing Manager, , Maintenance Manager, Quality control Manager, Factory Manager & Costing Sr. Manager of Standard Group. Who has given us scope for doing industrial attachment in the factory as well as for giving scope to work in their respective section. We also would like to thanks to production QM & PM "Md. Hashan, Md. Raju Ahmed, Md. Mahabub, Md. Mahamudulla with others persons" for their proper management & taking necessary procedure about our industrial attachment. I am also very much grateful to Standard Group Authority/ Management for giving me opportunity to do my internship work in their factory. Last but not the least, thanks go to all the workers, supervisors, Line Chife and Floor in charge who have assisted, helped and inspired me to complete this task at various stage

ABSTRACT

The project is on industrial training in garments. Traditionally operated garments industries are facing problems like how productivity, longer production lead time, high re-work and rejection, poor line balancing, low flexibility of style changeover etc. These problems were address in this study by the implementation of lean tools like cellular manufacturing, single piece flow, work standardization, just in time production etc. After implementation of lean tools results observed were highly encouraging. Some of the production time decreased by 8%, number of the operations required to produced equal amount of garments decreased by 14%, rework label reduced by80%, work in process inventory stays at maximum of 100 pieces from around 500 to 1500 piece. Apart from these tangible benefits operator multi skilling as well as flexibility of style changeover has been improved. This study is connected in the stitching section of shirt manufacturing company. This study includes time study, the conversation of traditional batch production into single piece flow and long assembly line into small work cells

CONTENTS

Chapter-01

INTRODUCTION

INTRODUCTION

Textile & garments sector is the biggest and fastest growing sector in Bangladesh. It also the highest foreign currency earning sector in Bangladesh. Among this sector , Knit garment is growing very rapidly due to smaller investment requirement, greater backward linkage facility & higher profit than woven garments. That's why export of knit garments has increasing steadily for last few years.

Practical knowledge is very much essential for the education of textile engineering and technology. University education provides us vast theoretical knowledge as I ll as more practical attachment. In despite of all these industrial attachment helps us to be familiar with technical support of modern machinery, skillness about various processing stages. Industrial training minimizes the gap bet I am theoretical & practical knowledge & make us accustomed to industrial environment.

It also provides us sufficient practical knowledge about production management, work study, industrial management, purchasing, utility and maintenance of machinery and their operation techniques etc. the above mentioned cannot be achieved successfully by means of theoretical knowledge only.

I got an opportunity to complete two months long industrial training at **Fariha Knit Tex Ltd.** Which is a 100% export oriented composite Knit Dyeing Industry. It has planned & equipped fabric dyeing –finishing , garments , washing, printing, embroidery, testing lab and merchandising units in addition to facilitate knitting & knit . It is fully approved by several multinational inspection firms.

Chapter-02

Project Description

Factory Profile:

Name of the Company:	Fariha Knit tex Ltd.
Legal Status:	Private Company Ltd.
(A sister Sensible & Asrotex Ltd. & ASrotex Group.etc Textile Group	
BGMEA Registration No. :	3645
EPB Registration No.	4405
Year of Establishment :	1996 first start
Factory Address :	Baroybogh, Enayetnagar, Fatullah, Narayangonj-1400,
Corporate Office :	House #85,Road 34,Block#B, Bonani, Dhaka-1213
Bangladesh	
Bangladesh Tel:	02-55033575,55035024
Fax	+8802-76011-88
E-mail:	asrotex@worldnetbd.com
Nature of Business :	100% export orient Knit garments
Name of the Bank :	Dutch Bangla Bank
Factory type:	Knit Garments
Manpower :	15000
Total no. of Machineries:	1200
Production Area:	700000 sq.ft
No. of production line :	60
Production Capacity :	3000000 pcs/month

Fariha Knit Tex Ltd composite is one of the eminent ready-made garments industry among the largest ready-made garments exporters in Bangladesh that commenced its official operation in the fall of 1996. It comprises of a vertical set up knit composite factory with having all in house facilities. Fariha Knit Tex Ltd composite has I ll been equipped with all sort of modern machineries with a view to ensuring the best convincing and satisfactory support in suiting the taste of the customers of all the departments.

Moreover, believes, at the same time, in the strategy that development is a never ending process. Therefore special care is taken to improve the every step and all the innovative ideas for customers and I fare of the employees are extolled. fosters a belief of long term relationship ethics with the valued customers and considers them as commercially viable business partners.

Vision:

- To build true marketing led enterprise with motivated workforce, innovative vision & more value added product portfolio, customer satisfaction & understanding of global market.
- To be one of the best leading composite mill in the Bangladesh.
- To be a world-class quality apparels manufacturer by satisfying social, ethical and environmental commitment.

Mission:

Each of our activities must benefit & add value to the common society. I firmly believe that , in the final analysis I am constituents with whom I interact; namely our employees, our customers, our business associates, our fellow citizens.

***** Execution of Lean manufacturing system in manufacturing processes

* Corporate practice in management system

* Be maximum flexible and transparent with our valued customers and suppliers

Values:

- Customer Satisfaction
- Inspiring creativity
- Integrity
- Corporate Social responsibility
- Healthy Work Environment
- Commitment & Teamwork
- Equal Opportunity Employer
- Greener Environment

Certificates:

- ISO 9001:2000 certified.
- SRM (compliance) certified.
- OEKO-TEX certified.
- WRAP

Buyers:

- H & M.
- Tom Tailor.
- Ahlense.
- G-Star.
- Gap
- Esprit
- Primark
- JC
- S.Oliver.
- Adler.
- Peacocks.
- C&A etc.

Product mix:

- 100% cotton.
- CVC (Chief value of cotton).
- PC/TC (The more % of polyester).
- Mélange-
    1. Grey mélange : 10% viscose + 90% cotton.
       : 15% viscose + 85% cotton.
    2. Anthra mélange : > 50% viscose.
    3. Ecro mélange : 2% viscose + 98% cotton.
    4. Camel mélange : 1% viscose.

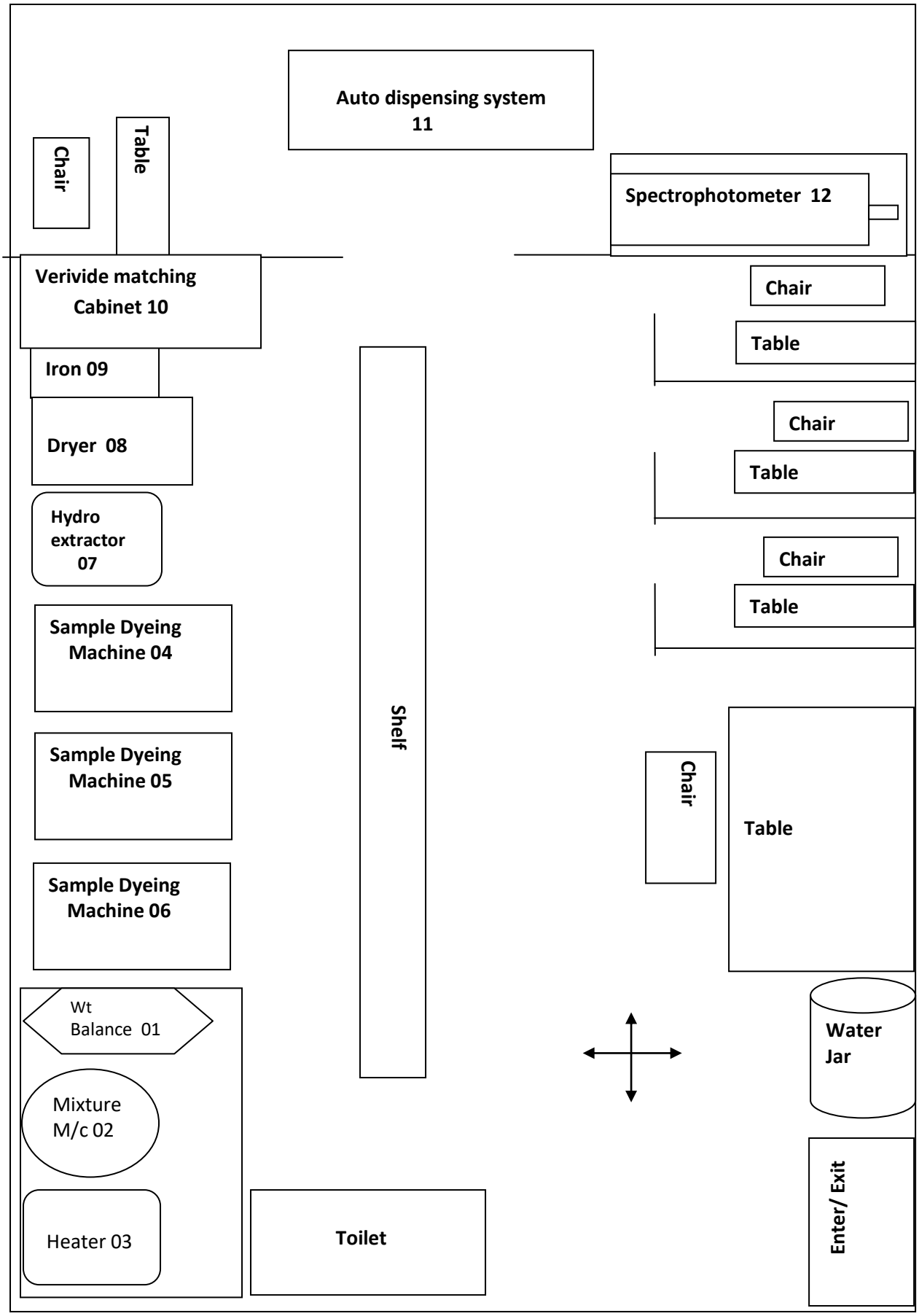
Departments related with production:

1. Yarn store.
2. Knitting section.
3. Raw fabric store & inspection section.
4. Batching.
5. Chemical Store.
6. Color lab section.
7. Dyeing Section.
8. Garments Section.
9. Finishing section.
10. Quality control section.
11. Maintenance.
12. Water treatment plant.

Supporting Department:

1. Procurement.
2. Merchandising.
3. Marketing.
4. Medical.
5. Administration.
6. IT.
7. HRD.
8. Finance & accounting.
9. Security.
10. Commercial
11. Work Study
12. Work Shop

CHAPTER-03
Machine Description



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Layout of Dyeing Lab
Machine specification:
Name: light measuring m/c.

Brand: AND

Origin: Japan

Manufacturer: A & D Company, LTD.

Purpose: To measure the wt of dye, fabrics, chemicals etc.

1. **Name:** Mixture m/c.

   Brand: ATAC.

   Origin: Turkey.

   Manufacturer: ELEKTRIK VE MAKINA SAN. TIC.LTD.STI

   Purpose: To get uniform mixture of dyes or chemicals.

2. **Name:** Heater

   Brand: ATAC.

   Origin: Turkey.

   Manufacturer: ELEKTRIK VE MAKINA SAN. TIC.LTD.STI

   Purpose: For testing chemicals at high temperature.

3. **Name:** Sample dyeing machine.

   Brand: ATAC.

   Origin: Turkey.

   Manufacturer: ELEKTRIK VE MARKINA SAN.TIC.LTD.STI

   Components: Beaker, Beaker holder, Beaker wheel, Sensor, Water tank
   Water tank (Containing the beaker wheel).
   Purpose: To dye the sample by rotating beaker at fixed time & temperature.

4. **Name:** Sample dyeing machine.

   Brand: ATAC

   Origin: Turkey.

   Manufacturer: ELEKTRIK VE MARKINA SAN.TIC.LTD.STI

   Components: Beaker, Beaker holder, Beaker wheel, Sensor, Water tank
   Water tank (Containing the beaker wheel).

   Purpose: To dye the sample by rotating beaker at fixed time & temperature.

5. **Name:** Sample dyeing m/c.

   Brand: ATAC

   Origin: Turkey.

   Manufacturer: ELEKTRIK VE MARKINA SAN.TIC.LTD.STI.

   Components: Beaker, Beaker holder, Beaker wheel, Sensor, Water tank
   Water tank (Containing the beaker wheel).

   Purpose: To dye the sample by rotting beaker at fixed time & temperature.

6. **Name:** Hydro extractor.
   Brand: ATAC.
   Origin: Turkey.
   Manufacturer: ELEKTRIK VE MARKINA SAN.TIC.LTD.STI.

   Purpose: To remove the excess water by centrifugal force from sample.

7. **Name:** Dryer.

   Brand :ATAC

   Origin: Turkey.

   Manufacturer:ELEKTRIK VE MARKINA SAN.TIC.LTD.STI.

   Purpose: To dry the sample at specific temperature.

8. **Name:**Iron

   Purpose: To finish the sample, giving luster by ironing.

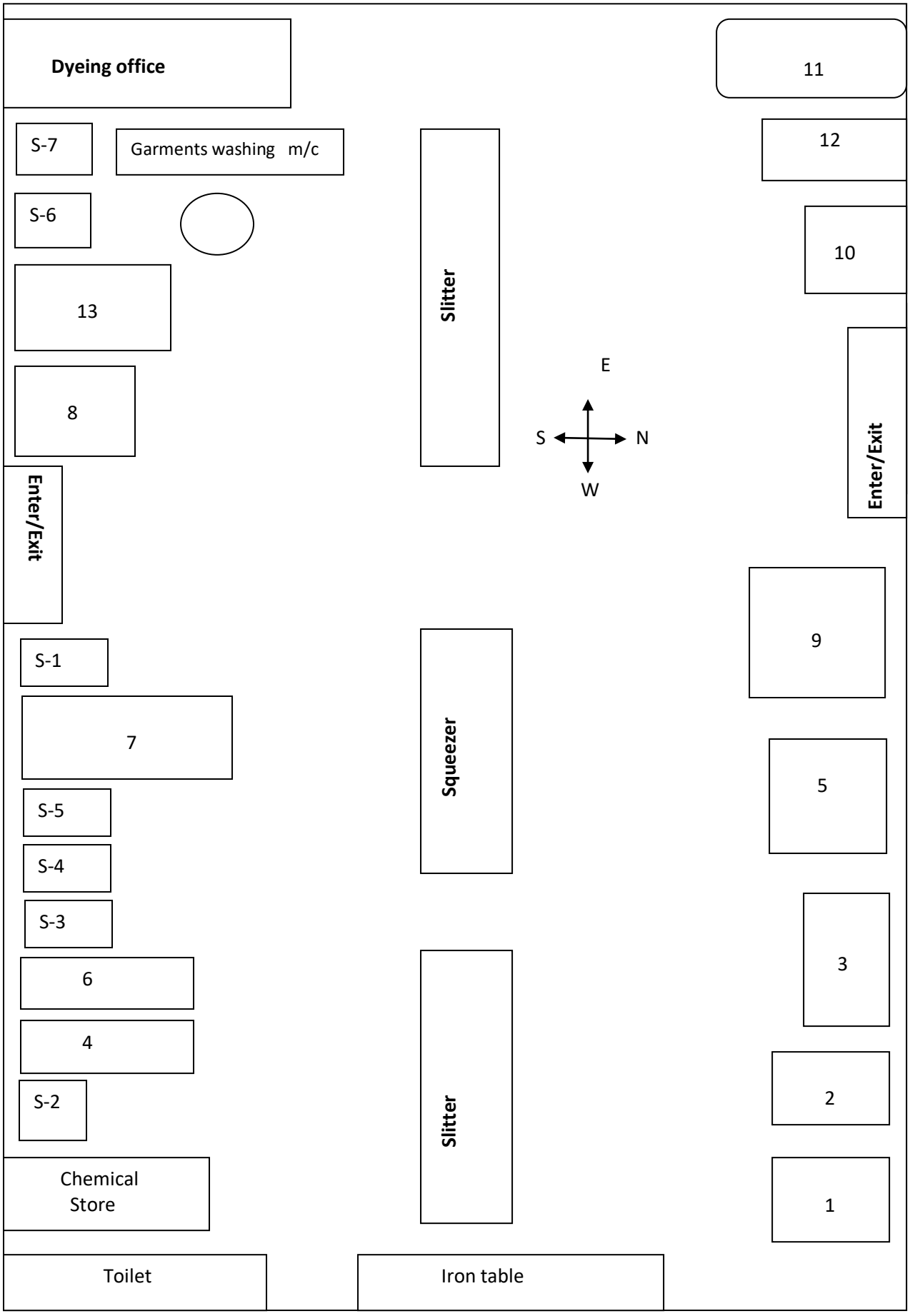
9. **Name:** Verivide matching cabinet.

   Origin: UK.

   Purpose: To match shades.

10. **Name:** Spectrophotometer

    Brand: Spectro flash SF600X
    Origin: USA.
    Manufacturer: Data color.
    Purpose: To match the color of sample with standard one.



= **Hydro extractor** **S 1 to S 7 =Sample Dyeing machine**

Layout of Dyeing Floor

Machine Specification:

1. **Name:** ATYC

   Brand: AGELICH TEMESY CO.S.A

   Origin: Espana.

   Capacity: 300 kg.

   Reel speed: 140 m/min.

   Max temp: 135℃.

2. **Name:** ATYC

Brand: AGELICH TEMSY CO.S.A

   Origin: Espana.

Capacity: 600 kg

Reel speed: 140 m/min.

   Max temp: 135℃.

3. **Name:** ATYC.

Brand: AGELICH TEMESY CO.S.A

Origin: Espana.

Capacity: 600 kg.

Reel speed: 140 m/min.

Max temp: 135℃.

4. **Name:** ATYC.

   Brand: AGELICH TEMESY CO.S.A

   Origin: Espana.

Capacity: 1000 kg.

Reel speed: 170 m/min.

Max temp: 135°C.

5. **Name:**Fongs.

   Brand: Fongs international Co.

   Origin: China.

Capacity: 1000 kg.

Reel speed: 180 m/min.

Max temp: 140°C.

6. **Name:**Fongs.

   Brand: Fongs international Co.

   Origin: China

Capacity: 1000 kg.

Reel speed: 170 m/min.

Max temp: 160^0C

7. **Name:**Akm.

   Brand: Asia kingdom machinery industry.

   Origin: Taiwan.

Capacity: 200kg.

Reel speed: 120 m/min.

Max temp: 160°C

8. **Name:**Akm.

   Brand: Asia kingdom machinery industry

   Origin: Taiwan.

Capacity: 200kg.

Reel speed: 120 m/min.

Max temp: 150°C

9. **Name:**Fongs

   Brand: Fongs international Co.

   Origin: China.

Capacity: 1500 kg.

Reel speed: 170 m/min.

Max temp: 160^0C

10. **Name:**Fongs

    Brand: Fongs international Co.

    Origin: China.

Capacity: 1500 kg.

Reel speed: 180m/min.

Max temp: 160^0C

11. **Name:**Thies.

    Brand: Thies.

    Origin: Germany.

Capacity: 900 kg.

Reel speed: 120 m/min.

Max temp: 200^0C

12. **Name:**Thies.

    Brand: Thies.

    Origin: Germany.

Capacity: 600 Kg.

Reel speed: 120 m /min.

Max temp: 200^0C

13. **Name:**Thies.

    Brand: Thies

    Origin: Germany.

Capacity: 800 kg.

Reel speed: 120 m/min

Max temp: 200^0C.

14. **Name:**Sclavos

    Origin: Japan

Capacity: 1500 kg.

Reel speed: 320 m/min

15. **Name:**Sclavos

    Origin: Japan.

Capacity: 1000 kg.

Reel speed: 120 m/min

Sample dyeing machine:

Machine number	Brand	Capacity(Kg)
1	ATYC	55.
2	ATYC	75.
3	FONGS	150.
4	FONGS	55.
5	FONGS	60.
6	FONGS	30
7	FONGS	30

CHAPTER-04

RAW MATERIALS

RAW MATERIALS

Raw materials are those, by using or processing which I get final product. It plays a vital role in continuous production and for high quality fabric. In textile there are different types of raw materials. Such as-

1. Yarn
2. Fabric
3. Dyestuff
4. Chemical and auxiliaries

Yarn:

The raw material for knitting is the yarn. Different types of yarn of wide range of count are used. In yarn store section I had the chance to know about different yarns of different count used in Fariha knit Tex Ltd. Composite Both carded and combed yarn are used for knitting.

Mélange:

Mélange is produced by blending different amount of top dyed fibre with grey fibre. Different types of méllangeused in Fariha Knit Tex Ltd. Composite

i) White or Ecru méllange
ii) Grey méllange
iii) Anthramélange

Source	Origin	Source	Origin
G.T.N	India.	PT INDORMA	Indonesia.
Perfect	India.	SQUARE	Bangladesh.
T.T	India.	SHOHAGPUR	Bangladesh.
AROTI	India.	RASHOWA	Bangladesh.
PAT SPIN	India.	WINSOM	India.
SPOT KING	Indonesia.	MALWA	India.
PT PASIFIC	Indonesia.	TARA	Bangladesh.

Fabric:

i) 100% cotton fabric
ii) CVC fabric
iii) PC fabric
iv) Lycra twill fabric
v) Rib
vi) Interlock

Dyes:

Sumifix	**Drimaren**	**Remazol**	**Levafix**
S.S Yellow EXF	D.VioletK2RLCDG	R. Yellow-RR	L. first RED CA
S.S Red EXF	D. Red K-4BL	R. Red-RR	L. BR Yellow CA
S.S Blue EXF	D.T Blue CLB	R. Blue-RR	L. Blue CA
S.S Yellow 3RS	D. Yellow CL-3GL	R.G Yellow-RGB	L. Amber CA
S.S Red 3 BS	D. Yellow CL2R	R. Ultramarine RGB	L. Red CA
S.S Navy Blue BS	D. Blue CL-BR	R. Red-RGB	L. Yellow
S.S Brill Blue R	D. Blue CLR	R. Blue-BB	L. Scarlet
S.S Brill Yellow 4GL	D. Blue CL-2RL	R. Briblue-R	L. Rubine CA
S.S Yellow 3RF	D. Orange K3R	R. Turblue-G	L. Orange CA

Etc.

Ciba	**Sk**	**Disperse**	**Benzactive**	**Terasil**
C.Yellow F-4G	Sk.Yellow Brown S-2RL	Dis K.B Blue	Benzactive Blue SLF	T. Red FBN
C.Yellow S-3R	Sk Blue S-3Rf	Dis K.B Red RB	Benzactive Red SLF	T.Rubine 2GFL
C.Red FN 3G	Sk Red SERPD	Dis K.B Orange	Benzactive Yellow S-Max	T. Blue WBLS
C.Super Black-G	SkRubine S-3GF	Dis K.B Navy Blue EXSF	Benzactive Cosmos S-Max	T. G Yellow W3R

Turquish	**Acid Dye**	**Black**
Sk T-Blue S-GL-200%	SS Black EXf	Reactive black B-1500%
RemazolTur-Blue G	Acid Black LDN	Ultrazol Black B-5.

Dyes origin

Sumifix: Japan.
Drimaren: Germany.
Remazol: Germany.
Levafix: Germany**Benzactive:** Switzerland.
Ciba: Switzerland.
SK: Korea
Terasil: Switzerland

Terasil& Disperse dyes are mainly used for dyeing polyester. Acid dyes are use to Nylon. Sumifix, Drimaren, Remazol, Levafix, Ciba, Sk all these dyes are use to dyeing the Cellulose or Cellulose based fabric.

Chemical & Auxiliaries:

Chemicals & Auxiliaries	Function
1. Sunmoral CK-2/ Pitch run L-2/ NDA.	I tting agent & Detergent.
2. Neocrystal DMBF.	Sequestering agent.
3. Invatex CS/ / Neocrystal 150F.	Sequestering agent & I tting agent.
4. Albatex FFC.	Antifoaming agent.
5. Pitch run L-100f.	All remover it is mainly used for lycra mixed fabric.
6. Neorate P^H 150F/ Neorate P^H55F.	Stabilizer used during peroxide bleaching.
7. Caustic Soda/ Soda Ash.	Give alkali media during reactive dyeing & fixation. It also used as saponification agent. Caustic Soda reduces the amount of Soda ash in same dyeing process where high amount Soda ash is used.
8. Hydrogen peroxide.	Bleaching agent.
9. Croaks NF/ Sodium Bisulphate.	Peroxide killer, It is enzyme based peroxide killer.
10. Acetic acid.	Give Acetic media & mainly used as neutralizer.
11. Bio touch C-35/ Bio touch C-30/ Invazyme CEL.	Enzyme.
12. Hydrose.	Reducing agent.
13. Neocrystal-200 BF/ Cibacel DBC/ GSS/ Drimagen E3R.	Leveling agent.
14. NicepoleD-1044/Lyocol-o-Powder/ Serabid MIP.	Anti creasing agent.
15. Serabid IPD/ Ladiquest/ Eganol PS	Sequestering agent.
16. Glabuer salt/ Serabid IPF/ San Salt LD4F	Electrolyte.
17. $NaHCO_3$.	Used where slightly alkali media is required.
18. Soda Ash/ Meropen KP/ Sodium Acetate	Give alkali media during reactive dye fixation.
19. Lipotal PS 60-F/ Ladiquest.	Multifunctional (I tting agent + detergent + sequestering agent).
20. Neo fix-R-250F.	Fixing agent.
21. AlcamineCWS/ArristanHPC/Hydroperm SRHA.	Cationic Softeners.
22. Silicon Amzf/ Sunsofter.	Softeners.
23. Sirrix 2UD.	Multifunctional.

CHAPTER-05

PRODUCTION PLANNING

Basic procedure of Production Planning & control:

A planned work brings success. Without planning nothing is complete within the required time. So planning has its own importance which is intolerable. Planning gives a scheduled task & control completes it successfully but production planning & control is not a easy task Its basic working procedure is as follows

Order receive by marketing division

↓

Analyzing the order

↓

Planning for Knitting

↓

Planning for dyeing

↓

Planning for finishing

↓

Planning for garments

It is only a basic procedure. It may be change according to the type of order. Sometime the order is placed only for finishing the materials or only for dyeing the goods. Then some steps are minimizing for planning.

Taking order from marketing division:

marketing division supplied fabric orders to the planning & control division by a specific format.

Analyzing the orders:

After getting the fabric order , this section analyzes the orders according to buyers order quantity, type of orders(i.e. type of fabric color to be dyed etc) delivery date etc. This section plans for required quantity of fabric to be knitted (order quantity + 7% of order quantity, if lycra is used then allowances keep up to 10% of order quantity) Knitting balance, fabric to be dyed, and dyeing balance, RFD (ready for delivery), RFD balance, delivery fabric & delivery balance etc.

Planning for Knitting:

This section is plans for knitting production. Following parameters are the important for the planning of knitting the fabric.

1. Order quantity (Required amount of fabric to be knitted).
2. Yarn received.
3. Brand & lot wise count test.
4. Type of fabric to be knitted(S/J, D/J, Pique etc).

5. No of machine to be used.
6. Fabric GSM, width.
7. Bulk production.
8. 100% quality assurance
9. Delivery grey fabric store.

Planning for dyeing the fabric:

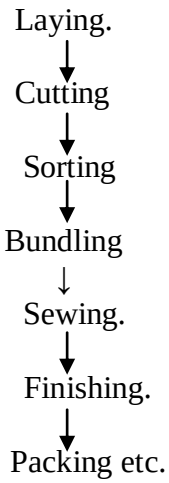
Planning for dyeing is called "Batch plan". Batch plan is prepared according to the batch no, fabric construction, color, width, GSM, & priority of delivery etc & written in batch card.

Planning for finishing the fabric:

Finishing schedule are same as the dyeing. After dyeing, materials go to the finishing section with the batch plan. Finishing data is written to the batch card & is informed to the planning section. this section always to all the departments to finish all the work within the delivery time given by the buyers. Thus it plays a very important role in success of the company.

Planning for Garments:

After finishing process the finished fabric are ready for producing garments. For the production of garments this fabric has to pass through some process



All this processes are planned according to the shipment schedule. the planning section always forces to the entire department to finish entire work within the lead time given by the buyers.

CHAPTER-06

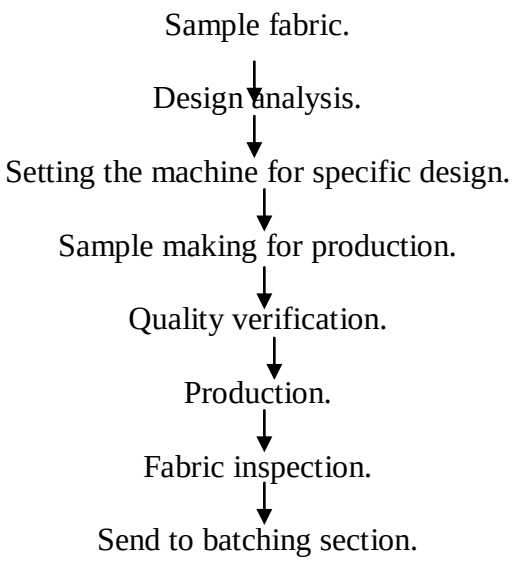
KNITTING SECTION

Knitting:

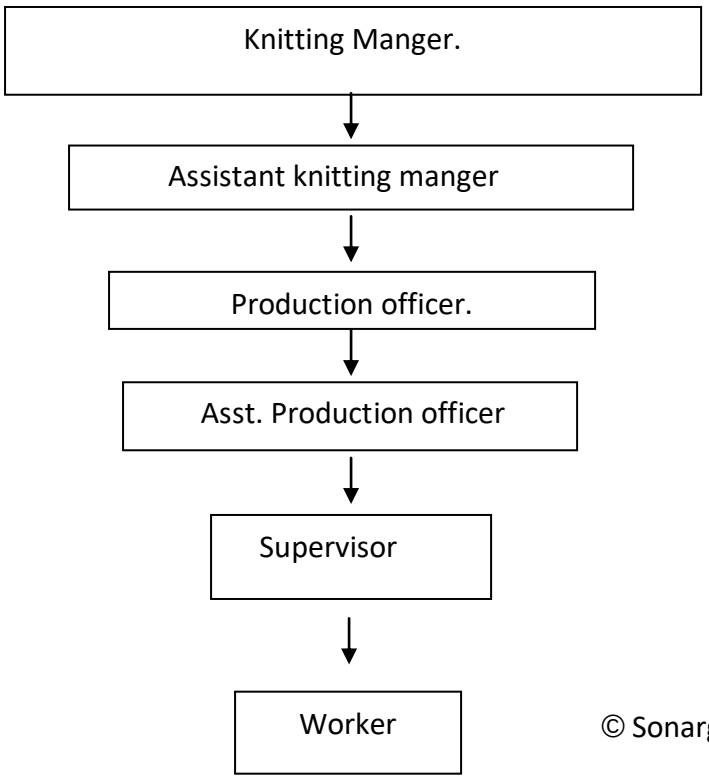
Knitting is the process of creating fabric by the intermeshing of loops of yarn. Each row of such loops hanging from the one immediately preceding it. There are two types of knitted fabric

1. Warp knitted fabric.
2. weft knitted fabric.

Sequence of operations in knitting section:



Organogram of knitting section:



Considerable points to produce knitted fabrics:

When a buyer orders for fabric then they mention some points related to production & quality. Before production of knitted fabric, these factors are needed to consider. These are follows —

1. Type of fabric or design of fabric.
2. Fabric composition.
3. Finished G.S.M
4. Yarn count.
5. Types of Yarn (combed or carded)
6. Diameter of the fabric.
7. Stitch length.
8. Color depth.

Different parameter in knitting machine:

Machine pitch: It is defined as the distance bet I en the centers of the two adjacent needle of the same row indicated in mm.

$$\text{Pitch} = \frac{25.4}{\text{Gauge (E)}} \text{mm}$$

Machine Gauge (E):

Machine gauge denotes the number of needles per inch arranged on the needle carrier & based on the nominal machine diameter.

Gauge (E) = (25.4/ pitch) mm.

Knitting machine production:

$$Single\ jerssey\ production = \frac{\pi dg \times no.of\ feeder \times sitch\ length \times RPM \times Eff\% \times Time}{10 \times 36 \times 2.54 \times 840 \times Count \times 2.24}$$

$$Double\ jerssey\ production = \frac{2\pi dg \times no.of\ feeder \times sitch\ length \times RPM \times Eff\% \times Time}{10 \times 36 \times 2.54 \times 840 \times Count \times 2.24}$$

$$\text{Grey GSM} = \left(\frac{\text{Finish G.S.M} \times \text{Machine dia}}{\text{Fabric diameter}}\right) - \text{Shade\%}$$

Loops: It is a basic unit by which fabric produced & meshed at its base with previous one.

Stitch: The smallest dimensionally stable unit of all knitted fabrics is the stitch. It consists of a yarn loop which is held together by being intermeshed with another stitch or other loops.

Stitch length: Stitch length is the length of yarn which includes the needle loop & half the sinker loop on either side of it. Generally the larger the stitch length, the more extensible & lighter the fabric & poorer the cover, opacity & brushing strength.

Basic knitting elements:

1. Needle.
2. Sinker.
3. Cam.

Function of needles: Needle is raised to clear the old loop from the hook & to receive the new loop above it on the needle steam. In general there are three types of needles

1. Bearded needle.
2. Latch needle.
3. Compound needle.

Function of Cam:

1. To produce motion of needles.
2. To drive the needles.
3. Formation of loops.

Function of Sinker:

It may one or more of the following functions dependent upon the machines knitting action & consequent sinker shape & movement.

Different parts of knitting machine:

Creel: it is used to place the cone.

Feeder: A unite which guides a yarn to the needles . The number of feeder is equal to the number of cam in the machine.

Tensioning device: Tensioning device is used to give proper tension to the yarn.

VDQ pulley: VDQ pulley is used to control the G.S.M by controlling the stitch length by feeding.

Guide: Guide is used to guide the yarn.

Sensor: Sensor is used to understand the cause of machine stop.

Spreader: Spreader is used to spread the knitted fabric before take up roller take it.

Take up roller: Take up roller is used to take up the fabric.

Knitting Faults & their causes:

1. **Name** : Hole mark

   Causes: a. Due to yarn breakage.
   b. Faulty yarn count.
   c. Faulty feeder setting.
   d. Badly knot or splicing.

2. **Name:** Needle mark.

   Causes: a. Due to needle breaks during the knitting cycle.
   b**.** If a needle or needle hook is slightly bends then needle mark comes on the fabric.

3. **Name:** Sinker Mark.

   Causes: a. when sinker corrodes due to abrasion then sometimes cannot hold a new loop as a result sinker marks comes.
   b. If sinker head bend then sinker mark comes.

4. **Name:** Star mark.

   Causes: a. Yarn tension variation due to production.
   b. Buckling of the needle latch.
   c. Low G.S.M fabric production.

5. **Name:** Drop stitches

   Causes: a. Defective needle.
   b. Take down mechanism too loose.
   c**.** Insufficient yarn tension.
   d. Improper setting of feeder.

6. **Name:** Oil stain

   Causes: a. when oil lick through the needle trick then it pass on the fabric & make a line.
   b. Excess oil pressure in the oil line.

7. **Name:** Rust stain

   Causes: If any rust on the machine parts.

8. Name: Pin hole.

Causes: Due to break down or bend of latch, pin hole may come in the fabric.

9. Name: Lycra katta.

Causes: a. Improper tension.
b. Dust deposit in the pulley.

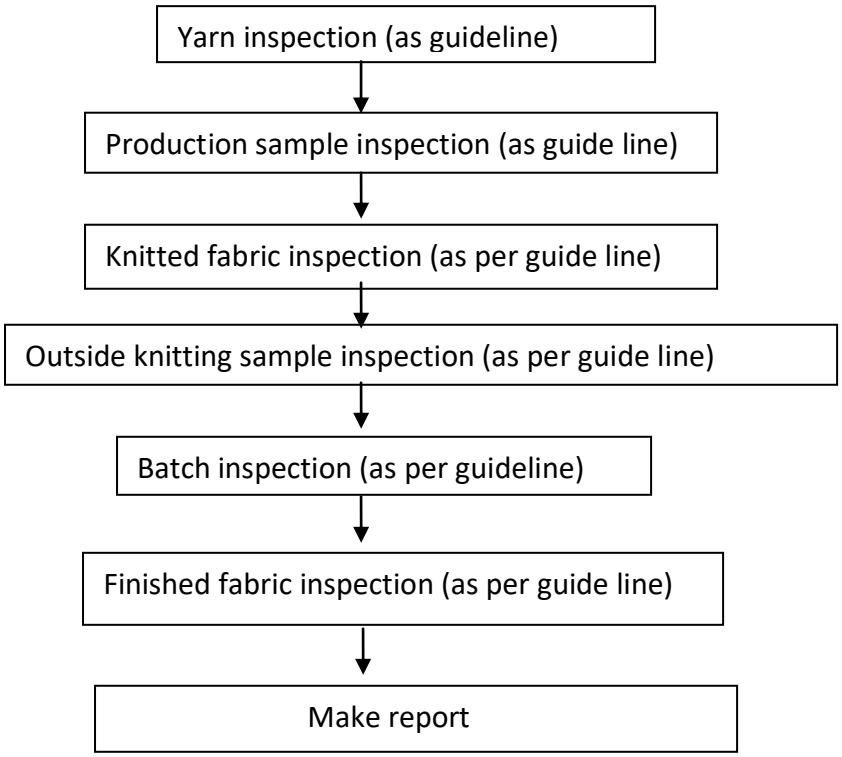
10. Name: Yarn contamination

Causes: a. If yarn contains foreign fibre then it remains in the fabric even after finishing.
b. If lot, count mixing occur.

: Other types of faults:

1. Cloth falls out.
2. Barre.
3. Fly.
4. Yarn contamination.
5. Patta.
6. Crease mark.
7. Loop.
8. Tana loop.
9. Lycra out.
10. Shart up.
11. Dia mark.
Etc.

Quality checking flow chart:\



Buyer order sheet for knitting section:

1. Buyer name.
2. Order No.
3. Fabric type.
4. Yarn type.
5. GSM.
6. Color.
7. Finish dia.
8. Quantity.

Types of Knit fabric produced by "S.B. Knit composite"

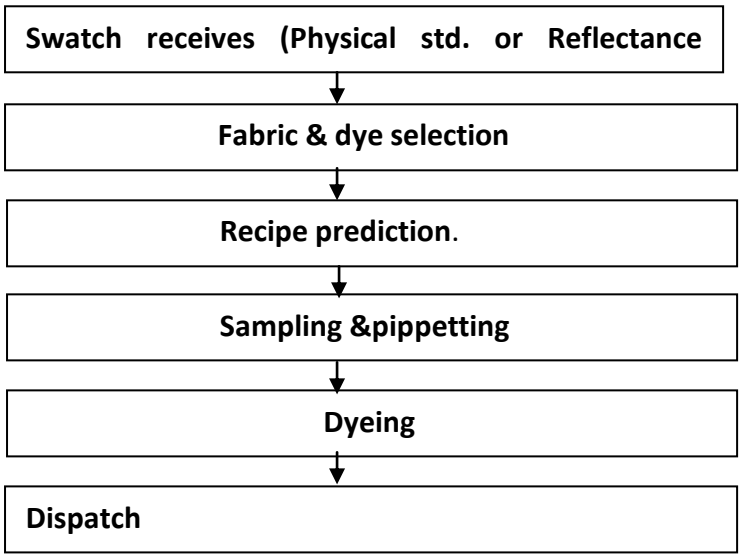
1. Single lacoste.
2. Double lacoste.
3. Pique.
4. Double pique.
5. 1*1 rib or 2*2 rib
6. Various stripes.
7. Normal single jersey.
8. Double jersey.

CHAPTER-07

DYEING LAB

Sequence of lab operations:

A number of operations are done in lab section. This are-



Fabric is always recommended by buyer & dyes selection depends upon the technician decision.

1.Swatch receives: Swatch is received from the buyer & it comes to the lab section through the merchandiser.

2.Fabric & dye selection: According to the buyer swatch , the type of fabric is selected & the dye selection depends on the following factor:

- **a.** The dye stuff contains "Metamerism" or not.
- **b.** The dye stuff is suitable for producing particular color.
- **c.** Sometimes buyers recommended the dye to produce particular color.
- **d.** The cost of dye stuff.

3.Recipe prediction: Recipe is determined by matching with reference book or Spectrophotometer.

- **a.** By the spectrometer the std. of the swatch is saved in computer.
- **b.** Then by data color software after selecting the dye some recipes are found with the best suitable recipe comes first & then others.
- **c.** If the recipe shows "Metamerism" then change the selected dye.

4.Sampling &pippetting: According to the recipe, the required fabric, dyes & chemicals are I ighted & stock solutions are made. Then pipe ting is done according to the recipe. Stock solutions are made according to the recipe%. Such as-

For Dye

- **a.** If recipe % (0.0001- <0.001) then stock solution % (0.01%)
- **b.** If recipe% (0.001- <0.1) then stock solution % (0.1%)
- **c.** If recipe % (0.1-0.8) then stock solution% (0.5%)
- **d.** If recipe% (0.9-4.9) the stock solution% (2.5%)
- **e.** If recipe % (≥5) then stock solution % (5%)

For Auxiliaries:

Salt– 20% stock solution; Soda: 10% stock solution.
Acetic Acid: 0.5 g/l; Detergent: 200ml/l;
Leveling agent: 3.5 g/l;

Pipette use in lab section: 0.1 ml – 1 ml & 5 ml to 20 ml.

5. Dyeing: After completing pipe ting according to the recipe, the I ighted fabric is taken in sample dyeing m/c beaker & dyeing is completed. Here sample wt. 10gm & liquor ratio 1:8.

6. Dispatch: After completing dyeing, the samples are checked by spectrophotometer or by eye vision in verified matching cabinet. If it shows "Metamerism" then recipe correction is done & again samples are prepared until no "Metamerism" & shade match occur. Then in a lab dip card 3 samples are attached. One card is sent to merchandiser & another to buyer through merchandiser.
If the buyer chooses the sample then the recipe is send to the dyeing section for bulk production through lab dip program card.

Working Flow Chart Of Color lab

Original swatch received from buyer.
↓
1st recipe collection (data color/Reflectance).
↓
Calculate the recipe.
↓
Pipe ting with robo lab.
↓
Add fabric & auxiliaries on dye bath.
↓
Load on machine.
↓
Dyeing (Time & temperature required)
↓
Unload after wash.
↓
Cold wash.

↓

Acid wash

↓

Cold wash

↓

Hot wash. (Time & temperature required)

↓

Cold wash.

↓

Squeezer

↓

Dryer

↓

Iron

↓

Visual /data color check with standard.

↓

I (Lab dip submission) ii (Reference keeping)

Lab Approved

↓

Transfer in dyeing floor with Recipe

Lab dyeing procedure for cotton:

Swatch receives

↓

Recipe prediction

↓

Pipe-ting

↓

Add leveling agent & salt

↓

Took fabric (Left for 20 min)

↓

Add soda

↓

Load on m/c (At 60°C, run 60 min)

↓

Unload

↓

Cold wash

↓

Hot wash at 95°C with detergent

↓

Cold wash

↓

Squeezing

↓

Drying.

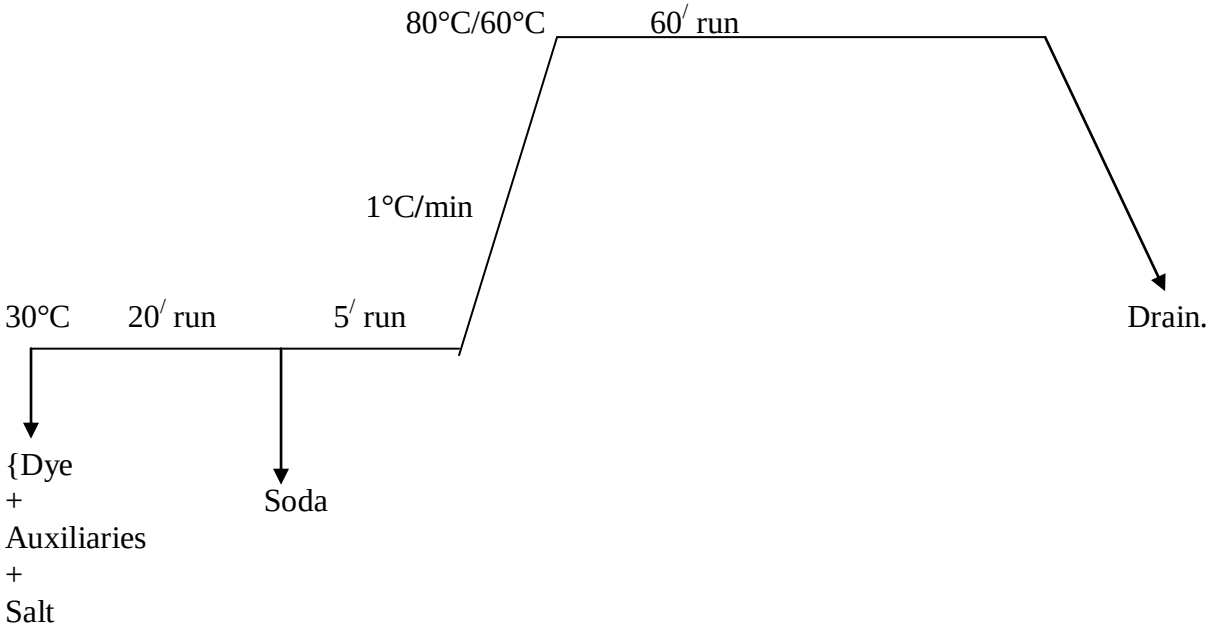
Washing off procedure:

1. Cold wash is carried out after dropping the dye bath.
2. Then treated with 2g/l acetic acid for 2 min.
3. Then cold wash & soaping with 1 g/l soaping agent at 95°C/98°C for 15 min (light shade) & 30 min (Dark shade).
4. Then wash with cold water, squeezing & drying.

Lab dyeing process for all dye:

Step by step method:

1. Add salt + Auxiliaries at 30°C & run for 20 min.
2. Add soda ash at 30°C & run for 5 min.
3. Set gradient 1°C up to 60°C.
4. At 60°C & run for 60 min or up to final shade.



100% cotton, bleached, non mercerized; Liquor ratio– 1:10

Shade%	< 0.1	0.1–< 0.5	0.5– < 1	1– <2	2–< 3	3–≤ 5	> 5
Salt g/l	20	20–25	25–40	40–50	50–60	60–80	80–100
Soda ash g/l	5	5	5	5	5	5	5

Caustic soda 50% ml/l	0.9	0.9–1	1–1.2	1.2–1.5	1.5–2	2–3	3
Progression	70%	70%	50%	50%	50%	50%	50%
Dosing time	60	60	60	60	60	60	45–60

Salt & soda amount in case ofMercerized &Un mercerizedSample:

Shade	Mercerized (g/l)	Un mercerized (g/l)
Light	5	3
Medium	20	10
Dark	20	10
Over Dark shade	50	50

Amount of soda ash in case ofMercerized & Un mercerizedSample: :

Shade	Mercerized (g/l)	Un mercerized (g/l)
Light	8	10
Medium	10	15
Dark	18	20

CHAPTER-08

BATCHING

Batching or Batch:

"A group of units of products of the same type, structure, color and finish, class and composition, manufactured under essentially the same conditions and essentially at the same time, and submitted at any one time for inspection and testing."

Types of Batching:

1. Solid batch.
2. Assort batch.

M/c used in the batching:

1. Back sewing m/c: Used to form tube fabric form from open fabric.

2. Reverse sewing m/c: Used only for single jersey fabric to replace the back part with front part in dyeing of critical shade.

Batch calculation ratio:

$$\text{No. of Batch} = \frac{\text{Batch quantity} \times \text{Finished Dia quantity}}{\text{Total quantity}}$$

NB:

1. Batch quantity depends on Machine dyeing capacity.
2. Finished Dia quantity means Fabric finish Dia.
3. Total quantity means Total lot size.

Calculation for Rope Length:

$$\text{Rope Length (L)} = \frac{(\text{Total batch quantity} \times 1000 \times 100)}{(\text{Finished GSM of fabric} \times \text{Fabric finished Dia} \times 2.54)} \text{m.}$$

In case of fabric in tube Dia, Rope length $(L^{/}) = \frac{L}{2} m$

For lycra = Process lost + 7% only full feeder lycra.

$$\text{Loading/ Nozzle} = \frac{\text{Rope length}}{\text{Nozzle number}} \text{ m.}$$

CHAPTER-09

DYEING
&
PRINTING

Dyeing Section

Dye stuff:–

It was noted by Otto.N.Witt in 1876 that color in organic compound is associated with the presence of certain groups in the molecule. He designated the group as that produce color as a chromophore& a molecule containing such a group as chromogen. The most effective chromophores are – Nitrozo, Nitro, Azo, Carbonyl etc.

Color substance should become a useful dye, the molecule should contain in addition to chromphore, some auxochrome groups. The most effective auxochromes are– Hydroxyl, Amino, Carboxyl, Sulphonic, group etc.

Dyes used in FAL–

1. Reactive dye (For Cotton).
2. Acid dye (For Nylon).
3. Disperse dye (For polyester).

Properties of Reactive dye:

- Soluble in Water & not to be hydrolyzed.
- Capability of movement within the fibre structure.
- Make covalent bond with fibre.
- Dyeing carried out in alkaline condition.
- Fastness properties are generally good.
- Dyeing method is easy & easy applicable to cellulose as I ll as protein fibre.
- All kinds of shade are found.

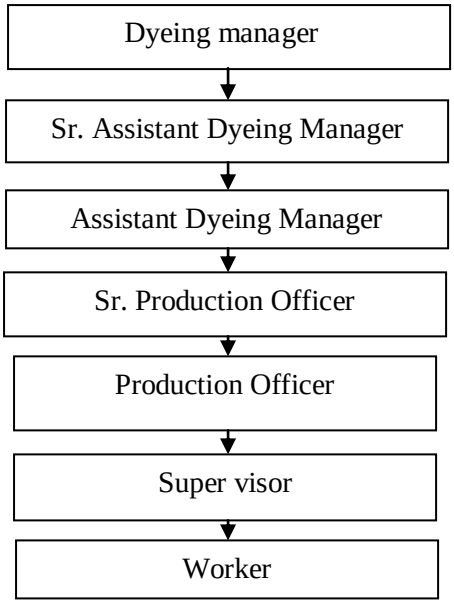
Properties of Acid dye:

- Acid dyes are salt of sulphonic acid & carboxylic acid & their anions are colored components
- Soluble in water & are applied in acid medium.
- It has affinity towards the protein fibre.
- Light fastness is good.
- It gives bright shades.

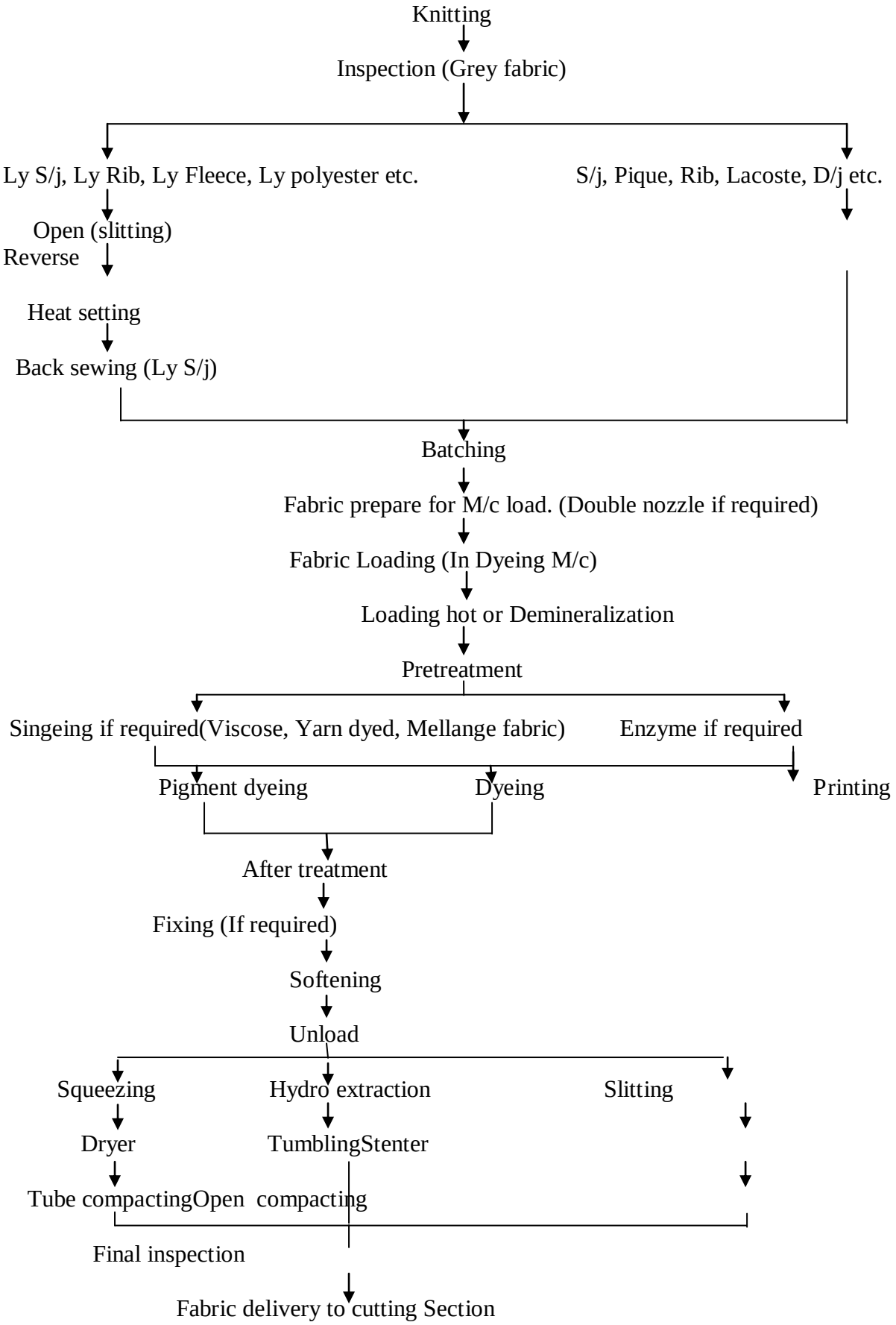
Properties of Disperse dye:

- It is little bit soluble in water.
- Fastness property is good.
- It has sublimation property.

:Organogram of Dyeing Floor:



Dyeing Floor Process Flowchart



Demineralization procedure Or Loading Hot(cotton)–

1. I tting agent (Sunmoral CK–2) + Sequestering agent (Sirrix 2UD) {Inject }.
2. Temperature raisesup to 50°C & run the process for 30 min.
3. Then drain the liquor.

Scouring & bleaching (Cotton):–

1. Inject { I tting agent (sunmoral Ck-2)+ Sequestering agent (Neocrystal 150F)+ Stabilizer (Neorate PH–150F)+Anti-creasing agent (NicepoleD-1044)+ Anti–foaming agent (Albatex FFC) }
2. Temperature raises up to 60°C & run for 5 min.
3. Temperature raises up to 70°C with Caustic soda (10 min Linear) dosing & run for 5 min.
4. Then H_2O_2 inject at 70°C. & P^H =10-11
5. Temperature raises up to 95°C & run for 60 min.
6. Drop the temperature up to 80°C for sample check.
7. Drain the liquor.
8. Fill m/c with water & inject the peroxide killer (Croaks NF)
9. Temperature raises up to 80°C & run for 10 min. It will remove the un used peroxide from the fabric.
10. Drain the liquor.
11. Then cold wash is given ($5^{/}$-$10^{/}$).

Bio scouring (Viscose)–

1. Inject { I tting agent (sunmoral Ck-2)+ Sequestering agent (Neocrystal 150F)+ Anti-creasing agent (NicepoleD-1044)+ Anti–foaming agent (Albatex FFC)}
2. Temperature raises up to 70°C & Caustic Soda (5 min linear) dosing.
3. Temperature raises up to 95°C & run for 5 min.
4. Drop the temperature up to 80°C for sample check.
5. Then drain the liquor.
6. Cold wash is given for ($5^{/}$-$10^{/}$).

Enzyme wash (Cotton)–

1. Acetic acid inject at 35°C.
2. Temperature raises up to 62°C & keeping P^H =4.5–5.
3. Enzyme (Bio touch C-35) is given in linear dosing process.
4. Run at 55°C for 60 min.
5. After that temperature raises up to 80°C & run for 10 min.
6. Drain the liquor.
7. Cold wash is given for ($5^{/}$-$10^{/}$).

Washing procedure:–

1. After B.D the fabric is washed with cold water.
2. Then it is neutralized by acetic acid.
3. After doing this fabric is soap washed at 80°C for $10^{/}$– $20^{/}$.

Softener Application:–

1. After washing softener is applied at 40°C for 20 min in acidic medium.
2. Softener dosing is done for 8 min.
3. After it the fabric is washed with cold water.

Stripping Procedure:–

1. Salt, caustic inject & temperature raise up to 95°C & run for 20 min.
2. Drain & again caustic inject, hydrous is given by dosing process & temperature raise up to 95°C for 40 min.
3. Then drain, hot wash at 80°C & then cold wash.

Process curve for Sumifix dyes (Critical + Super critical):–

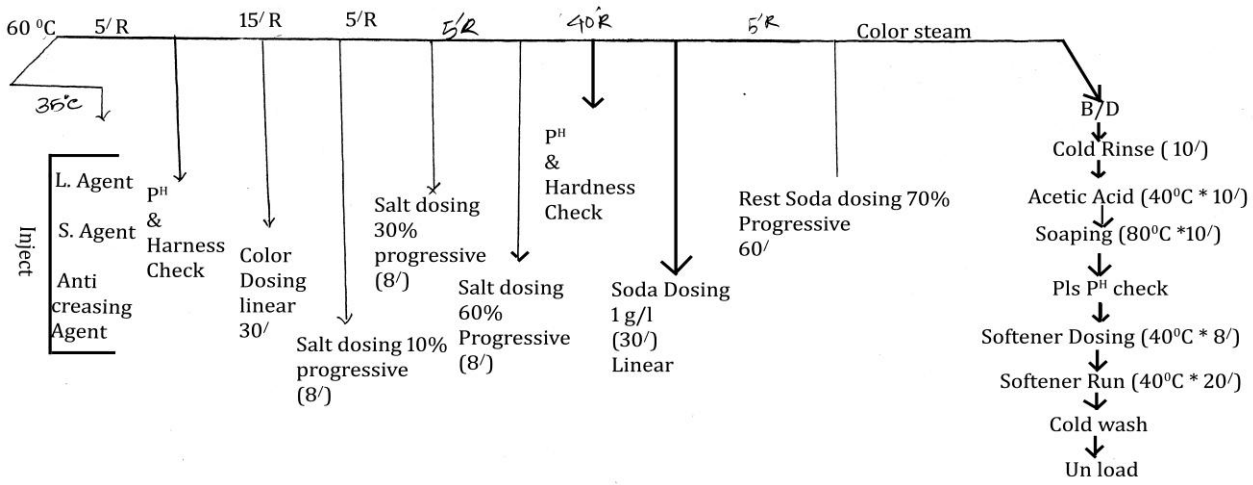


Fig: Process curve for Sumifix Critical & Super critical color

Process:–

1. Inject Leveling agent, Anti-creasing agent, and Sequestering agent.
2. Check P^H& Hardness level.
3. Color dosing linear –30 min.
4. Salt dosing 8 min 10%, 30%, 60% progressive.
5. Check P^H& Hardness level.
6. Soda dosing 1g/l – 30 min (linear).
7. Rest Soda dosing –60 min (70% progressive).

Process curve for Sumifix (Normal color):–

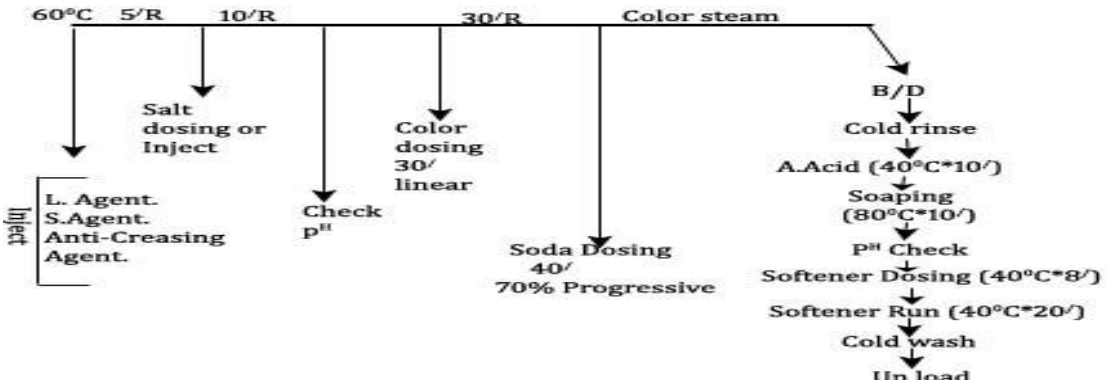


Fig: Process curve for Sumifix Normal color

Process:–

1. Inject leveling, anti-creasing & sequestering agents.
2. Salt dosing.
3. Check P^H & Hardness.
4. Color Dosing -30′ (Linear).
5. Soda dosing -40 min 70% progressive

Process curve for Drimarine Dyes (Critical Color):–

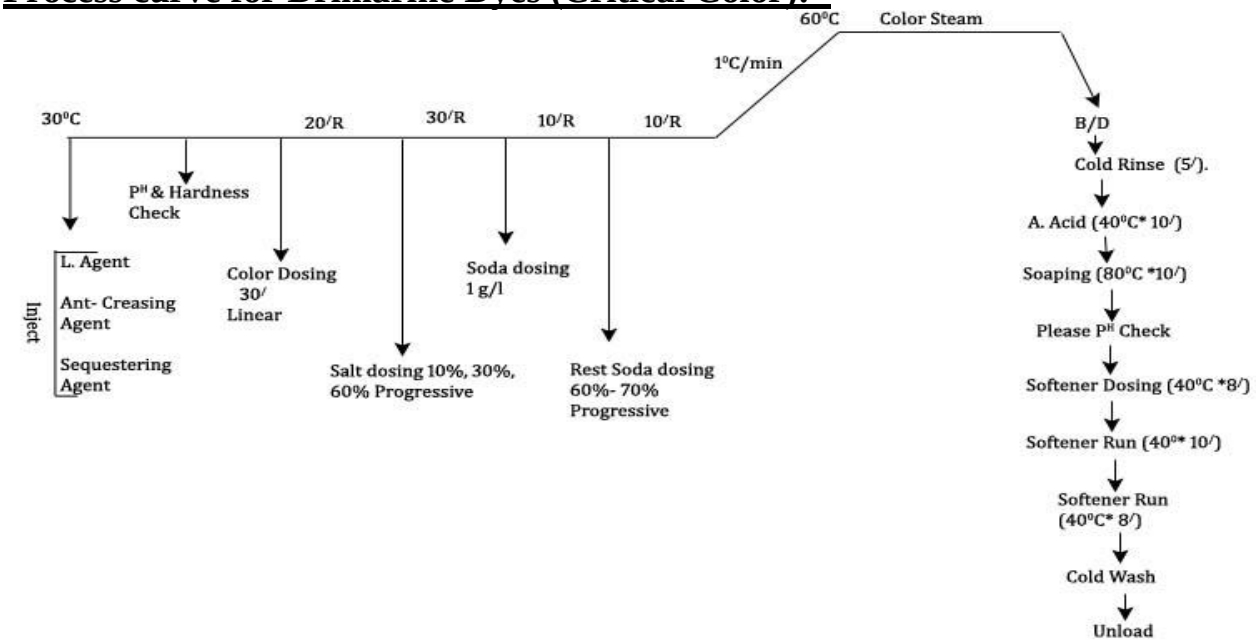


Fig: Process curve for Drimarine Critical color

Process:–

1. Inject leveling agent, anti-creasing agent, & sequestering agent at 30^0C.
2. Check P^H& Hardness.
3. Color dosing – 30 min Linear.
4. Salt dosing 10%, 30%, 60% progressive.
5. Soda dosing 1 g/l– 30 min (linear).
6. Rest soda dosing –60 min. (70% progressive).

Process curve for Drimarine Dyes (Normal Color):–

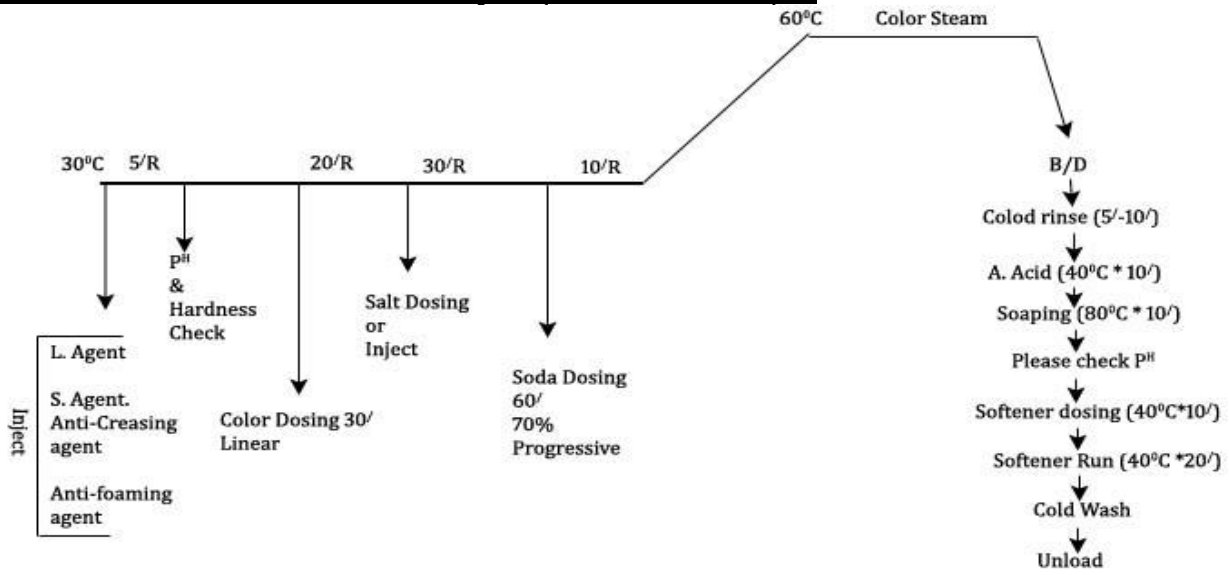


Fig: Process curve for Drimarine Normal Color

Process:–

1. Inject leveling agent , anti-creasing agent, & sequestering agent at 30^0C.
2. Check P^H & Hardness level.
3. Salt inject or dosing.
4. Soda dosing 70% -progressive 60 min.
5. Then Raise the temperature up to 60^0C & run up to final shade.

Process curve for (Remazol + Levafix Dyes):–

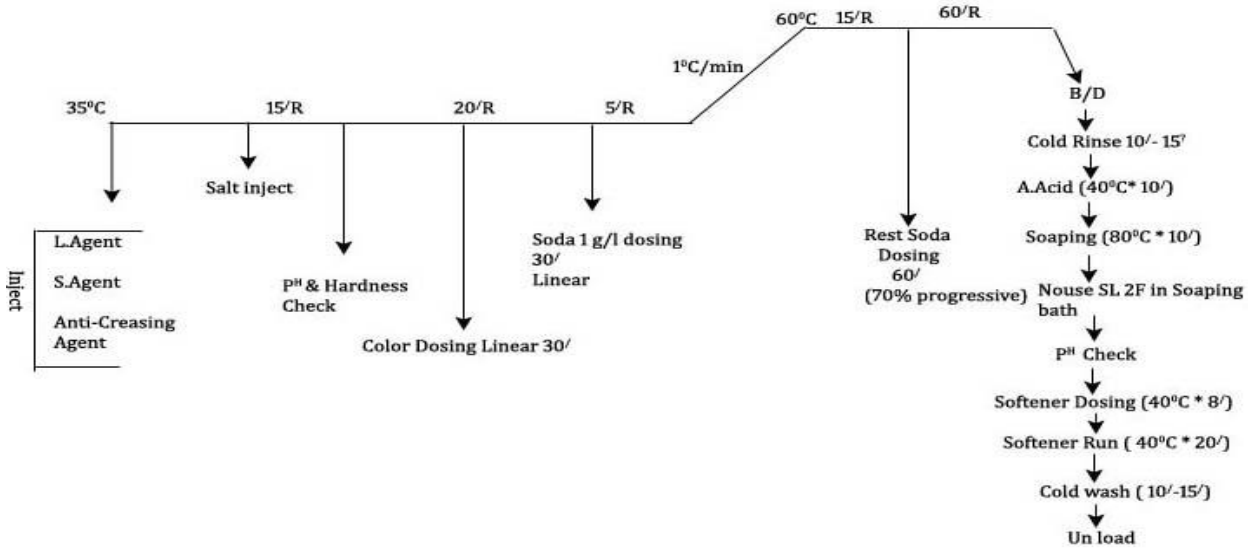


Fig: Process curve for Remazol&Levafix dye

Process:–

1. Inject leveling, anti-creasing & sequestering agents.
2. Salt is injected.
3. Check p^H& Hardness.
4. Color Dosing Linear.
5. Soda dosing 70% progressive 40 min.

Process curve for (All Green + Turquise Color):–

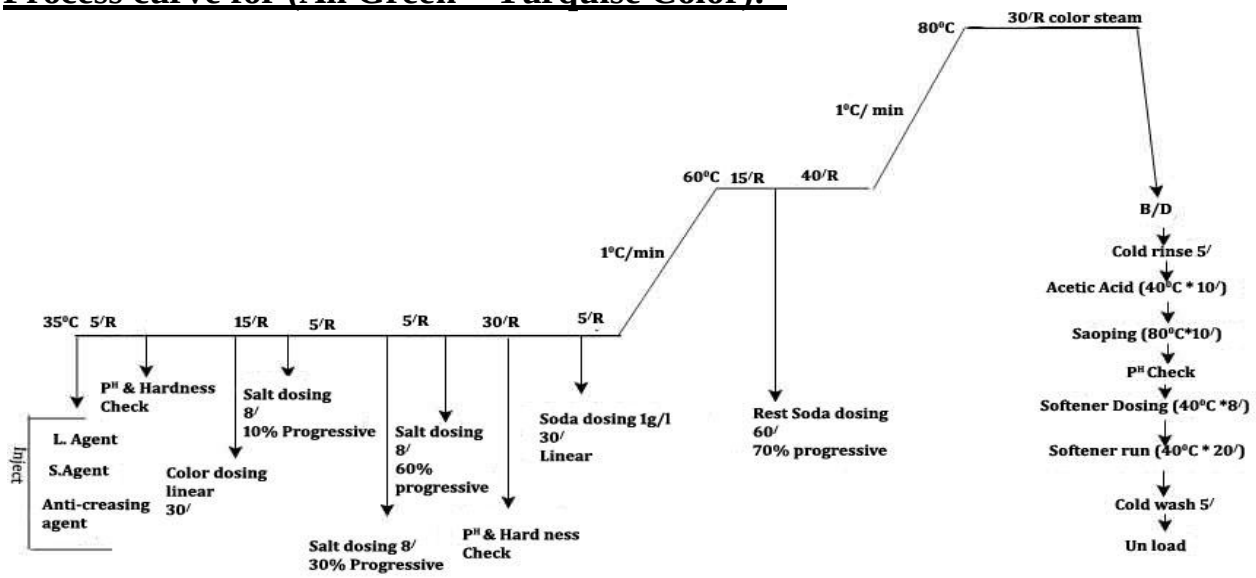


Fig: Process curve for (All green &Turquise color)

Process:–

1. Inject leveling, anti-creasing, sequestering agent.
2. Check P^H & Hardness level.
3. Color dosing – (30 min) Linear.
4. Salt dosing – (8 min), 10%, 30%, 60% progressive.
5. Check P^H & Hardness.
6. Soda dosing 1 g/l- (30min) linear & temperature gradient set 1^0C/min until 60^0C is reached.
7. Rest soda dosing – (60 min) 70% progressive temperature gradient set 1^0C/min until 80^0C is reached & then run the bath until the final shade has come.

Process curve for White:–

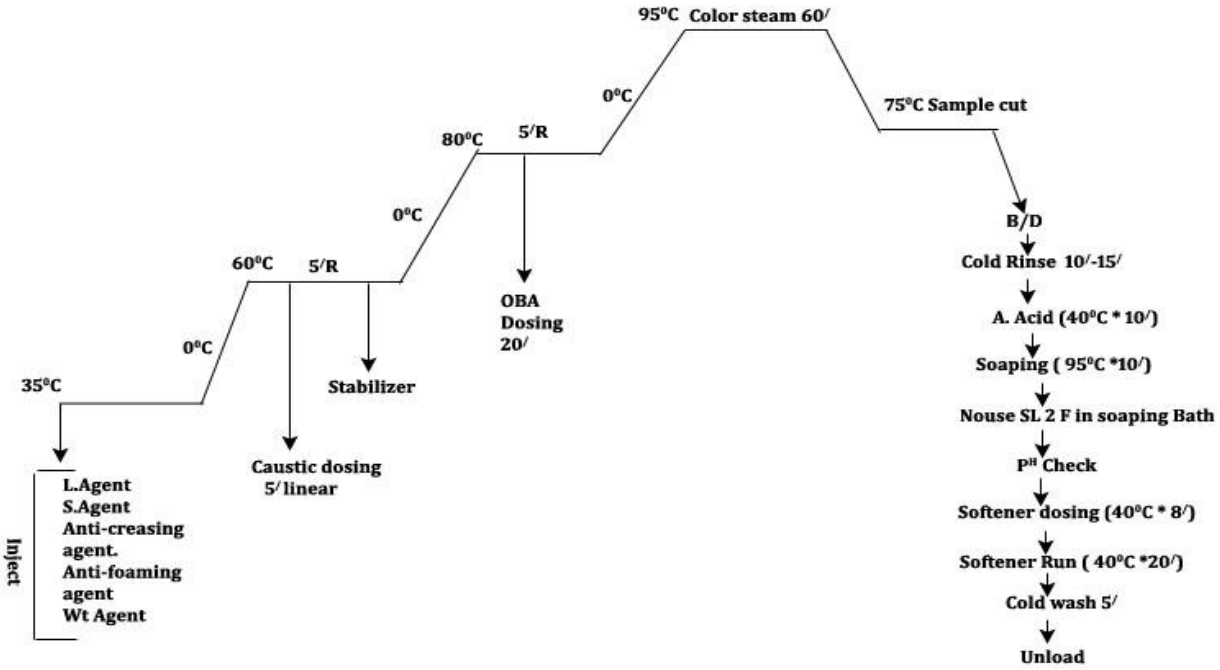


Fig: Process curve for White

Process:-

1. Leveling agent, I tting agent, Sequestering agent, Anti- foaming agent is injected.
2. Caustic soda dosing – (5 min) Linear.
3. Peroxide dosing -5 min.
4. OBA dosing -(20 min).
5. Then raised the temperature up to 95^0C run for 60/ then drop the temperature at 75^0C for sample cutting if matched un load the fabric.

Process curve for Black:–

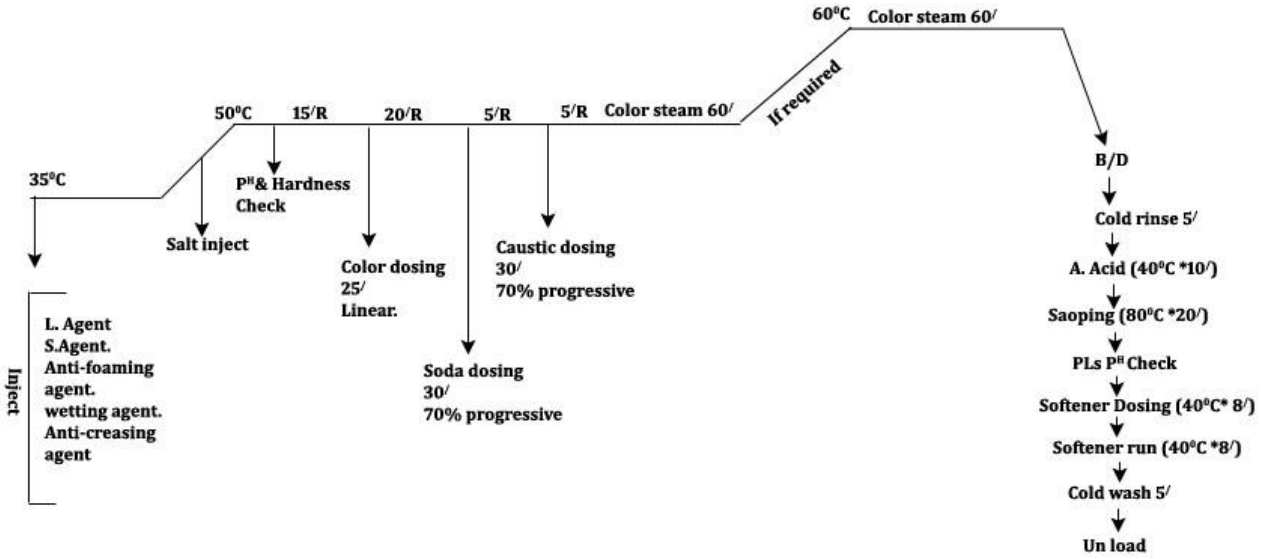


Fig: process curve for Black

Process:–

1. Inject leveling agent, anti-creasing agent, sequestering agents anti foaming agent etc.
2. Salt is injected.
3. Color dosing -25 min (linear).
4. Soda dosing–20 min (70% progressive).
5. Caustic soda dosing -20 min (70% progressive).

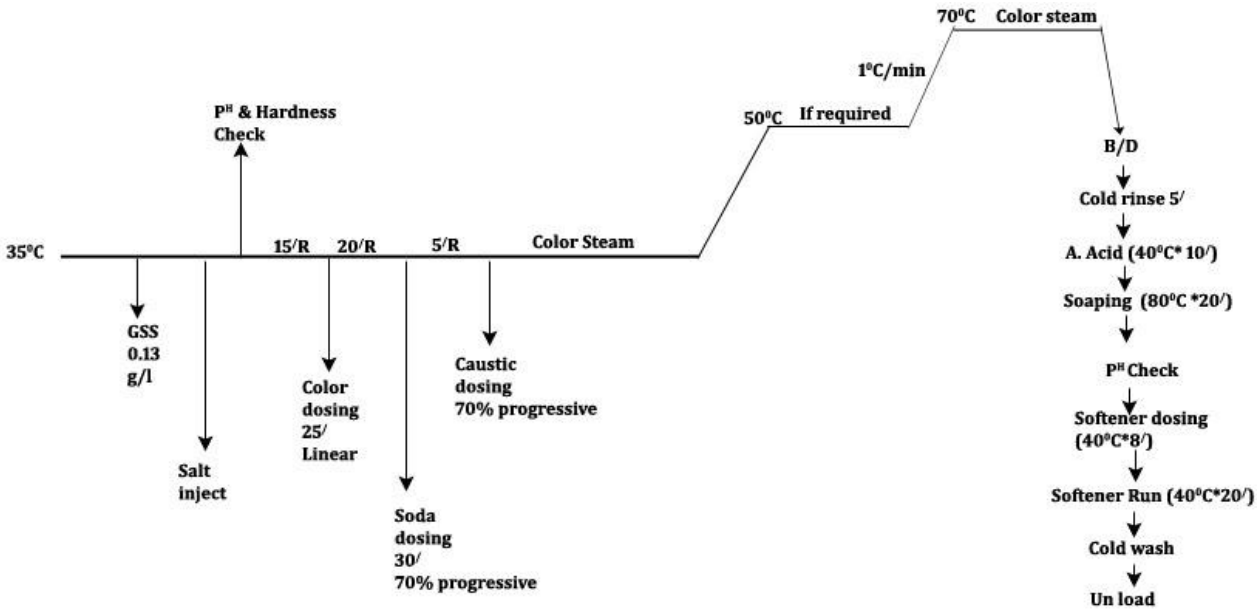


Fig: Process curve for Reactive black SR

Process curve for Polyester:–

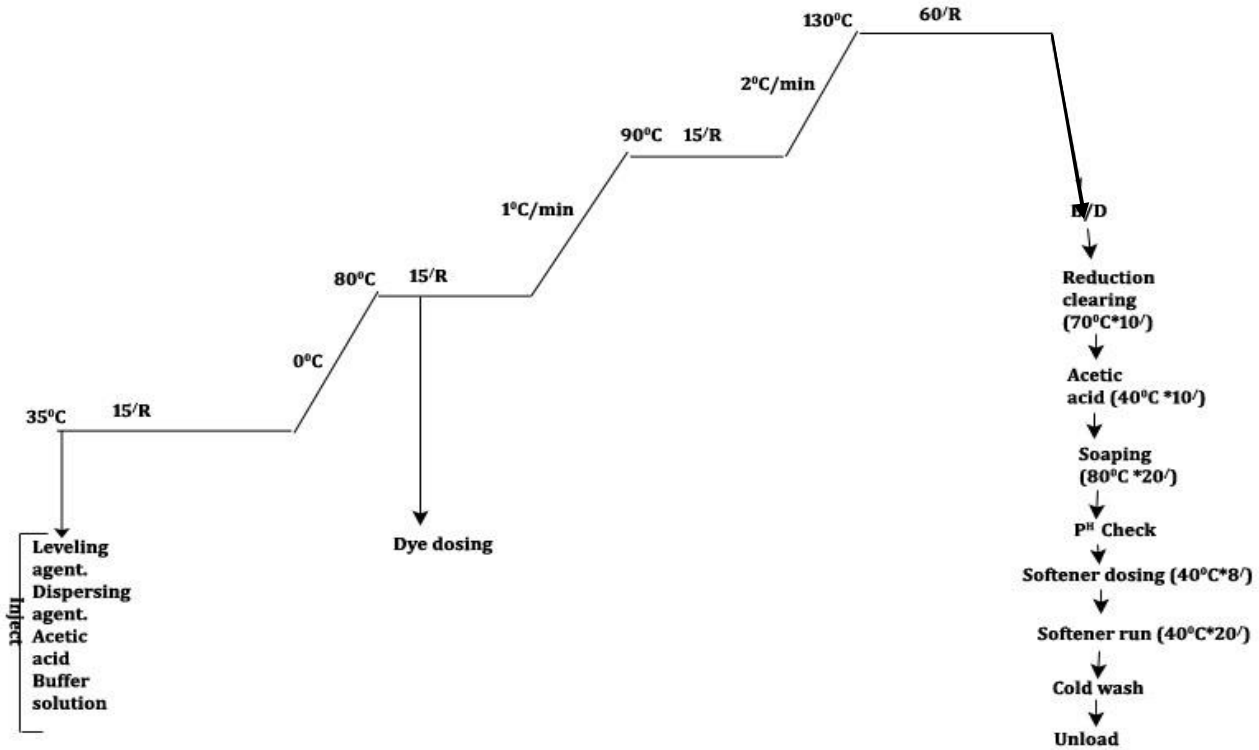


Fig: polyester dyeing curve

Polyester dyeing is done with disperse dye at 130^0C in acid medium.

1. At first fabric is hot washed at 80^0C with water.
2. Then dye, dispersing agent, acid is added & temp. Raise 130^0C .At this temp. Dyeing is done up to final shade.

Dyeing process for Polyester & Cotton blend:–

In case of blend dyeing at first polyester part is dyed with disperse dye & then cotton part is dyed with reactive dyes. Dyeing of blended fabric "Single bath two stage of dyeing" method is follo I d.

Dyeing process for Nylon:–

In S.B. Knit compositeDyeing is done with Reactive dye in acid medium at 80^0C, which is a matter of strange but it is true.

Process:–

1. At first material is hot washed at 60^0C.
2. Then leveling agent, dye, & acid are added & temperature raised up to 80^0C. After that color steam is run up to final shade.

Process curve for Viscose:–

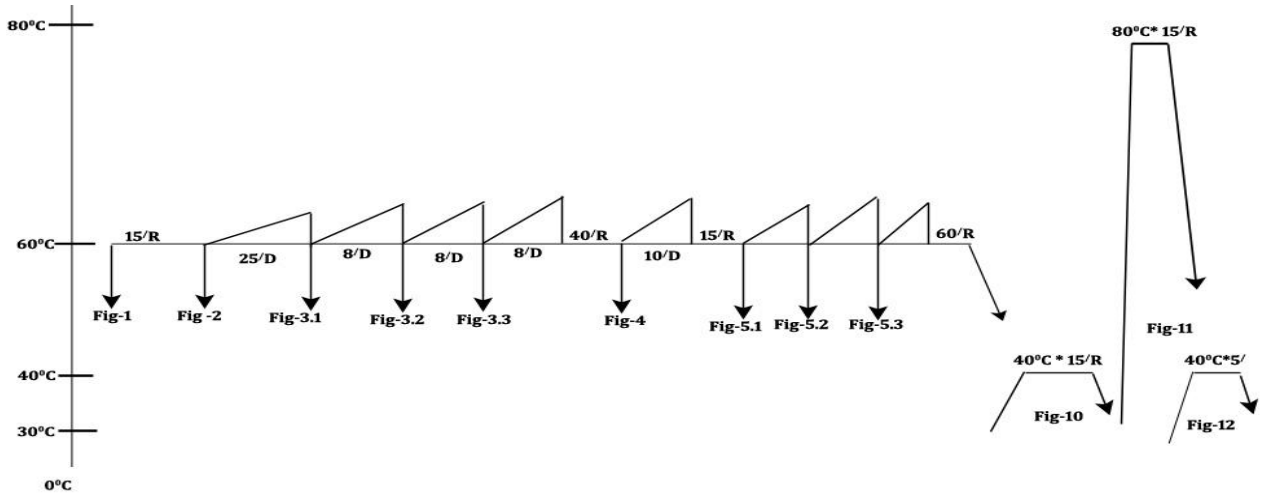


Fig:-Viscose dyeing curve

Fig:-1 Fig:–2 Fig:–3.1-3.3 Fig:–4

200B =1.5-2 g/l Dyes 3.1= Salt 10% $NaHCO_3$=0.5 g/l

ND1044 =1 g/l 3.2=Salt 30%

Ladiquest = 1g/l 3.3 =Salt 60% dosing respectively

Fig: (5.1 – 5.3) Fig:–10Fig11

Soda =10% Acid Wash Ps Hot

Soda =20%

Soda=70% dosing respectively

Fig:-12

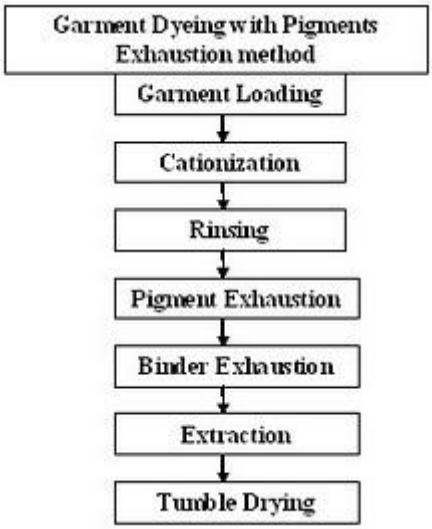
Cold wash.

Pigment dyeing:-

Pigment dyeing is not really "dyeing' in its truest form because the pigments stick on the fabric with the help of the binder. Pigments are insoluble in water. They exist in the form finely ground molecules, milled for garment dyeing purposes into a paste. When anionic dispersing agents are added, A slightly negative charge is present, thus the foundation for pigment dyeing is born.

When a positively charged cationic pre-treat is added to the fibre a magnetic bond is formed. The process is complete when a cationic binder is added to "lock" the pigment into place. In pigment dyeing no actual chemical reaction takes place bet I en the dye & the fabric.

The pigment dyeing process is:–



In **Fariha Knit Tex Ltd** It is continuing on the basis of experimental process only for short order items especially for the ladies I ar items.

They are done two types pigment dyeing according to the Buyer recommendation:–

1. Normal pigment dyeing.
2. Neon pigment dyeing.

Chemicals	**Function**
1. Catalyzer	For cationization.
2. Akramine prefix K	Multi functional.
3. Liquor Ammonia	Buffering agent.
4. Binder	used in the exhaust pigment dyeing procedure for fixing pigment colors
5. Pigment	For coloration of the fabric.

–: Types of Washing given on Garments or In fabric stage:–

1. Normal wash :– (40^0C×60′)
2. Enzyme wash: – Enzyme+ Acetic acid+ Chemical & auxiliaries (60^0C × 60′).
3. Heavy garments wash:-
   a. **If a garment is dyed with Reactive dye:** – I tting agent + soap/Detergent+ Softener+ Soda+ Auxiliaries+ Caustic. **M: L**= 1:20 **Time** = 15′–20′.
   b. **If a garment is pigment dyed:** – Binder + Soda. **M: L**= 1:10–1:15, **Time** = 15′–20′.
4. Acid wash with stone :–(40^0C ×15′–20′) **M:L=** 1: 10–1:20.
5. Acid brush effect.
6. GMT softener wash / Silicon wash.
7. GMT stone wash: – Water + Stone (owf) + chemical & auxiliaries.
   M: L =1:10. **Time** = 5′–10′.
8. GMT salt wash: – Normal salt + Water. **M: L =**1:10.
9. Denim wash: – Enzyme wash + Normal wash

PRINTING:–

Flow chart of Printing:–

Art work receive from buyer

↓

Make film for screen designer

↓

Make screen for sample

↓

Color standard receive from buyer for matching color

↓

Recipe maintain to register

↓

Strike off send to buyer for approval

↓

Approval strike received from merchandiser

↓

Bulk cuff panel receive from cutting

↓

Send to lab for wash report

↓

Recipe received from sample section

↓

After receive wash report than start bulk production

↓

Send to curing

↓

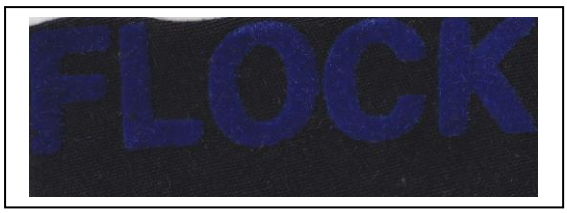
Quality control check

↓

Delivery to garments input section

Different types of printing:–

Pigment Print



Flock print

Foil print Puff print

Rubber print

High density print

Glitter print

Discharge print

Metal print

Silicon print

Common dyeing fault:–

1. **Name: –** Uneven dyeing.
   Causes:–
   a. Uneven pretreatment (Uneven scouring & bleaching).
   b. Improper color dosing.
   c. Using dyes of high fixation property.
   d. Uneven heat-setting in case of synthetic fiber.
   e. Lack of control on dyeing m/c.

2. **Name:– Batch to Batch Shade variation.**
   Causes:–
   a. Fluctuation of temperature.
   b. Improper dosing of dyes and chemicals.
   c. Batch to batch I ight variation of dyes and chemical.
   d. Dyes lot variation.
   e. Improper reel speed, pump speed, liquor ratio.
   f. Improper pretreatment.

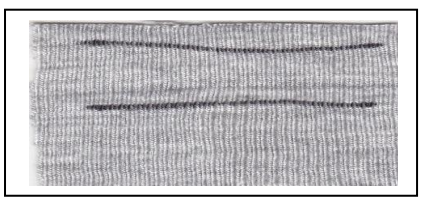
3. **Name: –** Crease mark.
   Causes:–
   a. Poor opening of the fabric rope.
   b. Sudden cooling of synthetic material.
   c. If pump pressure and reel speed is not equal.
   d. Due to high speed m/c running.

4. **Name: –** Dye spot.
Causes:–
   a. Improper dosing of dye particle in bath.
   b. Improper dosing of caustic soda particle in bath.

5. **Name:–** Wrinkle mark.
Causes:–
   a. Poor opening of the fabric.
   b. Sudden cooling of the synthetic material.
   c. High temperature entanglement of the fabric.

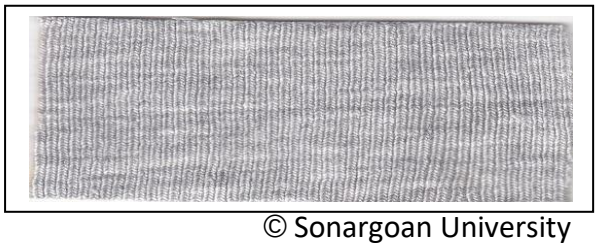
6. **Name: –** Softener Mark.
   Causes:-
   a. Improper mixing of the softener.
   b. Improper running time of the fabric during application of the softener
   c. Entanglement of the fabric during application of the softener.

Some faults of knit fabric:–

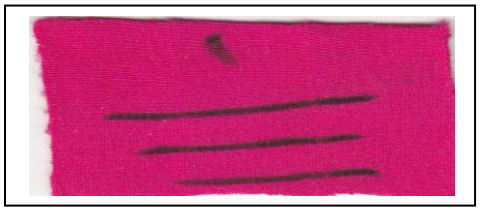


Thick & thin

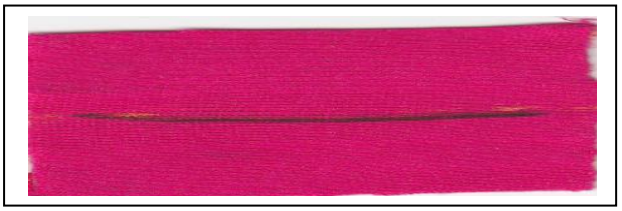
Color spot



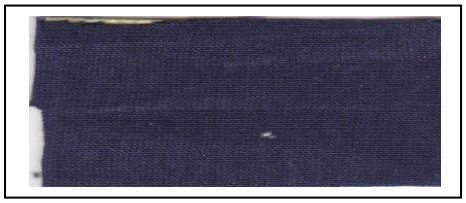
Oil stainLycra out



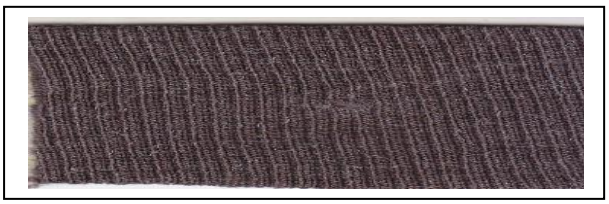
Heat set problem



Star mark



Softener mark



Pin hole

Needle drop

Color mark

CHAPTER-10

FINISHING SECTION

Finishing

Textile finishing in the restricted sense is the term used for a series of process to which all bleached, dyed, printed & certain gray fabric are subjected before put on the market.

In broad sense covers all the process which the fabric undergoes after leaving the knitting machine to the stage at which enters to the market.

The general aim of the finishing is to improve attractiveness & or serviceability of a fabric.

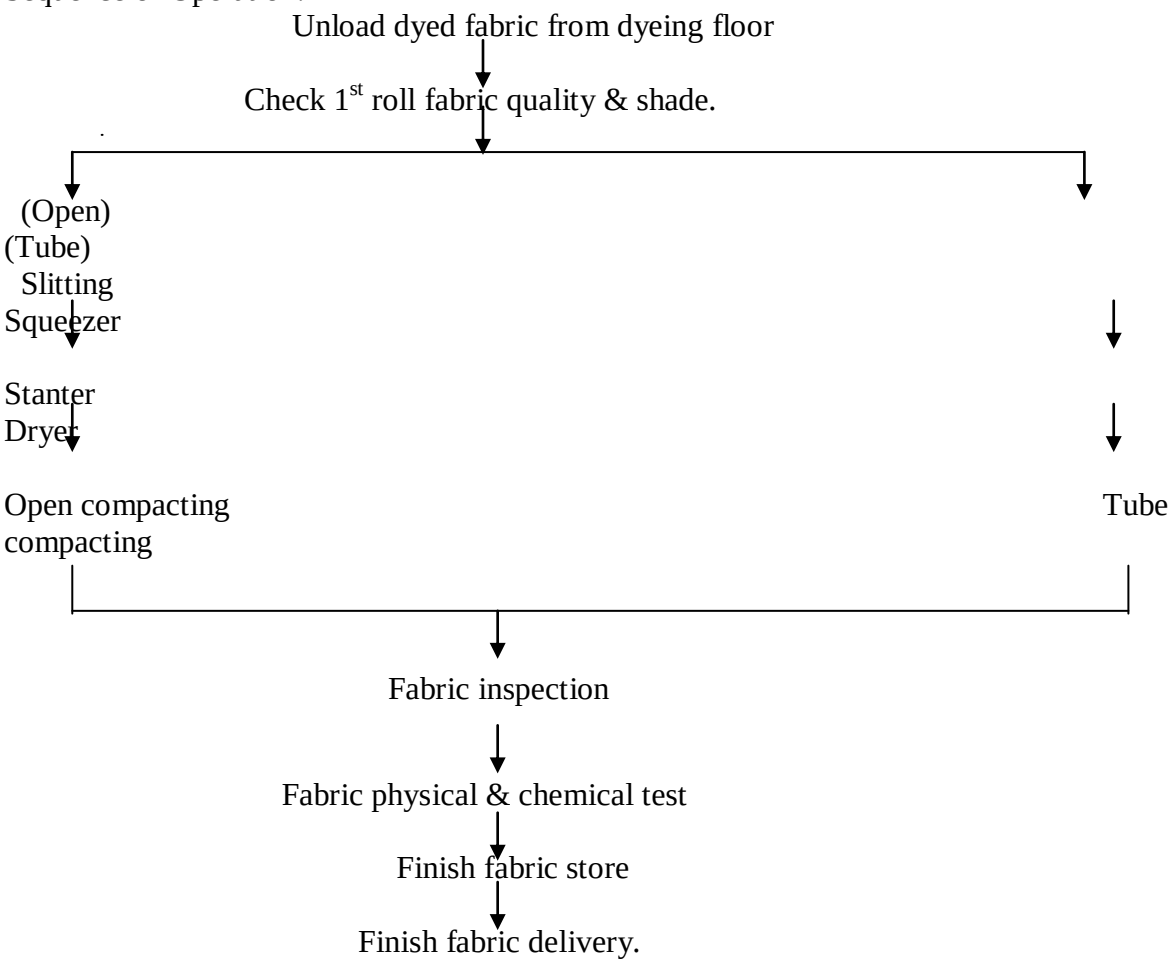
Finishing can:-

1. Improve the dimensional stability of the fabric.
2. Modify the handle of the fabric.
3. Improve the appearance of the fabric.
4. Modify the serviceability of the fabric.
5. Improve the durability of the fabric.

The finishing method can be classified according to the special effects that they produce on the fabric. These effects include;

a. Stabilizing effects. (Stentering, Mercerizing, etc).
b. Textural effects. (Calendering, Embossing).
c. Functional effects. (Water repellent finish, Soil release finish etc).

Sequence of Operation:-



Slitting M/C:-

Objects:

a. To get open with fabric from tube form.
b. To extract a level of water from the I t fabric by squeezing roller.
c. To apply softener to get softness of fabric

Main components:-

1. De-twister 2. Mechanical stretcher. 3. Fabric cutter. 4. Guide roller.
5. Tension roller 6. Dust remover. 7. Squeezer.

Cutting speed:-

For fabric cutting there remain a cutter & the cutting speed depends on type of fabric ie. (s/J or D/J). In case of S/j the speed is less than D/J.

Typical speed:-

Fabric type	R.P.M
S/J	60-65
D/J	80

To increase the production the speed is always remain in 80.

Pressure adjustment:-

Pressures in squeezing roller always remain bet I en 4-4.5 bar.

Note: - In special case where the shade need to be light then pressure must be increased according to the direction of upper level.

Precaution:-

a. Cutter cut the fabric according to the needle drop mark, so the operator must be aware about it.
b. There remain no folding in the selvedge when the fabric through the squeezing roller.

Stenter m/c:–

Object:–

a. To heat set lycra fabric.
b. To dry open width dyed fabric.
c. To maintain dia , GSM & bowing problem.
d. To apply chemicals.

Main components:–

a. Guide roller , b. Tension roller, c. Over feed roller, d. Under feed roller, d. Dancing roller.
e. Padder, f. Steam applier, g. Selvedge cutter, h. Gumming wheel, i. Heating chamber,
j. Blo I rs, k. Air joke, l. Sensor.

Heat setting:–

Due to elasticity of lycra it can create problem in the long run. So by applying heat elastic property is reduced a bit & plastic property is brought. This process is known as heat setting. This process is also carried out for polyester.

Typical temperature:–

For low gsm fabric : 120^0C –125^0C.
For High gsm fabric : 130^0C –135^0C.
For Lycra contained : 185^0C – 200^0C.
For Polyester : 200^0C – 210^0C.
For PC fabric : 190^0C – 200^0C.

Open compactor:–

Object:–

1. To control gsm, dia, & shrinkage of the fabric.

Main components:–

1. Scroll roller. 2. Metal detector. 3. Guide roller. 4. Tension roller.
5. Steam applier. 6. Feed roller. 7. Tension roller. 8. Take up roller. Etc.

Operating parameters:–

1. Set the temperature bet I en 120^0C – 130^0C for white & 150^0C – 160^0C for color fabric.
   Temp. increase with GSM & moisture content.
2. Over feed % is 10%–20% or more depends upon the finished G.S.M.
3. Speed depends on the finished gsm. They are vice versa.

Squeezer:–

Object:–

1. To extract excess amount of water by squeezing.
2. To apply softener to the fabric.

Main components:–

1. De-twister, 2. Guide roller. 3. Immersion roller.
4. Tension roller. 5. Squeezing roller. 6. Shape.
7. Softener tray. 8. Ring. 9. Over feed plate.

Roller speed:–

For single jersey :– (60–70) m/min.
For double jersey:– (50–55) m/min.

Squeezing pressure:–

Pressure always remains in first squeezing roller 4 bar& in second roller is 4.5 bar.

Overfeed:–

When there need to increase the width of fabric then feed roller feed more fabric to the next roller. In this way dimensional stability is gained.

Precaution:–

1. Chemicals should be changed every time when the roll is changed.
2. Diameter should be maintained.
3. Over feed section should be cleaned. Etc

Dryer:–

Objects:–

1. To dry the fabric.
2. To make the fabric wrinkle free.

Main Components:–

1. Tension roller, 2. Feed roller, 3. Conveyor. 4. Net. 5. Blo I r.
1. Scroll roller.

Temperature & speed:–

Temperature depends on the type of fabric. For S/j & D/J it remains 135^0C –160^0C & 140^0C–170^0C respectively. Speed for S/j & D/J 8-12 m/ min & 5-9.5 m /min respectively.

Precaution:–

1. Fabric should not contain any wrinkle when it is feed to the conveyor.
2. Temperature should be controlled according to the type of fabric.

Tube compactor:–

Object:–

2. To control gsm, dia, & shrinkage of the fabric.

Main components:–

1. Feed roller. 2. Shape . 3. Guide roller. 4. Tension roller.
5. Steam applier. 6. Feed roller. 7. Conveyor. 8. Take up roller.
9. Compacting shoe. Etc.

Compacting roller pressure:–

Roller pressure far– 20 psi
Roller pressure near– 25 psi
Shoe pressure – 30 psi

Temperature:–

Compacting shoe $\geq 70^0$C.

Feed roller $\geq 90^0$C.

Retard roller $\geq 90^0$C.

Precaution:–

1. Compacting roller pressure should be adjusted with far & near roller.
2. Care should be taken that over or loss compaction does not occur.
3. Care should be taken about gsm, temperature, dia.
4. Steam should be applied according to the required softness of the finished product.

CHAPTER-11

QUALITY LAB

Quality Laboratory

Machine specification:–

M/c Name	Model	Origin	Capacity	Rotation	Temp	Mfg& Brand	L:R	Function
1. Washing m/c	Electrolux W355H	S I den	5.5 Kg	4±2 rpm	30^0C–95^0C	Electrolux Wascator	1:10	Wash & Shrinkage test.
2. Washing m/c	Electrolux W455H	S I den	5.5 Kg	4±2 rpm	30^0C–95^0C	Electrolux Wascator	1:10	Wash & Shrinkage test.
3. Dryer	T4130ELEC	S I den	5.5 Kg	272 rpm	60^0C	Electrolux Dyer		Drying
4. Dryer	T2130ELEC	S I den	5.5 Kg	272 rpm	60^0C	Electrolux Dyer		Drying
5. Twist tester	Y220B	England				SDL international LTD.		Twist measurement
6. Evenness tester	SIno–50789713	England				SDL ATLAS		Nap, thick & thin places, Evenness test.
7. Crock meter	SI No. – CM 15322	England				James H> Heal & Co. LTD>		Color fastness to rubbing (I t & dry).
8. Pilling tester	M227A1	England				SDL international LTD.		Pilling test.
9. P^H meter	P^Hs–25	England				SDL international LTD.		Acidity/ Alkalinity measurement
10. Infrared dryer	D4001R	USA				SDL Atlas Data color international.		Dyeing & Washing.
11. Wrap reel		England				SDL international LTD.		Count test.
12. G.S.M Cutter.		England				SDL international LTD.		GSM test.
13. Balance m/c		England				SDL international LTD.		I ight measurement

Test performed in quality lab:–

1. Yarn count test.
2. Evenness test of yarn.
3. Fabric GSM tests.
4. TPI test.
5. Calculation of shrinkage & Twist % of garments.
6. Pilling test of fabric.
7. P^H test
8. Color fastness to Rubbing.
9. Color fastness to Light.
10. Color fastness to Washing.
11. Color fastness to perspiration.
12. Formaldehyde test ISO 14184–1 JISA JISB
13. Test for phenolic yellowing ISO 105 X 18.

Yarn count test:–

Yarn count is tested by the wrap reel & light balance. At first yarn is wrapped on the wrap reel. For 110 revolutions, 110 meters wrapped in wrap reel. Then yarn is I ighted by balance in gm, & count is measured in direct system (Tex). After this count is converted in to indirect system (Ne).

Conversion formula: $Ne = \frac{Tex}{590.5}$

Evenness test of yarn:–

Evenness is tested by the Evenness tester. Yarn is wound on evenness tester board & then evenness is measured by the evenness testing scale.

Evenness is graded by A, B, C, & D.

A indicates even

B indicates moderate

C indicates average

D indicates uneven.

No of scale:-

Different scales for different count of yarn.

1. Scale for count ranges from (12+ to 24 Ne or 50 to 25+ Tex).
2. Scale for count ranges from (24+ to 36 Ne or 25 to 16+ Tex).
3. Scale for count ranges from (36+to 50 Ne or 16 to 12+ Tex).

Note: Sometimes evenness may be graded as A^+, B^-.

Fabric G.S.M tests:–

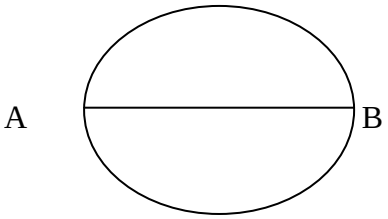
At first fabric is cut by G.S.M cutter. I ight is measured by I ight balance. Then G.S.M is measured by following procedure.

Area $=\pi r^2$

Here AB = Diameter (say 11.3 cm)

r = Radius & I ight = 2.1 gm

Now Area = $\pi \times (5.65\ cm)^2 = 100\ cm^2$



So, G.S.M = (I ight× 100) = 210 gm

TPI test:-

TPI means the no. of twist per unit length of yarn. It is measured by TPI tester. At first sample of specific yarn is placed bet I en jaw & clamp & distance bet I en them is 10 inch. Twist is counted by de-twisting & re-twisting process. Then TPI is measured by dividing the total no. of twist by 10.

Calculation of Shrinkage %:–

After washing fabric has a natural tendency to shrink. It is ratio of the change in dimension of the garments after wash & before wash. It is expressed in percentage.

$$\text{Shrinkage\%} = \frac{\text{After wash value} - \text{Before wash value}}{\text{Before wash value}} \times 100$$

Fabric or garments is pointed with the measurement 30cm × 30 cm. Then it is washed with the persil detergent 10gm/l in washing m/c. Washing time & temperature are given below:

Temperature	**Time**
30^0C	28 min
40^0C	45 min
60^0C	55min

Then drying is done either Tumbling or Line drying or Flat drying depends on the buyer requirement.

In case of tumble dry – 60^0C × 50′

In case of flat dry – Normal temperature × (7-8hr)

In case of line dry– Normal temperature × (7-8 hr).

Calculation of Twist% of Garments:–

After washing due to any problem related to yarn , seam line may deviate from its position in the garments. This problem is known as twisting.

Twisting is defined as the ratio of the deviation of the seam line to its original length or width. It is expressed as–

Twist % = $\frac{A}{B} \times 100$

Where

A= Measurement of seam line deviation.

B= Exact measurement of length or width before washing.

Some buyer recommends body length measurement.

B= Exact measurement of length before washing.

Some buyer recommends bottom length measurement then–

B= Exact measurement of width before washing.

Acceptable limit of twist % depends on buyer.

P^H test:–

First distilled water is taken & P^H is controlled bet I en 5.5–7.5. From this controlled water 50 ml water is taken & 2 gm of small piece of fabric is immersed in water for 12 hr. Then P^H is checked again by P^H meter.

If it is found that P^H is bet I en 5.5–7.5 then it is accepted but if it is greater than7.5 then it is rejected.

Pilling test of Fabric:–

Pilling test is done by ICI Pillbox. It gives an idea about the hairiness.

Test procedure:–

At first fabric is cut according to template (12.5 ×12.5). Now the sample is sewn around a rubber tube & set in the pilling tester. The main mechanism is that when the box rotates then friction takes place bet I en the rubber tube & inside m/c surface. After a number of rotations the hairiness is compared with pill scope.

Number of revolution depends on buyer. Some buyer demands 14400 rev. which takes time 4hr & some buyer demands 7200 rev. which takes time 2 hr. Some demands 10800 rev. which takes time 3 hr.

Grade of pill scope:–

1–> very bad

2–> Bad

3–> Average

4–> Good

5–> Excellent

Testing procedure of Formaldehyde (ISO14184):–

Sample collect (10cm× 5 cm).

↓

Water extraction (1200 PSI × 40^0C).

↓

3 ml extraction & 3 ml Narshing agent (40^0C 30′R).

↓ Cooling

Spectrophotometer (10ml sample).

↓

If yellow color turn then formaldehyde present in the fabric or garments.

For
Baby = 20 ppm
Adult = 75 ppm

Color fastness to rubbing:–

This test is performed by using the crock meter.

Test procedure:–

A sample of 15cm × 8 cm is placed on the base of crock meter. Then rubbing cloth of 5cm × 5 cm is clamped under the finger of the crock meter. Then 10 rubbing action is performed bet I en 13.5 cm × 2.5 cm area are tested sample by moving the handle of crock meter within the 10 sec.
The test is performed in two ways. Either in dry or I t rubbing. It is based on the buyer recommendation.
Then staining & color change is measured & rating is given by comparing with grey scale.

Grey scale rating	**Fastness**
5	Excellent
4	Good
3	Average
2	Bad
1	Very bad.

Color fastness to washing:–

Color fastness to washing can be performed either in washcator m/c or infrared dry m/c. In case of garments washcator is used in case of fabric & accessories infrared dryer is used.

Procedure for washcator:–

A sample of multi fibre of 10cm × 4 cm is taken & sewn to each garment. Then 10 gmpersil detergent is taken for each wash. The m/c is run for specific time & temp & it is depends opn the buyer recommendation. Typical temp.are 30^0C, 40^0C, 50^0C, 60^0C.
Then staining & color change is count & rating is given by comparing with grey scale.

Procedure for Infrared dryer:–

A sample of multi fibre of 10cm × 4 cm is taken & sewn with multi-fibre same measurement Then washing solution is prepared with following recipe:-
Water – 1 liter.
Sodium perborate– 1 gm/l
ECE (detergent)- 4 gm/l
In a beaker solution is taken according to the liquor ratio 1:10 & the sample is immersed in it. Then the beaker is set in the beaker holder in m/c & run for 30 min at 60^0C. Then the fabric is dried & staining & color change is measured & rating is given by comparing with grey scale.

Color fastness to perspiration:–

For this test artificial perspiration solution is prepared. It may be acidic or alkaline. Typical recipes are–

Components	**Acidic**	**Alkaline**
1. L histadine mono hydrochloride monohydrate	0.5 gm	0.5 gm
2.Di-sodium Hydrogen orthophosphate		2.5 gm
3. Sodium Hydrogen orthophosphate	2.2 gm.	
4. Sodium chloride	5 gm	5 gm
5. Water	1 L	1 L
6. P^H	5.5	8

In a beaker sufficient amount of solution is taken. Then a sample (10 cm × 4 cm) is immersed in to the solution for 30 min. Then the sample is taken out & place bet I en two glass plates. Then 5 kg I ight is placed over it & kept in the incubator at 37± 2^0C for 4 hr. Then the sample is taken out & the result is measured by comparing with the grey scale.

CHAPTER-12

QUALITY ASSURANCE

: Quality assurance system:

Quality control:

Quality control concerned with the evaluation of test data & its application of the textile process, raw materials, intermediate products & final products.

It is related not only with the cost of maintaining but also concerned with the presentation of tangible values to measure quality & change in quality. In order to control quality one must know about the consumers' expectations.

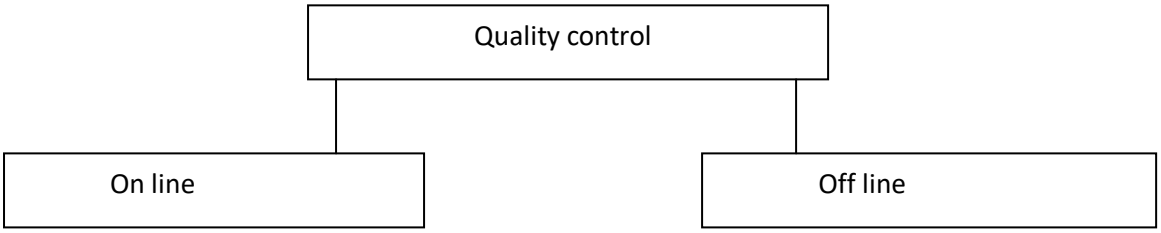
Quality assurance:

Quality assurance is defined as all those possible planned & systematic actions necessary to provide adequate confidence than a product or service will satisfy given requirements for quality. The Quality Assurance Department is assigned to maintain consistently uniform quality of the material in process & various stages of its manufacturing.

Object of quality control:–

1. Research/ analysis.
2. Selection of raw material.
3. Product testing.
4. Specification test.
5. Should be given economic requirements.
6. Quality assurance & so on.

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



On line quality control:–

On line quality control comprises with the new raw material, process control & finish fabric inspection.

1. **Raw material control:–** As the quality product depends upon the raw material quality assurance department must ensure that the best quality of raw material are used in the production.
   - **a.** The chemical should be with a known concentration & high degree of purity.
   - **b.** The dye & chemical should be compatible with each other.
   - **c.** The fabric must be without faults, with uniform absorbency, & whiteness as per requirement of the subsequent process.

2. **Process control:–**The method chosen for the process must be provided with the necessary parameters, Temperature, P^H, water level, Specific gravity should be checked at each stage of processes.
   - **a.** During dyeing samples are taken, & shade match with lab dip & when match allow for bath drop.
   - **b.** If not properly match topping is done until the required shade come.
   - **c.** After neutralization sample is collected & match with lab dip.
   - **d.** Sample is collected after fixation & matched.
   - **e.** Last of all after softening sample is collected & match with lab dip.
   - **f.** Each batch should be match with each other.
   - **g.** During finishing temperature, speed, padder pressure, over feed should be controlled as per recommendation.
   - **h.** G.S.M, width, spirality etc should be maintained as per buyer requirement.

3. **Finish Fabric Inspection:–**To ensure that only acceptable quality fabric is used for producing garments & proper quantity of shipment is received from the supplier.

Point calculation system:–

Defect area	Point
1"–3"	1
3"–6"	2
6"–9"	3
9"– above	4
For hole in fabric	4

Calculation of point is done by–

$$\text{Actual grade point} = \frac{\text{Actual point}}{\text{Inspected total yards}} \times 100$$

- If point grade is below 40 then the fabric is ok. If the grade point is more than the 40 points then inform it to respective officer.
- The fabric is also checking for the shading defect in side by side & length. Any non-conformilities/ shading will be notified to the manager using inspected reports. Roll wise color uniformity card is maintained for identification of shade variations.

The result of fabric inspection shall be recorded in fabric inspection report.

On-line test:

1.For pretreatment –

- P^H test.
- Absorbency test.
- Residual peroxide test.
- Whiteness test.
- Water quality test.

2.For Dyeing–

- Shade matching check.
- P^H check.
- Wash fastness check.

3.Machine checking.

Off-line Quality Control:–

Fariha Knit Tex Ltd. apparels limited have all the facility for off-line quality control of the materials used & processed materials. There are two types of material are tested in laboratory for the purpose of quality control. There are–

a. Fabric
b. Raw materials.

Fabric testing:–

All the off-line tests for finished can be grouped as follows–

a. Physical tests.
b. Chemical tests.

Physical test:–

- Fabric inspection by-4 point system.
- GSM test.
- Width of the fabric measure.
- Rubbing test.
- Pilling test.
- Shrinkage test.

A. Chemical test:–

- Color fastness to water.
- Color fastness to wash.
- Color fastness to rubbing.
- Color fastness to perspiration etc.

Raw material:–

a. Water : P^H& Hardness test.
b.Chemical : Purity test.

CHAPTER-13

Garments Section

CUTTING DEPARTMENT:

Bulk cutting process:

First Fabric is received store in batch wise**,** Before issue fabric to cutting, QA department cross check(As per buyer fabric approval shade ,G.S.M and other parameter of the buyer) every supervisor must check before fabric received and give fabric dia by won measure the roll width . Then Fabric relaxes about 6-8 hours according to fabric composition.

CAD section making marker as per given fabric roll measurement. Before plot the marker lay length must be measured and checked by supervisor. As per marker requisition, plot marker supply to the table supervisor. On the table marker length, width checked by consumption checked supervisor. After lay cuter man checked the mini marker and lay marker like job, style, buyer, then cutting. At the time of cutting cuter man must careful when cut critical shape, half fold, notch, talpart and others issue and signature on docket. After cutting the cut panels receive the total parts and supply to bundling supervisor must be received the signature on docket. Numbering man do the number and then roll wise do bundle. But numbering man has to follow sticker color, white color do not use color sticker every docket different color sticker. QA department people check the cut panel after the rejected cut panel must be cut size can cut make separate bundle. Print/embroidery parts go to that section but are curing the other parts. Also100% cut panel checking Input in the sewing line (100% of order quantity) as per sewing plan. Rejection parts return to cutting for re – cuts.

Mock up sample:

The sample which is made by batch wise fabric, that is called mock up sample this sample is made of only cutting section. Because batch wise fabric quality is different than each other, If any batch of fabric shows low shrinkage, other batch of fabric can shows high shrinkage. So to cut the fabric, it must be known how much allowance is given. After making the sample, it is sending for wash. Then received the washed sample and take the measurement, to know how much allowance is given the marker for cutting the fabric.

AUTO SPREADER:

This is one of the most important machines used in cutting section & next processes largely depend on the proper laying of fabric by the highest performance of this machine & operator. This machine is providing the best efficiency of laying fabric. Time consuming made the clear difference bet I en the auto spreading & the manual spreading which considered it as dependable to the manufacturers & made them pleased by delivering maximum output from the cutting section which is ultimately affecting positively the total production capacity. The fabric with the width of maximum 74” & the length of maximum 18000mm can be spread by this machine & highest 100 lay of fabric can be obtained. Lay number largely depends on the fabric quality. If fabric quality is high then higher number of lay is achievable

STRAIGHT KNIFE CUTTER:

This is the most important machine in the cutting room. Carefulness must need because of a small mistake can make a huge loss of fabric which must be avoided & it can be possible by using efficient cutter & skilled operator. Depth of fabric layer must be considered during cutting because higher layer takes much more attention than lo I r layer of fabric. Blade of cutter must be sharper. Another considerable matter is cutting speed which should be in control. After cutting the fabric, the edge of cutting pattern should be nice & clean. When the parts of fabric are cut from the fabric lay, there is friction generated bet I en the fabric & cutting knife, so that heat is generated in the knife. Sometimes due to too much heat generated by friction may cause burn of the edge of cutting fabric it is most important to take opportunities to remove heat from the knife & it can be removed by sharpening the knife, using anti fusing paper & spraying silicon lubricant in the cutting knife during cutting. The consistency of fabric cutting is an important factor. The shape of cutting parts must be same from up to bottom of fabric plies. Poor skill & concentration in work may cause the inconsistency in cutti

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Fig: **STRAIGHT KNIFE CUTTER:**

Defects of cutting section:

-Measurement not ok
-Marker ratio problem
-Shade variation in body parts
-Needle drop in fabric
-Numbering mistake
-Crease mark for machinery problem
-GSM, Shrinkage problem
-Spot, dirt, oil mark on fabric
- Over lay

- Fabric edge is not properly cutting

- Size variation

Machine of Sewing Section:

A sewing machine is a textile machine used to stitch fabric or other material together with thread. Industrial machines are usually specialized for a specific task, & so different machines may produce a different type of stitch. Modern sewing machines are designed in such a way that the fabric easily glides in & out of the machine without the hassle of needles & other such tools used in hand sewing, automating the process of stitching & saving time. In sewing section various types of industrial machine are used.

⇒ Plain Machine.
⇒ Over lock Machine.
- 3 Threads.
- 4 Threads (Roller, Cylinder & Compressor).
- 5 Threads.

⇒ Flat Lock Machine.
- Flat bed.
- Binding
- Narrow.
- Cylinder.

⇒ Vertical machine.
⇒ Button stitch machine
⇒ Button hole machine
⇒ Barteck machine.
⇒ Two needle machine.
⇒ Pecoating Machine (Kansai).
⇒ Rib cutter.
⇒ Snaff Button.
⇒ Thread recoining machine.
⇒ Belco Attach machine.
⇒ Back tape machine.
⇒ .
⇒ P.M.D (Kansai).
⇒ Paguter machine.

Mainly three type machines are hugely used in sewing section. These are obtained bellow:

PLAIN MACHINE:
Activities:
Joint- Label, Back tape, Pocket, Placket box, Moon, Side band, Zipper, Piping, Twill tape, V-neck, Shoulder, Collar lo I r placket, Elastic.

Others- Back tape top stitch, Sleeve hem tuck,, Body hem tuck, pocket to stitch, Rib tuck, Rib folding, false hem tuck, In seam tuck, Pocket top stitch, placket tuck, elastic tuck, Nose tuck, waist tuck, Loop tuck, Binding, Collar tuck, Collar piping, Close upper placket.

Fig: PLAIN MACHINE

OVER LOCK MACHINE:
Activities:
Joint: Neck, Contrast, Sleeve, Panel, Cuff, neck piping, Shoulder, Collar, Mock, Waist band.
Others: Side seam, Back rise, Front rise, Belt rolling, Neck piping, Bottom sharing, Elastic Over lock, Mock over lock, Rib hem piping, Body hem piping, blind stitch.

Fig:**OVER LOCK MACHINE**

FLAT LOCK MACHINE

ACTIVITIES:
Neck top stitch, Shoulder top stitch, arm hole top stitch, Sleeve hem, Body hem, Leg hem, Front rise top stitch, Back rise top stitch, Zigzag, Pocket hem, Panel top stitch, Shoulder to shoulder top binding, False sleeve hem, Cuff top stitch, Top stitch at waist band, Side seam top stitch, Mock piping.

Fig:**FLAT LOCK MACHINE**

Different types of machine of garment section:

Fig: Snap Button machine

Fig: **Button Hole machine**

Fig: Button stitch machine

Fig: **Rib cutter machine**

Fig: **Bartack machine**

FINISHING SECTION:

The term garments finishing mainly applies to pressing, folding and packing of garments. After completing pressing, the garments have to be folded. After completing pressing, the garments are folded with a predetermined area. Garments are folded according to the direction of Buyers requirements or in a standard area. Finishing is the final stage of garment manufacturing. Quality is the major issue in finishing. Final quality inspection is applied here which determines and ensure the total quality of the product.
The term finishing covers all textile dry/ I t process, the general aim of finishing is to improve attractiveness and/or serviceability of fabric. Finishing can:
-Improve the dimensional stability of the fabric

-Modify the handle of fabric.

-Improve the appearance of fabric. .

-Improve the durability of the fabric

-Modify the serviceability of the fabric.

Process Sequence of Garments Finishing:

Receive Garments

⇩

Reversing

⇩

Steam Ironing

⇩

Folding Garments

⇩

Final Inspection

⇩

Attach Labels in the Garments

⇩

Packing with Tissue, Board & Hanger in Polybag

⇩

Metal Inspection in Metal Detector M/c

⇩

Cartooning he Garments

⇩

Store in the wire house

⇩

Shipment

Receiving:

In finishing section receiving is the first procedure to start the activities of this section. Receiving is mainly done by a supervisor who preserves all data about the bodies coming in this section. The bodies completed all procedure of sewing section come to sewing section received in receiving area.

Reversing:

After receiving the bodies are taken to a table to open the face side. Mainly in sewing section bodies are in a state of backside opening form which is not suitable for pressing process so some people are in a job of reversing these bodies.

Pressing/Ironing:

This is a finishing process done by subjecting a cloth to heat & pressure with or without steam to remove unintended creases and to impart a flat appearance to the cloth or garment. Also, pressing is done to introduce creases in the garments. In garments industries, pressing is called Ironing.

Object of pressing:

The main aim of pressing is to increase the adornment of the garments. Also the followings are the objects of pressing.

1. Removal of unwanted creases and crinkles
2. To apply creases where necessary

3. Shaping
4. Increase the beauty of garments and to impart a flat appearance to the cloth or garments.

Categories of pressing:

The garments may be different in types especially different in design and garments materials. The pressing of garments is categorized into five according to the garments types, designs and materials are given below.

Pressing equipments and methods:

The garments may be different in types especially different in design and garments materials. As a result it needs different types of pressing for different types of garments. To do this it needs different types of pressing machines. Because of it cannot be done all types of pressing by using the same machine. There are different types of pressing machines or equipments used in garments industries for ensuring required quality of garments are mentioned below.
1. Iron
2. Steam press
3. Steam air finish
4. Steam tunnel.

Folding:

After completing pressing, the garments have to be folded. After completing pressing, the garments are folded with a predetermined area. Garments are folded according to the direction of Buyers requirements or in a standard area. Classification of folding depends on the fabric type. There are mainly 4 types of folding available.

- **Stand up:** Collar is folded with body and situated at 90^0 angles.
- **Semi stand up:** Collar is folded with body and situated at 45^0 angles.
- **Flat pack:** Collar is spread as a whole on the body of shirt.
- **Hanger pack:** Shirt is packed and transported by hanging on the hanger.

At the end of folding, garments are placed into a polythene packet. The size of polythene packet is permanent. This is needed to proper care during packing to prevent the wastage of polythene or to prevent the unexpected crease on garments.

Type of folding:

-Board folding
-Hanger folding
-Solid folding
-Blister folding
-Ratio folding .

Type of packing:

-Solid size packing (One size garment)
-Ratio packing (Similar color, different size)
-Assort packing (Different color, different size)

Type of carton:

- Box - Master
- Plain - Inner

CHAPTER-14

INDUSTRIAL ENGINEERING DEPT.

Industrial Engineering is a new dimension in Textile sector now. It is playing a vital role to increase production & productivity. By using industrial Engineering concept an industry can do a job within less time than before, which increasing its productivity & net profit also. So it is impossible to deny the effect of Industrial Engineering. Besides buyers are demanding of it.

Some basic activities of IE are

- ✓ Estimating sewing thread consumption
- ✓ Estimating SMV
- ✓ Target set up of a line
- ✓ Estimating cycle time
- ✓ Determining garments break down
- ✓ Line layout set up
- ✓ Machine layout set up
- ✓ Balancing the line to reduce WIP
- ✓ Determining work process flow
- ✓ Estimating the number of worker

Some systems to accomplish these jobs are

- ✓ Work study
- ✓ Time study
- ✓ Motion study
- ✓ Method study
- ✓ General Sewing Data

Job Description of Work-Study:

SL	Description
1	Collecting information from Fast react planner about running & new styles input status
2	Making work plan/Departmental plan
3	Ws members job allocation
4	Providing Estimated SMV to sales team for costing
5	Process analysis
6	Established standard minute (SMV find out from sewing line by performance rating)
7	Prepare garment's breakdown before issue with Technician & APM
8	Process layout
9	Process / work process flow chart during layout
10	Cycle check
11	Making / draw line graph
12	Co-ordinate (work together) with line Supervisor/Monitor/Technician for line balancing
13	Production study
14	Speed Training/Method Study
15	Production monitoring in required line
16	Measuring consumption of Thread, Seam tape, Elastic, String etc.)
17	Efficiency calculation

Required steps to determine productivity improvement:

- Line balancing
- Accurate SMV calculation
- Ergonomics
- Motivation
- Training
- Kaizen (5S)
- Data analysis
- Layout & Fast layout changes
- Basic time
- Operation break down
- Machine & manpo I r allowance
- Factor of quantity
- Design management for the line

Some important mathematical terms:

Basic Pitch Time (BPT)=$\frac{\text{Total Avg Cycle Check Time}}{\text{Total operator}}$

Standard Pitch Time (SPT) = BPT*1.05

Lo I st Pitch Time(LPT) = BPT/1.05

Capacity = $60/_{\text{Total Avg Cycle Check Time}}$

Basic Minute Value(BMV)= Observed Time x $\frac{\text{Rating}}{\text{Standard Rating}}$

Standard Minute Value(SMV)= Observed Time x $\frac{\text{Rating}}{\text{Standard Rating}}$ x1.05

Input Hour = Operator x Working Hour

Output Hour = $\frac{ProductionxSMV}{60}$

Target = $\frac{\text{Input Hour x 60}}{SMV}$

$$\text{Efficiency} = \frac{\text{Output Hour}}{\text{Input Hour}} \text{x}100$$

CHAPTER-15

MERCHANDISING

Merchandising denotes all the planned activities to execute and dispatch the merchandise on time taking into consideration the 4 R's of expediting Right Cost, Right Quantity, Right Quality and Right Time.

Bangladesh is one of the biggest garments producing and exporting country in the world market. At present a large number of garments factories running in Bangladesh. Merchandising is the most promising and challenging job in textile industry now.

Garment merchandising is an intricate and detail oriented job . If it can be done properly can be very rewarding . On the country , if it is done with lack of knowledge , insufficient skill and thoroughness , it can be destructive .

In Fariha Knit Tex Ltd.composite, very skilled and experienced personnel run the merchandising section . After receiving an order , the merchandiser with the help of pattern master calculates the consumption of fabric . Then according to the cost detail sheet and the price mentioned by the buyer costing is done. After the price is negotiated with the buyer order is placed to the suppliers of raw material and accessories .

The manufacturing factory as per the requirement suppliers the fabric and a ledger is maintained regularly to assess the production status . The accessories such as label , button , zipper , sewing thread , packing materials are collected from outside [sometime mentioned by the buyer]through back to back L/C's .The merchandising department also looks for the sources for procuring yarns to produce fabric .

Some activities for a skilled merchandiser are:

- New enquiry received from buyer
- Enquiry received and proceed for further action
- Fit sample preparation for styling check
- Fit costing
- Fabric development beside sample preparation
- Follow up for approved fabric from buyer
- Fit comments received on Sales Man Sample(SMS) file
- Print and embroidery Art Work development
- SMS sample booking
- SMS fabric booking
- SMS trim booking
- Tech pack review and check the findings with buyer office
- SMS sample production plan check
- SMS sample inspection schedule offer to buying house
- SMS sample shipment plan to buying house
- SMS sample document preparation
- SMS shipment.
- SMS price negotiation .
- ProformaInvoice(PI) preparation.

- Payment realization.
- Price quotation.
- Counter Price quotation.
- Yarn sourcing and stock base on bulk order projection.
- Yarn price fixation for competitive garments price.
- In-house available yarn check.
- Purchase Order sheet receive (Bulk quantity).
- PI preparation.
- Payment realization.
- Tech pack receive with SMS /photo/fit comments.
- Tech pack ,print , embroidery Art Work upload on share link.
- Inform to all related dept. i.e. Pattern, sample, print, embroidery, planning, production and quality dept.
- Tech pack study.
- Tech pack forward to concern dept.

Product study i.e.

Use fabric details

- ✓ Contrast color pocket fabric
- ✓ Specially mesh/lace fabric check
- ✓ Trims details
- ✓ Contrast color Herringbone tape
- ✓ Contrast color button
- ✓ Contrast color sewing thread
- ✓ Sewing stitch details
- ✓ Print and embroidery details

- Finally packing details.
- Packing method i.e. Half fold, flat or else.
- Finishing material.
- Shipping mark check.
- Tech pack finding check with buying house.
- Communication with buyer to correction the Tech pack.
- Color standard check.
- Fabric booking.
- Fabric test report forward to buyer.
- Trims booking [communicate with buyer if not available of contact details supplier.]
- Trims card preparation & get approval from buying house.
- Trims inventory check after trim in-house.
- Trims PI check with booking.
- Trims payment process.
- Maintain register for trims payment.

- Trims delivery fix as per garments production plan.
- Style wise trim checklist.
- Style wise production files preparation & forward to production floor.
- Print/ embroidery strike off preparation submission for approval.
- Print strike off test report ensure before bulk production.
- Fabric follow up with fabric planning team.
- Cutting delivery follow up with supply chain.
- Sealer/ Red tag sample submission target date.
- Sealer/ Red tag sample submission for approval.
- Print & embroidery follow up.
- Print & embroidery price negotiation for subcontract
- Production follow up .
- Garments production plan forward to buyer.
- Random garments quality check .
- Shipment plan offer to buyer.
- Inspection schedule offer to buyer.
- Co-ordinate with commercial dept for commercial document.
- Communicate with buyer for payment realization.

Costing:

The merchandisers should know the following details while costing.

- Yarn cost.
- Process cost (Knitting, Bleaching, and Raising etc.)
- Rates pertaining to various sewing operations.
- CMT(Cut Make Trim) Rate.
- Ironing charges, packing charges and accessories rate.
- Overheads.
- Shortage (or) wastage 3%.
- Free on Board (FOB) (Transport charges) 2% to 3%.
- Insurance 2%-3%,
- Buyers' agents commission 5%-6%,
- Quota rate per garment.
- Profit 15% - 20%

Requirements For A Successful Merchandiser:

- ✓ Job knowledge
- ✓ Should be hard worker
- ✓ Should be responsible for the job
- ✓ Should not be bureaucratic
- ✓ Should have ability to improve public relation
- ✓ Should have good knowledge on calculation
- ✓ Should have I ll behaved personality
- ✓ Must have knowledge in computer literacy

- ✓ Should have good command in English
- ✓ Should have good knowledge about fibres, yarns, fabrics, dyeing, printing, finishing, dyes, color fastness etc.

CHAPTER-16

MAINTENANCE

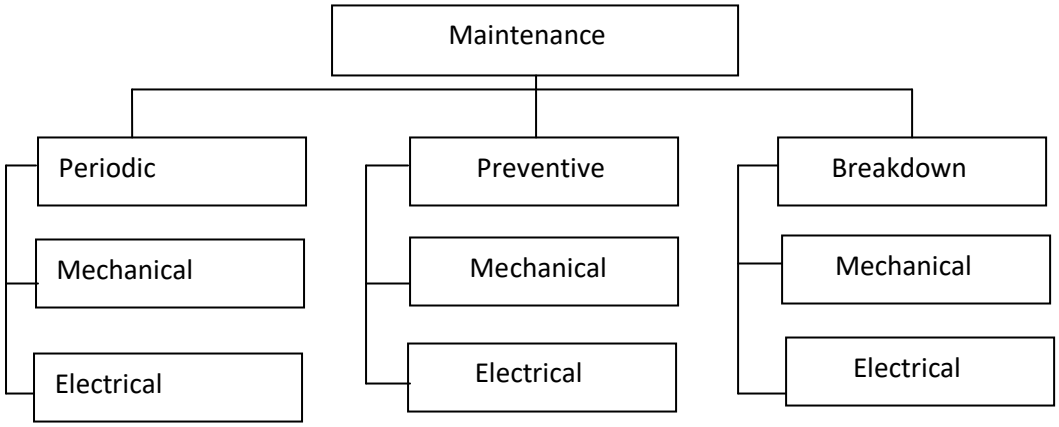
Maintenance

Maintenance is carried out by electrical & mechanical departments. It is a process by which equipment is looked after to give the best service of it. Machine, building, etc are subjected to deterioration due to the use & expose to environmental condition. In industry it is carried out regularly after a certain period of time to extent their life time in such a way that it is economically & physically possible to do so. Now a day's maintenance is essential for the modern time industrialization.

Objectives of maintenance:–

a. To avoid any kind of accident by checking the m/c parts & changing the parts which are damaged.
b. To ensure production & delivery time to customer.
c. To avoid the breakdown of m/c to facilitate the smooth running of production.
d. To get the maximum constant production from m/c.
e. To modify the machine tools to meet the need for production.

Types of maintenance:–



Periodic Maintenance:–

Periodic maintenance of different machines is carried out by expert engineer period of time. Normally in case of dyeing machine, complete checking of different important parts are done after 30 days.

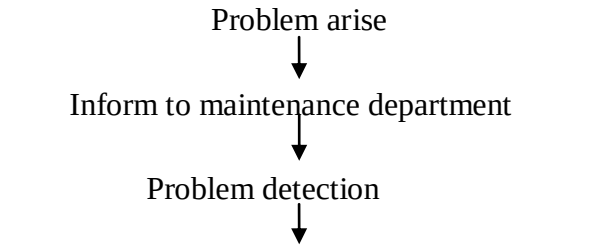
Preventive Maintenance:–

Preventive maintenance is a predetermined routine wise maintenance to prevent any kind of accident or breakdown of m/c which facilitates smooth running of production.

Breakdown Maintenance:–

It is done when any kind of m/c part is out of order or broken & it cannot perform its normal functions.

Flowchart of maintenance (Breakdown):



Maintenance tools:–

The most important maintenance tools are given below–

Tools	**Function**
Thread tape	Joining of broken metallic part.
Cutting disc	For cutting pipes, rods.
Globe valve	Fitting for steam line.
Union	Fitting for water, steam line.
Union Elbow	Fitting water steam line.
Gear oil	Lubrication.
Cutting oil	Lubrication
Hydraulic oil.	Lubrication
Oil gun	Oil application
Spanner	Tightening of nut, bolts.
Master range	Tightening of nut, bolts.
Flat/ Star screw driver	Screw tightening & loosening
Hacksaw blade	Cutting.
Spray gun	Spray chemicals
Drill m/c	To make hole by drilling.
Grinding m/c	Grinding
Hacksaw Frame	Cutting
Grease	Lubrication

Maintenance procedure of different machine:–

Machine: Dyeing m/c
Maintenance: Mechanical

Serial no	Items need to be checked & service
1	Grease the winch bearing
2	Complete cleaning of machine.
3	Cleaning of drained valves, replace scale if required.
4	Check air supply filters, regulator, & auto drain seals.
5	Greasing of unloading rollers bearing
6	Checking of oil levels, & bolts, of unloading roller gear box.
7	Complete cleaning of machine.
8	Checking unloading roller coupling.
9	Checking & cleaning of main vessel level indicator.
10	Check the oil level pump bearing & refill if required.
11	Check the function of heat & cool modulating valves.
12	Check all belts & belt tension.
13	Check all door seals.

Maintenance: Electrical

Serial no	Items need to be checked & service
1	Check main panels.
2	Check all on/ off switch.
3	Check all indicating lamps.
4	Check calibration of heating/ cooling modulating valves.
5	Check setting of sensor.
6	Check setting & operation of lid safety switches.
7	Check all motors terminal
8	Visual checking of all po I r & central cables.
9	Check all circuit breaker & motor overload.
10	Check all signal isolators.
11	Check main pump inverter & its cooling fan.

CHAPTER-17

UTILITY SERVICE

UTILITY SERVICE

Utility	Sources
Gas	TITAS
Electricity	Generator
Compressed air	Compressor
Steam	Boiler
Water	Natural water by pump
Temp. control	Air chiller.

Electricity:

Source	Generator.
No. of generator	6
Brand	Waukesha po I r steam
Origin	USA
Model	VHP 5904 GSD
Utility	Natural gas, water, Lubricating Mobil
Capacity	900 Kw-1165A
Gas consumption	11 Psi

Compressed air:

Source – Compressor
Brand– Fin.
Origin– Germany.

Gas : Generally 2500 CFT gas is required to produce 1 ton steam /hr. This amount gas is supplied by TITAS.

Water: submersible water is used by using pump.

Water treatment plant

In Fariha Knit Tex Ltd.they use submersible water. Natural ground water contains many impurities which has negative impact on the I t processing technology. The various salts present in the water depend on the geological formations through which the water has follo I d. These salts are mainly the carbonates (CO_3^{2-}), bi-carbonates (HCO_3^-) chlorides (Cl^-) of Calcium (Ca^{2+}), Magnesium (Mg^{2+}). Although Calcium & Magnesium carbonates in the limestone are relatively insoluble in water. So in this reasons, water hardness can be divided in two ways–

Temporary Hardness: $Ca(HCO_3)_2$, $Mg(HCO_3)_2$, $Fe(HCO_3)_2$ etc.
Permanent Hardness: $CaCl_2$, $MgCl_2$, $Ca(NO_3)_2$, $MgSO_4$, $CaSO_4$.

This water hardness causes some serious consequence in textile dyeing & finishing industries & this are–

1. Precipitation of soap.
2. Redeposit ion of dirt & insoluble soaps on the fabric being washed this can cause yellowing & lead to uneven dyeing & poor handle.
3. Scale formation on equipment & in boiler pipe lines.
4. Reduction of the activity of the enzymes used in washing.
5. Incompatibility with chemicals & so on.

Hardness is expressed by parts per million (ppm) of $CaCO_3$ which is standard hardness scale & it is also called American Hardness. The hardness of raw water is 100 ppm or more.

To use it in dyeing & in boiler this water must need to soft & foreign materials needs to remove.

Methods of water softening:–

There are mainly three methods by which hardness of water is removed in Industrial scale–

1. Lime-Soda process.
2. Base Exchange process (Permutit process).
3. Demineralization process.

Above these three processes, Fariha Knit Tex Ltd. used the **Base Exchange Process.** By the help of pump hard water is collected from the water store tank.

Sequence of water treatment plant is given below:–

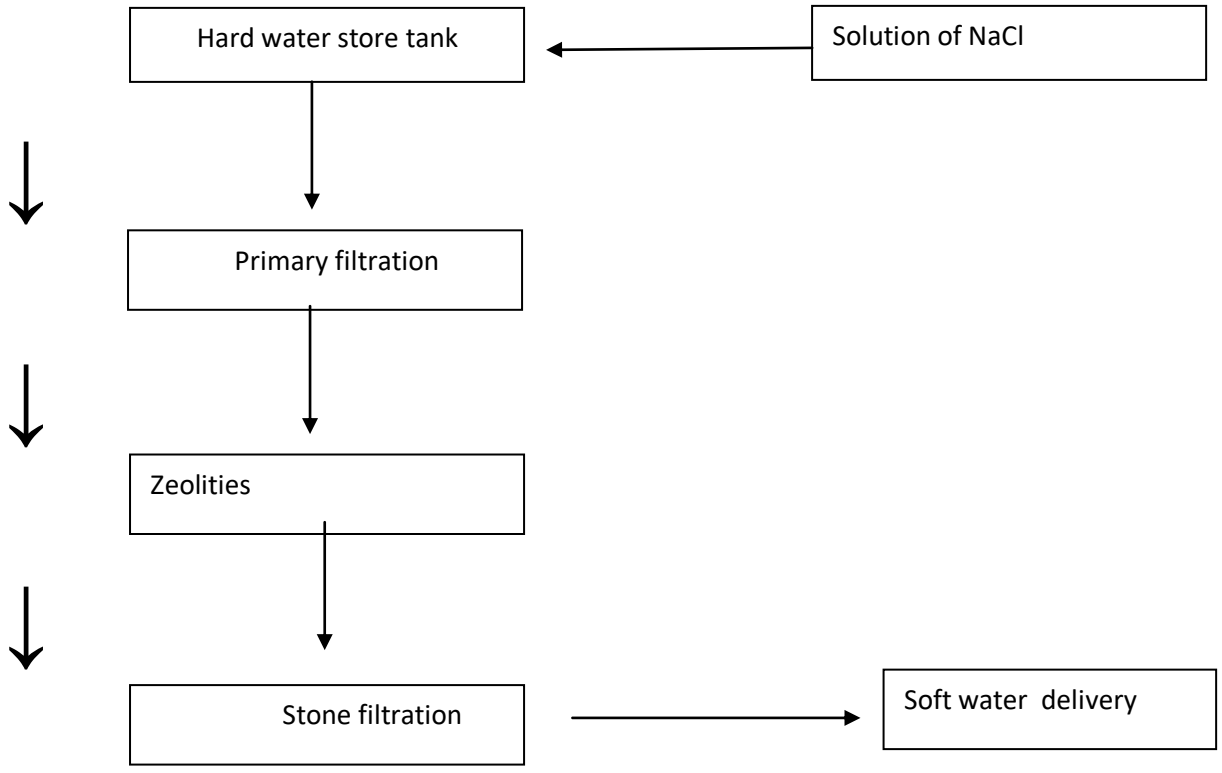


Fig: Water treatment plan

Measurement of water Hardness:–

Necessary equipment & chemicals–

1. Buffer sol^{n}.
2. Indicator.
3. Liquid EDTA sol^{n}.
4. Beaker.

Procedure:–

Take 50 ml water in a beaker which is treated by WTP- plant
Take 4-5 drops of buffer sol^{n} in a beaker.
Take 1 drop indicator in a beaker & form the violet color.
Now EDTA sol^{n} is dropped until the pink color is not form a crystal color
Here 1 drop EDTA sol^{n}=3 ppm.

Remarks: In industry hardness depends on the type of shade. For light, medium, & dark shades hardness remain < 5, or <9 or < 12 ppm respectively by using sequestering agent (Ladiquiest, Neo-crystal 150F etc).

CHAPTER-18

STORE & INVENTORY

STORE & INVENTORY

Inventory:– Inventory in a wider sense defined as any idle resources or assets of an organization, ho I very it is commonly used to indicate raw materials, finished, semi-finished, packing, spears & other stocked in order to meet an expected demand on distribution. Even though inventory of materials is an idle resource in the sense & is not meant for the most immediate use but it is almost necessary to maintain some inventories for the smooth function of an organization.

Causes of maintain inventory:–

1. To run manufacturing operations economically.
2. To take care of uncertainties demand.
3. To reduce the clerical cost & to take advantage of discounts, transportation etc.
4. It takes time to complete one operation & more products from one stage to another.
5. To take care of order cycles.

Scope of inventory control:–

1.Raw materials inventories.
2.In process inventories.
3.Finished goods inventories.
4.Miscellaneous inventories. Etc.

Frequency of inventory control:–

1.Daily inventory control.
2.Monthly inventory control.
3.Yearly inventory control.

Procurement system:–

a. S.B dyes & chemical is sister concern of Fariha Knit Tex Ltd. so Dyes (mostly used like Sumifix, Cibacron & Remazol dyes) & chemical (regular items like Sequestering agent, Anti-creasing agent, Anti-foaming, Levelling agents, Stabilizer etc) are collected from there.
b.Some dyes are purchased from local market if urgently required.

Inventory management for raw material:–

In Fariha Knit Tex Ltd. **composite** there are different inventory systems are maintained for different materials.

Grey fabric store:–

All the grey fabric is stored in the fabric store near the knitting section. Different types of fabric are listed in the sheet according to fabric types, quantity, & consumer's requirement.

Dyes & chemical store:–

There is a different store for dyes & chemicals. Varies types of dyes & chemicals are stored here according to dyes & chemicals companies. Different types of dyes & chemicals are listed in a sheet. In the sheet the stored quantity of dyes & chemicals are also included. Every day the sheet is updated & a copy of this sheet is supplied to the factory manager, Dyeing manager, & Dye house & Lab section.

Finished fabric store:–

In Fariha Knit Tex Ltd. finished fabric are sent to the garments section. After use in the garments excess fabrics are stored in finish fabric store according to the lot no, quantity, order no, fabrics diameter, buyers name, color, size other considering technical parameters.

Finished goods store:–

In garment section during production they always consider some allowances%. After shipment the remaining garments are stored in the finished goods store to the product name, order name, color name, & other subjected points.

Spare Parts store:–

In Fariha Knit Tex Ltd. required amount of spears of different machines are stored in the mechanical store room. All the spears are listed in a sheet which is controlled by the mechanical & maintenance personnel. Spares are arranged in the store room according to their size, quantity, & requirements. There are shelves in the store room to keep the small spare parts.

Store capacity:–

Items	**Amount**
Dyes	10-12 tons
Chemicals	20-25 tons
Yarn storage	10-15 tons
Grey fabric	20-25tons
Finished fabric	30-35tons

Reorder point:–

The re-order point is stated in terms of the level of inventory at which an order should be placed for maintaining the current inventory.
In other words, re-order point may be defined as the level of inventory when fresh order should be placed with supplies for procuring additional inventory equal to the economic order quantity.

CHAPTER-19

COST ANALYSIS

COST ANALYSIS

Costing system:–

Cost means the price of the product or goods which include some profit for the supplies or manufacturer or seller. Costing system mainly describe the cost of final product according to the buyer requirement by keeping some profit for the company. As it is a garments manufacturing company merchandiser give the consumption of fabric with specifications. Then how much yarn is required dyestuff & chemicals required, labors, utility services & other things related with manufacturing are calculated. After this the final cost is fixed including some profit & the unit price is offered to the buyer for their approval.

Cost includes followings:–

- Yarn cost.
- Knitting cost.
- Dyes & chemicals cost.
- Cost of dyeing & finishing.
- Cost of cutting, sewing, accessories etc.
- Cost of printing (if required).
- Labor cost (direct & indirect).
- Factory cost.
- Office & administrative cost
- Caring cost
- Other cost.
- Profit etc.

Price of different operation:–

Dyeing + finishing charge for light shade	: 80~90 tk
Dyeing + finishing charge for medium shade	: 85~90 tk
Dyeing + finishing charge for dark shade	:100~110 tk.
Tube finishing (Dewatering+ Dryer+ Compactor)	:15~20 tk.

Remarks:–

The costing of the product is most secret matter of the industry. They are not interested to flash the data. So I could not collect the costing process of the products.

CHAPTER-20

MARKETING STRATEGY

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Marketing information:–

Fariha Knit Tex Ltd. is 100% export oriented knit garments manufacturer. So, they sold their product to export market. They have taken some initiative for market development through communicating with new buyer & taking part in different international garments fair. As it is an apparels manufacturing industry, its main product is T-shirt, polo-shirt, Tank tops, children fashion & sports etc. Fariha Knit Tex Ltd. safe/ health hazard chemical free garments as per customer requirements, through practice of quality control procedure.

Marketing Strategy:–

Now days the marketing strategy is key feature for an export oriented company. If the marketing strategy is not good then it is not possible to survive in the competitive global market. In case of marketing the garments a good dealing with the buyer is very important.
In Fariha Knit Tex Ltd.Composite mainly the merchandising department & the higher officers deals with the buyer. The company has some fixed buyers. These buyers give their order continuously all over the year. The marketing officers & the merchandising department communicate with the buying house all the year.

Major buyer:–

1. H & M.
2. C & A.
3. Tom Tailor.
4. Ahlens.
5. S.oliver.
6. All marks.
7. Peacock
8. GAP
9. Kids
10. Primark etc.

Exported country:–
Europe& USA.

CHAPTER-21

CONCLUSION

After completing theoretical part of our degree we have heeded to our industrial training. By the grace of almighty we have completed our industrial training at Fariha Knit Tex Ltd. Composite At the time of industrial training we realized that there re is large difference between theoretical and practical experiences. This is also true in case of the textile technology. We have tried to combine our theoretical and practical knowledge. The industrial training helped me a lot about industrial management, machineries, production process. Besides these it helped me to prepare myself to work in an industry and competent for industrial.

During our industrial training at Fariha Knit Tex Ltd. Composite we have found that the industry is one of the modern instruments based export oriented knit composite industry. Though it was established a few years ago, it got reputation worldwide and world recognized certificates by not compromising about the quality of raw material and final product. It has very skilled and technically trained man power and we got a lot co operation from them.

At last

I tried my best to learn something and gather information but in reality it is true that within this short time it is quite impossible to achieve 100 success. But as a whole this industrial training was a satisfactory one and once again I would like to thank the authority of Fariha Knit Tex Ltd. Composite as well as our honorable teachers for their splendid help and advice. I am fortunate that we have got an opportunity to have training in the industry. During the training period we got enough co-operation and assistance from authority. All staffs and officers were very sincere and devoted to their duties to achieve their goal. We also believe that without everyone's sincerity and devotion it was impossible to get present success of the industry.