UGC & Govt. Approved
Sonargaon University (SU)
সোনারগাঁও ইউনিভার্সিটি (এসইউ)
WE WILL RISE UP WE WILL SHINE

Faculty of Engineering

Department of Textile Engineering

REPORT ON

Industrial Attachment

At

Fakir Apparels Ltd.

BSCIC, Shashangaon, Fatullah, Narayangonj-1420, Bangladesh

Course Title: Industrial Attachment
Course Code: Tex-442

Submitted By

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This Report Presented in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science in Textile Engineering.

Advance in Wet Processing Technology

Summer-2021

Sonargaon University (SU)

DECLARATION

We hereby declare that, this internship report has been done by us under the supervision of **Kamrul Hassan Bhuiyan ,** Lecturer & Co-ordinator, Department of Textile Engineering, Faculty of Engineering, Sonargaon University (SU). We also declare that, neither this report nor any part of this hasbeen submitted elsewhere for award of any degree.

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LETTER OF APPROVAL

This internship report prepared by **Masum Billah** (ID:TEX1802014063), **Md.Mohasin Hossain** (ID:TEX1802014072), **Akramul Islam Sabuj** (ID:TEX18020140794) **Rubel Mia** (ID:TEX1802014086) **Md. Arif Hossain** (ID:TEX1601007065) is approved in Partial Fulfilment of the Requirement for the Degree of **BACHELOR OF SCIENCE IN TEXTILE ENGINEERING**. The said students have completed their INDUSTRIAL ATTATCHMENT under my supervision. During the Industrial Attachment period I found them sincere, hardworking and enthusiastic.

Kamrul Hassan Bhuiyan
Lecturer,& Co-ordinator at
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Acknowledgement

First we express our heartiest thanks and gratefulness to almighty Allah for His divine blessing makes us possible to complete our Industrial attachment.

We are grateful to ***Fakir Apparels Ltd.*** for giving us this great opportunity to intern in such supportive friendly environment. They have given us great chance to work in details. We fell grateful to and wish our profound our indebtedness to **Kamrul Hassan Bhuiyan** Lecturer & Co-ordinator at, Department of Textile Engineering, Sonargaon University (SU), Deep Knowledge & keen interest of our supervisor in the field of dyeing influenced us to carry out this Industrial attachment. His endless patience, scholarly guidance, continual encouragement, constant and energetic supervision, constructive criticism, valuable advice, reading many inferior draft and correcting them at all stage have made it possible to complete this Industrial attachment.

We also wish to express our gratitude to **Kamrul Hassan Bhuiyan (**Head of Department), Faculty of Science and Information Technology, Sonargaon University (SU), for his continuous guidance to prepare this Industrial attachment.

A number of people have made significant contributions on preparing this report. Their advice and suggestions helped us a lot.

We are grateful to **Deputy General Manager, Sushanta Dey, of *Fakir Apparels Ltd.*** for being so gracious to us. We would like to express our sincere appreciation to **Md.Mehedi Hasan, Manager**, for their valuable advice, cooperation, guidance, encouragement and inspiration throughout the training period.

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

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DEDICATION

"To our dignified **parents** and teachers may they live long"

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Executive Summary

The Internationally Recognized Byers of clients are looking for those countries for producing their apparel products where different types of industries have established as a one stop source for the global apparel market, satisfy and meet customer's expectations by developing and providing products and service on time, which offers in terms of quality, price, safety and environmental impact. And also assure complete compliance with the international quality standard and also provide the employees internationally acceptable working condition/ standards.In Bangladesh, there are various group of Textile industries those are producing high quality textile. **Fakir Apparels Ltd.** is 100% export oriented Textile Composite knit Manufacturing Company. The factory operates by high experienced qualified personal & skill work force who are truly professional & dedicated to their respective assignment. The working environment of the factory is very much congenial with heavily equipped power distribution supply.

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CHAPTER-01

Company Profile

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1.1- Company Profile:

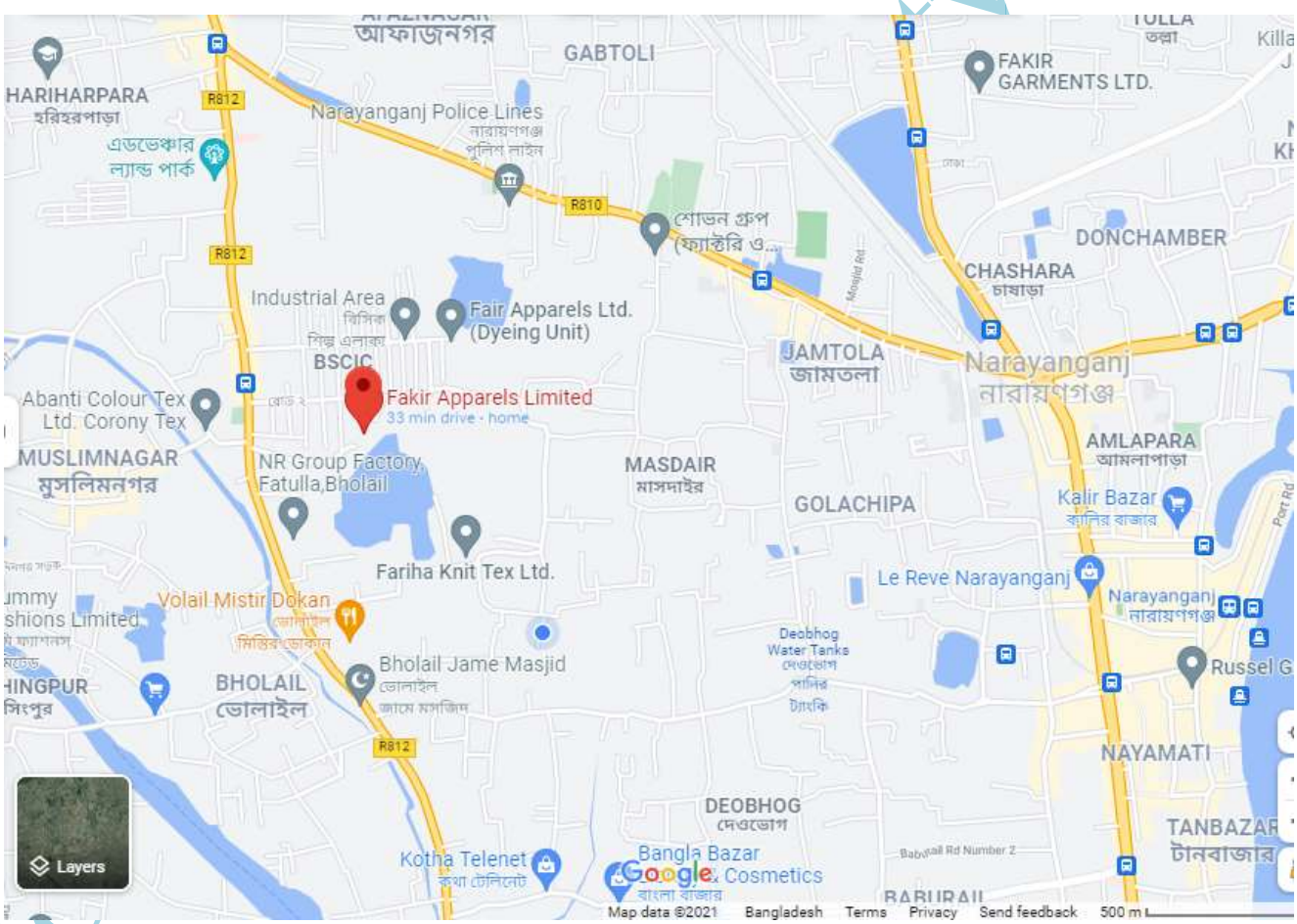
Factory Name	Fakir Apparels Ltd.
Nature of Business	100% export oriented Textile Composite knit Manufacturing Company.
Location	BSCIC, Shashangaon Fatullah, Narayanganj- 1400,
Dyeing Capacity	50 Ton per day
Establishment	1998
Contact	Email: info@@@fakirapparels.com www.fakirapparels.com Phone: +62-02-2671800

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1.2- Company Address:

Bscic, Shashangaon, Fatullah, Narayanganj-1400,

1.3- Company Location:



Main products:

Serial	Materials	Products
1	100% Cotton Knitted Fabrics	100% Cotton dyed Fabrics
2	PC Fabrics	PC dyed Fabrics
3	CVC fabrics	CVC dyed fabrics
4	Lycra cotton fabric	Lycra cotton dyed fabric
5	Cotton/Modal blend fabric	Cotton/Modal blend dyed fabric
6	Cotton/Viscose blend fabric	Cotton/Viscose blend dyed fabric
7	Lycra Viscose Fabrics	Lycra Viscose dyed Fabrics

Buyers:

Serial	Buyers
1	Esprit
2	H&M
3	S.Oliver
4	Primark
5	Mango
6	POP
7	C&A
8	Celio 360
9	Gerry Weber

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CHAPTER: 02

Man Power Management

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2.1- Management system:

Fakir Apparels Ltd. has skilled administration, management, and marketing team. All the team is guided by highly skilled leader and they offer the right solution with proper time and minimum use of wealth.

2.2- Total shift:

There are 2 shift per day in Fakir Apparels Ltd.

Shift	Duration
General	8.00 am – 5.00 pm {Lunch (1.00 - 2.00) pm }
A	8.00 am - 8.00 pm
B	8.00 pm – 8.00 am

2.3-Total Manpower of Dyeing & Finishing Sector:

	Dyeing Lab	**Person**
Managar		2
Executive		8
Test Technician		4
Assistant Technician		2
Quality Control		2
	Dyeing Floor	**Person**
GM (Dyeing & Finishing)		1
Senior Manager		4

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Executive		10
Super visor		8
Operator		120
Assistant Operator		50
	Finishing (Dyeing)	**Person**
Senior Executive		6
Supervisor		10
Operator		80
Assistant Operator		30
	Quality Control (Dyeing & Finishing)	**Person**
Senior In charge		4
Supervisor		16

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CHAPTER: 03

Dyeing Lab Department

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3.1- Lab Dip Development:

Lab Dip Development means the sample which is dyed according to buyers requirements (similar shade and so on). Sample dyeing and bulk production dyeing depending on lab dip development.

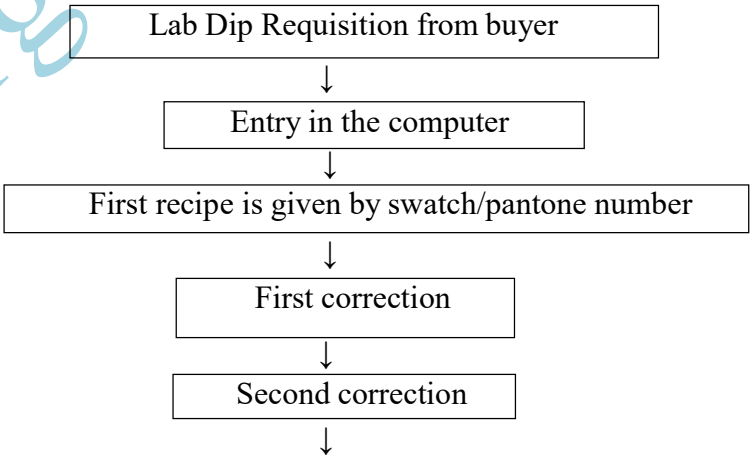
3.2- Object of Lab Dip:

The main objectives in lab dip are as follows:

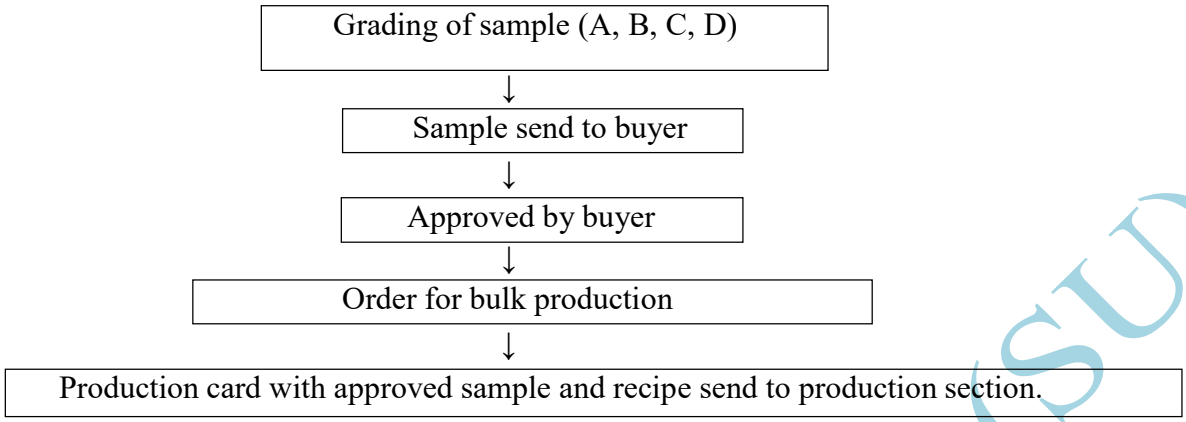
- ✓ To calculate the recipe for sample dyeing.
- ✓ To calculate revise recipe for sample dyeing.
- ✓ To compare dyed sample with swatch by light Box or Spectrophotometer.
- ✓ Finally approved Lab Dip (Grade: A, B, C & D)

3.3- Process Sequence of Lab work :

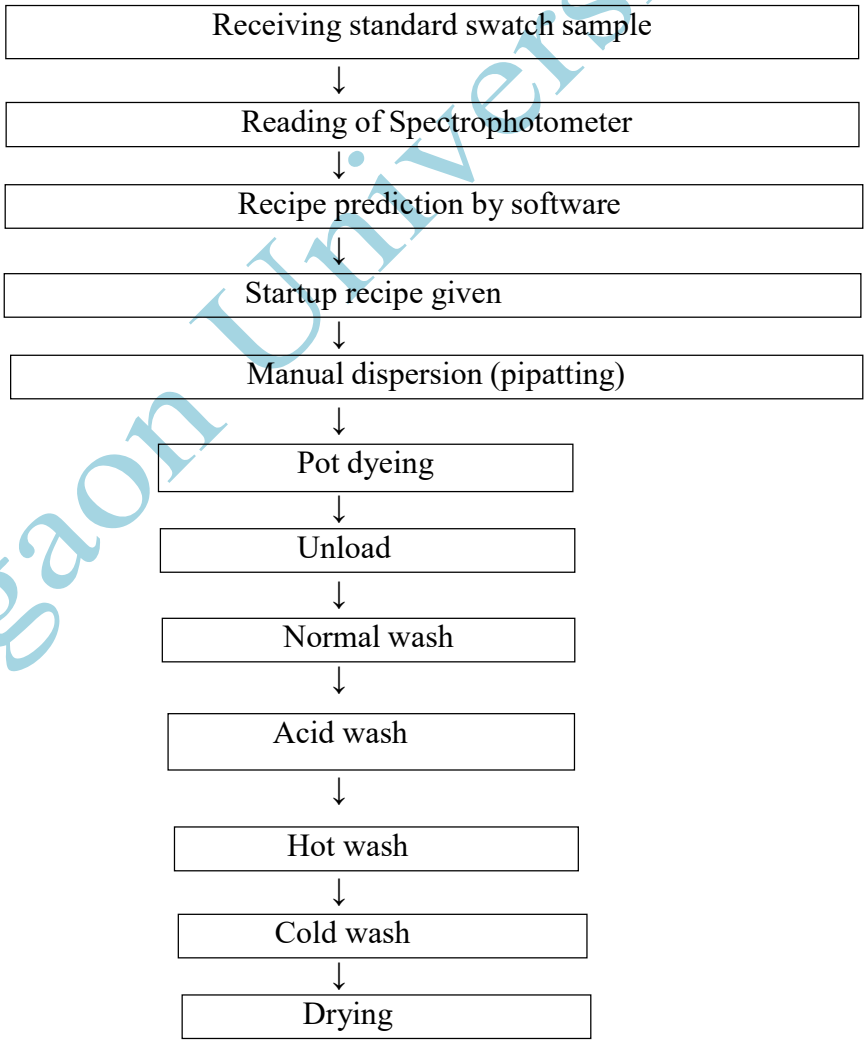
Lab work plays an important role in bulk dyeing process. Bulk dyeing process completely depends on the lab dip development work.



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3.4- Development of Lab Dip:



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3.5- How to Make Stock Solution:

0.001% → It means in 90 cc water mixed 10 cc chemicals.

0.01%→ It means in 99 cc water mixed 1 cc chemicals

0.1% dye shade → It means mix 0.1 gm dye in 100 cc water

0.5% dye shade → It means Mix 0.5 gm dye in 100 cc water.

1% → Mix 1 gm dye in 100 cc water.

2% → Mix 2 gm dye in 100 cc water.

3.6- Calculation Stock Solution in Lab Dip:

Dyeing (Solid) = (Sample Weight × Shade%)/ Stock%

Chemical = (Chemical Weight × Total liquor)/ Stock%

= (Chemical wt × Total liquor × 100)/ (1000 × Stock%)

3.7- Calculation Used in dyeing Lab:

Chemical = (Sample wt × ML:R × Shade% × 100)/ (1000 × Stock%)

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- Laboratory machines:

Serial No.	Machines
01	Crock meter
02	Wash fastness tester
03	Perspiration fastness tester
04	Spectrophotometer
05	Tumble dryer
06	Sample dyeing machine

3.9- Computer Color Matching System (CCMS):

Computer color matching system (CCMS) is the latest system to predict and analyzed the color of the sample. In wet processing section it is mostly used. In 1963 it is first introduced by ICI Company but it is introduced international color system in 1973. Now different companies produce CCMS but among them DATA COLOR is the best.

3.10- Different Components of CCMS

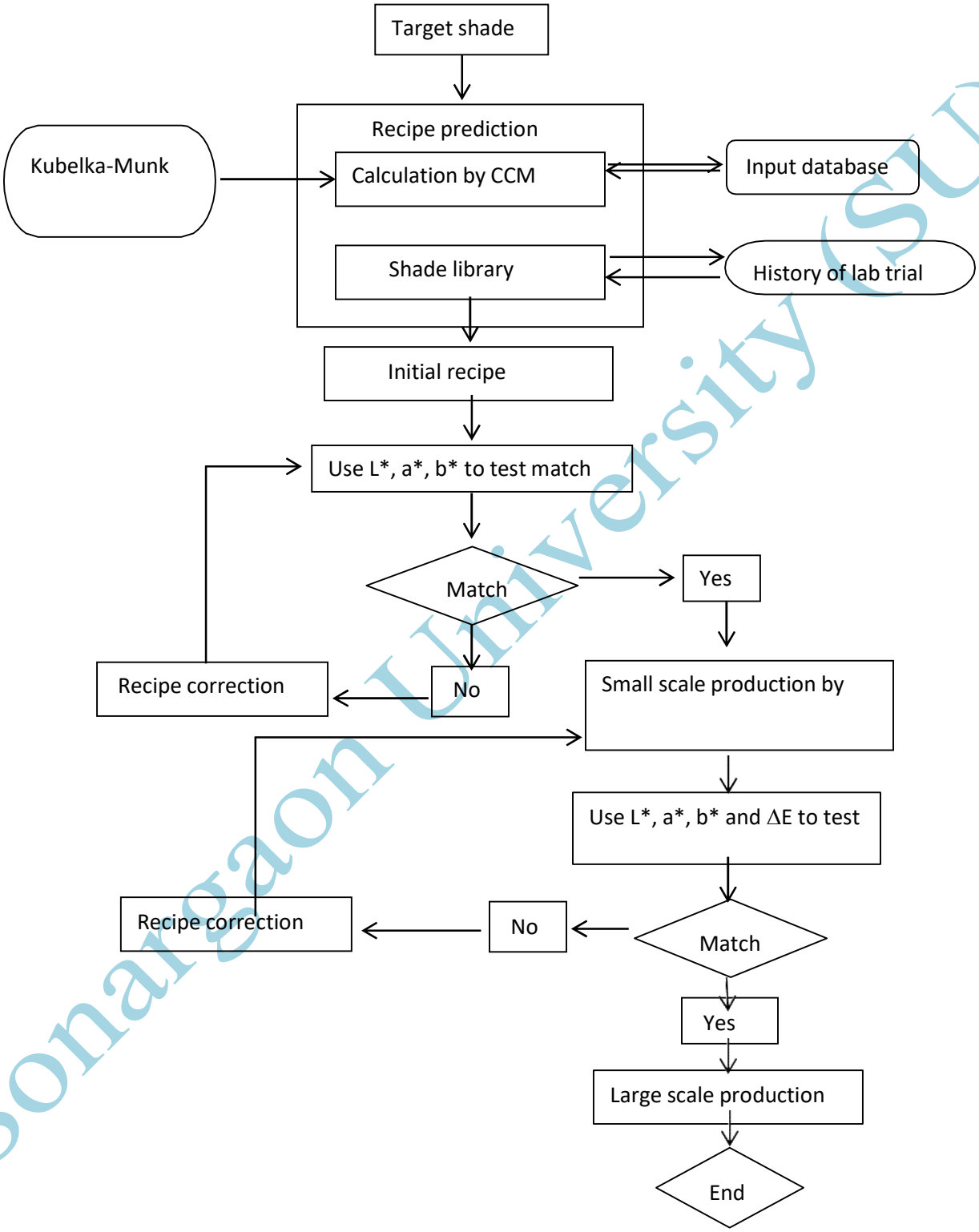
A. Computer

B. Spectrophotometer

C. Printer

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3.11- Spectrophotometer flow Chart:



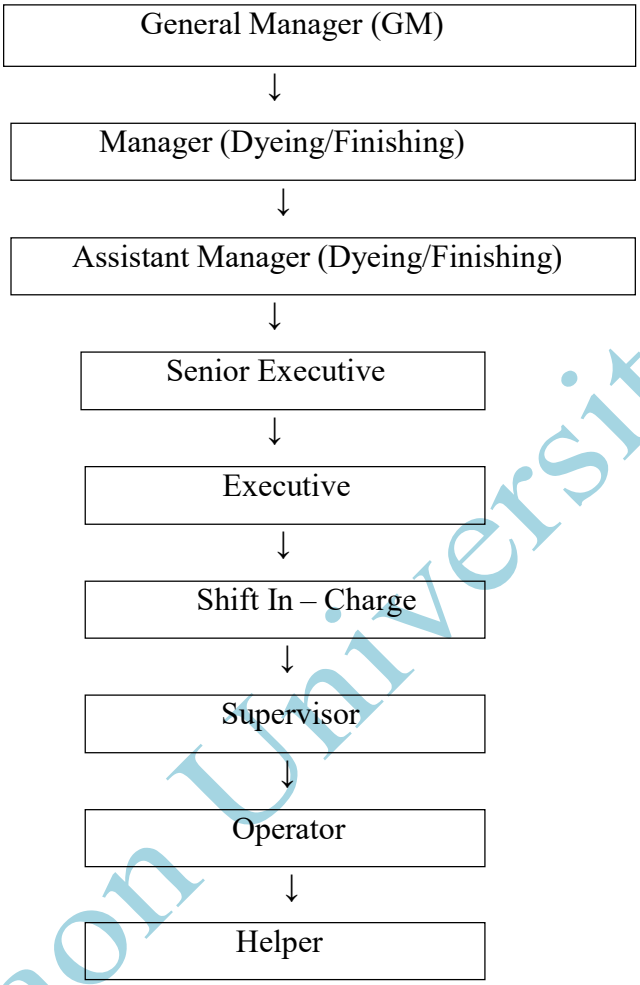
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CHAPTER: 04

DYEING SECTION

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4.1- Organogram of dyeing section



4.2-Responsibilities of production manager:

- To identify any kind of dyeing problems during dyeing.
- To observe whole dyeing procedure.
- To supervise senior and junior production officer.
- To provide production schedule and capacity.

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4.3-Responsibilities of Executive

- To provide dyeing recipe.
- To check and maintain PH during dyeing.
- To supervise assistant, operator, helpers.
- To check water level & every dyeing batch.
- To check daily production & report to the production manager.

4.4- Process Sequence of Batch Preparation

Receive Batch Card From Grey fabric In-Charge

↓

Make the Dyeing plan as dyeing priority

↓

One Specific Batch Card is taken

↓

For own Understanding Read the Batch carefully

↓

Availability of Fabric is checked

↓

Required Quantity of body is taken From Ware house

↓

Make required no of rope Maintaining Equal length

↓

Calculate collar /cuff fabric as per size, keep the total weight

↓

The collar/cuff or Rib is distributed in each rope equally ensuring equal length

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↓

Stitch the fabric end (side if required)

↓

The weight against Roll no. is written in the back side of the Batch Card

↓

Write the Total Weight in the Batch card

4.5- Objectives of Batching:

- To receive the grey fabric roll from knitting section or other source.
- Turn the grey fabric if require.
- To separate different types of fabrics
- To put the same characteristics fabric jointly.
- To ensure proper dyeing with actual shade.

4.6- To prepare the batch of fabric for dyeing according to the following criteria

- Received order sheet from buyer
- Dyeing shade prediction (color or white, light or dark)
- Machine capacity

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- Machine available
- Type of fabrics(100% cotton, PE, PC, CVC)
- Emergency
- To send the grey fabric to the dyeing floor with batch card.
- To keep records for every previous dyeing.
- To use maximum capacity of existing dyeing machine
- To minimize the washing time or preparation time & machine stoppage time.
- To keep the no. of batch as less as possible for same shade.
- To use a particular machine for dyeing same shade.

4.7- Batch Management:

Primarily batching (same characteristics material) is done by dyeing manager taking the above criteria under consideration. Batch section in-charge receives this primary batch plan from dyeing manager. Sometime planning is adjusted according to machine condition or emergency delivery.

4.8- Fabric Turning M/C:

Model	DNAT- 400
Roller Width	400 mm
Machine Space (over all)	Length =5.6m Width =1.1m Height = 1.41m

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Set-up	Length =7.6m Width =2.1m Height =1.51m
Production Capacity	7~10 Ton/Day
Spare parts (Tool Box)	1 set
Electric Capacity	11.75 kw
Fan Motor	11 kw
Roller Motor	0.75 kw

Function:

- ✓ The Machine is used to reverse the knitted face to back and back to face.

4.9- Sequence of Operation for Knit Fabric Dyeing Section:

Grey fabric inspection
↓
Batching
↓
Fabric turning
↓
Loading to the m/c
↓
Pre-treatment (Scouring & Bleaching)
↓
Dyeing
↓
Dewatering
↓

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Drying

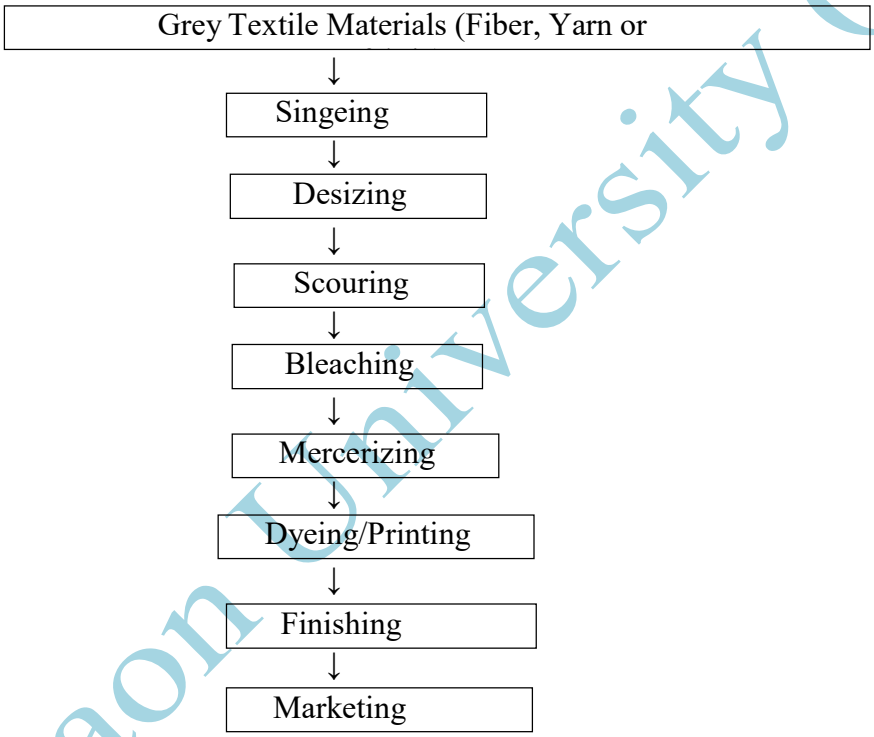
↓

Compacting & Calendaring

↓

Final inspection & packing

4.10- Process flow chart of Dyeing:



Dyeing Machines:

The dyeing section of Fakir Apparels Ltd. Has 60 Dyeing machine. Among them 20 are sample dyeing machine and 40 are for bulk production. Machine specification of the machines is given bellow.

4.11- Sample Dyeing Machine:

Parameter	Machine no:01 (A+B+C)	Machine no:02

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Manufacturer	FONG'S , China	FONG'S , China
M/c Capacity	60 kg	60 kg
Maximum Working Temp.	135 ^{0}c	135 ^{0}c
Liquid Ratio	1:5-1:8	1:5-1:8
Design Working Pressure	3.5 Bar	3.5 Bar
Hydraulic Test Pressure	5.4 Bar	5.4 Bar
Safety Valve Set	3.5 Bar	3.5 Bar
Maximum Surface Temp.	140 ^{0}c	140 ^{0}c
External Tank Capacity	200 lt. Dyes + 200 lt. Chemicals	200 lt. Dyes + 200 lt.Chemicals
Water Capacity	500 lt.	500 lt.

4.12- Dyeing Machine for Bulk production:

Dyeing qualities depends upon different factors, dyeing m/c quality is one of them. If the dyeing m/c are not perfect, there are many dyeing defect occurred in dyeing. For bulk dyeing Sclavos M/C are used for fabric dyeing in cotton club. Athena4 is designed and manufactured with the latest high technology for dyeing different types of fabric like cotton, polyester, viscose, nylon different types of blend etc.

Parameter	**Machine no:01**	**Machine no:02**	**Machine no:03**
Manufacturer	European Union	European Union	European Union
M/c Type	Athena4	Athena4	Athena4

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M/c Capacity	1000 kg	1500 kg	2000 kg
Maximum Working Temp.	135 ^{0}c	135 ^{0}c	135 ^{0}c
Liquid Ratio	1:5 – 1:8	1:5 – 1:8	1:5 – 1:8
Maximum Working Pressure	2,5 Bar	2,5 Bar	2,5 Bar
Maximum Surface Temp.	140 ^{0}c	140 ^{0}c	140 ^{0}c
External Tank Capacity	400 Lt.(chemical) + 400 Lt. (Dyes)	600 Lt.(chemical) + 600 Lt. (Dyes)	800 Lt.(chemical) + 800 Lt. (Dyes)
Water Capacity	1500 Lt.	2000 Lt.	2500 Lt.

Parameter	**Machine no:04**	**Machine no:05**	**Machine no:06**
Manufacturer	European Union	European Union	European Union
M/c Type	Athena4	Athena4	Athena4
M/c Capacity	600 kg	900 kg	1200 kg
Maximum Working Temp.	135 ^{0}c	135 ^{0}c	135 ^{0}c
Liquid Ratio	1:5 – 1:8	1:5 – 1:8	1:5 – 1:8
Maximum Working Pressure	2,5 Bar	2,5 Bar	2,5 Bar
Maximum Surface	140 ^{0}c	140 ^{0}c	140 ^{0}c

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Temp.			
External Tank Capacity	600 Lt.(chemical) + 600 Lt. (Dyes)	700 Lt.(chemical) + 700 Lt. (Dyes)	700 Lt.(chemical) + 700 Lt. (Dyes)



Figure: Winch Dyeing Machine

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4.13- Raw Materials of Dyeing:

Fabrics:

1. Single jersey grey fabric
2. Rib fabric
3. Interlock fabric

4.14- Commonly Used Dyes in Fakir Apparels Ltd.:

Brand Name	Commercial Name
Coralene	Coralene Red XF
	” Yellow Brown XF
	” Rubine XF -2G
	” Black XF 110%
	” Blue XF 110%
	” Brill Red XF BN
	” Brill Blue BG
	” Lume Pink 5B
	” Lume Pink RBSF
	” Lume Yellow 10GN
	” Lume Red G
	Corafix G.Yellow MERP 150%

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Corafix	” Red ME-4BP 150%
	” Brilliant Sky Blue-G
	” Black GDNN
	” Sapphire HP-RB
	” Blue –HPRL
	” Blue CL-HB
	” Orange CL-3R p
	” Red K-8B p
	” Scarler HF-3G edg
	” Yellow X-8GN
	” Turquoise CLB
Finozol	Finozol Red K2BF
	” Red KBS 150%
	” Blue RSPL 150%
	” Blue KBF 150%
Fucozol	Fucozol Yellow UCF
	” Red UCX
	” Black BG
Polazol	Polazol Yellow MS
	” Red MS
	” Navy Blue MS
Setapers	Setapers Rubine CTW
	” Navy Blue CTW
	” Black ECP

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Brand Name	Commercial Name
Remazol	Remazol Yellow RR
	” Red RR
	” Blue RR
	” Orange RR
	” Br. Yellow 3GL
	” Br. Blue BB New
	” Turquoise GN 266%
	” Blue RSPL 160%
	” T.Blue G 133%
Sunfix	Sunfix Yellow SPD cone
	” Red SPD cone
	” N. Blue SPD cone
	” Yellow SPR
	” Blue SPR
	” Red SPR
Sunwhite	Sunwhite BNH(poly.Brit)
	” 4 BK
	” BVB (nylon Brit)
Procion	Procion Dark Blue V-EL
	” Yellow V-EL
	” Crimson HE-XL
	” Sapphire HE-XL
	” Navy HE-XL
	” Lamon H-Exl

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4.15- Commonly Used Auxiliaries & Chemicals in Fakir Apparels Ltd.:

Name	Item
Detergent	Rheopol BMW
Sequestering	Suntex XPA
	Neoseq CI
	Lufibrol 2UD
Anti-Crease	Shunsoft LUB
	Imaco I Pc
	Lube 1010 Max
	Neolube C
Strong Alkali	Caustic Soda
Mild Alkali	Soda Ash
	Soda Cone
Bleaching Agent	H_2O_2
	Bleaching Powder
	Hydrose (BASF)
Stabilizer	Shuntex UFB
Stain Remover	Finocon X 55
Anti Staining	Crosden LPD
Anti Yellowing	Umidol APY
Anti Foam	Defoamer SS
Per Oxide Killer	Mega OX-1
	Croaks NF

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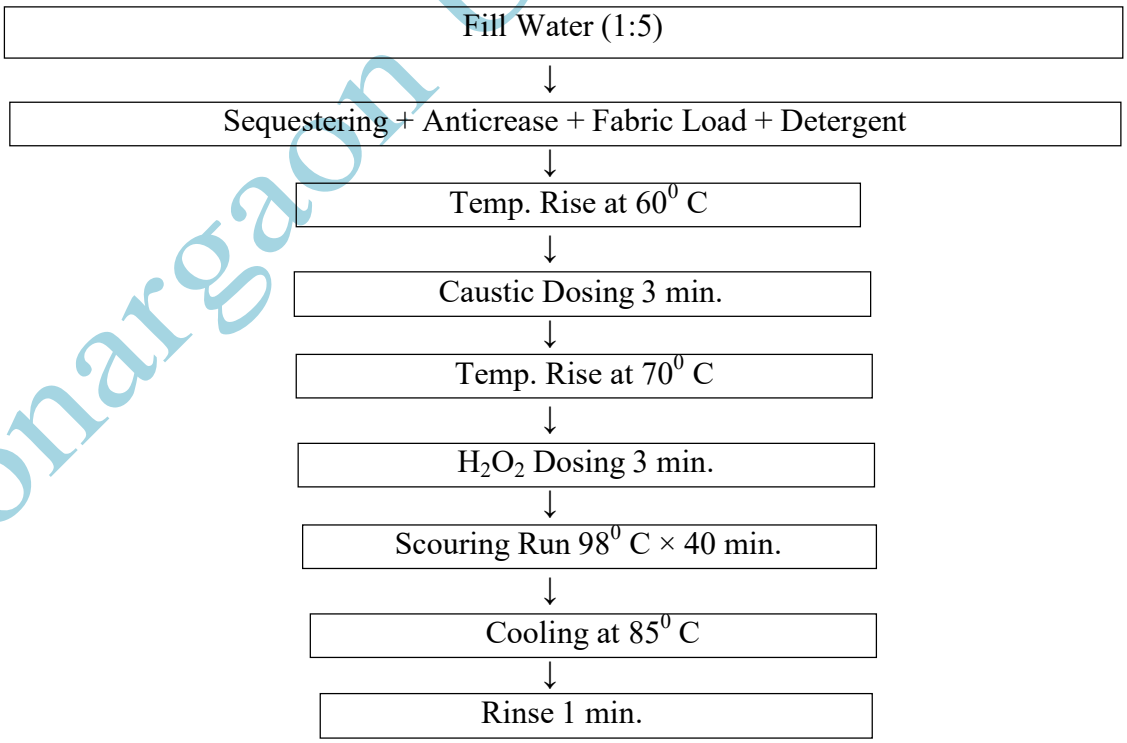
Organic Acid	Formic Acid
	Nutrafil 100V
	Sirrix NE
Enzyme	Mega Br-9-Plus
	Mega PK
Leveling	Rheotoch BDR
	Rheotec MFA
	Shuntex XMA
	CTF 1101
Salt	Glober Salt
Soaping	Shunsol RSL
	Ma Soap NC
Fixing	Peramix RD
	Denimcol Fix OS
	Optifix EC
	Optifix RSL
Softener	Super Soap Softener
	Softener WS-054
	Poly Softer AQ-09
	Permasoft-2120
	Wacker Power Soft-180

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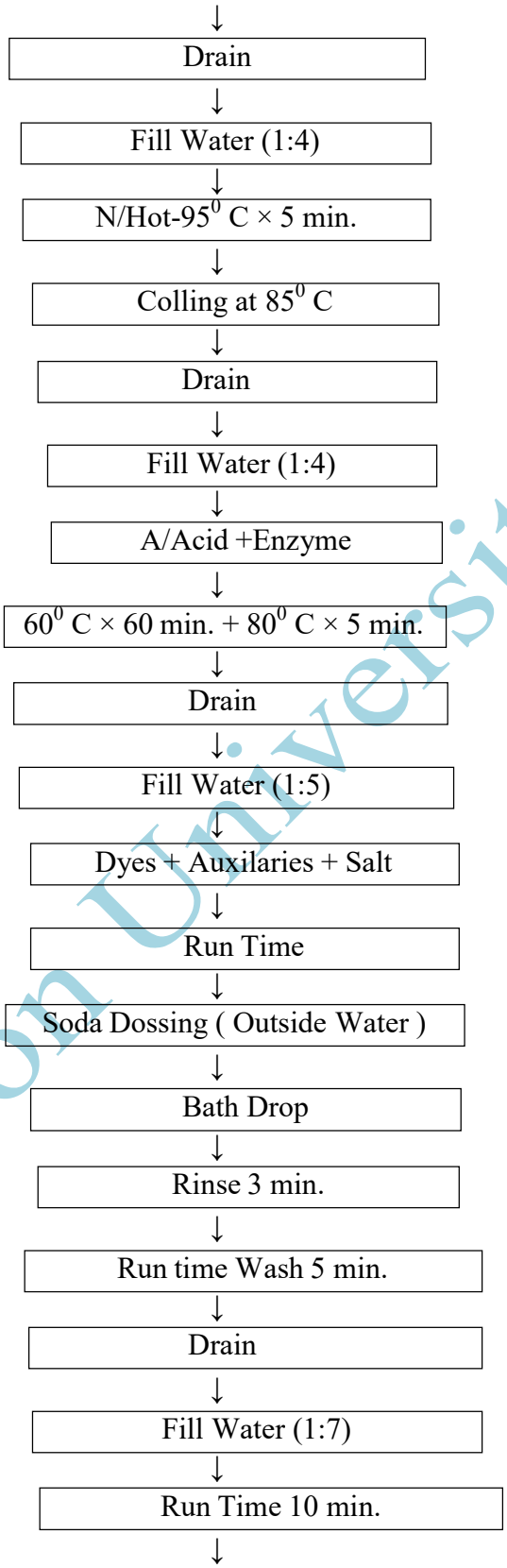
4.16- Production parameter:

Process names	pH	Temperature	Time
Scouring & bleaching	10	100^0C	1 hrs
Levelling	4-4.5	…….	…….
Enzyme wash	4.5-5	55^0C	30 min.
Reactive Dyeing (M:L=1:8)	10-12	60^0C	1 hrs
Polyester Dyeing (M:L=1:10)	5-6	135^0C	45 min.

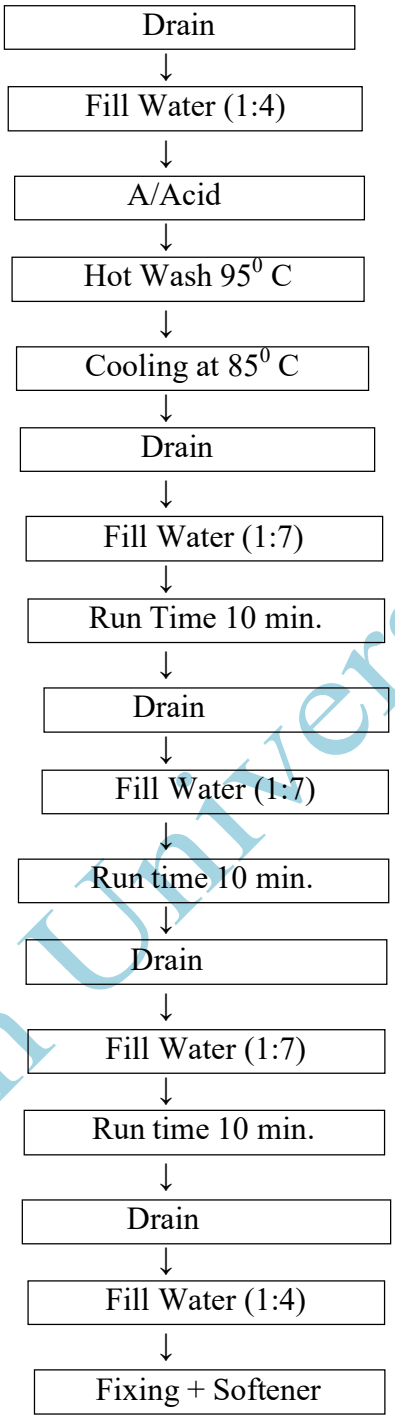
4.17- One part Dyeing Cotton fabric (Reactive)



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N:B : After Bath Drop

2 Time Wash for Light to Medium shade

3 Time Wash for Black , Navy , Royal , Turquise , Deep Red

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4.18- Two Part Dyeing Polyester fabric + Cotton fabric (Disperse dye & Reactive dye)

Process of Polyester/Cotton (P/C) Fabric dyeing:

1. At first the Polyester Part dyeing same as Polyester Dyeing.
2. Then the Cotton Part dyeing same as Cotton Dyeing.

Dyeing Procedure of polyester fabrics with Curve:

Required amount of water filled
Drain
↓
Required amount of water filled
↓
Oxalic acid was added for 5 min.
↓
Fabric was loaded and run for 10 min.
↓
Run for 20 min. at 80^0 C
↓
Rinse for 15 min.
↓
Drain
↓
Required amount of water filled
↓
Formic acid added for pH- controlled
↓

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Check pH at 4.5

↓

Leveling agent added for 10 min.

↓

Temperature increase at 60^0 C

↓

Color/Dyes added for 15 min.

↓

Run for 10 min.

↓

Temperature increases at 130^0 C for 30 min.

↓

Run for 30 min.

↓

Cooling at 80^0 C

↓

Shade check

↓

Rinsing for 15 min.

↓

Drain

↓

Required amount of water filled

↓

Hot wash at 80^0 C

↓

Shade check

↓

Rinsing for 15 min.

↓

Unloading

Reduction Cleaning-

Caustic Dosing (60^0 C × 6 min)

↓

Raising Temp at 130^0 C

↓

Hydrose injection

(Run time- 10 min at 80^0 C)

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↓

Normal wash

↓

Drain

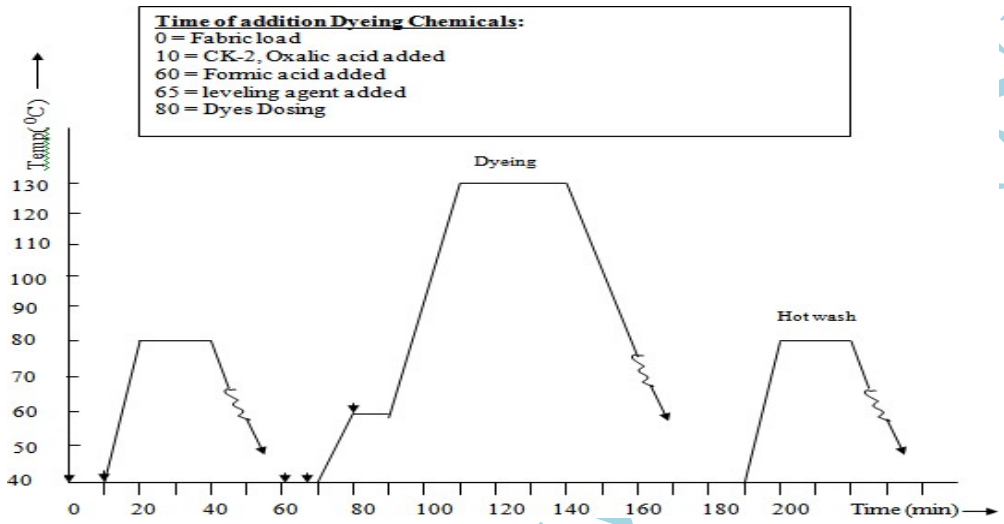


Figure-1: Dyeing Curve of Polyester.

Cotton Dyeing Steps with Curve:

Required amount of water was taken into the machine

↓

The fabric was loaded and run for (5-10) min. in normal temperature

↓

Anti Creasing agent and pH-10 (Scouring Chemicals) were added at a time for 5 min.

↓

Caustic was added at normal temperature for 5 min.

↓

Temperature increased at 60^0 C

↓

H_2O_2 was added for 5 min.

↓

Temperature increased at 95^0 C and continue for 1 hrs

↓

Sample check

↓

Cold wash at 40^0 C for (5-10) min.

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↓

Hot wash at 95^0 C for (5-10) min.

↓

Required amount of water was loaded

↓

Peroxide killer was added

↓

Acetic acid was added

↓

Temperature increased at 80^0 C for (15-20) min.

↓

Cold wash at 40 C and drain

↓

Water filled and Acetic acid was added

↓

PH check at 4.5

↓

Temperature increased at 55^0 C

↓

Enzyme (Bio-EC) was added and run for 1hrs at 55^0 C

↓

Shade check

↓

Cold wash at 40^0 C and drain

↓

Water filled/Required amount of water was taken

↓

Temperature increased at $(95\text{-}99)^0$ C for (5-10) min.

↓

Cold wash at 40^0 C and drain

↓

Acetic acid was added

↓

pH check at 4.5

↓

Levelling agent were added at a time

↓

Salt dosing

↓

Color dosing for 30 min.

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Run for 10 min.

↓

Soda dosing for 40 min.

↓

Run for 7 min.

↓

Temperature increase at 60^0 C for 5 min.

↓

Run for 10 min.

↓

Shade check (OK)

↓

Rinsing

↓

Water was filled at required amount

↓

Soaping agent was added

↓

Temperature increase at 80^0 C for 10 min.

↓

Hot wash at 90^0 C for 20 min. and shade check in this time (OK)

↓

Rinsing

↓

Water was filled at required amount

↓

Acetic acid was added for neutralization for 10 min.

↓

Shade check (ok)

↓

Fixing agent was added for 10 min.

↓

Rinsing

↓

Water was filled at required amount

↓

pH check at 6.5

↓

Softener was added

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↓

Final shades check and run for 20 min.

↓

Unload the dyed fabric

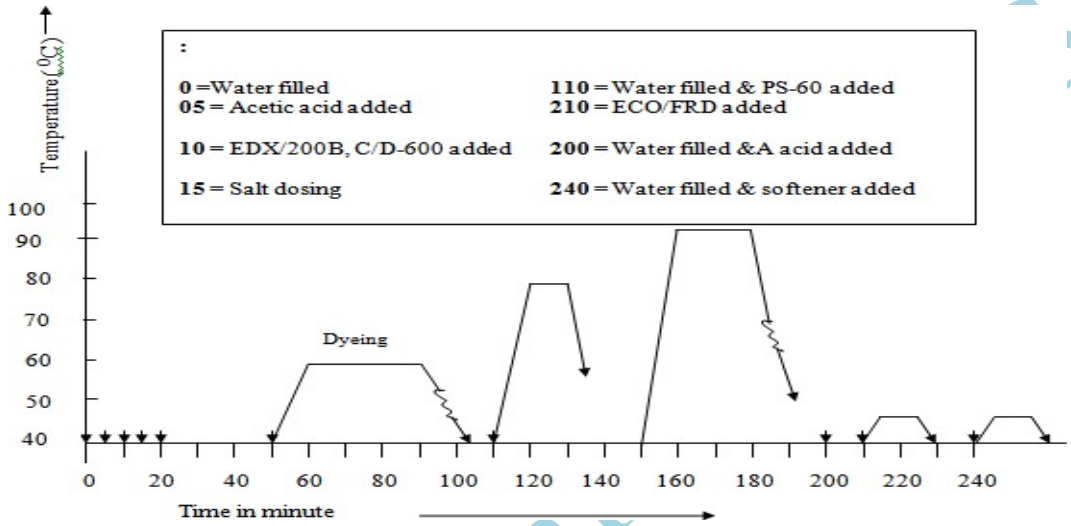


Figure-4: Dyeing Curve of Cotton.

4.19- Common faults in dyeing and their Causes:

- **<u>Uneven dyeing in a rope</u>**

Cause :

Uneven dyeing in a rope occurs due to uneven pretreatments and rapid addition of dyes and chemicals.

- **<u>Rope to rope uneven shade</u>**

Cause :

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Rope to rope shade variation occurs due to having incorrect rope length and fabric flow speed in different nozzles of dyeing machine.

- **Batch to batch shade variation**

Cause :

If any dyeing parameter (time, temperature, liquor ratio etc.) are changed, then problems arise in batch to batch shade reproducibility.

- **Dye spots**

Cause :

This problem occurs when the operators do not dissolve correctly the dyestuff, in the right amount of water.

- **Patta effect or Barrie effect**

Cause :

This type of fault is found after dyeing due to yarn lot or count mixing in fabric.

- **Crease marks**

Cause :

This problem occurs due to machine is overloaded by fabric and due to absence of sufficient amount of liquor in the machine during process.

- **Band marks**

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Cause :

Band marks are found in folded areas of wet dyed fabric due to dye migration.

- **Pin holes**

Cause :

Pin holes are very small holes that can be 40ccurs if iron content in fibres is very higher.

- **Ending or tailing effect**

Cause :

Shade variation occurs lengthwise of dyed fabric due to changing the concentration of dye liquor.

- **Listing effect**

Cause :

This problem occurs width way of dyed fabric due to uneven pressure of padder rollers.

- **Patchy dyeing**

Cause :

In continuous dyeing it occurs due to improper fabric impregnation in pad trough and uneven heating inside the machine.

- **Specky dyeing**

Cause :

It occurs in continuous dyeing due to excessive foam generation in pad trough and insufficient pretreatment.

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Dyeing Process & Recipe

Fabric composition	100% Cotton S/Jersey
Color	White

Process	Name of the Dyes & Chemicals	Dosages	Temperature	Duration	Remarks
Pre-treatment /Scouring	Argapep LFD conc	0.5gm/l	98ºC	90 minutes	
	Stabor PSL	0.8 gm/l			
	FYOP-C	0.8 gm/l			
	Lution SDA	0.6 gm/l			
	Caustic Soda (NaOH)	3.5 gm/l			
	Hydrogen Peroxide (H_2O_2)	5.0 gm/l			
Hot Wash			80ºC	20 minutes	
Dyeing	Uvitex BTV	0.06%	98ºC	30 minutes	
Hot Wash			80ºC	20 minutes	
Neutralization	Acetic Acid	0.80g/l	60ºC	30 minutes	
Softening	Acetic Acid	0.2 gm/l	45ºC	30 minutes	
	Sapamine KL New	1.0%			

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(100% EXPORT ORIENTED KNIT COMPOSITE FACTORY)

Dyeing Process & Recipe

Fabric composition	100% Cotton S/Jersey
Color	Black

Process	Name of the Dyes & Chemicals	Dosages	Temperature	Duration	Remarks
Pre-treatment /Scouring	Argapep LFD conc	0.5 gm/l	98ºC	90 minutes	
	Stabor PSL	0.4 gm/l			
	FYOP-C	0.5 gm/l			
	Lution SDA	0.5 gm/l			
	Caustic Soda (NaOH)	2.0 gm/l			
	Hydrogen Peroxide (H_2O_2)	2.0 gm/l			
Hot wash			95ºC	20 minutes	
Neutralization	Acetic Acid	1.0 gm/l	60ºC	20 minutes	
Enzyme Wash	Acetic Acid	0.3mg/l	55ºC	60 minutes	
	Eurolan 12500	0.5%			
Hot wash			95ºC	20 minutes	
Dyeing	Arglevel DS cone	0.60gm/l	60ºC	60 minutes	
	Lution SDA	0.5 gm/l			
	Setazol Orange S3R	0.26%			
	Fucozol Red USG	0.44%			
	Fucozol Black USN	5.0%			
	Gluber Salts	80 gm/l			
	Soda Ash	20 gm/l			
Neutralization	Acetic Acid	0.8 gm/l	60ºC	30 minutes	
Soaping	Argacel SW conc	1.0 gm/l	98ºC	30 minutes	
Soaping	Argacel SW conc	0.6 gm/l	98ºC	20 minutes	
Softening	Acetic Acid	0.4 gm/l	45ºC	30 minutes	
	Sapamine CSN	1.0%			

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Dyeing Process & Recipe

Fabric composition	100% Cotton S/Jersey
Color	Red

Process	Name of the Dyes & Chemicals	Dosages	Temperature	Duration	Remarks
Pre-treatment /Scouring	Argapep LFD conc	0.6 gm/l	98ºC	90 minutes	
	Stabor PSL	0.4 gm/l			
	FOYP-C	1.0 gm/l			
	Lution SDA	0.5 gm/l			
	Caustic Soda (NaOH)	3.0 gm/l			
	Hydrogen Peroxide (H_2O_2)	3.0 gm/l			
Hot wash			95ºC	20 minutes	
Neutralization	Acetic Acid	0.6 gm/l	60ºC	20 minutes	
Enzyme wash	Acetic Acid	0.4 gm/l	55ºC	45 minutes	
	Eurolan 12500	0.5%			
Hot wash			95ºC	20 minutes	
Dyeing	Argalevel DS conc	0.6 gm/l	60ºC	60 minutes	
	Lution SDA	0.6 gm/l			
	Setazol Red SX	4.5 %			
	Fucozol Yellow UCN	0.44%			
	Fucozol Blue EBL 150 %	0.0011%			
	Gluber Salts	80 gm/l			
	Soda Ash	20 gm/l			
Neutralization	Acetic Acid	1.0 gm/l	60ºC	30 minutes	
Soaping	Argacel SW conc	1.0 gm/l	98ºC	30 minutes	
Soaping	Argacel SW conc	0.6 gm/l	98ºC	20 minutes	
Fixing	Albafix ECO	0.5g/l	45ºC	30 minutes	
Softening	Acetic Acid	0.4 gm/l	45ºC	30 minutes	
	Sapamine CSN	1.0 gm/l			

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Dyeing Process & Recipe

Fabric composition	100% Cotton S/Jersey
Color	Navy

Process	Name of the Dyes & Chemicals	Dosages	Temperature	Duration	Remarks
Pre-treatment /Scouring	Argapep LFD conc	0.5 gm/l	98ºC	90 minutes	
	Stabor PSL	0.5 gm/l			
	FYOP –C	0.5 gm/l			
	Lution SDA	0.6 gm/l			
	Caustic Soda (NaOH)	2.5 gm/l			
	Hydrogen Peroxide (H_2O_2)	3.0 gm/l			
Hot wash			95ºC	20 minutes	
Neutralization	Acetic Acid	1.0 gm/l	60ºC	20 minutes	
Enzyme wash	Acetic Acid	0.4 gm/l	55ºC	45 minutes	
	Eurolan 12500	0.5%			
Hot wash			95ºC	20 minutes	
Dyeing	Arglevel DS cone	0.8 gm/l	60ºC	60 minutes	
	Lution SDA	0.5 gm/l			
	Fucozol Yellow UCN	1.1 %			
	Fucozol Red USG	0.66%			
	Fucozol Black BG 150%	3.6%			
	Gluber Salts	80 gm/l			
	Soda Ash	20 gm/l			
Neutralization	Acetic Acid	1.0 gm/l	60ºC	30 minutes	
Soaping	Argacel SW conc	1.0 gm/l	98ºC	30 minutes	
Soaping	Argacel SW conc	0.5 gm/l	98ºC	20 minutes	
Fixing	Albafix ECO	0.6 g/l	45ºC	30 minutes	
Softening	Acetic Acid	0.4 gm/l	45ºC	30 minutes	
	Ultratex SI	0.6 gm/l			

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Dyeing Process & Recipe

Fabric composition	100% Cotton S/Jersey
Color	Yellow

Process	Name of the Dyes & Chemicals	Dosages	Temperature	Duration	Remarks
Pre-treatment /Scouring	Argapep LFD conc	0.5 gm/l	98ºC	90 minutes	
	Stabor PSL	0.4 gm/l			
	FYOP-C	0.5 gm/l			
	Lution SDA	0.5 gm/l			
	Setalase Enzim 500-L	0.2 gm/l			
	Caustic Soda (NaOH)	2.5 gm/l			
	Hydrogen Peroxide (H_2O_2)	3.0 gm/l			
Hot wash			95ºC	20 minutes	
Neutralization	Acetic Acid	0.8 gm/l	60ºC	20 minutes	
Enzyme wash	Acetic Acid	0.6 gm/l	55ºC	45 minutes	
	Eurolan 12500	0.4%			
Hot wash			95ºC	20 minutes	
Dyeing	Arglevel DS cone	0.8 gm/l	60ºC	60 minutes	
	FYOP-C	0.5 gm/l			
	Fucozol Yellow 3GL	0.40%			
	Fucozol Yellow HE4R	1.20%			
	Gluber Salts	60 gm/l			
	Soda Ash	20 gm/l			
Neutralization	Acetic Acid	0.8 gm/l	60ºC	30 minutes	
Soaping	Setawash STP	1.0 gm/l	98ºC	30 minutes	
Soaping	Setawash STP	0.5 gm/l	98ºC	20 minutes	
Softening	Acetic Acid	0.4 gm/l	45ºC	30 minutes	
	Sapamine KL NEW	0.8 gm/l			

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Dyeing Process & Recipe

Fabric composition	95% Cotton 5% Elastane S/Jersey
Color	Green

Process	Name of the Dyes & Chemicals	Dosages	Temperature	Duration	Remarks
Pre-treatment /Scouring	Argapep LFD conc	1.0 gm/l	98ºC	90 minutes	
	Stabor PSL	0.5gm/l			
	FOYP-C	1.0 gm/l			
	Lution SDA	0.8 gm/l			
	Caustic Soda (NaOH)	2.5 gm/l			
	Hydrogen Peroxide (H_2O_2)	3.0 gm/l			
Hot wash			95ºC	20 minutes	
Neutralization	Acetic Acid	0.6 gm/l	60ºC	20 minutes	
Enzyme wash	Acetic Acid	0.5 gm/l	55ºC	45 minutes	
	Eurolan 12500	0.5%			
Hot wash			95ºC	20 minutes	
Dyeing	Arglevel DS cone	1.0 gm/l	80ºC	60 minutes	
	FOYP-C	0.5 gm/l			
	Fucocion Yellow 3GL 150%	2.2 %			
	Fucocion Turq. Blue G 225%	2.0 %			
	Fucozol Blue HERD	0.36%			
	Gluber Salts	80 gm/l			
	Soda Ash	20 gm/l			
Neutralization	Acetic Acid	0.8 gm/l	60ºC	30 minutes	
Soaping	Argacel SW conc	1.0 gm/l	98ºC	30 minutes	
Soaping	Argacel SW conc	0.6 gm/l	98ºC	20 minutes	
Fixing	Albafix ECO	0.5g/l	45ºC	30 minutes	
Softening	Acetic Acid	0.4 gm/l	45ºC	30 minutes	
	Sapamine CSN	0.8 gm/l			

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Dyeing Process & Recipe

Fabric composition	95% Cotton 5% Elastane S/Jersey
Color	Orange

Process	Name of the Dyes & Chemicals	Dosages	Temperature	Duration	Remarks
Pre-treatment /Scouring	Argapep LFD conc	0.5 gm/l	98ºC	90 minutes	
	Stabor PSL	0.5 gm/l			
	FOYP-C	1.0 gm/l			
	Lution SDA	0.6 gm/l			
	Caustic Soda (NaOH)	2.0 gm/l			
	Hydrogen Peroxide (H_2O_2)	3.0 gm/l			
Hot wash			95ºC	20 minutes	
Neutralization	Acetic Acid	0.8 gm/l	60ºC	20 minutes	
Enzyme wash	Acetic Acid	0.5 gm/l	55ºC	45 minutes	
	Eurolan 12500	0.5%			
Hot wash			95ºC	20 minutes	
Dyeing	Arglevel DS cone	0.8 gm/l	80ºC	60 minutes	
	FOYP-C	0.6 gm/l			
	Fucozol Orange D2R	1.80%			
	Fucocion Red D2B	0.40%			
	Fucozol Blue EBL	0.001%			
	Gluber Salts	80 gm/l			
	Soda Ash	20 gm/l			
Neutralization	Acetic Acid	1.0 gm/l	60ºC	30 minutes	
Soaping	Argacel SW conc	1.0 gm/l	98ºC	30 minutes	
Soaping	Argacel SW conc	0.8 gm/l	98ºC	20 minutes	
Softening	Acetic Acid	0.4 gm/l	45ºC	30 minutes	
	Sapamine KL NEW	0.7 gm/l			

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Dyeing Process & Recipe

Fabric composition	95% Cotton 5% Elastane S/Jersey
Color	Navy

Process	Name of the Dyes & Chemicals	Dosages	Temperature	Duration	Remarks
Pre-treatment /Scouring	Argapep LFD conc	0.5 gm/l	98ºC	90 minutes	
	Stabor PSL	1.0 gm/l			
	FOYP-C	1.10gm/l			
	Lution SDA	0.4 gm/l			
	Caustic Soda (NaOH)	2.0 gm/l			
	Hydrogen Peroxide (H_2O_2)	3.0 gm/l			
Hot wash			95ºC	20 minutes	
Neutralization	Acetic Acid	0.6 gm/l	60ºC	20 minutes	
Enzyme wash	Acetic Acid	0.5 gm/l	55ºC	45 minutes	
	Eurolan 12500	0.5%			
Hot wash			95ºC	20 minutes	
Dyeing	Arglevel DS cone	0.8 gm/l	60ºC	60 minutes	
	Lution SDA	0.4 gm/l			
	Setazol Yellow UCN	0.66 %			
	Setazol Red SX	3.2%			
	Fucozol Blue EBL 150 %	0.0010%			
	Gluber Salts	80 gm/l			
	Soda Ash	20 gm/l			
Neutralization	Acetic Acid	1.0 gm/l	60ºC	30 minutes	
Soaping	Argacel SW conc	1.0 gm/l	98ºC	30 minutes	
Soaping	Argacel SW conc	0.6 gm/l	98ºC	20 minutes	
Softening	Acetic Acid	0.4 gm/l	45ºC	30 minutes	
	Sapamine CSN	0.8 gm/l			

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Dyeing Process & Recipe

Fabric composition	95% Cotton 5% Elastane S/Jersey
Color	Black

Process	Name of the Dyes & Chemicals	Dosages	Temperature	Duration	Remarks
Pre-treatment /Scouring	Argapep LFD conc	0.5 gm/l	98ºC	90 minutes	
	Stabor PSL	0.5 gm/l			
	FOYP-C	1.0 gm/l			
	Lution SDA	0.6 gm/l			
	Caustic Soda (NaOH)	2.0 gm/l			
	Hydrogen Peroxide (H_2O_2)	2.0 gm/l			
Hot wash			95ºC	20 minutes	
Neutralization	Acetic Acid	0.6 gm/l	60ºC	20 minutes	
Enzyme wash	Acetic Acid	0.6 gm/l	55ºC	45 minutes	
	Eurolan 12500	0.6%			
Hot wash			95ºC	20 minutes	
Dyeing	Arglevel DS cone	1.0 gm/l	60ºC	60 minutes	
	Lution SDA	0.2gm/l			
	Setazol Orange S3R	0.36 %			
	Setazol Deep Red SX	0.5 %			
	Novacron Super Black G	4.8%			
	Gluber Salts	80 gm/l			
	Soda Ash	10 gm/l			
	Caustic Soda	1.0 gm/l			
Neutralization	Acetic Acid	1.0 gm/l	60ºC	30 minutes	
Soaping	Argacel SW conc	1.0 gm/l	98ºC	30 minutes	
Soaping	Argacel SW conc	0.8 gm/l	98ºC	20 minutes	
Softening	Acetic Acid	0.4 gm/l	45ºC	30 minutes	
	Sapamine CSN	0.8 gm/l			

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Dyeing Process & Recipe

Fabric composition	100% Viscose S/Jersey
Color	White

Process	Name of the Dyes & Chemicals	Dosages	Temperature	Duration	Remarks
Pre-treatment /Scouring	Argapep LFD conc	1.0 gm/l	98ºC	60 minutes	
	Stabor PSL	0.2 gm/l			
	FOYP-C	1.0 gm/l			
	Lution SDA	0.8 gm/l			
	Soda Ash	2.0 gm/l			
	Hydrogen Peroxide (H_2O_2)	1.5 gm/l			
Hot Wash			80ºC	20 minutes	
Dyeing	Uvitex BTV	0.060%	98ºC	30 minutes	
Hot Wash			80ºC	20 minutes	
Neutralization	Acetic Acid	1.0g/l	60ºC	30 minutes	
Softening	Acetic Acid	0.4 gm/l	45ºC	30 minutes	
	Sapamine KL NEW	1.0 %			

Sonargaon University (SU)

Dyeing Process & Recipe

Fabric composition	100% Viscose S/Jersey
Color	Black

Process	Name of the Dyes & Chemicals	Dosages	Temperature	Duration	Remarks
Pre-treatment /Scouring	Argapep LFD conc	0.6 gm/l	98ºC	90 minutes	
	Stabor PSL	0.4 gm/l			
	FYOP-C	1.0 gm/l			
	Lution SDA	0.8 gm/l			
	Soda Ash	2.0 gm/l			
	Hydrogen Peroxide (H_2O_2)	1.0gm/l			
Hot wash			95ºC	20 minutes	
Neutralization	Acetic Acid	0.6 gm/l	60ºC	20 minutes	
Dyeing	Arglevel DS cone	0.8 gm/l	60ºC	60 minutes	
	Lution SDA	0.6 gm/l			
	Fucozol Yellow RNL	0.60 %			
	Fucozol Red FRB	0.8%			
	Fucozol Black FGS	4.4%			
	Gluber Salts	80 gm/l			
	Soda Ash	20 gm/l			
Neutralization	Acetic Acid	1.0 gm/l	60ºC	30 minutes	
Soaping	Argacel SW conc	0.8 gm/l	98ºC	30 minutes	
Soaping	Argacel SW conc	0.6 gm/l	98ºC	20 minutes	
Softening	Acetic Acid	0.5 gm/l	45ºC	30 minutes	
	Sapamine CSN	0.8 gm/l			

Sonargaon University (SU)

Dyeing Process & Recipe

Fabric composition	100% Viscose S/Jersey
Color	Red

Process	Name of the Dyes & Chemicals	Dosages	Temperature	Duration	Remarks
Pre-treatment /Scouring	Argapep LFD conc	0.6 gm/l	98ºC	90 minutes	
	Stabor PSL	1.0 gm/l			
	FYOP-C	0.4 gm/l			
	Lution SDA	0.6 gm/l			
	Soda Ash	2.0 gm/l			
	Hydrogen Peroxide (H_2O_2)	1.5gm/l			
Hot wash			95ºC	20 minutes	
Neutralization	Acetic Acid	1.0 gm/l	60ºC	20 minutes	
	Setalase Enzim 500 L	0.4 gm/l	60ºC	20 minutes	
Dyeing	Arglevel DS cone	0.8 gm/l	60ºC	60 minutes	
	Lution SDA	0.6 gm/l			
	Fucozol Yellow 3RF	0.6 %			
	Fucozol Red D2B	4.4%			
	Fucozol Blue EBL 150%	0.01%			
	Gluber Salts	80 gm/l			
	Soda Ash	20 gm/l			
Neutralization	Acetic Acid	1.0 gm/l	60ºC	30 minutes	
Soaping	Setawash STP	1.0 gm/l	98ºC	30 minutes	
Soaping	Setawash STP	0.6 gm/l	98ºC	20 minutes	
Softening	Acetic Acid	0.4 gm/l	45ºC	30 minutes	
	Sapamine CSN	0.6 gm/l			

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Dyeing Process & Recipe

Fabric composition	100% Viscose S/Jersey
Color	Orange

Process	Name of the Dyes & Chemicals	Dosages	Temperature	Duration	Remarks
Pre-treatment /Scouring	Argapep LFD conc	0.8 gm/l	98ºC	90 minutes	
	Stabor PSL	1.0 gm/l			
	FYOP-C	1.0gm/l			
	Lution SDA	0.6 gm/l			
	Soda Ash	2.0 gm/l			
	Hydrogen Peroxide (H_2O_2)	1.0gm/l			
Hot wash			95ºC	20 minutes	
Neutralization	Acetic Acid	0.8 gm/l	60ºC	20 minutes	
Dyeing	Arglevel DS cone	1.0 gm/l	80ºC	60 minutes	
	Lution SDA	0.5 gm/l			
	Fucozol Orange D2R	1.80 %			
	Fucozol Red D2B	0.6%			
	Gluber Salts	80 gm/l			
	Soda Ash	20gm/l			
Neutralization	Acetic Acid	0.8 gm/l	60ºC	30 minutes	
Soaping	Setawash STP	1.0 gm/l	98ºC	30 minutes	
Soaping	Setawash STP	0.6 gm/l	98ºC	20 minutes	
Softening	Acetic Acid	0.4 gm/l	45ºC	30 minutes	
	Ultratex SI	0.6 gm/l			

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Dyeing Process & Recipe

Fabric composition	100% Viscose S/Jersey
Color	Olive

Process	Name of the Dyes & Chemicals	Dosages	Temperature	Duration	Remarks
Pre-treatment /Scouring	Argapep LFD conc	0.4 gm/l	98ºC	90 minutes	
	Stabor PSL	0.4 gm/l			
	FOYP-C	1.0 gm/l			
	Lution SDA	0.5 gm/l			
	Soda Ash	2.0 gm/l			
	Hydrogen Peroxide (H_2O_2)	1.0gm/l			
Hot wash			95ºC	20 minutes	
Neutralization	Acetic Acid	0.6 gm/l	60ºC	20 minutes	
Dyeing	Arglevel DS cone	1.0 gm/l	60ºC	60 minutes	
	Lution SDA	0.5 gm/l			
	Fucozol Yellow 3RF	0.20 %			
	Fucozol Red 3BF	0.046%			
	Fucozol Blue EBL	0.02%			
	Gluber Salts	50 gm/l			
	Soda Ash	20 gm/l			
Neutralization	Acetic Acid	1.0 gm/l	60ºC	30 minutes	
Soaping	Argacel SW conc	1.0 gm/l	98ºC	30 minutes	
Soaping	Argacel SW conc	0.6 gm/l	98ºC	20 minutes	
Softening	Acetic Acid	0.4 gm/l	45ºC	30 minutes	
	Sapamine CSN	0.7 gm/l			

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Dyeing Process & Recipe

Fabric composition	95% Viscose 5% Elasthane S/Jersey
Color	Yellow

Process	Name of the Dyes & Chemicals	Dosages	Temperature	Duration	Remarks
Pre-treatment /Scouring	Argapep LFD conc	0. 8 gm/l	98ºC	90 minutes	
	Stabor PSL	0.4 gm/l			
	FOYP-C	1.0 gm/l			
	Lution SDA	0.5 gm/l			
	Caustic Soda (NaOH)	1.0 gm/l			
	Hydrogen Peroxide (H_2O_2)	1.0gm/l			
Hot wash			95ºC	20 minutes	
Neutralization	Acetic Acid	0.6 gm/l	60ºC	20 minutes	
Dyeing	Arglevel DS cone	1.0 gm/l	80ºC	60 minutes	
		0.5 gm/l			
	Fucocion Yellow 3GL 150%	2.4 %			
	Fucocion Red EBN	0.02%			
	Fucocion Turq.Blue G 225%	0.0030%			
	Gluber Salts	80 gm/l			
	Soda Ash	20gm/l			
Neutralization	Acetic Acid	1.0 gm/l	60ºC	30 minutes	
Soaping	Argacel SW conc	1.0 gm/l	98ºC	30 minutes	
Soaping	Argacel SW conc	0.6gm/l	98ºC	20 minutes	
Softening	Acetic Acid	0.6 gm/l	45ºC	30 minutes	
	Sapamine KL NEW	0.8 gm/l			

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Dyeing Process & Recipe

Fabric composition	95% Viscose 5% Elasthane S/Jersey
Color	Black

Process	Name of the Dyes & Chemicals	Dosages	Temperature	Duration	Remarks
Pre-treatment /Scouring	Argapep LFD conc	0.6 gm/l	98ºC	90 minutes	
	Stabor PSL	0.4 gm/l			
	FYOP-C	1.0 gm/l			
	Lution SDA	0.6 gm/l			
	Soda Ash	2.0 gm/l			
	Hydrogen Peroxide (H_2O_2)	1.0gm/l			
Hot wash			95ºC	20 minutes	
Neutralization	Acetic Acid	0.6 gm/l	60ºC	20 minutes	
Dyeing	Arglevel DS cone	1.0 gm/l	60ºC	60 minutes	
	Lution SDA	0.5 gm/l			
	Fucozol Yellow RNL 150%	1.0 %			
	Fucozol Red FRB	0.80%			
	Fucozol Black FGS 120%	4.4%			
	Gluber Salts	80 gm/l			
	Soda Ash	20 gm/l			
Neutralization	Acetic Acid	1.0 gm/l	60ºC	30 minutes	
Soaping	Argacel SW conc	1.0 gm/l	98ºC	30 minutes	
Soaping	Argacel SW conc	0.5 gm/l	98ºC	20 minutes	
Softening	Acetic Acid	0.4 gm/l	45ºC	30 minutes	
	Sapamine CSN	0.8 %			

Sonargaon University (SU)

(100% EXPORT ORIENTED KNIT COMPOSITE FACTORY)

Dyeing Process & Recipe

Fabric composition	95% Viscose 5% Elasthane S/Jersey
Color	Red

Process	Name of the Dyes & Chemicals	Dosages	Temperature	Duration	Remarks
Pre-treatment /Scouring	Argapep LFD conc	0.6 gm/l	98ºC	90 minutes	
	Stabor PSL	0.2 gm/l			
	FYOP-C	1.1 gm/l			
	Lution SDA	0.6 gm/l			
	Soda Ash	2.0 gm/l			
	Hydrogen Peroxide (H_2O_2)	1.gm/l			
Hot wash			95ºC	20 minutes	
Neutralization	Acetic Acid	0.6 gm/l	60ºC	20 minutes	
Dyeing	Arglevel DS cone	1.0 gm/l	60ºC	60 minutes	
	Fucozol Yellow 3RF	1.0 %			
	Fucozol Red 3BF	4.0%			
	Fucozol Blue EBL 150%	0.001%			
	Gluber Salts	80 gm/l			
	Soda Ash	20 gm/l			
Neutralization	Acetic Acid	1.0 gm/l	60ºC	30 minutes	
Soaping	Argacel SW conc	1.0 gm/l	98ºC	30 minutes	
Soaping	Argacel SW conc	0.6 gm/l	98ºC	20 minutes	
Softening	Acetic Acid	0.4 gm/l	45ºC	30 minutes	
	Sapamine CSN	0.8 %			

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Dyeing Process & Recipe

Fabric composition	95% Viscose 5% Elasthane S/Jersey
Color	Royal Blue

Process	Name of the Dyes & Chemicals	Dosages	Temperature	Duration	Remarks
Pre-treatment /Scouring	Argapep LFD conc	0.8 gm/l	98ºC	90 minutes	
	Stabor PSL	0.2 gm/l			
	Lution SDA	0.6 gm/l			
	Soda Ash	2.0 gm/l			
	Hydrogen Peroxide (H_2O_2)	1.5gm/l			
Hot wash			95ºC	20 minutes	
Neutralization	Acetic Acid	0.6 gm/l	60ºC	20 minutes	
Dyeing	Arglevel DS cone	1.0 gm/l	60ºC	60 minutes	
	Lution SDA	0.6 gm/l			
	Fucozol Red E5BN	1.4%			
	Fucozol Blue Rn. Spl	0.66%			
	Fucozol Blue Exn	0.80%			
	Gluber Salts	80 gm/l			
	Soda Ash	20 gm/l			
Neutralization	Acetic Acid	1.0 gm/l	60ºC	30 minutes	
Soaping	Setawash STP	1.0 gm/l	98ºC	30 minutes	
Soaping	Setawash STP	0.5 gm/l	98ºC	20 minutes	
Softening	Acetic Acid	0.4 gm/l	45ºC	30 minutes	
	Sapamine CSN	0.9gm/l			

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Dyeing Process & Recipe

Fabric composition	100% Polyester S/Jersey
Color	White

Process	Name of the Dyes & Chemicals	Dosages	Temperature	Duration	Remarks
Pre-treatment	Argapep LFD conc	0.8 gm/l	90ºC	30 minutes	
Dyeing	RLA-37	0.8gm/l	120ºC	30 minutes	
	Argaphor PE-2B	0.120%			
Hot Wash			80ºC	20 minutes	
Neutralization	Acetic Acid	1.0 gm/l	60ºC	30 minutes	
Softening	Acetic Acid	0.4 gm/l	45ºC	30 minutes	
	Sapamine KL NEW	0.8 gm/l			

Sonargaon University (SU)

Dyeing Process & Recipe

Fabric composition	100% Polyester S/Jersey
Color	Black

Process	Name of the Dyes & Chemicals	Dosages	Temperature	Duration	Remarks
Pre-treatment	Argapep LFD conc	0.6 gm/l	80ºC	30 minutes	
Dyeing	Acetic Acid	0.8 gm/l	130ºC	45 minutes	
	RLA-37	0.6gm/l			
	Artilon G/Yellow SW-RW	0.4 %			
	Artilon Rubine SW-4B	0.30 %			
	Artilon Black SW-VIP 01 300%	3.4%			
Reduction & Cleaning.	Caustic Soda	2.0 gm/l	80ºC	30minutes	
	Sodium Hydro Sulphide	2.0 gm/l			
Neutralization	Acetic Acid	1.0 gm/l	60ºC	30 minutes	
Softening	Acetic Acid	0.4 gm/l	45ºC	30 minutes	
	Sapamine CSN	0.8 gm/l			

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CHAPTER: 05

Dye Finishing

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5.1- Objects of Finishing:

1. To improve the attractiveness of the fabric.
2. To increase the life time or durability of the fabric.
3. To meet up specific requirement of the fabric for achieve the final goal.

5.2- Process Sequence of Finishing Machine:

Tubular Fabric:

De-Watering m/c
↓
Dryer
↓
Tubular Compactor

Open Fabric:

Hydro-Extractor m/c
↓
Slitter
↓
Dryer
↓
Stenter
↓
Open Compactor

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Technical Parameter of Finishing Machineries

5.3- De-Watering m/c:

Technical Parameter:

Manufacture	Corino,Italy
Fabric Passing Speed	Depends on Count & GSM For low GSM fabric : 60-65 m/min. For medium GSM fabric : 55-58 m/min. For high GSM fabric : 50-52 m/min.
Overfeed Regions	J-box, Before Padder 1 & Padder 2
Pressure in Padder	Padder 1 : (4-5) bar Padder 2 : (3.5-4) bar
Types of Softener Used	Cationic Softener pH : (4.5-5) Concentration of Softener : 10g/l Bath is Changed after every 100 kg fabric.
Dia of Shaper	Max. : 52 inches Mini. : 18 inches
Water Recovery	(140-150) %
Power Consumed	400 v , 50 Hz

Function:

- To remove the excess water inherited by the fabric during Dyeing.
- To Clean any Unnecessary dirt or hairs of fibers.
- To soften the fabric if required by using softening agent.

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5.4- Dryer:

Technical Parameters :

Manufacture	DILMENLER,Turkey
Temperature	For Colored fabric : Chamber 1 :140^0 C Chamber 2 :150^0 C Chamber 3 :130^0 C For White fabric : All Chamber : 120^0 C
Working Width	3000 mm
Speed	(8-80) m/min.
Nozzle distance	(35-55) mm
Power Consumption	140 w

Function:

- To dry the wet fabric.
- Control the shade & GSM slightly.

5.5- Tubular Compactor:

Technical Parameters:

Manufacture	TUBETEX,USA
Speed of passing fabric	(22-40) m/min.
Shaper length	According to required Dia
Overfeed ratio	Edge drive zone : (1.0 -1.5) Retard roller : (0.80 – 0.85) Take-out zone : (0.85 - .90) Conveyer belt : (1.0 -1.05) Plaiter : (0.80 – 0.85)
Compaction%	According to Shirnkage result

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	S/J : (10-15)% Rib : (10-12)% Interlock : (8-10)% Pique : (7-8)%
Shoe Pressure	S/J –large dia : avg. 30 psi S/J –smaller dia: (10-15)psi Rib : (10-20) psi Lycra : < 10 psi
Power Consumed	80 Kw
Thermo-Oil Temp.	90^0 C

Function :

- To control Dimensional stability of fabric.
- To control GSM of fabric.
- To make shiny effect on fabric surface

.

5.6- Slitter machine

Technical Parameter :

Manufacture	BIANCO,ITALY DILMENLER,TURKEY
Speed	Varies with type of fabric
Overfeed	In feed zone,Cutting zone, Conveyor belt (20-30)%
Pressure	In De-twister zone:0.5 bar

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	In Padding: (4-5) bar

Function:

- To Slit-cut the tubular fabric through the needle mark.
- To remove excess water.
- To prepare the fabric for next operation.

5.7- Open Width Compactor:

Technical Parameters:

Manufacture	LAFER,ITALY
Max. line speed	60 m/min.
Usable line speed	30 m/min.
Max. Dia	95 inch
Workable Dia	90 inch
Steam box Temp.	80^0 C
Feed R/L Temp.	105^0 C
Over feed	Upto 50%
Shoe pressure	Max. : 18 Mini. : 5

Function:

- To compact the fabric.
- To control the shrinkage.
- To maintain proper width & GSM.

Condition:

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- **Deep shade & Yellowish:** Temperature , Pressure should low but Stream should high.
- **Light shade:** Temperature , Stream should high but Pressure low.
- **GSM:** High Stream is increase GSM.

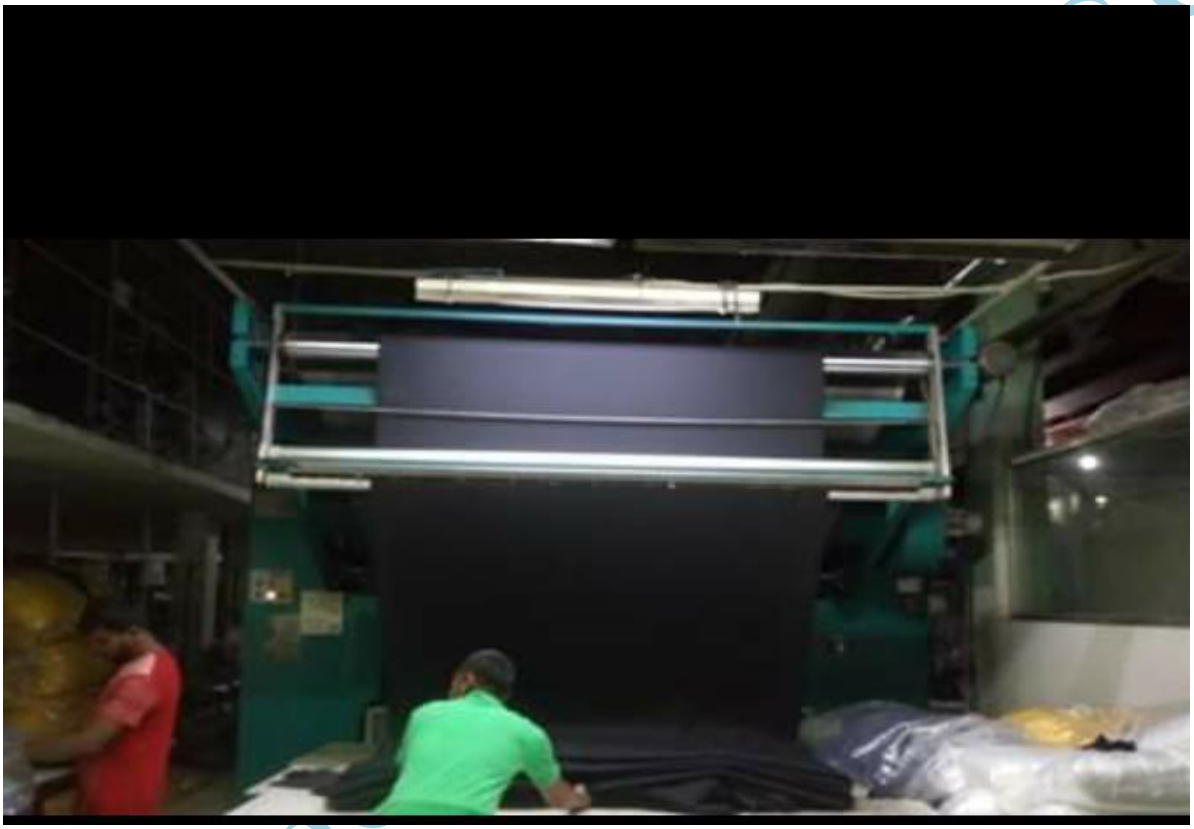


Figure : Open Width Compactor

Sonargaon University

CHAPTER: 06

Quality Assurance System

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6.1- Objective of quality control:

- Research.
- Selection of raw materials.
- Process control.
- Process development.
- Product testing.
- Specification test

6.2- Quality management system:

Off line test	On line test
✦ Physical test ✦ Chemical test	✦ Rubbing fastness ✦ Water fastness ✦ Wash fastness ✦ Shade check
Physical test	**Chemical test**
✦ Abrasion test ✦ Rubbing test ✦ Dimension stability check	✦ Colour fastness to light ✦ Colour fastness to washing ✦ Colour fastness to Perspiration ✦ Colour fastness to heat

6.3- Quality standard:

Basically Fakir Apparels Ltd.. follows ISO standard but the quality standard basicallydepend on the buyer choice.

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CHAPTER: 07

Store and Inventory Control

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7.1- Inventory control:

There are TWO types of Inventory Control System Fakir Apparels Ltd.

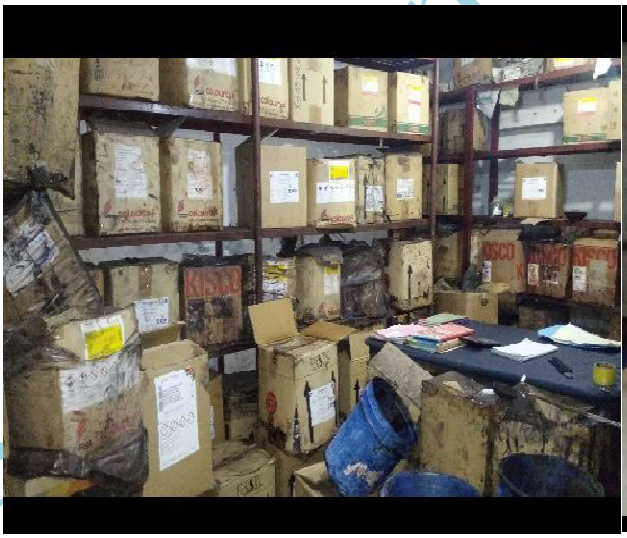
- Monthly inventory control
- Annual inventory control

7.2- Types of inventory carried in this mill is as follows:

- Grey fabric: Prepared in this factory
- Dyes and chemicals: Imported
- Machines parts: Imported
- Packing materials: Imported

7.3- Inventory system of Raw materials:

- Basically Dyes and chemicals are stored to separate store.
- Grey fabric is stored to the grey store after prepare the fabric from knitting.





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CHAPTER: 08

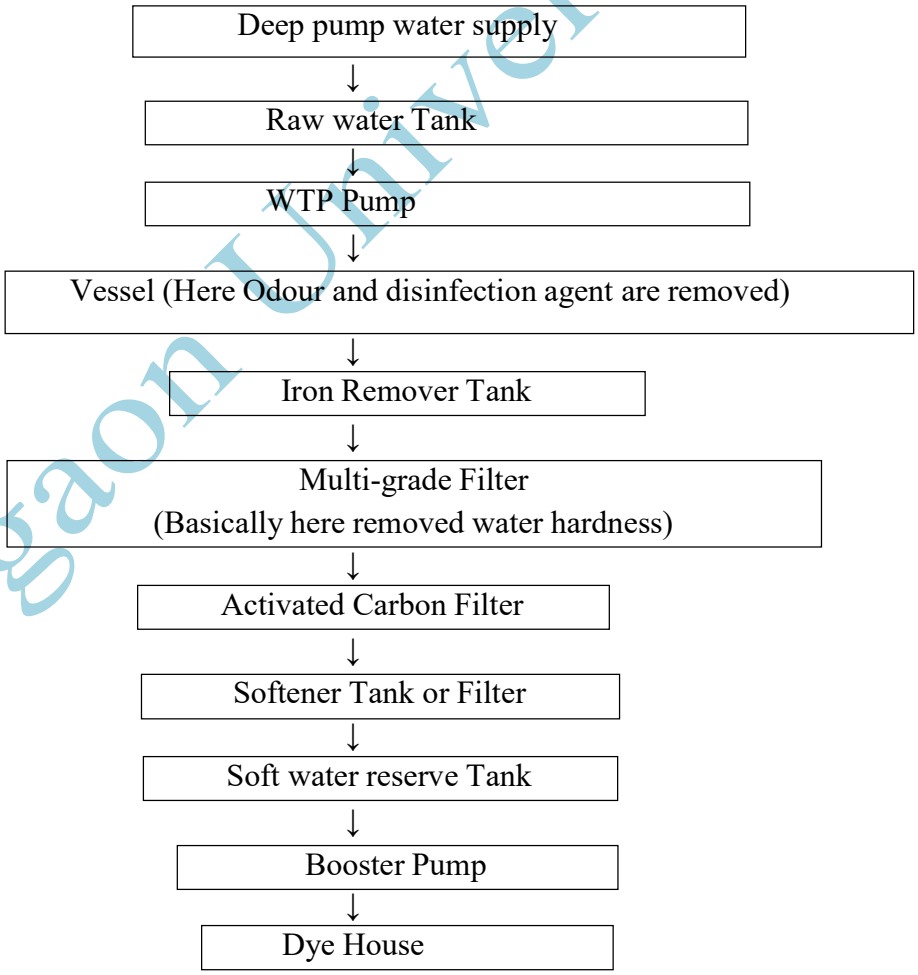
WTP (Water treatment plant)

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8.1- Water treatment plant (WTP):

Water treatment plant is the plant where ground water is collected by textile industries and remove the water impurities for textile dyeing process. Water treatment plant is very important because without proper water treatment (that means removing all impurities from water) textile dyeing will not occurs properly. For this WTP is very essential for every textile wet processing industry.

8.2- Process of WTP at Fakir Apparels Ltd.



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8.3- Chemical List & Function:

Chemical Name	Function
Common Salt (NaCl)	Resin Generation
Sodium Hypo-Choloride	It used for odour removal ,water disinfection agent.
Hydro-Choloric Acid	pH Control

8.4- Water Management:

Fakir Apparels Ltd. are trying to reduce dependency on underground water by deloping –

- ➔ Rain water harvesting plant.
- ➔ Re use m/c cooling water & Steam condensate.
- ➔ Establishing the control on water consumption in Process.
- ➔ Re use of wash & surface water.

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Figure: Water Treatment Plane

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CHAPTER: 09

ETP (Effluent treatment plant)

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9.1- Effluent treatment plant (ETP):

ETP (Effluent Treatment Plant) is a process design for treating the industrial waste water for its reuse or safe disposal to the environment. Now a days effluent treatment plant is very necessary for all textile industry. Because without ETP the pollutate water dispose to the environment that's why the environment become pollutate by this polluted water

9.2- Types of ETP:

- Chemical ETP
- Bio-chemical ETP
- Biological ETP

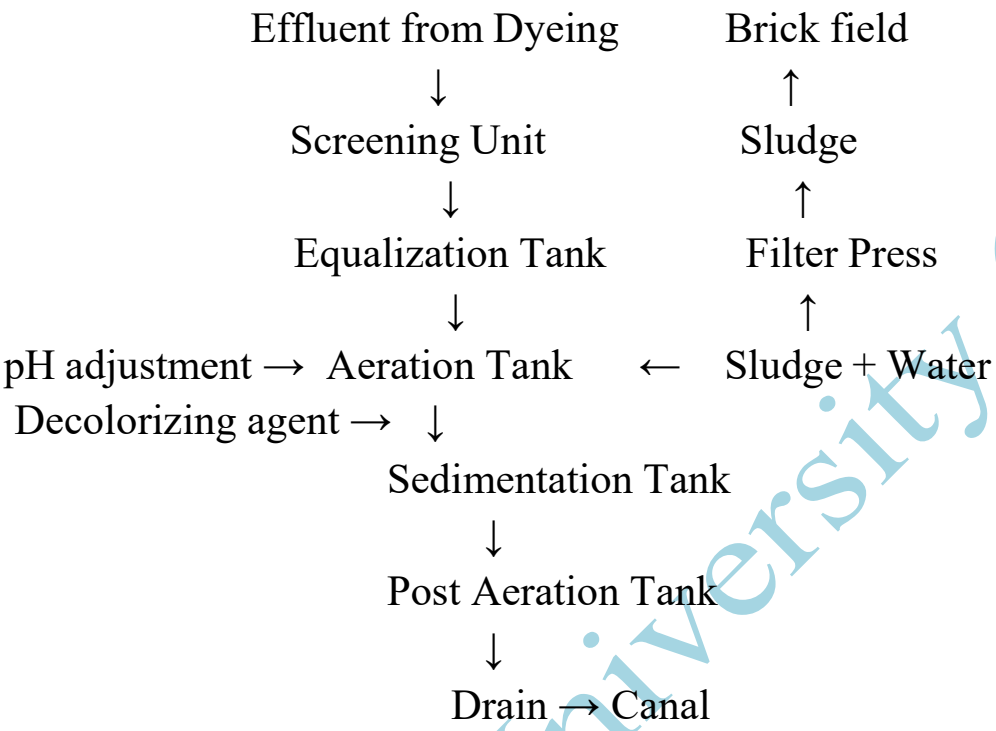
9.3- Biological ETP: Biological ETP is the process where the waste water is treated by using micro-organism (mostly use bacteria). In biological ETP plant the bacteria remove or reduce the concentration of organic or inorganic compound.

The basic units needed for biological treatment are:

1. Screening;
2. An equalization unit;
3. A pH control unit;
4. An aeration unit; and
5. A settling unit.

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9.4- Process of Biological ETP



9.5- Chemical List & Function:

Chemical Name & Micro-Organism	**Function**
Acetic acid	It control the pH.
De-Coloration	It remove the color from Waste water.
Urea	It used for food of Bacteria.
Bacteria	It remove or reduce the concentration of Organic & Inorganic compounds.

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Figure : Screening Unit

Sonara (SU)

CHAPTER: 10

Maintenance

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10.1- Maintenance:

The technical meaning of maintenance involves functional checks, servicing, repairing or replacing of necessary devices, equipment, machinery and supporting utilities in industrial installations. In engineering, we use this terminology for maintaining smooth and uninterrupted performance of machines, tools and metallurgical characteristics in practical uses.

10.2- Objectives:

- To keep plant, machines, tools ready for proper operations.
- To ensure proper production & proper safety.

10.3- Maintenance Tools & Equipment's:

Tools & Equipment's Name	Function
Combination tools / spanner	Tightening & loosening of nuts & bolts.
Slide Range	Tightening & loosening of nuts & bolts.
Pipe threat cutting tools	To cut the threat in pipe.
Hole punch	Punching the hole.
Heavy scissor	Cutting steel sheet.
Drill machine	For drilling.
Grinding M/C	For grinding & cutting of steel.
Welding M/C	For welding.
Hammer	For right angling.

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CHAPTER: 11

Cost

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11.1- Costing of the product:

Costing system mainly describes how much cost of the final product is fixed by the company/beneficial. According to buyer/customers requirement at first grey fabric is prepared from knitting section. Then calculated how much dyestuff and chemical is required to the end of the processing of that specific fabric .After that, the final cost is fixed including some profit. Then the unit price is offered to the buyer for approves it.

11.2- Costing of the product is done by the consideration of the following factors:

- Amount raw materials consumed.
- Direct Labour
- Indirect Labour
- Factory Cost
- Officer and administrative cost
- Sales and distribution cost
- Profit, etc.

N.B: Costing is the secret matter of this factory. They are not interested to share any data about costing of this factory.

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CHAPTER: 12

Utility Support

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Utility Support

Fakir Apparels Ltd.has a strong backup of utility support.

12.1- List of Machineries:

Names	Origin	Brand	Unit
Generator 900 & 500 KW	USA	Waukesha	01 Sets
Boiler (6.7 Tons)	USA	COCHRAN	01 Sets
Compressor 60 V ; Motor Capacity 45 KW	Belgium	Air Roll	01 Sets
Generator 500 KBAR	UK	Perkins	01 Sets
Condense Water Recovery System	INDIA	FORBES MARSHALL	01 Sets

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CHAPTER: 13

Compliance

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13.1- Compliance Issue:

Compliance means comply something i.e. yield to the wishes another. The main aim of compliance is to ensuring the all labor rights and facilities according to buyer code of conduct.

13.2- Different compliance issues which they are obeyed:

<table>
<tr>
<td><u>Admin & HR dept.:</u>

❖ Personnel policies:
✓ Recruitment policy
✓ Leave and holiday policy

❖ Attendance and leave register card:
✓ Their weekly working hour not more than 66 hours including overtime in a week.
✓ They have the approved manpower list.</td>
<td>Health & hygiene:
✓ First aid ensures.
✓ Medicine registers.
✓ Maternity and pregnancy register.
✓ Pure drinking water

Safety:
✓ Safety committee
✓ Fire-fighting committee
✓ Rescue committee
✓ Broken needle register
✓ Needle detector
✓ Fire alarm & switch
✓ Evacuation plan
✓ Rubber mats to every iron man.

Welfare:
✓ Welfare committee
✓ Day care center
✓ Canteen facility</td>
</tr>
</table>

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Chapter: 14

Impact of Internship

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14.1- Impact of Internship:

By means of the practical knowledge it's possible to apply the theoretical knowledge in the practical field. For any technical education practical experience is almost equally important in association with the theoretical knowledge.

The industrial attachment is the process which builds understanding skill and attitude of the performer, which improves his knowledge in boosting productivity and services. University education provides us vast theoretical knowledge as well as more practical attachment, despite all these industrial attachment help us to be familiar with the technical support of modern machinery, skillful about various operation stages.

It also provides us sufficient practical knowledge about production management, Productivity evaluation, work study, efficiency, industrial management, production planning & control, production cost analysis, inventory management, purchasing, utility & maintenance of machinery and their operation techniques etc. the above mentioned can not be achieved successfully by means of theoretical knowledge only. This is why it should be accomplished with practical knowledge in which it is based on industrial attachment makes us reliable to be accustomed with the industrial atmosphere & improve courage & inspiration to take self-responsibility.

We have prepared this report as required in completion of our attachment course in regarding guideline given by the University's authority which will lead to a strong guideline & milestone for our future carrier.

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CHAPTER: 15

Conclusion

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15.1- Conclusion:

Industrial attachment program send us to the expected destiny of practical life. Through The completion of Two Month industrial attachment at Fakir Apparels Ltd. We have got the impression that the factory is one of the most knit dyeing projects in Bangladesh. It has earned very good reputation for its best performance knit dyeing project. During our industrial attachment program we had tried to our best to done our duty. Our supervising officer also satisfied to us & offer co-operation in every steps. It is completely a new experience in our life, which will be very effective in our service life. During our training period we realized that practical experience is valuable for service life.

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