“A PRACTICAL ANALYSIS OF YARN DYEING FAULTS IN DYEING PRODUCTION & THEIR REMEDIES”

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PROJECT WORK TITLE: A PRACTICAL ANALYSIS OF YARN DYEING FAULTS IN DYEING PRODUCTION & THEIR REMEDIES.

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Submitted to the

DEPARTMENT OF TEXTILE ENGINEERING
SONARGAON UNIVERSITY (SU), DHAKA.

This report presented in partial fulfillment of the requirements for the degree of BACHELOR OF SCIENCE IN TEXTILE ENGINEERING.

FEBRUARY 2022

In The Name of Almighty Allah

Letter of Transmittal

Date:

To
Md. Juel Sarker
Asst. Coordinator & Lecturer
Department of Textile Engineering
Sonargaon University (SU), Dhaka.

Subject: Letter regarding the submission the "A practical analysis of yarn dyeing faults in dyeing production & their remedies".

Dear Sir,
With due respect, we are the student of Textile Engineering, Son argaon University (SU) Dhaka have successfully completed Project Work. WE are submitting our Project Work as part of my B.Sc. in Textile Engineering Degree requirement that bears three (03) credit hours under your supervision. We are submitting this report for academic purpose only.
Please be kind enough to evaluate this dissertation with your valued suggestions.

Sincerely Authors,

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APPROVAL SHEET

This research entitled the "**A Practical Analysis of Yarn Dyeing Faults in Dyeing Production & Their Remedies''** at Sonargaon University (SU), Dhaka. Spring 2021, prepared and submitted by **Md. Ferdous Hossain (Tex1803015042), Md. Sujon Ahmmed (Tex1803015004), Nakib khairul alom (Tex1803015036), A.K.M.Mafiuzzaman Mridul (Tex1803015049) & Md. Shahriar Hossain (Tex1803015007)** in partial fulfillment of the requirement for the degree of Bachelor of Science in Textile Engineering has been examined and hereby recommended for approval and acceptance.

Md. Juel Sarker

Asst. Coordinator & Lecturer

Supervisor

Department of Textile Engineering

Sonargaon University (SU), Dhaka.

ACKNOWLEDGEMENTS

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Abstract

There are various types of faults that occur during dyeing. Yarn dyeing faults are very Common in textile industry. The authors tried to focus on different types of yarn dyeing faults. The authors divided it into the pretreatment faults, dyeing faults, finishing faults. The authors collected all physical samples of faults. The authors have studied the effects of yarn dyeing faults, causes and possible remedies of all faults. The authors discuss some yarn dyeing faults found in one Industry and analyzed some possible remedies. It is always found that 30% problem of Dyeing are attributed to poor treatment of the yarn. Hence it becomes necessary to give Emphasis right pretreatment to ultimate dyeing steps to achieve best quality dyed Products.

CHAPTER -01

INTRODUCTION

1.1 INTRODUCTION

Yarn dyeing is used Yarn Dyeing is the dyeing of the yarns before they have been woven or knitted into fabrics. To create interesting checks, stripes and plaids with different-colored yarns in the weaving process. In yarn dyeing, dyestuff penetrates the fibers in the core of the yarn. There are many forms of Yarn dyeing: Screen (Hank) dyeing, package dyeing, warp-beam dyeing, and screen dyeing. Screen dyeing consists of immersing large, loosely wound hanks (skeins) of yarn into dye vats that are especially designed for this purpose. Soft, lofty yarns, such as hand knitted yarns are usually skein dyed. Skein dyeing is the most costly yarn-dye method.

In package dyeing the yarn is wound on a small perforated spool or tube called a package. Many spools fit into the dyeing machine in which the flow of the dye bath alternates from the center to the outside, and then from the outside to the center of the package. Package dyed yarns do not retain the softness and loftiness that skein-dyed yarns do. They are however satisfactory and very widely used for most types of yarns that are found in knitted and woven fabrics.

Beam dyeing is the much larger version of package dyeing. An entire warp beam is wound on to a perforated cylinder, which is then placed in the beam dyeing machine, where the flow of the dye bath alternate as in the package dyeing. Beam dyeing is more economical than skein or package dyeing, but it is only used in the manufacture of woven fabrics where an entire warp beam is dyed. Knitted fabrics, which are mostly produced from the cones of the yarn, are not adaptable to beam dyeing.

The dyeing of cloth after it is being woven or knitted is known as piece dyeing. It is the most common method of dyeing used. The various methods used for this type of dyeing include jet dyeing. Jig dyeing, pad dyeing and beam dyeing.

Garments dyeing are one part of dyeing the dyeing of the completed garments. The types of apparel that can be dyed are mostly non-tailored and simpler forms, such as sweaters, sweatshirts, T-shirts, hosiery, and pantyhose. The effect on sizing, thread, zippers, trims and snaps must be considered. Tailored items, such as suits or dresses, cannot be dyed as Garments because the Difference in Screen of the various components and linings and Misshape the Article.

Garments is done by placing a Suitable Number of Garments (usually about 24 sweaters or the equivalent, depending on the weight) into large nylon net bag. The garments are loosely packed. From 10 to 50 of the bags are placed in large tubs containing the dye bath and kept agitated by a motor – driven paddle in the dye tub. The machine is appropriately called a paddle dryer.

Yarn dyeing is a special type of dyeing process. This Dyeing process is slightly difference from woven or knit dyeing. Dyed yarns are used for making stripe knit or woven fabrics or solid dyed yarn fabric or in sweater manufacturing. Yarn can dye in two form, package or hank form. Flowchart of yarn dyeing can be divided into three stages. Preparatory process, Dyeing and After-treatment process. We are use in yarn special Cotton, Polyester, Viscos, Thread yarn, Jute yarn, Filament, 100% Modal yarn, Etc.

There are various types of faults that occur during dyeing. Yarn dyeing faults are very common in textile industry. We tried to focus on different types of yarn dyeing faults.

We divided it into the pretreatment faults, dyeing faults, finishing faults. We collected all physical samples of faults. We have studied the effects of yarn dyeing faults, causes and possible remedies of all faults. We discuss some yarn dyeing faults found in one industry and analyzed some possible remedies. It is always found that 70% problem of dyeing are attributed to poor treatment of the yarn. Hence it becomes necessary to give emphasis right pretreatment to ultimate dyeing steps to achieve best quality dyed products.

1.2 Objectives of project work

- To learn about Yarn dyeing process.
- To know about Yarn dyeing production.
- To know different of Yarn dyeing faults.
- To explore some Yarn dyeing process in different parameter.
- To know different types of yarn dyeing fault & There Remedies.
- To different types of Yarn dyeing machine.

CHAPTER -02

LITERATURE REVIEW

2.1 LITERATURE REVIEW

Common Yarn dyeing defects/faults, causes of Yarn dyeing defect. They published some faults and there causes and give the remedies.
Study on Yarn dyeing defects & faults and Find out there causes and given there remedies.

Faults, causes and remedies of Yarn dyeing. In their project, they give some actual fault found in yarn dyeing. They use some problem and show that way.
Study on yarn dyeing faults and their remedies named project found many types of faults. Give appropriate causes and their remedies.

2.2 History Yarn dyeing Machine:

There have been great advances in the machines used for the dyeing of yarn since they were introduced over a century ago. In this first instalment, Joseph Gaunt traces the history of hank and cop dyeing. In the next issue, further types of package dyeing and drying will be explored.
GALVANIN produces yarn dyeing equipment both vertical and horizontal type from laboratory size 1 bobbin up to 3000kg single. All Galvanin machines are working with a special system to reduce the liquor ratio up to 1:4 and to save water chemical and energy consumption. Galvanin dyeing machine.
The idea of dyeing yarns dates back to Neolithic times, some 5000 years ago on the continent of Asia. China has been using dyes generated from plants, minerals, and insects for at least
This far back in time. Until the mid-1800s, yarns were "package dyed" (individual cones of yarn were dyed prior to weaving into fabric).
In 1849, a new process of dyeing fabrics began in Lyon, a city in France. This process involved "piece dyeing" where a plain white or light colored fabric is woven and then dipped In to a dye bath, and then allowed to cure before being washed and dried.

2.3 Specification of yarn dyeing machine

Table. 2.3.1 Specification of yarn dyeing Machine

Company name	OBEAM, GALVANIN, PONCED.HANKS.
Brand Name	ITALLY
Serial no	72276-0513
Manufacturing year	2010
Temperature range	135-150
Production capacity	8 ton/day
Speed range	15-40 m/min
Use utility	Gas, Electricity, steam, compress air
No. of chamber	31
Steam pressure	3 bar
Air pressure	3.2 bar
M/C parts	Loading career, main motor , Dossing motor, ST tank , steam line, Nozzle, air fan, suction fan, and delivery roller.

2.4 Working procedure of Yarn dyeing machine

Soft winding

↓

Batching

↓

Dyeing

↓

Washing

↓

Finishing

↓

Hydro

↓

Dryer

↓

Coning

↓

Packing

↓

Delivery

2.5 Different parts and zone of yarn dyeing machine

Galvanin machine GALVANIN is active in hanks yarn dyeing, with the production of automated lines with dyeing machines, centrifuge or squeezers and low energy hot air dryer.

Figure. 2.5.1 Front zone

Figure. 2.5.2 Side zone

Figure. 2.5.3 Batching

Galvanin machine the use of squeezing system, a loading robot and a low ventilation dryer with control of final residual humidity, Galvanin hanks machines allow an exceptional working flexibility, obtaining high quality hanks and facilitating working operation. Most and contaminated air. Motor is supply the all revolution force.

Figure. 2.5.4 Motor

CHAPTER -03

MATERIALS AND METHODS

3.1 Materials

Following materials are used for this project work:

- Cotton
- Viscose
- Polyester
- Nylon
- CVC
- PC
- 100% Modal
- Siro inject etc.
- Reactive dye
- Disperse dye
- Caustic soda
- Hydroz
- Avolon IS
- Soda ash.
- Finishing agent (Lustraffing SL)
- Fixing agent(RRE win ACP)
- H2o2
- Stabilizer

3.2 Textile finishing chemicals

Table no 3.1: Finishing chemical

Chemical name	Supplier name	Country
Lustraffing SA 88 Softener	German CHT	Germany
RE WIN ACP	German CHT	Germany
ECO	DYE Star	Taiwan
Lustraffing SL	German CHT	Germany

3.3 Working Procedure

For cotton dyeing:

Batch loaded
↓
Demineralization (50˚C, 20 min; PH=4.5)
↓
Scouring & bleaching (100˚C×40 min.)
↓
Drain
↓
Rinse
↓
Drain
↓
Neutralization with acid (50°C ×20 min)
↓
Hot Wash with peroxide killer (60˚C,20 min.)
↓
Drain
↓
Leveling agent & Salt (60° × 20 min; PH=6)
↓
Color dosing (60°C×20 min.)
↓
Run time = 10 min. (60°C)
↓
Color migration (80°C × 20 min.)

↓

Cooling (60°C)

↓

Level Check

↓

Soda dosing (60°C×30 min.)

↓

Dyeing run (Dark-60°C×60 min;Medium-60°C×40 min;Light-60°C×30 min)

↓

Dyeing sample check

↓

(If Ok)

↓

Drain

↓

Rinse (with cold Water)

↓

Neutralization after dyeing (50°C×20 min.)

↓

Drain

↓

Soaping (Hot wash)

↓

Drain

↓

Rinse

↓

Add finishing chemical(60°C×20 min)

↓

Drain

↓

Unload

Polyester dyeing:

Batch loaded

↓

Leveling (60˚C×10 min)

↓

Color dosing (70˚C×10 min)

↓

Run time (100˚C×50 min)

↓

Dyeing sample

↓

If ok (Drain)

Working Procedure:

Collecting the sample from bulk and then conditioning for 04.30 to 06 hours

↓

making a specimen of 04 cm*10 cm in size.

↓

sewing the specimen with multi-fiber fabric of same size at one corner.

↓

making the solution of 4gm/liter ECE detergent & 1 gm/liter sodium per borate, (If required SKFL use 0.15 gm/liter TAED).

↓

putting the specimen with multi-fiber fabric into the solution in Rota wash m/c Prong. C2S Temp.: 60^{O}C/ 40^{O}C Time: 30 min Still ball: 25 pcs

↓

rinsing with hot water respectively.

↓

squeezing with cold water of the sample is done (Hand Wash).

↓

then drying is done at a temperature in the air not exceeding 60^{O}C

↓

the stitching is then broken out except on one of the shorter end.

↓

Measuring the staining and color change by grey scale & make a test report

Instruments:

- Rot wash / Gyro wash
- Stainless Still Ball
- Multi-fiber fabric
- Grey scale
- Sewing machine
- Thermometer
- Color matching cabinet

Recipe:

- Sodium Per borate…...1 gm/liter
- ECE Phosphate……4 gm/liter

Sample Preparation:

- Sample Yarn…….10 cm*4 cm
- Multi fiber fabric……10 cm*4 cm

For ISO 105 C06 A2S:

- Total solution (changeable) …150 ml
- Stainless Still Ball……10 (for hitting)
- Time……40 min
- Temperature……40^0C

3.4 Production Report

Order Date	Buyer	DFF Color	Order Quantity	Item Description	Remark
1-Sep-21	C&A	ECO-31783	200kg	24/1 Cotton 100% Single Part	Dyeing OK
1-Sep-21	C&A	ECO-17273	17kg	24/1 Cotton 100% Single Part	Dyeing OK
1-Sep-21	C&A	ECO-31782	289kg	24/1 Cotton 100% Single Part	Dyeing OK
2-Sep-21	GEORGE	SACHET PINK 15-2216 TCX 10530	289kg	24/1 Cotton 100% Single Part	Dyeing OK
2-Sep-21	GEORGE	SACHET PINK 15-2216 TCX 10530	81kg	24/1 Cotton 100% Single Part	Dyeing OK
2-Sep-21	GEORGE	Lilac Snow 13-3405 TCX – 12351	425kg	24/1 Cotton 100% Single Part	Uneven dyeing
3-Sep-21	GEORGE	BALLERINA 13-2807 TCX – 11073	550kg	24/1 Cotton 100% Single Part	Dyeing OK
3-Sep-21	GEORGE	LILAC SACHET 14-2710 TCX – 17768	625kg	24/1 Cotton 100% Single Part	Dyeing OK
3-Sep-21	GEORGE	EVENING SAND 14-1311 TCX 26224	245kg	24/1 Cotton 100% Single Part	Dyeing OK
4-Sep-21	GEORGE	POWDER PINK 14-1511 TCX 18039	445kg	24/1 Cotton 100% Single Part	Dyeing OK
4-Sep-21	GEORGE	Blushing Bride 12-1310 TCX 11831	1458kg	30/1 Cotton 100% Single Part	Dyeing OK
4-Sep-21	GEORGE	BALLERINA 13-2807 TCX - 11073	2215kg	30/1 Cotton 100% Single Part	Fastness Not OK

5-Sep-21	GEORGE	Vanilla Ice 11-0104TCX 21022	552kg	26/1 Cotton 100% Single Part	Dyeing OK
5-Sep-21	GEORGE	BLUE GLASS 12-5206 TCX - 15281	2458kg	26/1 Cotton 100% Single Part	Dyeing OK
5-Sep-21	GEORGE	LOBSTER BISQUE 16-1520 TCX 20182	457kg	26/1 Cotton 100% Single Part	Dyeing OK
6-Sep-21	GEORGE	Sheer Lilac 16-3617 TCX - 32672	1145kg	26/1 Cotton 100% Single Part	Dyeing OK
6-Sep-21	GEORGE	Vanilla Ice 11-0104TCX 21022	657kg	26/1 Cotton 100% Single Part	Damage yarn
7-Sep-21	GEORGE	BRIGHT WHITE 11-0601 TCX - 15003	951kg	26/1 Cotton 100% Single Part	Dyeing OK
7-Sep-21	GEORGE	Sheer Lilac 16-3617 TCX - 32672	321kg	22/1 Cotton 100% Single Part	Dyeing OK
8-Sep-21	GEORGE	ORCHID PETAL 14-3710 TCX - 24556	652kg	26/1 Cotton 100% Single Part	Dyeing OK
8-Sep-21	GEORGE	EVENING SAND 14-1311 TCX - 26224	751kg	26/1 Cotton 100% Single Part	Dyeing OK
9-Sep-21	GEORGE	Zen Blue 14-3912TCX 11823	1425kg	26/1 Melange 8% Single Part	Dyeing OK
9-Sep-21	GEORGE	Lilac Snow 13-3405 TCX - 12351	985kg	28/1 Cotton 100% Single Part	Dyeing OK
10-Sep-21	GEORGE	LILAC SACHET 14-2710 TCX - 17768	425kg	28/1 Cotton 100% Single Part	Dyeing OK
10-Sep-21	GEORGE	ORCHID PETAL 14-3710 TCX - 24556	624kg	22/1 Cotton 100% Single Part	Uneven dyeing
11-Sep-21	GEORGE	ICY MORN 13-5306 TCX 25218	1785kg	150D Polyester Filament HIM 100% F	Dyeing OK
11-Sep-21	GEORGE	Zen Blue 14-3912TCX 11823	452kg	34/1 Cotton 100% Single Part	Dyeing OK

12-Sep-21	GEORGE	Blushing Bride 12-1310 TCX 11831	715kg	32/1 Cotton 100% Single Part	Dyeing OK
12-Sep-21	GEORGE	LOBSTER BISQUE 16-1520 TCX 20182	421kg	24/1 Polyester Cotton (50%+50%) Single Part	Dyeing OK
13-Sep-21	GEORGE	BRIGHT WHITE 11-0601 TCX - 15003	956kg	24/1 Polyester Cotton (50%+50%) Single Part	Package to package shade variation
13-Sep-21	GEORGE	BLUE GLASS 12-5206 TCX - 15281	1421kg	32/1 Cotton 100% Single Part	Dyeing OK
14-Sep-21	GEORGE	ICY MORN 13-5306 TCX 25218	120kg	32/1 Cotton 100% Single Part	Dyeing OK
14-Sep-21	GEORGE	POWDER PINK 14-1511 TCX 18039	462kg	32/1 Cotton 100% Single Part	Dyeing OK
15-Sep-21	BESTSELLER	CASHMERE BLUE	2754kg	32/1 Cotton 100% Single Part	Dyeing OK
16-Sep-21	BESTSELLER	PARFAIT PINK	250kg	32/1 Cotton 100% Single Part	Dyeing OK
17-Sep-21	H&M	Grey Dark- (07-312)- 30752	165kg	30/1 Cotton 100% Single Part	Dyeing OK
18-Sep-21	H&M	Grey Dark- (07-312)- 30752	1599kg	30/1 Cotton 100% Single Part	Dyeing OK
18-Sep-21	BESTSELLER	KALAMATA	7045kg	26/1 Cotton 100% Single Part	Uneven dyeing
19-Sep-21	BESTSELLER	PUMICE STONE	806kg	28/1 CVC (60%40%) Single Part	Dyeing OK
19-Sep-21	BESTSELLER	SUGAR CORAL	2001kg	28/1 Cotton 100% Single Part	Dyeing OK
20-Sep-21	BESTSELLER	EVENTIDE	2001kg	28/1 Cotton 100% Single Part	Dyeing OK
20-Sep-21	BESTSELLER	MERMAID	1305kg	28/1 Cotton 100% Single Part	Dyeing OK

21-Sep-21	PRIMARK	G9760	2004kg	28/1 Cotton 100% Single Part	Dyeing OK
21-Sep-21	PRIMARK	G9760	706kg	28/1 Cotton 100% Single Part	Dyeing OK
22-Sep-21	PRIMARK	G9760	2000kg	30/3 Cotton 100% Single Part	Color spot
22-Sep-21	PRIMARK	G9760	2000kg	30/3 Cotton 100% Single Part	Dyeing OK
23-Sep-21	H&M	32890	2512kg	30/3 Cotton 100% Single Part	Dyeing OK
23-Sep-21	GEORGE	DYWHT-CO0106	106kg	30/3 Cotton 100% Single Part	Dyeing OK
24-Sep-21	GEORGE	WHITE	152kg	30/3 Cotton 100% Single Part	Dyeing OK
24-Sep-21	TEMA	RED CHECKED-LPA -11338	486kg	150D Polyester Filament NIM 100% F	Dyeing OK
25-Sep-21	H&M	32890	941kg	150D Polyester Filament NIM 100% F	Dyeing OK
25-Sep-21	TEMA	BLACK CHECKEDLKS -13626	489kg	150D Polyester Filament NIM 100% F	Damage yarn
26-Sep-21	TEMA	ECRU-R9J -13626	614kg	24/1 CVC (60%40%) Double Part	Dyeing OK
27-Sep-21	TEMA	LIGHT BORDEAUX-HFC -17883	619kg	24/1 CVC (60%40%) Double Part	Dyeing OK
27-Sep-21	JCPENNEY	A3952	34kg	20/1 CVC (60%40%) Double Part	Dyeing OK
28-Sep-21	JCPENNEY	A3182	36kg	20/1 CVC (60%40%) Double Part	Dyeing OK
28-Sep-21	H&M	32890	714kg	20/1 CVC (60%40%) Double Part	Dyeing OK

29-Sep-21	C&A	BLACK IRIS -21355	448kg	20/1 CVC (60%40%) Double Part	Fastness Not OK
29-Sep-21	C&A	SNOW WHITE -13626	175kg	20/1 CVC (60%40%) Double Part	Dyeing OK
30-Sep-21	C&A	MIMOSA -21465	664kg	20/1 CVC (60%40%) Double Part	Dyeing OK
30-Sep-21	C&A	MIMOSA -21465	1744kg	24/1 Melange 5% Single Part	Dyeing OK
1-Oct-21	C&A	MIMOSA -21465	695kg	22/1 Cotton 100% Single Part	Dyeing OK
1-Oct-21	H&M	32890	1675kg	75D Polyester Filament NIM 36 F	Dyeing OK
2-Oct-21	C&A	BLACK IRIS -13695	355kg	75D Polyester Filament NIM 36 F	Package to package shade variation
2-Oct-21	C&A	SNOW WHITE -13626	1944kg	26/1 Cotton 100% Single Part	Dyeing OK
3-Oct-21	GEORGE	BC01	429kg	26/1 Cotton 100% Single Part	Dyeing OK
3-Oct-21	GEORGE	WAX YELLOW	371kg	24/1 Cotton 100% Single Part	Dyeing OK
4-Oct-21	GEORGE	SPUN SUGAR	376kg	24/1 Cotton 100% Single Part	Dyeing OK
4-Oct-21	GEORGE	FAIR AQUA	3745kg	24/1 Cotton 100% Single Part	Dyeing OK
5-Oct-21	GEORGE	LAVENDER FOG	375kg	24/1 Cotton 100% Single Part	Dyeing OK
5-Oct-21	H&M	GREY (07-198) -10326	24kg	22/1 Cotton 100% Single Part	Dyeing OK
6-Oct-21	H&M	GREY (07-198) -10326	429kg	22/1 Cotton 100% Single Part	Dyeing OK

6-Oct-21	H&M	GREEN DARK (89-112) -32953	429kg	30/1 Cotton 100% Single Part (Low Temperature)	Dyeing OK
7-Oct-21	H&M	GREEN DARK (89-112) -32953	24kg	30/1 Cotton 100% Single Part (Low Temperature)	Batch to batch shade variation
7-Oct-21	BESTSELLER	PARFAIT PINK	7045kg	30/1 Cotton 100% Single Part (Low Temperature)	Dyeing OK
8-Oct-21	BESTSELLER	CASHMERE BLUE	704kg	20/1 CVC (60%40%) Double Part	Dyeing OK
8-Oct-21	GEORGE	SACHET PINK	6225kg	28/1 Cotton 100% Single Part	Dyeing OK
9-Oct-21	BESTSELLER	BLACK	1451kg	10/1 Cotton 100% Single Part	Dyeing OK
9-Oct-21	BESTSELLER	CLOUD DANCER	130kg	20/1 Cotton 100% Single Part	Dyeing OK
10-Oct-21	TKO	GREEN-32169	129kg	20/1 Cotton 100% Single Part	Dyeing OK
10-Oct-21	TKO	DARK DENIM-32168	107kg	20/1 Cotton 100% Single Part	Dyeing OK
11-Oct-21	TKO	HONEY BROWN-32166	107kg	32/1 Cotton 100% Single Part	Dyeing OK
11-Oct-21	TKO	STEEL-32167	78kg	32/1 Cotton 100% Single Part	Uneven dyeing
12-Oct-21	TKO	STEEL-32167	526kg	32/1 Cotton 100% Single Part	Dyeing OK
12-Oct-21	TKO	BIRCH-32166	162kg	32/1 Cotton 100% Single Part	Dyeing OK
13-Oct-21	GEORGE	EVENING SAND	238kg	28/1 Cotton 100% Single Part	Dyeing OK
13-Oct-21	GEORGE	LOBSTER BISQUE	319kg	30/1 Cotton 100% Single Part	Dyeing OK

14-Oct-21	GDM	A1712	352kg	34/1 Cotton 100% Single Part	Dyeing OK
14-Oct-21	GDM	A7960	35kg	34/1 Cotton 100% Single Part	Dyeing OK
15-Oct-21	GEORGE	CLOUD DANCER	238kg	34/1 Cotton 100% Single Part	Dyeing OK
15-Oct-21	GDM	A1712	216kg	40/1 Cotton 100% Single Part	Dyeing OK
16-Oct-21	GDM	A7960	105kg	40/1 Cotton 100% Single Part	Color spot
16-Oct-21	BESTSELLER	BLACK	90kg	40/1 Cotton 100% Single Part	Dyeing OK
17-Oct-21	GEORGE	ICY MORN	84kg	40/1 Cotton 100% Single Part	Dyeing OK
17-Oct-21	GEORGE	CLOUD DANCER	168kg	30/3 Cotton 100% Single Part	Dyeing OK
18-Oct-21	GEORGE	LILAC SACHET	168kg	30/3 Cotton 100% Single Part	Dyeing OK
19-Oct-21	GEORGE	BC01	35kg	30/3 Cotton 100% Single Part	Dyeing OK
19-Oct-21	TKO	G7932	118kg	30/3 Cotton 100% Single Part	Dyeing OK
20-Oct-21	TKO	G9760	131kg	22/1 Cotton 100% Single Part	Dyeing OK
21-Oct-21	TKO	G5927	1362kg	22/1 Cotton 100% Single Part	Damage yarn
21-Oct-21	TKO	G8930	171kg	18/1 Cotton 100% (Low Temperature)	Dyeing OK
22-Oct-21	TKO	G8973	118kg	18/1 Cotton 100% (Low Temperature)	Dyeing OK
23-Oct-21	GEORGE	PHLOX PINK	142kg	18/1 Cotton 100% (Low Temperature)	Dyeing OK

23-Oct-21	GEORGE	LAVENDER	716kg	18/1 Cotton 100% (Low Temperature)	Dyeing OK
24-Oct-21	GEORGE	FAIR AQUA	3411kg	18/1 Cotton 100% (Low Temperature)	Dyeing OK
24-Oct-21	GEORGE	LAVENDER FOG	3444kg	40/2 Cotton 100% Single Part (Bio-Degradable)	Dyeing OK
25-Oct-21	GEORGE	WAX YELLOW	34kg	34/1 Cotton 100% Single Part	Dyeing OK
25-Oct-21	GEORGE	SPUN SUGAR	354kg	34/1 Cotton 100% Single Part	Batch to batch shade variation
26-Oct-21	C&A	STAR WHITE - 13626	1766kg	30/3 Cotton 100% Single Part	Dyeing OK
27-Oct-21	C&A	STAR WHITE - 13626	915kg	34/1 Cotton 100% Single Part	Dyeing OK
27-Oct-21	C&A	GRAPE WINE - 31100	1445kg	34/1 Cotton 100% Single Part	Dyeing OK
27-Oct-21	C&A	PEACOAT - 10397	575kg	34/1 Cotton 100% Single Part	Dyeing OK
28-Oct-21	C&A	STAR WHITE - 13626	1174kg	30/3 Cotton 100% Single Part	Dyeing OK
28-Oct-21	C&A	GRAPE WINE - 31100	561kg	30/3 Cotton 100% Single Part	Softener Mark
29-Oct-21	GEORGE	STRAWBERRY PINK	274kg	34/1 Cotton 100% Single Part	Dyeing OK
29-Oct-21	GEORGE	Blue Tint	208kg	34/1 Cotton 100% Single Part	Dyeing OK
30-Oct-21	M&S	21241	112kg	34/1 Cotton 100% Single Part	Dyeing OK
30-Oct-21	M&S	30944	462kg	34/1 Cotton 100% Single Part	Dyeing OK

30-Oct-21	M&S	21241	945kg	30/1 Cotton 100% Single Part	Dyeing OK
31-Oct-21	M&S	30947	651kg	30/1 Cotton 100% Single Part	Wrinkle Mark
31-Oct-21	C&A	ANTHRA - 24739	3445kg	30/1 Cotton 100% Single Part	Dyeing OK
31-Oct-21	C&A	BRIGHT WHITE -15000	1052kg	150D Polyester Filament NIM 100% F	Dyeing OK
1-Nov-21	C&A	BRIGHT WHITE -15000	8545kg	16/1 Cotton 100% Single Part	Dyeing OK
1-Nov-21	C&A	ANTHRA - 24739	662kg	16/1 Cotton 100% Single Part	Fastness Not OK
1-Nov-21	GEORGE	CLOUD DANCER	172kg	22/1 Cotton 100% Single Part	Dyeing OK
2-Nov-21	GEORGE	Lilac Snow	614kg	22/1 Cotton 100% Single Part	Dyeing OK
3-Nov-21	GEORGE	Sheer Lilac	614kg	22/1 Cotton 100% Single Part	Dyeing OK
3-Nov-21	C&A	LIGHT GREY - 10736	350kg	28/1 Cotton 100% Single Part	Dyeing OK
4-Nov-21	C&A	BRIGHT WHITE -15000	90kg	10/1 Cotton 100% Single Part	Dyeing OK
4-Nov-21	C&A	BRIGHT WHITE -15000	10kg	24/1 Cotton 100% Single Part	Dyeing OK
4-Nov-21	GEORGE	CLOUD DANCER	181kg	24/1 Cotton 100% Single Part	Uneven dyeing
5-Nov-21	M&S	23700	53kg	22/1 Cotton 100% Single Part	Dyeing OK
5-Nov-21	M&S	15000	18kg	22/1 Cotton 100% Single Part	Dyeing OK
5-Nov-21	M&S	30947	32kg	40/1 Cotton 100% Single Part	Dyeing OK

6-Nov-21	C&A	MEDIUM GREY -10167	352kg	18/1 Cotton 100% (Low Temperature)	Dyeing OK
6-Nov-21	C&A	BRIGHT WHITE -15000	104kg	34/1 Cotton 100% Single Part	Dyeing OK
6-Nov-21	C&A	MEDIUM GREY -10167	357kg	34/1 Cotton 100% Single Part	Dyeing OK
7-Nov-21	C&A	BRIGHT WHITE -15000	905kg	34/1 Cotton 100% Single Part	Dyeing OK
7-Nov-21	C&A	STAR WHITE -13626	156kg	34/1 Cotton 100% Single Part	Package to package shade variation
7-Nov-21	C&A	STAR WHITE -13626	90kg	34/1 Cotton 100% Single Part	Dyeing OK
8-Nov-21	C&A	LIGHT GREY -10736	380kg	30/1 Cotton 100% Single Part	Dyeing OK
8-Nov-21	C&A	17932	100kg	30/1 Cotton 100% Single Part	Dyeing OK
8-Nov-21	C&A	White	10kg	32/1 Viscose 100% Single Part	Dyeing OK
8-Nov-21	C&A	MEDIUM GREY -11594	1064kg	32/1 Viscose 100% Single Part	Dyeing OK
9-Nov-21	C&A	MEDIUM GREY -11594	1236kg	26/1 Cotton 100% Single Part	Dyeing OK
9-Nov-21	C&A	MEDIUM GREY -11594	245kg	26/1 Cotton 100% Single Part	Dyeing OK
10-Nov-21	C&A	MEDIUM GREY -11594	112kg	20/1 Cotton 100% Single Part	Dyeing OK
11-Nov-21	C&A	MEDIUM GREY -11594	152kg	20/1 Cotton 100% Single Part	Dyeing OK
12-Nov-21	C&A	White	606kg	20/1 Cotton 100% Single Part	Wrinkle Mark

13-Nov-21	LPP	XG2306	20kg	20/1 Cotton 100% Single Part	Fastness Not OK
13-Nov-21	LPP	15000	170kg	22/1 Cotton 100% Single Part	Dyeing OK
13-Nov-21	LPP	XG7930	4545kg	30/3 Cotton 100% Single Part	Dyeing OK
14-Nov-21	LPP	XG9675	464kg	40/2 Cotton 100% Single Part	Dyeing OK
14-Nov-21	LPP	XG9675	114kg	22/1 Cotton 100% Single Part	Dyeing OK
15-Nov-21	LPP	15000	505kg	32/1 Cotton 100% Single Part	Dyeing OK
15-Nov-21	LPP	XG2306	254kg	30/1 Cotton 100% Single Part	Dyeing OK
16-Nov-21	LPP	XG2309	321kg	30/3 Cotton 100% Single Part	Dyeing OK
17-Nov-21	LPP	XG2306	149kg	26/1 CVC (60%40%) Single Part	Uneven dyeing
17-Nov-21	LPP	XG2309	20kg	26/1 CVC (60%40%) Single Part	Dyeing OK
17-Nov-21	LPP	XG7930	455kg	150D Polyester Filament NIM 100% F	Dyeing OK
18-Nov-21	LPP	XG7930	145kg	26/1 CVC (85%+15%) Single Part	Dyeing OK
18-Nov-21	LPP	15000	142kg	30/1 Cotton 100% Single Part	Dyeing OK
18-Nov-21	LPP	15000	2045kg	34/1 Cotton 100% Single Part	Re-Dyeing
18-Nov-21	LPP	15000	159kg	34/1 Cotton 100% Single Part	Dyeing OK
19-Nov-21	LPP	XG2306	170kg	34/1 Cotton 100% Single Part	Dyeing OK

19-Nov-21	LPP	XG2309	101kg	34/1 Cotton 100% Single Part	Dyeing OK
19-Nov-21	LPP	15000	65kg	26/1 Cotton 100% Single Part	Dyeing OK
20-Nov-21	LPP	XG7930	145kg	20/1 Cotton 100% (Low Temperature)	Dyeing OK
20-Nov-21	LPP	XG2306	11kg	20/1 Cotton 100% (Low Temperature)	Color spot
20-Nov-21	LPP	XG9675	215kg	20/1 Cotton 100% (Low Temperature)	Dyeing OK
21-Nov-21	LPP	XG2309	25kg	20/1 Cotton 100% (Low Temperature)	Dyeing OK
21-Nov-21	LPP	XG9675	170kg	20/1 Cotton 100% (Low Temperature)	Dyeing OK
21-Nov-21	LPP	15000	215kg	20/1 Cotton 100% (Low Temperature)	Re-Process
22-Nov-21	LPP	XG2309	56kg	20/1 Cotton 100% (Low Temperature)	Dyeing OK
22-Nov-21	LPP	XG2309	170kg	30/3 Cotton 100% Single Part	Dyeing OK
22-Nov-21	C&A	MAJOLICA BLUE -17854	1430kg	150D Polyester Filament HIM 100% F	Dyeing OK
22-Nov-21	C&A	ANTHRA -24739	220kg	150D Polyester Filament HIM 100% F	Dyeing OK
23-Nov-21	C&A	PALE MAUVE -31412	300kg	30/1 Polyester Cotton (65%+35%) Single Part	Uneven dyeing
23-Nov-21	C&A	(Style-77575-923-60-801-001)-15000	47kg	22/1 Cotton 100% Single Part	Dyeing OK
23-Nov-21	C&A	(Style-77575-926-60-802-001)-15000	10kg	22/1 Cotton 100% Single Part	Dyeing OK

23-Nov-21	C&A	(Style-77575-923-60-801-001)-15000	535kg	30/3 Cotton 100% Single Part	Dyeing OK
24-Nov-21	C&A	(Style-77575-926-60-802-001)-15000	82kg	28/1 Cotton 100% Single Part	Dyeing OK
24-Nov-21	C&A	(Style-77575-926-60-802-001)-15000	6kg	28/1 Cotton 100% Single Part	Dyeing OK
24-Nov-21	C&A	(Style-77575-923-60-801-001)-15000	32kg	050D Polyester Filament NIM 36 F	Dyeing OK
25-Nov-21	STRADIVARIUS	COTTON	100kg	050D Polyester Filament NIM 36 F	Softener Mark
25-Nov-21	STRADIVARIUS	COTTON	650kg	050D Polyester Filament NIM 36 F	Dyeing OK
26-Nov-21	STRADIVARIUS	COTTON	200kg	20/1 Cotton 100% Single Part	Dyeing OK
26-Nov-21	H&M	TA2317	553kg	20/1 Cotton 100% Single Part	Dyeing OK
27-Nov-21	H&M	TA2317	340kg	30/3 Cotton 100% Single Part	Dyeing OK
27-Nov-21	H&M	TA7933	7kg	24/1 Cotton 100% Single Part	Dyeing OK
28-Nov-21	H&M	TA1730	7kg	30/1 Cotton 100% Single Part	Crease Mark
29-Nov-21	H&M	TA7933	755kg	60/2 Cotton 100% Single Part (Low Temperature)	Dyeing OK
29-Nov-21	H&M	TA2317	140kg	60/2 Cotton 100% Single Part (Low Temperature)	Dyeing OK
30-Nov-21	C&A	(Style-77575-926-83-914-007)-25813	28kg	60/2 Cotton 100% Single Part (Low Temperature)	Damage yarn

30-Nov-21	C&A	(Style-77575-926-82-906-005)-13036	73kg	60/2 Cotton 100% Single Part (Low Temperature)	Dyeing OK
30-Nov-21	C&A	(Style-77575-923-82-906-006)-25050	14kg	60/2 Cotton 100% Single Part (Low Temperature)	Dyeing OK
30-Nov-21	C&A	(Style-77575-923-82-906-006)-25050	205kg	60/2 Cotton 100% Single Part (Low Temperature)	Dyeing OK
30-Nov-21	C&A	(Style-77575-923-82-906-006)-11528	20kg	60/2 Cotton 100% Single Part (Low Temperature)	Crease Mark
30-Nov-21	C&A	(Style-77575-923-83-906-004)-15000	6kg	20/1 Cotton 100% (Low Temperature)	Dyeing OK

CHAPTER -04

RESULTS AND DISCUSSION

4.1 Results and Discussion:

Faults, causes and remedies:

- Uneven dye
- Uneven Dyeing.
- Damaged Yarn.
- Package to package shade variation.
- Color Spot.
- Batch to batch shade variation
- Package Uneven
- Wrinkle Mark
- Softener mark
- Creases mark
- Wash fastness
- Damage package

At first different construction and different color, total color yarn dyed cotton fabric sample take.

4.2 Uneven dye: A defect is defined as minor defect that is not likely to reduce the usability of the product, but nevertheless may negatively influence the sales.

Causes:

- Uneven pretreatment (uneven scouring & bleaching).
- Improper color dosing.
- Using dyes of high fixation property.
- Uneven heat-setting in case of synthetic fiber

Lack of control on dyein machine

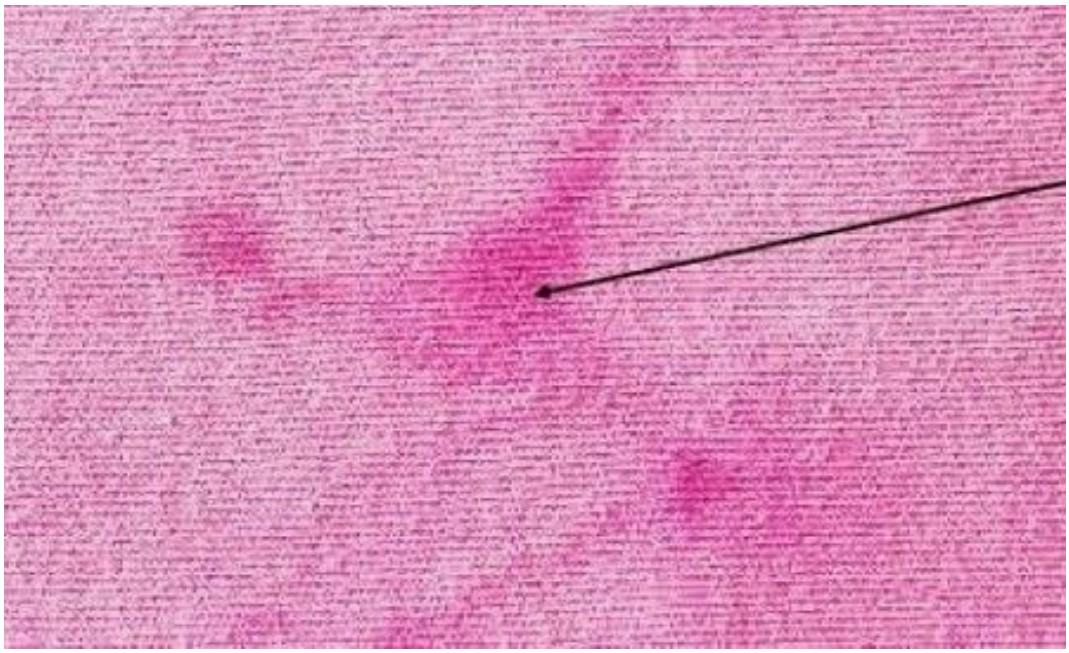

Figure: 4.2.1

Remedies:

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

4.3 Uneven Dyeing: Dyeing package are not similar they are many variation show on.

Causes:

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

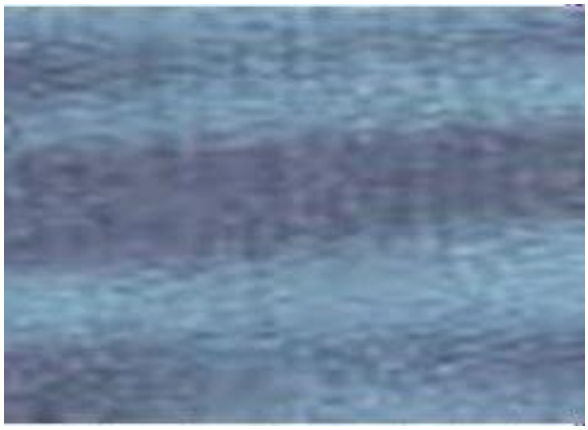

Figure: 4.3.1

Remedies:

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

4.4 Damage yarn:

Causes:

- Pump pressure too high
- Poorly wound package
- Manual handing errors
- Excessive processing

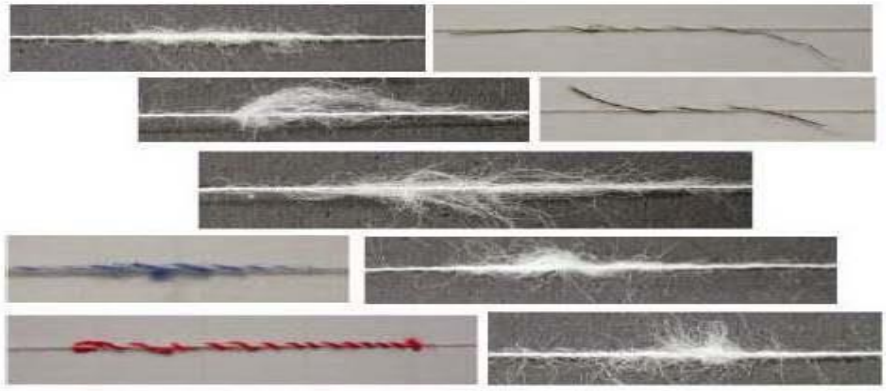

Figure: 4.4.1

Remedies:

- By ensuring standard pump pressure.
- By controlling manual errors.
- By ensuring properly wound package with standard tension.

4.5 Package to package shade variation:

Causes**:**

- Improper setting of yarn packages in the machine.
- Lot mixing of the package.
- Count variation of package.

Figure: 4.5.1

Remedies:

- By ensuring proper setting of yarn packages in the machine.
- By ensuring no lot mixing of the packages.
- By same count of the packages

4.6 Color spot: Color spot color or solid color is any color generated by an ink (pure or mixed) that is printed using a *single run*, whereas a process color is produced by printing a series of dots of different colors.

Causes:

- Floating of dye particles in the air.
- Improper pre-oxide killing.
- Improper mixing of dyestuffs.
- Improper Dissolving of dye particle in bath.
- Improper Dissolving of caustic soda particle in bath.

Figure: 4.6.1

Remedies:

- By ensuring proper per-oxide killing.
- By ensuring mixing of dyestuff.
- Make sure that no dye molecules are floating in the air.
- By proper dissolving of dyes & chemicals.
- By passing the dissolved dyestuff through a fine stainless steel mesh strainer, so that the large un-dissolved particles are removed.

4.7 Batch to batch shade variation:

Causes:

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

Figure:4.7.1

Remedies:

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

4.8 Package unleveled:

Causes:

- Tension variation while soft winding of the package.
- Lot mixing of yarns in the same package.
- Different counts of yarns in the same package.
- Pressure variation in the machine vessel.
- Improper pretreatment of the yarn.
- Improper quality of the dyes and chemicals.

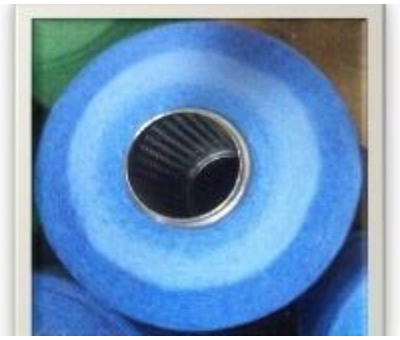

Figure:4.8.1

Remedies:

- Tension are standard while soft winding of the package.
- Use in saem Lot of yarns in the same package.
- Seam counts of yarns in the same package.
- Pressure can similar in the machine vessel.
- Proper pretreatment of the yarn.
- Pproper quality of the dyes and chemicals.

4.9 Wrinkle Mark:

Causes:

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

Figure: 4.9.1

Remedies:

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

4.10 Softner Mark:

Figure: 4.10.1

Causes:

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

Remedies:

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

4.11 Crease Mark:

Causes:

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

Figure: 4.11.1

Remedies:

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

4.12 Wash Fastness:

The ability of a material or dye to maintain its color without fading or washing away. Color fatness to washing means, A specimen of the textile, in contact with one or two specified adjacent fabrics, is mechanically agitated under described conditions of time and temperature in a soap solution, then rinsed and dried. The change in color of the specimen and the staining of the adjacent fabric are assessed with the grey scales.

Dyes No.	Color shades on wool	Light fastness	Washing fastness	Perspiration fastness		Sublimation fastness	Rubbing fastness	
				Acid	Alkaline		Dry	Wet
D_1	Pinkish blue	5	5	4	5	4	4	4
D_2	Pinkish blue	5	4	5	4	4	4	4
D_3	Reddish brown	5	5	5	5	5	5	4
D_4	Yellowish pink	4	5	4	5	4	4	3
D_5	Chocolate brown	4	4	5	5	4	5	4
D_6	Red	5	5	5	5	5	4	3
D_7	Red	5	4	5	5	4	5	4

4.13 Monthly Production & Not ok Result

S/L No	Months	Total Production	Yarn fault/Not ok/Re-Process Quantity	Faults (%) Percentage		Avarage fault (%) Percentage
01	September	364 Ton	36.4 Ton	Uneven Dyeing	15%	10%
				Damage yarn	5%	
				Package to package shade variation	11%	
				Color spot	9%	
				Batch to batch shade variation	12%	
				Wrinkle Mark	5%	
				Softner Mark	7%	
				Crease Mark	4%	
				Wash Fastness	11%	
				Re-Process	21%	
02	October	355 Ton	28.4 Ton	Uneven Dyeing	17%	8%
				Damage yarn	4%	
				Package to package shade variation	10%	
				Color spot	9%	
				Batch to batch shade variation	11%	
				Wrinkle Mark	5%	
				Softner Mark	5%	
				Crease Mark	4%	
				Wash Fastness	13%	
				Re-Process	22%	
03	November	380 Ton	45.6 Ton	Uneven Dyeing	15%	12%
				Damage yarn	3%	
				Package to package shade variation	8%	
				Color spot	11%	
				Batch to batch shade variation	10%	
				Wrinkle Mark	4%	
				Softner Mark	8%	
				Crease Mark	5%	
				Wash Fastness	14%	
				Re-Process	22%	

CHAPER-05

CONCLUSION

5.1 Conclusion

Yarn dyeing process plays an important role in the civilized world. Multiple colors can be used in Yarn dyeing process. Yarn dyeing process in which we should give great emphasis to produce different type of critical dyeing in textile. Modern technology made it easy to yarn dyeing by the help of computerized machine. On raise of customer demand in Yarn dryad products, dyeing factory increases day by day with latest machine and technology in Bangladesh so we are able to satisfy customers as well as increase the amount of garment orders which plays an important role in our economy. For Bangladesh, Now yarn dyeing is a growing sector in Bangladesh. A considerable number of experts have been developed here. Bangladesh can meet any quality demand in this. However, Bangladesh is behind in terms of digital machine in compared to India or China. If the sector can get proper patronization, investment and focus, Bangladesh will govern in the yarn dyeing like knit waving dusting or knitting across the world. In this case, the entrepreneurs, industry owners as well as the government have to work together keeping hand on hand. Have to take real and effective initiatives too. Only then Bangladesh will go ahead further to fulfill the dream of exporting 50 billion dollars by 2022.

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