



Daffodil
International
University

Faculty of Engineering
Department of Textile Engineering

Study on Fabric Wastage% for Plain Leggings in Knit Garments Industry

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A Thesis Submitted In Partial Fulfillment of the Requirement For The Degree Of
Bachelor of Science in Textile Engineering

Advance in Apparel Manufacturing Technology

April, 2018

Acknowledgement

First of all we are grateful to Allah who gives us sound mind and sound health to accomplish this project successfully.

We are also grateful to our supervisor **Mst. Murshida Khatun**, senior lecturer, department of textile engineering, faculty of engineering, daffodil international university. Her endless patience, scholarly guidance, continual encouragement, energetic supervision, constructive criticism, valuable advice, reading many inferior, draft and correcting these at all stages have made it possible to complete this project.

We are also thankful to all of our teachers, lab assistant, register sir, coordinators and all the employees of daffodil international university. We are highly delighted to express our regards and gratitude to honorable Head **Prof. Dr. Md. Mahbubul Haque** for providing his best support to us.

Finally, we would like to express a sense of gratitude to our beloved parents and friends for their mental support, strength and assistance throughout writing the project report.

Declaration

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

.....

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.....

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Letter of approval

19th April, 2018

To

The Head

Department of Textile Engineering

102, Shukrabad, Mirpur Road, Dhaka-1207

Subject: Approval of Project Report of B.Sc. in TE Program

Dear Sir,

I am just waiting to know you that, this project report titled as “**study on fabric wastage% for plain leggings in knit garments industry**” has been prepared by the student bearing ID’s 142-23-3915 and 142-23-3915 are completed for final evaluation, the whole report is prepared based on the proper investigation and interruption through critical analysis of empirical data with required belongings. The student were directly involved in their project activities and the report become vital to spark of many valuable information for the readers.

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

Yours Sincerely

.....

Mst. Murshida Khatun

Senior Lecturer

Department of Textile Engineering

Daffodil International University

Abstract

This report presents the process loss during garment manufacturing in knit garment industry. During manufacturing or processing, different types of wastes can be occurred. The wastes may be of fiber, finished fabric or garment form. The amount of total wastage may vary for different garment style, including process no, included designs, size variation. The word wastage means the action or process of losing or destroying something by using it carelessly extravagantly, the reduction of size of a material or goods resulting due to breakage, decay, handling, leakage, shrinkage, wear etc. [1]

Wastage is sometimes named as loss in textile industry, as it reduces the profit for a product. So every industry always tries to maintain a minimum wastage. This report will give us an overall idea in which sections in a garment industry wastage is occurred usually. The wastage has been identified in each stage in particular order of knit product. It also give us the knowledge about the causes of wastage creation.

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Chapter-1

Introduction

1.1 What is wastage?

Waste and wastage are the unwanted or unusable materials. Wasteful or careless use of something valuable. Loss of something by using too much of it or using it in a way that is not necessary or effective. Waste and wastage are to some extent interchangeable, but many people think that wastage should not be used to refer to loss resulting from human carelessness, inefficiency, etc. Or we can also say that the loss, decrease, or destruction of something.[2]

1.2 Wastage in knit garment industry

In knit garment industries the waste can be defined as the fiber, yarn, fabric or finished garment that are considered as reject due to any defect occurring, tearing, losing or reducing its usability for bad handling or maintenance.

Wastage is very common issue in garment industry, because it costs a lot of money. Wastage of materials during garment manufacturing directly affects the costing of that order.

1.3 Wastage %

The wastage% can be calculated from the comparison between total amount of input materials and total output of finished product. By using the following formula we will be able to calculate or measure the total wastage%. The equation is given below-

$$\text{Waste} = \text{Input} - \text{Output}$$

$$\text{Waste\%} = \frac{\text{Waste} \times 100}{\text{Total input}}$$

1.4 Causes of waste occurred in knit garment industry

Knitting is a method which is prevalent from a very long time. It is a method by which a yarn or thread is converted into cloth or fabric or any other form. It can be machine made or handmade. There exist numerous styles and methods of hand knitting. During the process of making thread into fabric, any faults can result in wastage of yarn as well as efforts. Many other processes are also involved in the making of garment, apart from knitting. Wastage can occur in those places as well. All the wastages that occur on the knitting floor have been discussed in this paper. Wastage can occur due to many reasons. Certain steps can be taken to avoid wastage of yarn. Wastage may occur due to any reason like yarn, fabric faults, lack of machine maintenance, sample production, problem of management, etc. [3]

Chapter-2

Literature review

2.1 Types of wastage

The waste occurred in a garment factory are of different in types. They can be in fiber form, yarn form, gray fabric form, dyed fabric, finished fabric, garment or it may be any metallic waste from any machine used in garment industry.

2.2 Waste occurring sections

In a knit garments industry usually the main portion of total wastage creates in the following sections-

- a. Spinning section,
- b. Knitting section,
- c. Dying section,
- d. Printing section,
- e. Cutting section,
- f. Sewing section and
- g. Finishing section.

2.3 Wastages occur due to yarn

Three main reasons of yarn wastage in knitting floor:

1. Yarn fault.
2. Fly generation.
3. Faulty baby cone.

1. Yarn faults

Yarn faults are responsible for a maximum amount of wastages of yarn in knitting floor. Faulty yarns break so much & during knotting yarn are wasted. About 4-5% yarn are wasted due to yarn fault.

Minimization

To minimize the wastage due to yarn fault faults free yarn should be supplied. Combed yarn is more effective than carded yarn, because combed yarn contains less short fibers. So in yarn stage about 8-9% wastage occur in knitting floor & it can be minimize by following the above steps.

2. Faulty baby cone

Due to faulty baby cone a major portion of yarn are wasted. Cone shape is very important. About 2-3% yarn are wasted due to faulty baby cone.

Minimization

To minimize the wastage percentage due to baby cone the cone shape & size should be checked very carefully during yarn production or yarn buy in cone form.

3. Fly generation

Fly generation occurs due to various thread guides & tensioner. About 1% of yarn is wasted due to fly generation.

Minimization

To minimize the wastage percentage due to fly the yarn must contain minimum amount of fly.

2.4 Wastages occur due to fabric faults:

Faults occur due to yarn in knitting almost all the defects appearing in the horizontal direction are yarn related. They are mainly:-

i) Shrinkage

A dimensional change resulting in a decrease in the length or width of a specimen subjected to specified conditions is known shrinkage. Shrinkage is mainly due to yarn swelling and the resulting crimp increase during washing in case of cotton fabrics. Yarn swelling percentage is more in polyester

cotton blending yarn. Reduction in length and width of fabric induced by conditioning, wetting, steaming, chemical treatment, wet processing as in laundering, in chemical practice and in literature the following terms have been used to describe the shrinkage which occurs in testing procedure:

ii) Relaxation shrinkage

During manufactures fabrics and their component yarns are subjected to tension under varying conditions of temperature and moisture content, after manufacturing when the fabric is taken from the machine and keep on floor or store room, then the fabric tends to shrink, this type shrinkage is called relaxation shrinkage.

iii) Felting shrinkage

In case of wool fibers dimensional changes can be magnified by felting shrinkage. When untreated wool fibers are subjected to mechanical action in the presence of moisture.

iv) Compressive shrinkage

It is a process in which fabric is caused to shrink in length by compression. The process often referred to as controlled compressive shrinkage.

v) Residual Shrinkage

After washing the fabric is shrunk. This type of shrinkage is called residual shrinkage. Residual shrinkage is the main factor of garments industry.

Causes

1. Twist factor; twist factor increases so that shrinkage will be increases,
2. Stitch length; stitch length increases so that shrinkage will be increases,
3. GSM; GSM increases so that shrinkage will be increases.

Remedies

1. In order to maintain the weight at a lower shrinkage, a finer yarn is used,
2. In order to maintain the width, a larger dia knitting machine or a longer stitch length is necessary.
3. In order to maintain the same knitted tightness factor, or cover factor with a finer yarn, a shorter average stitch length must be knitted. Changes in yarn count and stitch length also

change the stitch density which again changes the weight and the width for a given level of shrinkage. Changes in the tightness factor will change the extensibility of the fabric and will also affect the amount of spiraled.

vi) **Barreness**

The noun "BARRE" is defined by ASTM as a ripe visual pattern of continuous bars and stripes usually parallel to the filling of woven fabric or to the courses of circular knit fabric. It is unintentional. Barer normally runs in the length direction in a warp knit, following the direction of yarn flow. Barer can be caused by optical, physical or dye difference in the yarn, geometric difference in the fabric structure or by any combination of these differences. A barer streak can be several - a "shadow band" or it can be one course or end wide. Barre should not be confused with "warp streaks", which in woven fabric are narrow band running lengthwise and are characterized by apparent differences in color from adjoining ends. Nor should it be confused with filling A filling is a condition in which a filling yarn differing from the normal filling was accidentally inserted in the fabric.

Cause of barre

The varied and diverse causes of barre can generally be summed up in one word –INCONSISTENCY. Barre which is caused by an inconsistency can originate in one or more of following categories -raw material (fiber), yarn formation/supply, and fabric formation. Within these three categories, factors which may cause or contribute to barre are listed as follows:

1. Raw material fiber
2. Yarn formation supply
3. Knitting machine

Prevention of barre

As outlined on the previous page, barre is caused by inconsistencies in materials, or processing. Consistency must be maintained through all phases of textile production to prevent barre from occurring. Stock yarns should be carefully and properly labeled to avoid mix-ups. Inventory should be controlled on a First In/first out basis; fugitive tints can be useful for accurate yarn segregation. All

equipment should be maintained and periodically checked. Sample dyeing can be done to check for barre before beginning full scale production. Through careful dye selection, salvaging a fabric lot with a barre problem may be possible. Color differences can be masked by using shades with very low light reflectance (navy blue, black), or high light reflectance (light yellow, orange, or finished white). Dye should be able to offer assistance in this area. Also, if the cause of the barre is distribution of wax or oil, a more thorough preparation of the fabric prior to may result in more uniform dye coverage. With dose cooperation between pro-and quality control personnel, successful analysis and solution to barre problems can be brought.

vi) Thick & Thin Places

It causes due to yarn problem. If thick & thin places remain in yarn & fabric is knitted with that yarn, then, this problem found in fabric.

vii) Shrinkage

A dimensional change resulting in a decrease in the length or width of a specimen subjected to specified conditions is known shrinkage. Shrinkage is mainly due to yarn swelling and the resulting crimp increase during washing in case of cotton fabrics. Yarn swelling percentage is more in polyester cotton blending yarn. Reduction in length and width of fabric induced by conditioning, wetting, steaming, chemical

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Causes

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3. In order to maintain the same knitted tightness factor, or cover factor (square root of tex divided by stitch length) with a finer yarn, a shorter average stitch length must be knitted.

Changes in yarn count and stitch length also change the stitch density which again changes the weight and the width for a given level of shrinkages. Changes in the tightness factor will change the extensibility of the fabric and will also affect the amount of spiraled.

2.5 Faults occur due to knitting

Almost all the defects appearing in the vertical direction, in the knitted fabrics, are as a cause of bad Knitting Elements. And some defects appear randomly in the knitted fabrics, due to the wrong knitting machine settings & that of the machine parts. The defects are mainly; [5]

i) Cracks or holes

Local holes obtained when yam breaks during loop formation. Local holes obtained yam breaks during loop formation. Holes are the results of cracks or yam break-ices. During stitch formation the yarn had already broken at region of needle hook. Deciding on the knitted structure, yarn count, machine gauge

and course density, the holes has different sizes. The size can therefore only be estimated if the comparable fabric is known.

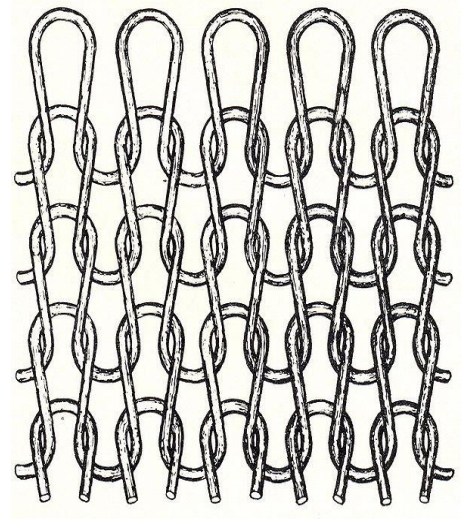
Causes

- i. Presence of knot in yarn.
- ii. Weak places in yarn.
- iii. Yarn tension too high.
- iv. Yarn too dry.
- v. Yarn - guide not properly set,
- vi. Yarn - guide block by yarn
- vii. Hair accumulation.
- viii. Poorly lubricated yarn.
- ix. Loose yarn end can slide out of the loop.
- x. Yarn take- off uneven or dragging.
- xi. Yam feeder not properly set.
- xii. Relation between cylinder & dial loop not correct.



Remedies

- a. Use of flat knots.
- b. Yarn regularity control.
- c. Yarn consumption & courier re-adjustment.
- d. Precise yarn - guide resetting.
- e. Air humidification.
- f. Use of yam having lower hairiness, bobbins & yarn guide blowing.
- g. Use of protective filter creel.
- h. Use of fabric fault detector.



ii) Pin hole

Causes

1. Improper tension.
2. Same drive for both knit & tucks stitch.
3. Curved needle latch.

Remedies

1. Different drive has to be maintained.
2. Needle has no change.

iii) Stain

The knitting industry, unlike weaving, uses oil to lubricate machinery where the fabric is being stained away.

Minimizing the stains

1. Plying it in minimum range.
2. Mixed with water, so piece goods are wet is fully fashioned where oil is not used on the needles.

iv) Vertical Stripe

Vertical stripes can be observed as longitudinal defective needles and sinkers.

Causes

Defective latch, needles or cam. That looks like cam, sinker etc.

Remedies

1. Precise knitting elements arrangements. Such oil mixed with dust and metallic powder can, cause stain on the fabric being knitted.
2. Control of the oil itself, by quantities and delivering it continuously, so that it present in the fabric but does not show up in any build up of soiled material.
3. Using oils that are readily called scourable or clean oils. The majority of knitted finished before cutting and therefore, little oil staining will remain in finished fabric.

On stitch-shaped garment, tight control needed as they are not wet finished, stains are dealt with during examination by solvent based spotting guns. The problem is negligible in where wet finishing is usual.

v) Sinker mark

Causes

1. Sinker not cleans.
2. Defected /broken sinker.

3. Incorrect depth of sinker which causes the stitch length to change while the needle knocks over during its movement towards rest position.

4. When darts deposited in sinker, it is raised & causes this fault.

Remedies

1. Sinker has to be clean.
2. It should be checked that the sinker having correct thickness and depth.
3. Replacement of defected sinkers.

vi) **Line star**

Cause

When needle latch is bent due to long time usage, then this problem occurred.

Remedies

Needle must be changed. Guide not properly set too high. Make yarn - guide resetting.

Loop forming using a simple needle,

vii) **Drop stitches**

Causes

1. Yarn guide higher tension.
2. Defective needle latch.
3. Yarn tension is not sufficient or too long stitches.
4. Take- down too high.
5. Cylinder - dial distance.
6. Wrong yarn threading.

Remedies

1. Precise arrangement of needle and guides.
2. Needle change.
3. Yarn consumption adjustment.
4. Take-down re-adjustment.
5. Dial position re-adjustment
6. Yarn threading through the guide properly.
7. This fault can be corrected by stitches reproducing.

8. Use of fabric fault detector.

viii) Slub

Causes

It is usually caused by a thick or heavy place in yarn, or by ling getting onto yarn feeds.

Remedy

Good quality yarn should be used properly set not too high and yarn - guide resetting & coulier re-adjustment. Loop forming using a simple needle,

ix) Drop stitches

Causes

1. Yarn guide not sufficient or too long stitches.
2. Defective needle latch.
3. Yarn tension is not sufficient or too long stitches.
4. Take- down too high.
5. Cylinder - dial distance too high.
6. Wrong yarn threading.

Remedies

1. Precise yarn guide resetting,
2. Needle change.
3. Yarn consumption and coulier re-adjustment.
4. Take-down re-adjustment.
5. Dial position re-adjustment.
6. Yarn threading through the right bore.
7. This fault can be corrected by stitches reforming using a simple needle.
8. Use of fabric fault detector.

x) Needle broken Causes

Causes

1. Due to dirt deposition in needle this problem occurred.

2. This problem also can occur due to yarn tension variation.

Remedies

1. Yarn tension has to minimize.
2. Needle must be cleaned before production of any new fabric.

2.5 Wastages occur due to sample production

When a new order is taken from the merchandiser the knitting section first needed to produce some sample to examine. If sample is accepted then bulk production will be continued. Here some fabrics are wastages. The wastages amount of sample production is about 1-1.5%.

Minimization

Wastage percentage occurs due to sample production can be reduced by extra care of operator & programmer of the design of knitting. Wastages occur due to machine maintenance: Before and after machine maintenance a small amount of fabric is wasted. About .5-1% fabric is wasted due to machine maintenance.

2.6 Wastages occur due to problem of management:

Manager will do the program. If there is any faults occur in setting the programmed then there will be a small or major amount of fabric will be wasted. It is all about the programmer's fault. About .5-1% of fabric may be wasted due to problem of management. Minimization: This wastages minimization is possible to minimize by skilled manager or programmer. During programming the programmer should have extra care. Hence, mistake possibility will reduce & wastages due to management problem will be minimized. [4]

Chapter-III

Experimental Details

Fig 3.1: Order Sheet for Plain Leggings

C&A Buying GmbH & Co. KG DELIVERY DETAILS
 WANHEIMER STR. 70 PO No.: 77496221 (USIM:77539-1074259)
 D-40468 DUESSELDORF Style Name: 2101 Legging Plain - 77539
 Duesseldorf HRA 10317 Supplier Style: 2101 Legging Plain - 77539

manually SEAS Far East PO 77539-120-43-924
 Fakir Apparels Ltd
 Season Indicator: SEASONLESS

Delivery Information

	Total Quantity	ShipmentID	Earliest Delivery Date	Latest Delivery Date
NL	729	003	01.Feb.2018	05.Feb.2018
D	6,588	003	01.Feb.2018	05.Feb.2018
B	1,212	003	01.Feb.2018	05.Feb.2018
F	1,533	003	01.Feb.2018	05.Feb.2018
CH	759	003	01.Feb.2018	05.Feb.2018
E	720	003	01.Feb.2018	05.Feb.2018
A	1,593	003	01.Feb.2018	05.Feb.2018
SK	1,341	003	01.Feb.2018	05.Feb.2018
TR				
OL	198	003	01.Feb.2018	05.Feb.2018
Total	14,673			

General Information

Payment Terms	CaD +75 days, -3%
Licence Family	
Sustainability	>= 95% Organic Cotton OCS
ShellPrice	N
EAN	
Marking Instruction	4 - colour within size

Delivery Instruction

NEW SEAS: In case preference rules are fulfilled please ensure that one Form A only is issued to C&A Buying about full quantity (no separate one for CH)

Price Calculation

	Supplier Cost Price	RFID
NL	USD	
D	USD	
B	USD	
F	USD	X
CH	USD	
E	USD	
A	USD	
SK	USD	
TR		
OL	USD	

Shipment Information

	Country Of Origin	Country Of Shipment	Way Of Transport	Terms Of Delivery	Nominated Place	Documents
NL	Bangladesh	Bangladesh	sea	FOB	Chittagong	
D	Bangladesh	Bangladesh	sea	FOB	Chittagong	
B	Bangladesh	Bangladesh	sea	FOB	Chittagong	
F	Bangladesh	Bangladesh	sea	FOB	Chittagong	
CH	Bangladesh	Bangladesh	sea	FOB	Chittagong	
E	Bangladesh	Bangladesh	sea	FOB	Chittagong	
A	Bangladesh	Bangladesh	sea	FOB	Chittagong	
SK	Bangladesh	Bangladesh	sea	FOB	Chittagong	
TR						
OL	Bangladesh	Bangladesh	sea	FOB	Chittagong	

Fig 3.2: Order Sheet for Plain Leggings

C&A Buying GmbH & Co. KG DELIVERY DETAILS
 WANHEIMER STR. 70 PO No.: 77496221 (USIM:77539-1074259)
 D-40468 DUESSELDORF Style Name: 2101 Legging Plain - 77539
 Duesseldorf HRA 10317 Supplier Style: 2101 Legging Plain - 77539

manually SEAS Far East PO 77539-120-43-924

Fakir Apparels Ltd

Season Indicator: SEASONLESS

Ticket & Presentation

	Price Ticket	RFID	Ticket Info Text	Marking Method	Item No.	Packaging	Packing Method Supplier
NL	TYPE 105= C&A standard price ticket		NOS_QVL_PR_CR_1	SOURCE TICKETING	6944230		L WITHOUT HANGER
D	TYPE 105= C&A standard price ticket		NOS_QVL_PR_CR_1	SOURCE TICKETING	6944230		L WITHOUT HANGER
B	TYPE 105= C&A standard price ticket		NOS_QVL_PR_CR_1	SOURCE TICKETING	6944230		L WITHOUT HANGER
F	TYPE 105= C&A standard price ticket	201 - Sticker 34 x 54	NOS_QVL_PR_CR_1	SOURCE TICKETING	6944230		L WITHOUT HANGER
CH	TYPE 105= C&A standard price ticket		NOS_QVL_PR_CR_1	SOURCE TICKETING	6944230		L WITHOUT HANGER
E	TYPE 105= C&A standard price ticket		NOS_QVL_PR_CR_1	SOURCE TICKETING	6944230		L WITHOUT HANGER
A	TYPE 105= C&A standard price ticket		NOS_QVL_PR_CR_1	SOURCE TICKETING	6944230		L WITHOUT HANGER
SK	TYPE 105= C&A standard price ticket		NOS_QVL_PR_CR_1	SOURCE TICKETING	6944230		L WITHOUT HANGER
TR							
OL	TYPE 105= C&A standard price ticket			SOURCE TICKETING	6944230		L WITHOUT HANGER

Promotion Details

	Advert
NL	N
D	N
B	N
F	N
CH	N
E	N
A	N
SK	N
TR	
OL	N

Fig 3.3: Order Sheet for Plain Leggings

C&A Buying GmbH & Co. KG MATERIALS/ADDITIONALS manually SEAS Far East PO 77539-120-43-924
 WANHEIMER STR. 70 PO No.: 77496221 (USIM:77539-1074259) Fakir Apparels Ltd
 D-40468 DUESSELDORF Style Name: 2101 Legging Plain - 77539
 Duesseeldorf HRA 10317 Supplier Style: 2101 Legging Plain - 77539 Season Indicator: SEASONLESS

Article(s)				
Article Name	Material Kind	Care	Additional Instruction	Extra Text
Leggings	Knitted (circular)	((40)) - X - * - ** - X	Single Jersey, 95/5% BIO Cotton/Elastan, 180gsm	
	Article Part Name	Outer	Lining	Padding
		95% COT - COTTON 5% ELA - ELASTANE		
	Neck Hood	Design	Silhouette	Sleevelength
		Print/Yarn dye/Print Placement		Length

No cotton originating from Uzbekistan is allowed in C&A products. Supplier guarantees this also for his supply chain.

Trimming

Label	K534 - Sustainability hangtag - Bio Cotton - GENERIC more than 85%
Hanger Type	L80/CL1336B or CL1836B or RKN36B
Plastic Bag	without plastic bag
Carton	Garment put on hanger by C&A, carton max. 15 kg
Security Tag	No Security Tag

Description

Style# 2101, Double Pack Leggings, 1/1 leg length, elastic tape at waist, printed label at back
 Dimensional Stability and Spirality to meet the C&A performance after 10 washing/drying cycles. Appearance after wash (colour retention and surface appearance) and hand feel to meet 25 washing/drying cycles. Pre-production samples will be tested via Quality Assurance Sourcing for compliance with the required standards and agree with you specific product performance before bulk production starts. For further details please contact your Local Merch andiser.
 no price tickets to be ordered before team confirmation!!!

Other Information

Brand, Subbrand, Graphic	Yessica
P.I.G.	2
Weight In Grams	348
CBM Total	23.03700
CBM/Piece	0.00157
Fastening	unisex

PLM Product Hierarchy

Product Hierarchy	Apparel/Bottoms/Trousers
Product Type	Leggings
Product Line	

Samples

Supplier agrees in accordance with the "C & A contractual legal requirements" to provide free of charge a reasonable number of samples. e.g. red tag / production samples, as requested via the Buying Operating System BuyOS. Such samples are needed e.g. to determine and control quality and fit of the ordered garments. Sample approval procedures and requirements concerning samples for these purposes as set out on GIN remain unaffected.

Fig 3.4: Order Sheet for Plain Leggings

C&A Buying GmbH & Co. KG
 WANHEIMER STR. 70
 D-40468 DUESSELDORF
 Duesseldorf HRA 10317

ARTICLE FABRICS
 PO No.: 77496221 (USIM:77539-1074259)
 Style Name: 2101 Legging Plain - 77539
 Supplier Style: 2101 Legging Plain - 77539

manually SEAS Far East PO 77539-120-43-924
 Fakir Apparels Ltd
 Season Indicator: SEASONLESS

ArticleFabric(s)

Article Name	Article Part Name	Fabric Type	Machine Gauge / Width	Construction / Yarn Count	Weight	Weight Unit
Leggings		Circular Knit Single Jersey	24,28	1/34s-20D	180	GRAMS PER QM

Fig 3.5: Fabric Booking Sheet for Plain Leggings

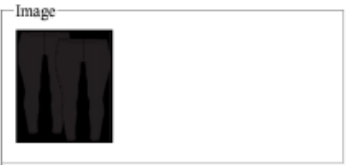
Fakir Apparels Ltd. Email Address: Website No: www.fakirapparels.com Main Fabric Booking (Approved)				Job No: FAL-17-01358(Normal)	
Buyer/Agent Name	: Clemens n August	Dept.	: Ladies (Yessica)	Order Qty	: 44019 Set
Garments Item	: Legging,Full Pant	Booking Release Date	: 02-10-2017	Style Ref.	: 2101 Legging Solid-18Q1
Style Des.	: Legging 02pack Solid	Lead Time	: 78,82,119	Dealing Merchant	: Jitu
Supplier Name	: FAKIR APPARELS LTD.	Delivery Date	: 24-10-2017	Booking No	: FAL-Fb-17-01840(Production)
Season	: 18Q1	Attention	: Mr. FayeZ	Po Received Date	: 23-09-2017
Order No	: 77539 120 43 924 003, 77539 120 43 924 001, 77539 120 43 924 002				
Shipment Date	: 20-01-2018, 10-12-2017, 14-12-2017				
WO Prepared After	: 9,9,9 Days	Ship.days in Hand	: -107,-103,-66 Days	Ex-factory status	: FS,FS,FS
Internal Ref No	:	File no	:		

Size and Color Breakdown

Color/Size	XS	S	M	L	XL	XXL	Total Order Qty(Pcs)	Excess %	Total Plan Cut Qty(Pcs)
Legging									
BLACK	2,574	6,939	12,474	11,646	8,010	2,376	44,019	3.25 %	45,450
Sub Total	2574	6939	12474	11646	8010	2376	44,019	3.25 %	45,450
Full Pant									
BLACK	2,574	6,939	12,474	11,646	8,010	2,376	44,019	3.25 %	45,450
Sub Total	2574	6939	12474	11646	8010	2376	44,019	3.25 %	45,450
Grand Total	5148	13878	24948	23292	16020	4752	88,038	3.25 %	90,900

RMG Process Loss %

Cut Panel rejection	1.50
Neck/Sleeve Printing	0.25
Sewing /Input	1.50
Sub Total	3.25



Fabric Process Loss %

Knitting	1.00
Dyeing & Finishing	12.00
Cutting (Fabric)	1.00
Grand Total	17.25

Body Part	Main Fabric Bottom			Total Finish Fabric (KG)	Total Grey Fabric (KG)	Process Loss %
Color Type	Solid					
Fabric Construction	Single Jersey Lycra					
Fabric Composition	Cotton 95% Elastane 5%					
GSM	180					
Dia/Width (Inch)	79.Open Width					
Consumption For 1 Dzn	Fin: 2.4100, Grey: 2.6992					
Fabric Color	Body Color	Lab Dip No	Finish	Grey		
BLACK			18,255.75	20,446.44	18,255.75	20,446.44 12.00
		Total	18,255.75	20,446.44	18,255.75	20,446.44 12.00
		Consumption For 1 Dzn			4.8200	5.3984 12.00

Yarn Required Summary (Pre Cost)

Sl	Yarn Description	Brand	Lot	Rate	Cons for 1 Dzn Gmts	Total (KG)
1	20D Elastane 100% Spandex			5.8000	0.2700	
2	34s Cotton 100% Combed			3.4000	5.1284	

Draft

Table 3.1: Fabric Booking Table from fig 3.5

Fig 3.6: Fabric Booking Sheet for Plain Leggings

Approved Instructions																																																																										
<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p><u>Special Instruction</u></p> <p>1 Fabric will be 95/5 bio cotton/elastane, s/j 180 gsm.</p> <p>2 2 pack garment.</p> </div> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="10" style="text-align: center;">Comments</th> </tr> <tr> <th>Sl</th> <th>Po NO</th> <th>Ship Date</th> <th>Pre-Cost Qty</th> <th>Mn.Book Qty</th> <th>Sht.Book Qty</th> <th>Smp.Book Qty</th> <th>Tot.Book Qty</th> <th>Balance</th> <th>Comments</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>77539 120 43 924 001</td> <td>10-12-2017</td> <td>6,815.48</td> <td>6,815.48</td> <td>0.00</td> <td>0.00</td> <td>6,815.48</td> <td>0.00</td> <td></td> </tr> <tr> <td>2</td> <td>77539 120 43 924 002</td> <td>14-12-2017</td> <td>6,815.48</td> <td>6,815.48</td> <td>0.00</td> <td>0.00</td> <td>6,815.48</td> <td>0.00</td> <td></td> </tr> <tr> <td>3</td> <td>77539 120 43 924 003</td> <td>20-01-2018</td> <td>6,815.48</td> <td>6,815.48</td> <td>0.00</td> <td>0.00</td> <td>6,815.48</td> <td>0.00</td> <td></td> </tr> <tr> <td colspan="3">Total:</td> <td>20,446.44</td> <td>20,446.44</td> <td>0.00</td> <td>0.00</td> <td>20,446.44</td> <td>0.00</td> <td></td> </tr> </tbody> </table>															Comments										Sl	Po NO	Ship Date	Pre-Cost Qty	Mn.Book Qty	Sht.Book Qty	Smp.Book Qty	Tot.Book Qty	Balance	Comments	1	77539 120 43 924 001	10-12-2017	6,815.48	6,815.48	0.00	0.00	6,815.48	0.00		2	77539 120 43 924 002	14-12-2017	6,815.48	6,815.48	0.00	0.00	6,815.48	0.00		3	77539 120 43 924 003	20-01-2018	6,815.48	6,815.48	0.00	0.00	6,815.48	0.00		Total:			20,446.44	20,446.44	0.00	0.00	20,446.44	0.00	
Comments																																																																										
Sl	Po NO	Ship Date	Pre-Cost Qty	Mn.Book Qty	Sht.Book Qty	Smp.Book Qty	Tot.Book Qty	Balance	Comments																																																																	
1	77539 120 43 924 001	10-12-2017	6,815.48	6,815.48	0.00	0.00	6,815.48	0.00																																																																		
2	77539 120 43 924 002	14-12-2017	6,815.48	6,815.48	0.00	0.00	6,815.48	0.00																																																																		
3	77539 120 43 924 003	20-01-2018	6,815.48	6,815.48	0.00	0.00	6,815.48	0.00																																																																		
Total:			20,446.44	20,446.44	0.00	0.00	20,446.44	0.00																																																																		
TNA Information																																																																										
Sl	Order No	Yarn Receive		Knitting		Dyeing		Finishing Fabric		Cutting		Sewing		Ex-factory																																																												
		Start Date	End Date	Start Date	End Date	Start Date	End Date	Start Date	End Date	Start Date	End Date	Start Date	End Date	Start Date	End Date																																																											

Sr.Mer/Mer T.Manager A.G.M (Supply Chain) Mer Manager G.M (K/D) G.M E.D M.D

Planning AGM Yarn Store Knitting Manager Dyeing Manager Batch Dyeing Delivery Cutting Fabric Store

Fig 3.7: Lay Sheet of Cutting Section for Plain Leggings

Body Part	Main Fabric Bottom
Color Type	Solid
Fabric Construction	Single Jersey Lycra
Fabric Composition	Cotton 95% Elastane 5%
GSM	180
Dia/Width	79,Open Width
Consumption for 1Dzn	Fin 2.4100, Gray 2.6992

FAKIR APPARELS
Limited

A-127-131, 135-138, 142-145, B 501-503, BSCIC HOCHERY INDUSTRIAL ESTATE.
SHASHANGOAN, FATULLAH, NARAYANGANJ-1420, BANGLADESH.

Cutting Section

LAY SHEET

Date :

Unit :

Buyer	C8A
Style	1298/mg
Order No	120-43-924-001
Order Qty	29346

Fabric	
Width/Dia	79
GSM	180

Operating	
Operators	
Cutting	
Supervisor	

Q.C Staff	
Q.C Sup	

STEP
LAY
DETAILS

Step-1

Marker Length	94 35°
Marker Width	77°

Step-2

Marker Length	
Marker Width	

Roll Spread Sequence	Roll No	Roll KGs	Number of plys	Color	Size Ref.						Total Garments	Per Roll Consumption	Cut Out Faults (KGs of all)	End of Roll KGs	Total Unused KGs
					Size Name	XS	S	M	L	XL					
1st	25	362	120			1	3	5	5	3	2	19			
2nd	39	397	112												
3rd	76	386	118												
4th	35	396	88												
5th	82	376	126												
6th	96	358	132												
7th	74	362	122												
8th	62	396	103												
9th	01	357	98												
10th	09	361	136												
11th	36	394	120												
12th	47	367	136												
13th	79	396	112												
14th	85	395	116												
15th	35	363	121												
TOTAL	03	402	143												

LAY LOSS or GAIN

Booking Consumption Per Doz	2.41
-----------------------------	------

Marker Consumption Per Doz	
----------------------------	--

Net KGs Used	KGs	Q.Qty

Consumption Per Doz.	Net	%

LAY LOSS or GAIN	
------------------	--

Checked By

Cutting In-Charge

Q.C In-Charge

Cutting Co-Ordinator

Table 3.2: Lay Sheet of Cutting Section

C/No.	Roll KGs	Number of plys	Size	Quantity
25	362	120	XS	1
39	397	112	S	3

76	386	118	M	5
35	396	88	L	5
82	376	126	XL	3
96	358	132	XXL	2
74	362	122		
62	396	103		
01	357	136		
09	361	98		
36	394	120		
47	367	136		
79	396	112		
85	395	116		
35	369	121		
03	402	143		

Fig 3.8: Process Loss Requirement for Yarn Dyeing, Knitting, Dyeing and AOP

Process loss requirement for Yarn Dyeing, Knitting, Dyeing and All Over Printing

Buyer	Fabrication	Composition	Y/D	Knitting	Dyeing LIGHT/WHITE		Dyeing Average		Dyeing Black		AOP Pigment	AOP Reactive	Remarks
					Last Update	Updated on 16/10/16	Last Update	Updated on 16/10/16	Update	Updated on 16/10/16			
H&M, C&A, Aldress, Primark, WW	S/L, 1X1 Rib, 2X2 Rib, Interlock, Pique	100% Cotton	0.0%	1.0%	11.0%	10.0%	10.0%	9.0%	9.0%	8.0%	1.0%	5.0%	
	Ly S/L, Ly 1X1 Rib, Ly 2X2 Rib, Interlock, Pique	95% Cotton 5% Spandex	0.0%	1.0%	14.0%	13.0%	13.0%	12.0%	12.0%	11.0%	1.0%	5.0%	
	Y/D, Melange (Wash)	100% Cotton	4.0%	2%, 1%	7.0%						1.0%	5.0%	
	LY Y/D, LY Melange (Wash)	95% Cotton 5% Spandex	4.0%	2%, 1%	10.0%	9% for LY YD and 10% for Ly Melange					1.0%	5.0%	
	Melange (Bleach)	100% Cotton	0.0%	1.0%	11.0%	10.0%					1.0%	5.0%	
	LY Melange (Bleach)	95% Cotton 5% Spandex	0.0%	1.0%	13.0%	12.0%	13.0%	12.0%	13.0%	12.0%	1.0%	5.0%	
	PC / CVC / Polyester	100% Cotton	0.0%	1.0%	8.0%	6% for PC and 7% for CVC					1.0%		
	PC / CVC / Polyester Lycra	95% Cotton 5% Spandex	0.0%	0.5%	11.0%	10.0%	11.0%	10.0%	11.0%	10.0%	1.0%		
Gater, Espirit, S.Oliver, Tom Tailor, Levi's, point Zero, JC Store, GAP, Bonita, POP	S/L, 1X1 Rib, 2X2 Rib, Interlock, Pique	100% Cotton	0.0%	1.0%	13.0%	12.0%	12.0%	11.0%	11.0%	10.0%	1.0%	5.0%	
	Ly S/L, Ly 1X1 Rib, Ly 2X2 Rib,	95% Cotton 5% Spandex	0.0%	0.5%	15.0%	14.0%	14.0%	13.0%	13.0%	11.0%	1.0%	5.0%	
	Y/D, Melange (Wash)	100% Cotton	4.0%	2%, 1%	8.0%	8.0%					1.0%	5.0%	
	LY Y/D, LY Melange (Wash)	95% Cotton 5% Spandex	4.0%	2%, 1%	11.0%	10.0%					1.0%	5.0%	
	Melange (Bleach)	100% Cotton	0.0%	1.0%	11.0%	11.0%					1.0%	5.0%	
	LY Melange (Bleach)	95% Cotton 5% Spandex	0.0%	1.0%	13.0%	13.0%	13.0%	13.0%	13.0%	13.0%	1.0%	5.0%	
	PC / CVC / Polyester	All Blend Ratio	0.0%	1.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	1.0%		
	PC / CVC / Polyester Lycra	All Blend Ratio + Elastane	0.0%	1.0%	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%	1.0%		

- Note 1: NO ENZYME COTTON 3 % LESS
- Note 2: BRUSH / PEACH FINISH Extra= (3+3=6%)
- Note 3: MODAL / VISCOSE 1% Extra
- Note 4: Roll Tumble 3% Extra

Merchandising Manager


DGM (Textile)


ED

ED

Table 3.3: Process Loss from fig 3.8

Fabrication	Expansion	Y/D	Knitting	Dyeing white		Dyeing average		Dyeing black		AOP pigment	AOP reactive
				Last Update	Update	Last Update	Update	Last Update	Update		
BIO cotton	100% cotton	0.0%	1%	11%	10%	10%	9%	9%	8%	1%	5%
Cotton Y/D	95% cotton 5% spandex	0.0%	1%	14%	13%	13%	12%	12%	11%	1%	5%
Milange (Gray)	100% cotton	4.0%	2%	7%	7%					1%	5%
Milange (Navy)	95% cotton 5% spandex	4.0%	2%	10%	3%					1%	5%
Milange (Black)	100% cotton	0.0%	1%	11%	10%					1%	5%
()Milange (Black)	95% cotton 5% spandex	0.0%	1%	13%	12%	13%	12%	13%	12%	1%	5%
PC/PVC /Polyester	100% cotton	0.0%	1%	8%	6%					1%	
PC/PVC /Polyester Lycra	95% cotton 5% spandex	0.0%	0.5%	11%	10%					1%	
Viscose, Lycra	100% cotton	0.0%	1%	13%	12%	11%	10%	11%	10%	1%	5%
Y/D Milange (Black)	95% cotton 5% spandex	0.0%	0.5%	15%	14%	12%	11%	11%	10%	1%	5%
30/s PVC	100% cotton	4.0%	2%	8%	8%	14%	14%	13%	11%	1%	5%

,PC											
11/2 U Milange (Black)	95%cotton 5%spandex	4.0%	2%	11%	10%					1%	5%
Y/D Milange (Black)	100%cotton	0.0%	1%	11%	11%	13%	13%	13%	13%	1%	5%
PC/PVC /Polyester	95%cotton 5%spandex	0.0%	1%	13%	3%	8%	8%	8%	8%	1%	5%
PC/PVC /Polyester, Lycra	100%cotton	0.0%	1%	8%	8%	11%	11%	11%	11%	1%	

Fig 3.9: Process Losses of Garment Making According to Different Buyers

Process Losses of Garment Making										Remarks
C&A/HnM/Primark/Woolworth										
Process	(0 - 2000 Pcs)		(2000 - 10000 Pcs)		(10001 - 50000 Pcs)		(50001 - above Pcs)			
	Present	Updated on 16/10/16	Present	Updated on 16/10/16	Present	Updated on 16/10/16	Present	Updated on 16/10/16		
Sewing Input	4.50%	3.50%	3.00%	2.50%	2.50%	1.50%	2.00%	1.25%		
Chest Print	1.50%	1.00%	1.00%	1.00%	1.00%	1.00%	0.50%	0.50%		
Chest Embroidery	0.50%	0.50%	0.50%	0.50%	0.25%	0.25%	0.25%	0.25%		
Print Neck/Sleeve	0.50%	0.50%	0.50%	0.50%	0.25%	0.25%	0.25%	0.25%		
Logo Embroidery	0.50%	0.50%	0.50%	0.50%	0.25%	0.25%	0.25%	0.25%		
Cutting Loss	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%		
Panel Rejection	White Color	3.00%	2.50%	3.00%	2.00%	2.00%	1.50%	2.00%	1.00%	

TT/POP/Esprit/Ax Store										Remarks
Process	(0 - 1000 Pcs)		(1001 - 5000 Pcs)		(5001 - 10000 Pcs)		(10001 - Above Pcs)			
	Present	Updated on 16/10/16	Present	Updated on 16/10/16	Present	Updated on 16/10/16	Present	Updated on 16/10/16		
Sewing Input	4.50%	4.50%	3.50%	3.50%	3.00%	3.00%	2.00%	2.00%		
Chest Print	3.00%	3.00%	2.50%	2.50%	1.50%	1.50%	1.00%	1.00%		
Chest Embroidery						0.50%				
Print Neck/Sleeve						0.50%				
Logo Embroidery						0.50%				
Cutting Loss	3.00%	3.00%	2.00%	2.00%	1.00%	1.00%	1.00%	1.00%		
Panel Rejection	White Color	6.00%	5.00%	5.00%	4.00%	3.00%	3.00%	3.00%		

S.Oliver/COS/Other Stories										Remarks
Process	(1000 Pcs & Below)		(1000-3000) Pcs		(3001-5000) Pcs		(5001 - Above)			
	Present	Updated on 16/10/16	Present	Updated on 16/10/16	Present	Updated on 16/10/16	Present	Updated on 16/10/16		
Sewing Input	7.00%	6.00%	5.50%	5.00%	4.50%	4.50%	3.50%	3.50%		
Chest Print	3.00%	3.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%		
Chest Embroidery	2.00%	2.00%	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%		
Print Neck/Sleeve	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%		
Logo Embroidery	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%		
Cutting Loss	4.00%	3.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%		
Panel Rejection	White Color	10.00%	8.00%	7.00%	6.00%	7.00%	5.00%	6.00%	5.00%	
	Color	7.00%	6.00%	5.00%	5.00%	5.00%	4.00%	4.00%	4.00%	

GM/BSM (RMG)

Mechandising Manager

Sr. GM

ED

Table 3.4: Process Losses of Garment Making from fig 3.9

C&A/H&M/Primark/Woolworth								
Process	0-2000pcs		2000-10000pcs		10000-50000pcs		50000-Above pcs	
	Present	Updated	Present	Updated	Present	Updated	Present	Updated
Sewing input	4.50%	3.50%	3.00%	2.50%	2.50%	1.50%	2.00%	1.25%
Chest print	1.50%	1.00%	1.00%	1.00%	1.00%	1.00%	0.50%	0.50%
Chest embroidery	0.50%	0.50%	0.50%	0.50%	0.25%	0.25%	0.25%	0.25%
Print neck/sleeve	0.50%	0.50%	0.50%	0.50%	0.25%	0.25%	0.25%	0.25%
Logo embroidery	0.50%	0.50%	0.50%	0.50%	0.25%	0.25%	0.25%	0.25%
Cutting loss	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%	0.25%
Panel rejection	3.00%	2.50%	3.00%	2.00%	2.00%	1.50%	2.00%	1.00%

Table 3.5: Fabric Delivery Sheet of Knitting Section

Section	Input (kg)	Output (kg)	wastage
Knitting	20446	20243	0.99%

Table 3.6: Fabrics Delivery Sheet of Cutting Section

Section	Input (kg)	Output (pcs)	Wastage
Cutting	18222	90836	0.91%

Table 3.7: Garments Delivery Sheet of Sewing Section

Section	Input (pcs)	Output (pcs)	Wastage
Sewing	90836	90330	0.55%

Table 3.8: Garments Delivery Sheet of Finishing Section

Section	Input (pcs)	Output (pcs)	Wastage
Finishing	90330	89074	11.4%

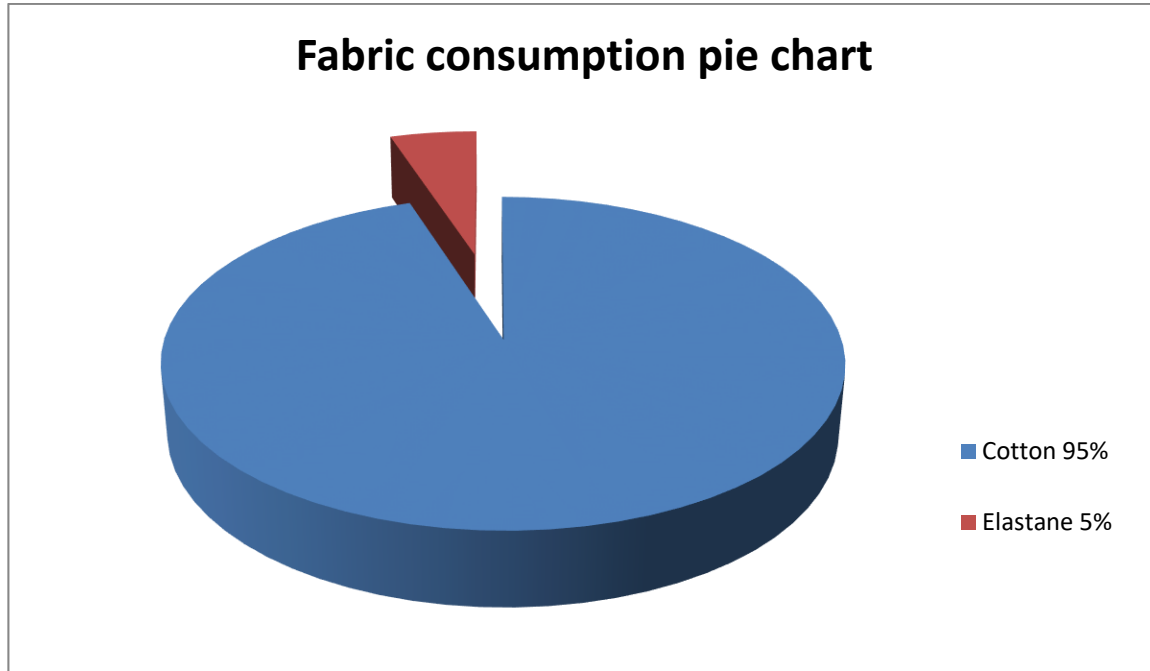
Table 3.9: Garments Delivery Sheet of Garment Shipment

Total shipment=88083

Chapter-IV

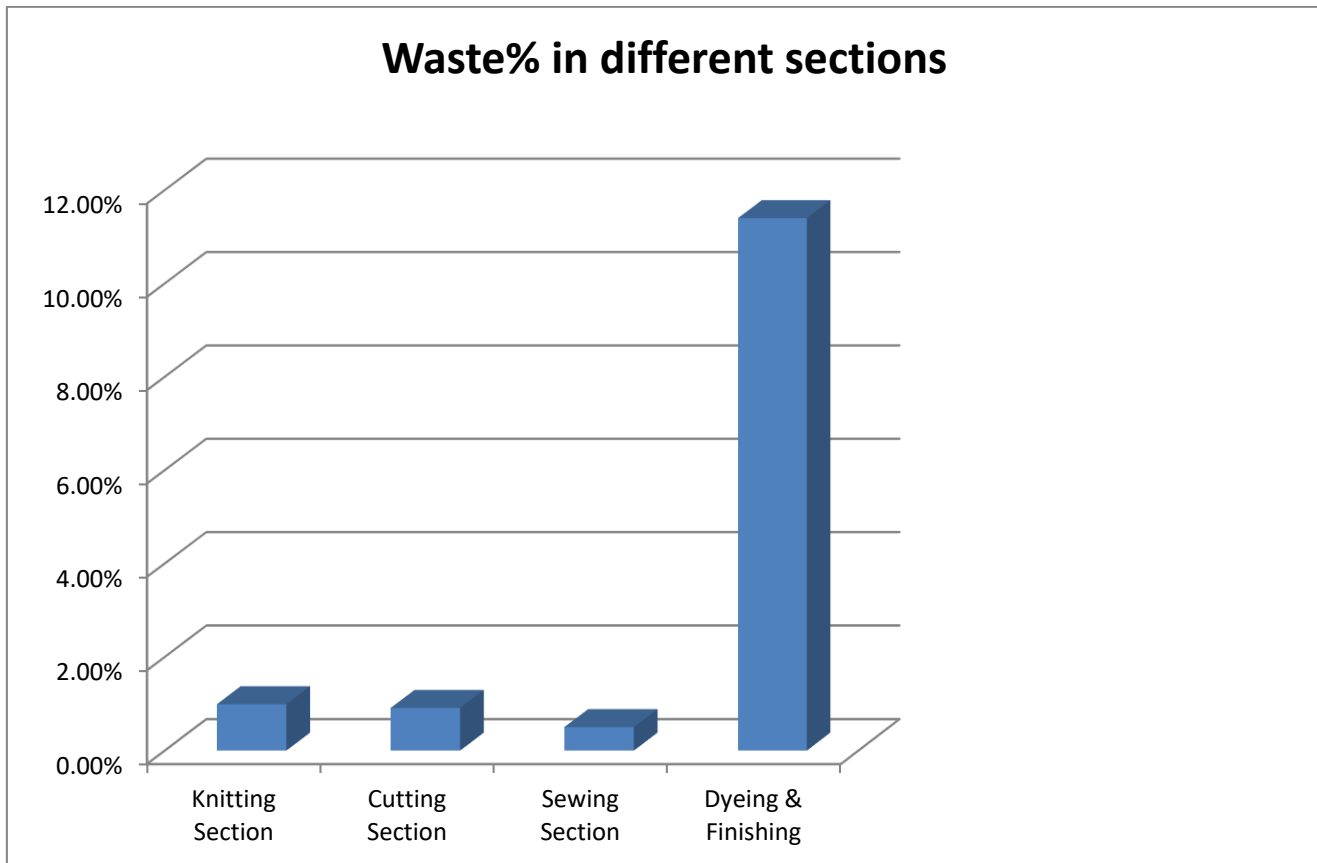
Discussion of Result

Fig: 4.1: Composition of Fabric in Plain Leggings



From this pie chart we can see that the most used Yarn is 100% Cotton. which was ordered by C&A buyer. The second portion is Lycra. This two types yarn are mostly used in knit leggings item in Fokir Apparels Industry. Then lycra which is also called spandex yarn and it is not so well to use. But the higher portion is 100% cotton yarn use in making knit garments. Actually it is vary with the weather of country. That's why they mostly use mix fabric.

4.2 Comparison of waste in different sections



This is a bar diagram of waste% for different sections in knit garment industry for solid color plain single jersey leggings. In this diagram we can clearly noticed that the waste% in dyeing and finishing section is excessively higher than any other sections. This because, the possibility of waste production is much higher in dyeing and finishing section. Here the fabric wastes more due to some unexpected reasons such as, shade variation, color fade due to excess heat or strong chemicals, hole or other defect occurring due to careless handling etc. On the other hand in case of fleece fabric, peach and brush operation causes farther 6% loss in fabric weight combinedly .

Chapter-V

Conclusion

5.1 Conclusion

The report represents the quality control activities in a woven garment industry. The assessment is done in knit fabric made plain leggings. For assessment the collected data were knitting report, fabric booking list, cutting floor data, waste% according to buyer & waste% according to fabric types. From data it is seen that different variable in measurement were found. It was occurred due to machine faults or carelessness of working operators. The problems were found such as variation of knitting time due to m/c problem, higher yarn damage due to less care of worker, higher wastage for carelessness of supervisor and so on. To remove these problems the consciousness of operators and periodical maintenance of machine have to do. The inspection during cutting and sewing has to do in proper way. The thesis was done so carefully and sensitively. All the workers and the factory authority were active that's why the data was collected easily.

5.2 Limitation

- ❖ Two months is not enough time to complete thesis. If we get more time we will know lot and complete more effectively.
- ❖ Internet had not enough information about related data.
- ❖ Internet speed was very low.
- ❖ Electricity problem occurs in almost every day.
- ❖ It was very difficult to collect all data in a specific order.
- ❖ It has taken so much time to collect any data or list from employees because they were so much busy.
- ❖ Finishing report hard cannot collect all documents for the industrial restriction.
- ❖ We had not enough theoretical knowledge about some packing details.

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