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AN INVESTIGATION INTO THE INFLUENCE OF STITCH LENGTH ON DIMENSIONAL STABILITY OF FLAT BED WEFT KNITTED FABRICS AT DIFFERENT RELAXATION TREATMENTS

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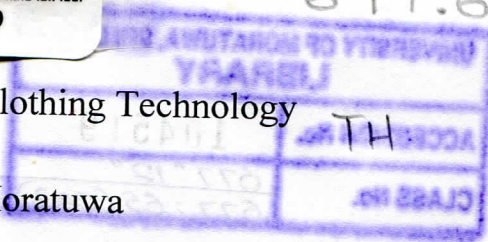
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Abstract

Wefts knitted fabrics are prone to change their dimensions during finishing process and customer usage. The effect of stitch length and relaxation treatments to the dimensional change of flatbed weft knitted single jersey fabrics is investigated in this research.

Experimental work has been carried out to monitor the changes of geometrical parameters such as wales per unit length, courses per unit length, width wise and lengthwise dimensional changes, area dimensional changes and changes of relaxation constant of the flat bed weft knitted fabric.

Three different stitch length categories (high, medium and low) are selected in this experiment. From each stitch length seven samples are produced. The measurements are taken off the machine state and after different relaxation treatments such as Dry Relaxed, Wet Relax and Finished relaxed for the purpose of monitoring the changes of the above parameters.

The stitch length and relaxation condition highly affect to the dimensional change of the fabric. The increasing of fabric relaxation is lead to the increasing of fabric shrinkage in both lengthwise and width wise of low & medium stitch length fabric. When the stitch length is high, it is noticed that expansion of width and the shrinkage of length while relaxation.

For the tight knitted flatbed single jersey fabrics, the loop shape factors are almost similar to the data given by previous researchers based on circular knitted single jersey fabrics.

Recommend not to increase the stitch length beyond certain limits as the dimensional behaviour is not possible to predict then.

DEDICATION

I would like to dedicate this Master's thesis to my mother. There is no doubt in my mind that without her continued moral support I could not have completed this research study.

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TABLE OF CONTENTS

Declaration, copyright statement and the statement of the supervisor	i
Abstract.....	ii
Dedication.....	iii
Acknowledgment.....	iv
Table of contents.....	v
List of figures.....	vii
List of tables.....	viii
List of abbreviations	ix
1 Introduction.....	1
1.1 Background.....	1
1.2 Aim of research.....	2
1.3 Objectives of the research.....	2
1.4 Chapter breakdown.....	3
2 Literature survey	4
3 Methodology.....	9
3.1 Machine and material.....	9
3.2 Experimental procedure.....	10
4 Results, data analysis and discussion.....	15
4.1 Linear dimensional changes at various relaxation treatments of flat bed weft knitted single jersey structures.....	15
4.1.1 Linear dimensional changes at various relaxation treatments of structures knitted with low stitch length.....	16
4.1.2 Linear dimensional changes at various relaxation treatments of structures knitted with medium stitch length.....	17
4.1.3 Linear dimensional changes at various relaxation treatments of structures knitted with high stitch length.....	18
4.2 Area dimensional changes at various relaxation treatments of flat bed weft knitted single jersey structures	19

4.3 Structural parameters changes at various relaxation treatments of flat bed weft knitted single jersey structures	21
4.4 Dimensional constants changes at various relaxation treatments of flat bed weft knitted single jersey structures	25
4.4.1 K_s value changes at different relaxation treatments of 100% cotton flat bed weft knitted single jersey structures	26
4.4.2 K_c value changes at different relaxation treatments of 100% cotton flat bed weft knitted single jersey structures	27
4.4.3 K_w value changes at different relaxation treatments of 100% cotton flat bed weft knitted single jersey structures	28
4.4.4 K_p value changes at different relaxation treatments of 100% cotton flat bed weft knitted single jersey structures	29
4.5 Observations of changes in flat bed weft knitted single jersey structures knitted with low, medium and high stitch lengths.....	30
5 Conclusion	33
6 Future work.....	35
Reference list	36
Appendix 1.a: Data collected to investigate linear and area dimensional changes at various relaxation treatments of low stitch length.....	38
Appendix 1.b: Data collected to investigate linear and area dimensional changes at various relaxation treatments of medium stitch length.....	40
Appendix 1.c: Data collected to investigate linear and area dimensional changes at various relaxation treatments of high stitch length.....	42
Appendix 2.a: Data collected to investigate structural parameter and dimensional changes at various relaxation treatments of low stitch length.....	44
Appendix 2.b: Data collected to investigate structural parameter and dimensional changes at various relaxation treatments of medium stitch length.....	46
Appendix 2.c: Data collected to investigate structural parameter and dimensional changes at various relaxation treatments of high stitch length.....	48

LIST OF FIGURES

Figure 3.1	Measuring Template	12
Figure 3.2	Selected sample categories for the experiment	14
Figure 4.1	Width and length dimensional changes of fabric knitted with low stitch length at different relaxation treatments.....	16
Figure 4.2	Width and length dimensional changes of fabrics knitted with medium stitch length at different relaxation treatments.....	17
Figure 4.3	Width and length dimensional changes of fabrics knitted with high stitch length at different relaxation treatments.....	18
Figure 4.4	Area dimensional changes of low, medium and high stitch length fabrics at different relaxation treatments.....	20
Figure 4.5	CPC changes at various relaxation states of flat bed weft knitted single jersey structures having low, medium and high stitch lengths.....	21
Figure 4.6	WPC changes at various relaxation states of flat bed weft knitted single jersey structures having low, medium and high stitch lengths.....	22
Figure 4.7	Stitch density (SD) per square centimeter changes at various relaxation states of flat bed weft knitted single jersey structures having low, medium and high stitch lengths.....	24
Figure 4.8	Ks value changes at different relaxation states of flat bed weft knitted single jersey structures having low, medium and high stitch lengths ..	26
Figure 4.9	Kc value changes at different relaxation states of flat bed weft knitted single jersey structures having low, medium and high stitch lengths ...	27
Figure 4.10	Kw value changes at different relaxation states of flat bed weft knitted single jersey structures having low, medium and high stitch lengths ...	28
Figure 4.11	Kp value changes at different relaxation states of flat bed weft knitted single jersey structures having low, medium and high stitch lengths ...	29
Figure 4.12	Photo of a flat bed knitted structure with low stitch length	31
Figure 4.13	Photo of a flat bed knitted structure with medium stitch length	31
Figure 4.14	Photo of a flat bed knitted structure with high stitch length.....	32

LIST OF TABLES

Table 3.1	Knitting specifications for sample preparation	9
Table 3.2	Knitted yarn specifications	9
Table 3.3	Selection of range of stitch lengths and yarn counts	10
Table 4.1	Width and length dimensional changes of fabric knitted with low stitch length at dry, wet and finish relaxation treatments	16
Table 4.2	Width and length dimensional changes of fabrics knitted with medium stitch length	17
Table 4.3	Width and length dimensional changes of fabrics knitted with high stitch length	18
Table 4.4	Length and width wise diamensional change with different relaxation	19
Table 4.5	Area dimensional changes	19
Table 4.6	CPC changes at various relaxation states of flat bed weft knitted single jersey structures	21
Table 4.7	WPC changes at various relaxation states of flat bed weft knitted single jersey structures	22
Table 4.8	Stitch density (SD) changes at various relaxation states of flat bed weft knitted single jersey structures	23
Table 4.9	Dimensional constants at different relaxation state of structures knitted with different stitch length	25
Table 4.10	Ks value changes at different relaxation state	26
Table 4.11	Kc value changes at different relaxation state	27
Table 4.12	Kw value changes at different relaxation state	28
Table 4.13	Kp value changes at different relaxation state	29

LIST OF ABBREVIATIONS

ABBREVIATION	DISCRIPTION
CPC	Courses per centi meter
WPC	Wales per centi meter
SD	Stitch Density per square centi meter
Ks	K value for stitch density
Kc	K value for courses
Kp	Loop shape factor
N	Surface density of stitches
C	Number of courses per inch
S	Number of stitches or wales per inch
L	Stitch Length
TF	Tightness factor
T	Linear density of yarn in Tex
SLS	Sri Lanka standard
L	Length
W	Width
P	Point
L0	Average length distance between pair of marks, before relaxation treatment
L1	Average width distance between pair of marks, after relaxation treatment
L10	Length distance between pair of marks, before relaxation treatment
Lw0	Width distance between pair of marks, before relaxation treatment
L11	Length distance between pair of marks, after relaxation treatment
Lw1	Width distance between pair of marks, after relaxation treatment

LIST OF APPENDICES

Appendix 1.a: Data collected to investigate linear and area dimensional changes at various relaxation treatments of low stitch length	38
Appendix 1.b: Data collected to investigate linear and area dimensional changes at various relaxation treatments of medium stitch length	40
Appendix 1.c: Data collected to investigate linear and area dimensional changes at various relaxation treatments of high stitch length.....	42
Appendix 2.a: Data collected to investigate structural parameter and dimensional changes at various relaxation treatments of low stitch length.....	44
Appendix 2.b: Data collected to investigate structural parameter and dimensional changes at various relaxation treatments of medium stitch length	46
Appendix 2.c: Data collected to investigate structural parameter and dimensional changes at various relaxation treatments of high stitch length	48