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EFFECT OF SEAM ON DRAPE OF SELECTED LIGHTWEIGHT WOVEN FABRICS

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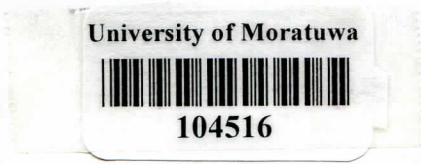
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Dissertation submitted in partial fulfillment of the requirements for the degree
Master of Science

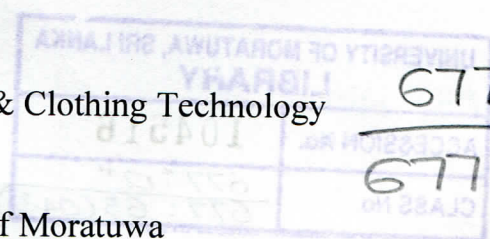
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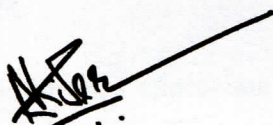
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ABSTRACT

Drape is a unique property that allows a fabric to be bent in more than one direction with double curvature. For many years, textile researchers studied this attribute in order to evaluate the drape quality and improve the drape appearance of garments. However, fabric drape can be more realistically investigated by considering seams. When various cut panels are stitched together, this will lead to significant variations in fabric drape performance. Thus investigation of the impact of a seam on fabric drape performance can help to understand, evaluate, and assure the appearance of the final garment.

The purpose of this research is to analysis the influence of direction and number of seams on fabric drape parameters. Further, the research may explore the influence on bending rigidity on drape coefficient.

Two main experiments, draping testing and bending testing were carried out in this study. For the experiment, 100% cotton, lightweight, plain woven fabric was used as the base material expecting medium weight. Seam type Ssa with stitch type 301 was used to prepare samples.

Six types of samples were prepared with varying number of seams and seam directions for draping test. For the bending testing, six types of samples were prepared with varying fabric direction. Cusick's drapemeter was used as a testing apparatus to analyze the drape of samples with seams and bending rigidity was investigated for similar types of sample using fixed angle flexometer.

Drape behavior was determined and compared in terms of drape coefficient and node amplitude. The effect of the number of seams and seam directions on fabric drape coefficient and stability of drape profile were statistically determined. The relationships were derived in between drape coefficient and bending rigidity for fabric with seams in warp, weft and bias directions.

Investigating on drape on fabric with seams can improve apparel design and fabric end-use applications. Moreover, contributing to garment drape prediction for the 3D modeling in clothing CAD system.

Keywords: Drape coefficient, Seam direction, Bending rigidity, Node amplitude

TABLE OF CONTENTS

Declaration	i
Acknowledgement	ii
Abstract	iii
Table of Contents	iv
List of Figures	vii
List of Tables	ix
List of Abbreviations	xi
List of Appendices	xiii
Chapter 1: Introduction	1
1.1 Background of the study	1
1.2 Factor affecting the drape of fabrics with seams	4
1.3 Identification of the problem	4
1.4 Problem statement	5
1.5 The purpose of the research	6
Chapter 2: Literature Review	7
2.1 History of research on fabric drape	7
2.2 Properties affect on fabric draping	8
2.3 Testing methods of fabric draping	9
2.3.1 Cantilever method	9
2.3.2 Development of drapemeter	12
2.4 Recent developments in draping research	13

2.4.1	Image Analysis System	13
2.4.2	Dynamic drapemeter	15
2.5	Measuring Parameters of fabric draping	16
2.5.1	Objective measurement	16
2.5.2	Subjective measurement	17
2.6	Previous research on effecting seams on fabric draping	18
Chapter 3:	Research Objectives and Hypothesis	21
3.1	Research Objectives	21
3.2	Developing Hypothesis	21
3.2.1	Hypothesis 1 (H1)	21
3.2.2.	Hypothesis 2 (H2)	22
3.2.3	Hypothesis 3 (H3)	23
Chapter 4:	Methodology	24
4.1	Study the literature relevant to fabric drape	24
4.2	Selection of fabric, seam and stitch type	24
4.2.1	Fabric selection for the research	24
4.2.2	Selection of seam type	26
4.2.3	Selection of stitch type	26
4.3	Performing experiments on bending and draping	26
4.3.1	Draping testing	26
4.3.2	Bending testing	29
4.4	Analyze the results	31

4.5	Develop a relationship between drape coefficient and bending rigidity	31
Chapter 5:	Result analysis and discussion	32
5.1	Hypothesis 1	32
5.1.1	Analyzing the Hypothesis 1	32
5.1.2	Discussion on Hypothesis 1	36
5.2	Hypothesis 2	38
5.2.1	Analyzing the Hypothesis 2	38
5.2.2	Stability Testing in Drape Profile	39
5.2.3	Discussion on Hypothesis 2	45
5.3	Hypothesis 3	46
5.3.1	Analyzing Hypothesis 3	46
5.3.2	Discussion on Hypothesis 3	53
Chapter 6:	Conclusions and Recommendations	56
References		58
Appendix i	Results	I
Appendix ii	Statistical Evaluation Tables	IX
Appendix iii	Physical properties of woven fabrics	XI

LIST OF FIGURES

	Page	
Figure 2.1	Principle of cantilever stiffness tester	10
Figure 2.2	Mounting fabric for Dynamic drapemeter	16
Figure 3.1	Sketch of drape profile	22
Figure 4.1	Shirley thickness gauge	25
Figure 4.2	Cusick's Drapemeter	27
Figure 4.3	Sample types for Drape testing	28
Figure 4.4	Shirley stiffness tester	29
Figure 4.5	Sample type for Bending test	30
Figure 5.1	Graph of Mean Drape coefficient variation Vs sample group	35
Figure 5.2	Box plot of Drape coefficient Vs sample group	36
Figure 5.3	Box plot of node amplitude variation in each sample group	40
Figure 5.4	Node distribution without seam samples (D-1)	41
Figure 5.5	Node distribution of samples with warp seam	42
Figure 5.6	Node distribution of samples with weft seams	42
Figure 5.7	Node distribution of warp & weft directional (0° & 90° with warp) seamed samples	43
Figure 5.8	Node distribution of bias (45° & -45° with warp direction) seamed samples	43
Figure 5.9	Node amplitude Vs Angle for bias (45° & -45° with warp direction) seamed samples	44

	Page
Figure 5.10 Node distribution of samples with warp, weft & bias seams (0°, 90°, 45°, -45° directional seams with warp)	44
Figure 5.11 drape coefficient Vs Bending rigidity for seam in warp direction	52
Figure 5.12 Drape coefficient Vs Bending rigidity for weft directional seam	53
Figure 5.13 Drape coefficient Vs Bending rigidity for bias seam	53

LIST OF TABLES

	Page	
Table 4.1	Sample Description for Draping test	28
Table 4.2	Sample description for Bending test	30
Table 5.1	Test of Homogeneity of Variances of drape coefficient using the Lavene statistic	33
Table 5.2	One-way ANOVA for Drape Coefficient	33
Table 5.3	Tukey-HSD for drape coefficient mean values	34
Table 5.4	Test of Homogeneity of Variance in number of nodes	39
Table 5.5	ANOVA for node amplitude	40
Table 5.6	Correlation between bending and drape coefficient in warp Direction	47
Table 5.7	Correlation between bending and drape coefficient in weft direction	47
Table 5.8	Correlation between drape coefficient and bending rigidity in bias direction	48
Table 5.9	Model Summary of regression analysis in warp direction	48
Table 5.10	ANOVA for regression analysis in warp direction	49
Table 5.11	coefficient for equation between bending rigidity and drape Coefficient in warp direction	49
Table 5.12	Model summary of regression analysis in weft direction	49
Table 5.13	ANOVA for regression analysis in weft direction	50
Table 5.14	Coefficient for equation between bending rigidity and drape coefficient in weft direction	50

	Page
Table 5.15 Model summary of regression analysis in bias direction	51
Table 5.16 ANOVA for regression analysis in bias direction	51
Table 5.17 Coefficient for equation between bending rigidity and drape coefficient in bias direction	51

LIST OF ABBREVIATIONS

Abbreviation	Description
%	Percentage
°	Degree of angle
2D	2 Dimensional
3D	3 Dimensional
ANOVA	Analysis of Variance
B	Bending rigidity
BS	British Standard
CAD	Computer aided design
CCD	Change couple device
CRD	Completely randomized designed
DC	Drape coefficient
<i>df</i>	Degree of freedom
Eq.	Equation
F	F ratio or F statistic
FAST	Fabric Assurance by Sample Testing
FRL	Fabric research laboratory
H	Hypothesis
HSD	Tukey's Honestly Significant Difference Test
KESF	Kawabata Evaluation System for Fabric

Abbreviation	Description
LSD	Least Significant Difference
N	Number of samples
p	Probability
R	Correlation Coefficient
Sig	Significance
t	t statistic or t test
tkt	Ticket No
A	probability level
α	Proportional
β	Beta, probability of making type II error
η	Mean value
σ	Variance

LIST OF APPENDICES

APPENDIX I	Results	I
APPENDIX ii	Statistical Evaluation Tables	IX
APPENDIX iii	Properties of woven fabrics	XI