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EFFECT OF DIFFERENT WEAVES ON MECHANICAL PROPERTIES AND DRAPEABILITY OF WOVEN FABRICS

A PROJECT REPORT

Submitted by

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BONAFIDE CERTIFICATE

Certificate that this project report **"Effect of different weaves on mechanical properties and drapeability of woven fabrics"** is the bonafide work of **Boominath.B, Prabhu.S, Prabhu.V** and **Raghukumar.D** who carried out the project work under my supervision

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We wish to express our deep gratitude to the guide **Mr.N.Gokarneshan, senior lecture,** Department of Textile Technology, Kumaraguru College of Technology for his valuable guidance and suggestions throughout the course of this project work.

Finally, we thank one and all who helped in our project.

Abstract:

The mechanical properties and handle value of woven fabrics are affected by various factors like pick spacing., type of material used, count used, type of weave and so many. So we decide to take a research work on **"EFFECT OF WEAVES ON MECHANICAL PROPERTIES AND DRAPEABILITY OF WOVEN FABRICS"**, to study the mechanical properties of plain, twill and satin weave .

we had conducted the study on bending modulus, drapeability and tensile strength . . We conducted these studies by having same constructions of woven fabrics ends per inch , picks per inch, count of warp and weft and width of fabrics.

We had found out the correlation coefficient between the drapeability and tensile strength, bending modulus and drapeability and multiple regression equations are found.

சாராம்சம்

நெசவு துணிகளின் இயந்தரவியல் பண்புகளும், கையுணர்வு பண்புகளும் நெசவின் போது உபயோகிக்கும் நூலின் தடிமன், நூலின் அடிப்படை பொருளின் தன்மை. மற்றும் நெசவு வடிவமைப்பு ஆகியவைகளை சார்ந்து இருக்கும். ஆகையால் எங்களின் ஆராய்ச்சி கீழ்கண்ட தலைப்பின் கீழ் நடத்தினோம்.

"நெசவு துணிகளின் இயந்தரவியல் பண்புகளிலும், கையுணர்வு பண்புகளிலும் நெசவு வடிவமைப்பின் விளைவுகள்". இந்த ஆராய்ச்சி, நெசவு வடிவமைப்பில் 1/1 ப்ளேன், 3/1 ட்டுவில் மற்றும் 4/1 சேட்டின் ஆகிய வடிவமைப்பில் நடத்தினோம்.

இந்த ஆராய்ச்சியில் நெசவு துணியின் வளைவு தன்மை, மடிப்புத்தன்மை மற்றும் இழுவலிமை ஆகியவற்றை பற்றி படித்தோம். இந்த ஆராய்ச்சி ஓரே கட்டமைப்பு பண்புகளை கொண்ட நெசவு துணிகளில் நடத்தினோம். ஆதாவது ஓரே கட்டமைப்பு என்பது ஓரே இடையிழை இடைவெளி, ஓரே நெடு இழை இடைவெளி, ஓரே நூலின் தடிமன் மற்றும் சமஅகலம் கொண்ட நெசவு துணிகளை பயன்படுத்தினோம்.

இறுதியில் இந்த ஆராய்ச்சியின் கீழ் நாங்கள் இயந்தரவியல் தன்மைக்கும் கையுணர்வு தன்மைக்கும் மற்றும் இழுவலிமைக்கும் கையுணர்வு தன்மைக்கும் இடையான சார்பு தன்மைக்கும் பல சார்பு நிலை கோடுகளையும் கண்டறிந்தோம்.

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1. INTRODUCTION

1.1 Mechanical properties of fabrics

The mechanical properties of the fabrics is decides the performance and appearance of the garments. In the mechanical and handle properties of the fabric. drape is an important property that decides the gracefulness of a garment as it is related to aesthetics and appearance of garments.

It describes the way in which fabric falls itself in specific shape according to its properties when part of its supported by any surface and rest is unsupported. Drape is of much importance for the selection of appropriate fabric for intended garment, and therefore the correlation between the drape and fabric properties must be know.

Treloar investigated the dependence of drape of the fabric on bending stiffness and shear stiffness.

The major mode of deformation in draping is fabric bending. But due to the occurrence of double curvature, some tensile and compressive deformations. Bulking behavior is also be found to be important in determining the form and magnitude of drape which is again related to bending stiffness.

So, the bending and tensile properties are thought to be main factors influencing drape and fabric handle. Bending length is suggested as appropriate measurement of bending behavior

1.2. Weave structure

Mechanical properties and hand value are decided by weave structure of the fabrics. So different float length also factor of the fabric properties. The different weaves has the different float length in warp and weft way also.

For example the drape co efficient of the different weaves are different. Some other mechanical properties are also different for different weaves.

We can define the drapability, bending modulus and tensile strength of the different weave fabrics. And we can find correlations and many regression equations.

Finally we are finding influence of weaves on mechanical properties and drapability of the fabrics.

2. LITERATURE SURVEY

2.1 Mechanical properties and hand value form parameters of weave structures.

This paper submitted by Matsudaira and furutain from Japan. In this study, mechanical properties and hand value are predicted from the parameters of weave structures.

To promote the design of woven fabrics, we can define the crossing over factor (CFF) and floating yarn factor (FYF) as the parameters of the weave structure for predicting mechanical properties and hand values. Both the CFF and FYF are related to some mechanical properties and primary hand.

Multiple regression equation of mechanical parameters and hand value are derived from those parameters of weave structures, and the predicted values almost exactly agree with the measured values from the KES-FB system.

In order to predict the mechanical properties and fabric handle from the parameters of the weave structure, they have defined the weave structure parameters and studied relationship between them.

They conclude that they can define the crossing over firmness factor and the floating yarn factor as the parameters of the weave structures for predicting mechanical parameters and hand values.

Both CFF and FYF are related to some mechanical parameters and to primary hand. The different in weave structures mainly affect bending and shearing properties and anti drape stiffness and flexibility with a soft feeling.

Multiple regression equations of mechanical parameters and handle values are derived from the weave structure parameters. These equations will be helpful in designing woven fabrics.

2.2. Fabric low stress mechanical properties and drapability.

This paper submitted by raj Sharma from India and H roedel from Germany. The cusick's drape meter has been modified and used to determine the accurate drape coefficient. The drape coefficient so obtained and is then correlated with fabric low stress mechanical properties.

It is observed that the drape coefficient has strong correlation with bending properties, good to strong correlation with shearing properties and poor correlation with tensile properties.

They conclude drape coefficient has very strong correlation with bending properties, good to strong correlations with shearing properties and poor correlation with tensile properties.

2.3. Fabric stiffness, handle and drape

Usually it is known what characteristics are required for a fabric for a given purpose for optimum performance in use. When mechanical or industrial fabrics are concerned, detailed information on strength, extensibility, resistance to chemicals attack etc., is required and suitable tests are available which gives this information in numerical form.

However, during the selection, some of the properties like stiffness, appearance, luster, smoothness or roughness, stiffness and limpness and good or bad draping qualities are considered.

But this properties are only relative properties are only by subjective assessment or psychological impression, the fabric are selected. The method adopted in the lab for judgment is called as ranking method.

2.4. Handle

Fabric handle, as the name itself implies, is concerned with the feel of the material and so depends upon the sense of touch. Different types of material will have different degrees of smoothness of roughness.

For the fabric such as worsted and cotton, the degree of smoothness or roughness is different and its judgment varies from person to person. When the fabric handle is to be judged the sensation for stiffness or limpness, hardness or softness, roughness or smoothness are all made use of.

The main but not only factors in handles are

2.4.1. Weight and density

Weight per unit area or per unit volume is considered. Fabric vary in weight from light to heavy and density form compact to open.

2.4.2. Surface friction.

It refers the resistance to be slipping either on the fingers or on another piece of fabric. Fabrics vary in surface friction from harsh to slippery.

2.4.3. Flexibility

It refers ease of bending of a fabric. Fabrics vary in flexibility from pliable to stiff.

2.4.4. Compressibility

It refers ease of squeezing of a fabric. Fabric vary in compressibility from soft to hard.

2.4.5. Resilience

It refers the ability of a fabric to recover from deformation in any length of time. The deformation may be flexural, compress ional, extensional or torsional. Fabrics vary in resilience from springy to limp.

2.5. Tensile strength

The tensile strength of the fabric is mainly depended to warp and weft float of the fabric. And its mainly depended to type of the machine to be used, and sample size, gauge length of the specimen.

The tensile strength of the fabric is depending by single yarn strength of the fabric also. Finally the tensile strength of the fabric desired by type of weaves, material, and construction of the fabrics.

3. AIM AND SCOPE

- We are finding influence of weaves on mechanical properties
- And finding correlation between drapability and bending modulus and correlation between drapability and tensile strength.

We are take three different weave samples, these samples are has different weave structures but its has same some other fabric construction like epi, ppi and count etc.

So these studies used to choosing of weave structure for different end uses of the fabrics. Because its describe level of mechanical properties and level of correlate with each other properties.

4. METHODOLOGY

4.1. FABRIC CONSTRUCTIONS

We are using three different weaves. These weaves are

1. 1/1 plain weave
2. 3/1 twill weaves
3. 4/1 satin weave

PLAIN WEAVE

X	
	X

3/1 TWILL WEAVE

	X	X	
X	X	X	X
X	X		X
X		X	X

4/1 SATIN WEAVE

X	X	X	.	X
X	.	X	X	X
X	X	X	X	.
X	X	.	X	X
.	X	X	X	X

FIG 1 : WEAVE STRUCTURE OF WOVEN FABRICS

Some other fabric constructions are:

Material	=	100% cotton
Count	=	warp- $2/40^s$ weft- $2/40^s$
EPI	=	54
PPI	=	44
Width	=	60"

4.2. Drapability of the fabrics

Drape is the ability of a fabric to assume a graceful appearance in use. drapability of the fabric can be determined using the instrument Drapameter and is expressed in terms of drape co-efficient. The below fig shows the full view of drape meter.

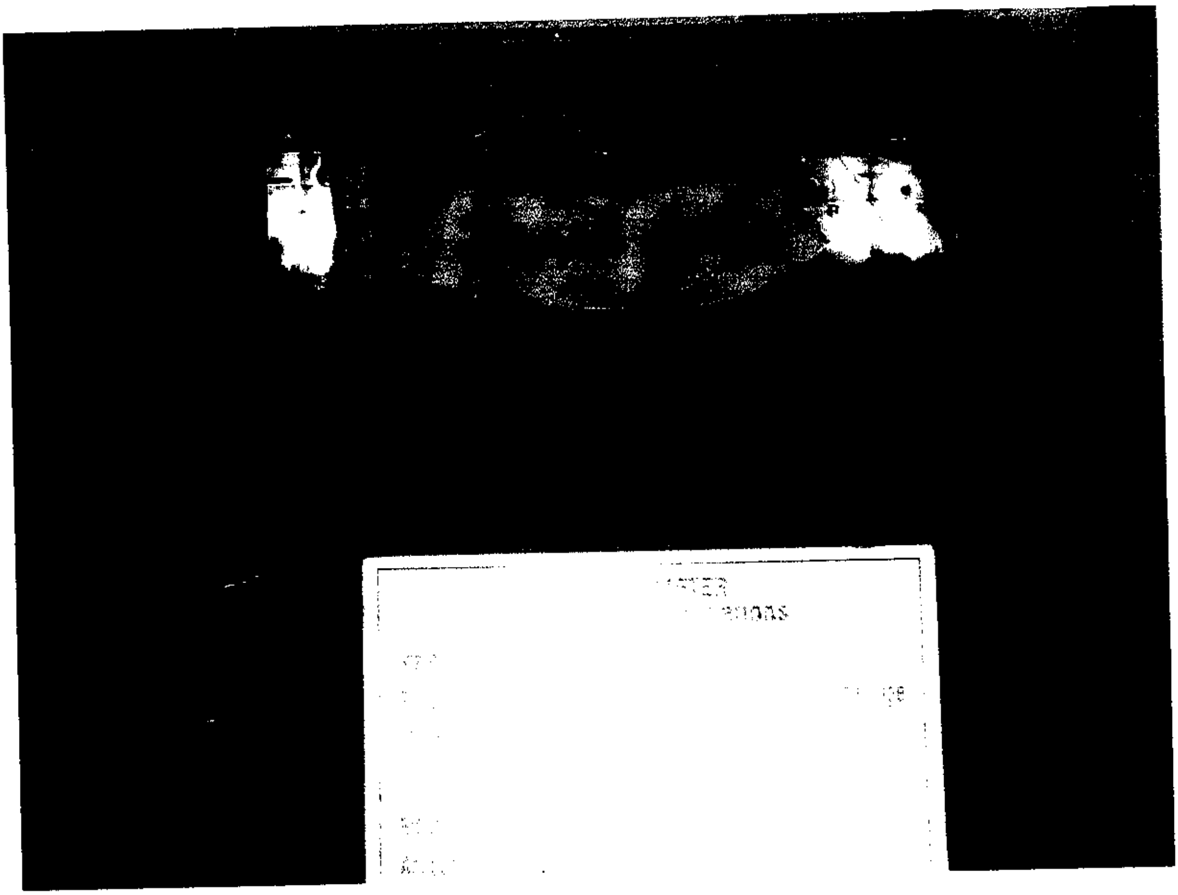

FIG 2: DRAPE METER

4.2.1. Description and procedure

A circular specimen of diameter 10 in. its supported on a circular disc of diameter 5 in. when doing so, the unsupported area of the fabric drapes over the edge of the supporting disc.

If the specimen is a solid object say a card board, draping would not occurs and hence the area of projection from the periphery would equal to the area of the solid object.

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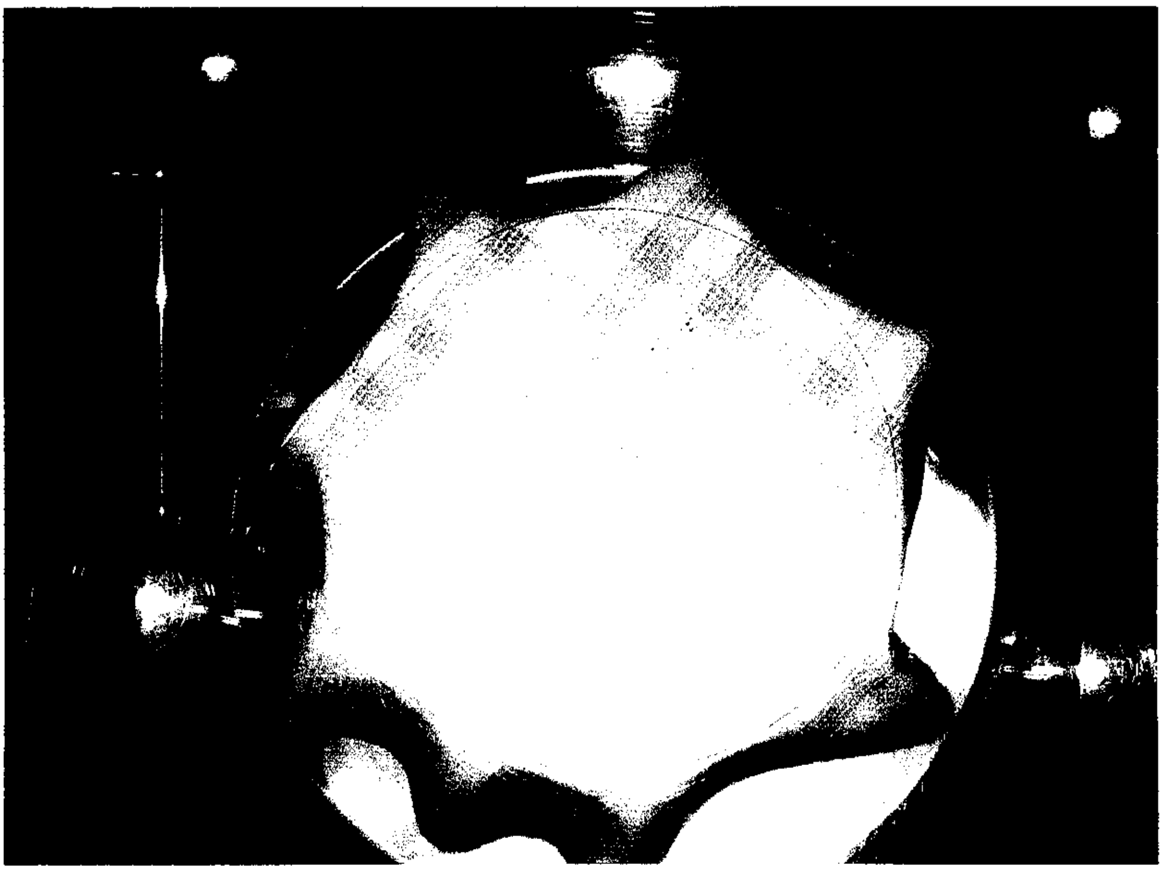

FIG 3 : PROJECTED FABRIC ON DRAPE METER

When the fabric is supported, it will assume the folded configuration due to gravity and the shape of the projected area will not be circular, but something like shape shown in fig

There are two ways are used to determine the drape co-efficient of the fabrics.

1. by area loss method.
2. by weight loss method.

Here we are using weight loss method. In this method corresponding weights of paper projection can also be taken to calculate the drape co-efficient.

i.e., $$F = \frac{Ws - Wd}{W_D - Wd}$$

Where,

W_D - weight of the paper whose area is equal to the area of the specimen.

Wd – weight of the paper whose area is equal to the area of the supporting Disc.

Ws - Weight of paper whose area is equal to projected area of the Specimen.

One point to keep in mind here is that the thickness of the paper to trace the outline must be uniform.

The small value of f indicates the better drapability of the fabric and the large value of the F indicates the bad drapability.

4.3. Bending modulus

The bending modulus of the fabric should be measured by fabric stiffness tester. fabric stiffness indicates the resistance of the fabric to bending and it is a key factor in the study of handle and drape.

Different methods are available to measure the fabric stiffness. They are

1. By the thickness of a folded sample.
2. By the sag of a projecting strip of sample-cantilever test.
3. by the length of a heart-loop-heart loop test
4. by means of a flexometer
5. by means of a planoflex
6. By the moment of rotation.

The cantilever test is the preferred method because it is simpler to carry out. However, it is not suitable for testing fabrics which are very limp and which have a marked tendency to curl or twist at a cut edge. For these types of fabrics, the heart loop test may be used.

These methods measure the bending length of fabric and form this the flexural rigidity and bending modulus can be calculated

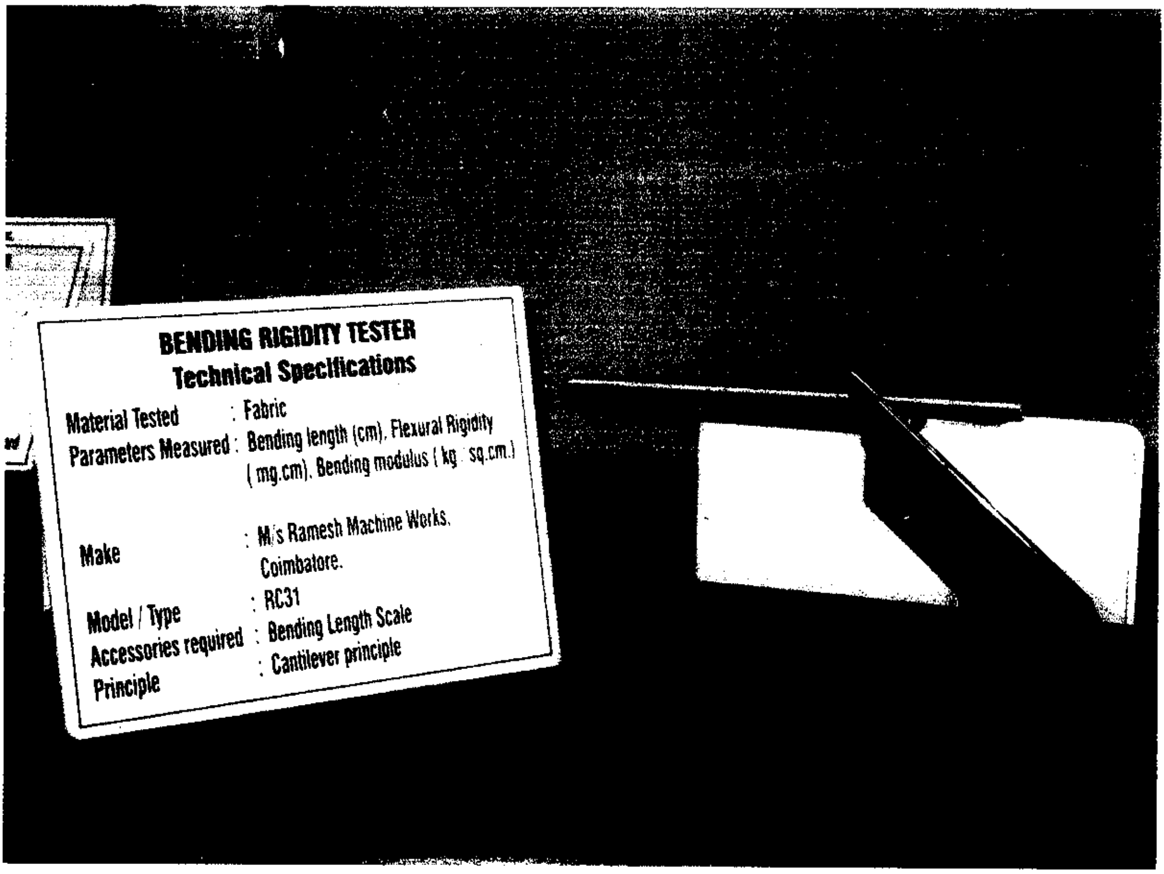

FIG 4: FABRIC STIFFNESS TESTER

4.3.1. Bending length

Bending length is also called as drape stiffness. It is the length of fabric that will bend under its own weight to a definite extent. It indicates the interaction between fabric weight and its stiffness. It reflects the stiffness of a fabric when bend in one plain under the force of gravity and is one component of drape.

A rectangular strip of fabric is mounted on a horizontal platform and slider until
The fabric overhangs like a cantilever.

The length of overhang / when it is depressed under its own weight and the angle between the line joining the tip to the platform ɵ are measured and from these values, the bending length is calculated as,

Bending length c = l f (ɵ)

Where $f(\theta) = [(\cos 1/2\theta)/ (8\tan\theta)]^{1/3}$

Here ɵ = 41.5

the difficulty of calculating the function of ɵ is avoided by consulting a prepared table. Bending length is calculate for warp way and weft ways of fabric.

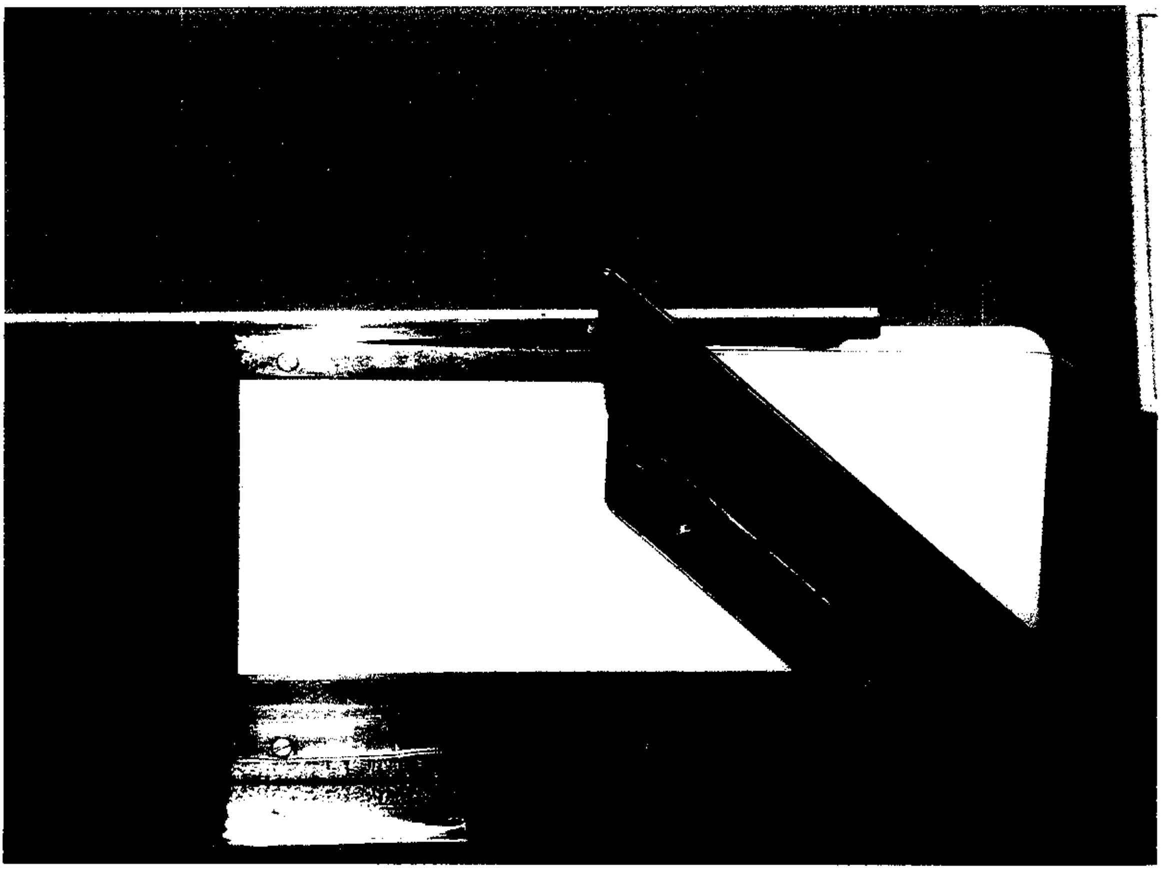

FIG 5:BENDING LENGTH MEASUREMENT

4.3.2. Flexural rigidity G

It is measure of stiffness associated within handle. It is also called as flex stiffness.

It is calculated from the bending length and weight per square yard of fabric as follows:

Flexural rigidity, $G = W_2 C^3 *$ mg. cm

Where,

C = bending length in cm.

W2 = weight / sq. cm of fabric in grams.

Flexural rigidity is calculated for warp and weft ways of fabric and the over all flexural rigidity is calculated as the geometric mean of those two values.

Overall flexural rigidity, $Go = (Gw.Gf)^{1/2}$

Where,

Gw = warp flexural rigidity

Gf = weft (filling flexural rigidity)

4.3.3. Bending modulus,

This value of independent of the dimension of the strip tested and may be regarded as the intrinsic stiffness. This value may be used to compare the stiffness of the material in fabric of different thickness values. For this calculation, the thickness of the fabric is measured at a pressure of 1 lb/sq.inch. then,

$$\text{The bending modulus, } q = \frac{12\, G * 10^{-6}}{g_2^{3}} \text{ kg/sq cm}$$

Where, g_2 = fabric thickness in cm.

Bending modulus is also calculated for warp and weft ways of the fabric.

4.4. Tensile strength.

The tensile strength of the fabrics measured by computerized fabric tensile strength tester. its work in CRT principles. They are two types of principles as

1. Constant rate of extension. (CRE)
2. Constant rate of traverse. (CRT)

The several factors are affecting the tensile strength of the fabrics. They are as

1. Type of testing machine.
2. Specimen length
3. Rate of loading and time to break.
4. Effect of humidity and temperature.

The British standard for fabric strength involves extending a strip of the fabric to its breaking point by a suitable mechanical means which can record the breaking load and extension. Five fabric samples are extended in a direction parallel to the warp and five parallel to the weft, no two samples to contain the same longitudinal threads.

FIG 6: COMPUTERISED FABRIC TENSILE TESTER

The specimens are cut to a size of 12”*2” and than frayed down in the width equally at both sides to gives samples which are exactly 50mm wide. This ensures that all threads run the full length of the samples so contributing to the strength and also that the width is accurate.

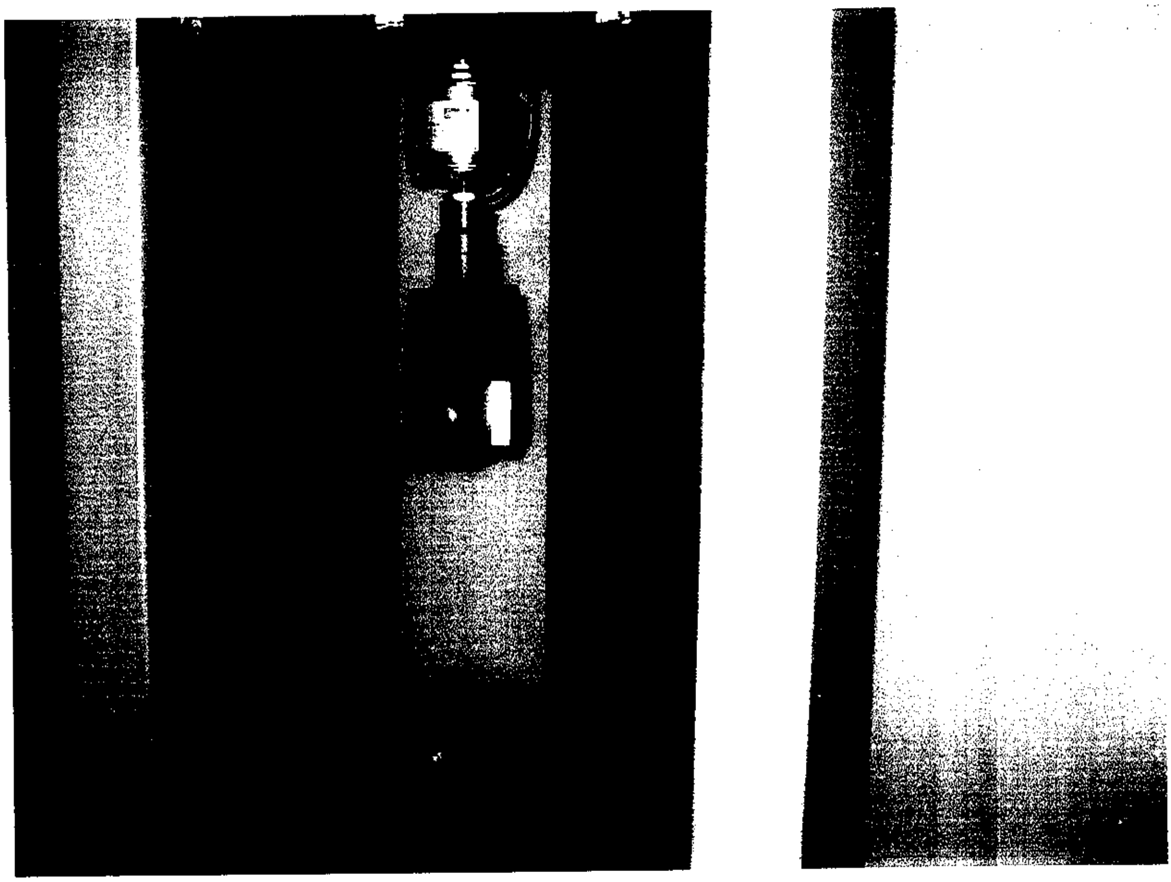

FIG 7: TENSILE STRENGTH TESTER WITH MOVABLE JAW

The rate of extension is set to 250mm/min and the distance between the jaws (gauge length 24.5cm. the sample is pretension to 1% of the probable breaking load. Any break that occur within 5mm of the jaws should be rejected and also those at loads substantially less than the average. the mean breaking force and mean extension as a percentage of initial length are reported.

To measure breaking strength, the are three tests may be used . they are:

1. Reveled strip method
2. Cut strip method
3. Grap method.

We are using reveled strip method for finding tensile strength of our woven fabric samples.

RESULTS AND DISCUSSION :

From our laboratory experiments the drapability, bending modulus and tensile strength readings of our samples is given below

TABLE 1: MECHANICAL PROPERTIES OF PLAIN WEAVE

S.NO	DRAPABILITY (%)	BENDING MODULUS (kg / sq cm)	TENSILE STRENGTH (lbs)	
1.	55.6	4.78	56.43	39.88
2.	55.4	5.41	34.1	49.058
3.	55.3	5.49	38.08	39.08
4.	55.7	5.09	42.77	37.89
5.	55.2	4.78	40.5	40.12
6.	54.3	5.02	51.3	42.25
7.	54.5	5.09	39.2	43.65
8.	54.9	5.02	45.32	45.55
9.	55.0	4.94	47.2	47.2
10.	55.1	5.58	48.88	48.82

TABLE 2 : MECHANICAL PROPERTIES OF TWILL WEAVE

S.NO	BENDING MODULUS (kg /sq cm)	DRAPABILITY (%)	TENSILE STRENGTH (lbs)	
1.	2.07	40	64.4	50.75
2.	2.24	43.3	76.77	55.83
3.	2.42	42.1	64.01	54.44
4.	2.34	40.2	66.4	44.47
5.	2.45	41	65.3	53.6
6.	2.32	40.5	67.32	51.23
7.	2.29	42	68.56	52.36
8.	2.38	42.5	69.32	49.65
9.	2.34	41.5	65.21	50.23
10.	2.34	43	66.95	54.65

TABLE 3: MECHANICAL PROPERTIES OF SATIN WEAVE

S.NO	BENDING MODULUS (kg / sq cm)	DRAPABILITY (%)	TENSILE STRENGTH (lbs)	
1.	1.28	33.7	64.7	52.94
2.	1.18	24.3	67.6	48.05
3.	1.24	40.2	69.29	56.63
4.	1.14	26.0	68.29	45.13
5.	1.27	30	65.63	40.35
6.	1.28	35.2	67.49	50.63
7.	1.41	29.2	66.28	55.36
8.	1.27	38.2	63.54	54.24
9.	1.24	32.1	69.32	50.6
10.	1.14	37.5	65.62	54.23

TABLE 4: COMPARISION OF DRAPEABILITY

S.NO	PLAIN	TWILL	SATIN
1.	55.6	40	33.7
2.	55.4	43.3	24.3
3.	55.3	42.1	40.2
4.	55.7	40.2	26.0
5.	55.2	41	30
6.	54.3	40.5	35.2
7.	54.5	42.0	29.2
8.	54.9	42.5	38.2
9.	55.0	41.5	32.1
10.	55.1	43	37.5

TABLE 5: COMPARISION OF BENDING MODULUS(kg/sq cm)

S.NO	PLAIN	TWILL	SATIN
1.	4.78	2.07	1.28
2.	5.41	2.24	1.18
3.	5.49	2.42	1.14
4.	5.09	2.34	1.27
5.	4.78	2.45	1.28
6.	5.02	2.32	1.41
7.	5.09	2.29	1.27
8.	5.02S	2.38	1.24
9.	4.94	2.34	1.14
10.	5.58	2.34	1.24

TABLE 6 : COMPARISION OFTENSILE STRENGTH(lbs)

S.NO	PLAIN	TWILL	SATIN
1.	56.43	64.4	64.7
2.	34.1	76.77	67.6
3.	38.08	64.01	69.29
4.	42.77	66.4	68.29
5.	40.5	65.3	65.63
6.	51.3	67.32	67.49
7.	39.2	68.56	66.28
8.	45.32	69.32	63.54
9.	47.2	65.1	69.32
10.	48.88	66.95	65.62

GRAPHS AND DISCUSSION:

From our readings the several graphs are uptain as given below

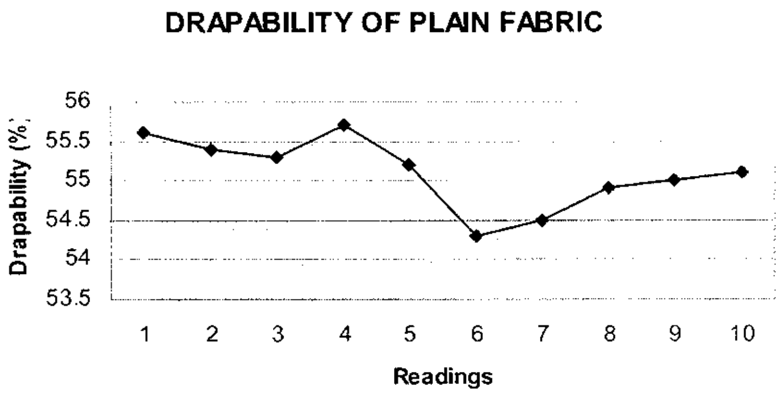

FIG 8: DRAPEABILITY OF PLAIN FABRIC

In above graph shows the drapability value of plain weave fabric. The minimum value of the drapability is 54.3% and maximum value of the drapability is 55.7%.

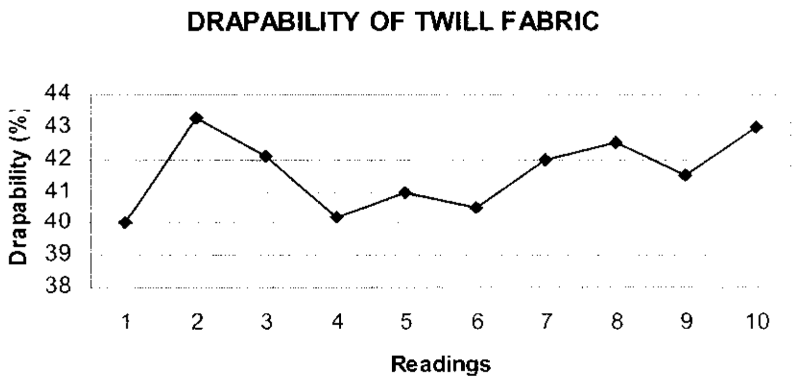

FIG 9 DRAPEABILITY OF TWILL FABRIC

In above graph shows the drapability of twill weave fabric.the minimum value of the drapability is 40% and maximum value of the drapability is 43.3%.

The below graph shows the values of drapability of satin weave. the minimum value is 26% and maximum value is 40.2%.

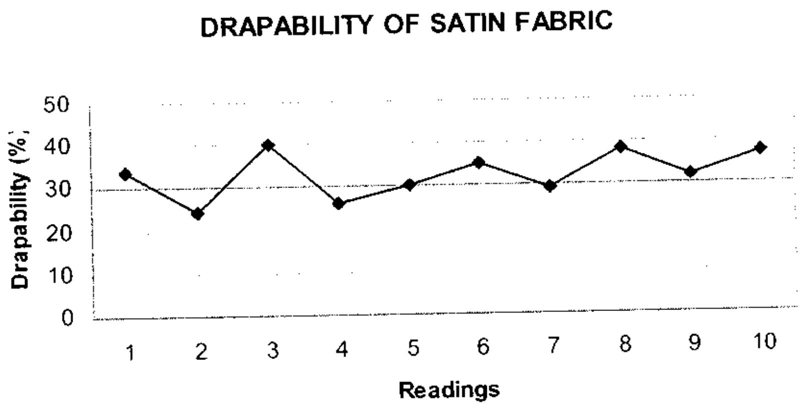

FIG 10: DRAPEABILITY OF SATIN FABRIC

BENDING MODULUS:

The below graph is shows that the values of bending modulus for plain weave.the maximum value is 5. 58kg/sq.cm and minimum value is 4.78kg/sq.cm .

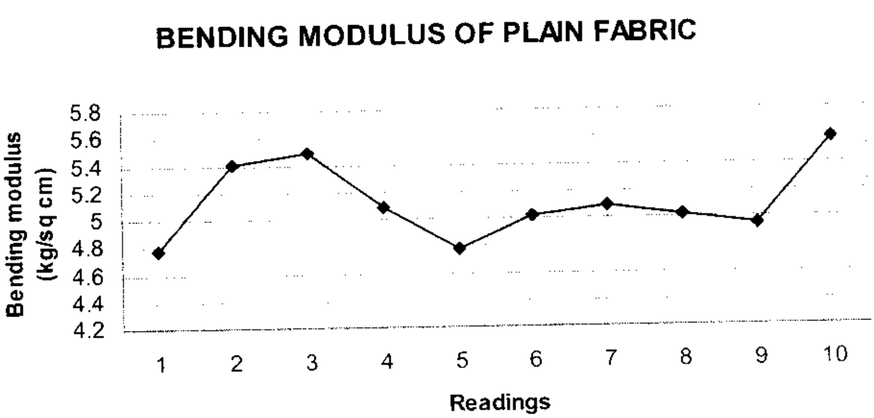

FIG 11: BENDING MODULUS OF PLAIN FABRIC

The below graph shows the value of bending modulus of twill fabrics.the maximum values is 2.45 kg/sq cm. the minimum value is 2.07 kg/sq cm.

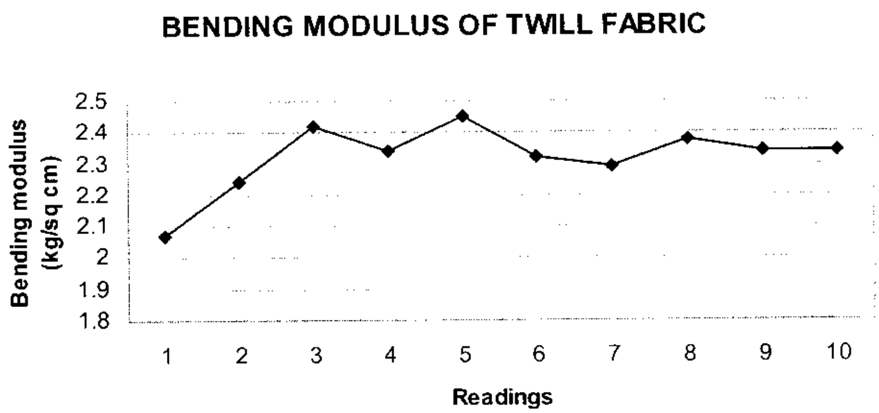

FIG 12 BENDING MODULUS OF TWILL FABRIC

The below graph shows the values of bending modulus of satin weave. The maximum values is 1.41 kg/sq cm. the minimum value is 1.14 kg/sq cm.

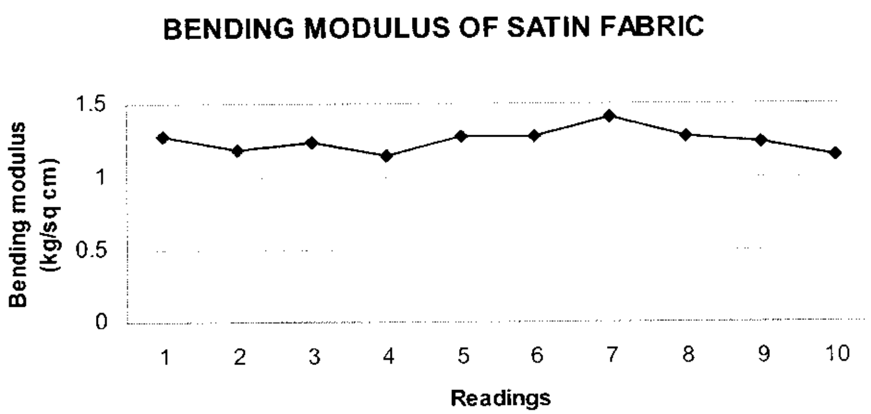

FIG 13 BENDING MODULUS OF SATIN FABRIC

TENSILE STRENGTH:

The below graph is shows the values of the tensile strength of plain weave. the warp way and weft way tensile strength graph shows as below.

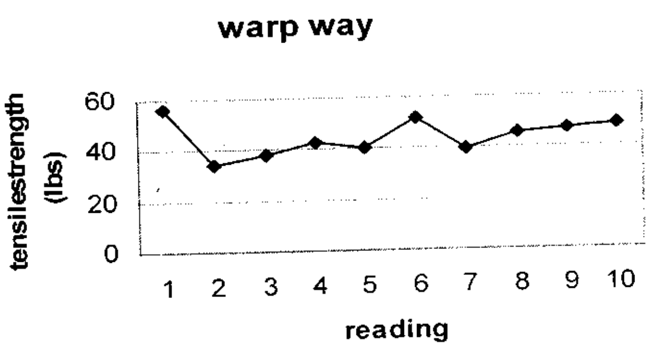

FIG 14: WARP WAY TENSILE STRENGTH FOR PLAIN WEAVE

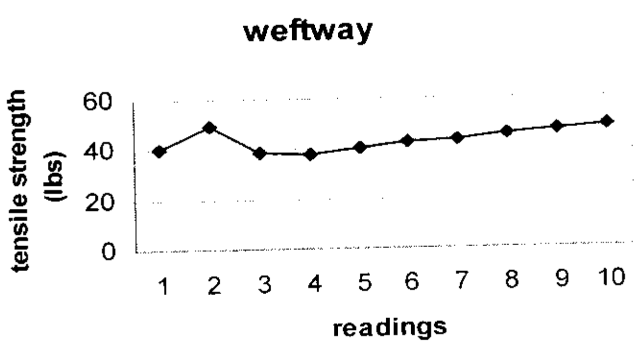

FIG 15: WEFT WAY TENSILE STRENGTH FOR PLAIN WEAVE

The below graph is shows the tensile strength values of twill weave. The warp way and weft way tensile strength graph shows as below.

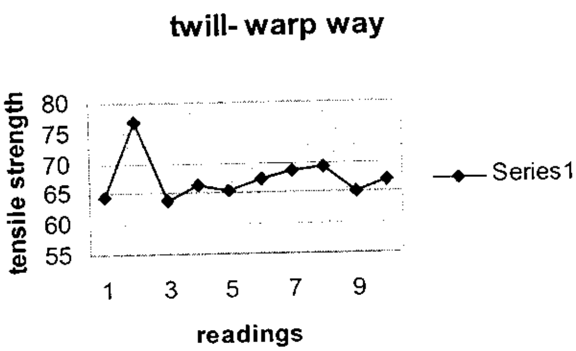

FIG 16: WARP WAY TENSILE STRENGTH FOR TWILL WEAVE

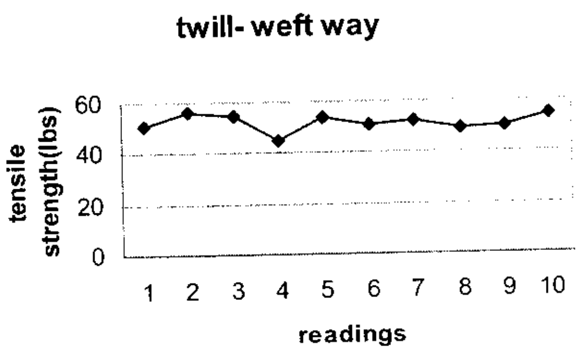

FIG 17: WEFT WAY TENSILE STRENGTH FOR TWILL WEAVE

The below graph is shows that the values of tensile strength for satin weave. The warp way and weft way tensile strength as shows below.

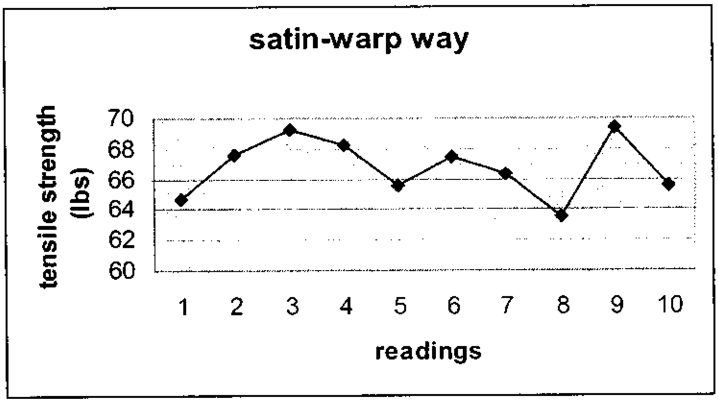

FIG 18:: WARP WAY TENSILE STRENGTH FOR SATIN WEAVE

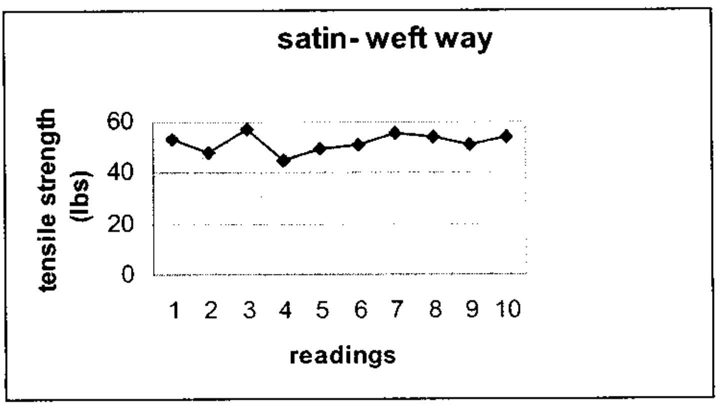

FIG 19: WEFT WAY TENSILE STRENGTH FOR SATIN WEAVE

Comparison of tensile strength for three weaves

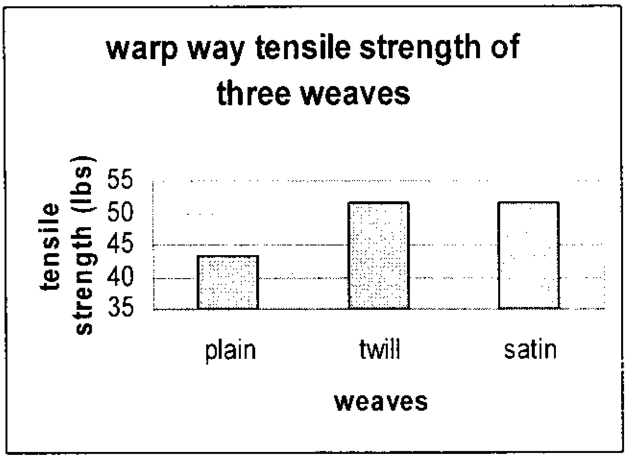

FIG 20: COMPARISION OF WARP WAY TENSILE STRENGTH

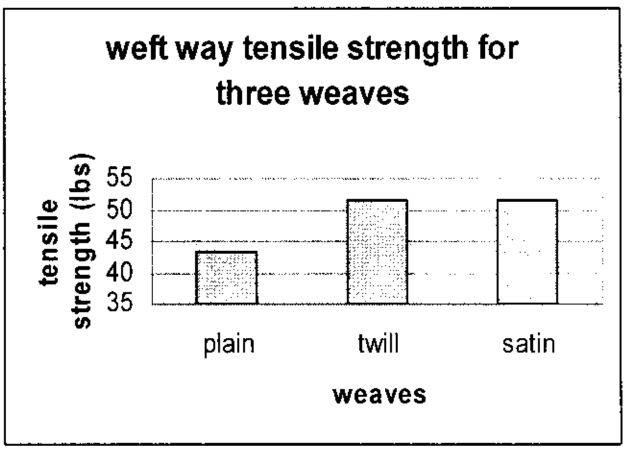

FIG 21: COMPARISION OF WEFT WAY TENSILE STRENGTH

The tensile strength has been compared for three weaves namely 1/1plain,3/1 twill and 4/1 satin.as can be seen from the fig twill and satin weaves exhibits almost same strength followed by plain weave.

Comparison of bending modulus for three weaves

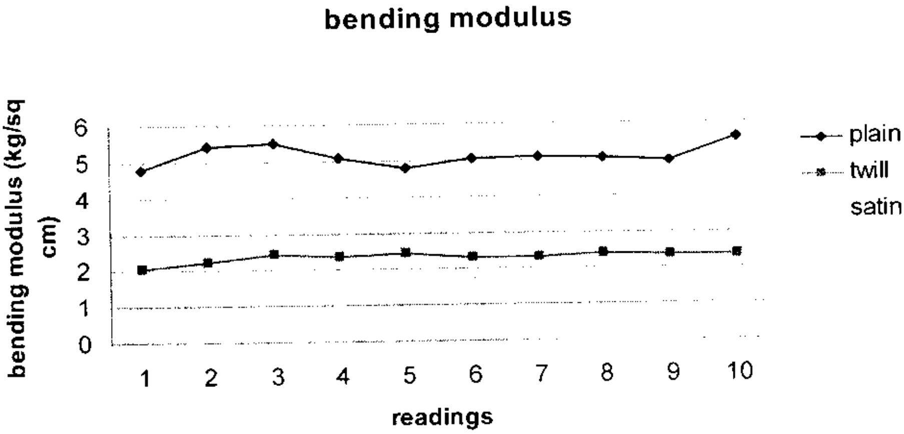

FIG 22: COMPARISION OF BENDING MODULUS

The bending modulus has been compared for three weaves namely 1/1 plain, 3/1 twill, 4/1 satin weave, as can be seen from the fig plain weave shows that highest value of bending modulus followed by twill and then satin.

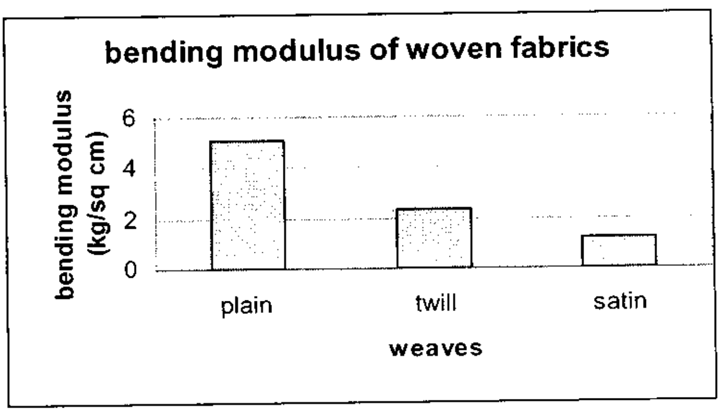

FIG 23: COMPARISION OF MEAN VALUEOF BENDING MODULUS

Comparison of drapability for three weaves

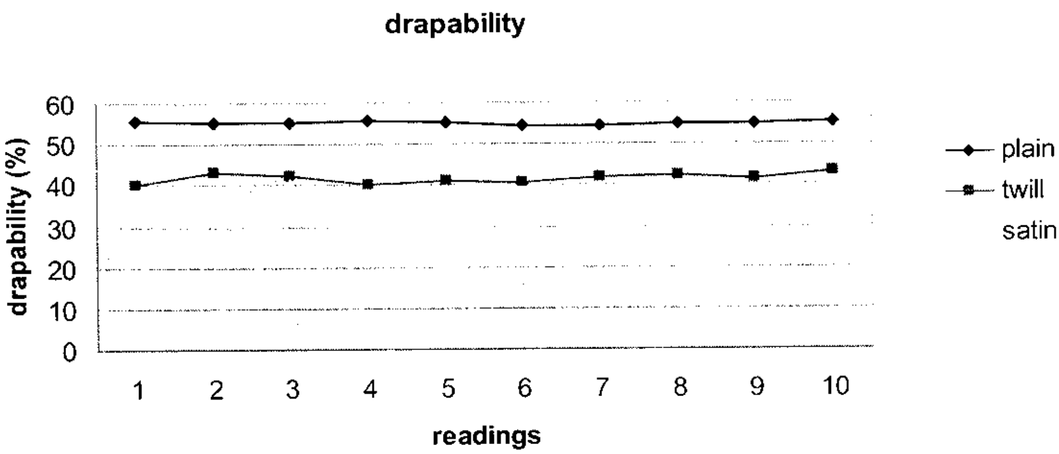

FIG 24: COMPARISION OF DRAPEABILITY

The drapability has been compared. As can be seen from fig the plain weave gives the maximum drapability followed by twill and satin.

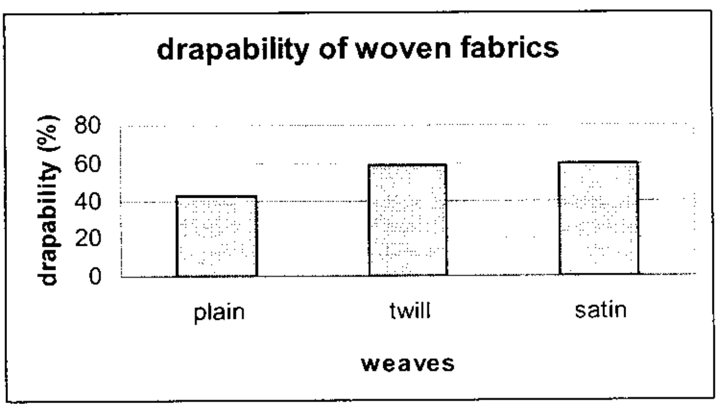

FIG 25: COMPARISION OF MEAN VALUE OF DRAPEABILITY

Correlation for plain weave mechanical properties

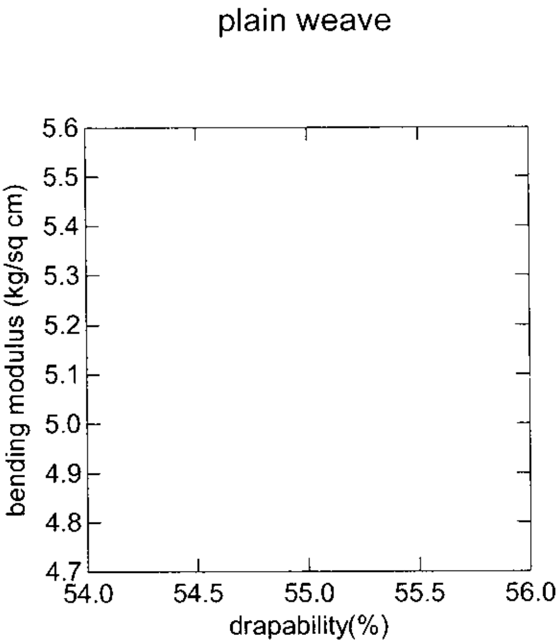

FIG 26: CORRELATION BETWEEN BENDING MODULUS AND DRAPEABILITY

As show in the fig the correlation is poor the regression equation is X=0.105Y+54.664, r=0.0659

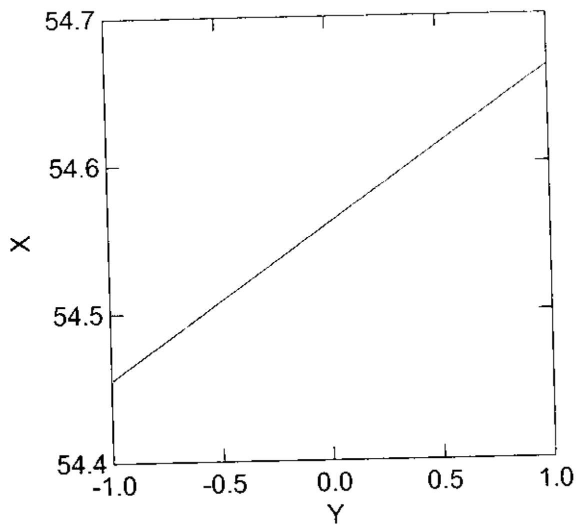

FIG 27: REGRESSION LINE BETWEENBENDING MODULUS AND DRAPEABILITY

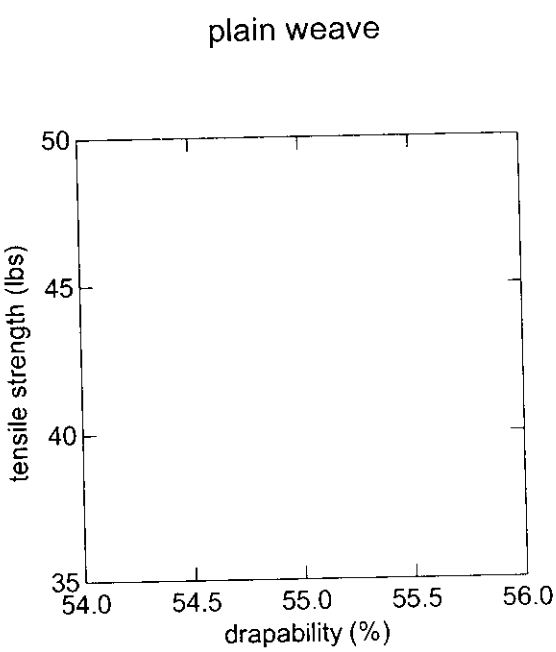

FIG 28: CORRELATION BETWEEN TENSILE STRENGTH AND DRAPEABILITY

As shown in the fig the correlation is absorbed to be better than previous correlation. Regression equation is X=0.03Y+53.808, r= 0.283

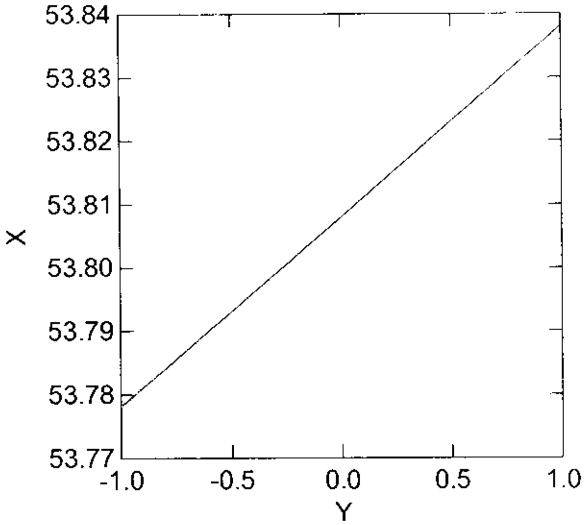

FIG 29: REGRESSION LINE BETWEEN TENSILE STRENGTH AND DRAPEABILITY

Correlation for twill weave fabrics

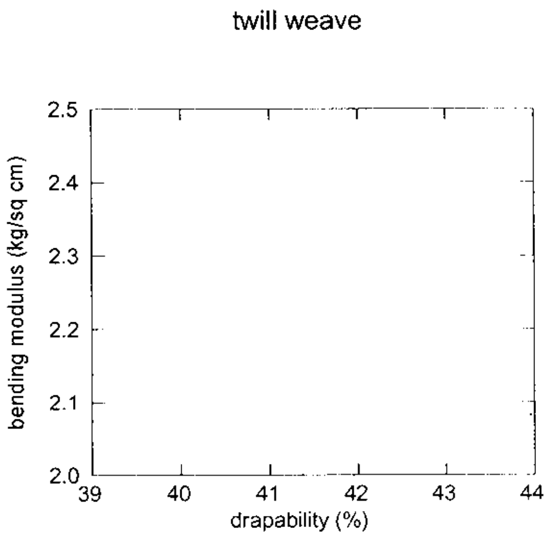

FIG 30: CORRELATION BETWEENBENDING MODULUS AND DRAPEABILITY

As shown in the fig the correlation is absorbed to be good in case of twill weave considerably betterthan plain weave. Regression equation is X=2.723Y+35.29, r= 0.248

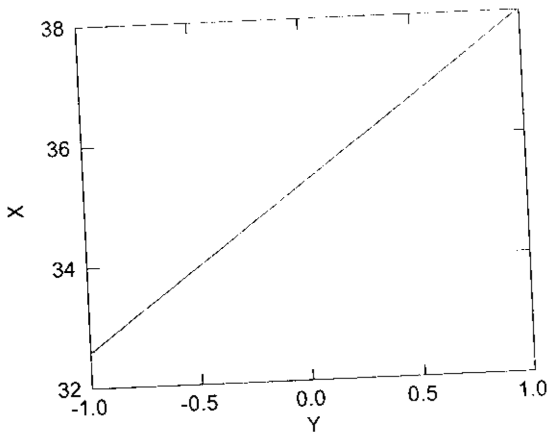

FIG 31:REGRESSION LINE BETWEENBENDING MODULUS AND DRAPEABILITY

twill weave

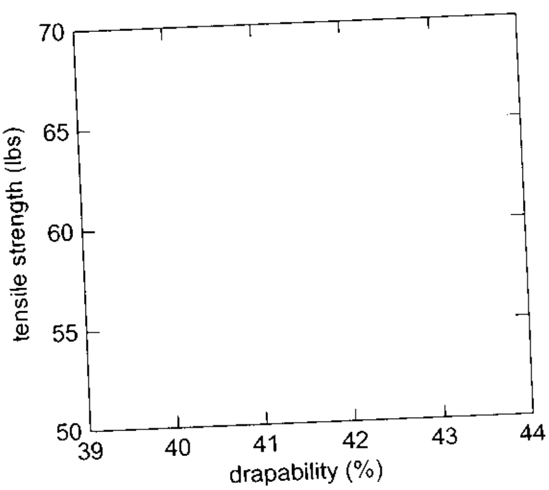

FIG 32: CORRELATION BETWEEN TENSILE STRENGTH AND DRAPEABILITY

As shown in the fig the correlation is absorbed to be poorer than plain weave. Also correlation is found to be poorer than previous correlation. Regression equation is X=0.054Y+38.396, r= 0.195

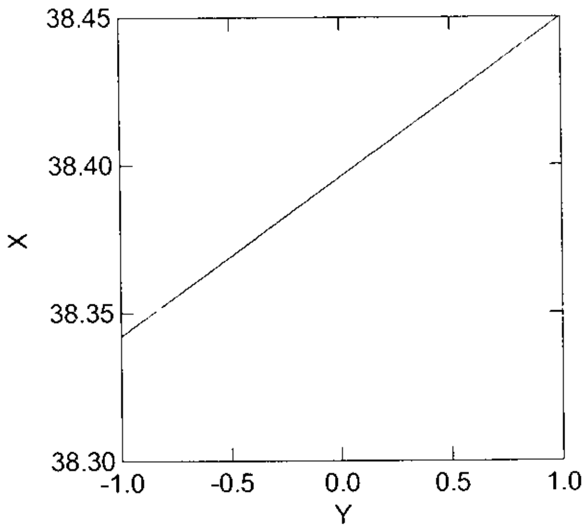

FIG 33: REGRESSION LINE BETWEEN TENSILE STRENGTH AND DRAPEABILITY

Correlation for satin weave

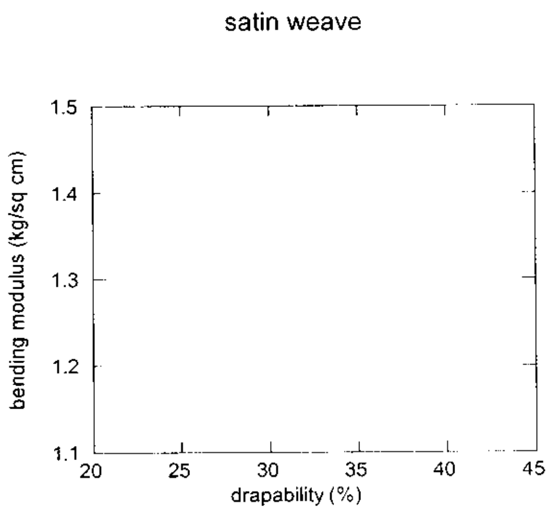

FIG 34: CORRELATION BETWEEN BENDING MODULUS AND DRAPEABILITY

As shown in the fig the correlation is absorbed to be poor . Regression equation is X=5.621Y+25.645, r= 0.086

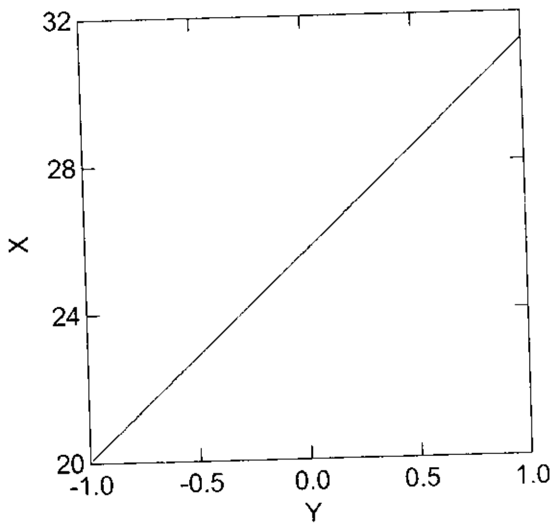

FIG 35: REGRESSION LINE BETWEEN BENDING MODULUS AND DRAPEABILITY

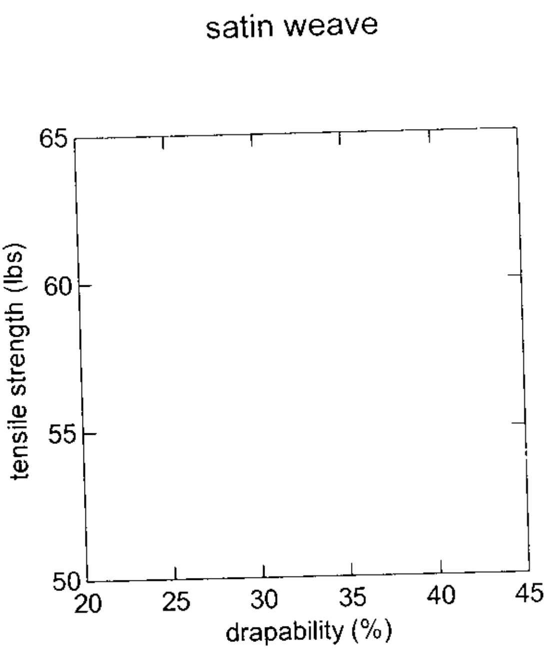

FIG 36: CORRELATION BETWEEN TENSILE STRENGTH AND DRAPEABILITY

As shown in the fig the correlation is absorbed to be very good compared with other all correlations. Regression equation is X=1.602Y-62.64, r= 0.769

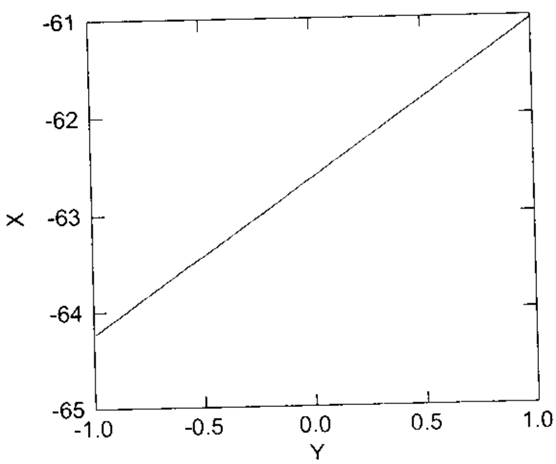

FIG 37: REGRESSION LINE E BETWEEN TENSILE STRENGTH AND DRAPEABILITY

Conclusion :

In the case of drapeability for three weaves, the plain weave gives the maximum drapeability than twill and satin weave.

In considering the bending modulus for three weaves, plain weave is better than twill and satin weave.

The tensile strength test shows that satin and twill weave are having the same value and also it is better than plain weave.

Correlation between drapeability and bending modulus shows the twill weave fabrics has better correlation than plain and satin weave.

Correlation between drapeability and tensile strength shows that satin weave has greater value than plain and twill weave.

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4. Angappan and Gopalakrishanan, textile testing, S.S.M Institute, India.