International Institute For Cotton

Technical Research Division

Research Record No:126

The Effect Of Crosslinking On The Properties Of Interlock And 1 X 1 Rib Fabrics

Robert D. Leah

October 1980

Classification: Fabrics/Knitted/Processing

Key Words: Finishing, Crosslinking, Interlock, Rib, Mercerising.

Digital Version: January 2012

CONTENTS

Introduction

The need to use crosslinking agents to confer some degree of dimensional stability to knitted cotton fabrics has to a large extent been forced upon finishers because of their inability to meet the more stringent specifications for outerwear, with conventional finishing techniques. This is particularly the case where the maker-up insists on the fabric being finished in open-width form.

In the majority of cases, the crosslinking process is carried out by the finisher against his better judgement, because he is only too aware of the problems he is likely to encounter. Many of these problems could be overcome with better equipment designed for such a process but, in the majority of cases, the equipment is inadequate and the finisher is forced to resort to “hot” catalyst systems in order to attain adequate fixation of the crosslinking agent at realistic production speeds.

The catalyst study, currently being carried out by TRD and financed by the TPI, is designed to examine a range of catalysts for the so-called "stenter-cure" or "flash-cure" system of easy-care finishing. It is this system which is predominantly employed in the finishing of knitted fabrics. This work is the subject of separate reports to the TPI.

It is well known that crosslinking affects fabric properties and perhaps the most widely known is the effect on fabric strength and durability. In the case of woven fabrics, where crosslinking techniques have been employed for many years, these changes in fabric properties are fairly well quantified so that it is relatively simple to decide whether a particular finishing technique or catalyst system has resulted in excessive changes in certain properties.

With knitted fabrics however, these effects have not been studied to any great degree in a systematic manner and, therefore, it is rather difficult to assess a particular system without the necessary reference points.

The work described in this report is a start to such a study.

An attempt is made to determine the effect on the major fabric properties of applying *one level* of crosslinking agent in a controlled manner to a range of knitted structures. It is the intention to extend the study to include at least two further levels of treatment at some future date. For the present, however, a typical level of 2½ % crosslinker on weight of fabric was used.

During the IIC/Meridian joint project of 1978 on interlock and 1x1 rib fabrics, provision was made for carrying out crosslinking treatments. In particular, sets of fabrics covering the complete yarn count/stitch length range under study were reserved in the dyed only (Thies R-Jet 95) state. These included fabrics which had been piece mercerised on an Omez machine in Italy. For the purpose of this report, the (nominal) constructions studied in the 1978 project are given below.

20g Interlock		**14g 1x1 Rib**	
Yarns, Ne	Stitch lengths, mm	Yarns, Ne	Stitch lengths, mm
34	3.07, 3.24, 3.40, 3.59, 3.77	26	2.67, 2.85, 3.06, 3.26, 3.50
38	3.07, 3.24, 3.40, 3.59, 3.77	30	2.67, 2.85, 3.06, 3.26, 3.50
42	3.07, 3.24, 3.40, 3.59, 3.77	34	2.48, 2.67, 2.85, 3.06, 3.26, 3.50

It is these fabrics, in the unmercerised and piece-mercerised states, which are the subjects of this study.

Preparation Of Fabrics

The fabrics which were jet dyed at Meridian and set aside for these crosslinking trials had been dried and calendered in tubular form. Since each fabric variant had previously been finished to its own predetermined width, a considerable amount of preparatory work was necessary in assembling a run of fabric for crosslinking. It was intended to treat these fabrics in open-width form and therefore, five-metre lengths of all the variants were removed and were slit into open-width.

In deciding upon the best finishing width for the run, the limiting factor was therefore the width of the narrowest fabric. This, in the case of both the interlock and rib, was the mercerised fabric with the shortest stitch length. The width which seemed to be the most appropriate was 80 cm and, therefore, all of the fabric variants had to be trimmed to a width which would enable them to be finished to 80 cm with the correct level of width shrinkage.

In determining the trimming width for each variant, reference had to be made to the individual residual width shrinkage levels in the dyed only (dried and calendered) state. The trimmed width was determined such that if each variant sample was stentered to 80 cm (not crosslinked) the residual width shrinkage level would be approximately 12% to the IIC shrinkage test.

It was assumed that crosslinking would reduce this residual shrinkage level to around 6-8% which was felt to be a realistic target.

After trimming, all the samples were sewn end to end on an overlocking machine, to give a run length of 62 x 5 metres = 310 metres. End cloths, of sufficient length to enable distortion on threading up and running out to be avoided, were attached.

Processing Details

In the introduction it was intimated that the usual method of applying and curing crosslinking agents is the so-called flash-cure process. In this process, the fabric is padded with a solution of crosslinking agent and catalyst, together with handle modifiers etc., and then dried and cured in one passage down a stenter. The time of curing is determined by the time of drying which in turn is influenced by the weight and air porosity of the fabric. In a trial such as this, the weight and porosity range was enormous, and therefore a flash-cure system was not practical. The drying and curing stages were therefore kept separate.

The practical details of the trial are now outlined.

The trial was carried out on the full-scale finishing equipment housed in the Shirley Institute workroom. It consists of a Kusters "Swimming Roll" padding mangle and a 2-bay indirect oil-fired Artos stenter. Water pick-up values were determined on the Kusters mangle using several of the fabric variants. The average pick-up value was found to be 93%. The finishing bath was formulated to give a total crosslinker solids level of 2½% on weight of fabric. Since the purpose of this exercise is to determine the effect of crosslinking on fabric properties, a typical crosslinking formulation consisting of unbuffered DHDMEU, magnesium chloride, a stitch lubricant and a handle modifier was used.

The bath consisted of:

60 g/1 Fixapret CPN (BASF)

9 g/1 Magnesium Chloride hexahydrate

25 g/1 Siligen E (BASF)

25 g/1 Perapret PE40 (BASF)

1 g/1 Synperonic NX (ICI)

The length of fabric was padded with the formulation and plaited into a glass-fibre wagon (linking the padder and the stenter on this range causes undue length tension). It was then immediately dried on the Artos stenter at a temperature of 120°C with the overfeed set to such a level that the fabric was just flat on entering the drying enclosure. The width was set so that the fabric left the chain at 80 cm. The fabric was batched on the stenter to avoid any creasing prior to curing.

Curing was carried out, again on the Artos stenter, by passing the dry fabric down the machine with the temperature set at 170°C. The speed of the machine was adjusted to give a contact time of 45 seconds. For this passage, the overfeed control was set to a minimal level. The air cooling device situated at the exit of the stenter was utilised to reduce fabric temperature prior to batching. The individual samples were separated and submitted for full test procedures.

The remainder of this report consists of an assessment of the test data.

Presentation Of Results

All the test results from the IIC/Meridian joint project CP78, together with the crosslinked fabric test results are on computer records and can be recalled to order in any combination. The tables of test data given in this report are copies of the computer printouts and, therefore, some explanation of the abbreviated terms is required.

Unless stated otherwise by the letters B or BW (before wash) all properties are given in the fully relaxed or AW (after wash) state. Other abbreviations are as follows.

JD	Jet dyed, dried, calendered
JDX2	Jet dyed, crosslinked (2.5%)
MJD	Mercerised, Jet dyed, dried, calendered
MJDX2	Mercerised, Jet dyed, crosslinked (2.5%)
% Shr.L	Length shrinkage, %
% Shr.W	Width Shrinkage, %
Wt.	Weight, grams per square metre
C/3cm	Courses per 3 cm
W/3cm	Wales per 3 cm
Bst.	Burst Strength, kN per square metre
Y.Str.	Yarn Strength, grams
St.L	Stitch length, millimetres

S Stitch density, stitches/sq. cm

Many of the properties being studied have already been presented in graphical form in the Data Base (*Research Record 112* and *Appendix Za* of the May 1980 report to the Steering Committee) and, therefore, in this report an attempt is made to present them in what is for the author a more digestible form. Bar charts allow a particular fabric property to be clearly compared for several treatments of nominally the same fabric.

In comparing the values for a particular property, the reader must not lose sight of the fact that other properties besides the one being studied have probably also been changed by the various treatments and, therefore, this can also have an influence on that particular property.

In the presentations that follow, fabrics of different yarn count have been separated and so, for each property, three bar charts are given. To make reference to exact test data somewhat easier, the tables of data relating to the three bar charts are given immediately prior to the diagrams.

Discussion Of Results

Although mercerised and unmercerised fabrics were included in this study, it is not intended in this report to carry out a detailed comparison of the data of the two states. This, would make this report unwieldy and, therefore, only occasional comparisons will be made where relevant.

The main purpose of this report is to study the effects on particular fabric properties of applying *one level* of crosslinking agent in a controlled manner.

By studying the bar charts given in the *Appendix*, distinct trends can be observed regarding changes in certain fabric properties.

To try to quantify these changes the author has studied the data in some detail and has attempted to present changes in fabric properties in percentage terms.

To enable comparisons to be made, the effect on certain fabric properties brought about by the crosslinking are presented below in tabular form.

Interlock: Percentage Changes in Fabric Properties Brought About by Crosslinking

Property	Unmercerised Fabrics	Mercerised Fabrics
Residual Length Shrinkage	-47 (41 - 54)	-66 (62 - 68)
Relaxed Weight	-24 (18 - 28)	-17 (12 - 20)
Relaxed Courses/3cm	-19 (12 - 25)	-17 (13 - 21)
Relaxed Wales/3cm	+3	+3
Relaxed Stitch Density	-16 (9 - 21)	-16 (13 - 20)
Relaxed Stitch Length	+ (0 - 1)	+ (0 - 1)
Relaxed Burst Strength	-37 (33 - 42)	-21 (12 - 27)

Relaxed Yarn Strength	-40 (36 - 47)	-36 (29 - 44)

1x1 Rib: Percentage Changes in Fabric Properties Brought About by Crosslinking

Property	Unmercerised Fabrics	Mercerised Fabrics
Residual Length Shrinkage	-41 (32 - 48)	- (42 >> 68)
Relaxed Weight	-18 (10 - 22)	- (13 >> 24)
Relaxed Courses/3cm	- (7 >> 20)	- (1 >> 21)
Relaxed Wales/3cm	+ (0 >> 11)	+ (0 >> 6)
Relaxed Stitch Density	- (6 >> 15)	- (1 >> 15)
Relaxed Stitch Length	0	0
Relaxed Burst Strength	-38 (30 - 43)	-19 (13 - 26)
Relaxed Yarn Strength	-46 (37 - 52)	-26 (21 - 33)

Where no noticeable constructional effect is apparent (interaction with stitch length), an average figure is given together with the minimum and maximum values in brackets.

Where a constructional effect is apparent, the range is given in the form (n >> m) where n refers to the value for the shortest stitch length an m refers to that for the largest.

5.1. Length Shrinkage

The effect on the residual length shrinkage is very clear to see. The residual length shrinkage, measured by the IIC test method, can be reduced by as much as 68% by crosslinking, but reductions of at least 40% would appear the minimum one could expect. The biggest improvements are apparent with the mercerised fabrics, most probably due to the high residual shrinkage levels obtained on the un-crosslinked fabrics.

The only set of fabrics where it was possible to see a constructional effect was the mercerised rib series.

5.2. Width Shrinkage

No attempt is made to quantify width shrinkage improvement since each variant was trimmed individually to meet a finished target. However, the residual width shrinkage values in the vast majority of cases are within the range 6-10%, which would indicate the validity of the calculation used.

5.3. Relaxed Weight

The effect of crosslinking is to stabilise the fabric at a relaxed weight which is nearer to the finished weight. The amount by which the relaxed weight is reduced is variable and only in the case of the mercerised rib fabric is a distinct constructional effect apparent. However, over the full fabric range investigated, the reduction in relaxed fabric weight lies between 10 and 28%.

5.4. Relaxed Structure

The effect of crosslinking is to reduce the number of courses per unit distance in the fully relaxed state so that the fabric after finishing has a structure which is not too far away from this relaxed structure. It is for this reason that the residual shrinkage levels in length direction are greatly reduced. It was not possible to determine a structural effect in the case of the interlock fabrics, but a distinct effect was apparent in the case of the rib fabrics - the shorter stitch lengths giving less improvement than the longer stitch lengths.

The effect on the relaxed wale spacings is somewhat surprising. It had been thought that a reduction in the fully relaxed wale spacings would be apparent, but this is not the case. In fact, a very slight increase in the fully relaxed wales was observed with the interlock series. It is interesting to speculate what would have been the case if the JD series had been slit, padded through water and stentered to the target widths specified for the JDX2 series.

Not surprisingly, the relaxed stitch density (product of course and wale densities) of the crosslinked fabrics has been reduced and again a constructional effect is apparent with the rib fabrics but not with the interlock fabrics.

5.5. Relaxed Stitch Length

Crosslinking has virtually no effect on the fully relaxed stitch length of both the unmercerised and mercerised series.

5.6. Relaxed Burst Strength and Yarn Strength

The effect of a crosslinking treatment on fabric strength of both woven and knitted fabrics is well known. It is for this reason that many finishers are very cautious about carrying out this process to obtain dimensional stability.

The accepted method of determining fabric strength on knitted fabrics is the Burst Strength method. Past work at IIC has shown that burst strength is linearly related to fabric weight and therefore this must be borne in mind when drawing conclusions from the data presented in this report.

In the case of the interlock fabrics, crosslinking resulted in average losses in bursting strength of 37% for the unmercerised series, and 21% for the mercerised series. Similar losses were brought about by crosslinking with the rib fabrics, with average reductions of 38% and 19% for the unmercerised and mercerised series respectively.

No constructional effect was apparent with either the interlock or rib fabrics.

It is the burst strength test which normally appears in fabric specifications and is normally used to give an indication as to how a fabric will behave under wear conditions. An inherent property of structures is their ability to distend under load to alleviate stress before actual thread breakage occurs. Fabrics with quite low burst strength figures may well perform satisfactorily in a wear situation.

However, it is at the making-up stage that the author feels that strength is perhaps of more importance.

During the sewing operation a relatively large diameter needle (when compared with the size of an individual stitch) penetrates the fabric at high speed. The needle should not penetrate the body of the yarns but should deflect them so that it, the needle, passes safely between the yarns into the inter-yarn spaces (this is the purpose of the stitch lubricant). For this to happen, individual stitches are deformed temporarily to allow the needle to penetrate. To do this, the yarn must either stretch to a large degree, or yarn must be borrowed from adjacent stitches. If the yarn has sufficient strength and extensibility, the latter normally occurs and no damage results.

If crosslinking has embrittled the yarn to a high degree, the residual strength and extensibility of the yarn is insufficient and it breaks causing sewing damage with all its implications.

In the present evaluation, the average losses in yarn strength brought about by crosslinking in the case of the interlock fabrics are 37% for the unmercerised series and 21% for the mercerised series. In the case of the rib fabrics they are 46% and 26%.

If these losses are compared with the equivalent losses in bursting strength, it will be apparent that crosslinking results in greater losses in individual yarn strengths than in the overall fabric burst strength. It is the opinion of the author therefore that far more attention should be paid to yarn strength when evaluating crosslinked knitted fabrics, particularly when attempting to draw up minimum strength specifications.

Conclusions

The effect of crosslinking on knitted structures is to alter to a variable degree the fully relaxed structure for a particular yarn count/stitch length combination.

Since the fully relaxed structure is the key to fabric performance and properties, it is not surprising that many of the knitted fabric properties are changed by crosslinking.

In particular, the effect on the relaxed fabric weight is considerable, which is also very apparent in the relaxed stitch density. The finisher is also able to finish fabric to meet a shrinkage specification but with fewer courses per unit length and also at a lower weight. What this means is that specifications drawn up for un-crosslinked fabrics are no longer valid when crosslinking is carried out.

Crosslinking is a very effective tool in reducing high residual length shrinkage values, but specifications must be rewritten to take into consideration other property changes. The improvement in fabric shrinkage is achieved at a price. Even under conditions which will have eliminated catalytic damage, losses in yarn strength of almost 50% can be expected.

The mercerising process, however, allows the strength losses to be reduced and this is clearly demonstrated in the bar charts and tables but, again, other properties are changed.

No attempt has been made in this report to try to find relationships between fabric properties, such as whether the relaxed weight of fabric affects the percentage strength loss after crosslinking, etc. No doubt such relationships do occur and these will possibly be highlighted when the computer model for predicting fabric properties is available. In the meantime, the figures given in this report should give an insight into the effect on fabric properties which a typical crosslinking formulation will give.

Appendix

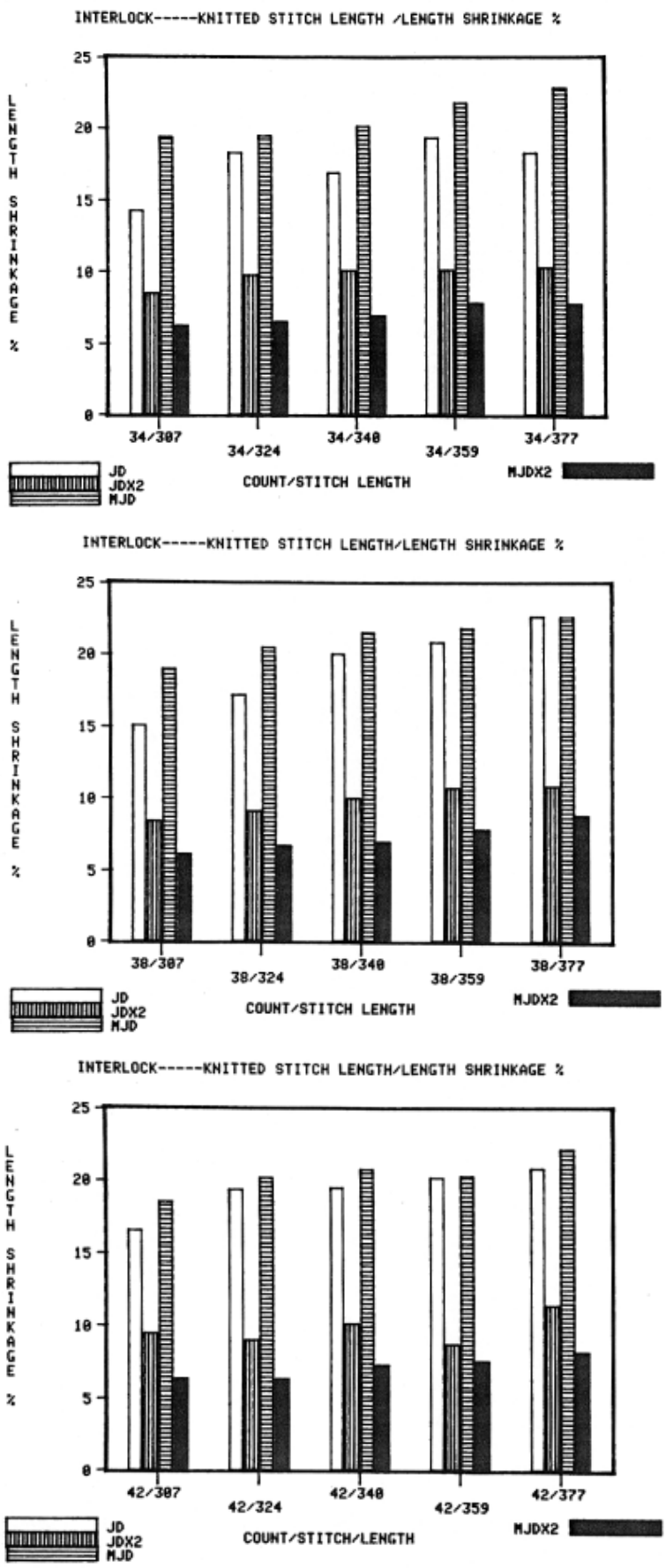
Interlock	1x1 Rib	Data
Table 1 & Figure 1	Table 10 & Figure 10	knitted stitch length vs. length shrinkage
Table 2 & Figure 2	Table 11 & Figure 11	knitted stitch length vs. width shrinkage
Table 3 & Figure 3	Table 12 & Figure 12	knitted stitch length vs. relaxed weight
Table 4 & Figure 4	Table 13 & Figure 13	knitted stitch length vs. relaxed courses
Table 5 & Figure 5	Table 14 & Figure 14	knitted stitch length vs. relaxed wales
Table 6 & Figure 6	Table 15 & Figure 15	knitted stitch length vs. relaxed stitch density
Table 7 & Figure 7	Table 16 & Figure 16	knitted stitch length vs. relaxed stitch length
Table 8 & Figure 8	Table 17 & Figure 17	knitted stitch length vs. relaxed burst strength
Table 9 & Figure 9	Table 18 & Figure 18	knitted stitch length vs. relaxed yarn strength

IIC/TPI PROJECT K3 1980 Table No. 1

INTERLOCK FABRICS :KNITTED STITCH LENGTH/LENGTH SHRINKAGE

SAMPLE	%Shr.L JD	%Shr.L JDX2	%Shr.L MJD	%Shr.L MJDX2
I34/377	18.31	10.34	22.96	7.78
I34/359	19.38	10.15	21.86	7.8
I34/340	16.96	10.09	20.22	6.91
I34/324	18.32	9.76	19.51	6.48
I34/307	14.24	8.49	19.43	6.23
I38/377	22.71	10.87	22.7	8.82
I38/359	20.91	10.74	21.89	7.79
I38/340	20.09	10	21.57	6.92
I38/324	17.24	9.1	20.54	6.68
I38/307	15.08	8.42	19.01	6.08
I42/377	20.84	11.4	22.21	8.2
I42/359	20.23	8.75	20.35	7.54
I42/340	19.52	10.15	20.81	7.29
I42/324	19.4	9	20.22	6.31
I42/307	16.59	9.45	18.55	6.31

Figure 1

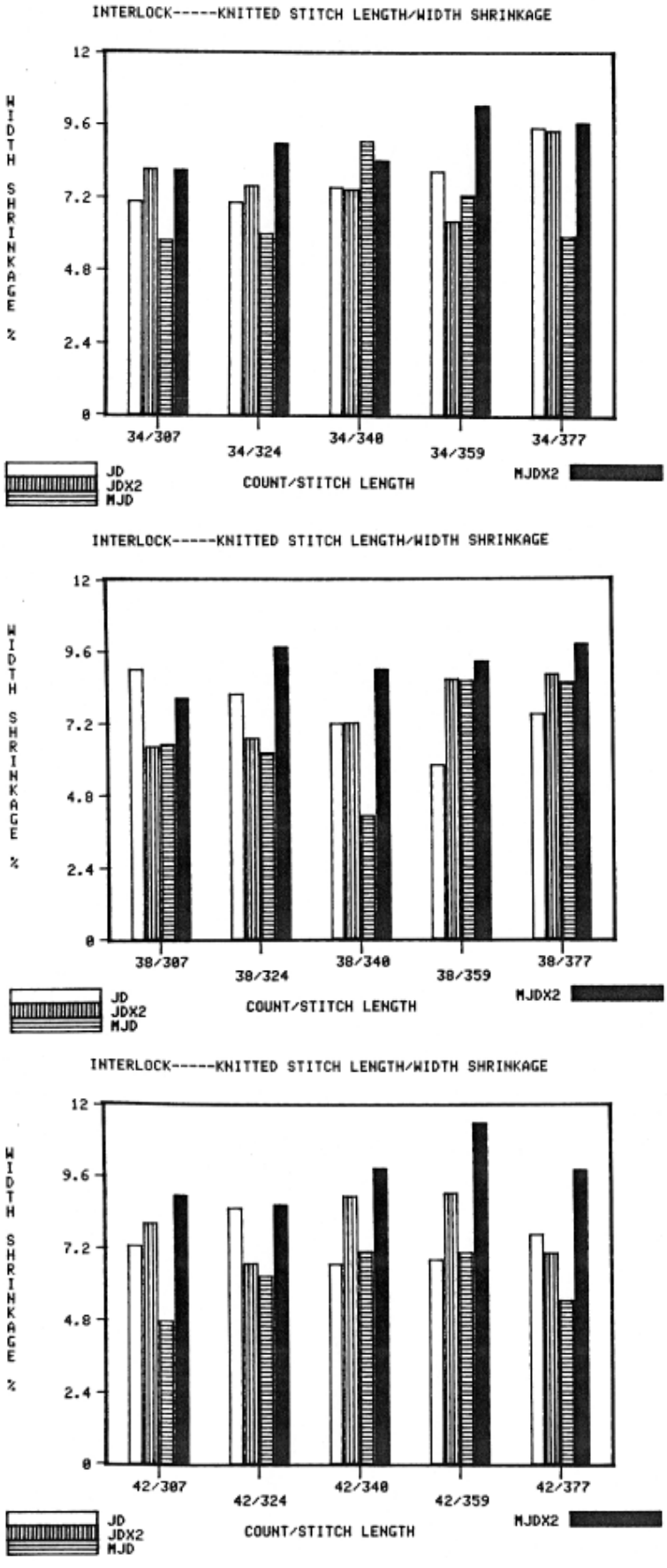

INTERLOCK-----KNITTED STITCH LENGTH /LENGTH SHRINKAGE %
LENGTH SHRINKAGE %
25
20
15
10
5
0
34/307
34/324
34/340
34/359
34/377
JD
JDX2
MJD
COUNT/STITCH LENGTH
MJDX2
INTERLOCK-----KNITTED STITCH LENGTH/LENGTH SHRINKAGE %
LENGTH SHRINKAGE %
38/307
38/324
38/340
38/359
38/377
JD
JDX2
MJD
COUNT/STITCH LENGTH
MJDX2
INTERLOCK-----KNITTED STITCH LENGTH/LENGTH SHRINKAGE %
LENGTH SHRINKAGE %
42/307
42/324
42/340
42/359
42/377
JD
JDX2
MJD
COUNT/STITCH/LENGTH
MJDX2

IIC/TPI PROJECT K3 1980 Table No. 2

INTERLOCK FABRICS :KNITTED STITCH LENGTH/WIDTH SHRINKAGE

SAMPLE	%Shr.W JD	%Shr.W JDX2	%Shr.W MJD	%Shr.W MJDX2
I34/377	9.51	9.43	5.94	9.71
I34/359	8.1	6.45	7.3	10.27
I34/340	7.56	7.48	9.08	8.44
I34/324	7.47	7.59	6.01	9
I34/307	7.71	8.14	5.8	8.12
I38/377	7.5	8.82	8.56	9.83
I38/359	5.82	8.66	8.62	9.27
I38/340	7.19	7.22	4.13	9
I38/324	8.18	6.71	6.23	9.74
I38/307	9	6.43	6.52	8.05
I42/377	7.68	7.06	5.48	9.84
I42/359	6.83	9.07	7.09	11.43
I42/340	6.69	8.96	7.1	9.87
I42/324	8.56	6.71	6.31	8.67
I42/307	7.28	8.05	4.77	8.97

Figure 2


INTERLOCK-----KNITTED STITCH LENGTH/WIDTH SHRINKAGE
WIDTH SHRINKAGE %
12
9.6
7.2
4.8
2.4
0
34/307
34/324
34/340
34/359
34/377
JD
JDX2
MJD
COUNT/STITCH LENGTH
MJDX2
INTERLOCK-----KNITTED STITCH LENGTH/WIDTH SHRINKAGE
WIDTH SHRINKAGE %
12
9.6
7.2
4.8
2.4
0
38/307
38/324
38/340
38/359
38/377
JD
JDX2
MJD
COUNT/STITCH LENGTH
MJDX2
INTERLOCK-----KNITTED STITCH LENGTH/WIDTH SHRINKAGE
WIDTH SHRINKAGE %
12
9.6
7.2
4.8
2.4
0
42/307
42/324
42/340
42/359
42/377
JD
JDX2
MJD
COUNT/STITCH LENGTH
MJDX2

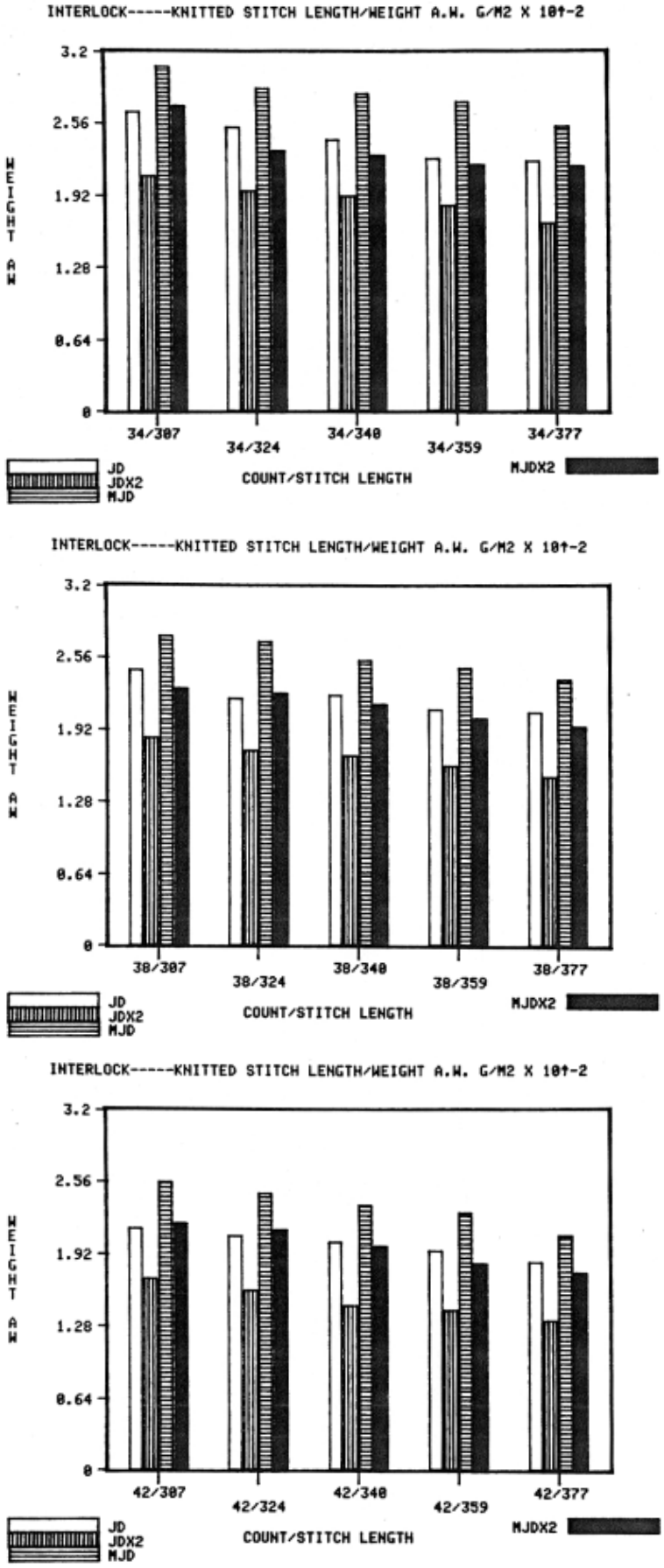
IIC/TPI PROJECT K3 1980 Table No. 3

INTERLOCK FABRICS :KNITTED STITCH LENGTH/RELAXED WEIGHT

UNITS.....GRAMS PER SQ.METRE.

SAMPLE	Wt.AW JD	Wt.AW JDX2	Wt.AW MJD	Wt.AW MJDX2
I34/377	222.4	167.5	258	218.2
I34/359	224.8	183.5	275	219.8
I34/340	241.2	191	282.6	227.4
I34/324	252	196	287.2	231.8
I34/307	265.8	209.5	307	271.6
I38/377	207.6	150.5	236.6	195.4
I38/359	210.8	160.5	247.8	202.8
I38/340	223	169	254	215
I38/324	220	173.5	270.2	224.8
I38/307	244.6	185	275.2	229
I42/377	184.9	133	209	175.6
I42/359	194.6	142	229	184
I42/340	202.3	146.5	235	198.6
I42/324	208	159.5	245.6	213.6
I42/307	214.8	170	256	219

Figure 3


INTERLOCK-----KNITTED STITCH LENGTH/WEIGHT A.W. G/M2 X 10↑-2
WEIGHT AW
3.2
2.56
1.92
1.28
0.64
0
34/307
34/324
34/340
34/359
34/377
COUNT/STITCH LENGTH
JD
JDX2
MJD
MJDX2
INTERLOCK-----KNITTED STITCH LENGTH/WEIGHT A.W. G/M2 X 10↑-2
WEIGHT AW
3.2
2.56
1.92
1.28
0.64
0
38/307
38/324
38/340
38/359
38/377
COUNT/STITCH LENGTH
JD
JDX2
MJD
MJDX2
INTERLOCK-----KNITTED STITCH LENGTH/WEIGHT A.W. G/M2 X 10↑-2
WEIGHT AW
3.2
2.56
1.92
1.28
0.64
0
42/307
42/324
42/340
42/359
42/377
COUNT/STITCH LENGTH
JD
JDX2
MJD
MJDX2

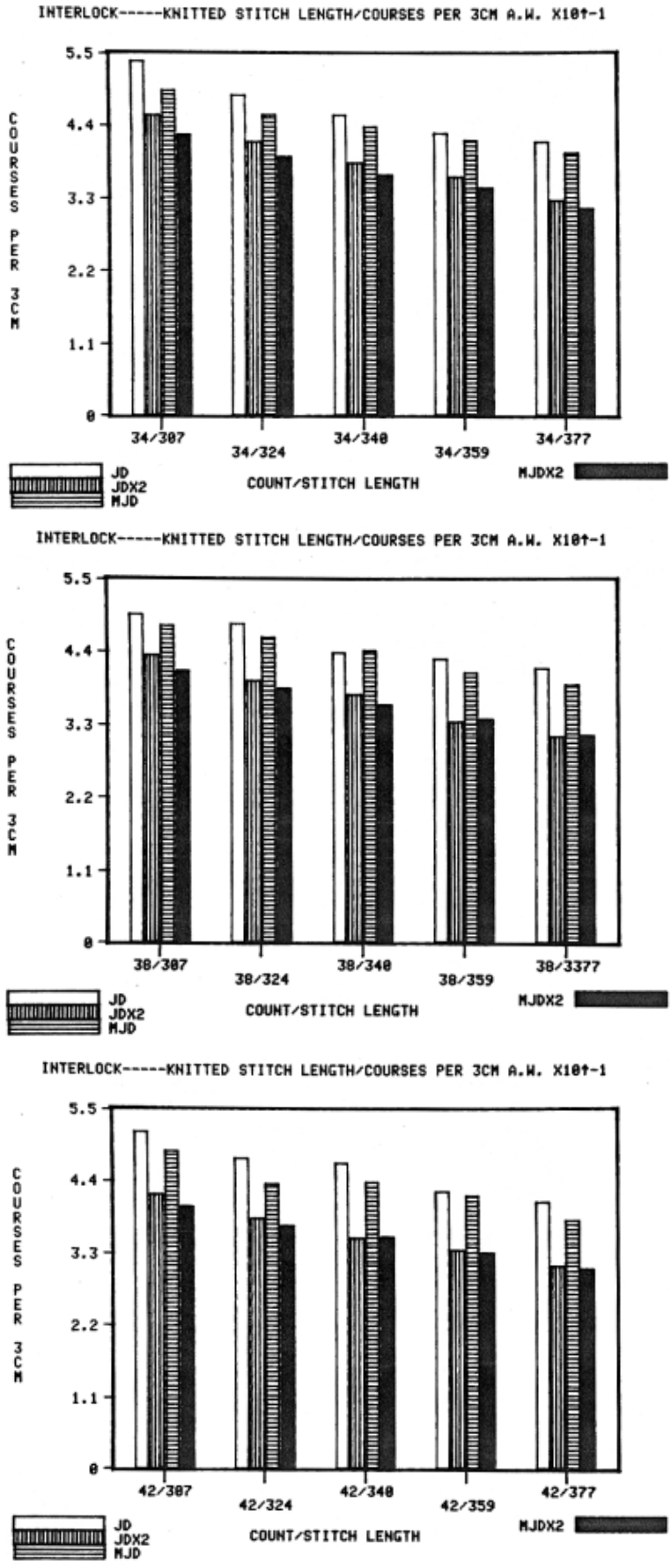
IIC/TPI PROJECT K3 1980 Table No. 4

INTERLOCK FABRICS :KNITTED STITCH LENGTH/RELAXED COURSES

UNITS.....COURSES PER 3 CENTIMETRES

SAMPLE	C/3cmA JD	C/3cmA JDX2	C/3cmA MJD	C/3cmA MJDX2
I34/377	41.5	32.7	39.9	31.5
I34/359	42.84	36.3	41.8	34.6
I34/340	45.59	38.4	43.8	36.6
I34/324	48.58	41.5	45.7	39.3
I34/307	53.8	45.5	49.4	42.6
I38/377	41.58	31.3	39.1	31.5
I38/359	42.99	33.5	41	33.9
I38/340	43.78	37.6	44.3	36.1
I38/324	48.19	39.6	46.2	38.5
I38/307	49.53	43.4	48	41.1
I42/377	40.79	31.1	38.1	30.7
I42/359	42.44	33.5	41.8	33.1
I42/340	46.6	35.3	43.8	35.5
I42/324	47.4	38.3	43.5	37.2
I42/307	51.5	41.9	48.6	40.1

Figure 4


INTERLOCK-----KNITTED STITCH LENGTH/COURSES PER 3CM A.W. X10↑-1
COURSES PER 3CM
5.5
4.4
3.3
2.2
1.1
0
34/307
34/324
34/340
34/359
34/377
JD
JDX2
MJD
COUNT/STITCH LENGTH
MJDX2
INTERLOCK-----KNITTED STITCH LENGTH/COURSES PER 3CM A.W. X10↑-1
COURSES PER 3CM
38/307
38/324
38/340
38/359
38/3377
JD
JDX2
MJD
COUNT/STITCH LENGTH
MJDX2
INTERLOCK-----KNITTED STITCH LENGTH/COURSES PER 3CM A.W. X10↑-1
COURSES PER 3CM
42/307
42/324
42/340
42/359
42/377
JD
JDX2
MJD
COUNT/STITCH LENGTH
MJDX2

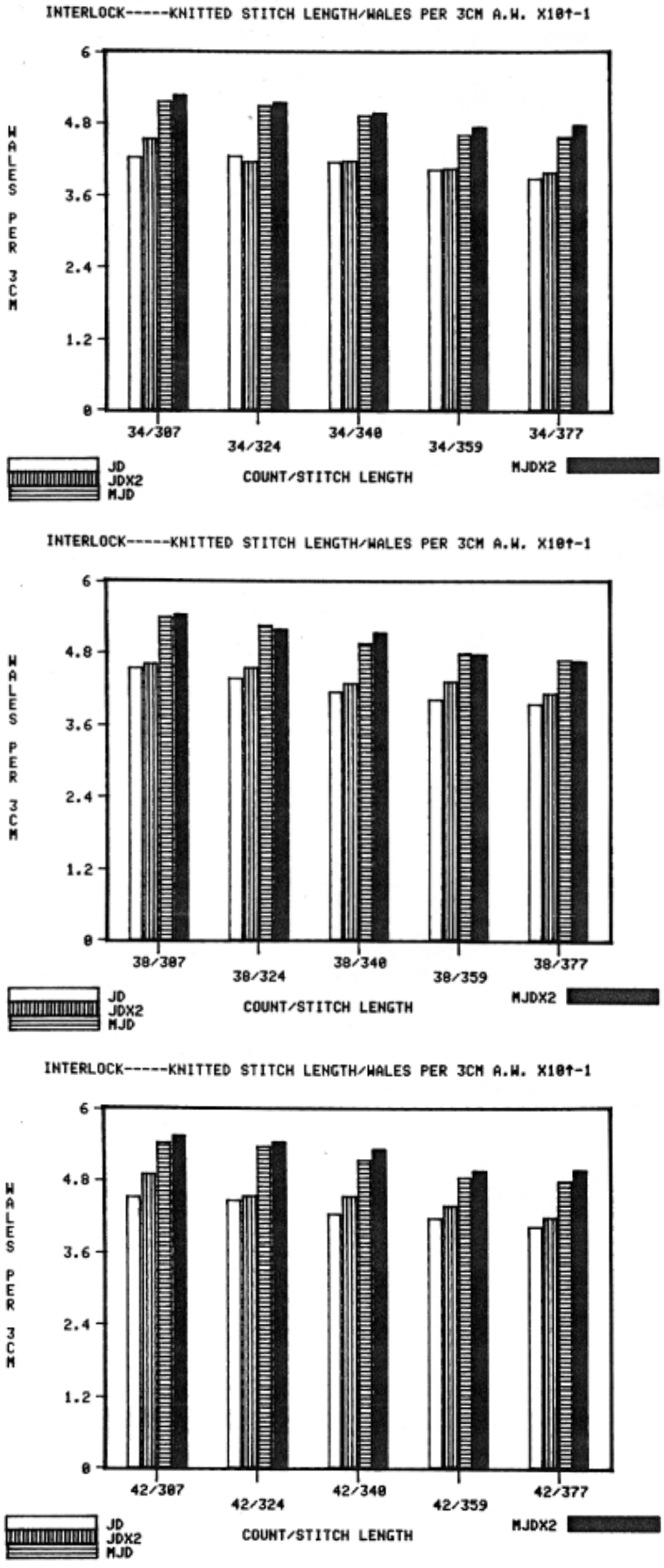
IIC/TPI PROJECT K3 1980 Table No. 5

INTERLOCK FABRICS :KNITTED STITCH LENGTH/RELAXED WALES

UNITS.....WALES PER 3 CENTIMETRES

SAMPLE	W/3cmA JD	W/3cmA JDX2	W/3cmA MJD	W/3cmA MJDX2
I34/377	38.82	39.9	45.9	47.8
I34/359	40.39	40.6	46.2	47.5
I34/340	41.58	41.8	49.4	49.8
I34/324	42.6	41.7	51	51.6
I34/307	42.36	45.4	51.7	52.8
I38/377	39.61	41.4	47	46.7
I38/359	40.39	43.3	48.1	47.8
I38/340	41.58	43	49.7	51.5
I38/324	43.78	45.5	52.7	52
I38/307	45.43	46.2	54.1	54.5
I42/377	40.32	41.9	48	49.8
I42/359	41.81	43.9	48.6	49.7
I42/340	42.44	45.4	51.4	53.3
I42/324	44.72	45.4	53.8	54.5
I42/307	45.2	49	54.4	55.6

Figure 5


INTERLOCK-----KNITTED STITCH LENGTH/WALES PER 3CM A.W. X10↑-1
WALES PER 3CM
6
4.8
3.6
2.4
1.2
0
34/307
34/324
34/340
34/359
34/377
JD
JDX2
MJD
COUNT/STITCH LENGTH
MJDX2
INTERLOCK-----KNITTED STITCH LENGTH/WALES PER 3CM A.W. X10↑-1
WALES PER 3CM
38/307
38/324
38/340
38/359
38/377
JD
JDX2
MJD
COUNT/STITCH LENGTH
MJDX2
INTERLOCK-----KNITTED STITCH LENGTH/WALES PER 3CM A.W. X10↑-1
WALES PER 3CM
42/307
42/324
42/340
42/359
42/377
JD
JDX2
MJD
COUNT/STITCH LENGTH
MJDX2

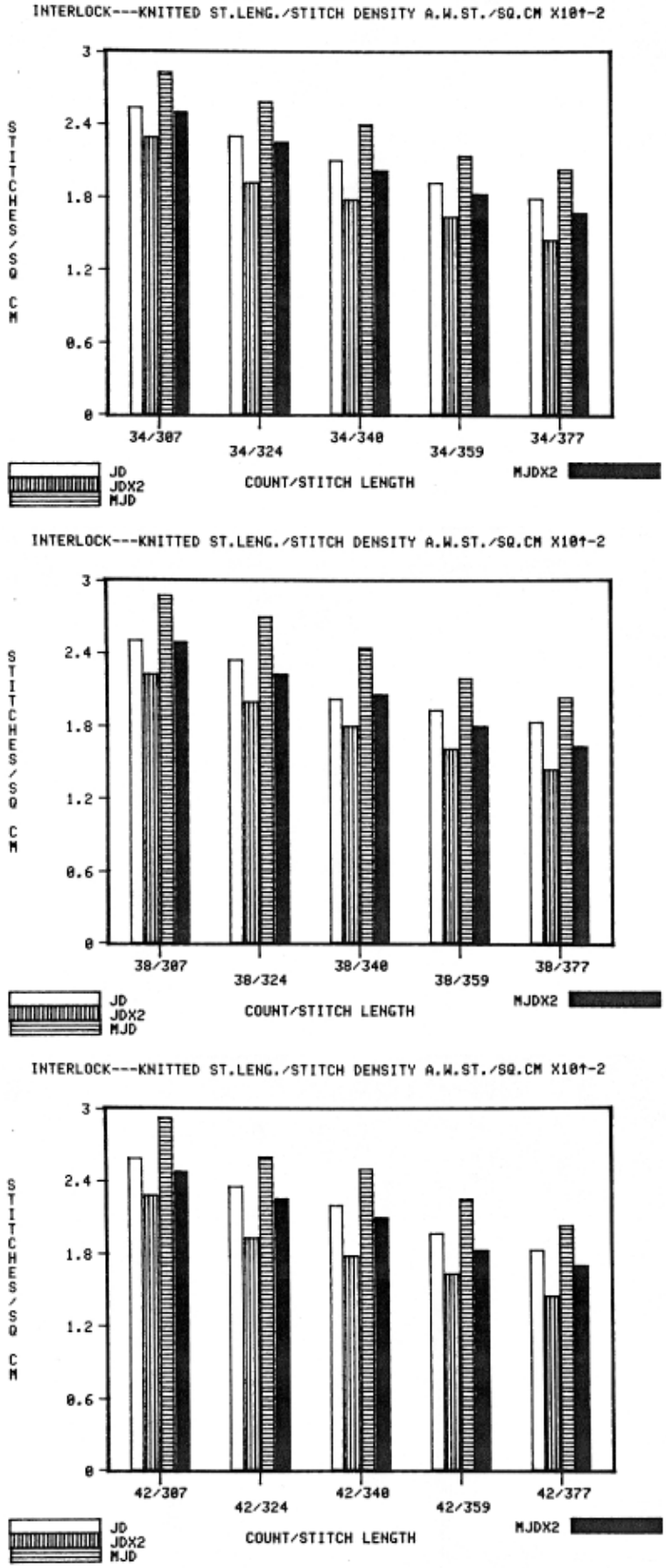
IIC/TPI PROJECT K3 1980 Table No. 6

INTERLOCK FABRICS :KNITTED STITCH LENGTH/RELAXED STITCH DENSITY

UNITS.....STITCHES PER SQ.CENTIMETRE.

SAMPLE	S JD	S JDX2	S MJD	S MJDX2
I34/377	179	145	203.5	167.3
I34/359	192.3	163.8	214.6	182.6
I34/340	210.6	178.3	240.4	202.5
I34/324	229.9	192.3	259	225.3
I34/307	253.2	229.5	283.8	249.9
I38/377	183	144	204.2	163.4
I38/359	192.9	161.2	219.1	180
I38/340	202.3	179.6	244.6	206.6
I38/324	234.4	200.2	270.5	222.4
I38/307	250	222.8	288.5	248.9
I42/377	182.7	144.8	203.2	169.9
I42/359	197.2	163.4	225.7	182.8
I42/340	219.7	178.1	250.1	210.2
I42/324	235.5	193.2	260	225.3
I42/307	258.6	228.1	293.8	247.7

Figure 6


INTERLOCK---KNITTED ST.LENG./STITCH DENSITY A.W.ST./SQ.CM X10↑-2
STITCHES/SQ CM
3
2.4
1.8
1.2
0.6
0
34/307
34/324
34/340
34/359
34/377
COUNT/STITCH LENGTH
JD
JDX2
MJD
MJDX2
INTERLOCK---KNITTED ST.LENG./STITCH DENSITY A.W.ST./SQ.CM X10↑-2
STITCHES/SQ CM
38/307
38/324
38/340
38/359
38/377
COUNT/STITCH LENGTH
JD
JDX2
MJD
MJDX2
INTERLOCK---KNITTED ST.LENG./STITCH DENSITY A.W.ST./SQ.CM X10↑-2
STITCHES/SQ CM
42/307
42/324
42/340
42/359
42/377
COUNT/STITCH LENGTH
JD
JDX2
MJD
MJDX2

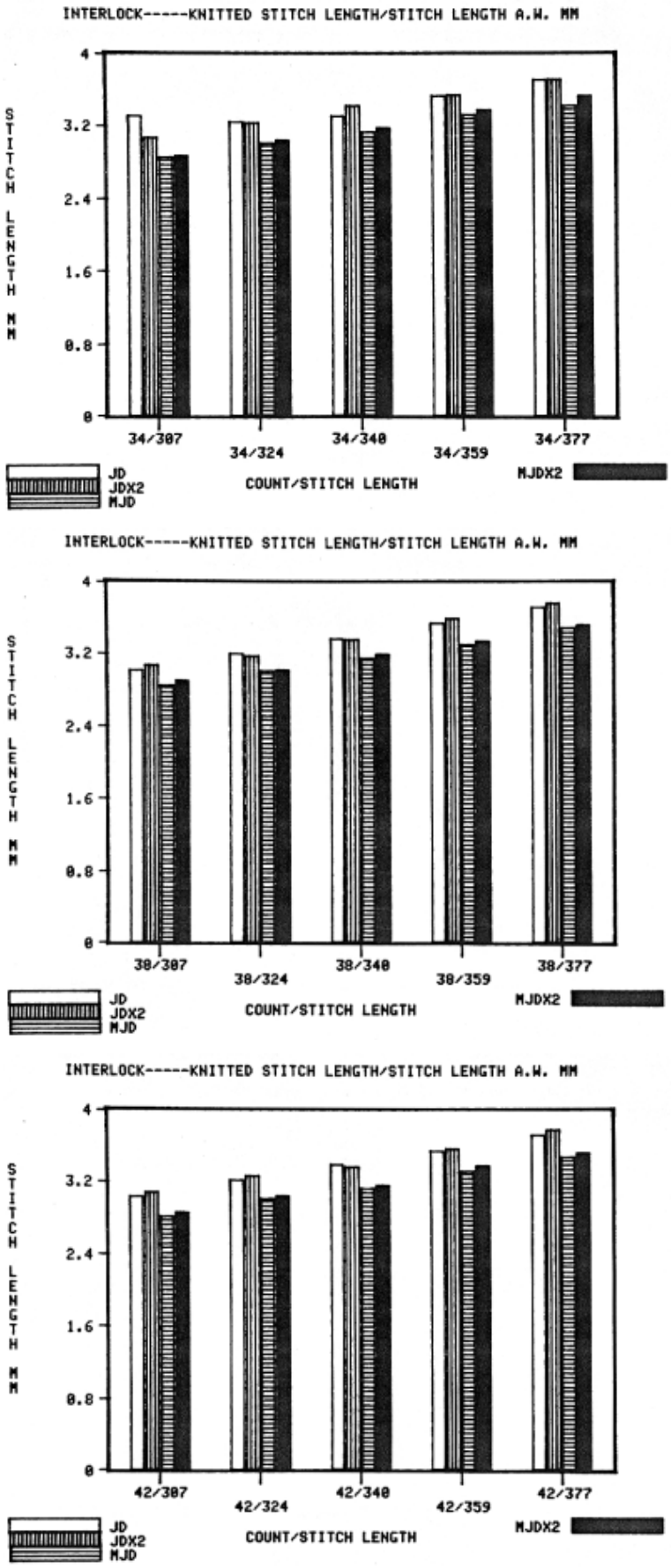
IIC/TPI PROJECT K3 1980 Table No. 7

INTERLOCK FABRICS :KNITTED STITCH LENGTH/RELAXED STITCH LENGTH

UNITS.....MILLIMETRES

SAMPLE	StL.AW JD	StL.AW JDX2	StL.AW MJD	StL.AW MJDX2
I34/377	3.717	3.722	3.427	3.544
I34/359	3.533	3.55	3.331	3.381
I34/340	3.308	3.423	3.134	3.18
I34/324	3.241	3.234	3.013	3.043
I34/307	3.034	3.069	2.856	2.873
I38/377	3.725	3.778	3.495	3.525
I38/359	3.542	3.6	3.307	3.346
I38/340	3.362	3.36	3.154	3.191
I38/324	3.195	3.175	3.012	3.022
I38/307	3.017	3.073	2.855	2.901
I42/377	3.72	3.79	3.482	3.527
I42/359	3.54	3.566	3.32	3.376
I42/340	3.384	3.363	3.13	3.157
I42/324	3.21	3.26	3.017	3.045
I42/307	3.028	3.077	2.818	2.861

Figure 7


INTERLOCK-----KNITTED STITCH LENGTH/STITCH LENGTH A.W. MM
STITCH LENGTH MM
4
3.2
2.4
1.6
0.8
0
34/307
34/324
34/340
34/359
34/377
JD
JDX2
MJD
COUNT/STITCH LENGTH
MJDX2
INTERLOCK-----KNITTED STITCH LENGTH/STITCH LENGTH A.W. MM
STITCH LENGTH MM
38/307
38/324
38/340
38/359
38/377
JD
JDX2
MJD
COUNT/STITCH LENGTH
MJDX2
INTERLOCK-----KNITTED STITCH LENGTH/STITCH LENGTH A.W. MM
STITCH LENGTH MM
42/307
42/324
42/340
42/359
42/377
JD
JDX2
MJD
COUNT/STITCH LENGTH
MJDX2

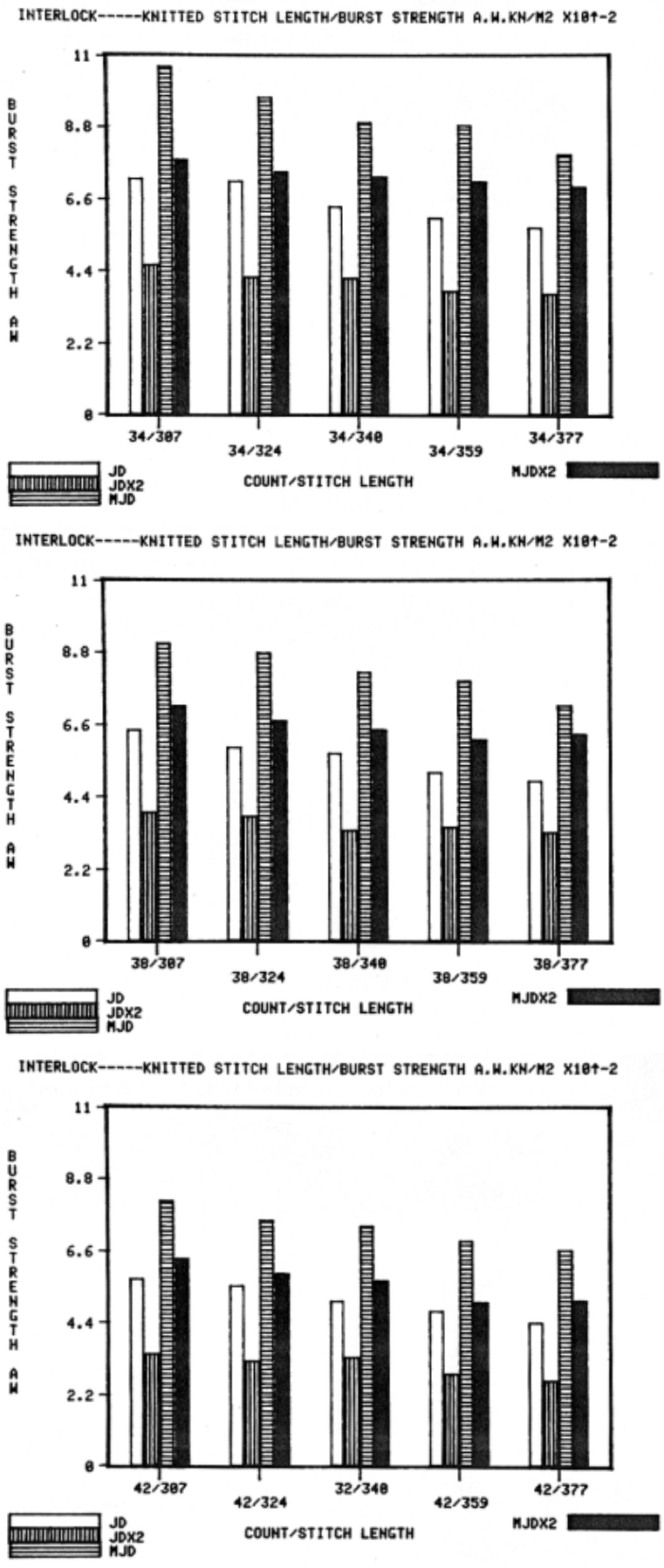
IIC/TPI PROJECT K3 1980 Table No. 8

INTERLOCK FABRICS :KNITTED STITCH LENGTH/RELAXED BURST STRENGTH

UNITS.....KILONEWTONS PER SQ.METRE

SAMPLE	Bst.AW JD	Bst.AW JDX2	Bst.AW MJD	Bst.AW MJDX2
I34/377	573.2	368.8	797.7	697.9
I34/359	604.2	379.3	887.67	716.6
I34/340	637.3	418.3	895	729.2
I34/324	714.2	421.1	971	743.1
I34/307	721.5	459	1068.2	781
I38/377	487.6	323.7	719.8	632.5
I38/359	516	347.8	795	614.7
I38/340	574	338.5	821.1	645.7
I38/324	591.1	379.9	879.4	670.9
I38/307	643.8	392.9	907.5	717
I42/377	439.2	264.5	663.36	508.4
I42/359	477.6	283.5	691.5	503
I42/340	507.7	337.6	739	570.5
I42/324	553.3	322.6	754.3	590.8
I42/307	573.1	344.1	812.9	636.4

Figure 8


INTERLOCK-----KNITTED STITCH LENGTH/BURST STRENGTH A.W.KN/M2 X10↑-2
BURST STRENGTH AW
11
8.8
6.6
4.4
2.2
0
34/307
34/324
34/340
34/359
34/377
COUNT/STITCH LENGTH
JD
JDX2
MJD
MJDX2
INTERLOCK-----KNITTED STITCH LENGTH/BURST STRENGTH A.W.KN/M2 X10↑-2
BURST STRENGTH AW
38/307
38/324
38/340
38/359
38/377
COUNT/STITCH LENGTH
JD
JDX2
MJD
MJDX2
INTERLOCK-----KNITTED STITCH LENGTH/BURST STRENGTH A.W.KN/M2 X10↑-2
BURST STRENGTH AW
42/307
42/324
32/340
42/359
42/377
COUNT/STITCH LENGTH
JD
JDX2
MJD
MJDX2

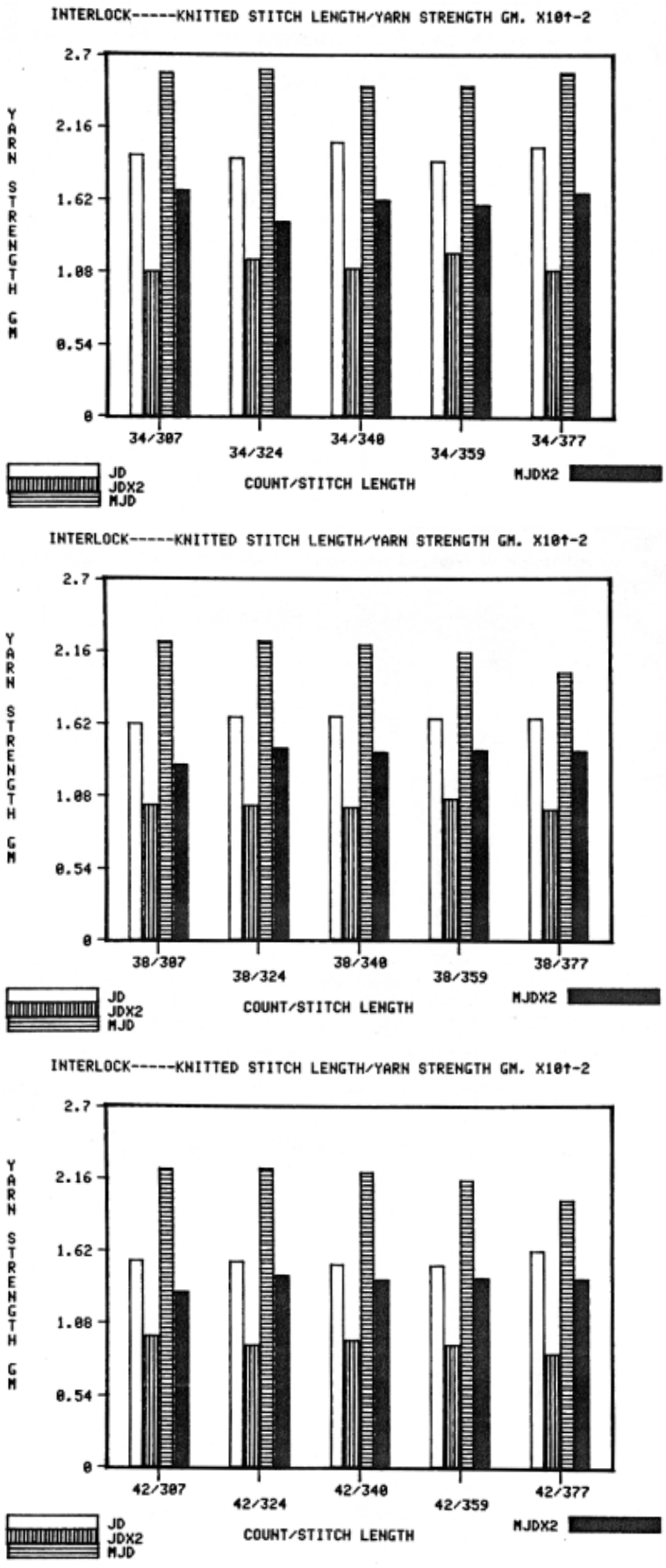
IIC/TPI PROJECT K3 1980 Table No. 9

INTERLOCK FABRICS :KNITTED STITCH LENGTH/RELAXED YARN STRENGTH

UNITS.....GRAMS

SAMPLE	Y.Str. JD	Y.Str. JDX2	Y.Str. MJD	Y.Str. MJDX2
I34/377	201.5	109.8	258.4	167.4
I34/359	191	122.5	248.15	158.7
I34/340	205	110.7	247.35	161.7
I34/324	192.75	117.7	260.25	145.6
I34/307	195	108.3	257	168.6
I38/377	165.75	97.6	200.1	141.7
I38/359	165.75	105.6	215	142
I38/340	167.5	99	221.35	141
I38/324	167	100.6	223.5	143.5
I38/307	162	101.3	229.7	131.1
I42/377	162.5	85.6	190	118.7
I42/359	151.3	91.6	191.3	131.3
I42/340	151.75	95.2	194.55	122.6
I42/324	153.75	91.3	199.95	126.7
I42/307	154.25	98.1	192.15	125

Figure 9

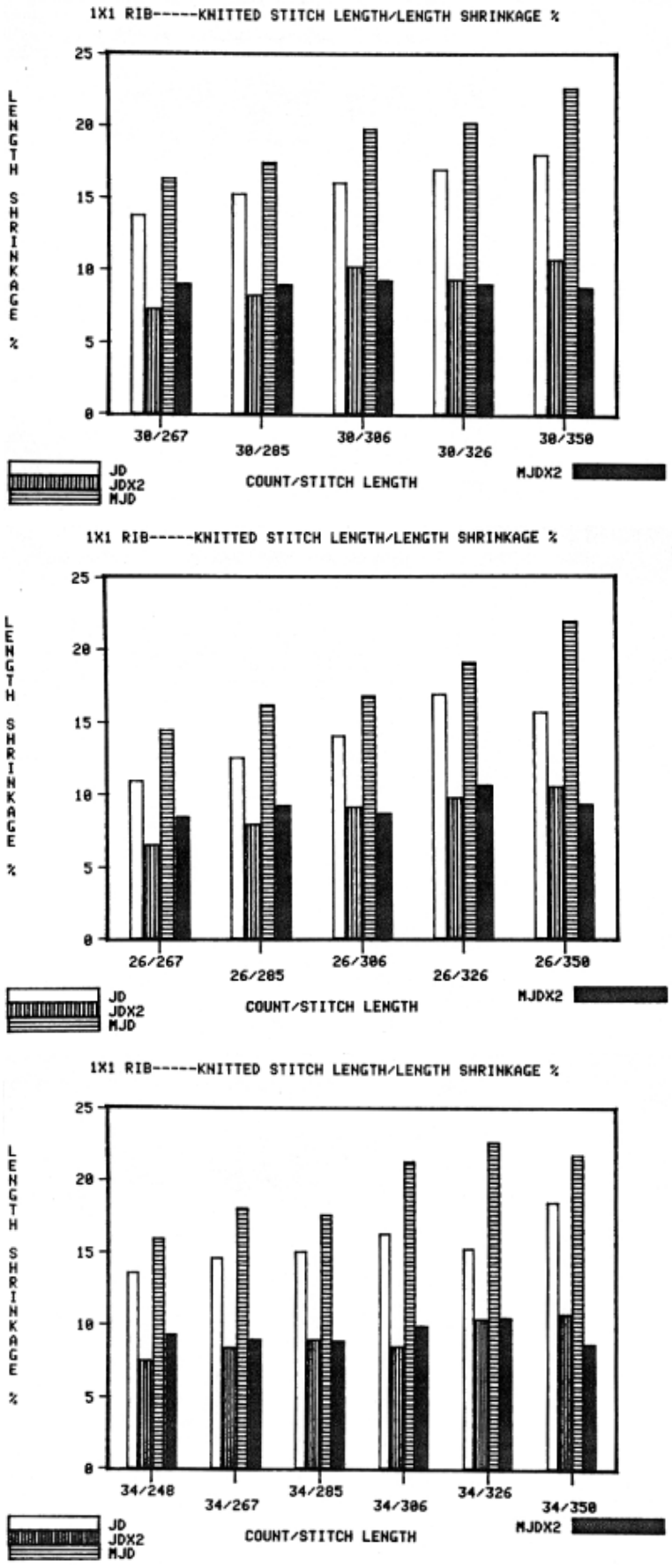

INTERLOCK-----KNITTED STITCH LENGTH/YARN STRENGTH GM. X10↑-2
YARN STRENGTH GM
2.7
2.16
1.62
1.08
0.54
0
34/307
34/324
34/340
34/359
34/377
JD
JDX2
MJD
COUNT/STITCH LENGTH
MJDX2
INTERLOCK-----KNITTED STITCH LENGTH/YARN STRENGTH GM. X10↑-2
YARN STRENGTH GM
2.7
2.16
1.62
1.08
0.54
0
38/307
38/324
38/340
38/359
38/377
JD
JDX2
MJD
COUNT/STITCH LENGTH
MJDX2
INTERLOCK-----KNITTED STITCH LENGTH/YARN STRENGTH GM. X10↑-2
YARN STRENGTH GM
2.7
2.16
1.62
1.08
0.54
0
42/307
42/324
42/340
42/359
42/377
JD
JDX2
MJD
COUNT/STITCH LENGTH
MJDX2

IIC/TPI PROJECT K3 1980 Table No. 10

RIB FABRICS :KNITTED STITCH LENGTH/LENGTH SHRINKAGE

SAMPLE	%Shr.L JD	%Shr.L JDX2	%Shr.L MJD	%Shr.L MJDX2
R26/350	15.64	10.49	21.94	9.28
R26/326	16.92	9.75	19.11	10.62
R26/306	14.04	9.11	16.84	8.64
R26/285	12.51	7.91	16.16	9.18
R26/267	10.94	6.48	14.44	8.4
R30/350	18.04	10.78	22.72	8.84
R30/326	17.06	9.37	20.29	9.04
R30/306	16.1	10.24	19.85	9.27
R30/285	15.26	8.24	17.51	8.94
R30/267	13.77	7.27	16.35	9.02
R34/350	18.49	10.79	21.81	8.68
R34/326	15.31	10.42	22.72	10.51
R34/306	16.37	8.51	21.35	9.93
R34/285	15.1	8.98	17.66	8.88
R34/267	14.61	8.39	18.1	8.94
R34/248	13.58	7.5	15.98	9.3

Figure 10

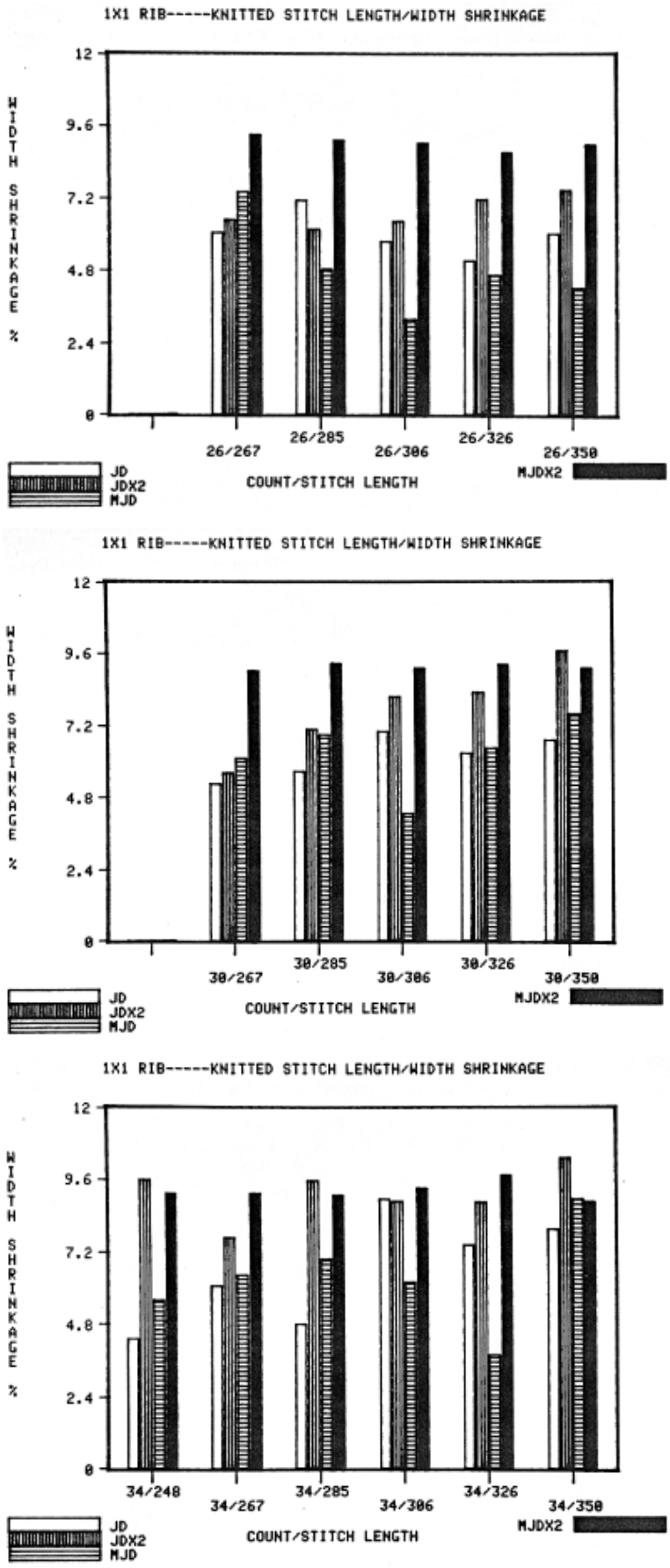

1X1 RIB-----KNITTED STITCH LENGTH/LENGTH SHRINKAGE %
LENGTH SHRINKAGE %
25
20
15
10
5
0
30/267
30/285
30/306
30/326
30/350
JD
JDX2
MJD
MJDX2
COUNT/STITCH LENGTH
1X1 RIB-----KNITTED STITCH LENGTH/LENGTH SHRINKAGE %
LENGTH SHRINKAGE %
26/267
26/285
26/306
26/326
26/350
JD
JDX2
MJD
MJDX2
COUNT/STITCH LENGTH
1X1 RIB-----KNITTED STITCH LENGTH/LENGTH SHRINKAGE %
LENGTH SHRINKAGE %
34/248
34/267
34/285
34/306
34/326
34/350
JD
JDX2
MJD
MJDX2
COUNT/STITCH LENGTH

IIC/TPI PROJECT K3 1980 Table No. 11

RIB FABRICS :KNITTED STITCH LENGTH/WIDTH SHRINKAGE

SAMPLE	%Shr.W JD	%Shr.W JDX2	%Shr.W MJD	%Shr.W MJDX2
R26/350	6.04	7.47	4.23	8.99
R26/326	5.13	7.18	4.66	8.73
R26/306	5.76	6.45	3.19	9.05
R26/285	7.14	6.18	4.85	9.13
R26/267	6.05	6.49	7.42	9.31
R30/350	6.73	9.7	7.61	9.13
R30/326	6.31	8.35	6.48	9.27
R30/306	7.02	8.19	4.27	9.13
R30/285	5.69	7.08	6.91	9.29
R30/267	5.26	5.63	6.11	9.05
R34/350	7.98	10.34	8.98	8.88
R34/326	7.43	8.87	3.79	9.77
R34/306	8.95	8.88	6.22	9.33
R34/285	4.79	9.56	6.97	9.08
R34/267	6.07	7.69	6.45	9.14
R34/248	4.33	9.58	5.61	9.14

Figure 11


1X1 RIB-----KNITTED STITCH LENGTH/WIDTH SHRINKAGE
WIDTH SHRINKAGE %
12
9.6
7.2
4.8
2.4
0
26/267
26/285
26/306
26/326
26/350
COUNT/STITCH LENGTH
JD
JDX2
MJD
MJDX2
1X1 RIB-----KNITTED STITCH LENGTH/WIDTH SHRINKAGE
WIDTH SHRINKAGE %
12
9.6
7.2
4.8
2.4
0
30/267
30/285
30/306
30/326
30/350
COUNT/STITCH LENGTH
JD
JDX2
MJD
MJDX2
1X1 RIB-----KNITTED STITCH LENGTH/WIDTH SHRINKAGE
WIDTH SHRINKAGE %
12
9.6
7.2
4.8
2.4
0
34/248
34/267
34/285
34/306
34/326
34/350
COUNT/STITCH LENGTH
JD
JDX2
MJD
MJDX2

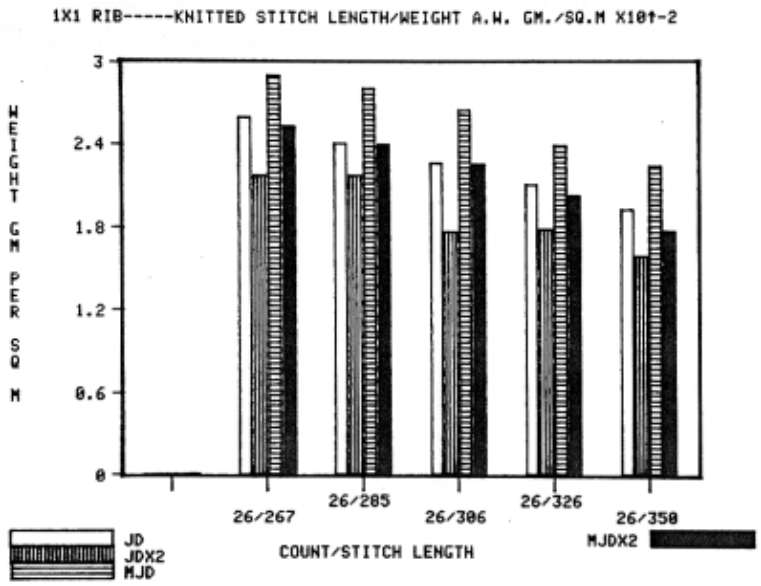
IIC/TPI PROJECT K3 1980 Table No. 12

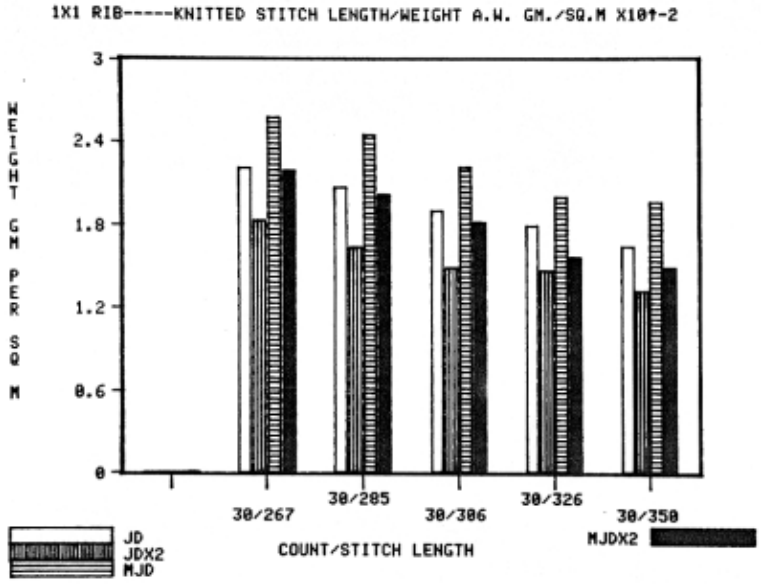
RIB FABRICS :KNITTED STITCH LENGTH/RELAXED WEIGHT

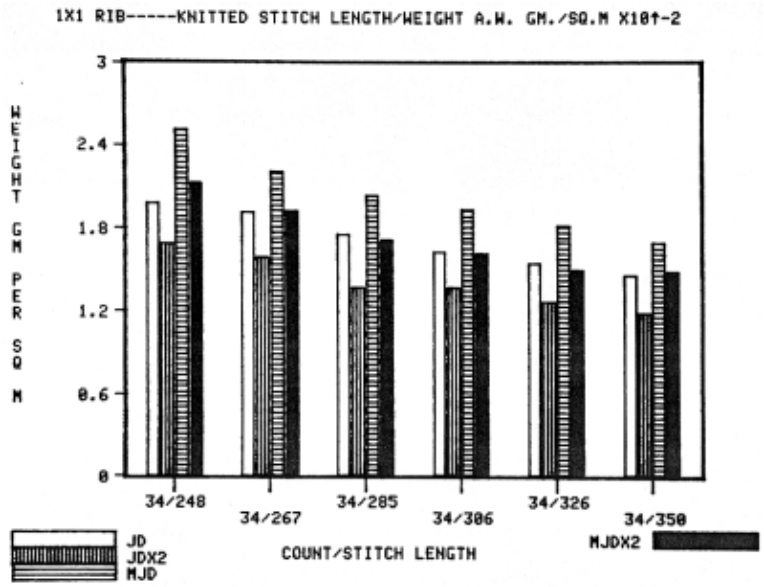
UNITS.....GRAMS PER SQ.METRE

SAMPLE	Wt.AW JD	Wt.AW JDX2	Wt.AW MJD	Wt.AW MJDX2
R26/350	193.2	159.8	225	177.6
R26/326	211.4	178.6	240	203.6
R26/306	226.6	177.4	265.6	225.8
R26/285	241	217.8	281.6	240.4
R26/267	259.8	217.6	291.4	253.2
R30/350	164.4	132.2	197	149.4
R30/326	179.5	146.8	201	157
R30/306	190.6	149	222.2	182
R30/285	207.2	164.2	245	202.6
R30/267	220.8	183.4	258	219.2
R34/350	145.8	118.4	170	148.6
R34/326	155	126.6	182.2	149.8
R34/306	163.2	136.8	193.8	161.6
R34/285	175.6	137.2	204.2	171.6
R34/267	191.4	159	221.2	192.4
R34/248	198	169	251	212.8

Figure 12


1X1 RIB-----KNITTED STITCH LENGTH/WEIGHT A.W. GM./SQ.M X10↑-2
WEIGHT GM PER SQ M
3
2.4
1.8
1.2
0.6
0
26/267
26/285
26/306
26/326
26/350
COUNT/STITCH LENGTH
JD
JDX2
MJD
MJDX2


1X1 RIB-----KNITTED STITCH LENGTH/WEIGHT A.W. GM./SQ.M X10↑-2
WEIGHT GM PER SQ M
3
2.4
1.8
1.2
0.6
0
30/267
30/285
30/306
30/326
30/350
COUNT/STITCH LENGTH
JD
JDX2
MJD
MJDX2


1X1 RIB-----KNITTED STITCH LENGTH/WEIGHT A.W. GM./SQ.M X10↑-2
WEIGHT GM PER SQ M
3
2.4
1.8
1.2
0.6
0
34/248
34/267
34/285
34/306
34/326
34/350
COUNT/STITCH LENGTH
JD
JDX2
MJD
MJDX2

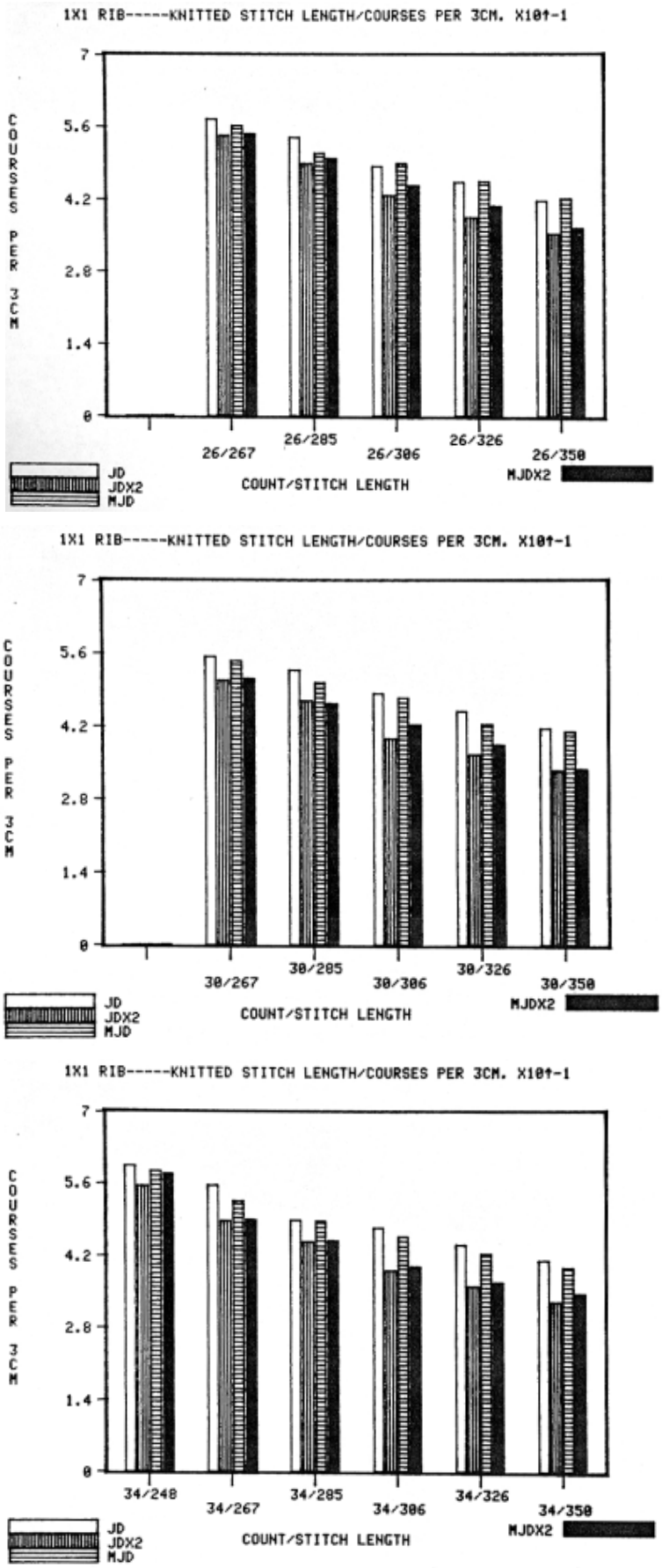
IIC/TPI PROJECT K3 1980 Table No. 13

RIB FABRICS :KNITTED STITCH LENGTH/RELAXED COURSES

UNITS.....COURSES PER 3 CENTIMETRES

SAMPLE	C/3cmA JD	C/3cmA JDX2	C/3cmA MJD	C/3cmA MJDX2
R26/350	41.89	35.4	42.4	36.6
R26/326	45.43	38.7	45.7	40.8
R26/306	48.58	42.9	49.1	44.8
R26/285	53.94	49	51.1	50
R26/267	57.8	54.4	56.4	54.8
R30/350	41.73	33.6	41.2	33.9
R30/326	45.12	36.8	42.6	38.6
R30/306	48.5	39.8	47.7	42.5
R30/285	52.83	47.1	50.5	46.6
R30/267	55.43	50.9	54.6	51.3
R34/350	41.26	33.2	39.9	34.8
R34/326	44.25	36.3	42.6	37
R34/306	47.64	39.3	46	40.1
R34/285	48.98	44.8	48.9	45.1
R34/267	55.6	48.9	52.8	49.2
R34/248	59.37	55.5	58.5	58

Figure 13


1X1 RIB-----KNITTED STITCH LENGTH/COURSES PER 3CM. X10↑-1
COURSES PER 3CM
7
5.6
4.2
2.8
1.4
0
26/267
26/285
26/306
26/326
26/350
JD
JDX2
MJD
COUNT/STITCH LENGTH
MJDX2
1X1 RIB-----KNITTED STITCH LENGTH/COURSES PER 3CM. X10↑-1
COURSES PER 3CM
7
5.6
4.2
2.8
1.4
0
30/267
30/285
30/306
30/326
30/350
JD
JDX2
MJD
COUNT/STITCH LENGTH
MJDX2
1X1 RIB-----KNITTED STITCH LENGTH/COURSES PER 3CM. X10↑-1
COURSES PER 3CM
7
5.6
4.2
2.8
1.4
0
34/248
34/267
34/285
34/306
34/326
34/350
JD
JDX2
MJD
COUNT/STITCH LENGTH
MJDX2

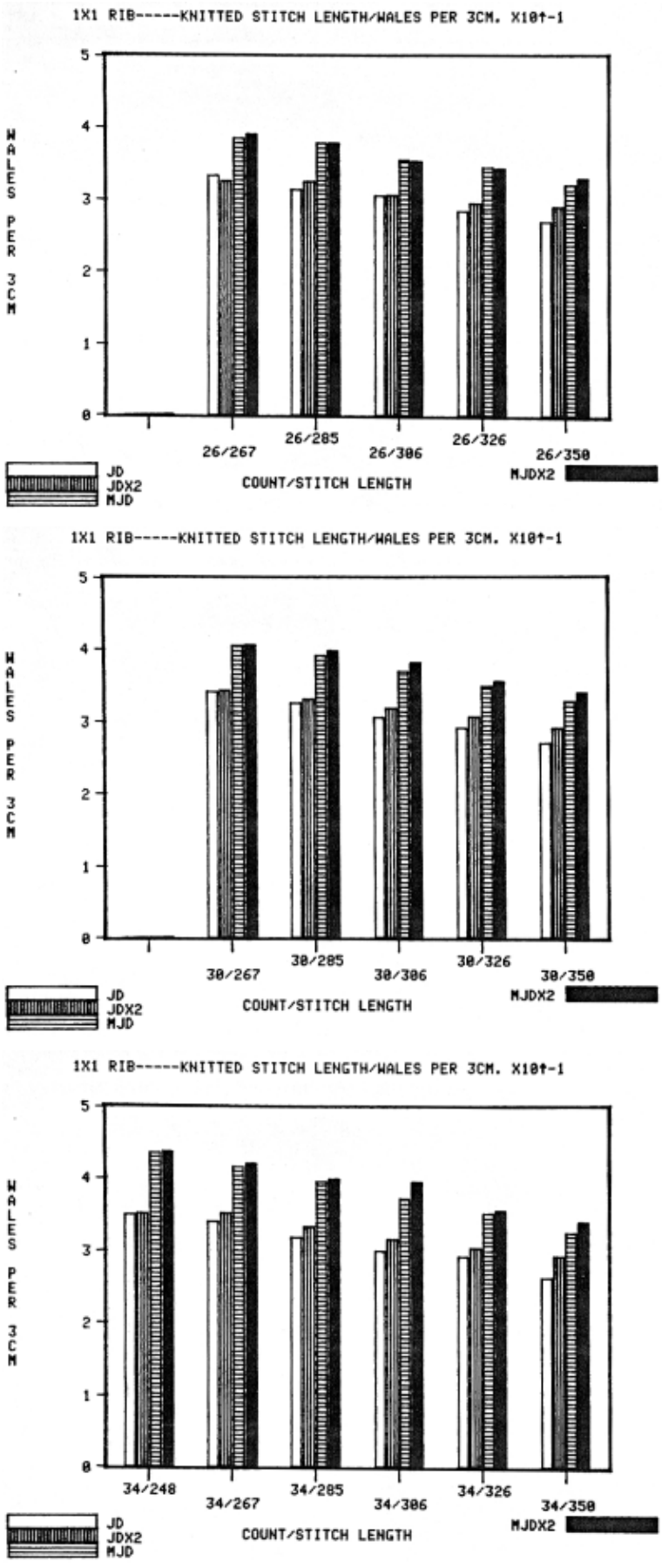
IIC/TPI PROJECT K3 1980 Table No. 14

RIB FABRICS :KNITTED STITCH LENGTH/RELAXED WALES

UNITS.....WALES PER 3 CENTIMETRES

SAMPLE	W/3cmA JD	W/3cmA JDX2	W/3cmA MJD	W/3cmA MJDX2
R26/350	27.09	29.2	32.2	33.1
R26/326	28.5	29.6	34.7	34.5
R26/306	30.63	30.7	35.6	35.5
R26/285	31.5	32.6	37.9	37.9
R26/267	33.39	32.6	38.6	39.1
R30/350	27.09	29.2	32.9	34.1
R30/326	29.21	30.7	35	35.6
R30/306	30.63	31.9	37	38.2
R30/285	32.6	33.2	39.2	39.8
R30/267	34.17	34.4	40.6	40.7
R34/350	26.46	29.4	32.7	34.2
R34/326	29.37	30.5	35.4	35.8
R34/306	30.08	31.7	37.4	39.7
R34/285	31.89	33.5	39.7	40.1
R34/267	34.09	35.3	41.7	42.1
R34/248	35.04	35.2	43.6	43.8

Figure 14


1X1 RIB-----KNITTED STITCH LENGTH/WALES PER 3CM. X10↑-1
WALES PER 3CM
0
1
2
3
4
5
26/267
26/285
26/306
26/326
26/350
COUNT/STITCH LENGTH
JD
JDX2
MJD
MJDX2
1X1 RIB-----KNITTED STITCH LENGTH/WALES PER 3CM. X10↑-1
WALES PER 3CM
0
1
2
3
4
5
30/267
30/285
30/306
30/326
30/350
COUNT/STITCH LENGTH
JD
JDX2
MJD
MJDX2
1X1 RIB-----KNITTED STITCH LENGTH/WALES PER 3CM. X10↑-1
WALES PER 3CM
0
1
2
3
4
5
34/248
34/267
34/285
34/306
34/326
34/350
COUNT/STITCH LENGTH
JD
JDX2
MJD
MJDX2

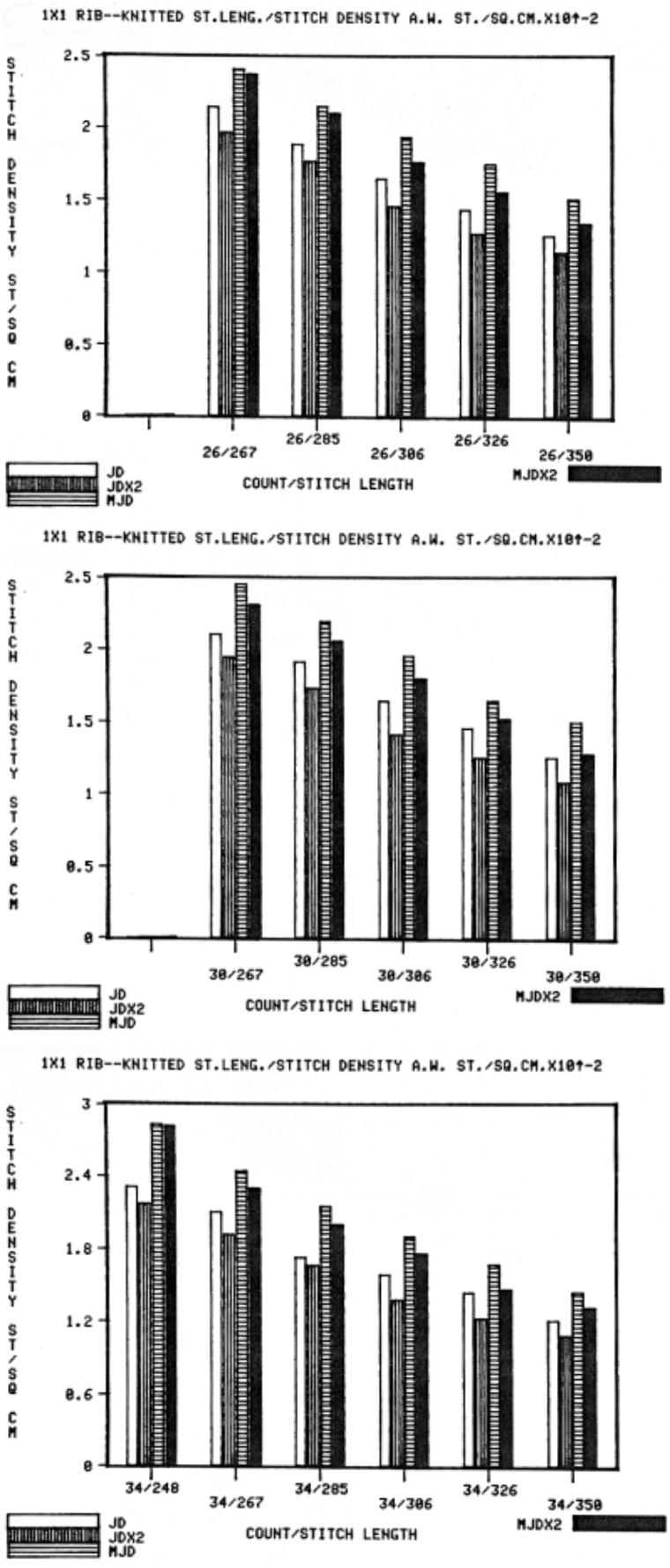
IIC/TPI PROJECT K3 1980 Table No. 15

RIB FABRICS :KNITTED STITCH LENGTH/RELAXED STITCH DENSITY

UNITS.....STITCHES PER SQ. CENTIMETRE

SAMPLE	S JD	S JDX2	S MJD	S MJDX2
R26/350	126.1	114.9	151.7	134.6
R26/326	143.9	127.3	176.2	156.4
R26/306	165.3	146.3	194.2	176.7
R26/285	188.8	177.5	215.2	210.6
R26/267	214.4	197	241.9	238.1
R30/350	125.6	109	150.6	128.4
R30/326	146.4	125.5	165.7	152.7
R30/306	165.1	141.1	196.1	180.4
R30/285	191.4	173.7	220	206.1
R30/267	210.4	194.6	246.3	232
R34/350	121.3	108.5	145	132.2
R34/326	144.4	123	167.6	147.2
R34/306	159.2	138.4	191.2	176.9
R34/285	173.6	166.8	215.7	200.9
R34/267	210.6	191.8	244.6	230.1
R34/248	231.1	217.1	283.4	282.3

Figure 15


1X1 RIB--KNITTED ST.LENG./STITCH DENSITY A.W. ST./SQ.CM.X10↑-2
STITCH DENSITY ST/SQ CM
2.5
2
1.5
1
0.5
0
26/267
26/285
26/306
26/326
26/350
JD
JDX2
MJD
COUNT/STITCH LENGTH
MJDX2
1X1 RIB--KNITTED ST.LENG./STITCH DENSITY A.W. ST./SQ.CM.X10↑-2
STITCH DENSITY ST/SQ CM
2.5
2
1.5
1
0.5
0
30/267
30/285
30/306
30/326
30/350
JD
JDX2
MJD
COUNT/STITCH LENGTH
MJDX2
1X1 RIB--KNITTED ST.LENG./STITCH DENSITY A.W. ST./SQ.CM.X10↑-2
STITCH DENSITY ST/SQ CM
3
2.4
1.8
1.2
0.6
0
34/248
34/267
34/285
34/306
34/326
34/350
JD
JDX2
MJD
COUNT/STITCH LENGTH
MJDX2

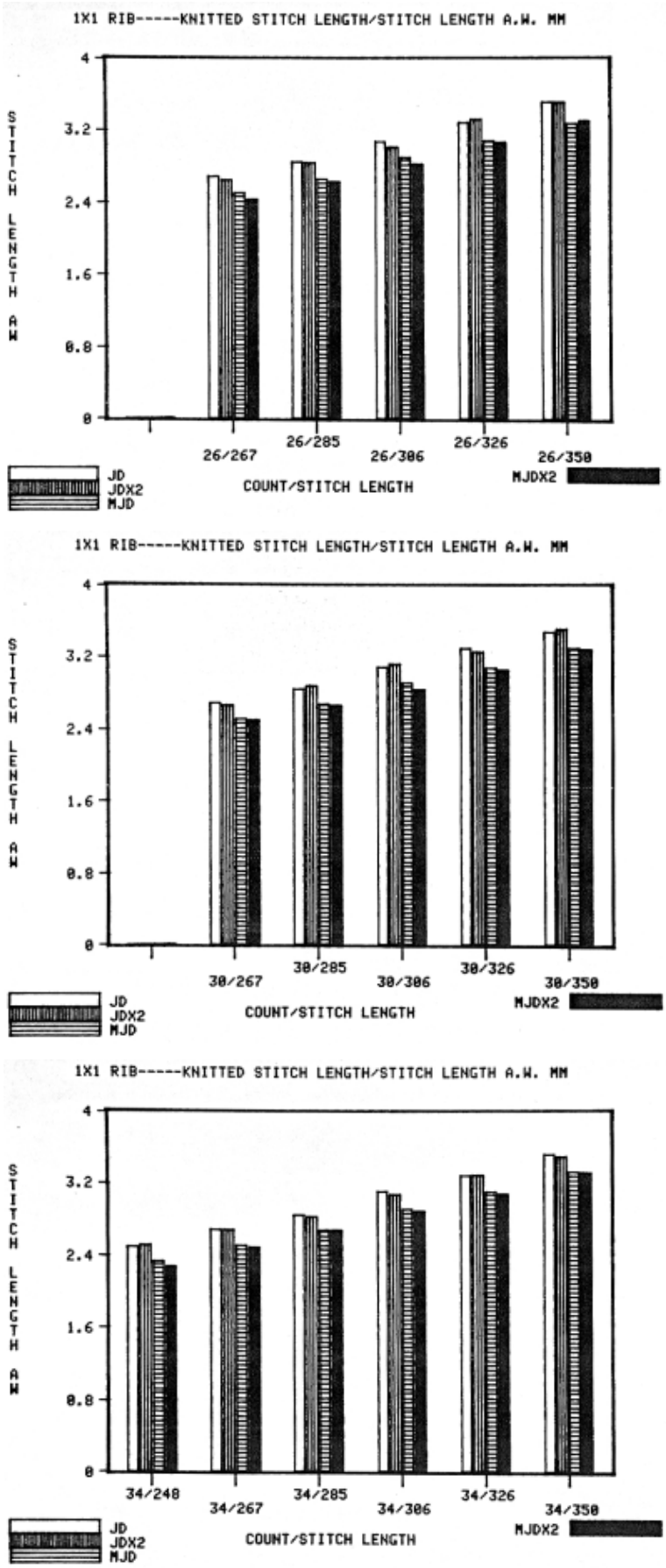
IIC/TPI PROJECT K3 1980 Table No. 16

RIB FABRICS :KNITTED STITCH LENGTH/RELAXED STITCH LENGTH

UNITS.....MILLIMETRES

SAMPLE	StL.AW JD	StL.AW JDX2	StL.AW MJD	StL.AW MJDX2
R26/350	3.515	3.513	3.282	3.31
R26/326	3.292	3.326	3.094	3.081
R26/306	3.081	3.022	2.908	2.838
R26/285	2.85	2.843	2.671	2.643
R26/267	2.69	2.653	2.51	2.436
R30/350	3.484	3.515	3.304	3.289
R30/326	3.295	3.264	3.086	3.064
R30/306	3.085	3.124	2.918	2.847
R30/285	2.847	2.884	2.681	2.669
R30/267	2.689	2.67	2.514	2.502
R34/350	3.527	3.505	3.335	3.325
R34/326	3.29	3.299	3.118	3.095
R34/306	3.117	3.083	2.924	2.904
R34/285	2.854	2.839	2.694	2.692
R34/267	2.692	2.691	2.511	2.491
R34/248	2.496	2.515	2.339	2.279

Figure 16


1X1 RIB-----KNITTED STITCH LENGTH/STITCH LENGTH A.W. MM
STITCH LENGTH AW
4
3.2
2.4
1.6
0.8
0
26/267
26/285
26/306
26/326
26/350
JD
JDX2
MJD
COUNT/STITCH LENGTH
MJDX2
1X1 RIB-----KNITTED STITCH LENGTH/STITCH LENGTH A.W. MM
STITCH LENGTH AW
4
3.2
2.4
1.6
0.8
0
30/267
30/285
30/306
30/326
30/350
JD
JDX2
MJD
COUNT/STITCH LENGTH
MJDX2
1X1 RIB-----KNITTED STITCH LENGTH/STITCH LENGTH A.W. MM
STITCH LENGTH AW
4
3.2
2.4
1.6
0.8
0
34/248
34/267
34/285
34/306
34/326
34/350
JD
JDX2
MJD
COUNT/STITCH LENGTH
MJDX2

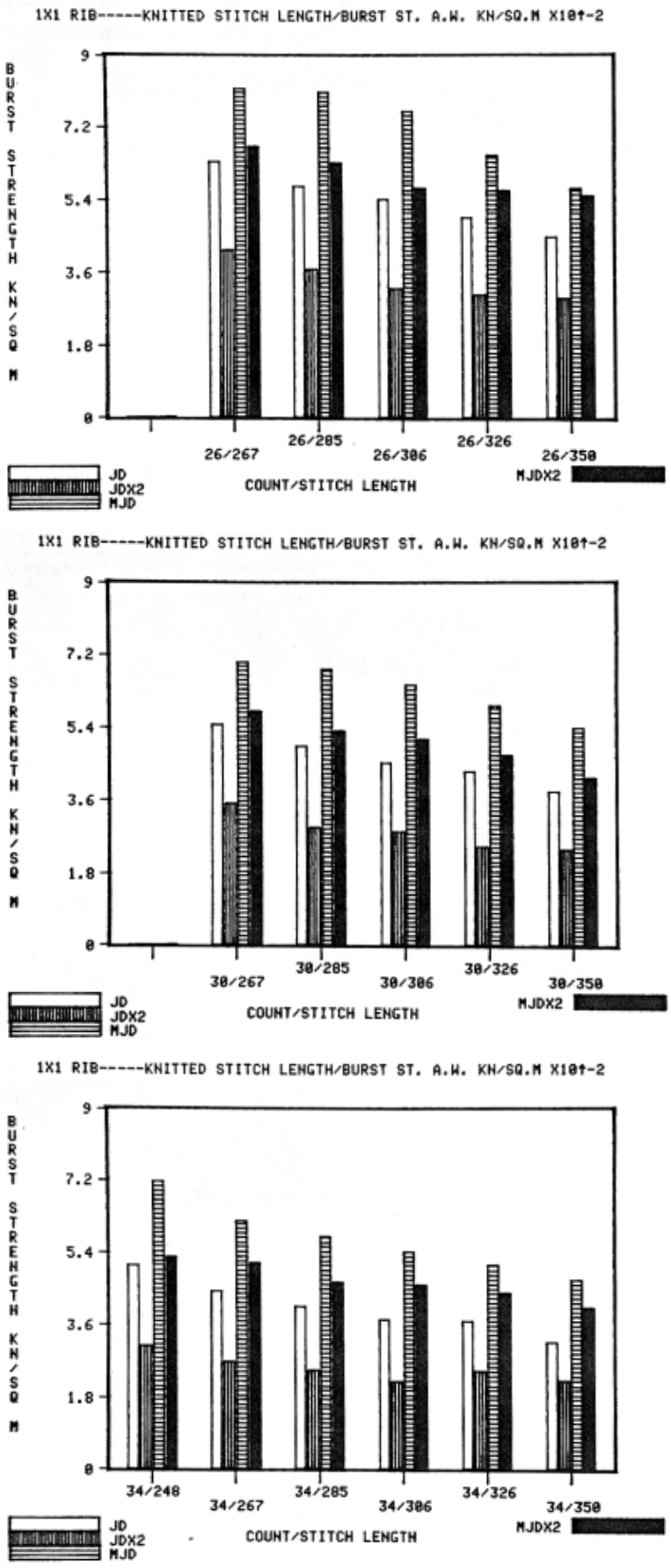
IIC/TPI PROJECT K3 1980 Table No. 17

RIB FABRICS :KNITTED STITCH LENGTH/RELAXED BURST STRENGTH

UNITS.....KILONEWTONS PER SQ.METRE

SAMPLE	Bst.AW JD	Bst.AW JDX2	Bst.AW MJD	Bst.AW MJDX2
R26/350	450	296.9	572	552.1
R26/326	499.1	305.7	653.2	566.7
R26/306	542.5	320.2	761.9	571
R26/285	575.2	369.4	810	632.8
R26/267	634.9	416.5	817.6	672.9
R30/350	382.5	239.2	541.8	418.6
R30/326	433.1	245.6	597.3	473.9
R30/306	453.4	283.6	648.5	514.6
R30/285	494.6	292.8	685.4	533.7
R30/267	547.9	352.1	703	580.8
R34/350	318	221.4	474.8	404.4
R34/326	370.6	244.4	511.3	440.7
R34/306	373.1	219.2	543.5	461.1
R34/285	406.5	247.3	581.2	468.4
R34/267	444.3	267.7	620.6	514.1
R34/248	507.8	307.5	716.7	530.4

Figure 17


1X1 RIB-----KNITTED STITCH LENGTH/BURST ST. A.W. KN/SQ.M X10↑-2
BURST STRENGTH KN/SQ M
9
7.2
5.4
3.6
1.8
0
26/267
26/285
26/306
26/326
26/350
JD
JDX2
MJD
MJDX2
COUNT/STITCH LENGTH
1X1 RIB-----KNITTED STITCH LENGTH/BURST ST. A.W. KN/SQ.M X10↑-2
BURST STRENGTH KN/SQ M
9
7.2
5.4
3.6
1.8
0
30/267
30/285
30/306
30/326
30/350
JD
JDX2
MJD
MJDX2
COUNT/STITCH LENGTH
1X1 RIB-----KNITTED STITCH LENGTH/BURST ST. A.W. KN/SQ.M X10↑-2
BURST STRENGTH KN/SQ M
9
7.2
5.4
3.6
1.8
0
34/248
34/267
34/285
34/306
34/326
34/350
JD
JDX2
MJD
MJDX2
COUNT/STITCH LENGTH

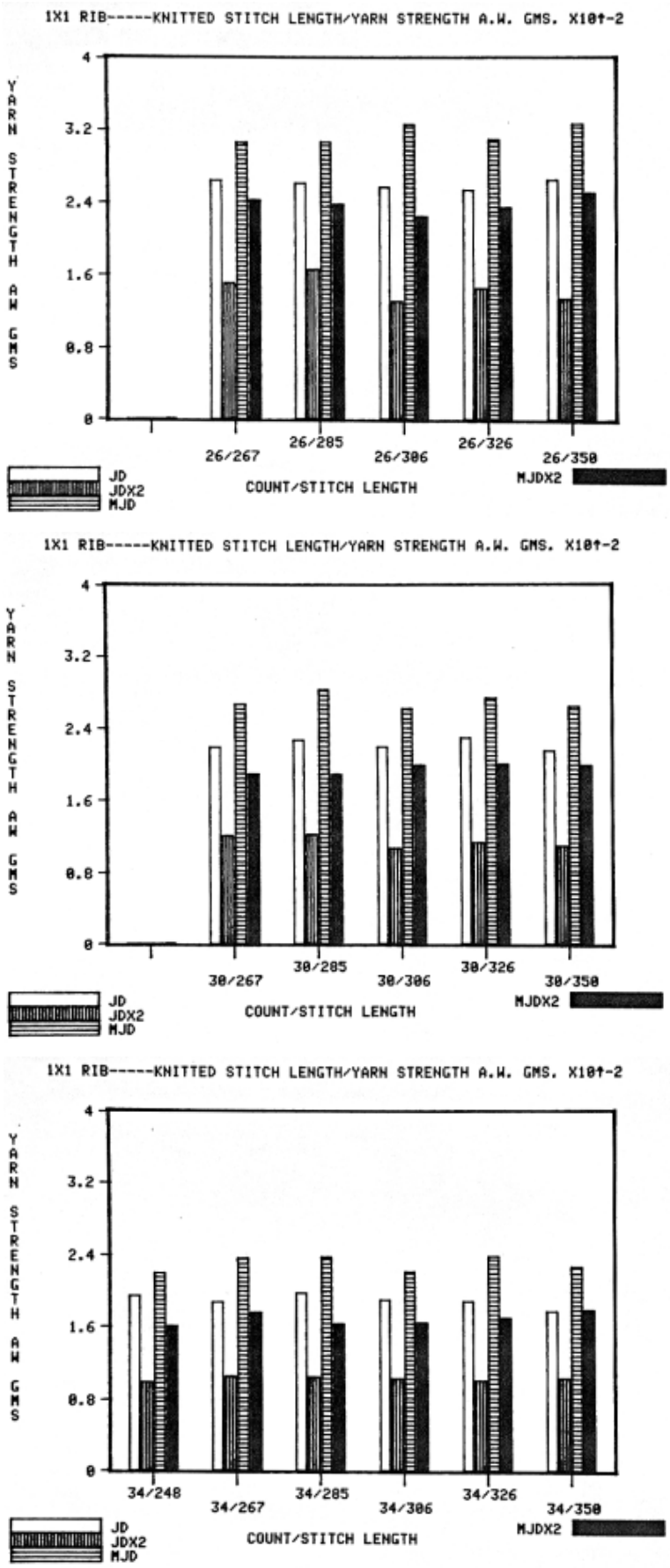
IIC/TPI PROJECT K3 1980 Table No. 18

RIB FABRICS :KNITTED STITCH LENGTH/RELAXED YARN STRENGTH

UNITS.....GRAMS.

SAMPLE	Y.Str. JD	Y.Str. JDX2	Y.Str. MJD	Y.Str. MJDX2
R26/350	265.9	134.7	327.6	252.1
R26/326	254.75	145.2	310.95	235.8
R26/306	257.75	130.8	326.9	224.8
R26/285	262.1	165.8	307.3	238.3
R26/267	264.5	150.7	306.6	243.1
R30/350	215.85	109.4	265.7	199.3
R30/326	230.25	113.3	275.3	201.1
R30/306	220.1	106.8	263.45	199.3
R30/285	227.3	122.4	283.5	189.6
R30/267	219.4	120.6	267.55	189.3
R34/350	178.15	103.6	228.55	179.6
R34/326	189.13	100.8	240.3	171.5
R34/306	190.8	103.4	222.25	165.1
R34/285	198.25	104.7	238.25	163.7
R34/267	187.65	105.5	236.55	175.9
R34/248	194.6	98.5	219.8	160.8

Figure 18


1X1 RIB-----KNITTED STITCH LENGTH/YARN STRENGTH A.W. GMS. X10↑-2
YARN STRENGTH AW GMS
4
3.2
2.4
1.6
0.8
0
26/267
26/285
26/306
26/326
26/350
JD
JDX2
MJD
MJDX2
COUNT/STITCH LENGTH
1X1 RIB-----KNITTED STITCH LENGTH/YARN STRENGTH A.W. GMS. X10↑-2
YARN STRENGTH AW GMS
4
3.2
2.4
1.6
0.8
0
30/267
30/285
30/306
30/326
30/350
JD
JDX2
MJD
MJDX2
COUNT/STITCH LENGTH
1X1 RIB-----KNITTED STITCH LENGTH/YARN STRENGTH A.W. GMS. X10↑-2
YARN STRENGTH AW GMS
4
3.2
2.4
1.6
0.8
0
34/248
34/267
34/285
34/306
34/326
34/350
JD
JDX2
MJD
MJDX2
COUNT/STITCH LENGTH