

IIC CASE STUDY

THE VARIABILITY OF A BRITISH HOME STORES 1 x 1 RIB FABRIC

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SUMMARY

Samples of grey yarn, knitted fabric and dyed and finished fabric have been taken, during a five-month production period, of a British Home Stores 1 x 1 rib. Fabric from two knitters was sampled in six widths, and the finished fabric included samples from three finishing companies and six processing routes.

The evaluation of these fabric samples included measurements of course and wale densities, weight, stitch length and yarn count, first in the delivered state and then after a five-cycle wash/tumble relaxation treatment. Shrinkages after one and five cycles were also measured.

Analysis of the data obtained in this evaluation showed that 28 of the 72 grey samples were out of compliance with the specification for knitted stitch length, and only 11 of the 59 finished samples (less than one in five) were within the limits of the specification for course and wale densities and weight.

More detailed statistical analysis, using Student's t-test, indicated that the main cause of variation in the finished fabric was stitch length variation between the mills, with one mill knitting consistently tighter than specification, the other equally consistently slacker than specification.

Yarn count variations, and smaller stitch length variations between machines within each mill, were contributory factors.

Finishing added very little to the overall variation, although jet and winch dyeing within one mill produced significant differences. Factors which did not add significantly to variations in the finished fabric included winch dyeing in two different ~~to~~ dyehouses or reactive and direct dyeing. Surprisingly, the use of a relaxed drying machine by one finisher did not appear to assist in attaining course targets.

The specification itself is not an unreasonable one. However, it would be preferable to specify the finished width corresponding to a given knitting machine, or finished wale density; by including both, the tolerance available to the finisher has been significantly reduced. *Yarn tolerance should*

1. INTRODUCTION

In 1982, IIC assisted British Home Stores in the development of a new specification for 14 gauge 1 x 1 rib fabric. The adoption of this specification in the production of tee-shirts and tops appeared to result in a reduction of customer returns.

The situation was discussed at a meeting between IIC and BHS in April 1983, at which it was decided that useful information might be obtained from a study of the sources of variation in finished fabric; a type of study which IIC had already carried out several times in the past.

Two knitters agreed to co-operate in this work, Klynton Davis of Leicester and Atkins of Hinckley.

The likely sources of variation in the properties of finished knitted cotton fabric have been shown to be:-

- a) variation in count of the yarn used by the knitter
- b) variation in stitch length in the knitted fabric
- c) variation in finishing procedure

In systematic work which has been carried out by IIC since 1978, and which is still continuing, the relative effects of these variations on finished fabric are being evaluated, and are being incorporated into computer models which can be used to predict fabric behaviour - the STARFISH project.

In this report, the fabric knitting and finishing conditions are reviewed, the sampling and testing are described, and selected test data analysed with a view to identifying the main sources of variation in the finished fabric.

The properties which have been studied in this analysis are, in general, those which are related either to the specification or to the STARFISH models "Reference State" (the structure assumed by the fabric after it has been subjected to a five-cycle wash and tumble dry treatment).

2. YARN SUPPLY AND KNITTING

A copy of the fabric specification can be found at the end of this report as Appendix A. The stipulated nominal structure is a 14 gauge 1 x 1 rib from Ne 30's combed cotton knitted at a stitch length of 0.282 cms. The specified tolerance for stitch length is 1½%, but no tolerance is specified for yarn count.

Atkins used one yarn supplier throughout the study, Naoussa Spinning Mills of Greece.

Klynton Davis, in contrast, used yarn from three different suppliers, Courtaulds (quality LW from Caleb Wright Mills), Blackwater of Ireland and Industrias Unidas S.A., a South American spinner.

Knitting at Atkins was carried out on Mayer and Cie (16 and 22 inch) and Bentley (18 and 20 inch) machines, and at Klynton Davis on Mayer and Cie 17 and 19 inch FHGII machines. The same six machines were used for sampling throughout the study. Details are given below:

<u>Ref. No.</u>	<u>Mill</u>	<u>Diameter</u>	<u>Needles</u>	<u>Mill Ref. No</u>
1	Atkins	16"	696	1R
2	Atkins	18"	792	B3
3	Atkins	20"	876	A1
4	Atkins	22"	972	B1
6	Klynton Davis	17"	756	MAY 6
8	Klynton Davis	19"	840	MAY 8

Sampling of grey yarn and knitted fabric was carried out between July and November 1983.

3. YARN TESTING AND DATA ANALYSIS

The yarn supply to each mill was sampled at intervals of 2 to 3 weeks throughout the knitting period. Ten packages were included in each sample. Five samples were taken at Atkins and eight at Klynton Davis. Of the latter, five were Courtaulds quality LW, two Blackwater and one IUSA. The test results on these samples are summarised in Table I.

Analysis of the yarn count data showed that, while the Naoussa yarn used by Atkins was quite variable, the Courtaulds yarn used at Klynton Davis was much less so. The overall variability of the raw materials used at Klynton Davis was clearly due to the use of yarn from three different sources, and would certainly have been much lower if only one yarn source had been used.

Although the average yarn count for the complete data set was very close to the specified count of Ne 30's, the Atkins/Naoussa yarn was consistently heavy and the Klynton Davis/Courtaulds yarn was consistently light. The one sample of IUSA yarn was heavier than the other yarns used at Klynton Davis, a fact which it may be useful to note for consideration in the study of fabric data.

A chart of yarn count data from the package testing is given in Figure 1.

The yarn samples taken from package showed a slight, but consistent difference in count from the corresponding grey fabric test data, giving results about 1% heavier (Table II), although it should be noted that the first yarn sample taken at Atkins, which gave an exceptionally heavy result, did not appear to have a parallel in the grey fabric samples, and may have been the result of an unfortunate sampling.

GREY FABRIC TESTING AND DATA ANALYSIS

The complete test data for the grey fabric samples are listed in Appendix B. The sample identifiers have been constructed as follows:

B.....British Home Stores
A or K....Knitter (Atkins or Klynton Davis)

Yarn samples and finished samples receive a further letter in the identifier:

Y.....yarn
W.....winch dyed
J.....jet dyed

The letters are then followed by a running number, corresponding to identical pieces in the cases of the grey and finished data sets.

A statistical analysis of the selected grey fabric test data is given in Table III. Further reference to this will be made later, but at the knitting stage the most important test is that of stitch length. An analysis of the stitch length data for the grey fabrics is given in Table IV. The specification calls for a knitted stitch length of 2.82 mm with a permitted tolerance of 1.5%, the overall mean value found was 2.832 mm with a percentage coefficient of variation (%CV) of 1.49%. The % CV is, in fact, the standard deviation expressed as a percentage of the mean, and one can say that a reasonable tolerance should be about two standard deviations either side of the mean. A % CV of 1.49 therefore indicates a variation of about 3%, or twice the level permitted by the specification, and in confirmation of this observation, reference to the stitch length data in Appendix B shows that of the 72 grey samples tested, 27 fell outside the specification.

Subdivision of the data, first to show the situation with regard to the production of each knitter, and further to show the variability from each machine, yields the information given in Table IV. This indicates that the variability of output from each machine is very low; the high overall variation is due to differences between machines, and even more to the difference between the mills. Charts showing these variations in stitch length over the course of sampling are given in Figure 2 (for Atkins) and Figure 3 (for Klynton Davis). At Atkins, in fact, 22 of the 36 samples tested were outside the permitted tolerance, including all the samples from the 18" diameter machine.

While the average stitch length at Atkins was high, most of the samples taken at Klynton Davis showed stitch lengths on the tight side, and as Figure 3 shows, results from the 17" machine drifted steadily downwards throughout the sampling period, so that although the production had originally been to specification, the final samples were clearly outside the specified range.

Apart from this drifting of the 17" fabric, however, reference to the %CV figures shows that each machine was holding very closely to its mean stitch length, and if these mean values could be set to the specified target, the permitted range of $\pm 1.5\%$ should be maintained without difficulty.

A mere cursory glance at the data given in Table IV will be sufficient to show that the fabrics knitted at the two mills were completely different. This conclusion is also apparent from a comparison of the two graphs in Figures 2 and 3. No statistical analysis is necessary to confirm this; however, a statistical analysis of the production from each mill did show up further significant differences.

The results of applying Student's t-test to the stitch length data are shown at the bottom of Table IV. Statistically highly significant differences are indicated between the 16" diameter fabric knitted at Atkins and the other fabrics from that mill, and also between the 17" and 19" diameter fabrics from Klynton Davis.

At this point, it may be of interest to note that application of the t-test to a comparison of stitch lengths between the two mills gave a result of 18.41!

4. FINISHING

The fabric knitted at Atkins was all processed within the Atkins dyeing and finishing works. The main processing route used a shallow-draught winch for scouring, bleaching and dyeing, followed by drying on a Kiefer 3-drum dryer, and calendering using a Heliot machine.

A few samples were processed in a Platt-Longclose "Softflow" jet machine; these were dried and calendered using the same equipment.

Fabric from Klynton Davis was commission finished. Two dyehouses were employed, Martins (Leicester) and Westertex (Loughborough). Samples taken from these finishing works were exclusively winch-processed using deep-draught Pegg or Horrocks machines. Drying at Martins was by Kiefer "Rotoswing" relaxed drying machine with final finishing on a Weiss calender, and at Westertex the fabric was dried on a Pegg vertical tubular drier, with finishing on a Hunt and Moscrop "Bestan" machine. This last was being employed mainly for dressing, rather than in its normal capacity of a compressive shrinker.

5. FINISHED FABRIC TESTING AND DATA ANALYSIS. 1. The Reference State

Samples of finished fabric were collected by the mills and submitted to IIC for testing. In most cases, equivalent samples were tested at the BHS laboratory at Atherstone and a comparison of the data obtained by the two laboratories will form the subject of a later report.

The IIC data on the finished fabrics are given in Appendix B.

Although it had originally been the intention to sample the same fabric pieces at both knitted and finished stages, this system did not operate well in practice and of the 72 knitted samples, only 54 were resampled after finishing. In addition three finished samples had no corresponding grey sample, and two were believed to have been sampled twice (although this may have been due to an error in identification).

Those properties which are related to the specification or to the Reference State are analysed in Table V, and a comparison of these figures with the corresponding data for the grey fabrics, shown in Table III, leads to some interesting conclusions.

The overall variability between samples is indicated by the % CV figure. In general the variability of the finished fabric data is no worse than that of the grey fabric data, with the exception of fabric weight in the Reference State. Although three separate finishing works and six dyeing and finishing processes were used, there is no evidence in these results that the variability of course and wale densities in particular, have been adversely affected by processing.

However, since significant variations had been noted in the grey fabric data, between the two mills, for instance, and within the Atkins data between the 16" and the others, it was clearly necessary to examine the finished fabric data to establish the effects which these variations would produce.

Table VI summarises the t-test data for differences between the means of course density, wale density and weight (all in the Reference State).

- a) between the mills
- b) between the two Klynton Davis finishers
- c) as b) but for direct dyeings only
- d) between direct dyeings and reactive dyeings (17" at Westertex)
- e) between jet and winch processing (Atkins)
- f) between 16" fabrics and others (Atkins)
- g) between the 17" and 19" fabrics (Klynton Davis)

As might be expected from the known stitch length difference, significant differences were noted in the course and wale densities of the Atkins and Klynton Davis fabrics. The weight difference was not significant, presumably because the stitch length effect was neutralised by an opposing yarn count difference.

The other significant variations which this analysis indicated were for comparison (e) in spite of the relatively small number of jet dyed samples; and for comparison (g), in which the stitch length variations (again already noted) have affected course and wale densities as well as weight. Comparison (f) indicated a weight difference but reference to the data showed it to have occurred in the wrong direction. This is strange, but may possibly be the result of an unequal distribution between pale and deep shades.

FINISHED FABRIC TESTING AND DATA ANALYSIS 2. Finished Dimensions

The degree to which the knitters have been adhering to the specification, in terms of yarn count and stitch length, has already been discussed, but the finisher would have to assume that knitting had been correctly carried out and, for his part, would have attempted to meet his own obligations with respect to final course and wale densities, weight, width, and residual shrinkage. Table VII shows how successful the finishers have been in meeting their target for weight and for finished course and wale densities.

All finishers found some difficulty in meeting these requirements; perhaps not surprisingly in view of the overall variability of the incoming grey cloth. Course and wale density requirements in particular seemed to present problems. The Klynton Davis finishers clearly had difficulty in meeting the wale density requirement, and in general these fabrics were finished rather below the specified width, a logical result of the tight knitted structure. Westertex were more successful than Martins in meeting the course density target; this was surprising in view of the claims made for the Kiefer "Rotoswing".

A study of the test data given in Appendix B shows that seven of the 23 samples taken from Atkins and four of the 36 Klynton Davis samples passed the specification in all the main requirements of courses, wales and weight; a total of 11 samples from a total of 59, or just under 19%!

For the record, all samples which gave results within specification were:

- from Atkins, BAW 2,6,10,11,24 and 31 and BAJ 13
- from Klynton Davis/Martins, BKW 18
- from Klynton Davis/Westertex, BKW 29,34 and 39

6. THE VALIDITY OF THE SPECIFICATION

Having established that less than one in five finished fabric samples satisfied the requirements of the specification in terms of courses, wales and weight, the question must be asked - Is the specification a reasonable one?

Certain mathematical tests can be carried out to establish the internal agreement of the various components of such a specification. For instance, by considering the weight of that length of yarn which makes up one square metre of fabric, a "calculated weight" can be derived which should, of course, agree with the weight which has been specified. This calculated weight is arrived at by means of the equation:

$$Wt = \frac{S \times l \times N}{10} \dots\dots\dots(1)$$

where Wt is the calculated weight in g/square metre, S the stitches per square centimetre, l is the stitch length in centimetres and N the yarn count in tex.

Before this equation can be applied to the specification, it will be necessary to obtain values for l and N in the finished fabric.

A figure for l is, in fact, included in the specification. The knitted stitch length of 0.282 cm is said to be reduced in finishing to 0.279 cm, implying a yarn shrinkage in processing of 1.06%.

In fact, from a study of the data given in Tables III and V, it can be seen that an initial mean stitch length of 0.2832 cm is reduced to 0.2764 cm after finishing; indicating a yarn shrinkage of 2.4%. From a knitted stitch length of 0.282 cm. We should therefore expect a finished stitch length of about 0.275cm.

Yarn count change in finishing is more variable and therefore less easy to determine than the corresponding change in stitch length, as it depends on several factors other than yarn shrinkage, but for a similar study of the data, it may be calculated that an initial yarn count of Ne 30 would change to about Ne 30.83, or 19.16 tex, after finishing.

Stitch density is calculated from the specified courses and wales, taking into consideration the fact that, for 1 x 1 rib, the true wale count is twice the visible wales. In this case the value for S is given by $48 \times 31 \times 2 \div 9 = 330.67$, and the calculated weight, from equation 1, for the finished fabric is:-

$$Wt = \frac{330.67 \times 0.275 \times 19.16}{10} = 174.2g/sq. \text{ metre}$$

This figure is in good agreement with the specified weight of 173g/sq. metre.

Another, perhaps simpler, mathematical test relates the finished fabric width, wale density and the number of needles in the knitting machine cylinder. In this case:

$$w = \frac{3 \times n}{2 \times Wd} \dots\dots\dots(2)$$

where w is the calculated wale density per 3cm, n the number of needles and Wd is the tubular width in centimetres. Taking data from the specification for the six machine diameters studied in this report, we arrive at the following:-

<u>Diameter</u>	<u>n</u>	<u>Wd</u>	<u>w</u>
16"	692	34	30.53
17"	756	37	30.65
18"	792	38	31.26
19"	840	41	30.73
20"	876	42	31.29
22"	972	47	31.02

This leads to the conclusion that the wale density will vary between 30.5 and 31.3 wales per 3 cm. even if the finisher consistently delivers the fabric exactly at the specified width. This variation alone is of the order of $\pm 1\%$, and is attributable entirely to the terms of the specification. The tolerance available to the finisher then is not $2\frac{1}{2}\%$ as the specification suggests, but only $1\frac{1}{2}\%$

The remaining item in the specification is shrinkage. Fabric shrinkage is not in fact specified; the "guide line" is for garment shrinkage, and no maximum acceptable limits are laid down. The July 1979 version of BHS Performance Standard G.11 is not helpful, as the drying method ~~is not mentioned~~ (it specifies a maximum length shrinkage of 6%).
in fact dried

The mean Reference State course and wale densities found in this study are given in Table V as 53.605 and 34.436 respectively per 3cm. Finished fabric course and wale densities of 48 and 31 would then correspond to shrinkages of 10.5% (length) and 10.0% (width), after five wash-tumble dry cycles.

It is impossible, with our present state of knowledge, to be accurate in relating fabric shrinkage after five cycles to garment shrinkage after one wash; there is some evidence to show that, over the same number and type of washes, garment shrinkage is rather less than fabric shrinkage, and also that while length shrinkage tends to increase with the number of wash cycles, width shrinkage may quickly level out, or even start to reverse direction. This is, in fact, indicated by the results obtained in this study.

While no firm conclusions can be drawn from these data on the validity of the "guide-lines", it may be useful in the future to refer to Figures 4 and 5, in which the fabric shrinkage data after one wash-tumble dry cycle have been plotted against the finished wale and course densities respectively.

Incidentally, these graphs give a clear picture, as perhaps the bare statistics do not, of the extent of the variabilities which have been observed in the course and wale densities of the finished fabrics examined in this study.

7. CONCLUSIONS

The level of quality control during the sampling period, in terms of finished, delivered course and wale densities and weight, is indicated in Table V by the % CV data. The figure for weight is 3.94%, for course density 2.59% and for wale density 3.34%. If the % CV can be regarded as numerically about half the range, then provided the present situation is satisfactory, the specification can be drawn up afresh, with new mean values and tolerance levels based on these results, as:-

- finished weight, g/sq, metre $171 \pm 8\%$
- finished courses per 3cm $47 \pm 5\%$
- finished wales per 3cm $31.5 \pm 7\%$

Similarly from the data given in Table III, a mean value and tolerance can be found for stitch length

- grey stitch length, cm $0.283 \pm 3\%$

and from the data in Table I

- yarn count, Ne $30 \pm 6\%$

With this specification, one of the 13 yarn samples would have failed, none of the 72 grey samples and three of the 59 finished samples. Samples BKW 11 and BKW 28 would be too heavy, and samples BKW 28 and BKW 30 would be above the course density limit. (Looking at the other data for these samples, it can be seen that BKW 11 shows unusually low shrinkages, and BKW 28 and BKW 30 were knitted from the heavy IUSA yarn).

However, it must be assumed that the present situation is not satisfactory; otherwise there would have been no need for this study.

Table IV and VI show where the main variations arise. The two knitters have produced completely different grey fabrics, with different stitch lengths, and this has resulted in different course and wale densities in the finished Reference State. Minor differences in stitch length between machines within each mill, particularly at Klynton Davis, have contributed to the variations.

In finishing, some variation was introduced at Atkins by the use of two different types of dyeing equipment, the winch and the Longclose "Softflow" jet machine. The use by Klynton Davis of two commission finishers, on the other hand, does not appear to have added to the variation; neither does the use at Westertex of both direct and reactive dyeing processes.

In general, it can be said that the variations in the finished fabric are little different from the corresponding variations in the grey. It is therefore in tighter control of yarn supply and knitting that the main opportunities for improvement in quality are to be found.

8. THE ROLE OF THE STARFISH PREDICTIVE MODELS

STARFISH is the name given to a set of computer-based programmes which relate the properties and dimensions of a knitted cotton fabric to the knitting parameters and the finishing route.

A pre-requisite for the application of the STARFISH system is efficient quality control by the manufacturer.

The variations of both yarn count and stitch length in the production of this 1 x 1 rib fabric have been shown to be high both in terms of STARFISH applicability and also in terms of the specification requirements.

Some printouts from the STARFISH model, relating to the data from this project, are shown in Table VIII, and serve to confirm the product variability which results from the lack of knitting parameter control.

Table VIII (a) shows that the specification requirements for knitted yarn count and stitch length, and for finished course and wale densities, will result in a fabric weight of around 170 g/square metre, and fabric shrinkages after five wash cycles of about 11% (length) and 8-9% (width), and confirms that the specification, as written, is a reasonable one.

Table VIII (b) shows the extent of the variations, in weight and shrinkage, when the average values for yarn count and stitch length for each knitter are entered together with the same course and wale density targets for the finisher. The weight varies from 166 to 180 g/square metre and the shrinkages in both directions are increased; and this is the effect of the difference in the average values, not the extremes.

The STARFISH predictive model has here served merely to confirm the need for better quality control at the knitting stage. However, the results obtained from this project will be incorporated into the STARFISH data base to improve the accuracy and precision of the model.

Table I

Grey Yarn Data - 1. Yarn Count

	No. of samples	Yarn count		
		Ne	Tex	%C.V.
ALL DATA	13	29.8	19.8	2.93
Atkins/Naoussa	5	29.1	20.3	2.51
Klynton Davis - all data	8	30.3	19.5	2.02
Klynton Davis/Courtaulds LW	5	30.7	19.3	0.87
Klynton Davis/Blackwater	2	29.9	19.8	0.71
Klynton Davis/IUSA	1	29.2	20.2	

2. Other yarn test data - mean values

	Naoussa	LW	Blackwater	IUSA
Turns per metre	778	752	769	759
Twist factor (English)	3.66	3.45	3.58	3.57
Strength (g)	249	272	269	267
Extension at break (%)	5.7	6.0	5.9	6.2
Tenacity (g/tex)	12.24	14.12	13.60	13.20
Coefficient of friction	0.13	0.09	0.10	0.11

GREY FABRIC - Yarn counts & comparison with data from yarn packages.

	No. of sples	FABRIC			No. of sples	YARN		
		Mean	Tex BW S.D.	%C.V.		Mean	Tex S.D.	%C.V.
ALL DATA	72	19.68	0.51	2.57	13	19.82	0.58	2.93
Atkins/Naoussa	36	20.03	0.35	1.74	5	20.30	0.51	2.51
KD	36	19.32	0.37	1.92	8	19.51	0.39	2.02
KD LW	24	19.19	0.27	1.38	5	19.26	0.17	0.87
KD Blackwater	9	19.41	0.32	1.67	2	19.80	0.14	0.71
KD IUSA	3	20.11	0.02	0.08	1	20.20		

Table III

*** STATISTICAL DATA - 72 GREY FABRICS ***

	Mean	SD	CV%	Max	Min
1. Wt BW	157.074	7.988	5.09	178.400	140.300
2. Wt AW	228.568	4.897	2.14	242.600	218.100
3. C/3cmBW	46.501	1.250	2.69	50.400	44.500
4. C/3cmAW	56.060	1.266	2.26	59.100	53.100
5. W/3cmBW	27.169	1.090	4.01	29.600	23.900
6. W/3cmAW	34.254	0.875	2.55	36.000	32.600
7. SL BW	2.832	0.042	1.49	2.910	2.760
8. SL AW	2.786	0.043	1.55	2.850	2.710
9. Tex BW	19.675	0.505	2.57	20.700	18.630
10. Tex AW	19.351	0.539	2.78	20.350	18.270

*** 36 GREY FABRICS FROM ATKINS ***

	Mean	SD	CV%	Max	Min
1. Wt BW	161.689	7.211	4.46	178.400	149.700
2. Wt AW	228.275	5.299	2.32	237.800	218.100
3. C/3cmBW	46.997	1.281	2.72	50.400	44.700
4. C/3cmAW	55.331	0.995	1.80	57.000	53.100
5. W/3cmBW	26.644	1.148	4.31	28.500	23.900
6. W/3cmAW	33.622	0.581	1.73	34.900	32.800
7. SL BW	2.870	0.016	0.57	2.910	2.840
8. SL AW	2.825	0.017	0.61	2.850	2.790
9. Tex BW	20.030	0.348	1.74	20.700	19.380
10. Tex AW	19.707	0.263	1.34	20.320	19.230

*** 36 GREY FABRICS FROM KLYNTON DAVIS ***

	Mean	SD	CV%	Max	Min
1. Wt BW	152.458	5.799	3.80	163.500	140.300
2. Wt AW	228.861	4.515	1.97	242.600	222.100
3. C/3cmBW	46.006	1.012	2.20	47.800	44.500
4. C/3cmAW	56.789	1.081	1.90	59.100	54.600
5. W/3cmBW	27.694	0.724	2.62	29.600	26.300
6. W/3cmAW	34.886	0.628	1.80	36.000	32.600
7. SL BW	2.794	0.019	0.67	2.840	2.760
8. SL AW	2.746	0.018	0.64	2.770	2.710
9. Tex BW	19.319	0.370	1.92	20.120	18.630
10. Tex AW	18.996	0.509	2.68	20.350	18.270

Table III (cont.)

*** 9 GREY SAMPLES FROM ATKINS (16") ***

	Mean	SD	CV%	Max	Min
1. Wt BW	160.633	1.871	1.16	164.500	158.200
2. Wt AW	228.300	2.419	1.06	231.600	223.800
3. C/3cmBW	47.989	1.072	2.23	50.400	46.700
4. C/3cmAW	55.733	1.063	1.91	57.000	54.000
5. W/3cmBW	26.733	0.557	2.08	27.500	26.000
6. W/3cmAW	33.556	0.416	1.24	34.200	32.900
7. SL BW	2.850	0.007	0.25	2.860	2.840
8. SL AW	2.807	0.014	0.50	2.830	2.790
9. Tex BW	20.001	0.342	1.71	20.570	19.380
10. Tex AW	19.619	0.189	0.96	19.870	19.270

*** 11 GREY SAMPLES FROM ATKINS (18") ***

	Mean	SD	CV%	Max	Min
1. Wt BW	164.027	9.163	5.59	178.400	152.100
2. Wt AW	228.773	6.350	2.78	237.600	219.200
3. C/3cmBW	46.027	0.756	1.64	47.300	44.700
4. C/3cmAW	55.009	0.948	1.72	56.300	53.100
5. W/3cmBW	27.436	0.625	2.28	28.500	26.300
6. W/3cmAW	33.982	0.569	1.67	34.900	33.100
7. SL BW	2.884	0.013	0.45	2.910	2.870
8. SL AW	2.841	0.009	0.33	2.850	2.820
9. Tex BW	20.046	0.292	1.45	20.580	19.660
10. Tex AW	19.800	0.307	1.55	20.270	19.230

*** 9 GREY SAMPLES FROM ATKINS (20") ***

	Mean	SD	CV%	Max	Min
1. Wt BW	162.589	6.329	3.12	175.900	150.700
2. Wt AW	230.133	5.361	2.33	237.800	221.700
3. C/3cmBW	46.389	1.033	2.23	47.800	44.700
4. C/3cmAW	55.278	0.923	1.67	56.800	53.900
5. W/3cmBW	26.989	0.909	3.37	28.500	25.800
6. W/3cmAW	33.733	0.512	1.52	34.500	32.800
7. SL BW	2.873	0.011	0.39	2.890	2.860
8. SL AW	2.828	0.010	0.34	2.840	2.810
9. Tex BW	20.030	0.412	2.06	20.700	19.560
10. Tex AW	19.760	0.280	1.42	20.320	19.410

Table III (cont.)

*** 7 GREY SAMPLES FROM ATKINS (22") ***

		Mean	SD	CV%	Max	Min
1.	Wt BW	158.214	6.264	3.96	164.900	149.700
2.	Wt AW	225.071	5.732	2.55	234.100	218.100
3.	C/3cmBW	48.029	0.814	1.69	49.000	47.100
4.	C/3cmAW	55.386	1.093	1.97	57.000	53.500
5.	W/3cmBW	24.843	0.629	2.53	25.500	23.900
6.	W/3cmAW	33.000	0.365	1.11	33.800	32.800
7.	SL BW	2.869	0.009	0.31	2.880	2.860
8.	SL AW	2.820	0.014	0.50	2.830	2.800
9.	Tex BW	20.043	0.425	2.12	20.460	19.420
10.	Tex AW	19.604	0.228	1.16	20.080	19.400

*** 15 GREY SAMPLES FROM KLYNTON DAVIS (17") ***

		Mean	SD	CV%	Max	Min
1.	Wt BW	147.920	4.791	3.24	161.100	140.300
2.	Wt AW	226.733	2.694	1.19	230.100	222.100
3.	C/3cmBW	45.547	1.167	2.56	47.800	44.500
4.	C/3cmAW	56.587	1.117	1.97	57.800	54.600
5.	W/3cmBW	27.273	0.542	1.99	28.000	26.300
6.	W/3cmAW	34.713	0.719	2.07	35.600	32.600
7.	SL BW	2.806	0.021	0.76	2.840	2.760
8.	SL AW	2.758	0.015	0.55	2.770	2.730
9.	Tex BW	19.308	0.180	0.93	19.820	19.060
10.	Tex AW	18.872	0.279	1.48	19.290	18.270

*** 21 GREY SAMPLES FROM KLYNTON DAVIS (19") ***

		Mean	SD	CV%	Max	Min
1.	Wt BW	155.700	4.038	2.59	163.500	146.800
2.	Wt AW	230.381	4.978	2.16	242.600	223.100
3.	C/3cmBW	46.333	0.755	1.63	47.800	45.100
4.	C/3cmAW	56.933	1.057	1.86	59.100	55.400
5.	W/3cmBW	27.995	0.696	2.49	29.600	27.000
6.	W/3cmAW	35.010	0.538	1.54	36.000	34.100
7.	SL BW	2.785	0.010	0.35	2.800	2.770
8.	SL AW	2.738	0.014	0.52	2.770	2.710
9.	Tex BW	19.328	0.466	2.41	20.120	18.630
10.	Tex AW	19.084	0.616	3.23	20.350	18.500

Table III (cont.)

*** 24 GREY SAMPLES FROM K.D. (COURTAULDS LW) ***

	Mean	SD	CV%	Max	Min
1. Wt BW	151.225	5.424	3.59	159.500	140.300
2. Wt AW	227.363	2.736	1.20	231.300	222.100
3. C/3cmBW	45.967	1.172	2.55	47.800	44.500
4. C/3cmAW	56.596	1.040	1.84	58.300	54.600
5. W/3cmBW	27.758	0.724	2.61	29.600	26.700
6. W/3cmAW	34.858	0.685	1.96	35.800	32.600
7. SL BW	2.793	0.017	0.62	2.820	2.760
8. SL AW	2.746	0.016	0.60	2.770	2.720
9. Tex BW	19.188	0.265	1.38	19.820	18.630
10. Tex AW	18.812	0.256	1.36	19.290	18.270

*** 9 GREY SAMPLES FROM K.D. (BLACKWATER) ***

	Mean	SD	CV%	Max	Min
1. Wt BW	153.600	5.974	3.89	161.100	146.000
2. Wt AW	228.800	2.140	0.94	231.900	226.000
3. C/3cmBW	45.956	0.577	1.26	46.700	45.000
4. C/3cmAW	56.678	0.719	1.27	57.800	55.900
5. W/3cmBW	27.600	0.831	3.01	28.800	26.300
6. W/3cmAW	34.978	0.600	1.71	36.000	34.100
7. SL BW	2.802	0.020	0.73	2.840	2.780
8. SL AW	2.757	0.011	0.41	2.770	2.740
9. Tex BW	19.407	0.324	1.67	19.890	19.060
10. Tex AW	19.081	0.528	2.77	19.790	18.500

*** 3 GREY SAMPLES FROM K.D. (IUSA - all 19") ***

	Mean	SD	CV%	Max	Min
1. Wt BW	158.900	4.600	2.89	163.500	154.300
2. Wt AW	241.033	1.779	0.74	242.600	239.100
3. C/3cmBW	46.467	0.681	1.46	47.000	45.700
4. C/3cmAW	58.667	0.379	0.65	59.100	58.400
5. W/3cmBW	27.467	0.473	1.72	28.000	27.100
6. W/3cmAW	34.833	0.153	0.44	35.000	34.700
7. SL BW	2.773	0.006	0.21	2.780	2.770
8. SL AW	2.717	0.006	0.21	2.720	2.710
9. Tex BW	20.107	0.015	0.08	20.120	20.090
10. Tex AW	20.210	0.135	0.67	20.350	20.080

Table IV

GREY FABRIC -Stitch length as knitted (Spec.2.82mm.±1.5%)

	Mean st. length (mm.)	%C.V.	No. of samples	Below spec.	Above spec.	
All Data	2.832	1.49	72	6	22	SD 0.042
Atkins	2.870	0.57	36	0	22	
Klynton Davis	2.794	0.67	36	6	0	
Atkins - 16"	2.850	0.25	9	0	1	0.007
- 18"	2.884	0.45	11	0	11	0.013
- 20"	2.873	0.39	9	0	7	0.011
- 22"	2.869	0.31	7	0	4	0.009
KD - 17"	2.806	0.76	15	2	0	0.021
- 19"	2.785	0.35	21	4	0	0.010

Grey stitch lengths - t-test for equality of the means.

1. Atkins

Diam.	No. of samples	Mean st. l.(mm.)	t for equality of the means		
			16"	18"	20"
16"	9	2.850			
18"	11	2.884	7.00 ***		
20"	9	2.873	5.29 ***	1.89	
22"	7	2.869	4.63 ***	2.69 *	0.92

2. Klynton Davis.

Diam.	No. of samples	Mean st. l.(mm.)	t for equality of the means
			17"
17"	15	2.806	
19"	21	2.785	4.02 ***

* Significant difference at 95% confidence level

*** Significant difference at 99.9% confidence level

Table V

*** STATISTICAL DATA - 59 FINISHED SAMPLES ***

	Mean	SD	CV%	Max	Min
1. Wt BW	170.812	6.730	3.94	186.900	160.700
2. Wt AW	210.653	6.147	2.92	230.000	201.100
3. C/3cmBW	47.139	1.221	2.59	50.600	45.100
4. C/3cmAW	53.605	1.198	2.23	56.000	50.200
5. W/3cmBW	31.444	1.051	3.34	33.600	29.500
6. W/3cmAW	34.436	0.775	2.25	35.800	32.800
7. SL BW	2.764	0.037	1.35	2.840	2.710
8. SL AW	2.760	0.045	1.64	2.850	2.690
9. Tex BW	19.147	0.471	2.46	20.240	18.100
10. Tex AW	19.052	0.452	2.37	20.110	18.210

*** 23 FINISHED SAMPLES FROM ATKINS ***

	Mean	SD	CV%	Max	Min
1. Wt BW	170.809	5.934	3.47	182.700	161.600
2. Wt AW	209.252	6.051	2.89	217.800	201.100
3. C/3cmBW	46.839	1.053	2.25	49.000	45.100
4. C/3cmAW	52.557	0.924	1.76	54.200	50.200
5. W/3cmBW	30.448	0.532	1.75	31.500	29.500
6. W/3cmAW	33.878	0.722	2.13	35.800	32.800
7. SL BW	2.804	0.018	0.63	2.840	2.770
8. SL AW	2.807	0.024	0.85	2.850	2.770
9. Tex BW	19.521	0.278	1.42	20.240	19.110
10. Tex AW	19.360	0.256	1.32	19.870	18.690

*** 36 FINISHED SAMPLES FROM KLYNTON DAVIS ***

	Mean	SD	CV%	Max	Min
1. Wt BW	170.814	7.275	4.26	186.900	160.700
2. Wt AW	211.547	6.122	2.89	230.000	202.200
3. C/3cmBW	47.331	1.295	2.74	50.600	45.100
4. C/3cmAW	54.275	0.810	1.49	56.000	52.600
5. W/3cmBW	32.081	0.764	2.38	33.600	30.900
6. W/3cmAW	34.792	0.576	1.66	35.800	33.800
7. SL BW	2.739	0.020	0.72	2.770	2.710
8. SL AW	2.730	0.025	0.91	2.770	2.690
9. Tex BW	18.908	0.410	2.17	20.020	18.100
10. Tex AW	18.856	0.442	2.35	20.110	18.210

Table V (cont.)

*** 15 FINISHED SAMPLES FROM K.D./MARTINS ***

	Mean	SD	CV%	Max	Min
1. Wt BW	171.153	7.773	4.54	185.400	161.400
2. Wt AW	209.193	4.026	1.92	213.900	202.200
3. C/3cmBW	47.047	1.168	2.48	48.900	45.100
4. C/3cmAW	54.213	0.551	1.02	54.900	53.200
5. W/3cmBW	32.313	0.892	2.76	33.600	30.900
6. W/3cmAW	34.600	0.643	1.86	35.800	33.800
7. SL BW	2.734	0.016	0.58	2.750	2.710
8. SL AW	2.735	0.028	1.03	2.770	2.690
9. Tex BW	18.874	0.208	1.10	19.370	18.490
10. Tex AW	18.715	0.161	0.86	19.040	18.420

*** 21 FINISHED SAMPLES FROM K.D./WESTERTEX ***

	Mean	SD	CV%	Max	Min
1. Wt BW	170.571	7.083	4.15	186.900	160.700
2. Wt AW	213.229	6.865	3.22	230.000	205.500
3. C/3cmBW	47.533	1.369	2.88	50.600	45.100
4. C/3cmAW	54.319	0.965	1.78	56.000	52.600
5. W/3cmBW	31.914	0.628	1.97	33.100	30.900
6. W/3cmAW	34.929	0.495	1.42	35.700	34.000
7. SL BW	2.742	0.022	0.79	2.770	2.710
8. SL AW	2.726	0.022	0.82	2.770	2.700
9. Tex BW	18.932	0.512	2.70	20.020	18.100
10. Tex AW	18.957	0.547	2.88	20.110	18.210

*** 15 DIRECT DYED SAMPLES FROM WESTERTEX ***

	Mean	SD	CV%	Max	Min
1. Wt BW	173.267	6.519	3.76	186.900	165.400
2. Wt AW	214.367	7.874	3.67	230.000	205.500
3. C/3cmBW	47.840	1.363	2.85	50.600	45.800
4. C/3cmAW	54.287	1.013	1.87	56.000	52.600
5. W/3cmBW	32.053	0.576	1.80	33.100	30.900
6. W/3cmAW	34.993	0.523	1.49	35.700	34.000
7. SL BW	2.743	0.021	0.75	2.770	2.720
8. SL AW	2.727	0.024	0.86	2.770	2.700
9. Tex BW	18.995	0.597	3.14	20.020	18.100
10. Tex AW	18.997	0.644	3.39	20.110	18.210

Table V (cont.)

*** 6 REACTIVE DYED SAMPLES FROM WESTERTEX ***

	Mean	SD	CV%	Max	Min
1. Wt BW	163.833	2.323	1.42	167.800	160.700
2. Wt AW	210.383	1.148	0.55	212.400	209.400
3. C/3cmBW	46.767	1.147	2.45	48.000	45.100
4. C/3cmAW	54.400	0.917	1.68	55.300	53.100
5. W/3cmBW	31.567	0.668	2.12	32.500	30.900
6. W/3cmAW	34.767	0.413	1.19	35.300	34.300
7. SL BW	2.740	0.026	0.95	2.770	2.710
8. SL AW	2.725	0.021	0.76	2.750	2.700
9. Tex BW	18.777	0.099	0.53	18.930	18.650
10. Tex AW	18.855	0.125	0.66	18.970	18.650

*** 6 JET-DYED SAMPLES FROM ATKINS ***

	Mean	SD	CV%	Max	Min
1. Wt BW	166.650	4.187	2.51	173.800	162.600
2. Wt AW	202.550	1.871	0.92	206.000	201.100
3. C/3cmBW	45.967	0.862	1.87	47.300	45.100
4. C/3cmAW	51.667	1.127	2.18	52.900	50.200
5. W/3cmBW	30.167	0.393	1.30	30.800	29.800
6. W/3cmAW	33.383	0.306	0.92	33.900	33.000
7. SL BW	2.807	0.008	0.29	2.820	2.800
8. SL AW	2.820	0.032	1.14	2.850	2.770
9. Tex BW	19.525	0.175	0.90	19.670	19.220
10. Tex AW	19.153	0.113	0.59	19.290	19.020

*** 17 WINCH-DYED SAMPLES FROM ATKINS ***

	Mean	SD	CV%	Max	Min
1. Wt BW	172.276	5.845	3.39	182.700	161.600
2. Wt AW	211.618	5.145	2.43	217.600	201.200
3. C/3cmBW	47.147	0.953	2.02	49.000	45.100
4. C/3cmAW	52.871	0.613	1.16	54.200	51.800
5. W/3cmBW	30.547	0.549	1.80	31.500	29.500
6. W/3cmAW	34.053	0.751	2.21	35.800	32.800
7. SL BW	2.804	0.020	0.71	2.840	2.770
8. SL AW	2.803	0.020	0.70	2.850	2.770
9. Tex BW	19.520	0.311	1.59	20.240	19.110
10. Tex AW	19.432	0.254	1.31	19.870	18.690

Table V (cont.)

*** 4 FINISHED SAMPLES FROM ATKINS (16") ***

	Mean	SD	CV%	Max	Min
1. Wt BW	167.400	3.915	2.34	170.100	161.600
2. Wt AW	206.325	4.711	2.28	211.500	201.200
3. C/3cmBW	47.400	0.860	1.81	48.400	46.500
4. C/3cmAW	52.650	0.737	1.40	53.600	51.800
5. W/3cmBW	29.975	0.377	1.26	30.400	29.500
6. W/3cmAW	33.525	0.320	0.95	33.800	33.200
7. SL BW	2.790	0.008	0.29	2.800	2.780
8. SL AW	2.790	0.020	0.72	2.820	2.780
9. Tex BW	19.333	0.132	0.68	19.440	19.170
10. Tex AW	19.403	0.112	0.58	19.550	19.290

*** 13 WINCH-DYED SAMPLES FROM ATKINS (18/20/22") ***

	Mean	SD	CV%	Max	Min
1. Wt BW	173.400	5.674	3.27	182.700	165.300
2. Wt AW	212.867	4.133	1.94	216.900	204.200
3. C/3cmBW	47.067	1.043	2.22	49.000	45.100
4. C/3cmAW	52.967	0.604	1.14	54.200	52.100
5. W/3cmBW	30.725	0.494	1.61	31.500	30.000
6. W/3cmAW	34.192	0.807	2.36	35.800	32.800
7. SL BW	2.807	0.021	0.76	2.840	2.770
8. SL AW	2.807	0.019	0.69	2.850	2.770
9. Tex BW	19.523	0.276	1.41	19.950	19.110
10. Tex AW	19.406	0.268	1.38	19.720	18.690

*** 18 FINISHED SAMPLES FROM K.D. (17") ***

	Mean	SD	CV%	Max	Min
1. Wt BW	167.028	4.738	2.84	177.500	160.700
2. Wt AW	208.639	3.273	1.57	215.800	202.200
3. C/3cmBW	46.583	1.081	2.32	48.900	45.100
4. C/3cmAW	53.861	0.870	1.61	55.300	52.600
5. W/3cmBW	31.850	0.535	1.68	32.700	30.900
6. W/3cmAW	34.489	0.438	1.27	35.300	33.800
7. SL BW	2.752	0.018	0.67	2.770	2.710
8. SL AW	2.747	0.022	0.81	2.770	2.700
9. Tex BW	18.862	0.292	1.55	19.650	18.490
10. Tex AW	18.618	0.273	1.45	19.400	18.390

Table V (cont.)

*** 18 FINISHED SAMPLES FROM K.D. (19") ***

	Mean	SD	CV%	Max	Min
1. Wt BW	174.600	7.493	4.29	186.900	165.400
2. Wt AW	214.456	6.968	3.25	230.000	205.500
3. C/3cmBW	48.078	1.049	2.18	50.600	46.400
4. C/3cmAW	54.689	0.481	0.88	56.000	54.000
5. W/3cmBW	32.311	0.896	2.77	33.600	30.900
6. W/3cmAW	35.094	0.546	1.56	35.800	33.900
7. SL BW	2.726	0.009	0.34	2.740	2.710
8. SL AW	2.713	0.013	0.49	2.730	2.690
9. Tex BW	18.954	0.506	2.67	20.020	18.100
10. Tex AW	18.894	0.570	3.02	20.110	18.210

Table VI

FINISHED FABRICS - t-test for equality of the means.

Comparison	t for equality of the means		
	courses	wales	weight
a) Atkins vs. Klynton Davis	7.521 ***	5.374 ***	1.411
b) Martins vs. Westertex	0.381	1.869 *	1.252
c) Martins vs. West.(directs)	0.246	1.967 *	1.162
d) Directs vs. Reactives(West.)	1.589	0.859	0.281
e) Jet vs. Winch (Atkins)	2.977 **	2.501 *	5.919 ***
f) 16" vs. others (Atkins)	0.814	1.700	2.817 **
g) 17" vs. 19" (K. Davis)	2.754 **	3.121 **	2.938 **

* Significant difference at 95% confidence level

** Significant difference at 99% confidence level

*** Significant difference at 99.9% confidence level

Table VII

Finished Fabric Weight (Spec. 173 g./sq.m.±5%)

	Mean g./sq.m.	%C.V.	No. of samples	Below spec.	Above spec.
All Data	170.8	3.94	59	11	6
Atkins	170.8	3.47	23	3	1
KD-total	170.8	4.26	36	8	5
KD/Martins	171.2	4.54	15	3	3
KD/Westertex	170.5	4.50	21	5	2

Finished Fabric Course Density (Spec. 48 courses/3cm.±2.5%)

	Mean Courses per 3cm.	%C.V.	No. of samples	Below spec.	Above spec.
All data	47.1	2.59	59	23	2
Atkins	46.8	2.25	23	11	0
KD-total	47.3	2.74	36	12	2
KD/Martins	47.0	2.48	15	7	0
KD/Westertex	47.8	2.76	21	5	2

Finished Fabric Wale Density (Spec. 31 wales/3cm.±2.5%)

	Mean Wales per 3cm.	%C.V.	No. of samples	Below spec.	Above spec.
All data	31.4	3.34	59	9	24
Atkins	30.4	1.75	23	9	0
KD-total	32.1	2.38	36	0	24
KD/Martins	32.3	2.76	15	0	10
KD/Westertex	31.9	2.11	21	0	14

I I C -STARFISH 84- MODEL PREDICTIONS

1x1 Rib - singles, combed ring yarns

14g 22in 972 needles

Winch dye (white)

Targets are Finished Courses & Wales

29-JAN-85 08:43

As knitted		Average finished dimensions				Shrinkage (5 W&T)		
Yarn StLen	TF	courses	wales	weight	width	Length	Width	
Ne	cm	3cm	3cm	g/sm	cm(T)	%	%	
30.0	0.282	15.7	48.0	31.0	168.8	47.0	-11.2	-7.5

NB : Shrinkage convention is + for growth, - for contraction

: Estimates are given in good faith but without liability

: Yarn counts are given as Resultant for folded yarns

I I C -STARFISH 84- MODEL PREDICTIONS

1x1 Rib - singles, combed ring yarns

14g 22in 972 needles

Winch dye (medium)

Targets are Finished Courses & Wales

29-JAN-85 08:44

As knitted		Average finished dimensions				Shrinkage (5 W&T)		
Yarn StLen	TF	courses	wales	weight	width	Length	Width	
Ne	cm	3cm	3cm	g/sm	cm(T)	%	%	
30.0	0.282	15.7	48.0	31.0	172.0	47.0	-11.1	-9.3

NB : Shrinkage convention is + for growth, - for contraction

: Estimates are given in good faith but without liability

: Yarn counts are given as Resultant for folded yarns

IIC -STARFISH 84- MODEL PREDICTIONS

1x1 Rib - singles, combed ring yarns
 14g 22in 972 needles
 Winch dye (white)

Targets are Finished Courses & Wales

29-JAN-85 08:47

As knitted			Average finished dimensions				Shrinkage (S W&T)	
Yarn Ne	StLen cm	TF	courses 3cm	wales 3cm	weight g/sm	width cm(T)	Length %	Width %
29.1	0.287	15.7	48.0	31.0	177.0	47.0	-9.6	-6.1
30.3	0.279	15.8	48.0	31.0	165.6	47.0	-12.1	-8.3

NB : Shrinkage convention is + for growth. - for contraction
 : Estimates are given in good faith but without liability
 : Yarn counts are given as Resultant for folded yarns

IIC -STARFISH 84- MODEL PREDICTIONS

1x1 Rib - singles, combed ring yarns
 14g 22in 972 needles
 Winch dye (medium)

Targets are Finished Courses & Wales

29-JAN-85 08:48

As knitted			Average finished dimensions				Shrinkage (S W&T)	
Yarn Ne	StLen cm	TF	courses 3cm	wales 3cm	weight g/sm	width cm(T)	Length %	Width %
29.1	0.287	15.7	48.0	31.0	179.6	47.0	-9.6	-8.1
30.3	0.279	15.8	48.0	31.0	169.2	47.0	-11.9	-9.9

NB : Shrinkage convention is + for growth. - for contraction
 : Estimates are given in good faith but without liability
 : Yarn counts are given as Resultant for folded yarns

Figure 1. GREY YARN COUNTS.

Ne

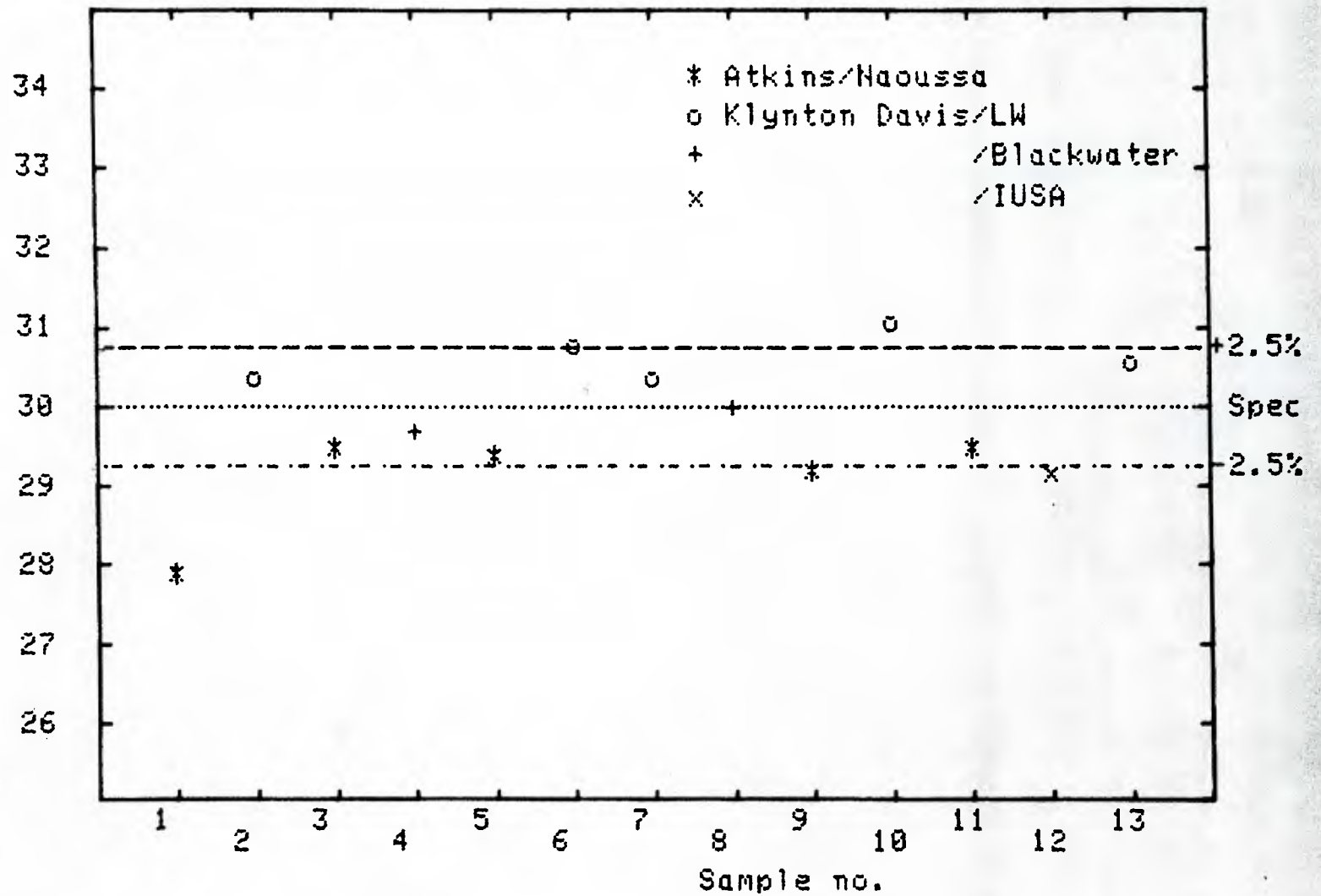


Figure 2. Grey stitch lengths (Atkins).

Stitch length
(cm.)

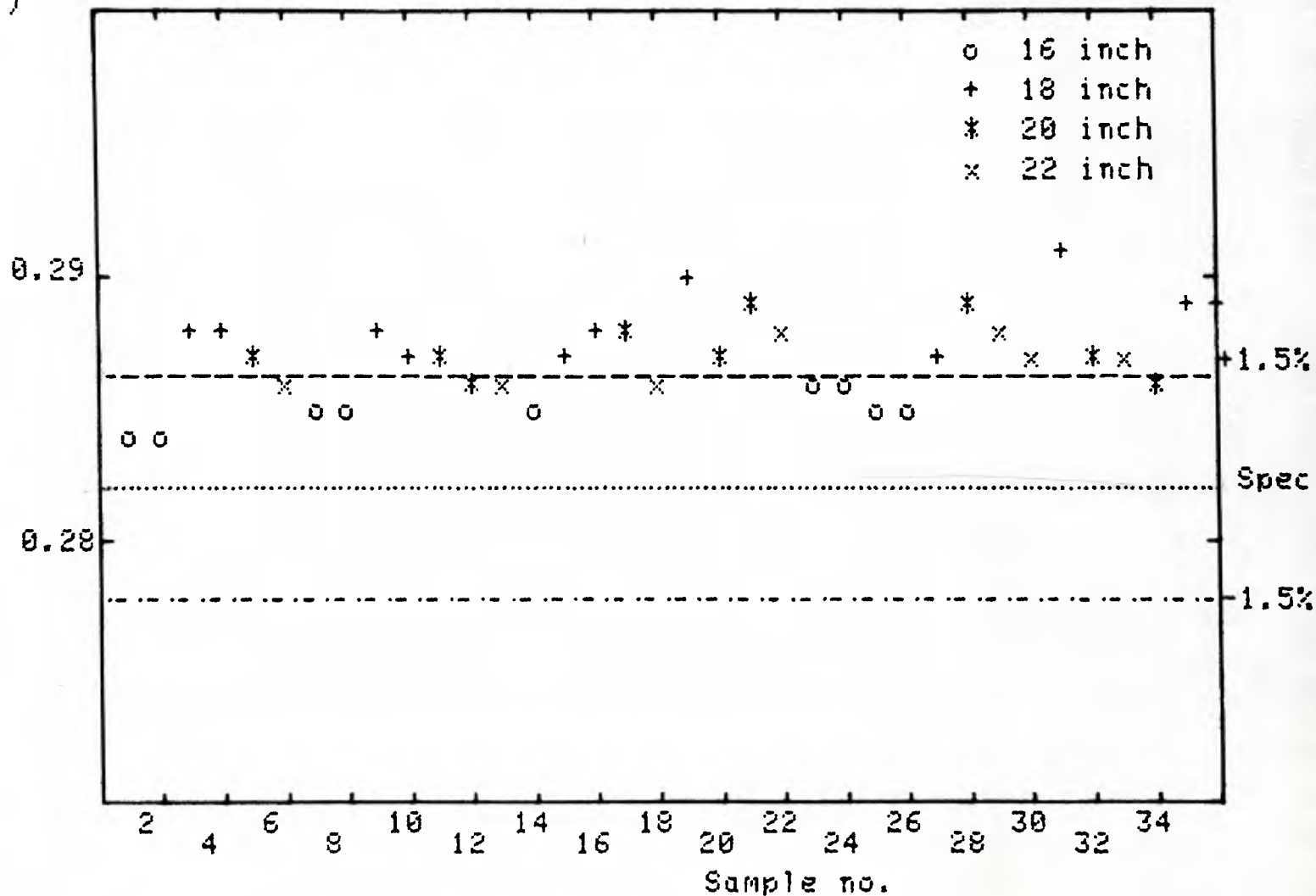


Figure 3. Grey stitch lengths (Klynton Davis).

Stitch length
(cm.)

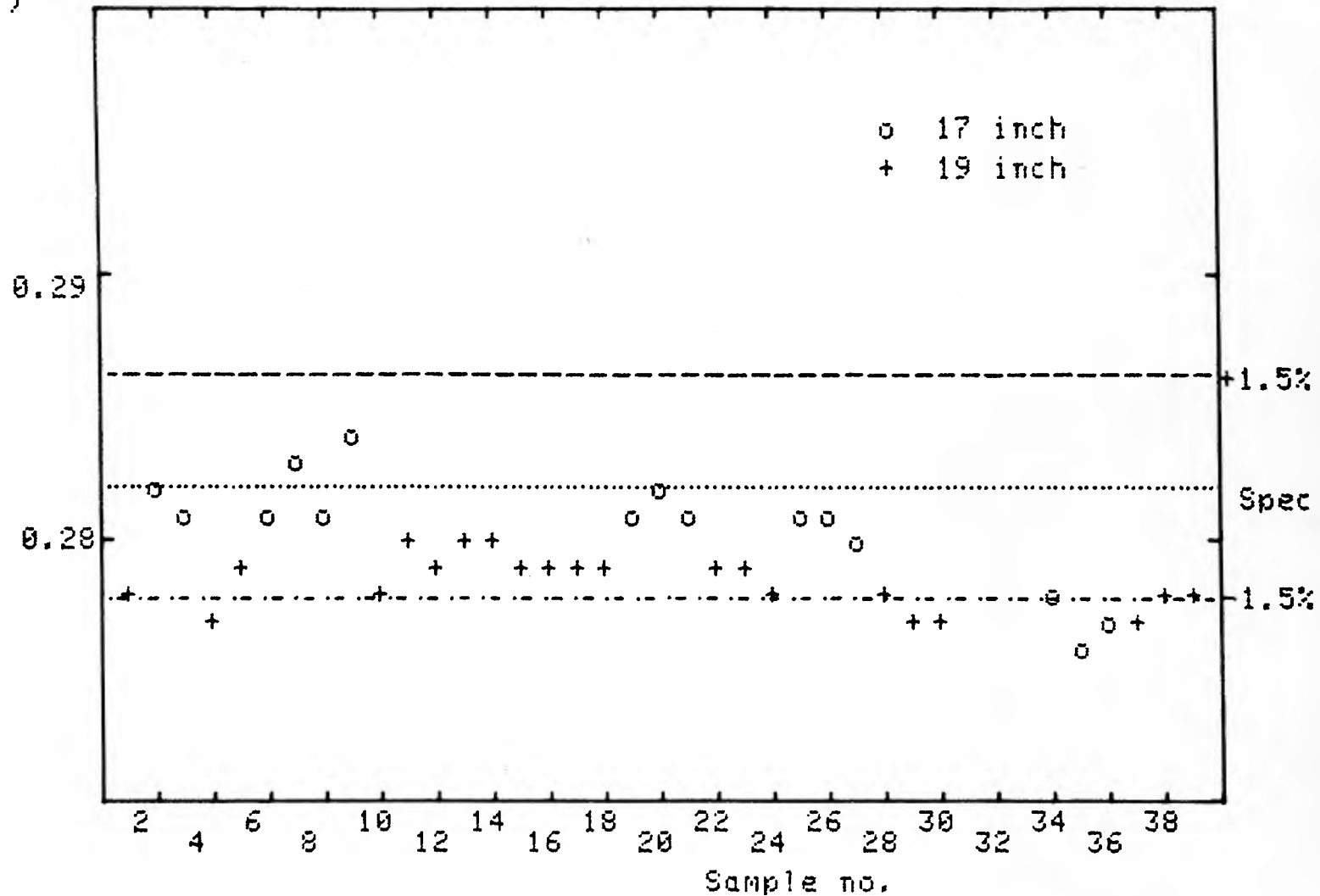


Figure 4. Finished width shrinkage & wale density.

Width shrinkage (%)

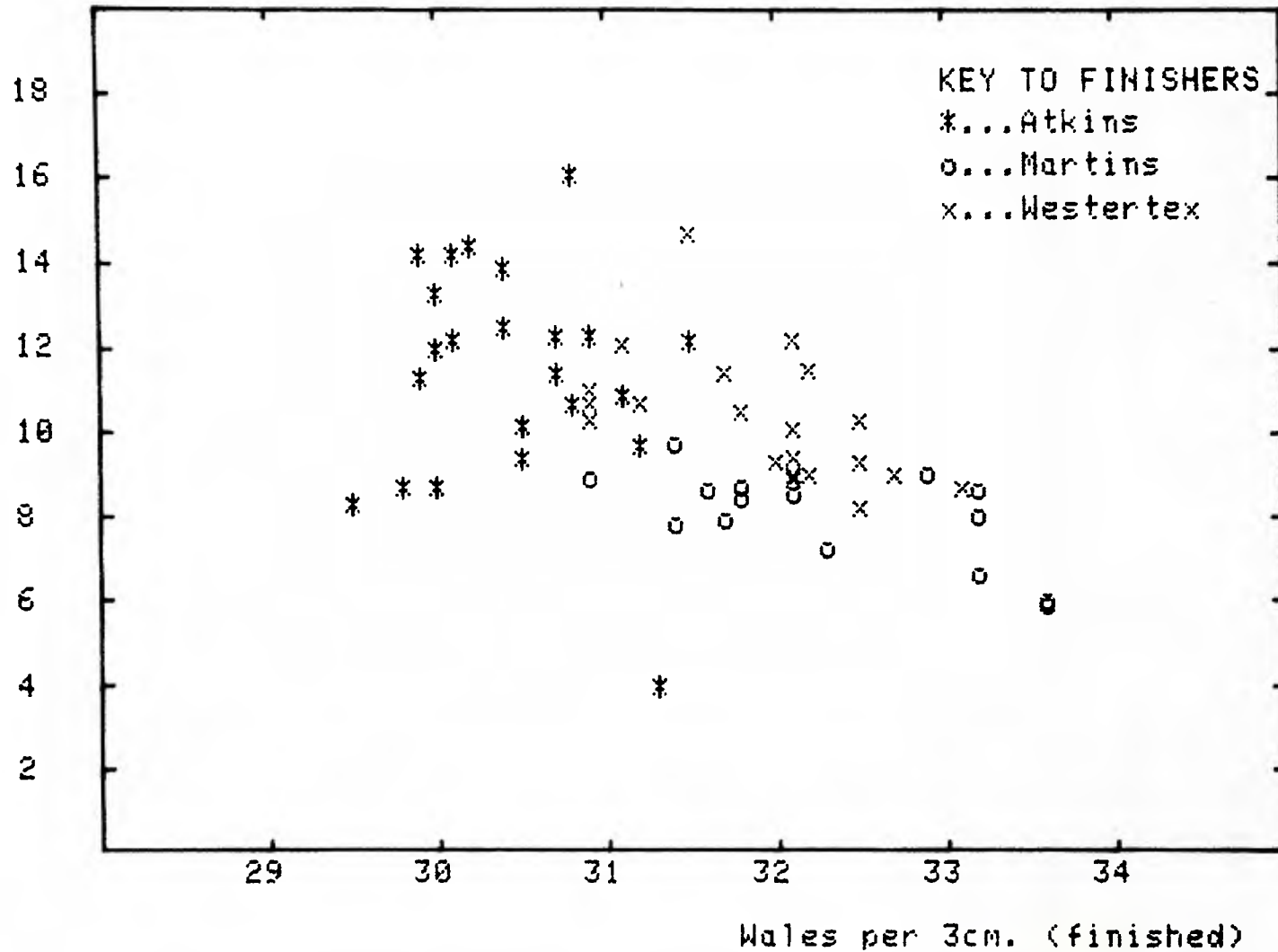
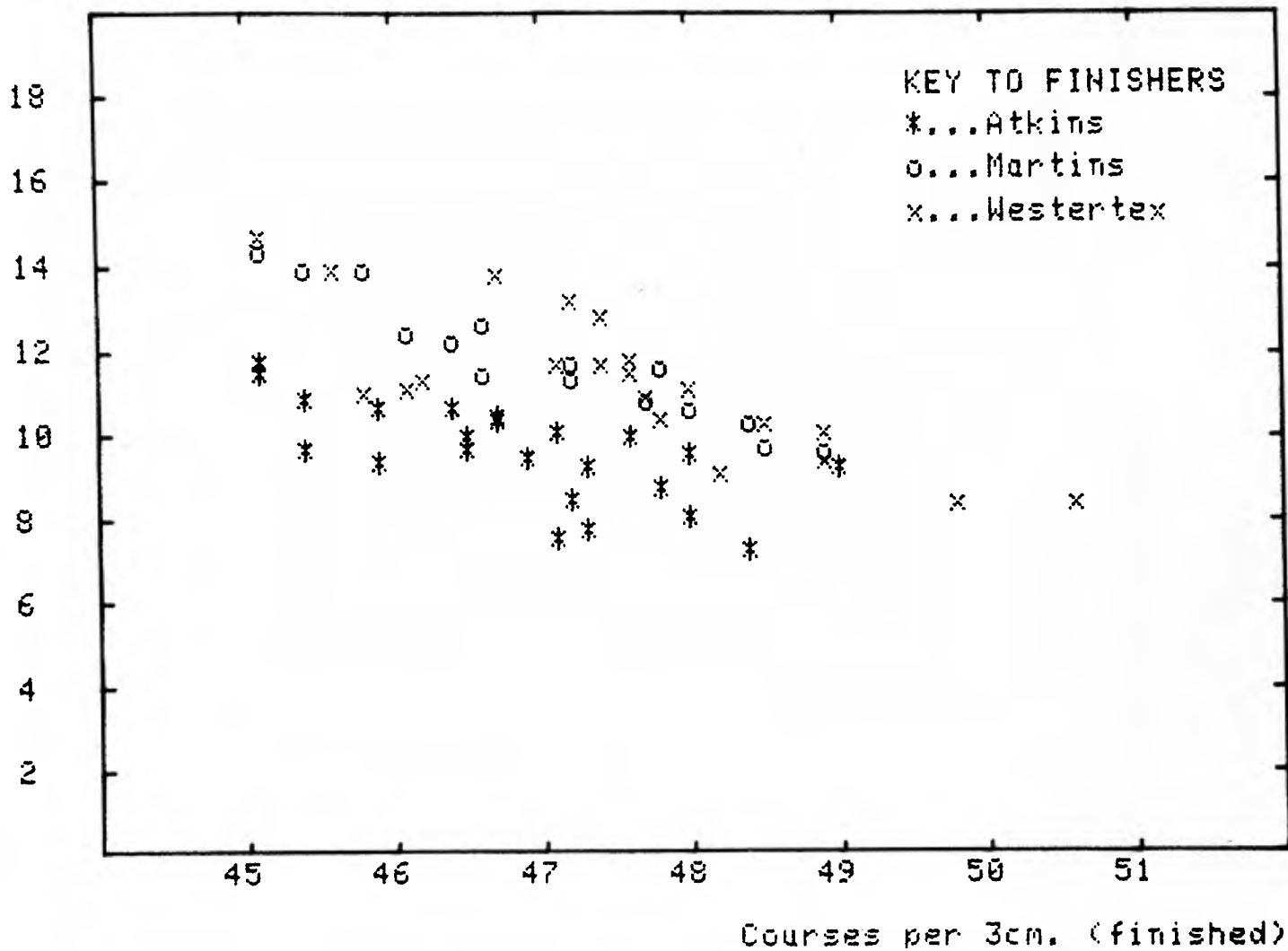


Figure 5. Finished length shrinkage & course density.

Length shrinkage (%)



SPECIFICATION K1

FABRIC SPECIFICATION FOR TEE SHIRTS & COTTON TOPS

1. Fabric	1 x 1 Rib Construction	
2. Yarn	1/30's Combed Cotton	
3. Machinery	14 gauge with Positive Feed	
4. Knitted stitch length	0.282cm	$\pm 1\frac{1}{2}\%$
5. Finished stitch length	0.279cm	$\pm 1\frac{1}{2}\%$
6. Finished Courses/3cm	48	$\pm 2\frac{1}{2}\%$
7. Finished Wales/3cm	31	$\pm 2\frac{1}{2}\%$
8. Weight/Square metre	173 grams	$\pm 5\%$ at correct condition

9. NOTES

1. All finished fabrics to conform to BHS Performance Standard G11.

2. Guide line for finished garment Tumble Dry

Shrinkage = Length 10% Width 8%

3. Number of needles in maching cylinder to obtain finished width.

Needles	616	660	692	756	792	840	876	912	972
	1320								
Width	30	32	34	37	38	41	42	44	47
	64								

4. All colours should be matched against the BHS Master Patterns using the specified lighting conditions.

5. Finished fabric handle should be as per sealed sample.

APPENDIX B.

DESCRIPTION OF SAMPLES

Ref. no.	Knitter	Yarn	Machine no.	Piece no.	Process	Remarks
BA1	Atkins	Naoussa	1 16"	4696	1	
BA2	Atkins	Naoussa	1	4780	1	
BA3	Atkins	Naoussa	2 18"	4710	1	
BA4	Atkins	Naoussa	2	4762	5	
BA5 X	Atkins	Naoussa	3 20"	0	0	No Finished Sample
BA6	Atkins	Naoussa	4 22"	4708	1	
BK1	Klynton Davis	Courtaulds LW	8 19"	78718	4	
BK2	Klynton Davis	Courtaulds LW	6 17"	78820	4	
BK3	Klynton Davis	Courtaulds LW	6	78823	4	
BK4	Klynton Davis	Courtaulds LW	8	78722	4	
BK5	Klynton Davis	Courtaulds LW	8	78717	4	
BK6	Klynton Davis	Courtaulds LW	6	78818	4	
BA7 X	Atkins	Naoussa	1	0	0	No Finished Sample
BA8 X	Atkins	Naoussa	1	0	0	No Finished Sample
BA9	Atkins	Naoussa	2	6936	5	
BA10	Atkins	Naoussa	2	6731	5	
BA11	Atkins	Naoussa	3	6175	5	
BA12 X	Atkins	Naoussa	3	0	0	No Finished Sample
BK7	Klynton Davis	Blackwater	6	78835	4	
BK8	Klynton Davis	Blackwater	6	78843	4	
BK9	Klynton Davis	Blackwater	6	78841	4	
BK10	Klynton Davis	Blackwater	8	78744	4	
BK11	Klynton Davis	Blackwater	8	78741	4	
BK12	Klynton Davis	Blackwater	8	78738	4	
BA13	Atkins	Naoussa	4	8931	2	
BA14 X	Atkins	Naoussa	1	0	0	No Finished Sample
BA15	Atkins	Naoussa	2	6935	5	
BA16 X	Atkins	Naoussa	2	0	0	No Finished Sample
BA17 X	Atkins	Naoussa	3	0	0	No Finished Sample
BA18	Atkins	Naoussa	4	8516	2	
BK13	Klynton Davis	Courtaulds LW	8	76638	3	
BK14	Klynton Davis	Courtaulds LW	8	76637	3	
BK15	Klynton Davis	Courtaulds LW	8	76634	3	
BK16	Klynton Davis	Blackwater	8	76605	4	
BK17	Klynton Davis	Blackwater	8	76616	4	
BK18	Klynton Davis	Blackwater	8	76611	4	
BK19	Klynton Davis	Courtaulds LW	6	78881	3	
BK20	Klynton Davis	Courtaulds LW	6	76544	3	
BK21	Klynton Davis	Courtaulds LW	6	76551	3	
BA19 X	Atkins	Naoussa	2	0	0	No Finished Sample
BA20	Atkins	Naoussa	3	7428	2	
BA21	Atkins	Naoussa	3	7429	2	
BA22 X	Atkins	Naoussa	4	0	0	No Finished Sample
BA23	Atkins	Naoussa	1	7598	5	
BA24	Atkins	Naoussa	1	7616	5	
X BK22	Klynton Davis	Courtaulds LW	8	0	0	No Finished Sample
X BK23	Klynton Davis	Courtaulds LW	8	0	0	No Finished Sample
X BK24	Klynton Davis	Courtaulds LW	8	0	0	No Finished Sample
BA25 X	Atkins	Naoussa	1	0	0	No Finished Sample
BA26 X	Atkins	Naoussa	1	0	0	No Finished Sample
BA27 X	Atkins	Naoussa	2	0	0	No Finished Sample
BA28 X	Atkins	Naoussa	3	0	0	No Finished Sample
BA29 X	Atkins	Naoussa	4	0	0	No Finished Sample
BA30 X	Atkins	Naoussa	4	0	0	No Finished Sample
BK25	Klynton Davis	Courtaulds LW	6	78806	6	

BK26	Klynton Davis	Courtaulds LW	6	76565	6	
BK27	Klynton Davis	Courtaulds LW	6	76572	6	
BK28	Klynton Davis	I.U.S.A.	8	76696	3	
BK29	Klynton Davis	I.U.S.A.	8	76699	3	
BK30	Klynton Davis	I.U.S.A.	8	76697	3	
BA20A	Atkins	Naoussa	3	9027	2	} no grey samples
BA21A	Atkins	Naoussa	3	9031	2	
BK31	Klynton Davis	Unknown	0	78858	3	No Grey Sample
BK32	Klynton Davis	Unknown	0	78834	3	No Grey Sample
BK33	Klynton Davis	Unknown	0	78863	3	No Grey Sample
BK34	Klynton Davis	Courtaulds LW	6	82862	6	
BK35	Klynton Davis	Courtaulds LW	6	82863	6	
BK36	Klynton Davis	Courtaulds LW	6	82864	6	
BK37	Klynton Davis	Courtaulds LW	8	83137	3	
BK38	Klynton Davis	Courtaulds LW	8	83127	3	
BK39	Klynton Davis	Courtaulds LW	8	83126	3	
BA31	Atkins	Naoussa	2	1118	1	
BA32	Atkins	Naoussa	3	1122	1	
BA33	Atkins	Naoussa	4	1127	5	
BA34	Atkins	Naoussa	3	1069	5	
BA35	Atkins	Naoussa	2	1193	5	
BA36	Atkins	Naoussa	2	1180	1	

0=Unknown

PROCESSING CODES

- A 1. ... Scour, Bleach, Winch dye (direct), Hydro-extract, Kiefer drum dry, Calen
- A 2. ... Scour, Bleach, Longclose Softflow Dye, Hydro-extract, Kiefer drum dry, C
- W 3. ... Scour, Bleach, Winch dye (direct), Hydro-extract, Pegg Dry, Bestan
- M 4. ... Scour, Bleach, Winch dye (direct), Hydro-extract, Kiefer Rotoswing dry.
- A 5. ... Scour, Bleach, Winch dye (reactive), Hydro-extract, Kiefer drum dry, Cal
- W 6. ... Scour, Bleach, Winch dye (reactive), Hydro-extract, Pegg Dry, Bestan

YARN TESTS

1	Tex	Yarn Count (Tex)
2	turns/m	Twist (turns per metre)
3	SES	Single End Strength (g.)
4	Ext	Extension at Break (%)
5	Frict.	Coefficient of Friction
6	Ne	Yarn count, Ne
7	tpi	Turns per inch
8	TF	Twist Factor
9	g/tex	Tenacity, g/tex

FABRIC TESTS

1	ShrL(1x)	Length shrinkage (1 wash/tumble dry cycle)
2	ShrW(1x)	Width shrinkage (1 wash/tumble dry cycle)
3	ShrL(5x)	Length shrinkage (5 wash/tumble dry cycles)
4	ShrW(5x)	Width shrinkage (5 wash/tumble dry cycles)
5	Wt BW	Weight (gms. per square metre), as received
6	Wt AW	Weight (gms. per square metre), after 5 wash cycles
7	C/3cmBW	Courses per 3cm., as received
8	C/3cmAW	Courses per 3cm., after 5 wash cycles
9	W/3cmBW	Wales per 3cm., as received
10	W/3cmAW	Wales per 3cm., after 5 wash cycles
11	SL BW	Stitch length (mm.), as received
12	SL AW	Stitch length (mm.), after 5 wash cycles
13	BurstBW	Burst strength (kN/sq.m.), as received
14	BurstAW	Burst strength (kN/sq.m.), after 5 wash cycles
15	DistBW	Distension at burst (%), as received
16	DistAW	Distension at burst (%), after 5 wash cycles
17	Wid BW	Width (tubular, cm.), as received
18	Y.StrBW	Yarn strength (gm.), as received
19	Y.StrAW	Yarn strength (gm.), after 5 wash cycles
20	Ext BW	Yarn extension at break (%), as received
21	Ext AW	Yarn extension at break (%), after 5 wash cycles
22	Tex BW	Yarn count (tex), as received
23	Tex AW	Yarn count (tex), after 5 wash cycles
24	ThknsBW	Thickness (mm./1000), as received
25	ThknsAW	Thickness (mm./1000), after 5 wash cycles
26	P	Colour measurement - R value
27	G	- G value
28	B	- B value

COMPLETE YARN DATA SET

Sample	Tex	turns/m	SES	Ext	Frict.	Ne	tpi	TF	g/tex
BAY1 N	21.20	773.00	256.40	6.00	0.17	27.90	19.60	3.71	12.10
LW BKY1	19.40	752.00	281.90	6.30	0.08	30.40	19.10	3.46	14.50
BAY2 N	20.00	753.00	258.20	5.90	0.12	29.50	19.10	3.52	12.90
B BKY2	19.90	755.00	286.60	5.90	0.10	29.70	19.20	3.52	14.40
BAY3 N	20.10	778.00	249.40	5.30	0.11	29.40	19.80	3.65	12.40
LW BKY3	19.20	783.00	271.20	5.80	0.09	30.80	19.90	3.59	14.10
LW BKY4	19.40	765.00	272.90	5.70	0.09	30.40	19.40	3.52	14.10
B BKY5	19.70	783.00	251.90	5.80	0.09	30.00	19.90	3.63	12.80
BAY4 N	20.20	820.00	246.90	6.00	0.11	29.20	20.80	3.85	12.20
LW BKY6	19.00	763.00	259.60	5.60	0.10	31.10	19.40	3.48	13.70
BAY5 N	20.00	767.00	231.70	5.50	0.12	29.50	19.50	3.59	11.60
USA BKY7	20.20	759.00	266.60	6.20	0.11	29.20	19.30	3.57	13.20
B BKY8	19.30	696.00	273.80	6.60	0.09	30.60	17.70	3.20	14.20

*** COLUMN STATISTICS ***

	Mean	SD	CV%	Max	Min
1. Tex	19.815	0.580	2.93	21.200	19.000
2. turns/m	765.154	27.574	3.60	820.000	696.000
3. SES	262.085	15.339	5.85	286.600	231.700
4. Ext	5.908	0.335	5.68	6.600	5.300
5. Frict.	0.106	0.023	21.60	0.170	0.080
6. Ne	29.823	0.855	2.87	31.100	27.900
7. tpi	19.438	0.693	3.57	20.800	17.700
8. TF	3.561	0.151	4.23	3.850	3.200
9. g/tex	13.246	0.985	7.43	14.500	11.600

COMPLETE GREY FABRIC DATA SET

Sample	ShrL(1x)	ShrW(1x)	ShrL(5x)	ShrW(5x)	Wt BW	Wt AW	C/3cmBW	C/3cmAW	W/3cmBW	W/3cmAW	SL BW	SL AW
BA1	17.40	20.10	15.80	20.60	159.50	223.80	48.10	56.90	27.00	33.30	2.84	2.80
BA2	14.50	19.50	16.40	19.40	159.80	226.20	47.80	56.50	27.50	33.30	2.84	2.79
BA3	16.20	19.00	17.70	19.60	159.90	219.20	46.00	55.70	27.70	33.70	2.88	2.84
BA4	15.80	18.70	17.60	19.60	157.10	221.00	46.20	55.60	27.50	33.70	2.88	2.84
BA5	19.00	18.70	21.00	19.40	154.20	225.60	44.70	55.90	27.70	33.80	2.87	2.81
BA6	16.00	24.30	17.40	26.30	158.50	220.20	47.20	57.00	25.00	33.00	2.86	2.80
BK1	19.50	19.10	21.40	19.70	155.90	230.60	45.20	57.90	28.30	35.60	2.78	2.73
BK2	19.50	20.70	20.90	20.90	149.10	227.60	45.10	56.90	27.90	35.20	2.82	2.77
BK3	20.80	21.20	22.30	22.70	144.80	226.50	44.70	57.00	27.90	35.60	2.81	2.76
BK4	20.60	17.60	22.50	18.10	146.80	231.30	45.50	58.30	29.10	35.40	2.77	2.72
BK5	20.50	19.00	22.20	19.80	152.90	230.40	45.10	57.70	28.80	35.50	2.79	2.72
BK6	20.20	20.70	21.50	21.70	140.30	230.00	44.70	57.30	28.00	35.20	2.81	2.76
BA7	15.20	20.10	16.20	22.70	161.90	231.60	48.20	57.00	26.70	34.00	2.85	2.80
BA8	15.40	20.60	16.70	22.30	161.10	227.30	47.60	56.70	27.10	34.20	2.85	2.79
BA9	20.00	18.40	21.30	21.20	152.10	230.80	44.70	55.90	27.40	34.50	2.88	2.84
BA10	18.10	22.00	19.60	23.30	160.80	234.80	45.40	56.30	27.10	34.50	2.87	2.82
BA11	14.80	21.00	16.00	23.60	161.80	230.40	47.80	56.00	26.60	34.50	2.87	2.82
BA12	16.30	20.30	17.40	23.10	157.80	231.50	47.20	56.80	27.00	34.30	2.86	2.82
BK7	18.10	19.30	19.70	18.50	161.10	229.90	46.70	57.10	27.40	35.00	2.83	2.76
BK8	19.90	20.50	21.10	21.20	146.00	226.00	45.00	57.80	26.30	34.90	2.81	2.77
BK9	18.70	22.00	19.80	22.80	146.90	227.60	45.80	57.10	26.50	34.10	2.84	2.77
BK10	21.10	19.80	22.10	20.60	151.30	228.90	45.10	56.00	27.90	35.50	2.78	2.75
BK11	19.50	20.80	20.50	22.60	148.00	231.60	46.20	56.30	27.20	36.00	2.80	2.75
BK12	19.40	18.60	20.40	20.50	156.10	229.50	46.40	57.50	28.30	35.50	2.79	2.74
BA13	13.90	23.60	15.00	26.30	150.10	218.10	49.00	55.70	24.00	32.80	2.86	2.80
BA14	14.40	20.40	15.70	21.90	161.60	228.30	46.70	54.00	26.80	33.80	2.85	2.81
BA15	15.50	18.50	16.40	19.30	159.90	225.30	46.50	55.20	27.70	34.90	2.87	2.84
BA16	15.50	18.50	16.40	19.80	158.00	221.40	46.50	55.10	26.90	33.80	2.88	2.85
BA17	13.60	20.80	14.30	21.60	161.10	221.70	47.10	54.50	26.10	32.80	2.88	2.83
BA18	14.80	23.40	15.60	25.40	149.70	220.60	48.20	55.90	23.90	32.80	2.86	2.83
BK13	17.00	21.20	18.20	21.80	154.10	225.00	46.20	56.50	28.00	35.30	2.80	2.74
BK14	17.50	18.60	18.50	20.10	156.20	226.90	47.30	56.30	27.70	35.80	2.80	2.73
BK15	17.20	20.80	18.00	21.30	154.10	223.10	46.40	56.10	27.90	35.00	2.79	2.74
BK16	17.20	19.20	18.70	20.60	152.90	226.20	46.30	55.90	28.20	34.80	2.79	2.75
BK17	17.30	17.60	18.50	19.20	159.90	227.60	46.20	55.90	27.80	34.40	2.79	2.75
BK18	17.70	17.50	19.30	19.10	160.20	231.90	45.90	56.50	28.80	34.60	2.79	2.77
BK19	19.30	20.80	20.50	22.30	147.30	224.40	45.10	55.70	27.30	34.40	2.81	2.77
BK20	19.80	20.20	21.20	22.30	148.70	225.70	44.60	55.00	27.50	34.90	2.82	2.77
BK21	19.20	20.80	20.20	22.50	149.80	222.10	44.50	55.60	27.30	35.10	2.81	2.77
BA19	15.80	19.90	17.20	21.30	160.20	232.00	45.80	55.30	26.30	33.10	2.90	2.84
BA20	14.90	21.70	16.20	22.10	161.70	233.10	46.30	55.50	26.10	33.70	2.87	2.84
BA21	14.00	22.10	15.70	23.80	166.30	231.30	46.10	55.50	25.80	33.30	2.89	2.83
BA22	15.00	25.00	16.10	26.80	158.30	226.00	47.10	55.80	25.10	32.80	2.88	2.83
BA23	12.10	21.10	14.00	23.20	159.70	231.00	48.20	55.20	26.00	33.40	2.86	2.83
BA24	15.50	18.70	16.80	20.10	158.20	229.70	46.80	55.20	27.30	33.80	2.86	2.82
BK22	16.00	18.90	17.80	20.60	158.80	228.80	46.60	55.40	28.40	34.90	2.79	2.75
BK23	16.70	18.00	18.30	18.80	158.00	227.30	46.50	56.40	29.60	34.90	2.79	2.74
BK24	15.60	18.40	17.40	19.80	158.10	228.50	47.10	55.80	27.90	35.00	2.78	2.74
BA25	12.40	20.90	13.30	21.10	164.50	229.10	50.40	54.90	26.00	32.90	2.85	2.80
BA26	13.90	21.00	15.50	21.40	159.40	227.70	48.10	55.20	26.20	33.30	2.85	2.82
BA27	14.10	17.90	15.90	18.50	163.50	226.70	46.50	54.70	26.80	33.10	2.87	2.83
BA28	17.10	16.50	18.40	16.70	150.70	224.10	44.90	53.90	28.50	33.50	2.89	2.84
BA29	14.60	22.10	15.60	23.40	164.90	229.30	48.60	53.50	25.20	33.00	2.88	2.83
BA30	14.30	23.00	15.30	25.30	161.20	227.20	48.80	54.90	25.20	32.80	2.87	2.82
BK25	20.10	20.90	21.80	21.30	147.30	222.70	45.00	57.70	27.70	35.00	2.81	2.76

BK26	20.20	23.60	21.70	24.00	141.20	223.30	44.80	57.50	26.90	35.10	2.81	2.76
BK27	21.20	21.40	22.70	21.70	145.60	230.10	44.70	57.20	27.80	35.00	2.80	2.76
BK28	21.30	21.60	22.70	22.20	154.30	239.10	45.70	58.50	27.30	34.80	2.78	2.72
BK29	18.70	22.30	20.20	23.00	158.90	241.40	46.70	58.40	27.10	34.70	2.77	2.72
BK30	18.80	20.40	20.20	21.10	163.50	242.60	47.00	59.10	28.00	35.00	2.77	2.71
BK34	17.20	23.30	18.20	23.00	151.20	228.80	46.90	57.50	26.70	34.50	2.78	2.73
BK35	17.80	23.10	18.80	23.40	149.10	226.90	47.80	54.60	27.10	32.60	2.76	2.73
BK36	17.30	24.30	18.70	25.00	150.40	229.40	47.80	54.80	26.80	34.10	2.77	2.73
BK37	16.20	22.30	17.50	22.50	159.50	229.20	47.80	56.50	27.00	34.20	2.77	2.75
BK38	17.40	22.40	19.30	22.60	154.70	228.20	47.50	57.50	27.00	34.20	2.78	2.74
BK39	17.70	21.50	19.50	21.30	155.50	229.90	46.30	57.10	27.60	34.10	2.78	2.74
BA31	14.30	16.30	16.00	17.10	178.40	234.10	46.40	53.80	28.00	34.20	2.91	2.85
BA32	14.60	19.10	15.90	19.50	173.80	235.70	46.60	54.30	27.70	33.70	2.87	2.83
BA33	13.00	23.70	14.20	23.70	164.80	234.10	47.30	54.90	25.50	33.80	2.87	2.83
BA34	12.80	20.00	14.20	20.90	175.90	237.80	46.80	55.10	27.40	34.00	2.86	2.83
BA35	14.30	15.90	16.10	16.70	177.00	233.60	45.00	54.40	27.90	34.10	2.89	2.85
BA36	13.40	18.10	15.40	18.00	177.40	237.60	47.30	53.10	28.50	34.20	2.89	2.85

*** COLUMN STATISTICS ***

	Mean	SD	CV%	Max	Min
1. ShrL(1x)	16.871	2.447	14.50	21.300	12.100
2. ShrW(1x)	20.385	2.000	9.81	25.000	15.900
3. ShrL(5x)	18.203	2.502	13.75	22.700	13.300
4. ShrW(5x)	21.439	2.192	10.22	26.800	16.700
5. Wt BW	157.074	7.988	5.09	178.400	140.300
6. Wt AW	226.568	4.897	2.14	242.600	218.100
7. C/3cmBW	46.501	1.250	2.69	50.400	44.500
8. C/3cmAW	56.060	1.266	2.26	59.100	53.100
9. W/3cmBW	27.169	1.090	4.01	29.600	23.900
10. W/3cmAW	34.254	0.875	2.55	36.000	32.600
11. SL BW	2.832	0.042	1.49	2.910	2.760
12. SL AW	2.786	0.043	1.55	2.850	2.710

BK26	591.70	569.90	16.70	22.70	41.40	247.40	251.10	6.50	8.10	19.16	18.82
BK27	643.30	619.90	17.00	23.10	40.50	272.00	272.00	7.10	8.70	19.82	19.29
BK28	618.30	621.00	17.80	23.10	45.30	249.90	241.10	7.00	8.20	20.12	20.08
BK29	625.70	598.90	18.20	23.00	45.70	254.00	248.40	6.80	8.40	20.09	20.20
BK30	611.70	581.20	17.30	22.50	44.40	254.40	252.30	7.20	8.70	20.11	20.35
BK34	621.10	628.30	17.60	22.80	41.30	273.40	228.80	6.80	6.70	19.14	18.89
BK35	635.00	610.80	17.20	22.80	41.80	265.20	232.50	6.60	6.60	19.30	18.43
BK36	584.20	576.60	17.70	21.70	41.70	250.80	239.80	6.30	6.90	19.27	18.27
BK37	581.10	601.50	19.40	22.40	44.60	246.20	247.20	6.30	7.10	19.31	18.86
BK38	613.90	625.70	18.00	22.80	44.50	253.40	255.00	6.10	7.20	19.30	18.70
BK39	608.80	584.00	17.80	23.00	44.10	224.80	262.40	5.60	7.50	19.14	18.65
BA31	631.80	620.20	21.10	24.20	40.40	265.70	281.60	6.90	8.20	20.18	19.96
BA32	602.10	618.50	21.50	24.30	46.20	273.90	263.00	6.80	7.60	20.70	20.32
BA33	611.90	602.70	20.60	23.80	56.60	285.30	266.00	7.10	8.10	20.43	20.08
BA34	620.60	619.20	21.10	24.70	47.50	270.20	280.90	7.00	8.20	20.64	19.97
BA35	640.30	608.80	22.20	23.80	41.40	279.90	264.50	7.40	7.90	20.28	20.10
BA36	638.10	640.90	19.80	24.10	42.70	274.00	279.80	6.90	8.00	20.58	20.27

*** COLUMN STATISTICS ***

	Mean	SD	CV%	Max	Min
1. BurstBW	614.158	29.452	4.80	731.500	541.300
2. BurstAW	598.154	29.253	4.89	655.900	530.700
3. DistBW	18.747	1.357	7.24	22.200	16.400
4. DistAW	23.140	0.571	2.47	24.700	21.700
5. Wid BW	44.169	5.203	11.78	58.700	37.800
6. Y.StrBW	241.447	22.535	9.33	285.300	187.200
7. Y.StrAW	233.254	25.360	10.87	281.600	163.700
8. Ext BW	6.264	0.554	8.84	7.400	5.000
9. Ext AW	7.388	0.633	8.66	8.700	6.400
10. Tex BW	19.875	0.505	2.57	20.700	18.630
11. Tex AW	19.351	0.539	2.78	20.350	18.270

COMPLETE GREY FABRIC DATA SET

Sample	BurstBW	BurstAW	DistBW	DistAW	Wid BW	Y.StrBW	Y.StrAW	Ext BW	Ext AW	Tex BW	Tex AW
BA1	604.50	556.00	18.30	22.40	38.80	222.20	223.70	6.60	7.60	20.18	19.50
BA2	582.70	558.20	18.50	22.70	38.50	245.80	219.80	6.80	7.60	20.02	19.78
BA3	592.40	530.70	18.80	22.90	43.00	222.00	229.40	6.50	7.70	19.72	19.23
BA4	620.70	570.00	18.30	22.80	43.60	226.80	224.20	6.30	7.40	19.66	19.46
BA5	616.20	565.00	17.90	22.90	47.80	233.10	225.20	6.20	7.30	20.14	19.56
BA6	566.70	571.10	17.70	22.90	57.50	214.80	222.70	6.20	7.40	19.66	19.44
BK1	677.70	632.10	17.20	22.80	43.20	272.00	245.40	6.40	7.70	19.42	18.76
BK2	646.80	617.50	16.60	22.40	40.20	257.30	240.70	6.40	8.20	19.36	18.70
BK3	647.70	612.10	17.30	22.50	40.10	261.30	246.00	6.40	8.00	19.25	19.01
BK4	731.50	638.90	17.10	22.70	42.20	265.80	258.40	6.50	8.20	19.19	19.11
BK5	694.20	624.20	16.70	22.70	43.20	266.30	247.50	6.80	7.80	19.18	18.79
BK6	644.50	631.50	17.00	22.60	40.50	277.40	250.90	6.70	7.90	19.41	19.16
BA7	600.40	604.40	18.20	22.70	39.50	239.10	222.30	6.90	7.90	20.19	19.67
BA8	600.60	540.50	18.10	22.90	38.30	237.50	233.20	7.10	8.00	19.91	19.87
BA9	580.30	566.80	18.00	23.10	42.50	237.80	247.60	7.00	8.00	20.12	19.80
BA10	626.90	569.90	18.00	23.40	43.10	258.90	237.30	7.20	8.00	19.95	19.95
BA11	590.00	562.20	18.20	23.00	49.20	258.90	222.80	6.70	7.50	19.84	19.59
BA12	590.40	596.10	18.80	23.50	48.70	220.40	222.60	6.60	7.70	20.07	19.60
BK7	633.10	589.60	19.70	23.60	40.40	241.50	229.10	6.20	6.70	19.20	19.01
BK8	619.80	586.70	19.20	23.30	40.90	250.50	242.20	6.00	6.80	19.26	18.79
BK9	633.60	622.10	19.80	23.40	41.30	252.00	237.30	6.00	6.70	19.06	18.80
BK10	633.30	633.60	18.80	24.30	43.70	246.30	238.60	5.80	6.60	19.17	18.61
BK11	618.20	626.80	18.60	23.50	44.20	245.00	250.60	6.10	7.00	19.89	18.74
BK12	639.10	621.60	18.90	23.10	43.80	249.40	241.70	6.10	7.00	19.10	18.50
BA13	573.90	572.20	19.20	22.00	58.70	218.80	212.70	5.90	6.40	19.42	19.46
BA14	592.00	575.50	19.30	23.40	38.40	231.40	219.60	6.00	6.70	19.81	19.62
BA15	613.70	587.20	20.30	23.60	42.20	217.30	219.40	5.60	6.50	19.86	19.53
BA16	591.00	557.00	20.50	23.60	42.80	187.20	222.10	5.10	6.40	19.71	19.64
BA17	594.90	591.80	20.80	23.40	48.70	204.50	220.40	5.40	6.80	19.56	19.41
BA18	541.30	531.10	20.50	23.10	57.70	216.00	214.60	5.50	6.50	19.77	19.59
BK13	617.30	599.00	18.80	23.30	44.00	245.00	235.50	5.60	7.10	18.63	18.69
BK14	611.30	580.10	19.30	23.20	42.60	253.50	243.70	6.00	6.90	18.91	19.03
BK15	599.20	626.60	19.10	23.10	43.40	254.10	239.60	5.90	6.90	18.80	18.51
BK16	613.80	611.40	17.90	23.10	43.90	212.50	238.10	5.00	6.70	19.45	19.72
BK17	617.30	655.50	17.60	23.10	43.50	232.20	223.70	5.70	6.70	19.69	19.79
BK18	646.20	655.90	18.20	23.40	42.90	256.30	245.60	6.00	6.80	19.64	19.77
BK19	632.90	648.70	16.50	23.40	40.50	265.40	238.80	5.90	6.70	19.48	19.08
BK20	607.60	636.70	17.10	22.70	39.70	241.10	253.00	5.10	6.80	19.40	19.24
BK21	602.10	629.80	17.00	23.20	40.20	251.70	237.20	5.70	6.70	19.30	18.80
BA19	632.50	591.80	18.90	23.50	43.30	244.20	221.80	6.80	7.20	20.30	19.86
BA20	639.80	613.70	20.00	23.00	48.80	235.70	234.80	6.50	7.50	19.56	19.87
BA21	635.50	605.40	19.40	23.40	48.70	228.80	234.20	6.10	7.30	19.92	19.62
BA22	578.00	566.00	18.60	23.40	57.80	198.50	211.30	5.60	6.80	20.14	19.40
BA23	605.80	600.10	20.10	22.90	38.90	205.70	216.00	6.10	7.20	20.57	19.27
BA24	598.40	569.40	19.90	24.10	37.80	205.90	206.60	5.90	7.20	19.39	19.48
BK22	618.20	566.80	19.00	23.10	43.00	227.80	238.00	5.60	7.10	18.84	18.53
BK23	629.30	610.80	19.60	22.50	42.00	233.50	232.90	5.80	6.90	18.86	18.70
BK24	642.60	618.20	19.10	23.40	42.50	233.50	230.30	5.70	6.90	18.84	18.67
BA25	596.50	577.40	20.60	24.60	39.10	204.30	173.70	5.80	6.90	20.21	19.56
BA26	592.20	549.00	19.40	23.00	39.50	204.40	164.90	5.80	7.30	19.74	19.54
BA27	566.80	585.80	20.10	22.40	43.40	210.80	169.30	5.90	6.50	20.15	20.00
BA28	591.70	603.30	19.50	23.90	46.60	213.20	163.70	6.00	6.50	19.84	19.90
BA29	584.10	594.70	20.10	22.80	57.20	227.30	176.00	6.20	6.60	20.42	19.59
BA30	589.50	601.10	21.10	23.10	57.80	224.10	171.40	6.20	6.40	20.46	19.65
BK25	603.10	599.40	16.40	22.50	40.30	256.90	251.00	6.70	8.50	19.21	18.79

BAW 33	11.80	12.20	14.40	11.90	173.70	216.90	45.10	52.80	31.50	34.90	2.79	2.80
BAW 34	10.70	16.10	12.80	15.10	166.10	214.70	45.90	52.90	30.80	35.80	2.77	2.79
BAW 35	10.40	13.90	12.50	13.40	174.20	214.70	46.70	52.90	30.40	34.40	2.81	2.81
BAW 36	10.10	13.30	12.10	13.70	167.40	214.20	47.10	53.00	30.00	34.20	2.80	2.82

*** COLUMN STATISTICS ***

	Mean	SD	CV%	Max	Min
1. ShrL(1x)	10.800	1.749	16.18	14.800	7.300
2. ShrW(1x)	10.214	2.333	22.84	16.100	4.000
3. ShrL(5x)	12.798	1.718	13.42	16.500	9.500
4. ShrW(5x)	9.251	2.301	24.88	15.100	4.600
5. Wt BW	170.812	6.730	3.94	186.900	160.700
6. Wt AW	210.653	6.147	2.92	230.000	201.100
7. C/3cmBW	47.139	1.221	2.59	50.600	45.100
8. C/3cmAW	53.605	1.198	2.23	56.000	50.200
9. W/3cmBW	31.444	1.051	3.34	33.600	29.500
10. W/3cmAW	34.436	0.775	2.25	35.800	32.800
11. SL BW	2.764	0.037	1.35	2.840	2.710
12. SL AW	2.760	0.045	1.64	2.850	2.690

COMPLETE FINISHED FABRIC DATA SET

Sample	ShrL(1x)	ShrW(1x)	ShrL(5x)	ShrW(5x)	Wt BW	Wt AW	C/3cmBW	C/3cmAW	W/3cmBW	W/3cmAW	SL BW	SL AW
BAW 1	7.30	8.30	10.20	7.50	170.10	201.20	48.40	53.60	29.50	33.20	2.78	2.82
BAW 2	9.50	12.50	11.00	10.80	168.60	203.70	46.90	52.60	30.40	33.30	2.79	2.78
BAW 3	10.70	9.40	13.20	8.20	165.30	204.20	46.40	52.60	30.50	33.30	2.82	2.85
BAW 4	10.00	9.70	12.30	9.10	170.40	209.20	46.50	52.10	31.20	33.70	2.84	2.81
BAW 6	10.00	4.00	12.70	4.60	180.80	207.20	47.60	53.60	31.30	32.80	2.78	2.81
BKW 1	10.70	8.10	12.60	7.60	175.40	212.60	48.00	54.60	33.20	35.80	2.72	2.69
BKW 2	14.00	8.50	15.50	8.20	161.40	204.60	45.80	53.30	31.80	33.80	2.75	2.75
BKW 3	14.40	7.30	16.50	6.70	164.40	202.20	45.10	53.40	32.30	34.10	2.75	2.76
BKW 4	11.80	9.10	13.30	8.50	170.80	212.80	47.20	54.20	32.90	35.50	2.72	2.71
BKW 5	11.70	8.70	13.20	7.90	177.30	212.40	47.80	54.50	33.20	35.30	2.72	2.70
BKW 6	14.00	7.90	15.90	7.70	166.20	204.20	45.40	53.20	31.40	34.40	2.75	2.77
BAW 9	8.50	14.40	11.00	12.80	174.80	216.90	47.20	52.40	30.20	35.10	2.81	2.80
BAW 10	8.10	10.90	10.20	9.60	178.60	216.90	48.00	53.30	31.10	34.30	2.83	2.80
BAW 11	7.60	12.30	9.50	10.80	178.30	217.80	47.10	52.60	30.70	34.50	2.82	2.81
BKW 7	12.70	9.80	14.40	8.90	163.90	204.70	46.60	54.10	31.40	34.10	2.75	2.77
BKW 8	12.50	8.00	14.20	6.90	164.30	206.90	46.10	53.80	31.70	34.50	2.75	2.77
BKW 9	11.50	8.70	13.90	8.50	166.20	207.50	46.60	54.20	31.60	33.90	2.75	2.77
BKW 10	10.40	6.10	12.00	5.10	182.80	212.70	48.40	54.80	33.60	35.00	2.71	2.71
BKW 11	9.70	6.00	10.90	4.70	185.40	213.90	48.90	54.50	33.60	35.20	2.73	2.72
BKW 12	9.80	6.70	11.20	6.10	182.90	212.60	48.50	54.70	33.20	34.90	2.71	2.71
BAJ 13	9.30	10.20	11.50	8.60	173.80	206.00	47.30	52.90	30.50	33.90	2.80	2.79
BAW 15	7.80	14.20	10.10	12.40	170.30	211.00	47.30	52.30	30.10	34.00	2.81	2.80
BAJ 18	10.50	10.70	12.40	8.10	167.10	201.10	46.70	52.60	30.80	33.40	2.80	2.77
BKW 13	10.50	10.40	12.50	9.10	167.70	205.50	47.60	54.10	32.50	35.40	2.72	2.73
BKW 14	11.60	9.40	13.60	8.40	166.50	205.70	47.60	54.10	32.00	34.70	2.74	2.73
BKW 15	9.20	8.80	11.30	7.80	177.10	209.00	48.20	54.00	33.10	35.50	2.73	2.72
BKW 16	12.30	8.60	14.10	6.30	170.90	213.80	46.40	54.40	32.10	34.50	2.72	2.73
BKW 17	11.40	8.80	13.30	6.40	167.50	208.00	47.20	54.60	31.80	34.10	2.74	2.73
BKW 18	10.90	9.00	12.60	7.30	167.90	209.00	47.70	54.90	30.90	33.90	2.74	2.73
BKW 19	10.20	9.40	11.60	8.20	177.50	215.80	48.90	54.50	32.50	34.80	2.77	2.73
BKW 20	11.90	9.10	13.20	7.80	173.80	211.40	47.60	54.50	32.70	34.90	2.77	2.74
BKW 21	11.00	9.50	12.30	8.30	172.80	209.40	47.70	54.30	32.10	35.00	2.77	2.75
BAJ 20	10.90	8.70	13.10	8.00	168.60	203.30	45.40	51.80	30.00	33.30	2.80	2.85
BAJ 21	11.50	8.70	13.70	9.20	164.60	201.20	45.10	52.10	29.80	33.50	2.81	2.84
BAW 23	9.70	14.20	12.40	13.00	161.60	208.90	46.50	51.80	29.90	33.80	2.80	2.78
BAW 24	8.80	12.20	11.10	10.90	169.30	211.50	47.80	52.60	30.10	33.80	2.79	2.78
BKW 25	12.90	11.10	14.30	10.10	163.80	212.40	47.40	54.90	30.90	34.40	2.76	2.74
BKW 26	14.80	8.30	16.30	7.30	163.80	209.70	45.10	53.10	32.50	34.60	2.76	2.74
BKW 27	14.00	10.40	15.90	9.70	160.70	209.40	45.60	53.40	30.90	34.30	2.77	2.75
BKW 28	8.50	10.80	10.50	10.20	186.90	227.60	50.60	56.00	30.90	34.60	2.73	2.71
BKW 29	9.50	12.20	11.70	11.20	180.40	225.50	48.90	54.90	31.10	35.30	2.72	2.70
BKW 30	8.50	11.50	10.70	10.90	183.20	230.00	49.80	54.80	31.70	35.40	2.72	2.70
BAJ 20A	9.40	11.30	11.00	10.40	163.20	202.10	45.90	50.20	29.90	33.20	2.82	2.84
BAJ 21A	9.70	12.00	11.10	10.70	162.60	201.60	45.40	50.40	30.00	33.00	2.81	2.83
BKW 31	11.40	9.00	14.10	7.90	170.80	209.30	46.20	52.60	32.10	34.00	2.76	2.76
BKW 32	11.10	9.10	13.40	7.40	171.30	208.50	45.80	52.60	32.20	34.30	2.77	2.75
BKW 33	11.20	9.10	13.20	7.70	170.90	208.70	46.10	52.60	32.10	34.40	2.76	2.77
BKW 34	11.20	10.80	13.90	10.40	167.80	209.90	48.00	55.30	31.20	35.30	2.72	2.70
BKW 35	11.80	10.20	14.50	9.30	162.70	211.10	47.10	55.00	32.10	34.80	2.72	2.71
BKW 36	11.80	10.60	13.90	9.50	164.20	209.80	47.40	54.70	31.80	35.20	2.71	2.71
BKW 37	13.30	11.60	15.60	10.60	166.30	216.60	47.20	55.00	32.20	35.70	2.73	2.71
BKW 38	13.90	12.30	16.10	11.00	165.40	217.30	46.70	55.10	32.10	35.20	2.73	2.70
BKW 39	10.40	14.80	12.30	13.80	168.40	215.20	48.50	55.20	31.50	35.70	2.73	2.70
BAW 31	9.60	12.30	11.40	10.80	176.50	213.10	48.00	53.50	30.90	34.00	2.83	2.82
BAW 32	9.30	11.40	10.90	12.00	182.70	215.40	49.00	54.20	30.70	33.80	2.79	2.77

BAW 33	588.70	601.50	17.50	20.90	46.40	279.60	327.20	7.90	8.50	19.42	19.38	824.20	1093.70
BAW 34	618.90	641.00	18.30	20.40	42.80	309.90	321.30	8.80	7.00	19.40	19.39	808.40	1097.90
BAW 35	610.90	620.50	18.20	20.90	39.30	305.30	328.30	8.20	8.60	19.77	19.72	844.30	1121.90
BAW 36	612.70	610.40	18.00	20.60	39.20	299.80	336.70	8.00	8.40	19.79	19.55	844.40	1104.00

*** COLUMN STATISTICS ***

	Mean	SD	CV%	Max	Min
1. BurstBW	592.856	46.085	7.77	669.600	455.200
2. BurstAW	578.459	37.597	6.50	642.200	493.900
3. DistBW	17.859	1.079	6.04	19.500	15.400
4. DistAW	20.064	0.589	2.93	21.100	18.500
5. Mid BW	38.661	3.211	8.31	46.800	34.000
6. Y.StrBW	263.422	28.077	10.66	319.000	212.600
7. Y.StrAW	295.215	23.767	8.05	336.700	222.500
8. Ext BW	7.624	0.523	6.86	8.800	6.300
9. Ext AW	7.149	0.799	11.18	8.600	5.600
10. Tex BW	19.147	0.471	2.46	20.240	18.100
11. Tex AW	19.052	0.452	2.37	20.110	18.210
12. ThknsBW	801.407	59.773	7.46	915.800	703.000
13. ThknsAW	1071.939	37.350	3.48	1160.400	1013.900

COMPLETE FINISHED FABRIC DATA SET

Sample	BurstBW	BurstAW	DistBW	DistAW	Mid BW	Y.StrBW	Y.StrAW	Ext BW	Ext AW	Tex BW	Tex AW	ThknsBW	ThknsAW
BAW 1	554.70	585.30	19.30	20.90	35.10	269.00	308.60	7.90	6.20	19.28	19.35	863.70	1062.40
BAW 2	547.00	545.40	17.80	19.70	34.70	286.10	299.00	8.50	6.90	19.44	19.55	822.10	1078.20
BAW 3	540.90	542.90	17.60	20.30	38.10	273.10	315.90	7.90	6.00	19.15	18.69	839.70	1140.30
BAW 4	557.90	525.00	17.50	19.90	38.20	246.40	289.10	7.50	7.40	19.11	19.41	870.30	1121.80
BAW 6	553.00	575.00	19.10	20.90	45.80	273.00	295.40	7.60	6.50	19.21	19.31	898.20	1098.90
BKW 1	658.10	618.50	18.30	20.10	37.80	285.00	323.70	8.00	7.60	18.78	18.73	813.80	1040.60
BKW 2	597.80	611.60	17.80	19.80	35.80	287.70	311.50	7.80	6.40	18.98	18.63	734.60	1028.50
BKW 3	609.50	594.80	17.50	20.10	35.10	299.30	299.40	8.10	6.70	18.84	18.79	744.30	1037.80
BKW 4	669.60	628.60	17.50	20.60	38.20	279.40	305.90	7.70	6.60	18.95	18.53	808.10	1041.50
BKW 5	639.90	642.20	18.20	20.50	38.00	282.10	323.70	7.80	7.10	18.65	18.74	816.10	1058.50
BKW 6	633.90	599.90	17.10	20.10	35.30	292.20	327.40	8.30	6.80	18.89	18.88	742.70	1036.10
BAW 9	586.20	566.60	19.30	19.90	38.30	270.50	292.30	7.70	7.70	19.66	19.35	913.40	1126.40
BAW 10	622.20	565.40	19.30	20.40	37.40	257.90	290.00	8.00	8.20	19.68	19.59	915.80	1157.40
BAW 11	576.30	541.60	19.20	20.80	41.60	219.60	222.50	7.10	6.90	20.24	19.87	910.60	1160.40
BKW 7	610.10	589.50	16.90	20.20	36.00	318.90	325.10	7.90	6.60	18.49	18.58	796.20	1013.90
BKW 8	599.00	578.70	16.40	19.80	36.00	319.00	308.30	7.60	6.40	18.76	18.59	815.00	1020.00
BKW 9	625.90	596.90	17.20	20.20	36.10	316.30	314.00	7.80	6.60	18.76	18.42	794.40	1019.00
BKW 10	652.90	628.70	18.80	20.30	37.60	283.30	308.50	7.50	7.30	18.86	18.77	855.80	1024.80
BKW 11	659.20	640.90	19.40	20.50	37.50	278.70	321.60	7.70	7.40	18.72	18.72	868.80	1026.30
BKW 12	669.60	628.90	19.10	20.90	38.10	287.70	318.20	7.40	7.70	19.11	18.68	836.70	1027.70
BAJ 13	548.90	552.00	19.20	19.40	46.50	218.10	300.20	7.30	6.90	19.54	19.28	885.50	1103.70
BAW 15	593.20	580.00	19.50	19.70	38.20	248.70	297.80	7.40	7.20	19.42	19.25	906.70	1100.90
BAJ 18	562.60	546.80	18.40	20.50	46.80	212.60	277.70	7.50	7.30	19.22	19.02	845.00	1122.90
BKW 13	486.80	519.70	16.00	20.40	39.20	231.50	268.80	6.90	6.80	18.38	18.34	757.40	1040.30
BKW 14	455.20	493.90	15.80	19.40	39.30	227.80	256.70	6.70	6.40	18.10	18.21	740.40	1036.00
BKW 15	510.20	496.40	16.10	20.00	38.90	221.20	261.60	6.80	6.70	18.45	18.25	742.70	1044.80
BKW 16	563.60	537.10	17.70	20.10	39.80	245.40	277.30	7.20	6.30	19.37	19.04	759.40	1109.10
BKW 17	545.10	513.90	17.10	19.70	39.80	237.00	281.00	6.90	6.30	19.01	16.79	764.90	1090.90
BKW 18	544.40	517.90	17.10	19.60	39.80	233.80	265.70	7.10	5.80	19.02	18.91	756.10	1074.40
BKW 19	593.70	589.40	18.50	20.00	35.50	253.60	286.90	8.10	8.30	18.79	18.73	744.30	1073.70
BKW 20	582.10	580.20	17.50	19.60	35.50	247.50	297.30	7.60	7.30	18.68	18.73	736.80	1073.50
BKW 21	581.50	573.00	17.50	19.70	35.70	245.30	289.00	7.50	7.60	18.56	18.39	726.30	1081.70
BAJ 20	583.60	588.40	17.40	20.00	43.40	305.10	299.00	8.50	5.60	19.67	19.07	830.30	1105.20
BAJ 21	566.10	575.80	16.90	19.80	43.40	300.30	306.80	8.10	5.70	19.62	19.09	834.30	1104.80
BAW 23	566.30	561.50	18.80	19.60	34.70	243.90	280.60	7.60	7.40	19.44	19.42	813.90	1093.90
BAW 24	573.30	572.00	18.80	19.70	34.00	255.40	285.40	7.40	7.50	19.17	19.29	888.40	1106.10
BKW 25	661.00	603.60	18.00	21.10	36.80	269.90	281.50	8.40	8.20	18.82	18.96	707.00	1049.50
BKW 26	640.80	587.30	17.20	20.10	35.90	257.00	270.40	7.70	7.90	18.81	18.97	711.10	1033.20
BKW 27	618.20	594.70	17.00	20.10	36.80	252.60	283.80	7.60	8.10	18.93	18.86	703.00	1034.60
BKW 28	615.80	580.20	17.80	20.10	40.20	261.00	268.10	7.80	8.00	19.75	19.93	837.30	1112.10
BKW 29	625.00	588.30	18.30	20.20	40.20	256.30	269.20	7.70	7.90	20.02	20.05	800.00	1102.60
BKW 30	620.00	584.50	18.50	20.40	40.00	245.30	265.50	7.50	8.00	19.79	20.11	810.60	1072.40
BAJ 20A	582.40	578.30	19.30	18.60	43.10	282.80	292.30	7.80	6.20	19.43	19.17	823.80	1055.60
BAJ 21A	604.50	553.40	18.40	18.50	42.90	278.90	322.90	7.80	6.20	19.67	19.29	811.80	1048.60
BKW 31	524.90	510.10	15.70	19.20	35.60	214.00	259.10	6.30	6.20	19.65	19.40	755.80	1064.30
BKW 32	520.50	509.30	15.40	18.50	35.70	224.20	268.50	6.60	6.90	19.38	19.18	745.20	1072.20
BKW 33	526.90	534.00	15.60	19.10	35.60	231.50	255.90	6.50	6.40	19.24	19.27	750.60	1054.10
BKW 34	606.10	600.70	16.80	19.40	36.20	259.40	312.80	7.50	8.20	18.75	18.92	727.20	1039.70
BKW 35	637.20	610.20	17.70	20.50	35.90	250.90	317.30	7.30	7.00	18.70	18.65	719.60	1033.00
BKW 36	627.10	601.20	17.90	19.70	35.80	251.30	312.80	7.00	6.90	18.65	18.77	728.50	1018.90
BKW 37	644.70	588.00	17.30	20.40	39.90	232.80	272.40	7.00	7.90	18.86	18.59	735.20	1048.10
BKW 38	639.30	589.50	17.50	20.10	39.80	250.60	294.80	8.00	8.30	18.75	18.97	733.90	1051.70
BKW 39	601.80	596.10	18.80	20.30	40.10	240.30	282.20	7.30	7.90	18.68	18.81	774.40	1051.90
BAW 31	594.20	616.80	19.40	20.70	38.90	267.70	317.00	8.30	8.00	19.95	19.62	848.10	1081.80
BAW 32	635.80	624.30	19.50	20.90	42.70	268.40	325.80	8.40	7.80	19.71	19.61	845.90	1101.80

COMPLETE FINISHED FABRIC DATA SET

Sample	R	G	B
BAW 1	85.60	82.70	68.10
BAW 2	85.90	84.10	70.40
BAW 3	83.70	77.50	38.50
BAW 4	34.30	13.00	4.10
BAW 6	83.90	81.00	66.60
BKW 1	87.40	89.00	101.30
BKW 2	87.40	89.20	103.40
BKW 3	87.60	89.40	103.60
BKW 4	87.10	88.80	101.30
BKW 5	87.80	89.50	101.90
BKW 6	87.00	88.70	102.00
BAW 9	45.30	36.60	22.00
BAW 10	27.50	32.60	59.50
BAW 11	2.20	2.60	5.60
BKW 7	87.10	89.10	102.40
BKW 8	87.60	89.60	102.50
BKW 9	87.10	89.00	102.00
BKW 10	88.20	89.80	102.70
BKW 11	87.60	89.20	101.80
BKW 12	87.80	89.50	102.40
BAJ 13	87.30	88.70	100.50
BAW 15	45.30	36.70	21.90
BAJ 16	86.80	88.20	100.10
BKW 13	87.70	88.90	100.40
BKW 14	87.20	88.40	99.70
BKW 15	88.20	89.30	101.10
BKW 16	89.20	90.60	102.40
BKW 17	88.20	89.60	100.80
BKW 18	88.20	89.70	101.00
BKW 19	87.10	88.20	99.00
BKW 20	88.70	90.00	101.70
BKW 21	87.80	89.00	100.20
BAJ 20	88.10	89.90	103.60
BAJ 21	88.20	90.00	103.30
BAW 23	29.60	34.50	60.20
BAW 24	28.20	33.10	60.10
BKW 25	39.90	48.30	71.10
BKW 26	39.80	48.10	70.50
BKW 27	39.80	48.00	70.60
BKW 28	85.30	83.00	66.50
BKW 29	85.90	83.40	66.20
BKW 30	86.00	83.80	66.60
BAJ 20A	86.90	88.10	100.30
BAJ 21A	88.40	89.80	102.50
BKW 31	87.60	88.90	99.60
BKW 32	87.50	88.80	99.60
BKW 33	87.80	89.20	100.30
BKW 34	39.90	48.60	74.40
BKW 35	40.60	49.30	75.30
BKW 36	40.90	49.60	75.30
BKW 37	66.20	53.10	37.60
BKW 38	66.40	53.50	38.10
BKW 39	65.90	52.70	37.30
BAW 31	87.80	89.50	101.90
BAW 32	87.50	89.10	101.10

BAW 33	9.10	16.70	41.70
BAW 34	41.70	42.10	31.70
BAW 35	41.10	41.60	32.10
BAW 36	83.00	75.90	36.80