

CORAH SINGLE JERSEY VARIABILITY STUDY

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VARIATION

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1. INTRODUCTION

It will be appreciated that when specifying fabric qualities or performance standards it is not enough to quote a single target figure for a given property. What must also be specified is the tolerance, i.e. the range of values within which the cloth will be considered to be acceptable. The concept of tolerances applies equally to raw materials (e.g. yarn count), knitting variables (e.g. stitch length), and processing variables (e.g. dimensional stability).

In order to be able to place realistic tolerances on any specification it is important to establish, in a given factory and between factories, what are the normal variations in raw materials, knitting and finishing. This was the purpose of this investigation.

A possible by-product of an investigation of this type is that unacceptable or unavoidable variations may be brought to light and pinpointed so that action may be indicated which could lead to product improvements or to cost savings.

The fabric chosen for this investigation was a resin finished single-jersey quality designated by our co-operator Corah (St. Margaret) plc as quality 3169. Corah are a large company with various types of dyeing and drying routes which may be used to process this quality depending upon demand at any moment in time. This always leads to the question of how much more variability will be introduced by using more than one finishing route.

Two dyeing routes and two drying routes are used on this quality by finishers at Corah. It was therefore decided that samples should be collected from all the four processing routes over a period of time. The obvious sources of variation have been identified and wherever possible included in this investigation. The specification is given in Table 1.

2. WORK PLAN

Yarns

Yarns were selected at random over a period of approximately one month - July/August 1985. Seven separate lots were tested; each lot consisted of 10 cones. Total tested = 70 cones, from 2 suppliers: Courtaulds and Goncalves. Samples are identified in Appendix A.

Greige Fabrics

Again samples were selected at random in July/August 1985. 36 samples x 3 metres were tested. They had been knitted on two machines, using yarns from either Courtaulds or Goncalves.

The knitting machines used in this exercise were Monarch 3FA, 24 gauge, having 2268 needles. Samples are identified in Appendix B.

Dyed-only fabric

36 samples were selected again during the period July/August 1985. These were selected so that 9 samples from each of 4 finishing routes were tested.

The four finishing routes are as follows:-

1. Jet dyed in a Thies Rotostream and dried on a Kiefer Rotoswing relaxed dryer (code JK).
2. Jet dyed in a Thies Rotostream and dried on a Famatex stenter (code JS).
3. Winch dyed in a Leemetal deep draught winch and dried on a Kiefer Rotoswing relaxed dryer (Code WK).
4. Winch dyed in a Leemetal deep draught winch and dried on a Famatex stenter (code WS).

Three dye types were used:

R = reactives - 30 samples
W = white (OBA) - 3 samples
D = direct - 3 samples

The samples were collected in the following manner:

3 samples were taken from a particular dyelot

Hence sample Nos. 1, 2, and 3 are from one dyelot
4, 5, and 6 from another

and so on up to 36 samples (always in sets of three).

Samples are identified in Appendix C.

Dyed and Resinated Fabrics

These are from the same pieces as the dyed-only samples and have been numbered so that they receive the corresponding sample number in both the dyed-only and the dyed and resin-treated state, i.e. sample marked No. 1 in the dyed and resinated set is from the same piece as No. 1 in the dyed-only set.

Two resin recipes were used in this exercise; recipe No. 300 was used on all the coloured samples and recipe No. 300W was used on the whites only. Samples are identified in Appendix D.

3. SUMMARY OF RESULTS

- 3.1. The greige fabric samples in this study were apparently produced to relatively high standards of quality control, the yarn count before knitting being 30.02cc with a %CV of 0.72. The stitch length in the greige measured on the crimp tester indicated that it was well controlled and on target. Mean measured at 2.80mm with a %CV of 0.37.
- 3.2. The average courses, wales and weight of the greige state fully relaxed were as follows

	<u>Mean</u>	<u>CV%</u>
courses/3cm	63.8	0.8
wales/3cm	45.8	2.4
weight/sq.m.	171	0.9

When the two yarn suppliers were separated, it was noted that the relaxed courses were very similar between the two yarn types, but the relaxed wales were different.

<u>Wales/3cm</u>	<u>Mean</u>	<u>%CV</u>
27 samples, Courtaulds	46.4	0.8
9 samples, Goncalves	44.1	1.8

3.3. Considering the good levels of quality control which had apparently been achieved in both knitting and finishing, the variations which were found in these samples must represent levels which are practically almost unavoidable (i.e. due to normal random fluctuations in materials, processing, and testing) and therefore should present a good guide to the tolerances which can reasonably be imposed by a customer.

3.4. The actual levels at which tolerances should be set depends upon the evaluation method used. In the case where only a single sample is monitored, then the test values can not be expected to agree with the specification by closer than plus or minus about two standard deviations. When the production is assessed on the basis of the average of multiple (at least 5) samples taken at random over a period of time, then agreement to within one standard deviation may be expected.

The results of this study on the finished fabrics allow the following minimum allowances to be deduced, expressed as percentage deviations from specification

	<u>Courses</u>	<u>Wales</u>	<u>Weight</u>
Single sample	3.0%	2.4%	3.4%
Multiple samples	1.5%	1.2%	1.7%

3.5. The specification which had been laid down for this resin finished quality has been shown to be a fairly reasonable one. However, the theoretical average shrinkages have been shown to be 5 to 6% in both length and width when the delivered weight and width are exactly on specification. Therefore taking normal unavoidable variation into account, it is literally impossible to consistently deliver this quality with maximum shrinkages of 5% in each direction.

3.6. Resin finishing significantly changes the average dimensions of the fabric in the relaxed state whether compared to the dyed-only fabric or to the greige. Thus a knowledge of the dyed or greige reference states themselves will be of little assistance in arriving at finishing targets or product specifications for resin finished goods.

As a rough guide finishing factors have been calculated from the results of this study and were found to be as follows:

F = 0.90 for courses, 0.985 for wales, 0.883 for weight compared to the greige reference state.

In general the effect of resin finishing was to make the relaxed fabric longer and slightly wider. This change in the reference state is responsible for improved shrinkage performance at a given weight and width as compared to the unresinated material.

- 3.7. Burst strength losses caused by the resin finishing averaged overall about 21%. If however one looks at the losses in each recipe, the following can be found:

33 samples, resin No. 300, Burst Strength losses - 22%
3 samples, resin No. 300W, Burst Strength losses - 5.7%

Yarn strength losses were higher than the burst strength losses, the average being 31% with:

Resin No. 300 - 32% (33 samples)
Resin No. 300W - 23% (3 samples)

If one looks at the strength losses against dyestuffs the white shows the lowest and the directs exhibit the highest. Part of these strength losses can be accounted for by change in the weight per unit area.

- 3.8. For all the fabrics in this study the single wash and tumble drying test does not seriously underestimate the final shrinkage after multiple cycles (i.e. 5 cycles).
- 3.9. Spirality is markedly reduced as a result of the dyeing and finishing process so that final twisting in the garment is estimated to be only of the order of six degrees. Average spirality was about 17 degrees in the greige reference state. This was reduced to about 12½ degrees after dyeing and about 9 degrees after resin finishing. The three samples that came from the direct dye route exhibited the lowest angle of spirality. However, with only three samples it is not possible to say whether this result was significant.
- 3.10. Free formaldehyde levels were found to average around 176 ppm (Shirley test) but the variation was rather high.
- 3.11. Resin treatment did not seem to alter the shade of the fabric to any significant degree.
- 3.12. The finished fabrics were delivered close to target, with low levels of variation in both weight and width. Because the finished width was held under such good control and because the fabric quality specification is not quite accurate, it was inevitable that the target for length shrinkage of 5% could not be met. Actual length shrinkages varied from about 4½ to 8½ with a mean of 6½% - which is a creditable performance.
- 3.13. There was evidence that the different finishing routes were having different effects upon the relaxed dimensions and, therefore, were contributing to the total variation in the final fabrics. Although these effects were statistically significant the actual level of increased variation was relatively small in practical terms and can perhaps be ignored.

4. TESTING AND ANALYSIS OF RESULTS

All the testing was carried out at IIC Manchester and the following methods were used:

1. Yarn count from package - IIC method YT1
2. Yarn count from fabric - IIC method KT9
3. Twist - IIC method KT10 - untwist-retwist method
4. Stitch length - IIC method KT3 - crimp tester
5. Single-end strength - IIC method KT11 - Instron
6. Courses and wales - IIC method KT6
7. Length and width shrinkage - IIC method KT1C
8. Fabric weight - IIC method KT4B
9. Burst strength - IIC method KT5 - complies with BS4768 - 30mm diaphragm sample
10. Angle of spirality - IIC method KT2
11. Free formaldehyde - Shirley test method
12. Nitrogens - Kjeldahl method
13. Colour R.G.B. - using ICS colour difference meter.

The complete test results are given in Appendix A (yarns), Appendix B (grey), Appendix C (dyed-only), and Appendix D (dyed and resin-finished).

By using two equations it is possible to calculate the weight and shrinkage of a fabric and compare the results with those measured in the laboratory.

This enables a quick check for "rogue" test data to be made and allows an overall evaluation of the self-consistency of the test data.

Weight Calculations

Weight = courses/cm x wales/cm x Tex x stitch length x 0.1

Shrinkage Calculations

Shrinkage (length) = [courses (AW) - courses (BW)]/courses (AW)

Shrinkage (width) = [wales (AW) - wales (BW)]/wales (AW)

The raw data obtained from the above 3 equations can be seen in Appendix E and are summarised in Table 2.

On the whole agreement between measured and calculated values is acceptable, indicating that the testing procedures are under reasonably good control.

5. VARIATIONS WITHIN PROCESSING GROUPS

In each of the test data Appendices (A to D) the means, standard deviations, and variation coefficients for all tests averaged over all samples are given. In addition, the samples were sub-divided by dyeing machine, (winch and jet), by drying route, (Kiefer or stenter), by dyestuffs, (reactive, white, direct), and by resin finishing recipe.

The average yarn count in the greige fabric was found to be 19.45 Tex with a standard deviation of 0.16 and coefficient of variation of 0.84%. This compares reasonably well with the nominal count of 19.7 Tex (30Ne) and the yarn from package test results of 19.66 Tex. The average stitch length found in the greige fabric was 2.80mm, with a standard deviation of 0.01 and a variation coefficient 0.37%. The overall level of variation in stitch length is low, indicating careful control in production. Charts showing the variation in yarn count and stitch length, compared to targets, are shown in Figure 1 and Figure 2, and the resulting variation in courses and wales in the greige reference state are charted in Figure 3 and Figure 4. There is a clear indication in Figure 4 that the two different yarns are behaving differently.

The summary statistics for the most important dimensional properties in the finished, relaxed reference state have been extracted and are given in Table 3.

The levels of variation found in the reference state give an indication of:-

- a) The amount of variation in measured weight and shrinkage to be expected between different pieces of fabric all finished to the same width and courses.
- b) The accuracy with which tests on an individual sample or group of samples can be predicted. An individual sample may return test values anywhere within plus or minus 2 standard deviations of the predicted values (which are predictions of the mean). The average tests on five or more different pieces will be anywhere within plus or minus 1 standard deviation.

Looking at the variations in these relaxed dimensions we may conclude as follows:-

- 5.1. The variation in relaxed courses, wales and weight is similar between the dyed-only and the dyed and resinated samples.
- 5.2. The average level of relaxed courses, wales and weight are significantly different as a result of resin finishing.

Courses change from 60.4 to 57.4 per 3cm, i.e. by about 5%
Wales change from 46.4 to 45.1 per 3cm, i.e. by about 3%
Weight changes from 157.7 to 151gsm, i.e. by about 4%

Comparison charts for all samples are given in Figures 5, 6, and 7.

- 5.3. These changes in relaxed dimensions mean that, if resinated and unresinated dyelots were to be finished to the same width and courses then, on average, length and width shrinkage would both be less in the resin finished goods.

For example, the average courses and wales in the resinated fabrics as delivered were 53.7 and 42.8 per 3cm respectively, from which the average shrinkage (5WTD) can be calculated as 6.5% in length and 5.2% in width. (Actual measured values were 6.8% and 4.9%). If unresinated fabrics were to be finished to the same courses and wales (i.e. roughly the same width and weight per unit area), then the calculated average shrinkages would be 10.9% in length and 7.8% in width.

5.4. The specification laid down for this resinated fabric is 54 courses by 42.5 wales with a weight of 140 gsm. This can be checked for practical realism as follows:-

Average reference courses = 57.4/3cm
Specification = 54
Therefore average length shrinkage = 5.9%

Average reference wales = 45.1
Specification = 42.5
Therefore average width shrinkage = 5.8%

Average reference weight = 151
Average Shrinkages = 5.9 x 5.8%
Therefore average finished weight = 134 gsm

If shrinkages are held to 5% x 5% as specified, then the finished weight is 137 gsm and the finished width is about 1% below specification.

Thus the specification is not absolutely correct but is certainly very close; maybe as close as is practicable.

5.5. Since the knitting production has been shown to be under good control (as judged by the variation in yarn count and stitch length), the variations in the finished relaxed reference dimensions can be used to arrive at reasonable tolerances for the specification. The coefficients of variation for the courses, wales and weight in the relaxed resinated fabrics were found to be 1.5%, 1.2%, and 1.7% respectively.

Therefore without any allowance whatsoever for variations in the as delivered courses and wales (an impossible situation in practice), both manufacturer and customer must accept that measurements from any one individual piece may be anywhere within plus or minus 2 times the CV, i.e. plus or minus: 3% for courses, 2.4% for wales and 3.4% for weight. When some allowance is made for inevitable variations in finishing these tolerances will naturally need to be set higher.

5.6. In fact, the finisher appears to have done a remarkably good job in containing these extra variations since the variation coefficients for courses, wales and weight in the as-delivered state are only 1.37%, 0.92% and 1.49% respectively. The actual measured courses, wales and weight as delivered are charted in Figures 8, 9, and 10, compared to the specified targets.

5.7. Table 4 shows the means and standard deviations for reference courses, wales, and weight broken down over the dyeing and the drying machines for both dyed-only and dyed/finished samples.

When the data are simply averaged over dyeing machine or over drying machine, then there are no significant differences. However when the data are further broken down into specific total processing routes, e.g. winch plus Kiefer or winch plus stenter, jet plus Kiefer or jet plus stenter, then statistically significant differences begin to emerge.

The biggest influence is seen in the wales. Comparing the extremes, the winch/Kiefer route yields 47.3 plus or minus 0.2 wales/3cm in the dyed only reference state whereas the jet/stenter route yields 45.7 plus or minus 0.3. This difference is significant at 99.9% confidence level and represents a potential difference in width shrinkage, on the average of about 3 percentage points. After resin finishing, the difference is somewhat less and represents a potential difference of about two percentage points.

There is also statistically significant differences in the weights but the differences in courses are not significant.

Thus we have to conclude that the use of different dyeing/drying routes does result in extra variation in the finished goods. However it must be said that, given the generally fairly low level of variation in the total population of samples, there would not seem to be much commercial incentive to attempt to eliminate this degree of extra variation at the expense of production flexibility.

The variation in courses, wales, and weight in the dyed-only reference state are charted in Figures 11, 12, and 13 for the different process combinations.

Figures 14, 15, and 16 show the corresponding values for the dyed and resinated samples. Figures 17, 18, and 19 show the same data but with the two resin systems identified.

6. YARN STRENGTH

The average loss in strength caused by the resin finish was about 31%. When this was split by the resin then type 300 (33 samples) averaged 32% and resin 300W (3 samples) averaged 23%.

The following table shows the recorded losses split by dyestuffs. The white (OBA) exhibited the lowest loss and the direct dye exhibited the highest.

Yarn Strength (BW)

		<u>Dyed</u>	<u>Dyed & Resin</u>	<u>% Loss</u>
White	R1	308	237	22.9
Direct	R2	325	180	44.6
Reactive	R2	291	202	30.5
All samples	R1+R2	295	203	31.2

Yarn Strength (AW)

White	R1	313	243	22.4
Direct	R2	306	201	34.4
Reactive	R2	310	216	30.4
All sample	R1+R2	310	217	30.0

R1 = Resin 300W

R2 = resin 300

7. FINISHING FACTORS

Average relaxed reference dimensions

	<u>Courses</u>	<u>Wales</u>	<u>Weight</u>
Grey	63.8	45.8	171
Dyed only	60.4	46.4	158
Resinated	57.5	45.1	151

<u>F Factors</u>	<u>Dyed</u>	<u>Resinated</u>
Courses	0.9458	0.8998
Wales	1.0127	0.9852
Weight	0.9222	0.8827

These data confirm that measurements made on relaxed greige (or grey) fabrics are in themselves of little value in predicting the final finished dimensions. However, it has been proposed that, in the absence of more comprehensive data, if a new single jersey fabric is to be made (i.e. with different yarn count and stitch length) for resin finishing with a similar finishing recipe, then the so-called finishing factors (F factors) may be helpful and there is a limited amount of experimental evidence to support this proposition.

F factors are arrived at by calculating the ratios of finished relaxed courses, wales, and weight to those of the grey relaxed fabrics. Thus, when a new quality is produced it is only necessary to carry out the reference relaxation procedure upon several samples of the greige fabric and to multiply the average measured courses, wales, and weight by the appropriate finishing factors in order to arrive at a rough prediction for the average dyed or resin finished reference state. Once the finished reference state is known, then preliminary specifications and finishing targets can easily be deduced by scaling up to the required as-delivered dimensions.

8. SHRINKAGES

Comparisons were made of the shrinkage values which were returned after 1 wash and tumble dry cycle and also after the standard reference relaxation procedure (5 wash and tumble dry cycles). Plots of all the data are given in various forms in Figures 20 to 30. The table below summarises the averages from the two test methods.

Shrinkage comparisons

	<u>1 wash</u>		<u>5 washes</u>		<u>Mean Difference</u>
	<u>Mean</u>	<u>SD</u>	<u>Mean</u>	<u>SD</u>	
<u>Length</u>					
Dyed	8.2	2.9	9.4	3.3	1.2
Resin 300	6.3	0.8	6.6	0.7	0.4
Resin 300W	8.3	0.2	8.7	0.2	0.4
All resin	6.4	1.0	6.8	1.0	0.4

Width

	<u>1 wash</u>		<u>5 washes</u>		<u>Mean</u>
	<u>Mean</u>	<u>SD</u>	<u>Mean</u>	<u>SD</u>	<u>Difference</u>
Dyed	2.7	3.4	2.9	3.4	0.2
Resin 300	4.9	0.9	4.9	0.8	0
Resin 300W	5.5	0.1	5.3	0.2	-0.2
All resin	5.0	0.9	4.9	0.7	0

From these data we can deduce that, for the resin finished fabrics, the one-cycle test is giving results which are very similar to the five-cycle test. However, with the dyed-only fabrics the single 1 wash and tumble test is 1.2% in length away from the reference state, with the width readings similar between the two test methods. The specified shrinkages of 5 x 5% have been reasonably well met; reference back to the specification in section 5.3.

The variation in shrinkage due to variation in reference wales caused by the differences between the different dyeing/drying routes is, of course, partly obscured by variation in the width as delivered.

Nevertheless, the trends mentioned in section 5.7. can be discerned in Figure 25 where the winch/Kiefer route yields consistently higher shrinkages than the jet/stenter route. The average difference is almost exactly as predicted by the average difference in reference wales, i.e. in the region of two percentage points.

9. EFFECTS OF PROCESSING UPON SPIRALITY

Spirality is defined as the angle in degrees between the wales and a line drawn perpendicular to the courses. It is always present in plain single jersey fabrics made from singles yarns and although the fabric may be temporarily straightened by the finisher, the garment will always tend to return to the relaxed, spiralled state after laundering. Thus the spirality before washing (BW) is a measure of the success of the finisher in presenting a straight fabric to the maker-up, but the increase in spiral angle in the reference state (AW) is an indication of how much a garment will twist in use.

A twisting effect of about 5 degrees has been said to be acceptable and it has been claimed that resin finishing will reduce the spiral angle in the relaxed state. The table below summarises the measurements which have been made on these fabrics and the individual results have been charted in Figures 31 to 35.

Spiral Angle

	<u>As Received</u>		<u>Relaxed</u>		<u>Twisting</u>
	<u>Mean</u>	<u>SD</u>	<u>Mean</u>	<u>SD</u>	<u>Mean</u>
	(a)		(b)		(b-a)
Grey	10.1	2.5	17.2	2.5	7.1
Dyed only	8.3	3.5	12.7	2.1	4.3
Resinated	3.6	2.5	9.2	1.8	5.6
Resin 300	3.5	2.6	9.0	1.7	5.5
Resin 300W	4.2	1.9	11.5	0.1	7.3

From these results it appears that the finisher has been quite successful in presenting a straight fabric since the angle in the finished fabrics averages only 3.6 degrees. Relaxation causes the spiral angle to increase to an average of 9.2 degrees, i.e. there is a twisting effect of just under 6 degrees. Processing has had a clear influence upon spirality since the value in greige was over 17 degrees. The dyeing process alone reduces this to 12.6 degrees which after resin finishing comes down to just over 9 degrees. However, it appears that the actual resin recipe can influence the situation with recipe 300 recording 9 degrees; an improvement against dyed only of approximately 3 degrees, whereas recipe 300W recorded 11.5 degrees, only 1 degree better than the dyed only samples. However, note that this conclusion depends upon only a single dyelot put through the 300W recipe.

10. CHANGE IN SHADE

From the red, green, and blue measurements made in the laboratory the standard parameters, L, A, B, C, X, Y, and Z have been calculated and are listed in Tables 5 and 6 for reference purposes only, since no analysis has been attempted for this report.

In addition, the colour difference ΔE between corresponding dyed and resinated pieces has been calculated and these values are given in the last data column of Table 6. For those colours where more than one sample was available, the ΔE values have been grouped according to colour, and averaged.

The individual values are charted in Figure 36 and are summarised below:

Change in colour after resination

	<u>N</u>	<u>Mean ΔE</u>	<u>SD</u>
Yellow (reactive)	9	0.67	0.34
Pink (reactive)	3	0.78	0.37
Turquoise (reactive)	6	1.03	0.34
Turquoise (direct)	3	1.02	0.04
White (OBA)	3	0.63	0.27
Orange (reactive)	12	1.16	0.42

It can be seen from the table that the changes in shade are relatively small and seem to be randomly scattered over the different colours and dyestuff classes.

11. FREE FORMALDEHYDE AND NITROGENS

Free formaldehyde was measured by the Shirley Institute method using aqueous extraction. In addition, nitrogen content was measured as received and after washing since, obviously, the amount of free formaldehyde will be related to the total amount of resin and to the efficiency of fixation. Total and fixed nitrogen contents were measured by the Kjeldahl method. Individual results are charted in Figures 37 to 40, and are listed in Table 7. Averaging these data over resin systems yields the following table.

	<u>Resin 300 (N=33)</u>		<u>Resin 300W (N=3)</u>	
	<u>Mean</u>	<u>SD</u>	<u>Mean</u>	<u>SD</u>
Formaldehyde (ppm)	169	70	248	52
Nitrogen (% total)	0.18	0.03	0.14	0.01
Nitrogen (fixed)	0.15	0.03	0.12	0.01

All samples (N=36)

	<u>Mean</u>	<u>SD</u>
Formaldehyde (ppm)	176	72
Nitrogen (% total)	0.18	0.03
Nitrogen(%fixed)	0.15	0.03
Nitrogen (fixed corrected)	0.07	0.03

Both the resin recipes used gave low free formaldehyde readings: 169 ppm for resin 300, and 248 ppm for resin 300W.

12. BURSTING STRENGTH

Bursting strength was measured on the Heals Model 111 tester with a diaphragm of 3cm diameter. The units of measurement are Kn/sq.m. The individual data are charted in Figure 41 and are summarised in Tables 8 and 9.

Strength loss as a result of resin finishing (compared to the dyed only fabrics) averages about 21% in the as-delivered state and 18.5% after the reference relaxation procedure. This is somewhat lower than the 31% loss found in the yarns. A portion of this loss in burst strength is due to changes in weight per unit area (averaging about 4%). This can be allowed for by calculating the strength/weight ratios which are also shown in Tables 8 and 9. The loss in strength/weight ratio as a result of resin finishing (all fabrics) is this about 18% as received or 15% after relaxation.

A large difference in the strength loss was recorded between the two resin recipes (Table 8). Recipe 300 recording approximately 22% (as received) and recipe 300W recording approximately 6% (as received). However, note again that this conclusion is based on results from only one dyelot.

This trait was noted also in the yarn strength, losses although not to the same degree.

There was no significant difference in burst strength between the different dyeing/drying routes (Table 9).

QUALITY 3169 - SPECIFICATION CORAHKnitting

Construction: Plain Web Single Jersey

M/C: 24 gauge Monarch Single Jersey
 26" dia. 1932 needles
 30" dia. 2268 needles

Yarn: 1/30's Combed Cotton Ecrú

Stitch Length: 2.8mm

Yarn Length: 26" dia. - 541cms/course
 30" dia. - 635cms/course

CP3cm on M/c: 56

Finishing

Finished Weight per sq. Metre: 140 grams_{+5%}

Finished CP3cm: 54 45.7 CPI

Finished WP3cm: 42.5 36 WPI

Finished Width: 26" dia. - 129₊₃cm edge/edge
 30" dia. - 150₊₃cm edge/edge

Finishing Route - as specified on samples sent to you.

23.10.85.

COMPARISON OF MEASURED & CALCULATED TEST DATAGREIGE (36 samples)

		<u>Ave (Measured)</u>	<u>Ave (Calc)</u>	<u>% Mean Difference</u>	
Weight (gsm)	BW	128.12 ± 3.54	125.87±3.47	1.75	
	AW	171.00 ± 1.60	172.83±4.68	-1.07	
% shrinkage (5x)	LEN	1.29 ± 1.59	0.69±1.61	0.6	} absolute difference
	WID	27.87 ± 0.86	28.52±1.32	-0.65	

DYED ONLY (36 SAMPLES)

Weight (gsm)	BW	140.49 ± 5.65	142.42±5.99	-1.37	
	AW	157.69 ± 3.39	162.37±2.84	-2.96	
% shrinkage (5x)	LEN	9.38 ± 3.29	8.96±3.70	0.42	}
	WID	2.90 ± 3.43	3.69±3.90	-0.79	
% shrinkage (TD)	LEN	8.18 ± 2.90	7.69±3.14	0.49	}
	WID	2.71 ± 3.35	2.63±3.56	0.08	

DYED & RESINATED (36 SAMPLES)

Weight (gsm)	BW	135.45 ± 2.02	136.57±2.94	-0.82	
	AW	150.93 ± 2.50	152.60±3.45	-1.10	
% shrinkage (5x)	LEN	6.78 ± 0.91	6.45±1.22	0.33	}
	WID	4.92 ± 0.74	5.24±0.83	-0.32	
% shrinkage (TD)	LEN	6.42 ± 0.97	5.89±0.87	0.53	}
	WID	4.96 ± 0.90	5.35±1.06	-0.39	

BW = Before wash (as received)

AW = After wash (reference state)

5x = 5 wash and tumble

TD = 1 wash and tumble

GREY (AW) - ALL AVAILABLE SAMPLES (36)

	<u>x</u>	<u>S.D.</u>	<u>%C.V.</u>
Courses	63.9	0.5	0.8
Wales	45.8	1.1	2.4
Weight	171.0	1.6	1.0
Tex	19.2	0.2	1.0
Stitch length	2.76	0.01	0.39
Yarn strength	255.2	187.7	7.3

DYED ONLY (AW) - ALL AVAILABLE SAMPLES (36)

Courses	60.4	0.7	1.1
Wales	46.4	0.6	1.4
Weight	157.7	3.4	2.1
Tex	18.9	0.2	1.2
Stitch length	2.75	0.01	0.62
Yarn strength	310.4	14.4	4.7

DYED AND RESINATED (AW) - ALL AVAILABLE SAMPLES (36)

Courses	57.4	0.9	1.5
Wales	45.1	0.5	1.2
Weight	150.9	2.5	1.7
Tex	19.2	0.2	1.0
Stitch length	2.75	0.01	0.37
Yarn strength	217.1	16.3	7.5
Nitrogen (fixed)	0.15	0.02	19.21

VARIATION CAUSED BY DIFFERENT DYEING & DRYING MACHINES

<u>DYED ONLY</u>		<u>Courses</u>		<u>Wales</u>		<u>Weight</u>	
		<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>
ALL	(36)	60.4	0.7	46.4	0.6	158	3
WINCH	(18)	60.2	0.4	46.8	0.5	159	2
JET	(18)	60.6	0.8	46.0	0.5	156	4
STENTER	(18)	60.5	0.6	46.0	0.5	156	3
KIEFER	(18)	60.3	0.7	46.8	0.6	159	2
W/K	(9)	60.1	0.5	47.3	0.2	161	1
W/S	(9)	60.4	0.4	46.4	0.4	157	2
J/K	(9)	60.5	0.9	46.3	0.4	158	3
J/S	(9)	60.6	0.8	45.7	0.3	154	4

DYED & RESIN

ALL	(36)	57.5	0.9	45.2	0.5	151	3
WINCH	(18)	57.4	0.8	45.3	0.5	152	2
JET	(18)	57.5	1.0	45.0	0.6	150	2
STENTER	(18)	57.7	0.6	44.8	0.4	150	2
KIEFER	(18)	57.3	1.1	45.5	0.4	152	2
W/K	(9)	56.9	0.7	45.6	0.5	152	3
W/S	(9)	57.8	0.6	45.0	0.4	152	1.4
J/K	(9)	57.6	1.3	45.5	0.4	151	2.5
J/S	(9)	57.5	0.6	44.6	0.2	148	1

CORAH SINGLE JERSEY '85

- DYED ONLY

COLOUR MEASUREMENT

No.	G	R	B	L	A	B	C	X	Y	Z
1	79.58	85.02	41.32	91.50	-1.69	32.25	32.30	74.78	79.58	48.79
2	79.38	84.60	41.70	91.41	-1.81	31.63	31.68	74.53	79.38	49.24
3	79.98	85.27	42.16	91.68	-1.71	31.53	31.57	75.15	79.98	49.79
4	34.08	58.26	29.71	65.03	58.49	2.55	58.54	51.52	34.08	35.08
5	34.10	58.07	29.69	65.04	58.01	2.61	58.07	51.36	34.10	35.06
6	33.71	57.93	29.04	64.73	58.72	3.09	58.80	51.12	33.71	34.29
7	44.39	30.84	61.12	72.49	-18.99	-21.87	28.97	36.17	44.39	72.18
8	44.46	30.85	62.01	72.53	-18.61	-22.63	29.30	36.35	44.46	73.23
9	44.89	31.28	62.28	72.82	-18.54	-22.40	29.07	36.74	44.89	73.55
10	80.49	85.31	41.52	91.91	-2.89	32.71	32.83	75.05	80.49	49.04
11	80.60	85.51	41.49	91.95	-2.79	32.83	32.95	75.20	80.60	49.00
12	80.69	85.70	41.84	91.99	-2.51	32.46	32.56	75.42	80.69	49.41
13	45.33	31.36	63.10	73.11	-19.04	-22.67	29.60	36.97	45.33	74.52
14	44.66	31.03	61.46	72.67	-19.06	-21.88	29.02	36.39	44.66	72.59
15	44.69	31.16	61.49	72.68	-18.79	-21.88	28.84	36.49	44.69	72.62
16	86.27	85.31	98.38	94.43	8.08	-14.03	16.20	86.21	86.27	116.19
17	88.15	86.69	100.28	95.23	7.35	-13.97	15.78	87.66	88.15	118.43
18	88.03	86.62	100.04	95.17	7.38	-13.89	15.73	87.55	88.03	118.14
19	60.44	44.60	75.17	82.07	-19.80	-17.79	26.62	49.72	60.44	88.77
20	60.26	44.52	74.63	81.98	-19.84	-17.51	26.46	49.55	60.26	88.13
21	60.58	44.81	74.73	82.15	-19.92	-17.30	26.38	49.80	60.58	88.26
22	51.23	70.58	37.75	76.82	35.39	11.48	37.20	62.76	51.23	44.58
23	51.90	71.30	38.18	77.22	35.15	11.61	37.02	63.41	51.90	45.09
24	52.00	71.56	38.41	77.28	35.47	11.41	37.26	63.66	52.00	45.36
25	51.47	71.38	37.79	76.96	36.23	11.68	38.07	63.39	51.47	44.63
26	51.58	71.26	37.67	77.03	35.69	11.94	37.63	63.28	51.58	44.49
27	51.09	70.25	37.59	76.73	35.08	11.55	36.94	62.47	51.09	44.39
28	80.21	84.62	40.57	91.78	-3.83	33.66	33.88	74.33	80.21	47.92
29	79.37	84.20	38.84	91.40	-3.60	35.21	35.39	73.66	79.37	45.87
30	79.86	84.41	39.29	91.62	-4.04	35.01	35.24	73.90	79.86	46.40
31	52.18	70.73	38.02	77.39	33.33	12.11	35.46	62.92	52.18	44.90
32	51.82	71.19	37.55	77.17	34.89	12.35	37.01	63.20	51.82	44.35
33	52.18	71.29	38.13	77.39	34.38	11.97	36.40	63.39	52.18	45.03
34	49.32	69.35	36.12	75.65	37.44	11.63	39.21	61.48	49.32	42.66
35	49.21	69.14	36.24	75.58	37.39	11.36	39.08	61.33	49.21	42.79
36	49.91	69.95	36.94	76.02	37.33	11.16	38.97	62.11	49.91	43.63

CORAH SINGLE JERSEY '85

- DYED & RESINATED

COLOUR MEASUREMENT

No.	G	R	B	L	A	B	C	X	Y	Z	ΔE	FINISH
1	78.85	83.96	41.27	91.17	-2.01	31.74	31.81	73.94	78.85	48.74	0.6860	300
2	79.15	84.20	41.81	91.30	-1.97	31.30	31.36	74.24	79.15	49.38	0.3739	300
3	79.35	84.68	42.17	91.39	-1.43	31.02	31.05	74.68	79.35	49.80	0.6425	300
4	34.22	58.32	30.10	65.14	58.33	2.15	58.37	51.64	34.22	35.54	0.4435	300
5	34.33	58.51	30.24	65.22	58.45	2.07	58.49	51.82	34.33	35.71	0.7204	300
6	33.83	58.16	29.83	64.83	59.19	2.02	59.23	51.46	33.83	35.23	1.1720	300
7	44.90	31.47	61.91	72.82	-18.30	-22.04	28.65	36.82	44.90	73.12	0.7866	300
8	44.69	31.53	62.21	72.69	-17.37	-22.56	28.47	36.92	44.69	73.47	1.2452	300
9	44.80	31.46	61.83	72.76	-18.09	-22.08	28.54	36.80	44.80	73.02	0.5521	300
10	80.33	85.63	40.75	91.83	-2.38	33.54	33.62	75.15	80.33	48.12	0.9821	300
11	80.56	85.88	41.06	91.94	-2.29	33.32	33.40	75.41	80.56	48.49	0.7068	300
12	80.34	85.74	40.66	91.84	-2.25	33.66	33.73	75.22	80.34	48.02	1.2308	300
13	45.97	32.47	63.42	73.52	-17.80	-22.25	28.49	37.90	45.97	74.90	1.3749	300
14	45.34	31.93	61.97	73.12	-18.34	-21.59	28.33	37.20	45.34	73.19	0.9010	300
15	45.40	32.01	62.98	73.16	-17.67	-22.47	28.59	37.45	45.40	74.38	1.3501	300
16	87.50	86.33	99.02	94.95	7.55	-13.58	15.53	87.12	87.50	116.95	0.8755	300W
17	87.87	86.54	99.05	95.11	7.20	-13.32	15.15	87.30	87.87	116.98	0.6692	300W
18	87.99	86.61	99.53	95.16	7.26	-13.57	15.39	87.45	87.99	117.54	0.3431	300W
19	59.46	44.25	73.09	81.55	-19.37	-16.97	25.76	49.04	59.46	86.33	1.0652	300
20	60.13	44.80	73.33	81.91	-19.63	-16.55	25.67	49.51	60.13	86.60	0.9885	300
21	60.10	44.94	73.36	81.89	-19.25	-16.60	25.42	49.63	60.10	86.64	1.0001	300
22	51.48	70.52	38.13	76.97	34.80	11.25	36.57	62.79	51.48	45.03	0.6509	300
23	51.45	70.53	38.20	76.95	34.91	11.13	36.64	62.80	51.45	45.11	0.5986	300
24	51.13	69.92	38.20	76.76	34.66	10.78	36.29	62.33	51.13	45.12	1.1571	300
25	51.26	70.49	38.58	76.83	35.53	10.42	37.03	62.85	51.26	45.57	1.4390	300
26	51.73	71.04	38.46	77.12	35.25	11.08	36.95	63.26	51.73	45.42	0.9755	300
27	51.91	71.24	38.43	77.22	35.14	11.30	36.91	63.41	51.91	45.38	0.5542	300
28	80.19	84.64	40.55	91.77	-3.80	33.67	33.89	74.33	80.19	47.89	0.0398	300
29	80.09	84.52	39.62	91.73	-4.16	34.77	35.02	74.06	80.09	46.79	0.7800	300
30	80.29	84.61	39.98	91.81	-4.25	34.46	34.73	74.20	80.29	47.22	0.6163	300
31	53.50	71.75	39.71	78.17	32.56	11.28	34.46	64.06	53.50	46.90	1.3731	300
32	52.82	71.58	38.88	77.77	33.59	11.65	35.56	63.76	52.82	45.92	1.5880	300
33	52.65	71.30	38.75	77.67	33.48	11.64	35.45	63.52	52.65	45.77	0.9934	300
34	50.34	69.88	37.37	76.28	36.28	11.04	37.92	62.14	50.34	44.14	1.4486	300
35	50.82	70.19	37.87	76.57	35.82	10.89	37.44	62.48	50.82	44.72	1.9154	300
36	50.11	69.49	37.56	76.14	36.26	10.56	37.77	61.87	50.11	44.36	1.2375	300

NITROGENS & FORMALDEHYDES

ID	DYED ONLY			DYED & RESINATED					
	Total (N)	Fixed (N)	Ave. (N)	Total (N)	Fixed (N)	%Cure (1)	%Cure (2)	Fixed Corr.	Formal dehyde
1	0.100	0.095	0.098	0.200	0.155	56	78	0.058	203
2	0.085	0.095	0.090	0.210	0.155	54	74	0.065	197
3	0.100	0.080	0.090	0.200	0.155	59	78	0.065	168
4	0.095	0.075	0.085	0.210	0.170	68	81	0.085	148
5	0.075	0.055	0.065	0.215	0.165	67	77	0.100	***
6	0.065	0.085	0.075	0.190	0.170	83	89	0.095	***
7	0.095	0.090	0.093	0.185	0.165	78	89	0.073	379
8	0.085	0.085	0.085	0.215	0.190	81	88	0.105	259
9	0.085	0.095	0.090	0.175	0.170	94	97	0.080	316
10	0.080	0.055	0.068	0.155	0.155	100	100	0.088	167
11	0.055	0.050	0.053	0.170	0.030	-19	18	-0.023	173
12	0.060	0.075	0.068	0.170	0.145	76	85	0.078	115
13	0.090	0.070	0.080	0.220	0.185	75	84	0.105	243
14	0.095	0.090	0.093	0.220	0.185	73	84	0.093	300
15	0.100	0.090	0.095	0.230	0.200	78	87	0.105	247
16	0.060	0.075	0.068	0.130	0.130	100	100	0.063	308
17	0.075	0.050	0.063	0.150	0.115	60	77	0.053	228
18	0.065	0.060	0.063	0.150	0.120	66	80	0.058	210
19	0.040	0.050	0.045	0.175	0.140	73	80	0.095	124
20	0.040	0.055	0.048	0.140	0.140	100	100	0.093	***
21	0.060	0.055	0.058	0.155	0.160	105	103	0.103	138
22	0.080	0.135	0.108	0.170	0.145	60	85	0.038	128
23	0.135	0.135	0.135	0.165	0.150	50	91	0.015	131
24	0.060	0.130	0.095	0.155	0.145	83	94	0.050	105
25	0.020	0.105	0.063	0.160	0.140	79	88	0.078	113
26	0.020	0.110	0.065	0.160	0.135	74	84	0.070	202
27	0.025	0.040	0.033	0.165	0.145	85	88	0.113	136
28	0.115	0.075	0.095	0.200	0.175	76	88	0.080	108
29	0.130	0.090	0.110	0.190	0.185	94	97	0.075	168
30	0.140	0.080	0.110	0.205	0.180	74	88	0.070	174
31	0.115	0.050	0.083	0.135	0.145	119	107	0.063	193
32	0.115	0.045	0.080	0.140	0.125	75	89	0.045	139
33	0.140	0.055	0.098	0.150	0.140	81	93	0.043	136
34	0.165	0.055	0.110	0.135	0.125	60	93	0.015	182
35	0.155	0.065	0.110	0.145	0.140	86	97	0.030	140
36	0.155	0.060	0.108	0.185	0.135	35	73	0.028	141

Mean. 0.070 (Excluding
Sd.D. 0.026 sample 11)

*** = less than 100 p.p.m. Formaldehyde

%Cure (1) : calculated by first subtracting the average dyed only nitrogen from the total and fixed resinated nitrogens.

%Cure (2) : calculated directly on the total and fixed resinated nitrogens.

Fixed Corr. : fixed nitrogen after resination - average dyed only nitrogen

Burst Strength to Weight Comparison

AS RECEIVED

	Strength kn/sqm		Weight g/sqm		Str/Wt ratio	Str loss	Str/Wt loss	Wt loss
	mean	%cv	mean	%cv	mean	%	%	%
Dyed Only								
White	540.4	3.1	136.7	1.0	4.0	-	-	-
Direct	550.7	1.2	131.2	1.4	4.2	-	-	-
Reactive	594.7	3.9	141.8	3.6	4.2	-	-	-
All Fabrics	586.5	4.9	140.5	4.0	4.2	-	-	-
Resin Finished								
White	509.8	3.7	133.1	0.2	3.8	5.7	3.1	2.7
Direct	440.2	2.6	134.9	1.4	3.3	20.1	22.3	-
Reactive	459.4	5.9	135.7	1.5	3.4	22.8	19.3	4.3
All Fabrics	462.0	6.4	135.5	1.5	3.4	21.2	18.3	3.6

REFERENCE STATE

	Strength kn/sqm		Weight g/sqm		Str/Wt ratio	Str loss	Str/Wt loss	Wt loss
	mean	%cv	mean	%cv	mean	%	%	%
Dyed Only								
White	545.6	2.8	155.1	0.6	3.5	-	-	-
Direct	564.5	1.6	150.1	1.4	3.8	-	-	-
Reactive	571.5	2.5	158.7	1.5	3.6	-	-	-
All Fabrics	568.8	2.7	157.7	2.2	3.6	-	-	-
Resin Finished								
White	496.9	1.1	151.7	1.1	3.3	8.9	6.9	2.2
Direct	462.0	4.7	147.6	0.7	3.1	18.2	16.8	1.6
Reactive	460.6	7.1	151.2	1.6	3.0	19.4	15.4	4.7
All Fabrics	463.7	6.9	150.9	1.7	3.1	18.5	14.8	4.3

Burst Strength to Weight Comparisons

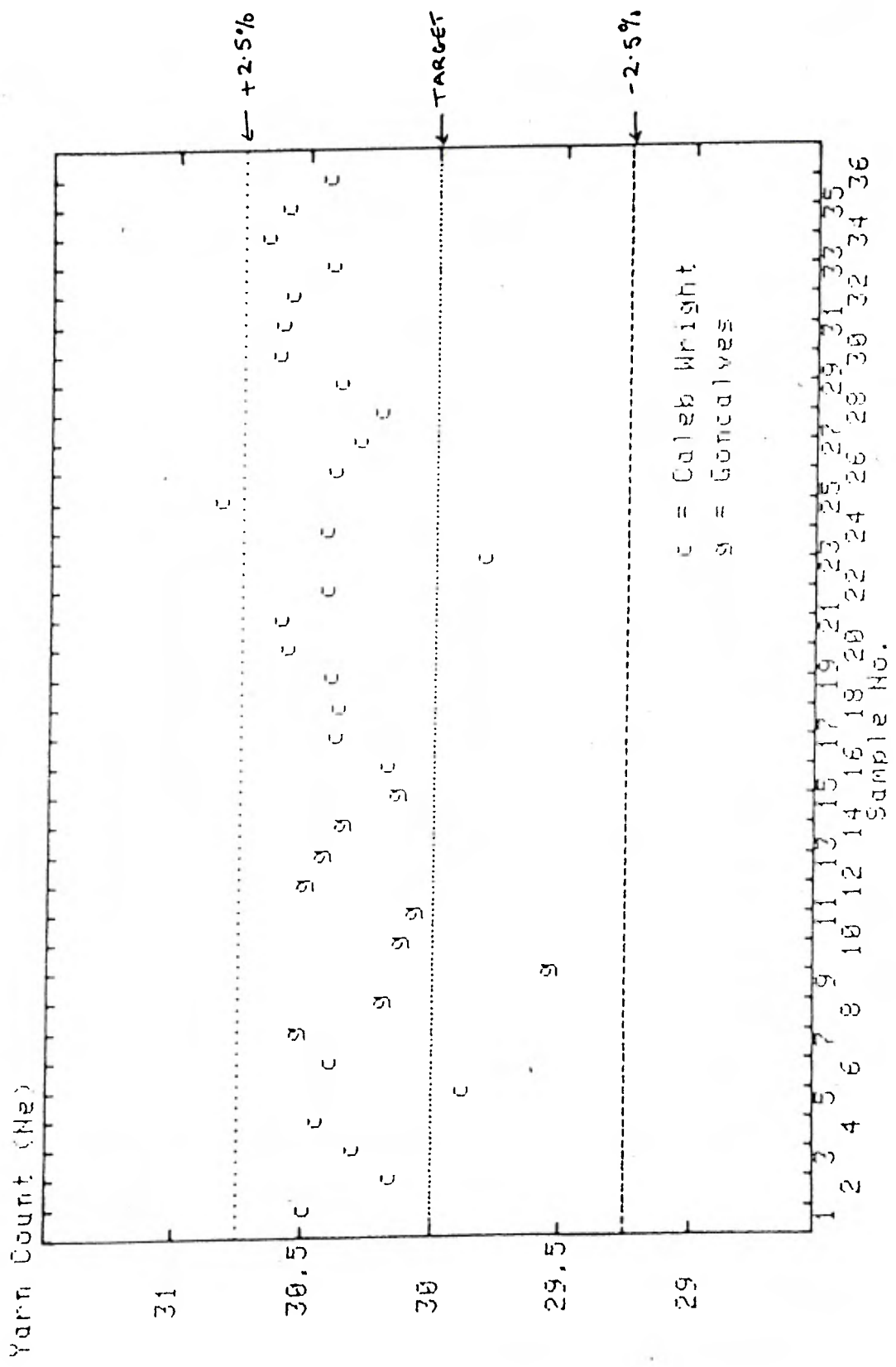
AS RECEIVED

	Strength		Weight		Str/Wt ratio mean	Str loss %	Str/Wt loss %	Wt loss %
	kn/sqm mean	%cv	g/sqm mean	%cv				
Dyed Only								
Jet	579.4	3.7	138.0	4.0	4.2	-	-	-
Winch	593.6	5.6	143.0	3.3	4.2	-	-	-
Stenter	569.3	4.1	137.4	3.4	4.1	-	-	-
Kiefer	603.7	3.7	143.6	3.4	4.2	-	-	-
All Fabrics	586.5	4.9	140.5	4.0	4.2	-	-	-
Resin Finished								
Jet	449.1	5.3	135.3	1.7	3.3	22.5	20.9	2.0
Winch	474.8	6.2	135.7	1.3	3.5	20.0	15.7	5.1
Stenter	461.7	7.7	134.9	1.4	3.4	18.9	17.4	1.8
Kiefer	462.3	5.0	136.0	1.5	3.4	23.4	19.2	5.3
All Fabrics	462.0	6.4	135.5	1.5	3.4	21.2	18.3	3.6

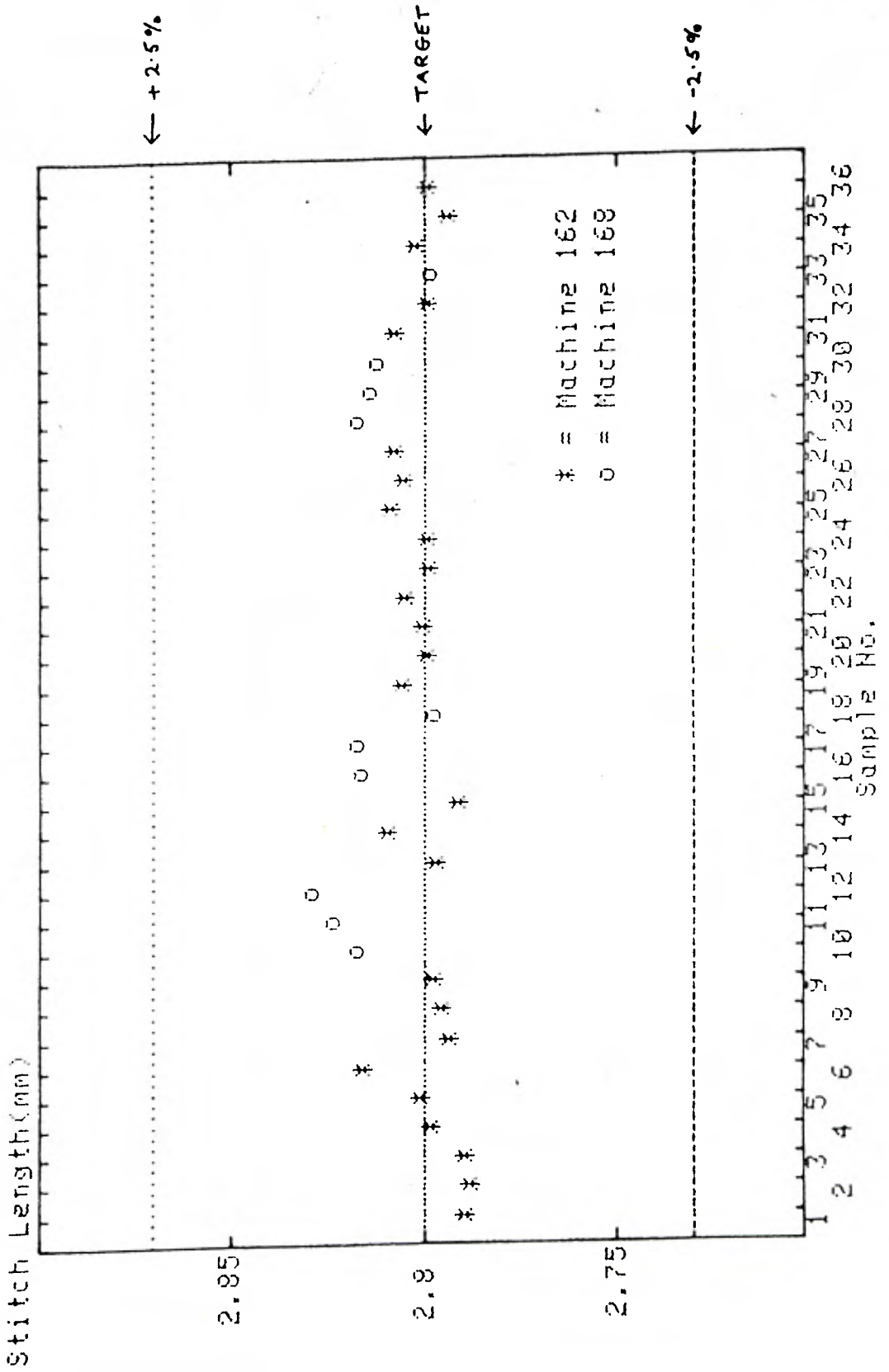
REFERENCE STATE

	Strength		Weight		Str/Wt ratio mean	Str loss %	Str/Wt loss %	Wt loss %
	kn/sqm mean	%cv	g/sqm mean	%cv				
Dyed Only								
Jet	565.8	2.4	156.4	2.4	3.6	-	-	-
Winch	571.8	3.0	159.0	1.5	3.6	-	-	-
Stenter	559.7	2.3	155.9	2.1	3.6	-	-	-
Kiefer	577.9	2.2	159.5	1.5	3.6	-	-	-
All Fabrics	568.8	2.7	157.7	2.2	3.6	-	-	-
Resin Finished								
Jet	457.8	7.4	149.7	1.6	3.1	19.1	15.5	4.3
Winch	469.6	6.3	152.1	1.3	3.1	17.9	14.2	4.3
Stenter	459.4	7.8	150.2	1.6	3.1	17.9	14.8	3.6
Kiefer	468.0	6.0	151.6	1.6	3.1	19.0	14.8	4.9
All Fabrics	463.7	6.9	150.9	1.7	3.1	18.5	14.8	4.3

GREY YARN COUNT VARIATION (BW)



GREY STITCH LENGTH VARIATION (BW)



COURSES/3CM AFTER 5 WASHES (GREY)

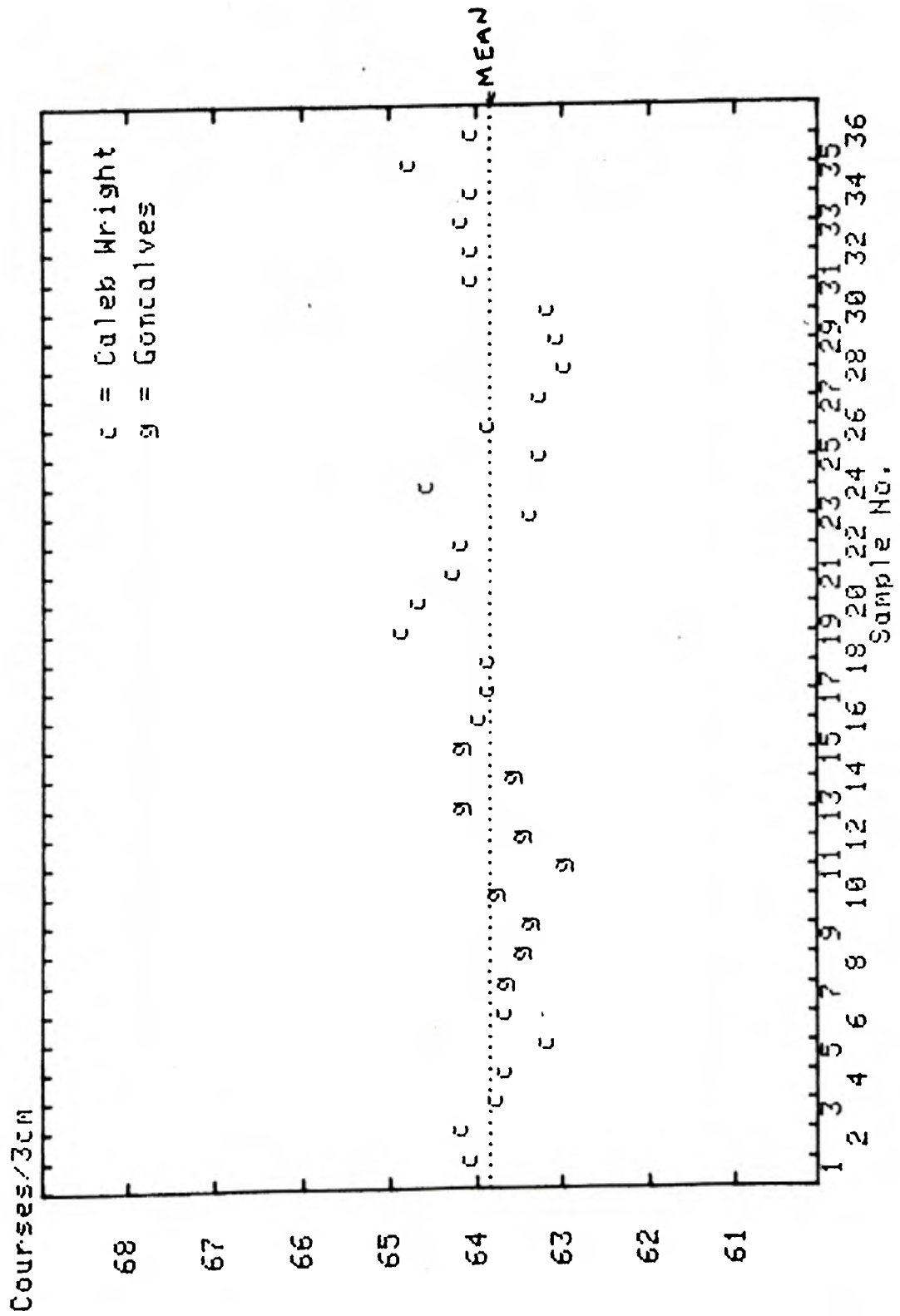
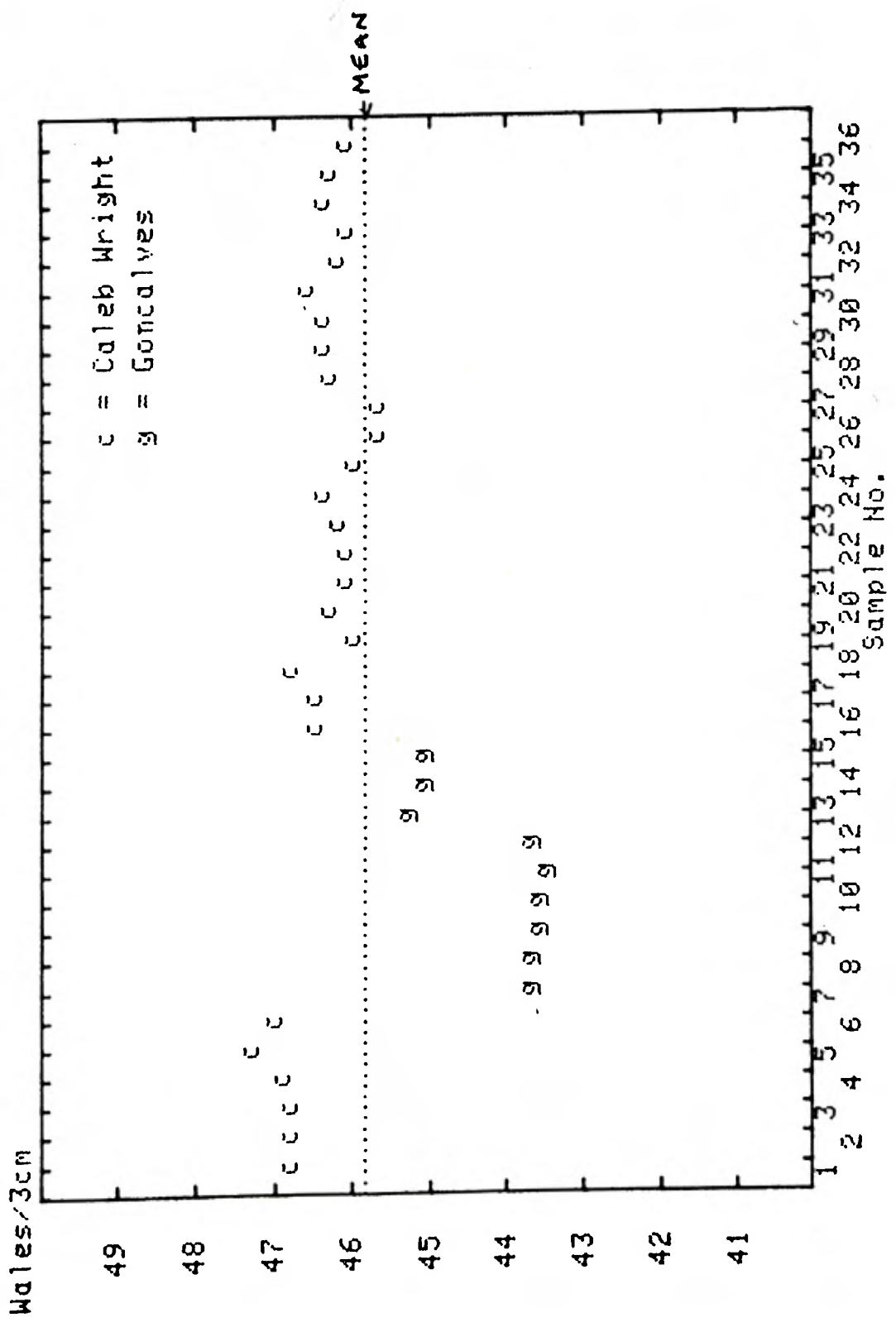


FIGURE 3

MALES/3CM AFTER 5 WASHES (GREY)



COMPARISON OF COURSES/3CM AFTER 5 WASHES (DYED ONLY & RESINATED)

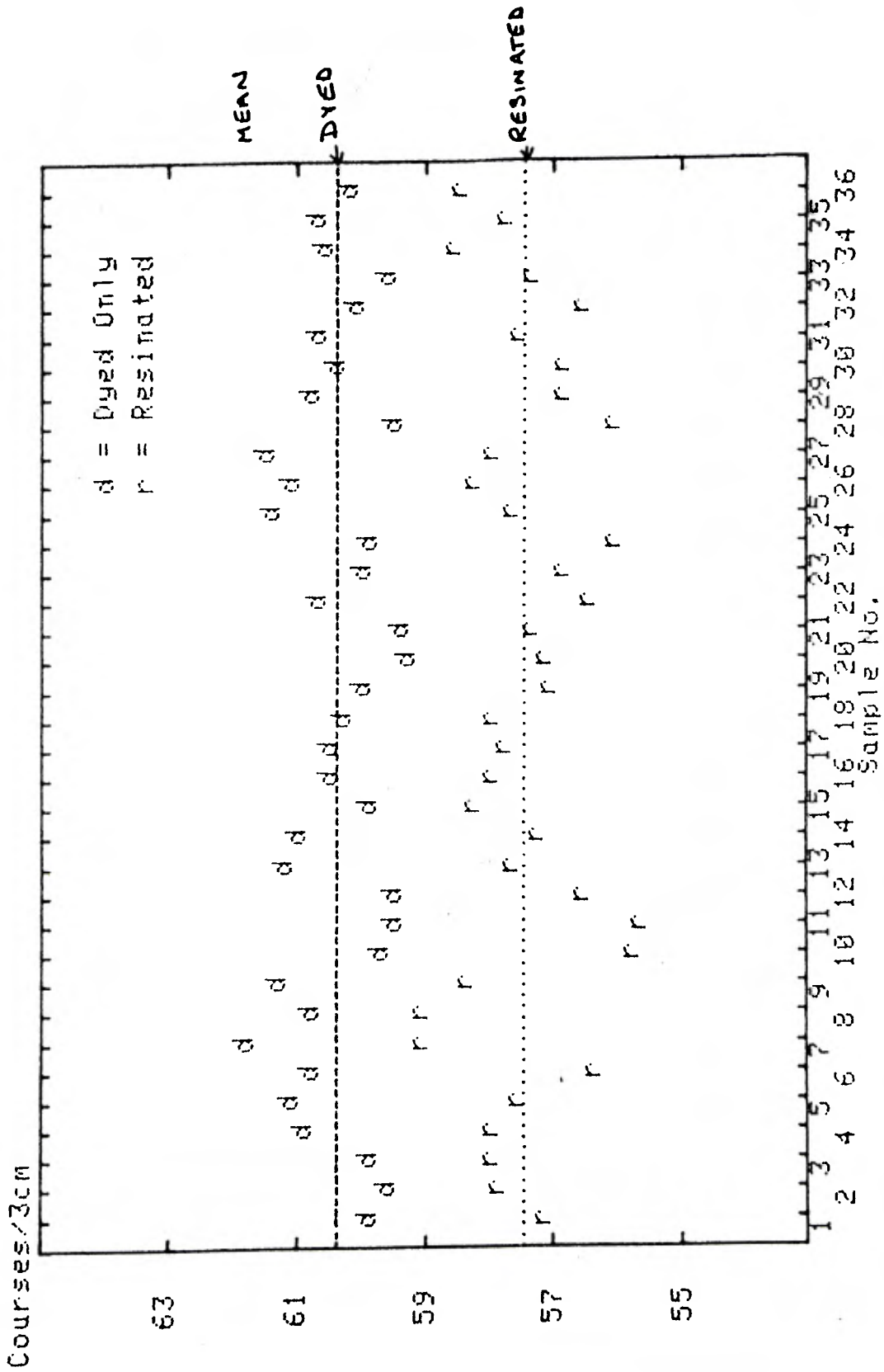
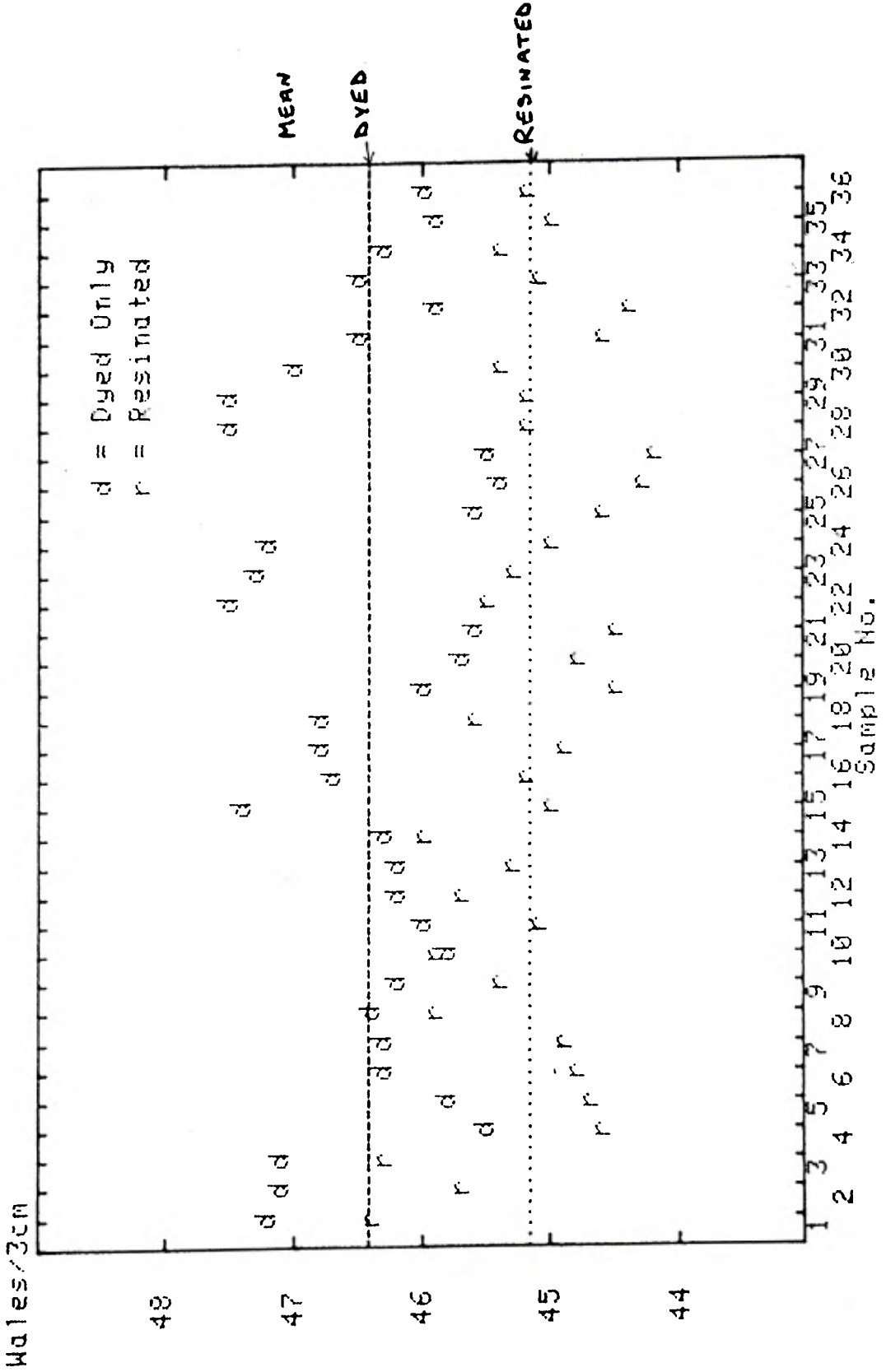
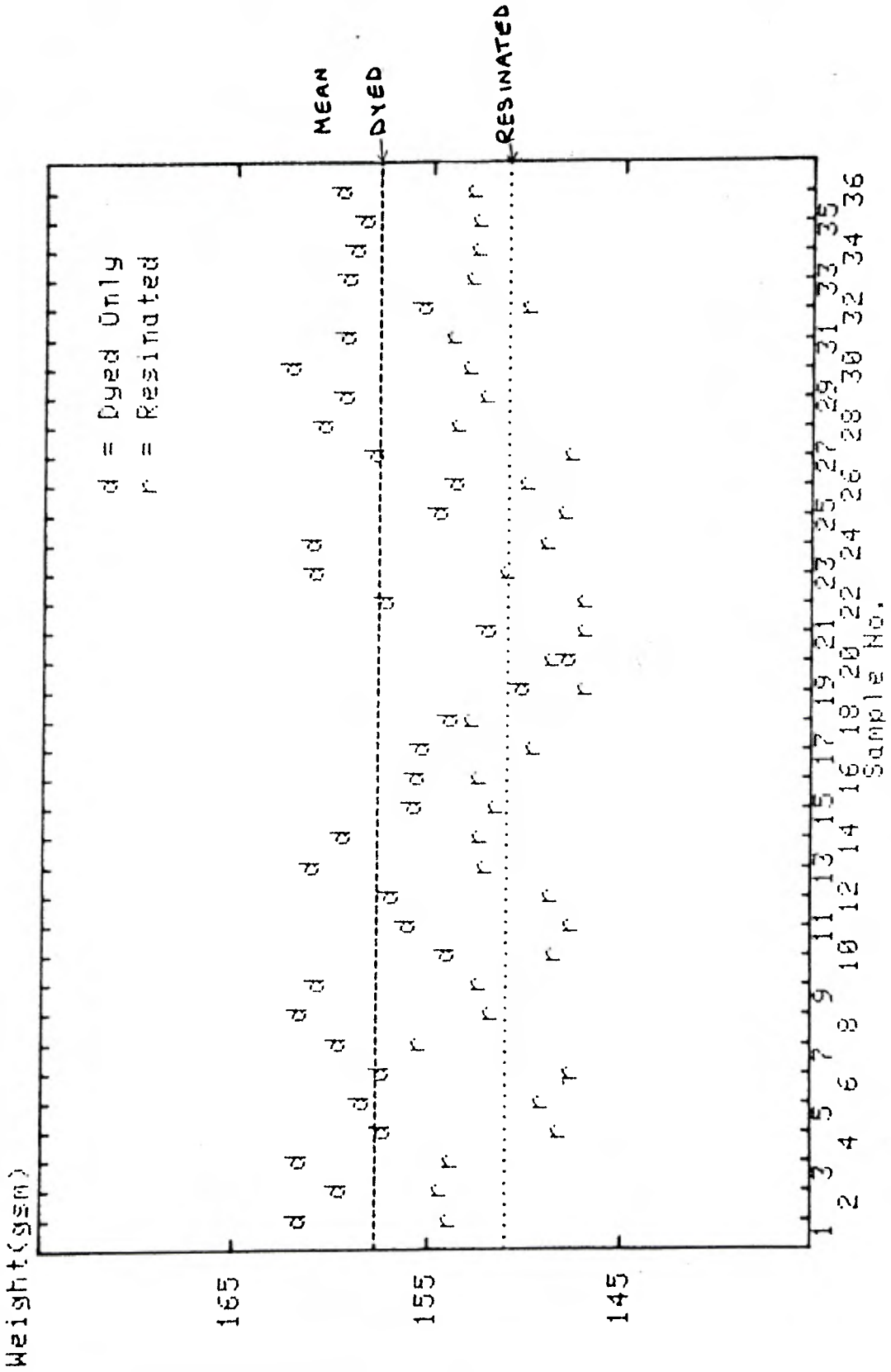


FIGURE 5

COMPARISON OF WALES/3CM AFTER 5 WASHES (DYED ONLY & RESINATED)



COMPARISON OF WEIGHT(GSM) AFTER 5 WASHES(DYED ONLY & RESINATED)



VARIATION IN COURSES/3CM AS DELIVERED (DYED & RESINATED B.W.)

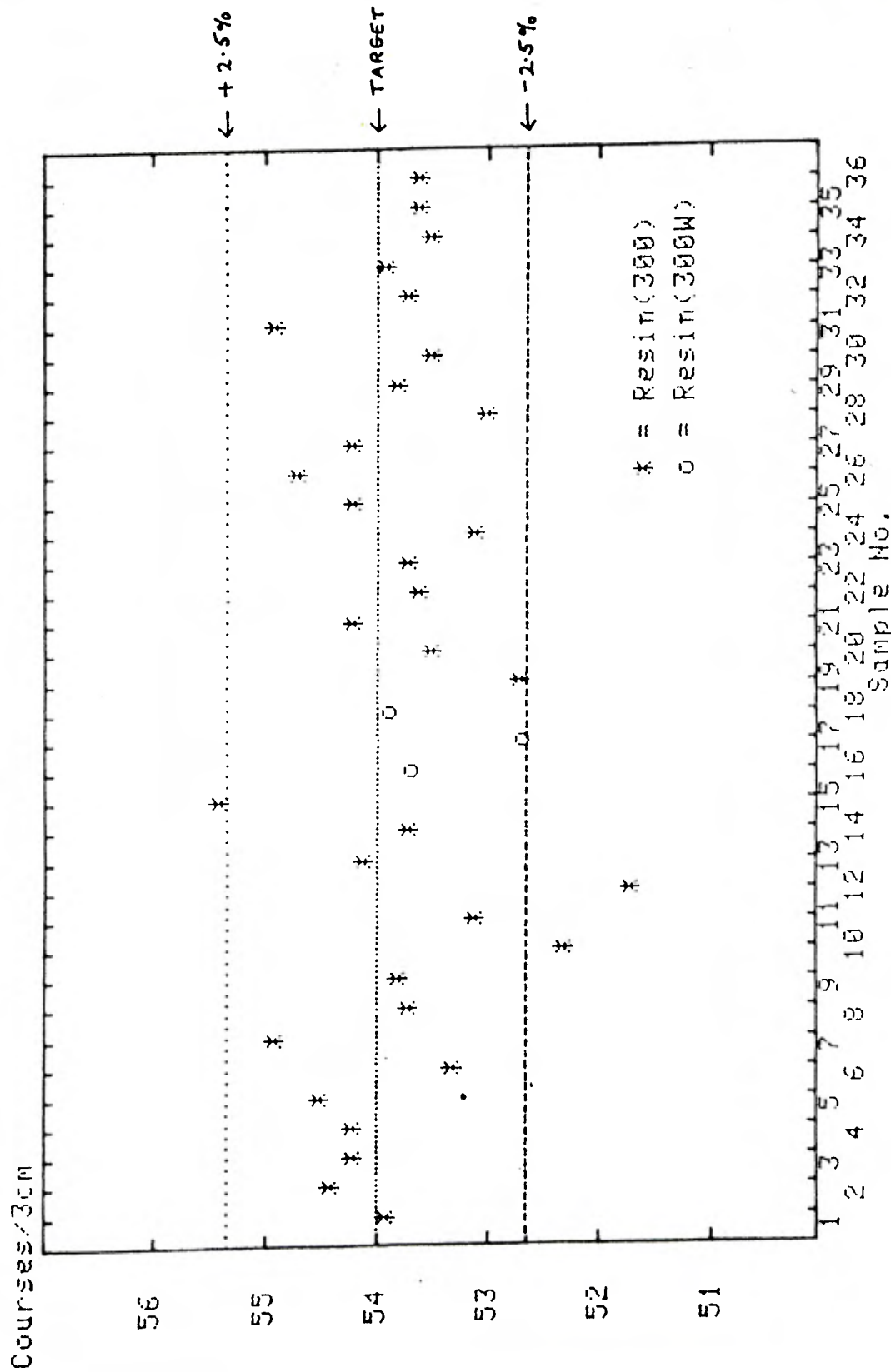
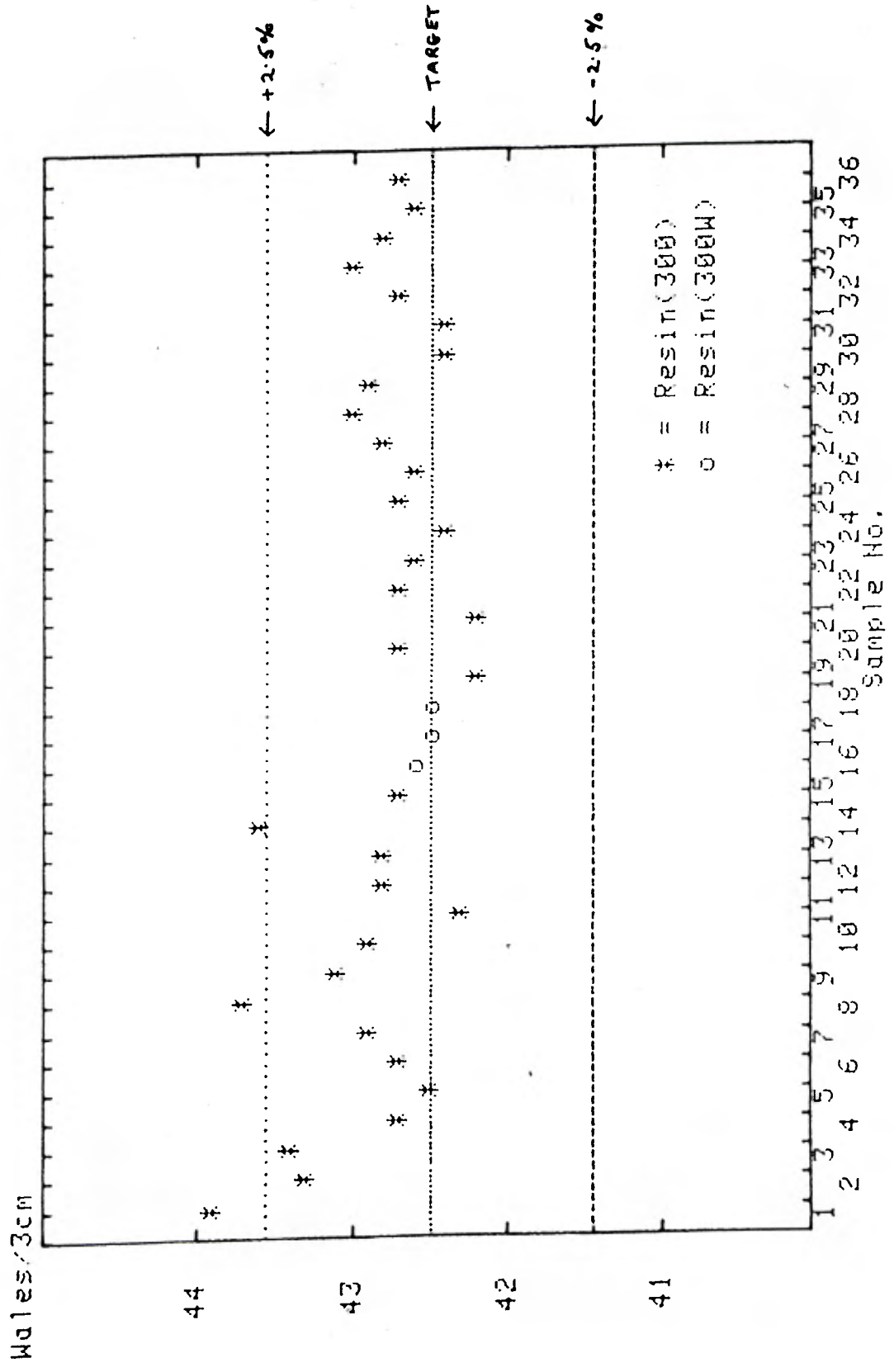
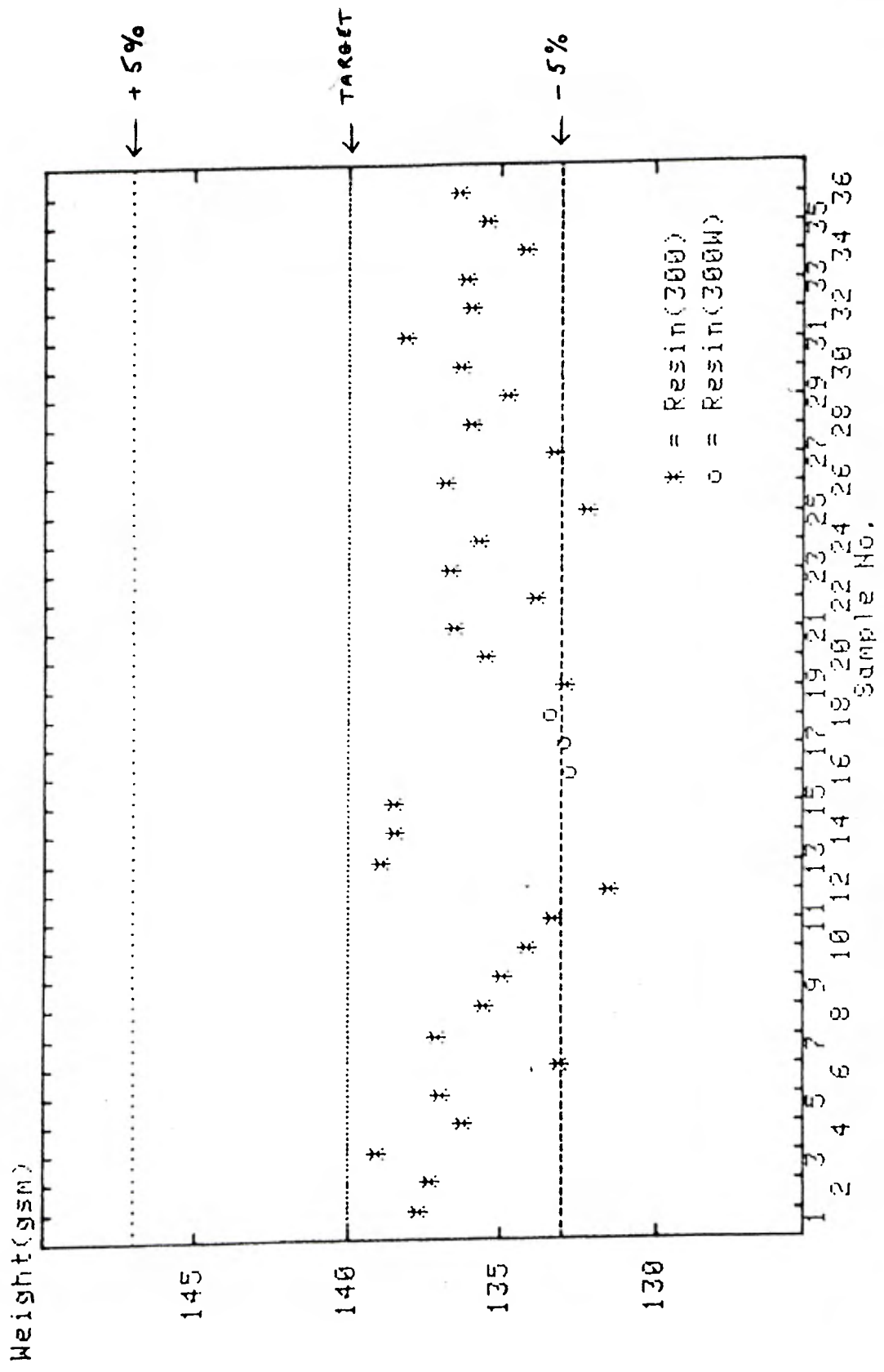


FIGURE 8

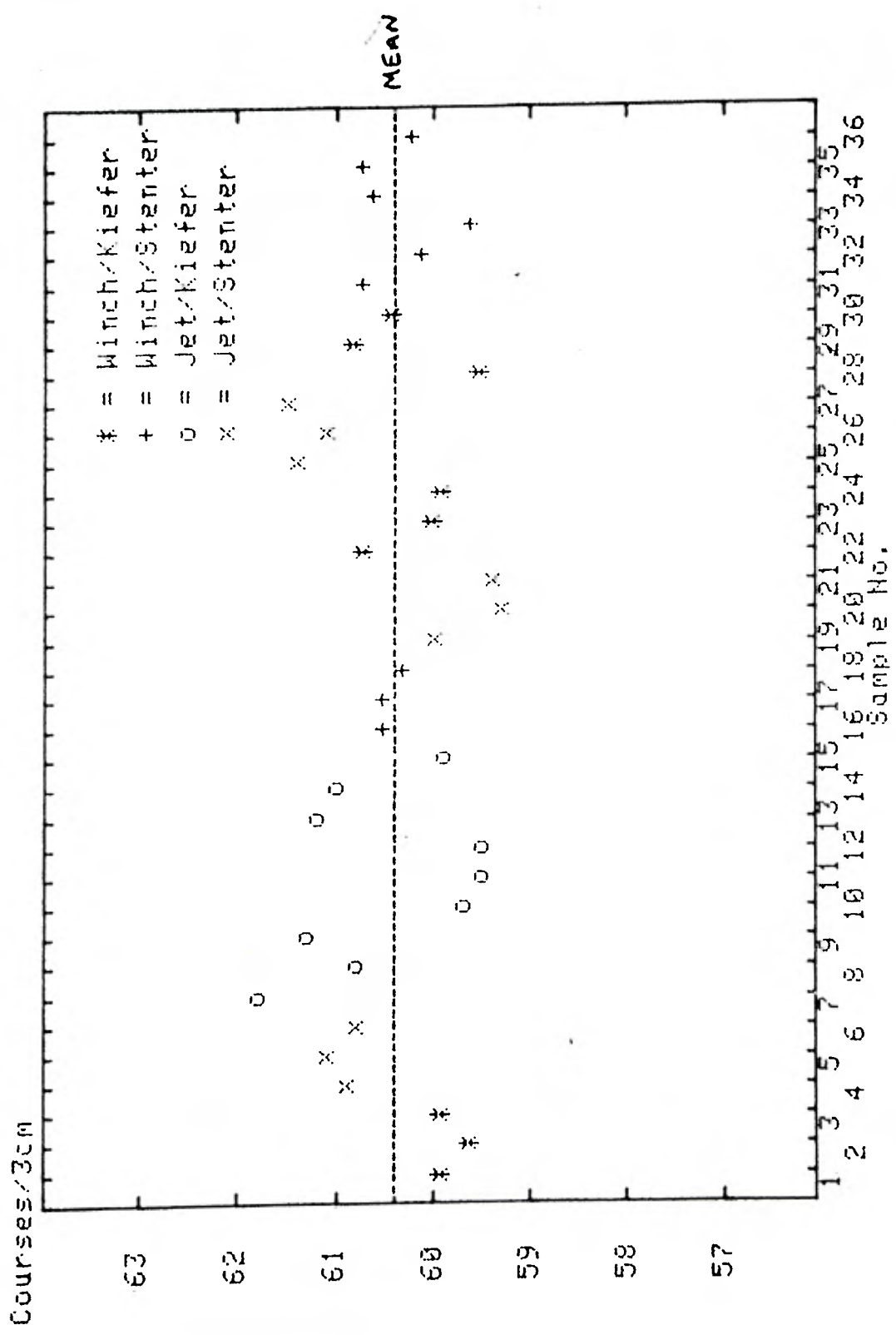
VARIATION IN WALES/3CM AS DELIVERED (DYED & RESINATED B.W.)



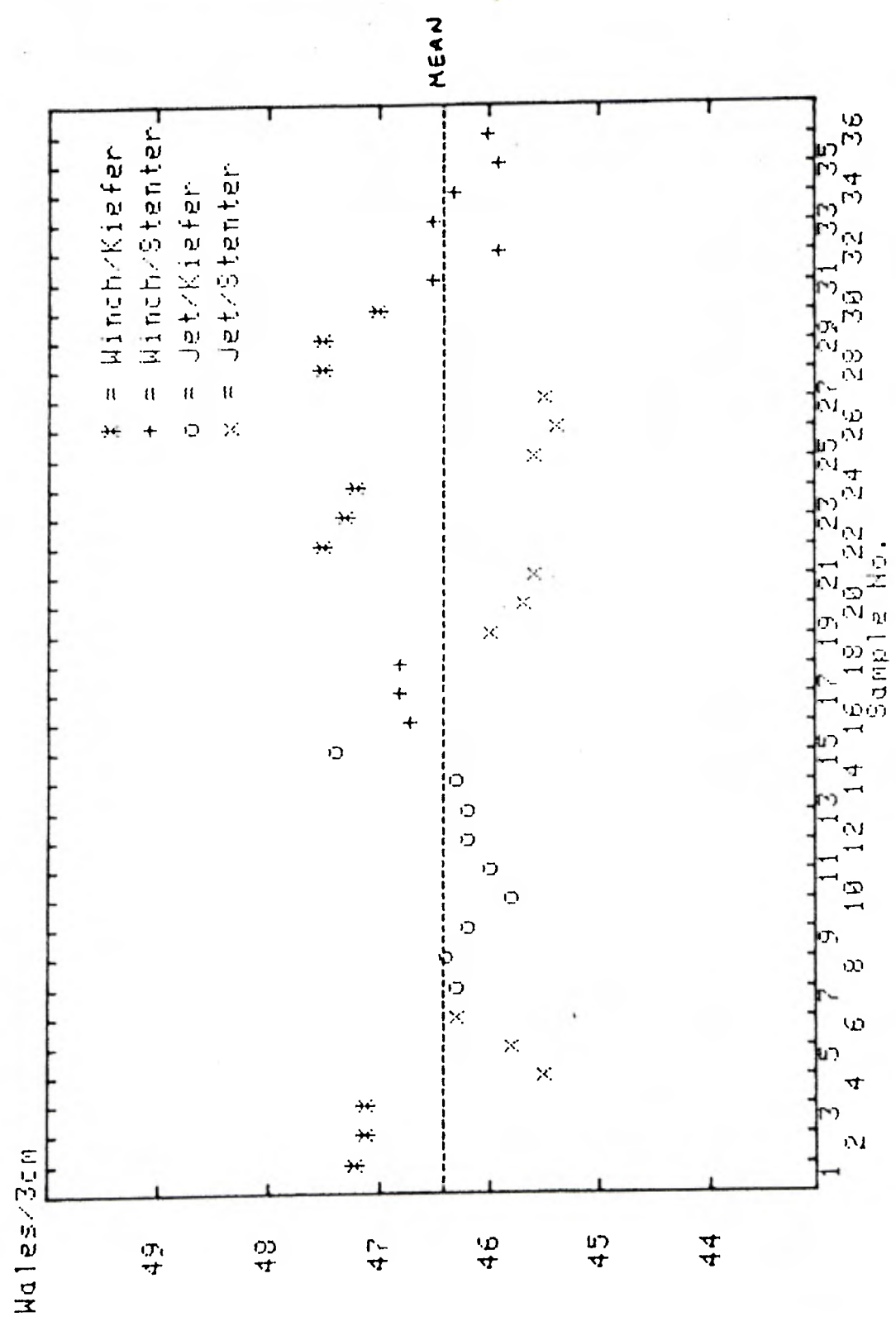
VARIATION IN WEIGHT(GSM) AS DELIVERED (DYED & RESINATED B.W.)



COURSES/3CM AFTER 5 WASHES (DYED ONLY)



WALES/3CM AFTER 5 WASHES(DYED ONLY)



WEIGHT(GSM) AFTER 5 WASHES(DYED ONLY)

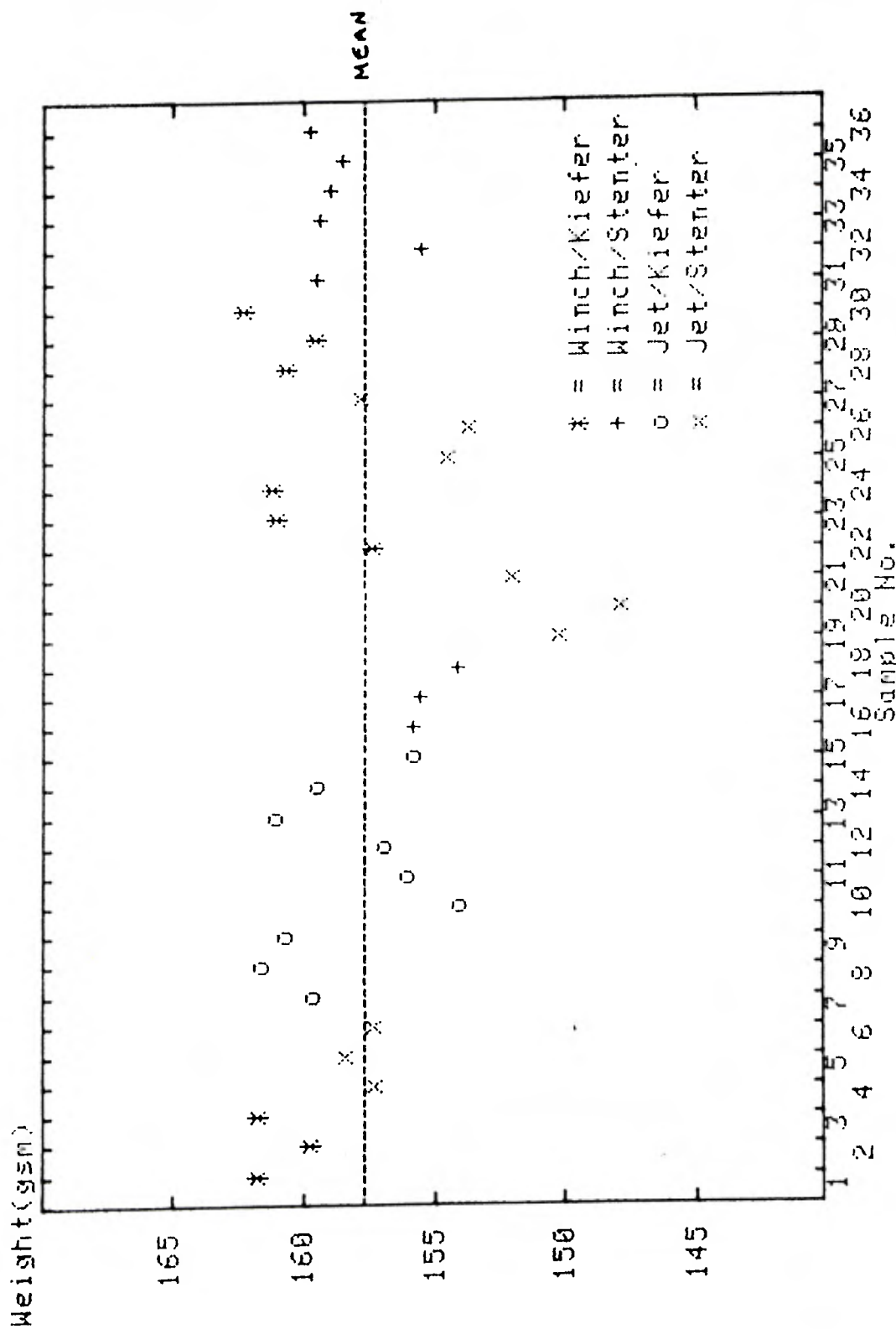
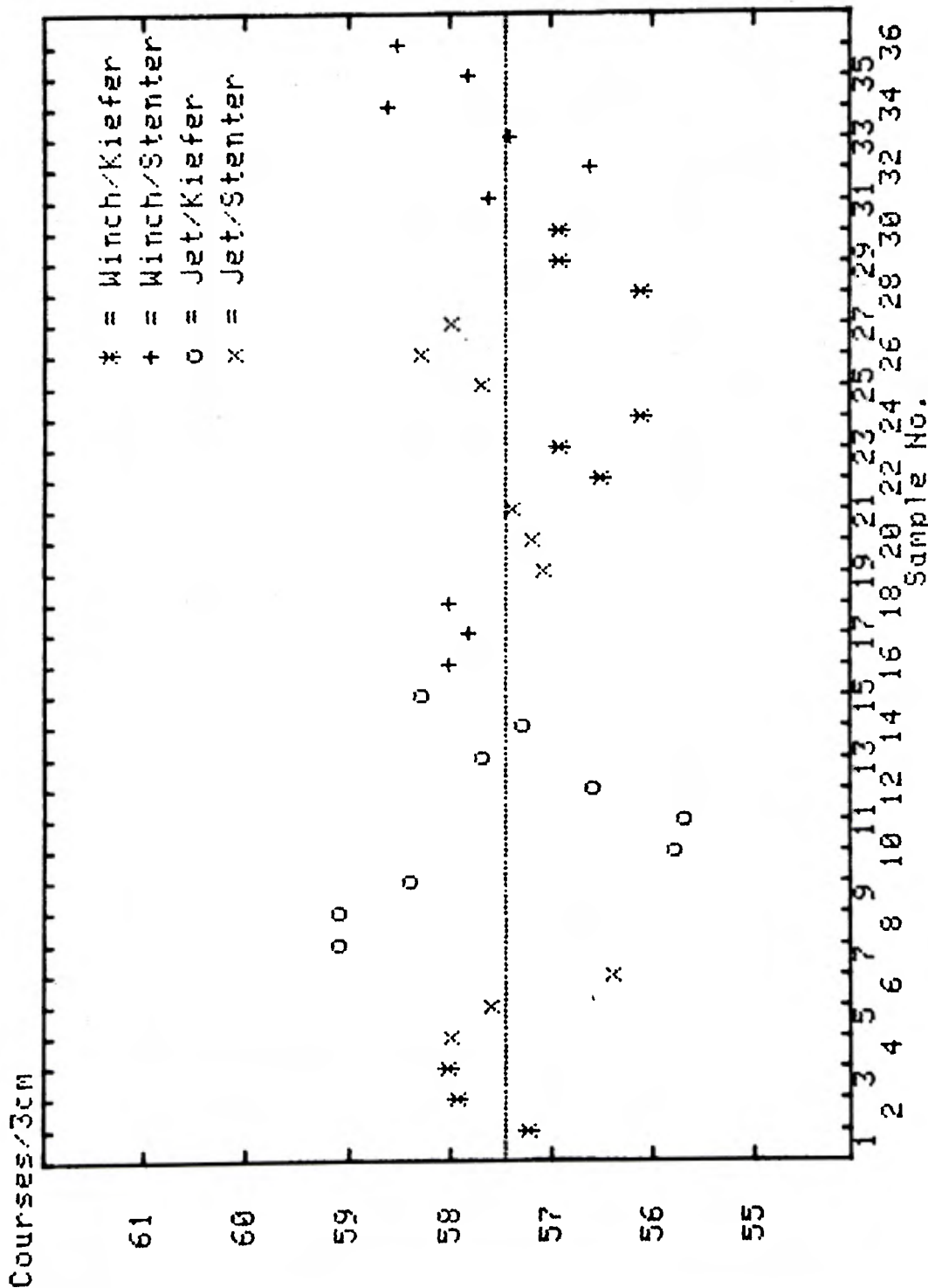


FIGURE 14

VARIATION IN COURSES/3CM AFTER 5 WASHES(DYED & RESINATED)



VARIATION IN WALES/3CM AFTER 5 WASHES(DYED & RESINATED)

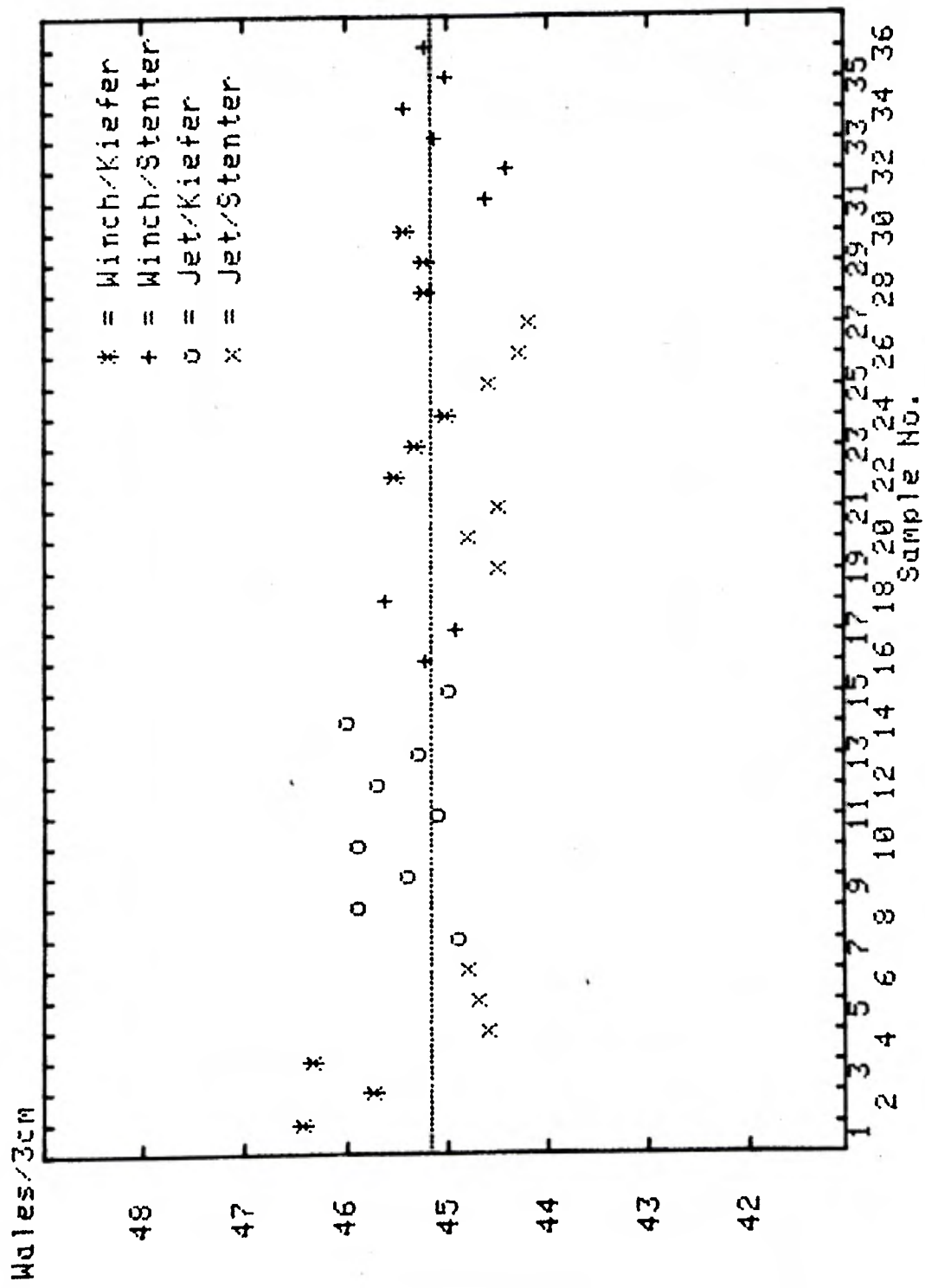


FIGURE 15

VARIATION IN WEIGHT(GSM) AFTER 5 WASHES(DYED & RESINATED)

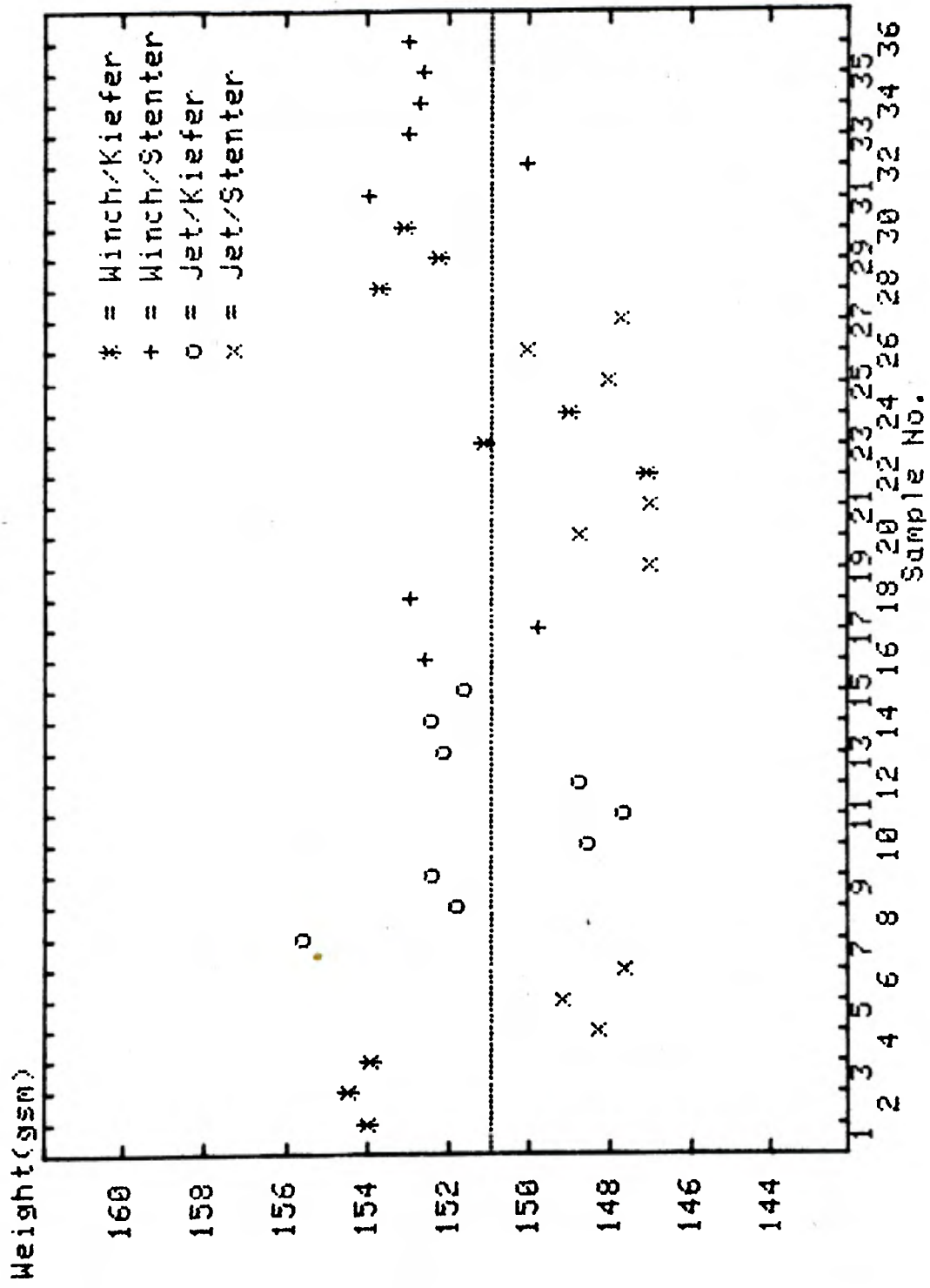


FIGURE 16

VARIATION IN COURSES/3CM AFTER 5 WASHES(DYED & RESINATED)

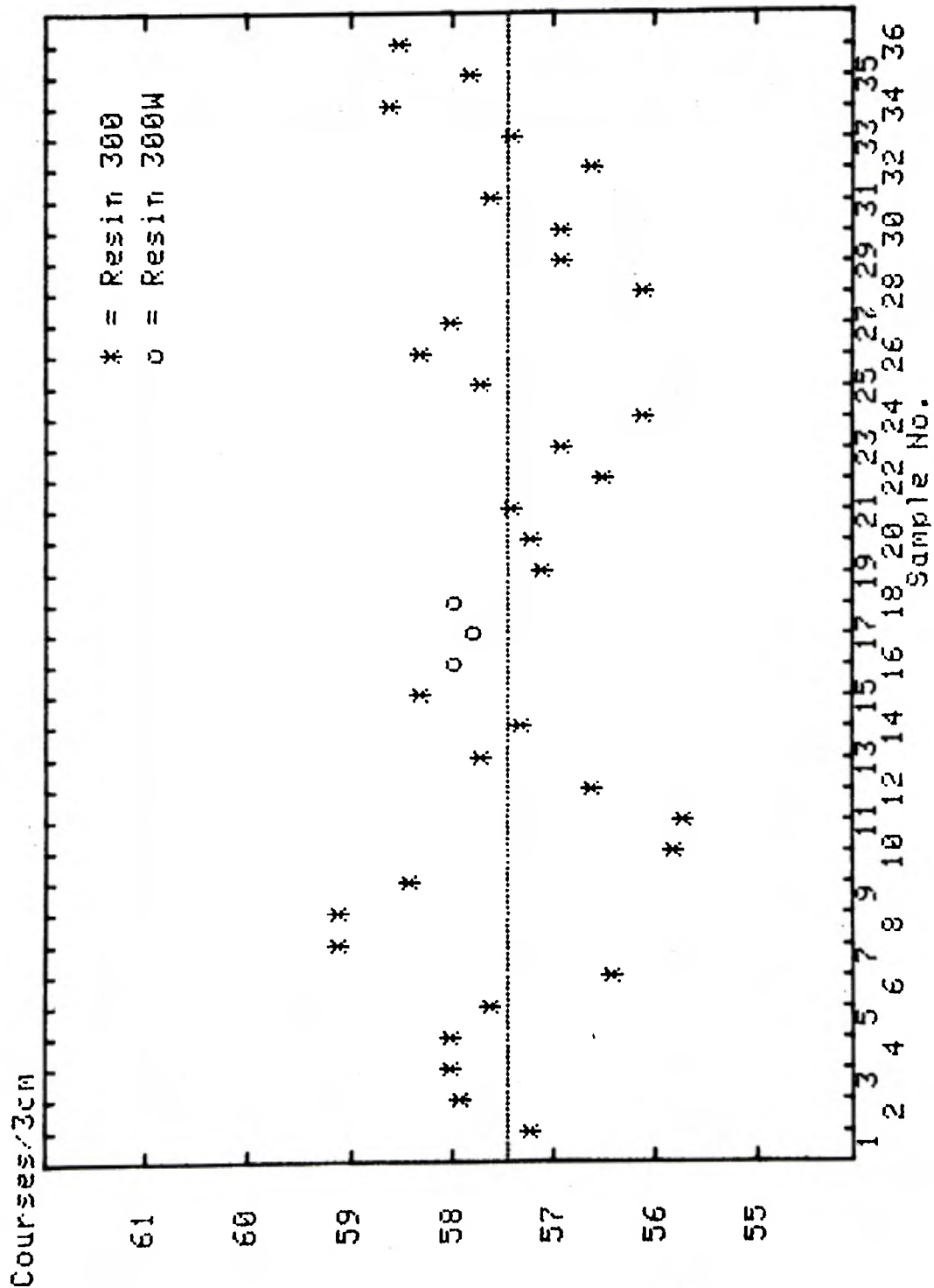


FIGURE 17

VARIATION IN WALES/3CM AFTER 5 WASHES(DYED & RESINATED)

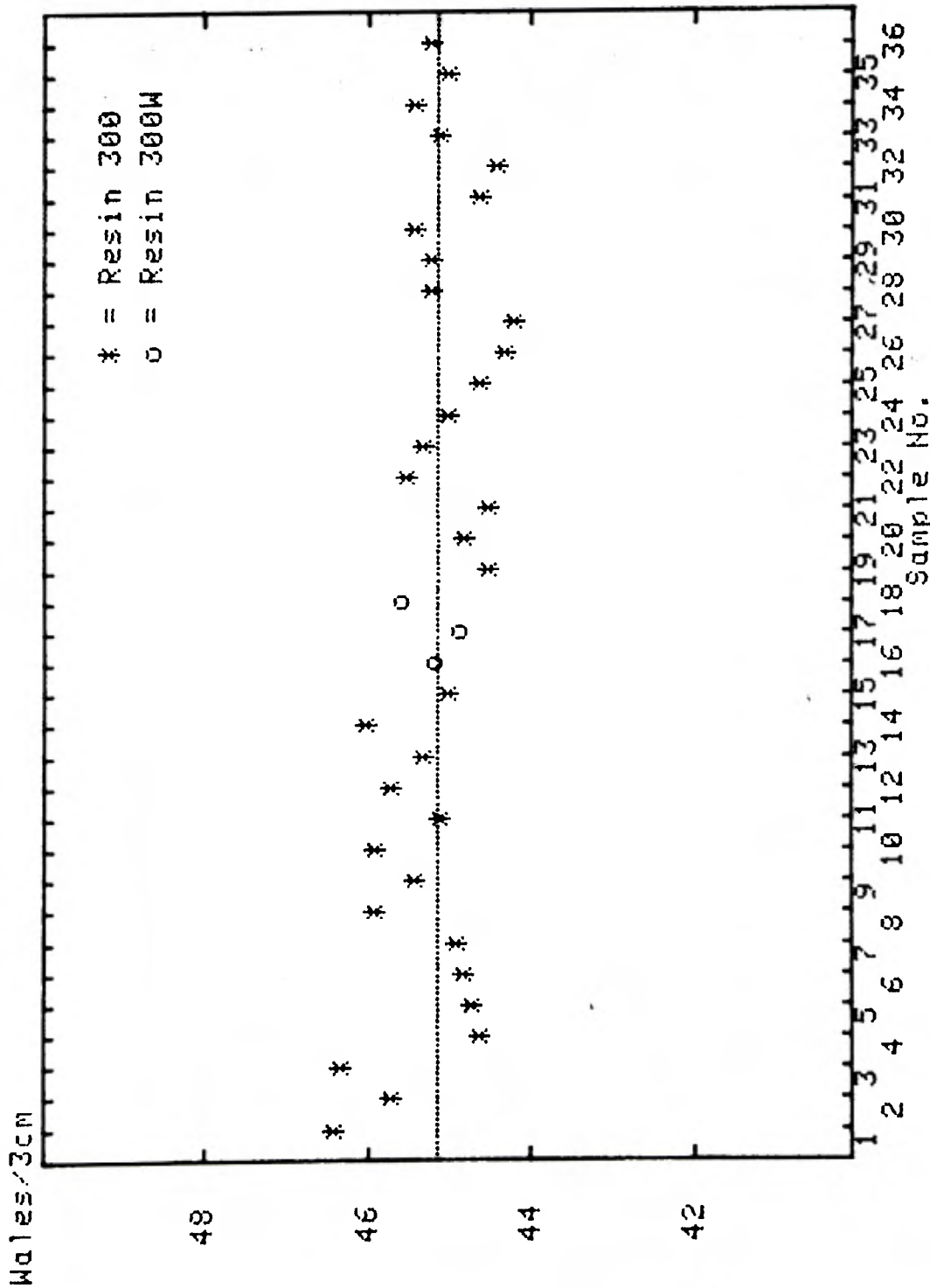


FIGURE 18

VARIATION IN WEIGHT(GSM) AFTER 5 WASHES(DYED & RESINATED)

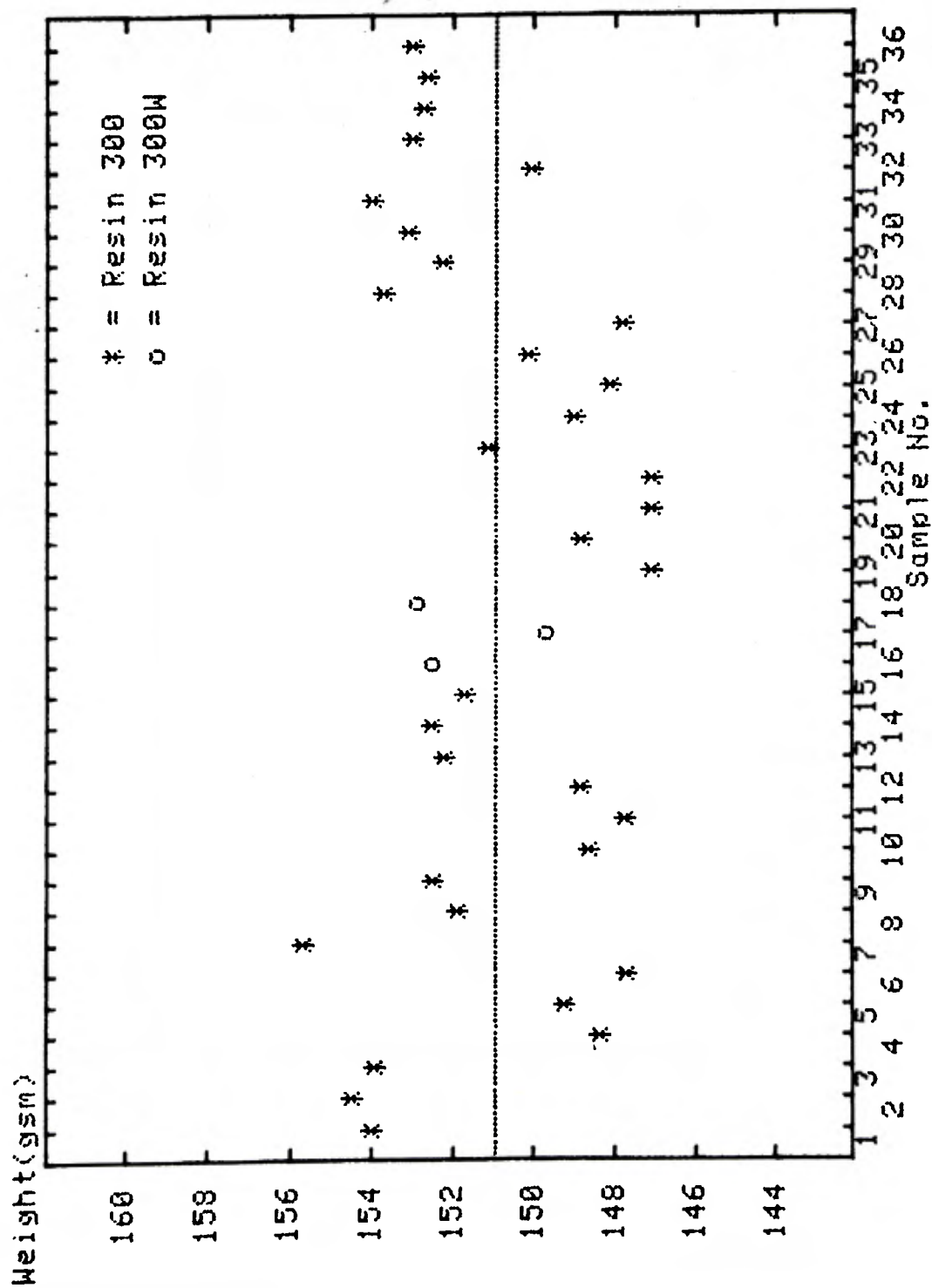


FIGURE 19

% LENGTH SHRINKAGE AFTER 1 WASH (DYED ONLY)

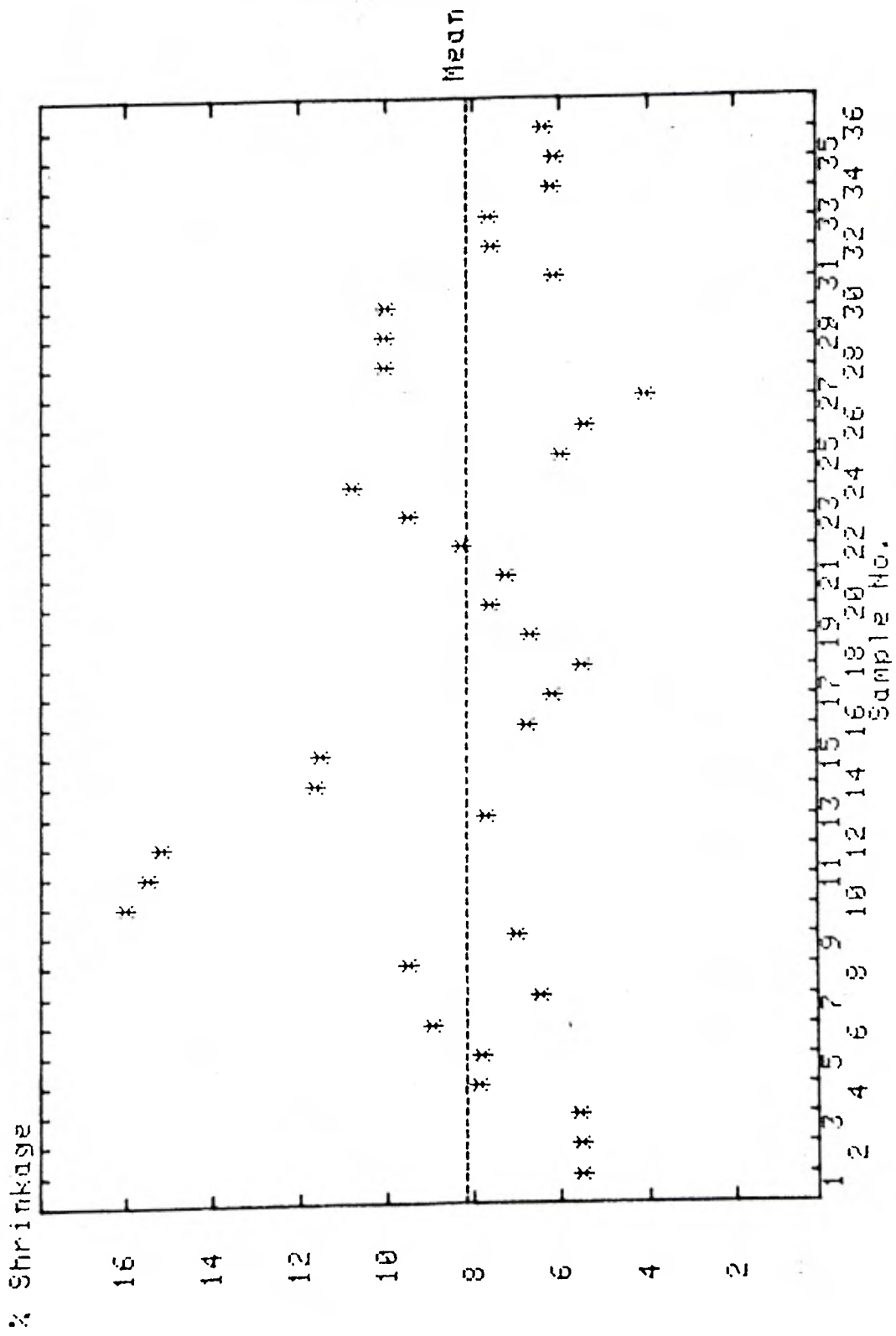
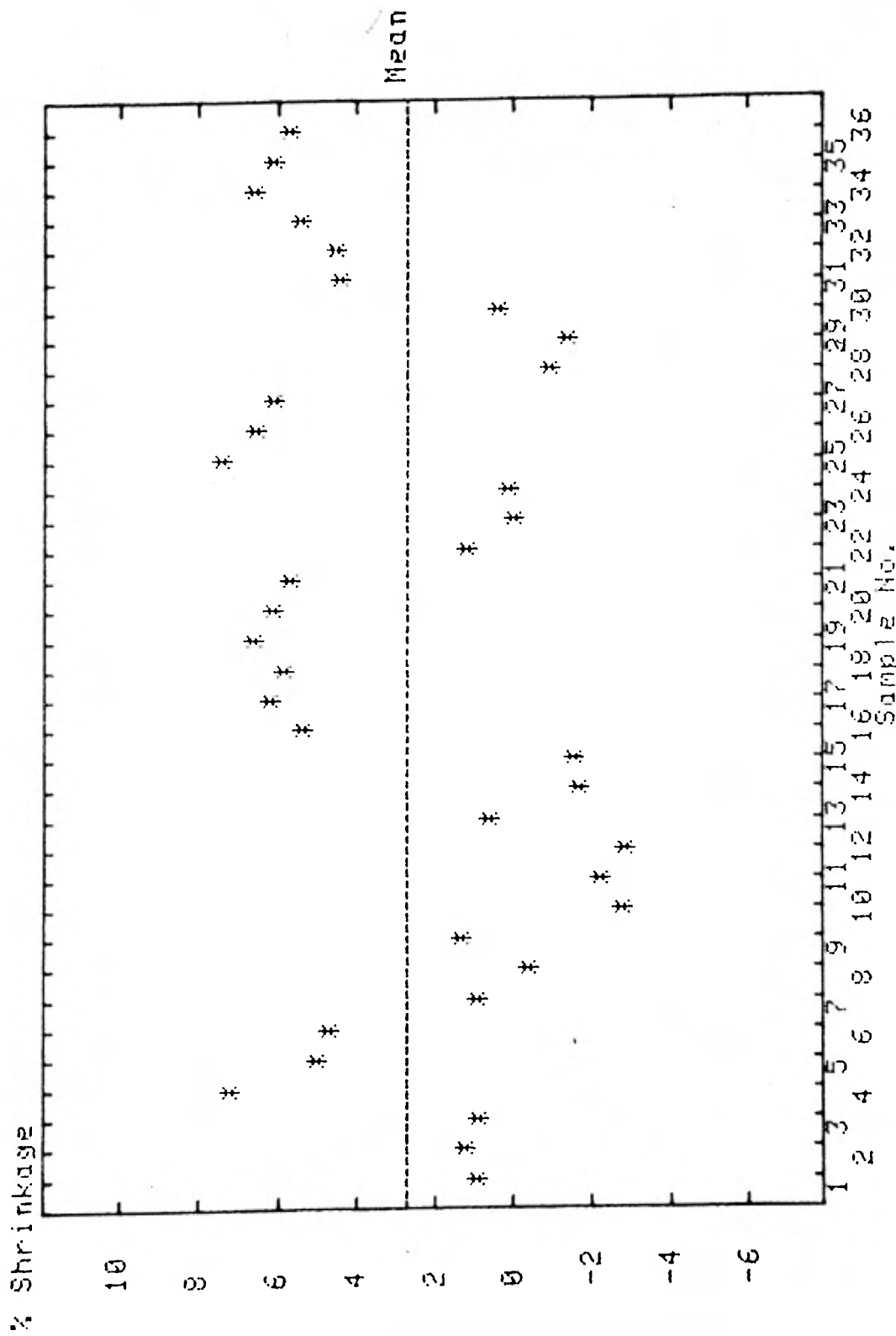
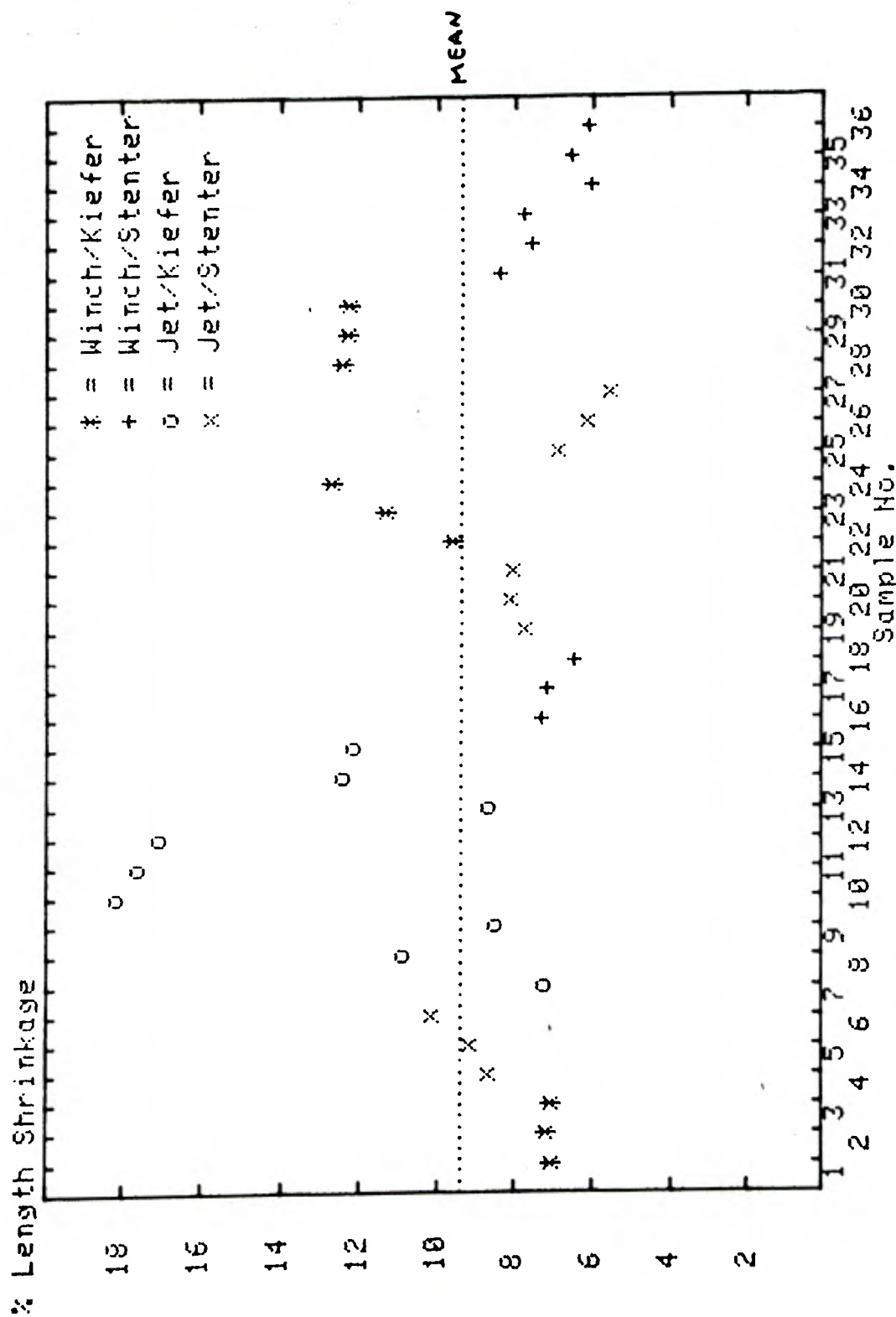


FIGURE 20

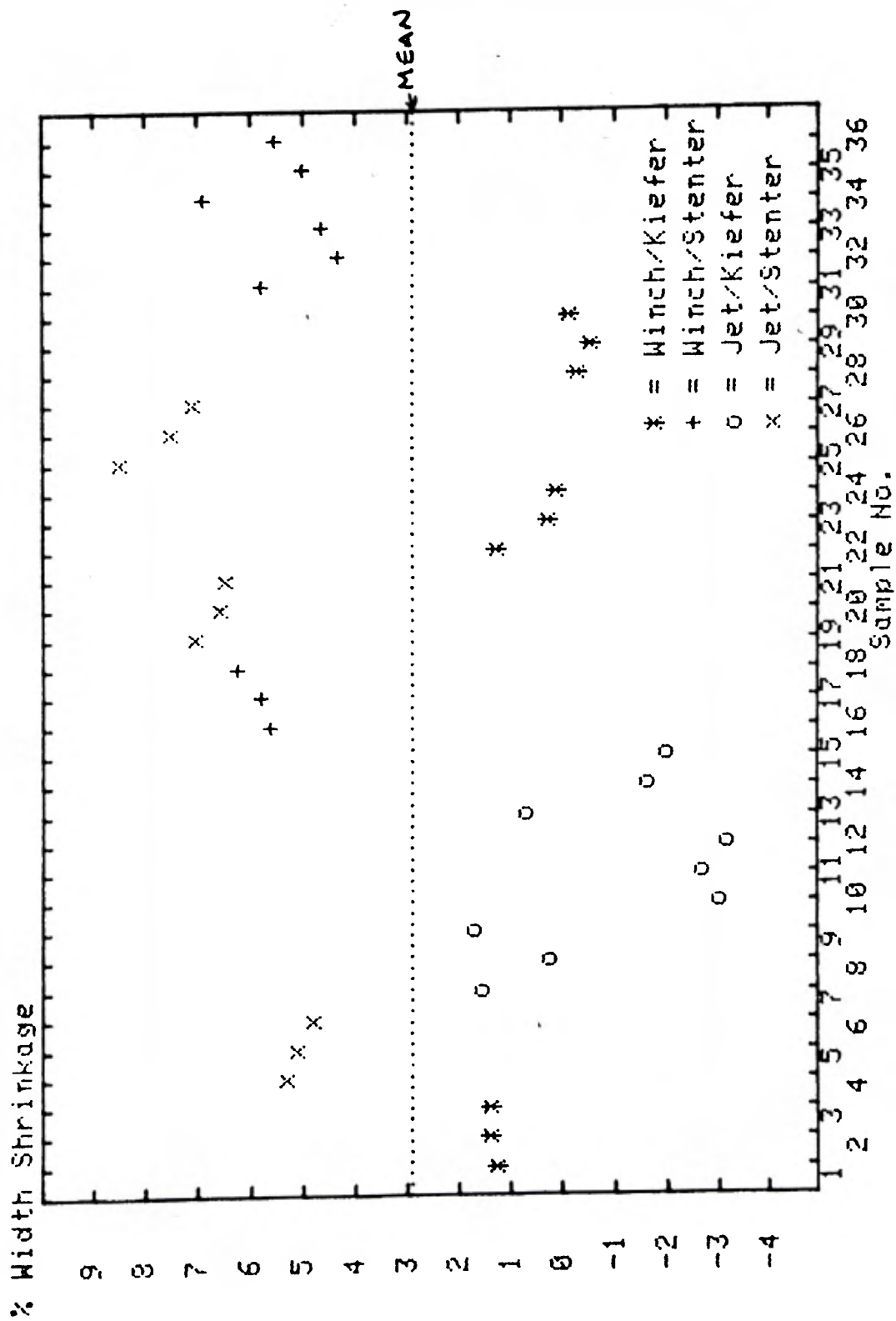
% WIDTH SHRINKAGE AFTER 1 WASH (DYED ONLY)



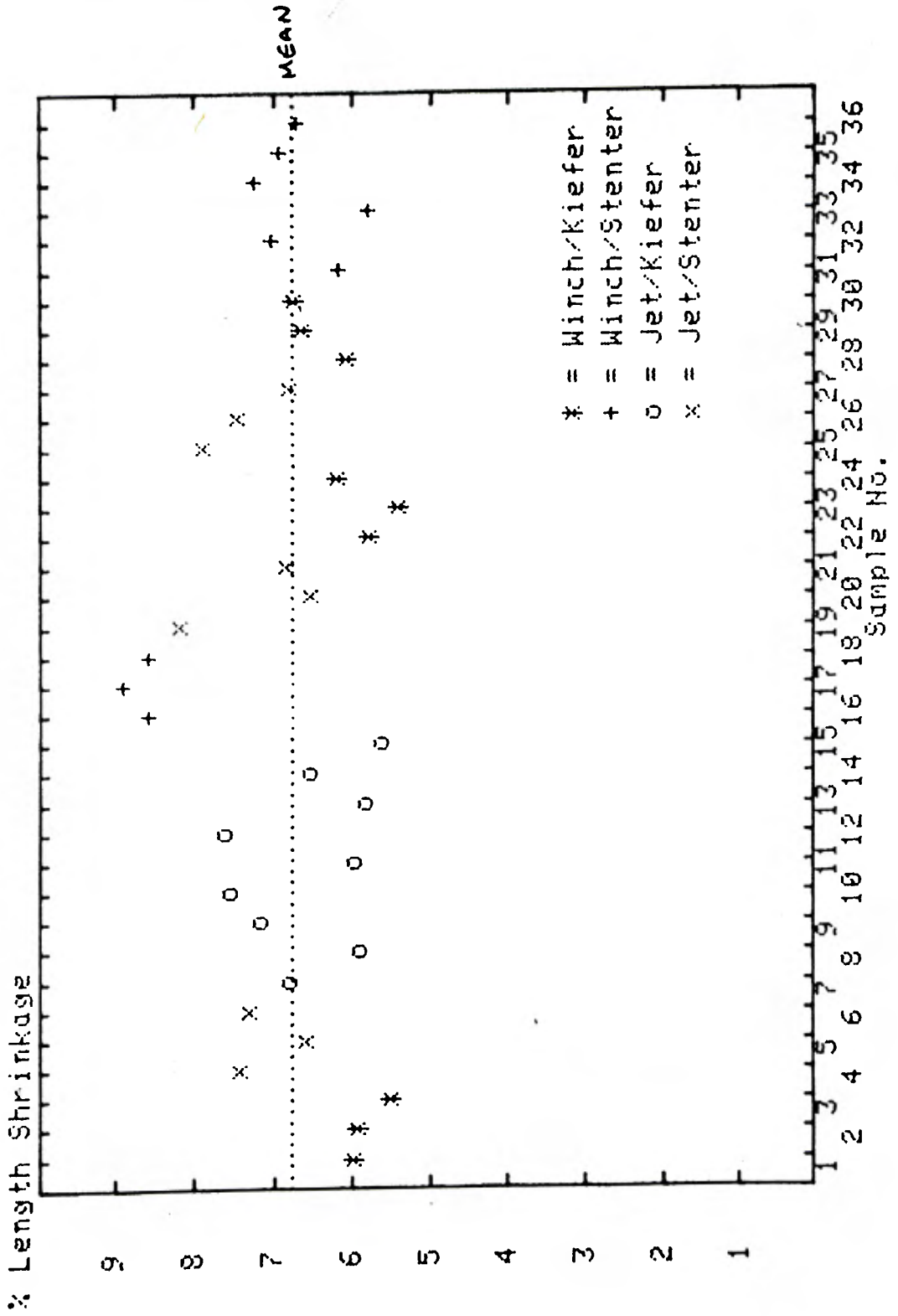
% LENGTH SHRINKAGE AFTER 5 WASHES (DYED ONLY)



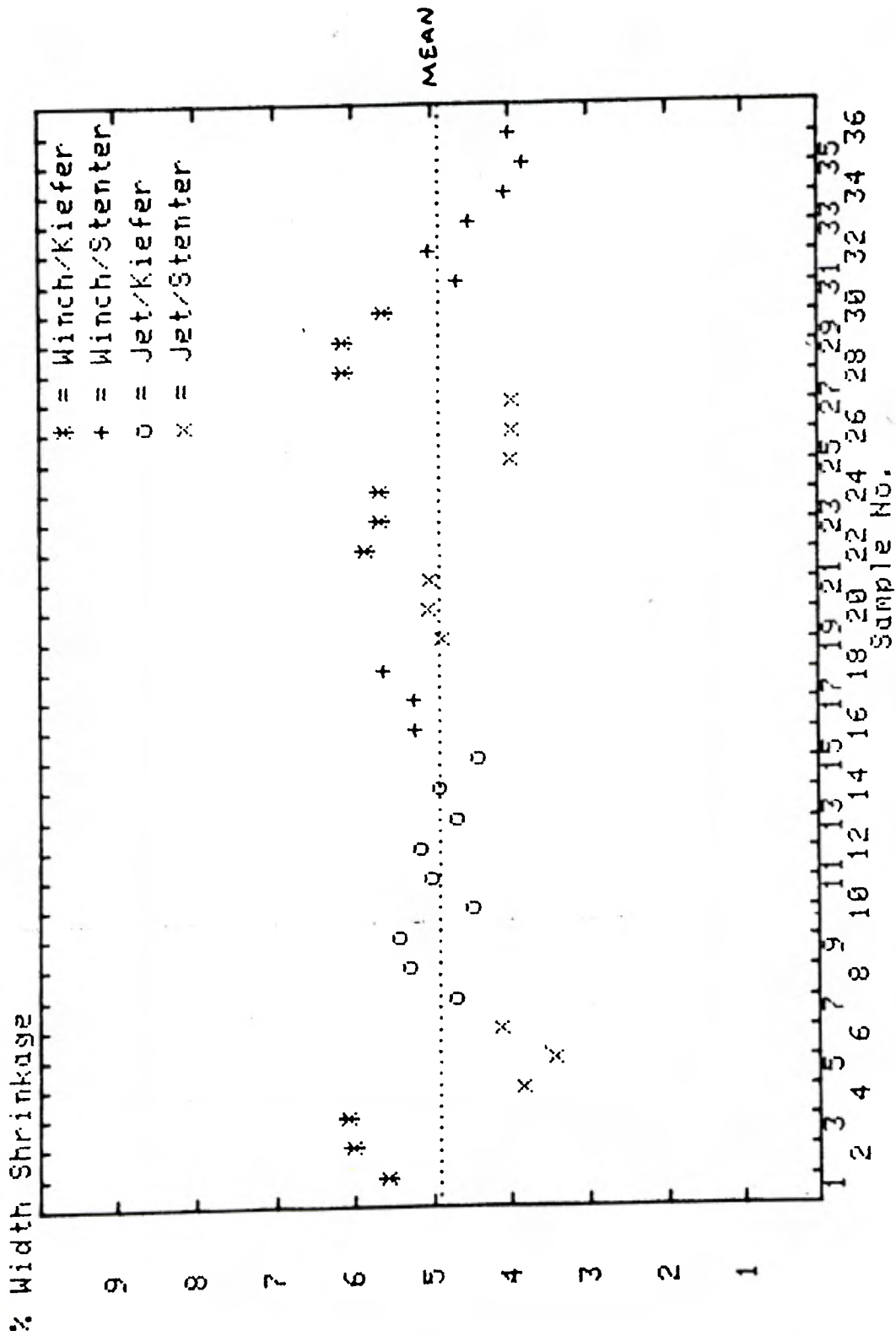
% WIDTH SHRINKAGE AFTER 5 WASHES (DYED ONLY)



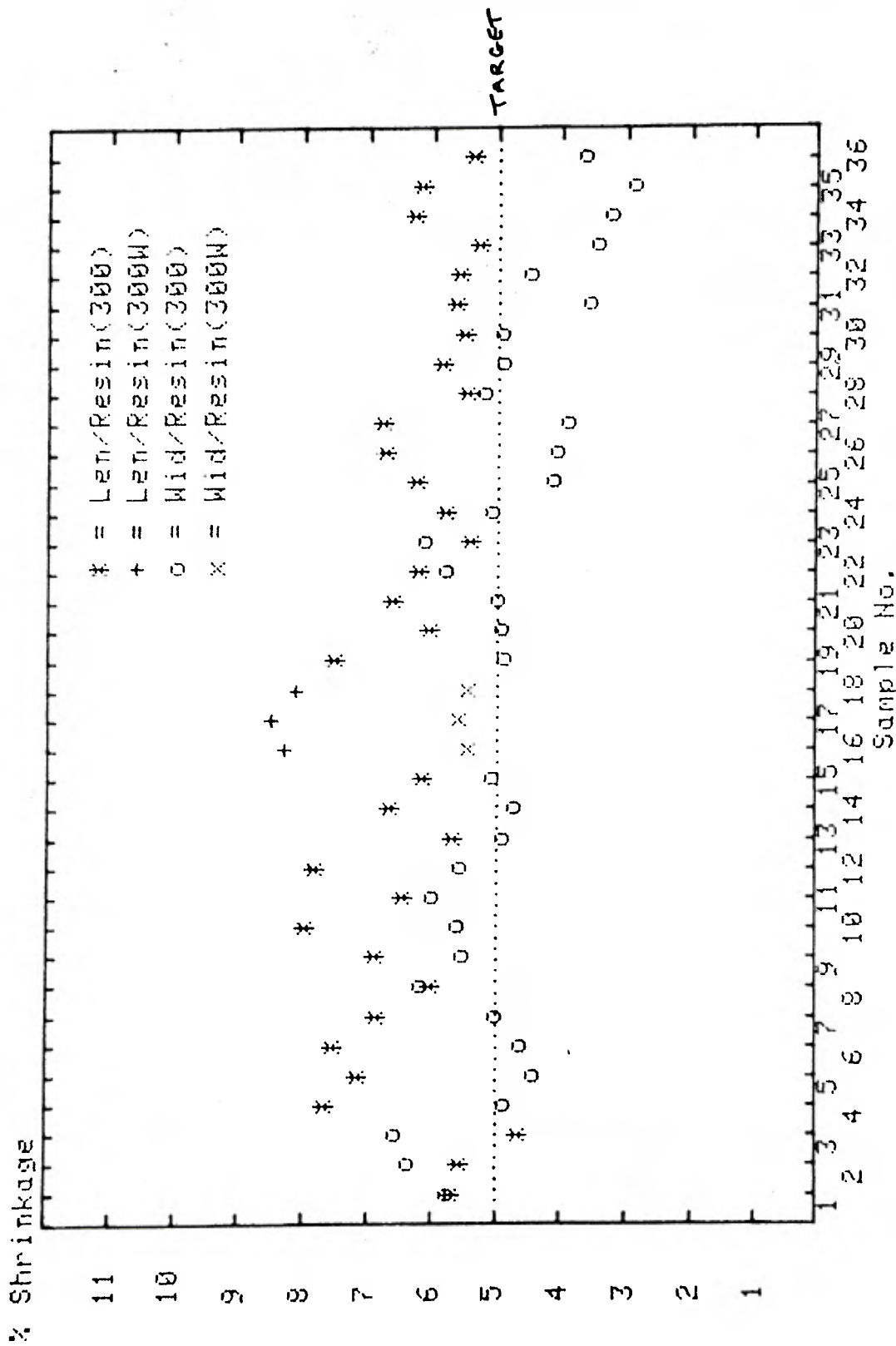
% LENGTH SHRINKAGE AFTER 5 WASHES (DYED & RESINATED)



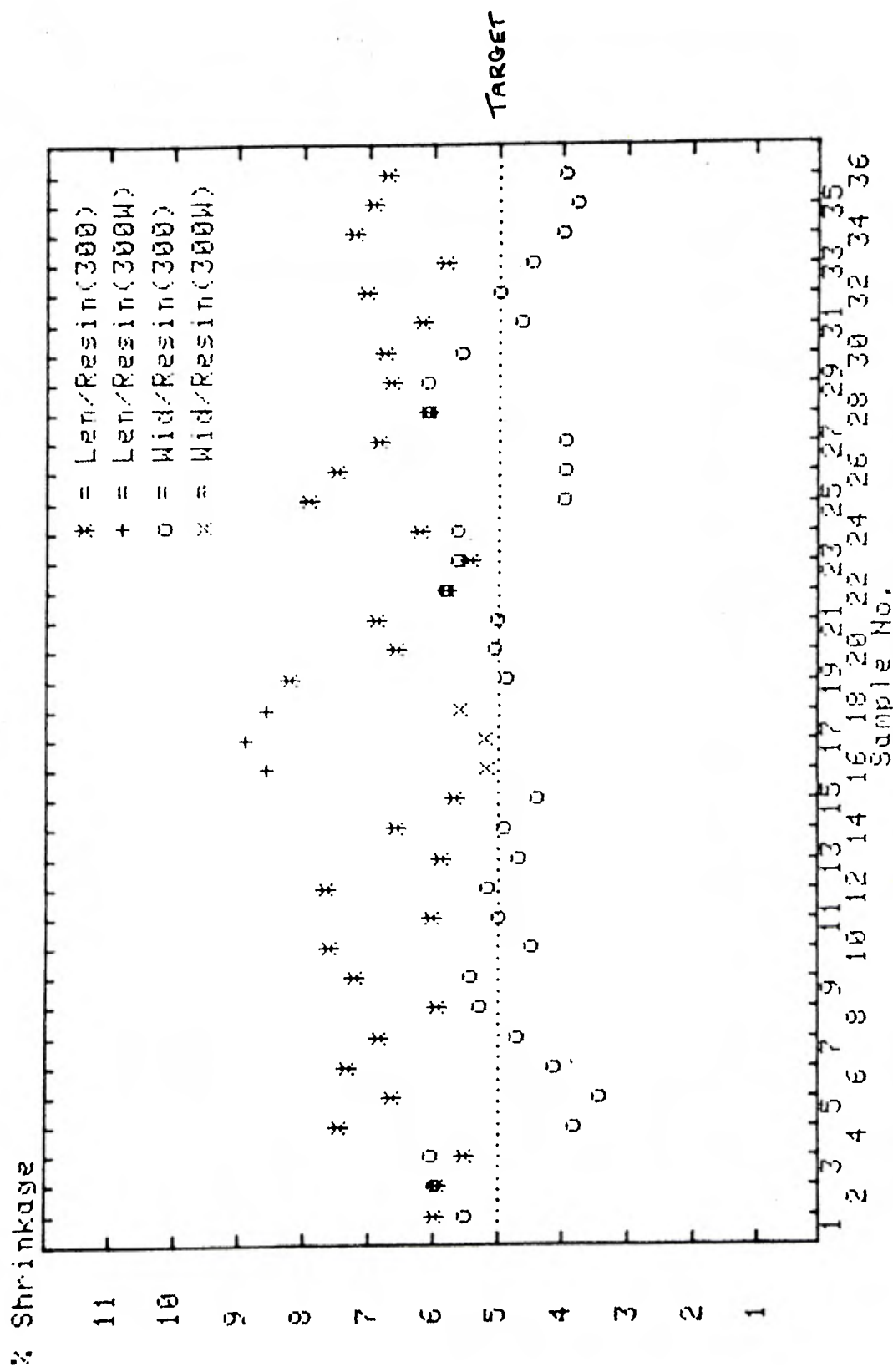
< WIDTH SHRINKAGE AFTER 5 WASHES (DYED & RESINATED)



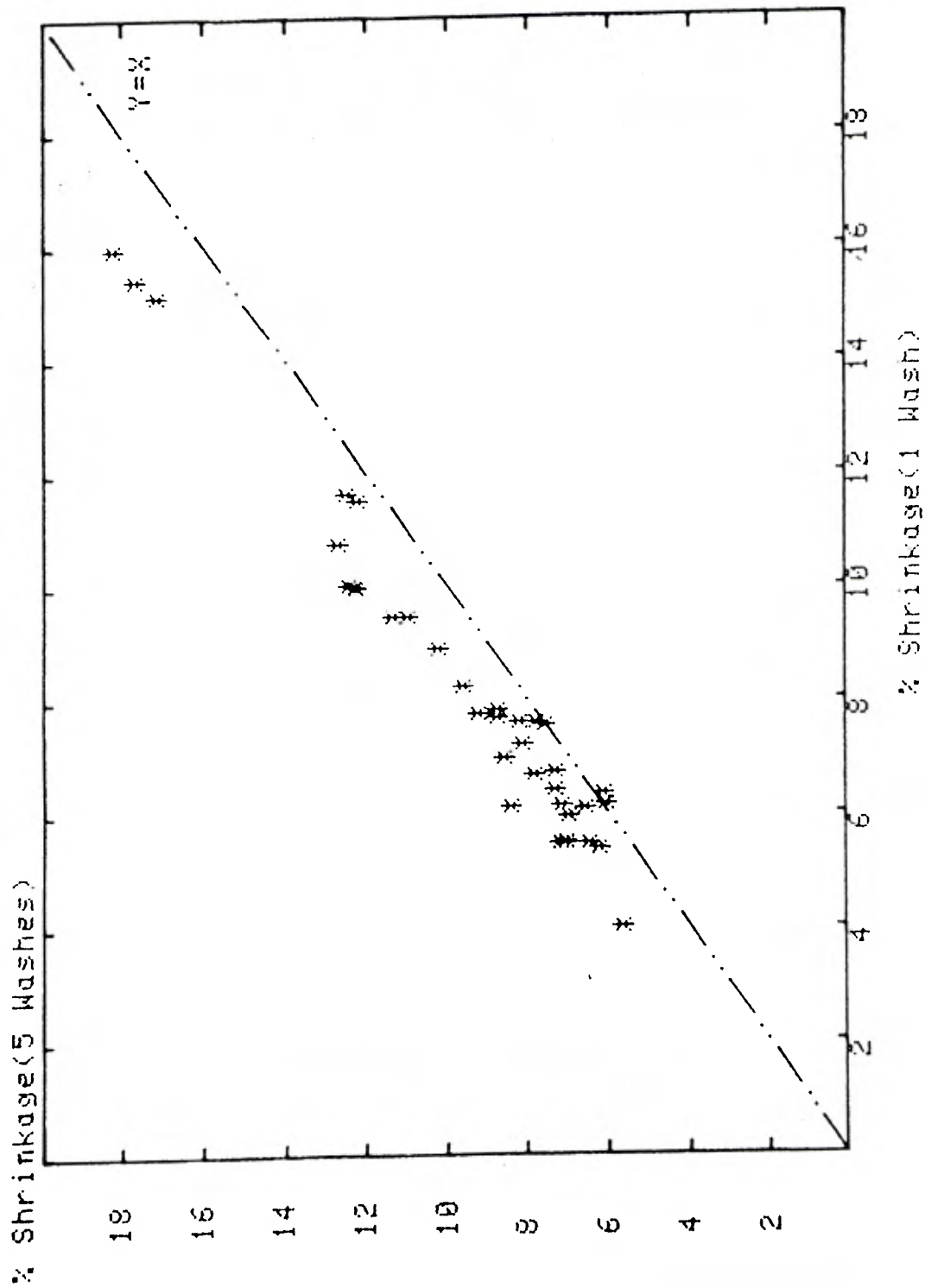
< RESINATED & DRYED TUMBLE 1 WASH AFTER SHRINKAGE % >

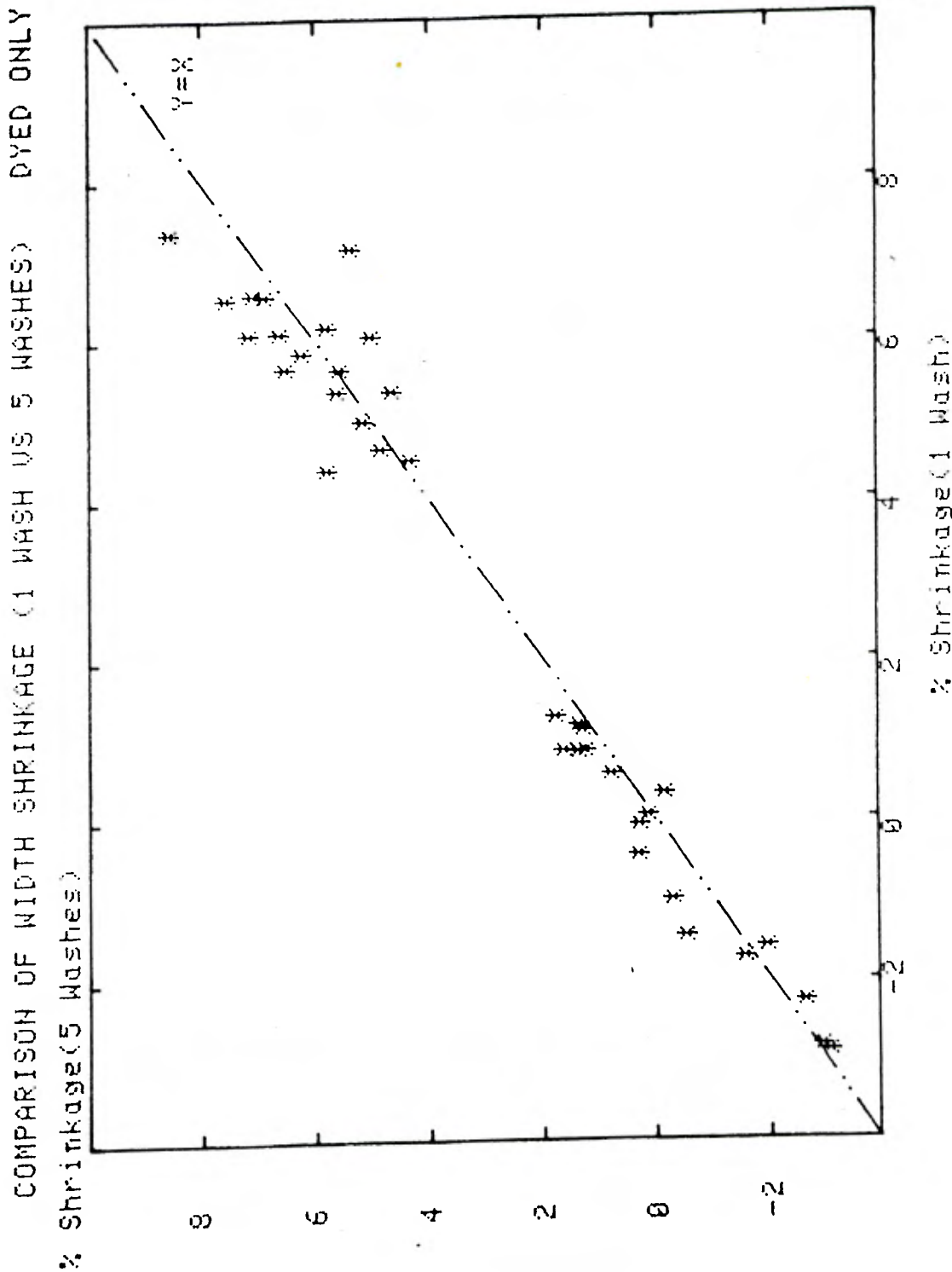


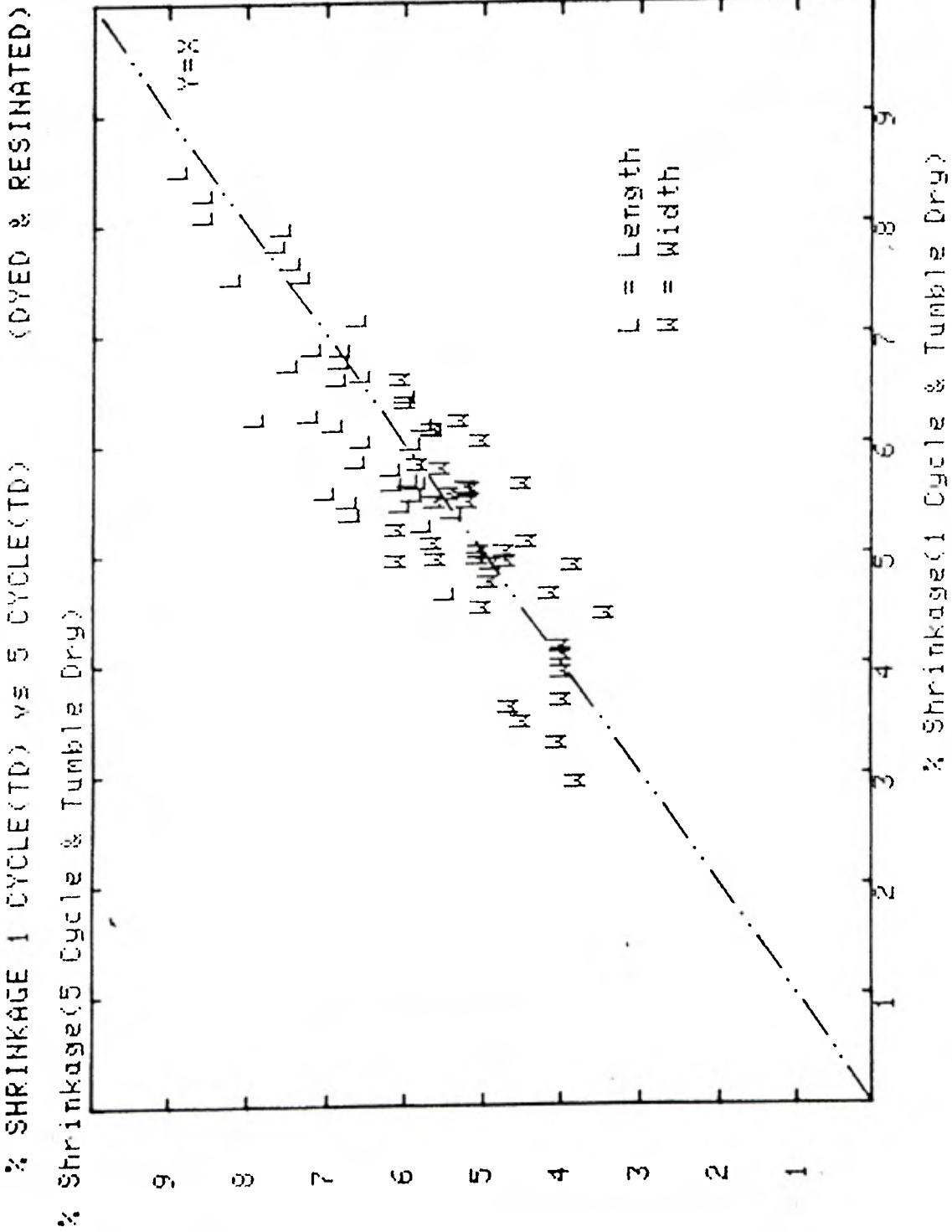
% SHRINKAGE AFTER 5 CYCLE REFERENCE RELAXATION(DYED & RESINATED)



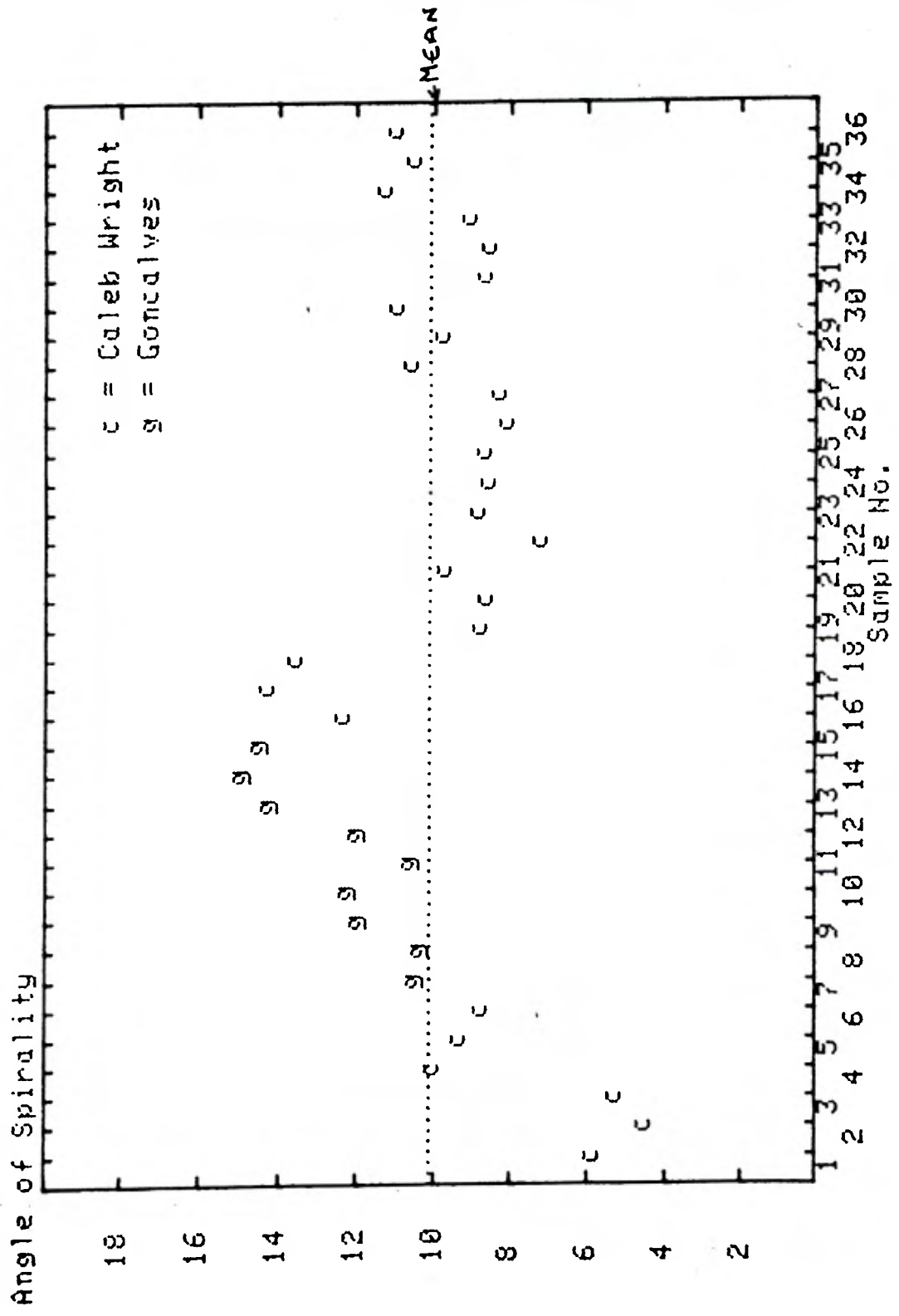
COMPARISON OF LENGTH SHRINKAGE (1 WASH VS 5 WASHES) DYED ONLY



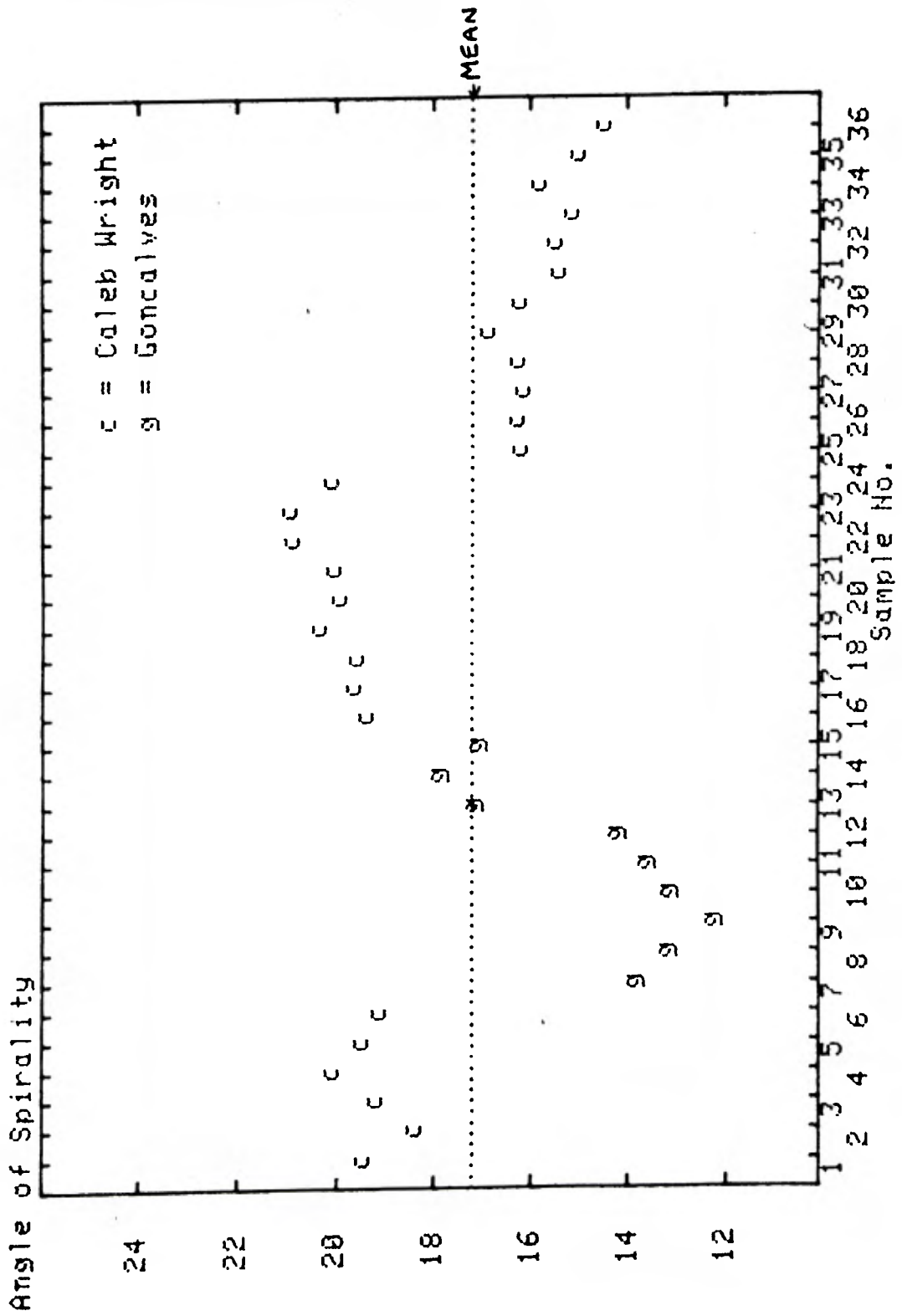




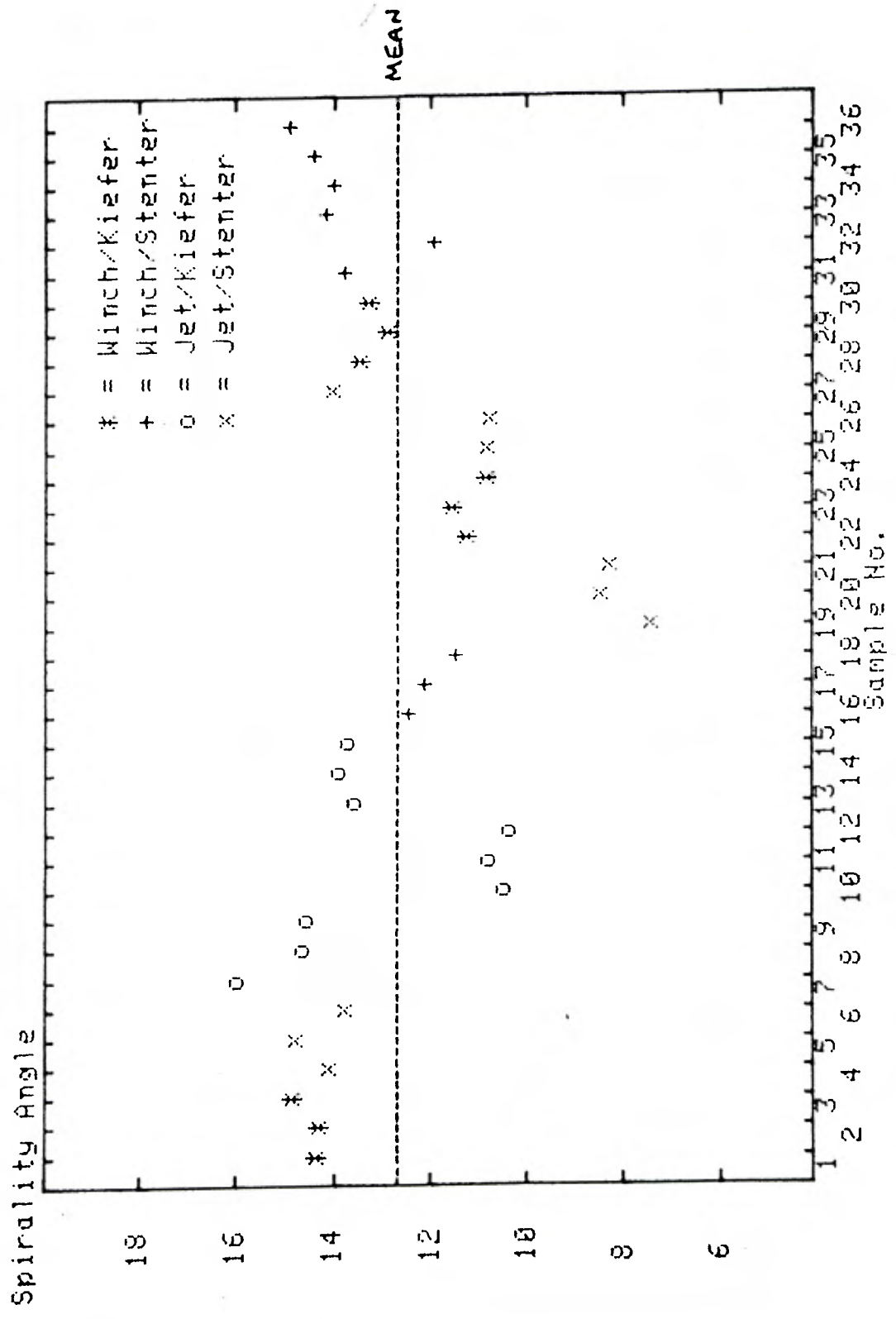
ANGLE OF SPIRALITY BEFORE WASH (GREY)



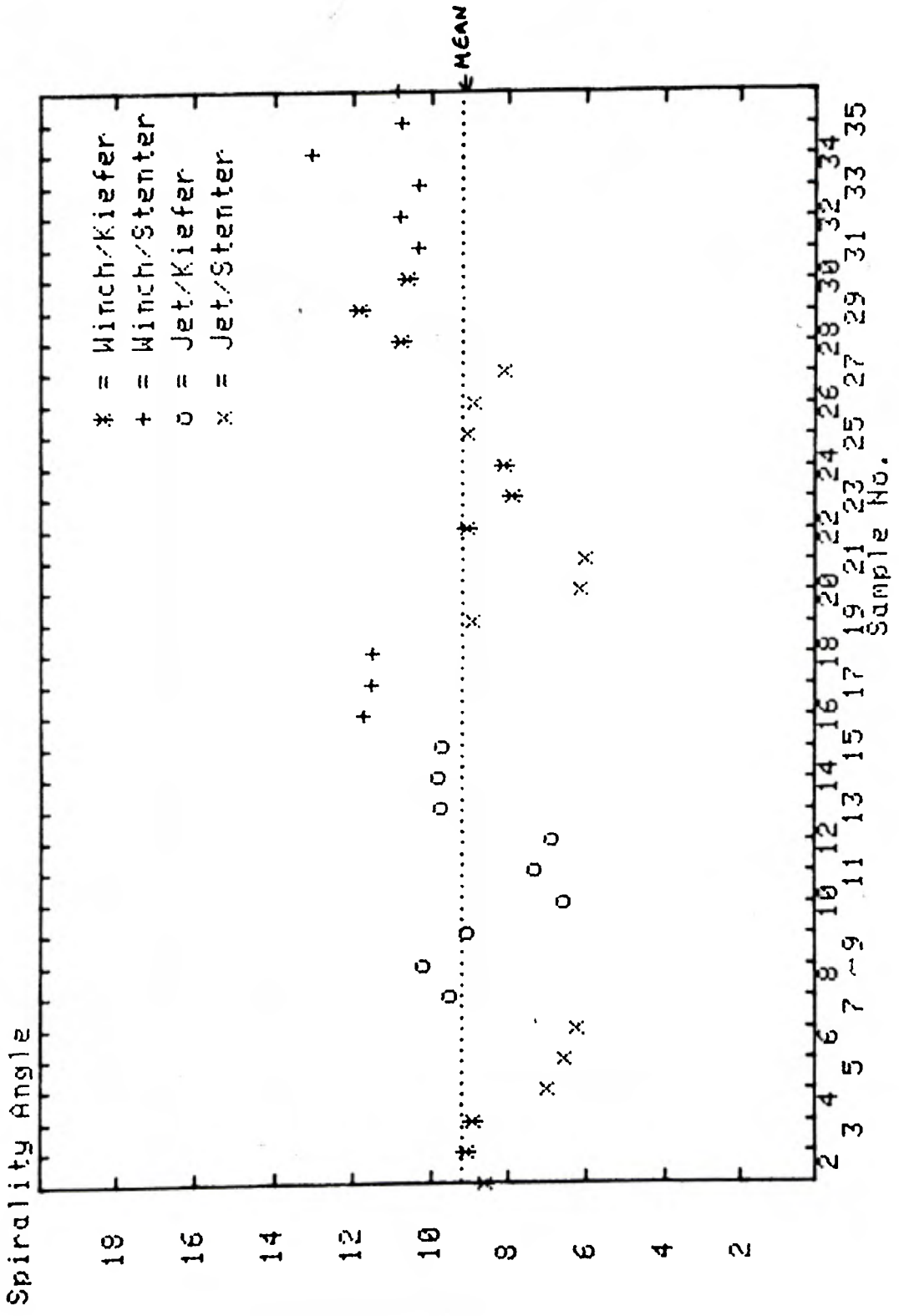
ANGLE OF SPIRALITY AFTER 5 WASHES (GREY)



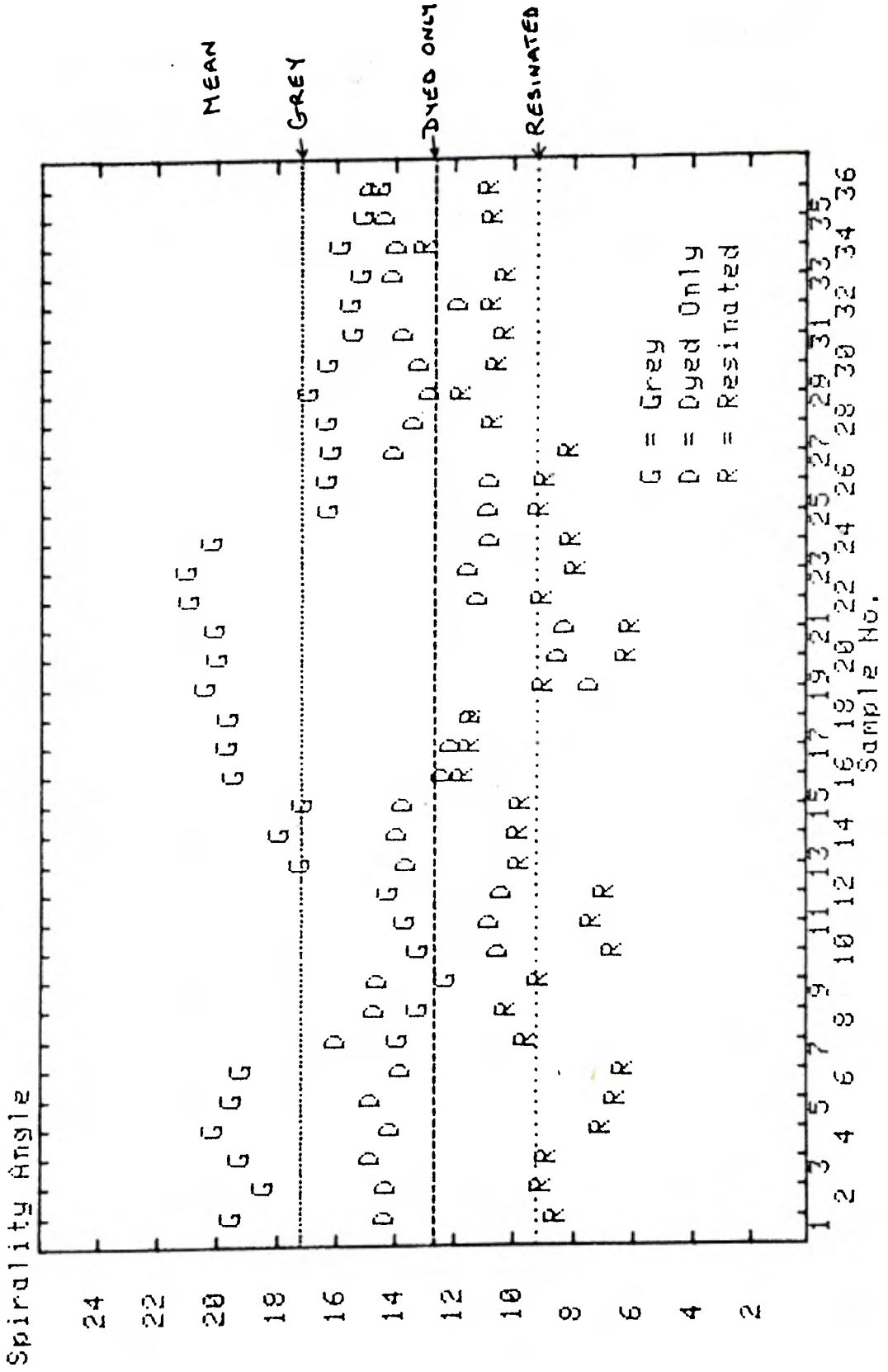
ANGLE OF SPIRALITY AFTER 5 WASHES (DYED ONLY)



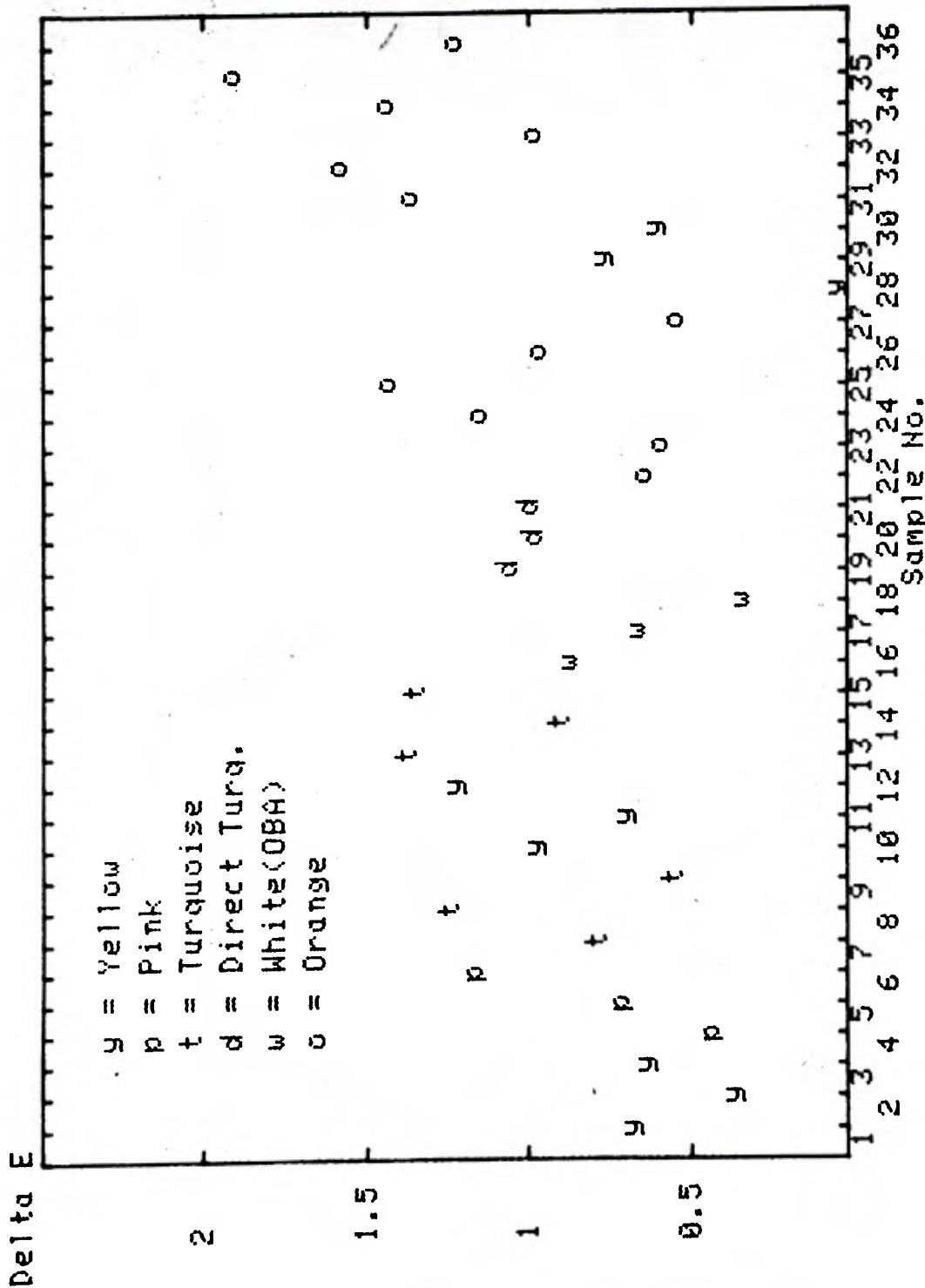
ANGLE OF SPIRALITY AFTER 5 WASHES (DYED & RESINATED)



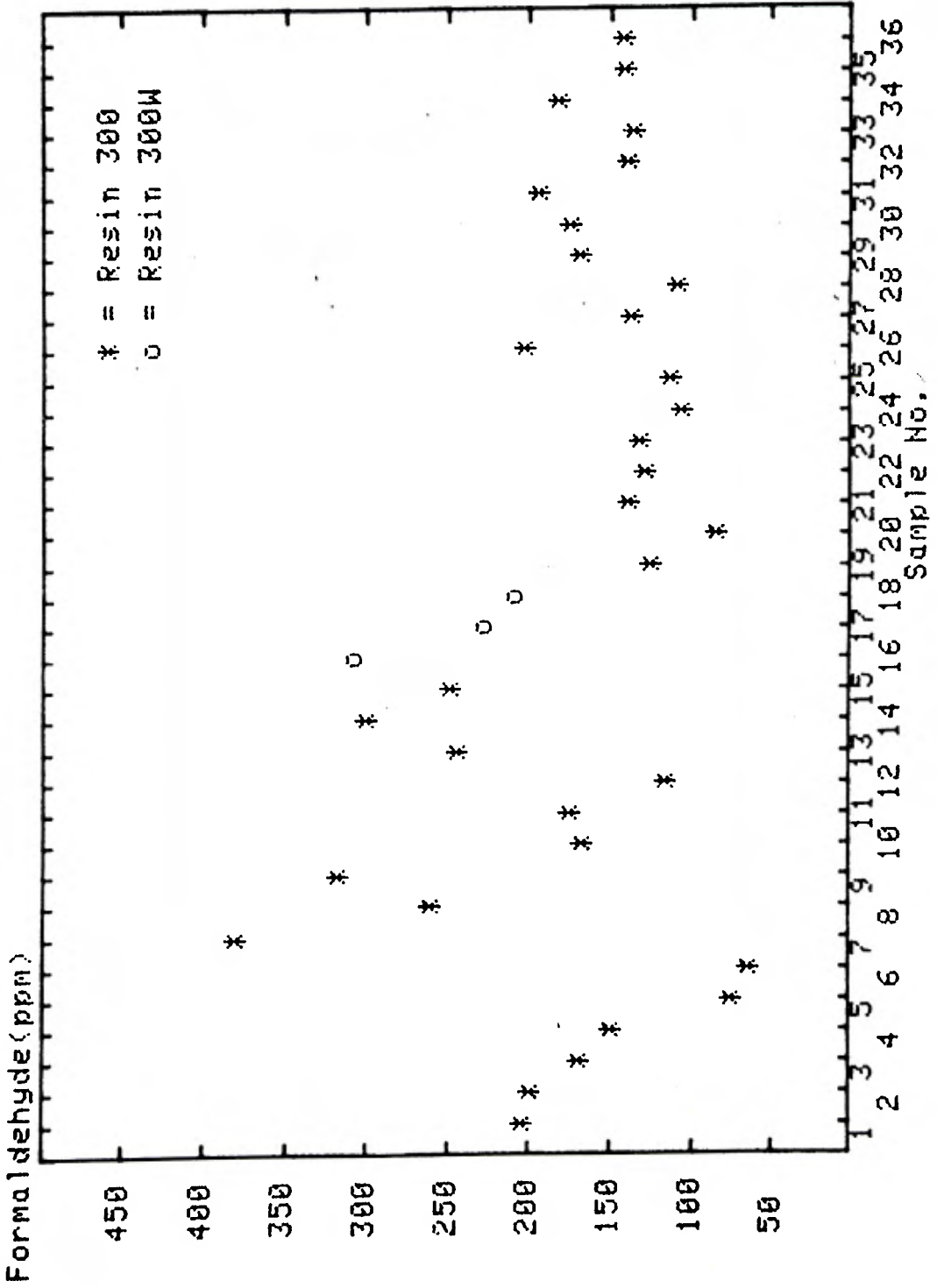
SPIRALITY ANGLE IN THE RELAXED STATE



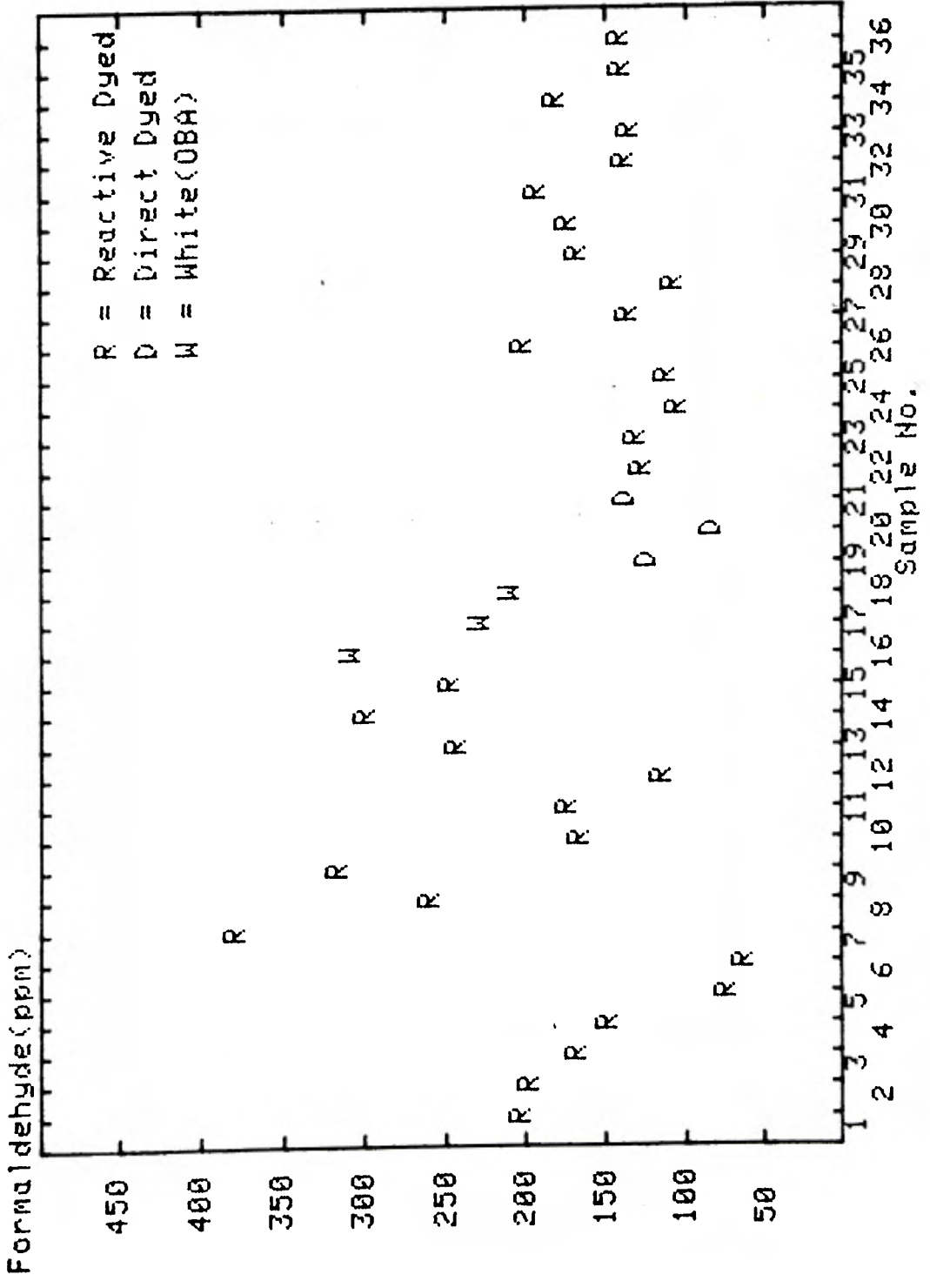
CHANGE IN COLOUR AFTER RESINATION



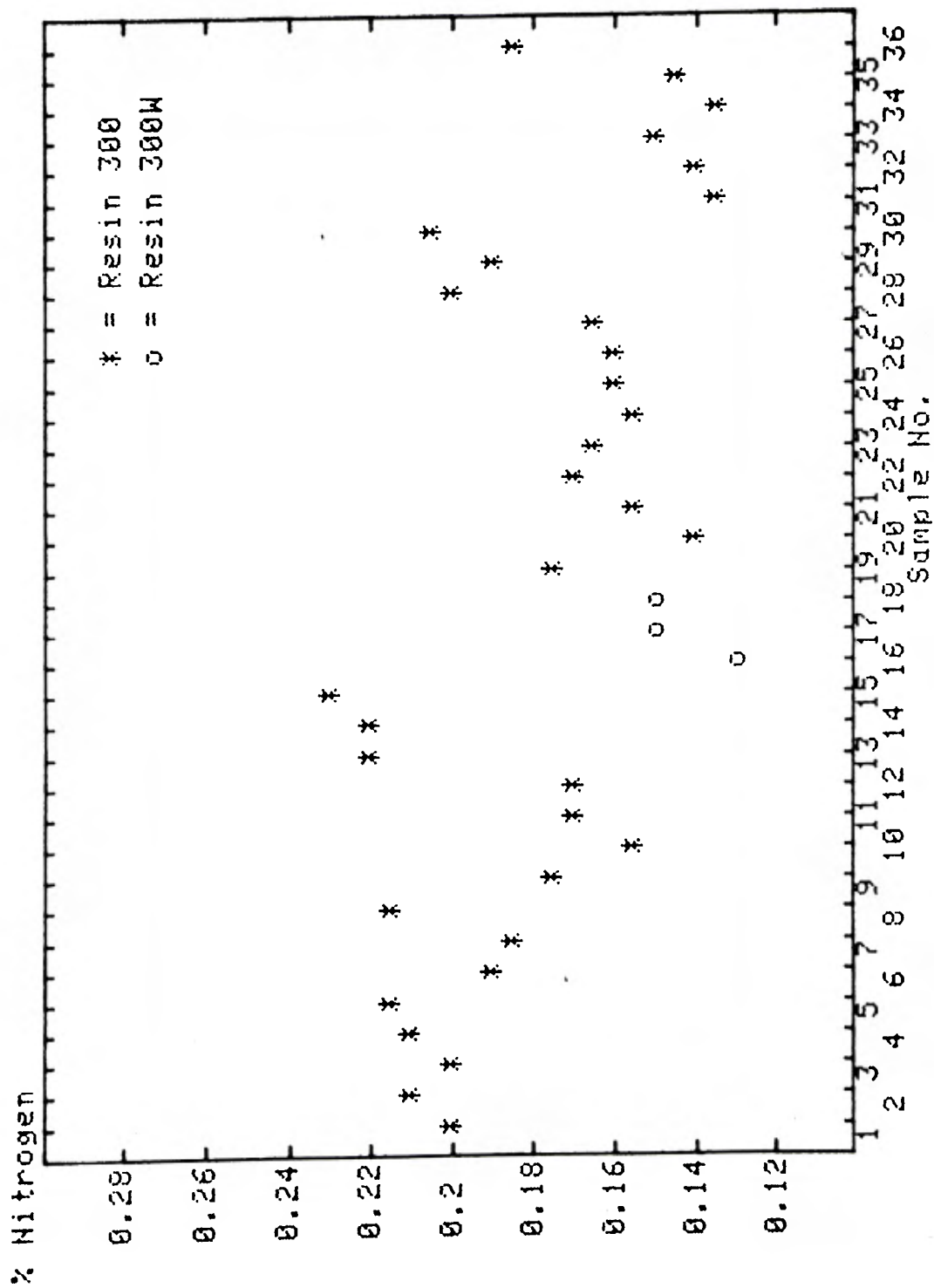
FREE FORMALDEHYDE CONTENTS OF RESINATED FABRICS



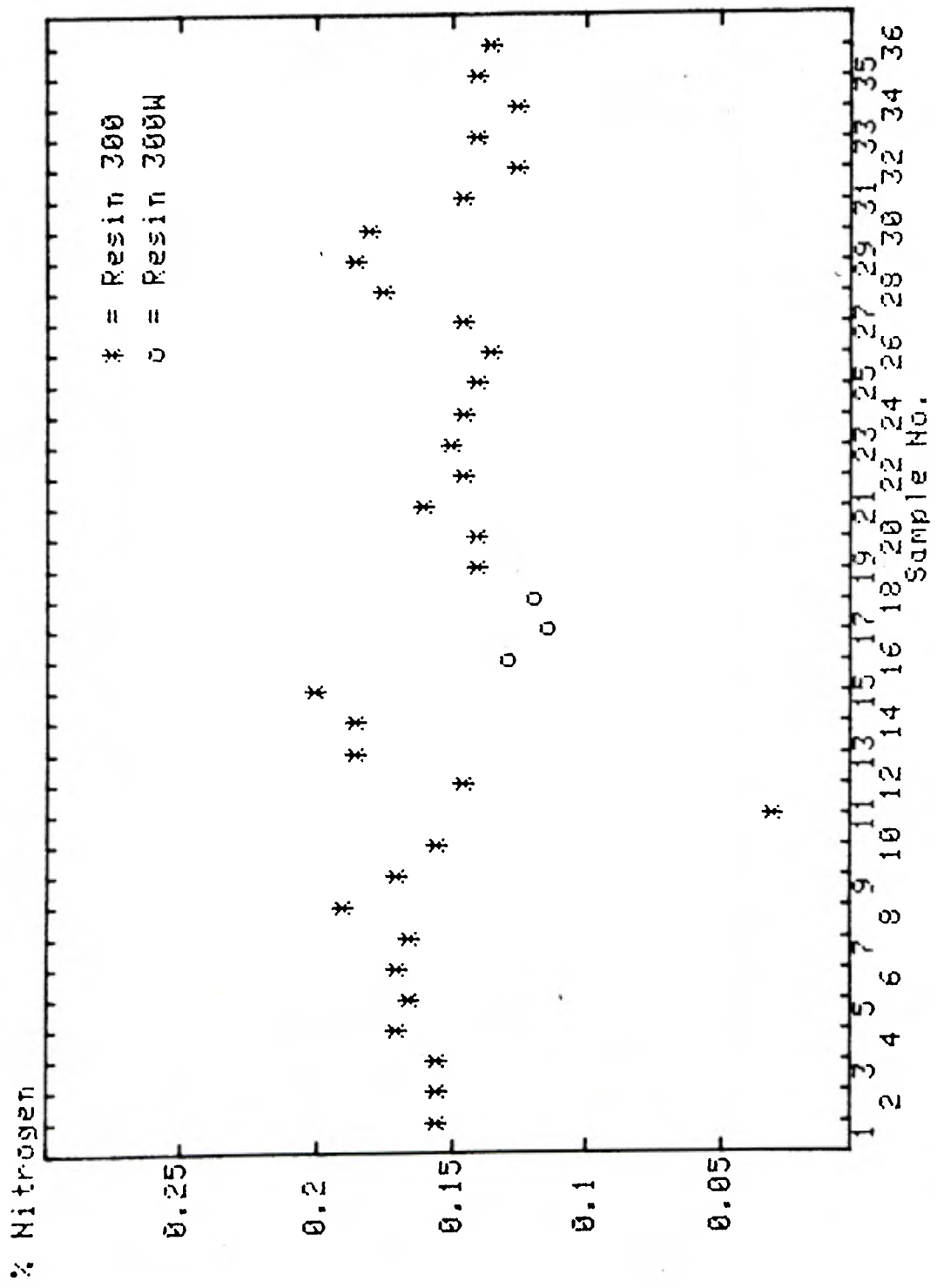
FREE FORMALDEHYDE CONTENTS OF RESINATED FABRICS



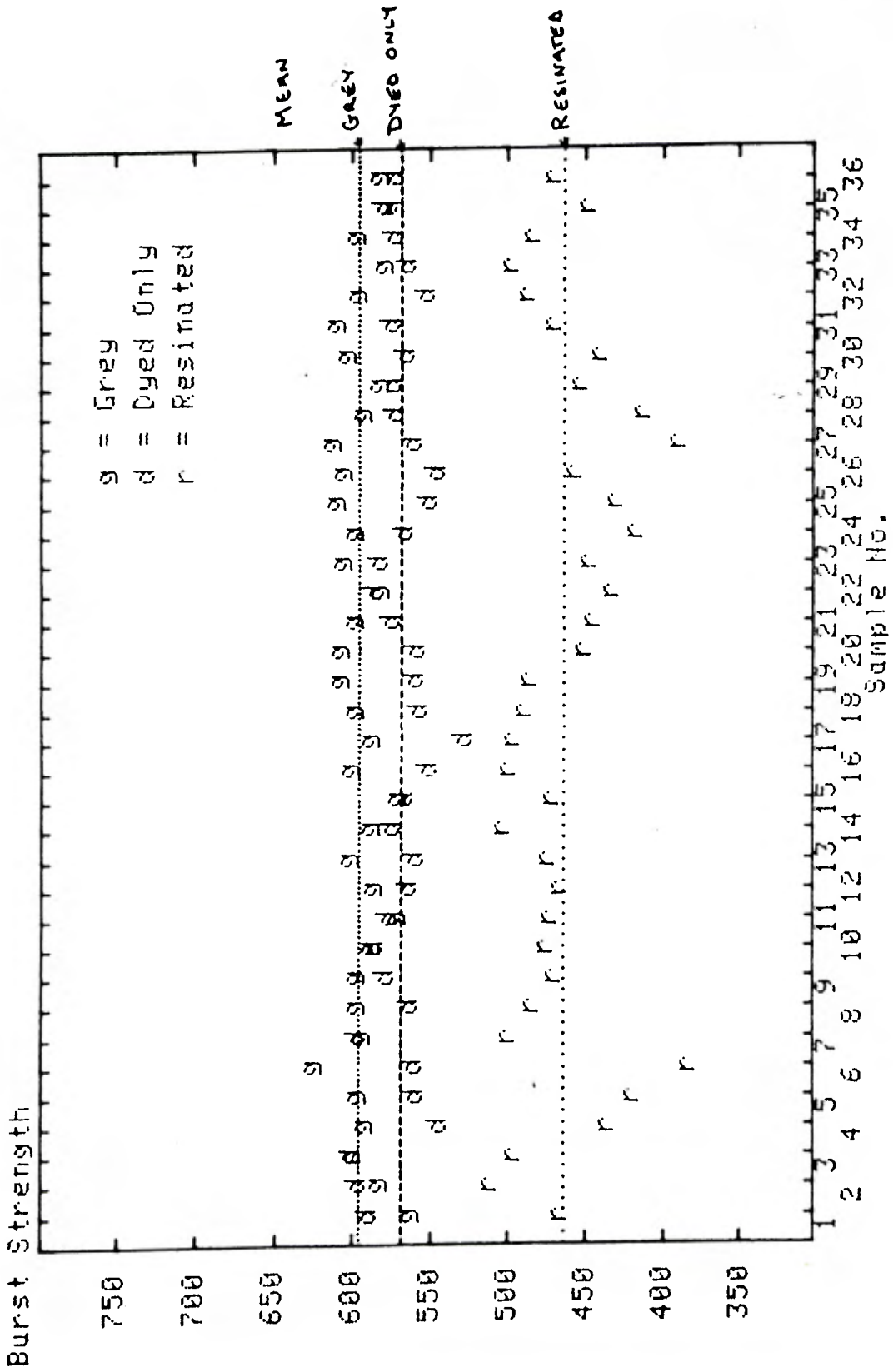
% TOTAL NITROGEN CONTENT OF RESINATED SAMPLES



% FIXED NITROGEN CONTENT OF RESINATED SAMPLES



BURST STRENGTH AFTER 5 CYCLE REFERENCE RELAXATION



A P P E N D I X A

YARN DATA

CORAH/IIC SINGLE JERSEY CASE STUDY

Yarns

IIC No.	Yarn Supplier	Twist Factor
1	1/30s Combed Cotton Goncalves (Portugal)	3.45
2	1/30s Combed Cotton Caleb Wright (U.K.)	3.42
3	1/30s Combed Cotton Caleb Wright (U.K.)	3.42
4	1/30s Combed Cotton Goncalves (Portugal)	3.45
5	1/30s Combed Cotton Caleb Wright (U.K.)	3.42
6	1/30s Combed Cotton Caleb Wright (U.K.)	3.42
7	1/30s Combed Cotton Caleb Wright (U.K.)	3.42

Ten cones of each yarn were tested

CORAH-SINGLE JERSEY '85

YARN DATA

Test Method	Sample Identification						
	1	2	3	4	5	6	7
1 Yarn count (Tex)	19.66	19.83	19.57	19.72	19.72	19.41	19.78
2 Twist (turns per metre)	806.50	800.00	793.50	801.00	811.50	831.50	791.00
3 Single end strength (g)	237.62	286.26	278.08	247.78	283.26	293.52	291.26
4 Extension at break (%)	5.66	6.46	6.46	5.57	6.26	6.31	6.33
5 Coefficient of friction (μ)	0.09	0.17	0.10	0.10	0.13	0.12	0.13
6 Twist liveliness (tpm)	59.05	51.55	56.85	56.00	58.50	58.65	58.35
7 Yarn Count (Ne)	30.04	29.79	30.17	29.95	29.95	30.42	29.85
8 Turns per inch	20.49	20.32	20.15	20.35	20.61	21.12	20.09
9 Twist Factor - alpha Tex	35.76	35.62	35.11	35.57	36.04	36.63	35.18
10 Twist Factor - English	3.74	3.72	3.67	3.72	3.77	3.83	3.68
11 Tenacity (g/tex)	12.09	14.44	14.21	12.57	14.36	15.12	14.72

CORAH-SINGLE JERSEY '85

YARN DATA		ALL SAMPLES		Column Statistics		
No.	Test Method	N	Mean	Std.Dev	%C.V.	
1	Yarn count (Tex)	7	19.6693	0.1400	0.71	
2	Twist (turns per metre)	7	805.0000	13.6382	1.69	
3	Single end strength (g)	7	273.9680	22.1460	8.08	
4	Extension at break (%)	7	6.1513	0.3736	6.07	
5	Coefficient of friction (μ)	7	0.1185	0.0287	24.22	
6	Twist liveliness (tpm)	7	56.9929	2.6370	4.63	
7	Yarn Count (Ne)	7	30.0248	0.2149	0.72	
8	Turns per inch	7	20.4470	0.3464	1.69	
9	Twist Factor - alpha Tex	7	35.7003	0.5217	1.46	
10	Twist Factor - English	7	3.7315	0.0545	1.46	
11	Tenacity (g/tex)	7	13.9301	1.1418	8.20	

Statistics calculated from individual test results

		Column Statistics			
No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Yarn count (Tex)	70	19.6693	0.5148	2.62
2	Twist (turns per metre)	70	805.0000	56.7348	7.05
3	Single end strength (g)	175	273.9680	32.8401	11.99
4	Extension at break (%)	175	6.1513	0.5789	9.41
5	Coefficient of friction (μ)	105	0.1185	0.0557	47.04
6	Twist liveliness (tpm)	70	56.9929	4.2027	7.37

CORAH-SINGLE JERSEY '85

YARN DATA

Caleb Wright

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Yarn count (Tex)	5	19.6624	0.1696	0.86
2	Twist (turns per metre)	5	805.5000	16.5567	2.06
3	Single end strength (g)	5	286.4752	6.1938	2.16
4	Extension at break (%)	5	6.3653	0.0896	1.41
5	Coefficient of friction (μ)	5	0.1288	0.0275	21.37
6	Twist liveliness (tpm)	5	56.7800	3.0116	5.30
7	Yarn Count (Ne)	5	30.0358	0.2602	0.87
8	Turns per inch	5	20.4597	0.4205	2.06
9	Twist Factor - alpha Tex	5	35.7157	0.6347	1.78
10	Twist Factor - English	5	3.7331	0.0663	1.78
11	Tenacity (g/tex)	5	14.5709	0.3604	2.47

Statistics calculated from individual test results

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Yarn count (Tex)	50	19.6624	0.5515	2.80
2	Twist (turns per metre)	50	805.5000	63.6817	7.91
3	Single end strength (g)	125	286.4752	29.0437	10.14
4	Extension at break (%)	125	6.3653	0.5120	8.04
5	Coefficient of friction (μ)	75	0.1288	0.0628	48.74
6	Twist liveliness (tpm)	50	56.7800	4.5582	8.03

CORAH-SINGLE JERSEY '85

YARN DATA

Goncalves

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Yarn count (Tex)	2	19.6866	0.0422	0.21
2	Twist (turns per metre)	2	803.7500	3.8891	0.48
3	Single end strength (g)	2	242.7000	7.1899	2.96
4	Extension at break (%)	2	5.6162	0.0623	1.11
5	Coefficient of friction (mu)	2	0.0927	0.0066	7.12
6	Twist liveliness (tpm)	2	57.5250	2.1567	3.75
7	Yarn Count (Ne)	2	29.9972	0.0643	0.21
8	Turns per inch	2	20.4153	0.0988	0.48
9	Twist Factor - alpha Tex	2	35.6619	0.1343	0.38
10	Twist Factor - English	2	3.7275	0.0140	0.38
11	Tenacity (g/tex)	2	12.3279	0.3388	2.75

Statistics calculated from individual test results

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Yarn count (Tex)	20	19.6866	0.4213	2.14
2	Twist (turns per metre)	20	803.7500	35.0517	4.36
3	Single end strength (g)	50	242.7000	17.2715	7.12
4	Extension at break (%)	50	5.6162	0.3432	6.11
5	Coefficient of friction (mu)	30	0.0927	0.0108	11.66
6	Twist liveliness (tpm)	20	57.5250	3.1850	5.54

A P P E N D I X B

GREY DATA

Grey

Knitted On : Monarch 3FA 24 Gauge
Diameter 30 inches
Needles 2268

IIC No.	Pc.No.	Knitting Mach. No.	Yarn Used
1	17	162	1/30's Caleb Wright (U.K.)
2	18	162	1/30's Caleb Wright (U.K.)
3	16	162	1/30's Caleb Wright (U.K.)
4	15	162	1/30's Caleb Wright (U.K.)
5	14	162	1/30's Caleb Wright (U.K.)
6	13	162	1/30's Caleb Wright (U.K.)
7	12	162	1/30's Goncalves (Portugal)
8	11	162	1/30's Goncalves (Portugal)
9	10	162	1/30's Goncalves (Portugal)
10	7	168	1/30's Goncalves (Portugal)
11	8	168	1/30's Goncalves (Portugal)
12	9	168	1/30's Goncalves (Portugal)
13	1	162	1/30's Goncalves (Portugal)
14	2	162	1/30's Goncalves (Portugal)
15	3	162	1/30's Goncalves (Portugal)
16	4	168	1/30's Caleb Wright (U.K.)
17	5	168	1/30's Caleb Wright (U.K.)
18	6	168	1/30's Caleb Wright (U.K.)
19	28	162	1/30's Caleb Wright (U.K.)
20	29	162	1/30's Caleb Wright (U.K.)
21	30	162	1/30's Caleb Wright (U.K.)
22	31	162	1/30's Caleb Wright (U.K.)
23	32	162	1/30's Caleb Wright (U.K.)
24	33	162	1/30's Caleb Wright (U.K.)
25	34	162	1/30's Caleb Wright (U.K.)
26	35	162	1/30's Caleb Wright (U.K.)
27	36	162	1/30's Caleb Wright (U.K.)
28	19	168	1/30's Caleb Wright (U.K.)
29	20	168	1/30's Caleb Wright (U.K.)
30	21	168	1/30's Caleb Wright (U.K.)
31	22	162	1/30's Caleb Wright (U.K.)
32	23	162	1/30's Caleb Wright (U.K.)
33	24	168	1/30's Caleb Wright (U.K.)
34	25	162	1/30's Caleb Wright (U.K.)
35	26	162	1/30's Caleb Wright (U.K.)
36	27	162	1/30's Caleb Wright (U.K.)

CORAH SINGLE-JERSEY '85

GREY DATA

Test Method	Sample Identification					
	1	2	3	4	5	6
1 Length shrinkage, 5x	3.03	3.72	2.48	2.49	2.35	2.40
2 Width shrinkage, 5x	29.28	28.92	29.44	28.07	28.64	27.74
3 Weight (gsm)BW	127.25	124.80	124.49	131.37	128.18	129.74
4 Weight (gsm)AW	171.22	172.17	169.74	172.34	171.23	172.95
5 Courses per 3cm BW	63.00	61.90	63.40	62.70	62.90	63.00
6 Courses per 3cm AW	64.10	64.20	63.80	63.70	63.20	63.70
7 Wales per 3cm BW	33.00	32.90	32.90	33.80	33.80	33.90
8 Wales per 3cm AW	46.80	46.80	46.80	46.90	47.30	47.00
9 Stitch length (mm) BW	2.79	2.79	2.79	2.80	2.80	2.82
10 Stitch length (mm) AW	2.76	2.75	2.75	2.77	2.76	2.76
11 Burst strength, BW	607.90	599.50	607.90	587.20	560.20	646.40
12 Burst strength, AW	564.10	584.50	601.50	594.30	598.40	626.20
13 Distension at burst, BW	17.26	17.48	18.24	17.48	18.23	18.39
14 Distension at burst, AW	21.64	21.18	21.64	21.43	21.70	21.93
15 Angle of spirality, BW	5.89	4.55	5.31	10.07	9.37	8.78
16 Angle of spirality, AW	19.47	18.39	19.21	20.09	19.48	19.14
17 Width, BW	104.60	103.30	104.83	100.90	101.17	101.83
18 Yarn strength, BW	289.84	259.97	277.28	279.99	287.97	276.60
19 Yarn strength, AW	267.45	251.93	251.55	249.29	255.37	251.29
20 Yarn extension at break, BW	8.11	7.62	7.80	8.02	8.11	8.32
21 Yarn extension at break, AW	8.27	7.97	7.89	7.77	7.88	7.65
22 Yarn count (tex), BW	19.37	19.58	19.48	19.39	19.76	19.42
23 Yarn count (tex), AW	19.20	19.32	19.36	19.25	18.89	19.33
24 Thickness, BW	624.40	611.90	622.50	633.90	648.40	652.80
25 Thickness, AW	843.20	848.10	861.60	848.60	843.70	848.50
26 Turns per metre	870.50	856.00	823.00	799.00	858.50	831.50
27 Yarn Count (Ne), BW	30.49	30.16	30.31	30.45	29.88	30.40
28 Yarn Count (Ne), AW	30.76	30.57	30.50	30.68	31.26	30.54

CORAH SINGLE-JERSEY '85

GREY DATA

Sample Identification

Test Method	7	8	9	10	11	12
1 Length shrinkage, 5x	2.96	2.40	2.39	0.81	0.63	0.46
2 Width shrinkage, 5x	27.79	27.66	27.53	27.34	26.99	27.02
3 Weight (gsm)BW	121.98	124.87	126.19	128.40	128.51	126.70
4 Weight (gsm)AW	168.50	169.04	169.13	167.38	170.05	168.79
5 Courses per 3cm BW	62.30	62.30	63.30	63.30	62.90	63.40
6 Courses per 3cm AW	63.70	63.50	63.40	63.80	63.00	63.50
7 Wales per 3cm BW	31.60	32.10	32.00	32.20	32.20	32.10
8 Wales per 3cm AW	43.70	43.70	43.60	43.60	43.50	43.70
9 Stitch length (mm) BW	2.79	2.80	2.80	2.82	2.82	2.83
10 Stitch length (mm) AW	2.75	2.75	2.75	2.77	2.75	2.78
11 Burst strength, BW	609.00	597.30	618.00	605.60	580.00	606.60
12 Burst strength, AW	595.70	599.40	599.00	589.40	572.80	588.20
13 Distension at burst, BW	16.76	17.44	16.71	17.73	16.89	18.29
14 Distension at burst, AW	21.73	20.97	21.12	21.51	21.20	21.37
15 Angle of spirality, BW	10.54	10.41	12.00	12.27	10.64	12.04
16 Angle of spirality, AW	13.88	13.22	12.28	13.19	13.65	14.24
17 Width, BW	103.20	104.50	103.73	101.93	102.03	102.23
18 Yarn strength, BW	236.91	231.49	234.61	218.95	215.57	207.85
19 Yarn strength, AW	232.67	225.27	220.01	232.19	215.69	225.37
20 Yarn extension at break, BW	8.34	6.89	6.44	6.03	5.90	5.49
21 Yarn extension at break, AW	7.51	7.10	7.21	7.37	7.34	7.55
22 Yarn count (tex), BW	19.34	19.55	19.98	19.60	19.63	19.36
23 Yarn count (tex), AW	19.20	19.26	19.24	19.28	19.76	19.19
24 Thickness, BW	621.60	634.40	646.50	678.80	677.70	681.90
25 Thickness, AW	848.40	849.80	852.70	864.10	869.30	857.20
26 Turns per metre	874.50	897.50	902.00	916.50	896.50	869.50
27 Yarn Count (Ne), BW	30.53	30.20	29.55	30.13	30.08	30.51
28 Yarn Count (Ne), AW	30.76	30.65	30.69	30.63	29.88	30.77

CORAH SINGLE-JERSEY '85

GREY DATA

Sample Identification

Test Method	13	14	15	16	17	18
1 Length shrinkage, 5x	0.01	-0.77	0.49	-1.69	-2.14	-1.93
2 Width shrinkage, 5x	27.48	25.48	27.30	26.32	27.53	26.76
3 Weight (gsm)BW	127.88	132.98	126.35	134.37	133.88	136.04
4 Weight (gsm)AW	169.27	169.27	169.11	172.98	174.07	173.94
5 Courses per 3cm BW	64.40	63.80	63.80	64.70	65.60	65.40
6 Courses per 3cm AW	64.20	63.60	64.20	64.00	63.90	63.90
7 Wales per 3cm BW	32.60	33.20	32.90	33.30	33.80	33.10
8 Wales per 3cm AW	45.30	45.10	45.10	46.50	46.50	46.80
9 Stitch length (mm) BW	2.80	2.81	2.79	2.82	2.82	2.80
10 Stitch length (mm) AW	2.76	2.76	2.76	2.76	2.77	2.78
11 Burst strength, BW	601.20	582.10	606.10	607.60	615.90	605.20
12 Burst strength, AW	603.60	589.70	572.50	602.30	589.70	599.70
13 Distension at burst, BW	17.68	17.89	17.76	19.05	18.89	18.77
14 Distension at burst, AW	21.34	21.62	21.24	21.50	21.71	21.62
15 Angle of spirality, BW	14.29	14.98	14.54	12.37	14.33	13.61
16 Angle of spirality, AW	17.21	17.90	17.11	19.41	19.66	19.59
17 Width, BW	105.10	104.27	101.77	99.83	99.27	98.10
18 Yarn strength, BW	219.73	221.59	246.97	278.45	282.63	274.99
19 Yarn strength, AW	219.44	234.29	233.23	270.03	273.32	274.41
20 Yarn extension at break, BW	6.15	6.15	6.63	7.53	7.71	7.75
21 Yarn extension at break, AW	6.81	7.25	6.90	7.72	8.10	7.82
22 Yarn count (tex), BW	19.40	19.45	19.59	19.56	19.43	19.44
23 Yarn count (tex), AW	19.14	19.37	19.30	19.26	19.34	19.53
24 Thickness, BW	642.20	681.90	641.30	659.30	658.00	656.80
25 Thickness, AW	798.30	808.70	797.30	786.60	793.70	789.90
26 Turns per metre	848.00	822.50	818.00	860.50	789.00	810.00
27 Yarn Count (Ne), BW	30.44	30.36	30.15	30.18	30.39	30.38
28 Yarn Count (Ne), AW	30.85	30.49	30.59	30.66	30.53	30.23

CORAH SINGLE-JERSEY '85

GREY DATA

Test Method	Sample Identification					
	19	20	21	22	23	24
1 Length shrinkage, 5x	3.36	3.09	2.94	2.76	1.84	2.74
2 Width shrinkage, 5x	27.92	28.21	28.73	28.36	28.44	27.89
3 Weight (gsm)BW	126.30	125.41	125.34	126.43	125.62	123.85
4 Weight (gsm)AW	172.20	171.21	172.65	171.94	172.16	171.53
5 Courses per 3cm BW	62.50	62.10	62.00	64.10	63.40	62.70
6 Courses per 3cm AW	64.90	64.70	64.30	64.20	63.40	64.60
7 Wales per 3cm BW	32.50	32.40	32.30	32.30	32.40	32.30
8 Wales per 3cm AW	46.00	46.30	46.10	46.10	46.20	46.40
9 Stitch length (mm) BW	2.81	2.80	2.80	2.80	2.80	2.80
10 Stitch length (mm) AW	2.78	2.77	2.77	2.77	2.77	2.77
11 Burst strength, 8W	601.30	585.90	602.60	590.50	601.10	583.40
12 Burst strength, AW	609.50	609.20	600.40	584.00	607.80	599.90
13 Distension at burst, 8W	18.63	17.46	17.89	18.96	17.92	18.51
14 Distension at burst, AW	21.42	21.54	21.38	21.25	21.89	21.56
15 Angle of spirality, BW	8.82	8.69	9.74	7.25	8.91	8.62
16 Angle of spirality, AW	20.36	19.97	20.06	20.90	20.97	20.13
17 Width, 8W	101.17	101.90	102.70	102.37	102.00	102.73
18 Yarn strength, BW	285.12	286.25	276.55	289.08	267.61	280.55
19 Yarn strength, AW	270.48	269.27	271.05	273.83	272.45	285.27
20 Yarn extension at break, 8W	7.33	7.24	6.80	6.95	7.03	6.97
21 Yarn extension at break, AW	7.29	7.55	7.33	7.15	7.16	7.63
22 Yarn count (tex), BW	19.42	19.31	19.30	19.41	19.81	19.41
23 Yarn count (tex), AW	19.25	19.03	19.18	19.16	19.53	19.16
24 Thickness, BW	595.70	602.90	600.80	596.50	597.20	599.20
25 Thickness, AW	822.80	818.80	818.60	810.60	809.10	818.30
26 Turns per metre	801.00	845.50	833.50	850.00	795.50	795.00
27 Yarn Count (Ne), 8W	30.41	30.58	30.60	30.43	29.81	30.43
28 Yarn Count (Ne), AW	30.68	31.02	30.79	30.83	30.23	30.82

CORAH SINGLE-JERSEY '85

GREY DATA

Test Method	Sample Identification					
	25	26	27	28	29	30
1 Length shrinkage, 5x	2.17	2.32	1.88	-1.04	0.75	-0.85
2 Width shrinkage, 5x	28.62	28.65	28.54	28.35	28.53	28.58
3 Weight (gsm)BW	128.12	125.13	124.08	130.64	131.95	133.87
4 Weight (gsm)AW	172.57	170.64	169.77	172.41	172.33	171.56
5 Courses per 3cm BW	63.10	63.10	62.80	64.60	63.30	64.00
6 Courses per 3cm AW	63.30	63.90	63.30	63.00	63.10	63.20
7 Wales per 3cm BW	32.40	32.40	32.50	32.60	32.50	32.90
8 Wales per 3cm AW	46.00	45.70	45.70	46.30	46.40	46.40
9 Stitch length (mm) BW	2.81	2.81	2.81	2.82	2.81	2.81
10 Stitch length (mm) AW	2.76	2.75	2.75	2.78	2.78	2.78
11 Burst strength, BW	593.20	593.00	587.00	579.60	620.20	601.30
12 Burst strength, AW	611.80	607.40	614.60	594.80	584.40	605.00
13 Distension at burst, BW	17.95	18.81	18.62	17.76	18.49	18.25
14 Distension at burst, AW	21.71	21.46	21.62	21.75	21.42	21.46
15 Angle of spirality, BW	8.74	8.13	8.34	10.63	9.81	11.02
16 Angle of spirality, AW	16.25	16.30	16.18	16.30	16.92	16.27
17 Width, BW	102.70	103.13	102.43	99.63	99.50	99.53
18 Yarn strength, BW	293.39	279.47	286.49	279.43	279.32	263.73
19 Yarn strength, AW	257.48	257.64	256.25	273.44	260.89	265.00
20 Yarn extension at break, BW	8.18	7.89	8.32	8.27	8.16	7.78
21 Yarn extension at break, AW	8.68	8.60	8.94	9.51	9.51	9.50
22 Yarn count (tex), BW	19.15	19.43	19.49	19.54	19.44	19.29
23 Yarn count (tex), AW	19.12	19.27	19.25	19.55	19.31	19.46
24 Thickness, BW	606.20	615.40	612.10	644.90	637.90	639.50
25 Thickness, AW	795.30	789.70	801.40	816.00	810.20	814.60
26 Turns per metre	849.50	858.50	859.50	887.50	866.00	869.00
27 Yarn Count (Ne), BW	30.83	30.40	30.30	30.22	30.38	30.62
28 Yarn Count (Ne), AW	30.89	30.65	30.67	30.20	30.58	30.35

CORAH SINGLE-JERSEY '85

GREY DATA

Test Method	Sample Identification					
	31	32	33	34	35	36
1 Length shrinkage, 5x	0.16	0.63	1.01	1.04	0.53	1.00
2 Width shrinkage, 5x	27.73	28.41	28.01	27.00	27.48	26.40
3 Weight (gsm)BW	125.71	132.95	125.71	127.44	126.82	132.97
4 Weight (gsm)AW	170.38	170.57	170.84	171.30	170.60	170.00
5 Courses per 3cm BW	63.80	63.60	63.70	63.60	64.40	63.80
6 Courses per 3cm AW	64.10	64.10	64.20	64.10	64.80	64.10
7 Wales per 3cm BW	32.70	32.67	32.60	33.50	33.00	33.70
8 Wales per 3cm AW	46.60	46.20	46.10	46.40	46.30	46.10
9 Stitch length (mm) BW	2.81	2.80	2.80	2.80	2.79	2.80
10 Stitch length (mm) AW	2.77	2.75	2.76	2.76	2.76	2.76
11 Burst strength, BW	618.90	579.70	604.70	602.20	611.10	607.80
12 Burst strength, AW	612.10	598.30	581.60	598.80	575.00	584.40
13 Distension at burst, BW	18.51	18.89	18.64	18.29	19.51	18.87
14 Distension at burst, AW	22.23	21.65	21.15	21.95	21.62	21.30
15 Angle of spirality, BW	8.72	8.62	9.13	11.31	10.58	11.04
16 Angle of spirality, AW	15.44	15.53	15.18	15.87	15.05	14.51
17 Width, BW	102.70	101.47	102.30	100.27	101.37	100.20
18 Yarn strength, BW	267.64	275.35	275.19	262.49	260.23	269.88
19 Yarn strength, AW	268.37	265.09	262.32	265.72	262.65	266.92
20 Yarn extension at break, BW	7.27	7.38	7.58	7.59	7.45	7.43
21 Yarn extension at break, AW	8.43	8.34	8.62	8.43	8.59	8.84
22 Yarn count (tex), BW	19.29	19.31	19.42	19.26	19.31	19.41
23 Yarn count (tex), AW	19.11	18.92	19.08	19.04	18.87	18.91
24 Thickness, BW	606.60	605.50	604.40	614.00	614.80	621.30
25 Thickness, AW	780.00	795.00	788.90	789.90	789.90	794.20
26 Turns per metre	844.50	803.50	838.50	849.00	825.50	850.50
27 Yarn Count (Ne), BW	30.61	30.57	30.41	30.66	30.59	30.43
28 Yarn Count (Ne), AW	30.90	31.21	30.95	31.01	31.30	31.22

CORAH SINGLE-JERSEY '85

GREY DATA

ALL SAMPLES

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage, 5x	36	1.2891	1.5859	123.03
2	Width shrinkage, 5x	36	27.8651	0.8575	3.08
3	Weight (gsm)BW	36	128.1194	3.5448	2.77
4	Weight (gsm)AW	36	170.9958	1.5994	0.94
5	Courses per 3cm BW	36	63.4083	0.8804	1.39
6	Courses per 3cm AW	36	63.8528	0.4983	0.78
7	Wales per 3cm BW	36	32.7519	0.5765	1.76
8	Wales per 3cm AW	36	45.8333	1.1069	2.41
9	Stitch length (mm) BW	36	2.8038	0.0104	0.37
10	Stitch length (mm) AW	36	2.7633	0.0107	0.39
11	Burst strength, BW	36	600.2000	15.3558	2.56
12	Burst strength, AW	36	595.8333	13.2858	2.23
13	Distension at burst, BW	36	18.1351	0.6786	3.74
14	Distension at burst, AW	36	21.5220	0.2634	1.22
15	Angle of spirality, BW	36	10.1136	2.4842	24.56
16	Angle of spirality, AW	36	17.2031	2.5299	14.71
17	Width, BW	36	101.9639	1.6951	1.66
18	Yarn strength, BW	36	264.4211	24.5902	9.30
19	Yarn strength, AW	36	255.1930	18.7408	7.34
20	Yarn extension at break, BW	36	7.3502	0.7617	10.36
21	Yarn extension at break, AW	36	7.9492	0.7444	9.36
22	Yarn count (tex), BW	36	19.4530	0.1634	0.84
23	Yarn count (tex), AW	36	19.2342	0.1927	1.00
24	Thickness, BW	36	630.2556	26.2301	4.16
25	Thickness, AW	36	818.6944	26.9633	3.29
26	Turns per metre	36	846.2500	32.6174	3.85
27	Yarn Count (Ne), BW	36	30.3572	0.2525	0.83
28	Yarn Count (Ne), AW	36	30.7036	0.3069	1.00

T.F. = 15.6

CORAH SINGLE-JERSEY '85

GREY DATA 1/30s Caleb Wright

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage, 5x	27	1.3715	1.6959	123.65
2	Width shrinkage, 5x	27	28.0944	0.7906	2.81
3	Weight (gsm)BW	27	128.4610	3.6984	2.88
4	Weight (gsm)AW	27	171.6787	1.1600	0.68
5	Courses per 3cm BW	27	63.4519	0.9415	1.48
6	Courses per 3cm AW	27	63.9185	0.5211	0.82
7	Wales per 3cm BW	27	32.8951	0.5365	1.63
8	Wales per 3cm AW	27	46.3963	0.3868	0.83
9	Stitch length (mm) BW	27	2.8032	0.0088	0.31
10	Stitch length (mm) AW	27	2.7648	0.0097	0.35
11	Burst strength, BW	27	600.0481	16.4178	2.74
12	Burst strength, AW	27	597.7667	13.5614	2.27
13	Distension at burst, BW	27	18.3602	0.5616	3.06
14	Distension at burst, AW	27	21.5816	0.2456	1.14
15	Angle of spirality, BW	27	9.3474	2.2098	23.64
16	Angle of spirality, AW	27	18.0233	2.1186	11.75
17	Width, BW	27	101.5531	1.6369	1.61
18	Yarn strength, BW	27	277.2400	9.2135	3.32
19	Yarn strength, AW	27	264.7699	8.7691	3.31
20	Yarn extension at break, BW	27	7.6509	0.4456	5.82
21	Yarn extension at break, AW	27	8.1905	0.6957	8.49
22	Yarn count (tex), BW	27	19.4226	0.1418	0.73
23	Yarn count (tex), AW	27	19.2102	0.1928	1.00
24	Thickness, BW	27	621.5889	21.0222	3.38
25	Thickness, AW	27	812.1185	23.3641	2.88
26	Turns per metre	27	837.7778	27.3156	3.26
27	Yarn Count (Ne), BW	27	30.4043	0.2206	0.73
28	Yarn Count (Ne), AW	27	30.7418	0.3087	1.00

CORAH SINGLE-JERSEY '85

GREY DATA

1/30s Goncalves

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage, 5x	9	1.0418	1.2510	120.08
2	Width shrinkage, 5x	9	27.1771	0.6894	2.54
3	Weight (gsm)BW	9	127.0944	2.9910	2.35
4	Weight (gsm)AW	9	168.9471	0.7225	0.43
5	Courses per 3cm BW	9	63.2778	0.6960	1.10
6	Courses per 3cm AW	9	63.6556	0.3812	0.60
7	Wales per 3cm BW	9	32.3222	0.4919	1.52
8	Wales per 3cm AW	9	44.1444	0.7715	1.75
9	Stitch length (mm) BW	9	2.8058	0.0147	0.52
10	Stitch length (mm) AW	9	2.7590	0.0127	0.46
11	Burst strength, BW	9	600.6556	12.4620	2.07
12	Burst strength, AW	9	590.0333	11.1388	1.89
13	Distension at burst, BW	9	17.4599	0.5529	3.17
14	Distension at burst, AW	9	21.3434	0.2445	1.15
15	Angle of spirality, BW	9	12.4122	1.7899	14.42
16	Angle of spirality, AW	9	14.7422	2.0810	14.12
17	Width, BW	9	103.1963	1.2588	1.22
18	Yarn strength, BW	9	225.9644	12.2969	5.44
19	Yarn strength, AW	9	226.4622	6.9627	3.07
20	Yarn extension at break, BW	9	6.4480	0.8198	12.71
21	Yarn extension at break, AW	9	7.2252	0.2542	3.52
22	Yarn count (tex), BW	9	19.5443	0.1972	1.01
23	Yarn count (tex), AW	9	19.3059	0.1844	0.95
24	Thickness, BW	9	656.2556	23.6603	3.61
25	Thickness, AW	9	838.4222	28.6847	3.42
26	Turns per metre	9	871.6667	35.5044	4.07
27	Yarn Count (Ne), BW	9	30.2161	0.3016	1.00
28	Yarn Count (Ne), AW	9	30.5890	0.2873	0.94

CORAH SINGLE-JERSEY '85

GREY DATA

Machine 162

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage, 5x	26	1.9384	1.1723	60.48
2	Width shrinkage, 5x	26	27.9888	0.8633	3.08
3	Weight (gsm)BW	26	127.0091	2.9030	2.29
4	Weight (gsm)AW	26	170.8269	1.3230	0.77
5	Courses per 3cm BW	26	63.1462	0.7146	1.13
6	Courses per 3cm AW	26	63.9654	0.4749	0.74
7	Wales per 3cm BW	26	32.7603	0.5982	1.83
8	Wales per 3cm AW	26	45.9308	0.9979	2.17
9	Stitch length (mm) BW	26	2.7996	0.0070	0.25
10	Stitch length (mm) AW	26	2.7607	0.0094	0.34
11	Burst strength, BW	26	599.2500	16.2226	2.71
12	Burst strength, AW	26	597.7731	14.0530	2.35
13	Distension at burst, BW	26	18.0811	0.6920	3.83
14	Distension at burst, AW	26	21.5423	0.2855	1.33
15	Angle of spirality, BW	26	9.5477	2.5439	26.64
16	Angle of spirality, AW	26	17.4962	2.5440	14.54
17	Width, BW	26	102.5513	1.3748	1.34
18	Yarn strength, BW	26	267.0405	22.0254	8.25
19	Yarn strength, AW	26	255.1646	17.7577	6.96
20	Yarn extension at break, BW	26	7.4000	0.6597	8.92
21	Yarn extension at break, AW	26	7.8130	0.6392	8.18
22	Yarn count (tex), BW	26	19.4463	0.1811	0.93
23	Yarn count (tex), AW	26	19.1793	0.1621	0.85
24	Thickness, BW	26	621.1538	21.2672	3.42
25	Thickness, AW	26	818.5577	25.1969	3.08
26	Turns per metre	26	840.8462	28.9913	3.45
27	Yarn Count (Ne), BW	26	30.3682	0.2796	0.92
28	Yarn Count (Ne), AW	26	30.7906	0.2610	0.85

CORAH SINGLE-JERSEY '85

GREY DATA

Machine 168

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage, 5x	10	-0.3992	1.2566	-314.79
2	Width shrinkage, 5x	10	27.5436	0.7938	2.88
3	Weight (gsm)BW	10	131.0062	3.5549	2.71
4	Weight (gsm)AW	10	171.4348	2.1883	1.28
5	Courses per 3cm BW	10	64.0900	0.9386	1.46
6	Courses per 3cm AW	10	63.5600	0.4551	0.72
7	Wales per 3cm BW	10	32.7300	0.5458	1.67
8	Wales per 3cm AW	10	45.5800	1.3782	3.02
9	Stitch length (mm) BW	10	2.8149	0.0098	0.35
10	Stitch length (mm) AW	10	2.7703	0.0111	0.40
11	Burst strength, BW	10	602.6700	13.2883	2.20
12	Burst strength, AW	10	590.7900	9.9366	1.68
13	Distension at burst, BW	10	18.2756	0.6560	3.59
14	Distension at burst, AW	10	21.4692	0.1981	0.92
15	Angle of spirality, BW	10	11.5850	1.6408	14.16
16	Angle of spirality, AW	10	16.4410	2.4532	14.92
17	Width, BW	10	100.4367	1.5283	1.52
18	Yarn strength, BW	10	257.6107	30.5389	11.85
19	Yarn strength, AW	10	255.2667	22.1338	8.67
20	Yarn extension at break, BW	10	7.2206	1.0107	14.00
21	Yarn extension at break, AW	10	8.3032	0.9093	10.95
22	Yarn count (tex), BW	10	19.4705	0.1104	0.57
23	Yarn count (tex), AW	10	19.3768	0.2003	1.03
24	Thickness, BW	10	653.9200	23.6160	3.61
25	Thickness, AW	10	819.0500	32.6118	3.98
26	Turns per metre	10	860.3000	38.7163	4.50
27	Yarn Count (Ne), BW	10	30.3287	0.1720	0.57
28	Yarn Count (Ne), AW	10	30.4775	0.3137	1.03

A P P E N D I X C

DYED-ONLY DATA

CORAH/IIC SINGLE JERSEY CASE STUDY

C1

Dyed Only

Knitted On : Monarch 3FA 24 Guage
Diameter 30 inches
Needles 2268

IIC No.	Pc.No.	Ref. Number	Dye Route	Colour	Shade Ref. No.	% Dye	Dye Type
1	1	305339	WK	MED YELLOW	MSC60832A	0.076	R
2	2	305339	WK	MED YELLOW	MSC60832A	0.076	R
3	3	305339	WK	MED YELLOW	MSC60832A	0.076	R
4	1	315313	JS	MED PINK	MSC60858A	0.205	R
5	2	315313	JS	MED PINK	MSC60858A	0.205	R
6	3	315313	JS	MED PINK	MSC60858A	0.205	R
7	1	295314	JK	MED TURQ.	MSC60830A	0.147	R
8	2	295314	JK	MED TURQ.	MSC60830A	0.147	R
9	3	295314	JK	MED TURQ.	MSC60830A	0.147	R
10	1	325352	JK	MED YELLOW	MSC60832	0.076	R
11	2	325352	JK	MED YELLOW	MSC60832	0.076	R
12	3	325352	JK	MED YELLOW	MSC60832	0.076	R
13	1	295313	JK	MED TURQ.	MSC60830A	0.147	R
14	2	295313	JK	MED TURQ.	MSC60830A	0.147	R
15	3	295313	JK	MED TURQ.	MSC60830A	0.147	R
16	1	305313	WS	WHITE(OBA)	60020	0.696	W
17	2	305313	WS	WHITE(OBA)	60020	0.696	W
18	3	305313	WS	WHITE(OBA)	60020	0.696	W
19	1	305342	JS	DIR. TURQ.	MSC60872A	0.030	D
20	2	305342	JS	DIR. TURQ.	MSC60872A	0.030	D
21	3	305342	JS	DIR. TURQ.	MSC60872A	0.030	D
22	1	365319	WK	MED ORANGE	60874A	0.088	R
23	2	365319	WK	MED ORANGE	60874A	0.088	R
24	3	365319	WK	MED ORANGE	60874A	0.088	R
25	1	325339	JS	MED ORANGE	MSC60874A	0.088	R
26	2	325339	JS	MED ORANGE	MSC60874A	0.088	R
27	3	325339	JS	MED ORANGE	MSC60874A	0.088	R
28	1	345315	WK	MED YELLOW	60832A	0.092	R
29	2	345315	WK	MED YELLOW	60832A	0.092	R
30	3	345315	WK	MED YELLOW	60832A	0.092	R
31	1	325345	WS	MED ORANGE	60874A	0.088	R
32	2	325345	WS	MED ORANGE	60874A	0.088	R
33	3	325345	WS	MED ORANGE	60874A	0.088	R
34	1	325343	WS	MED ORANGE	60874A	0.088	R
35	2	325343	WS	MED ORANGE	60874A	0.088	R
36	3	325343	WS	MED ORANGE	60874A	0.088	R

Dye Route

WK = Unroll/Flap/Winch Dye/Calator Extract/Mc.Cut/Kiefer Dry
 WS = Unroll/Flap/Winch Dye/Calator Extract/Mc.Cut/Stenter Dry
 JK = Unroll/Flap/Jet Dye/Calator Extract/Mc.Cut/Kiefer Dry
 JS = Unroll/Flap/Jet Dye/Calator Extract/Mc.Cut/Stenter Dry

Dye Type

CORAH-SINGLE JERSEY '85

DYED ONLY

Sample Identification

Test Method	1	2	3	4	5	6
1 Length shrinkage. TD	5.47	5.48	5.51	7.83	7.75	8.88
2 Width shrinkage. TD	0.87	1.19	0.83	7.13	4.97	4.63
3 Length shrinkage. 5x	6.98	7.12	6.99	8.70	9.19	10.17
4 Width shrinkage. 5x	1.21	1.33	1.33	5.34	5.12	4.82
5 Weight (gsm)BW	150.41	149.13	152.21	136.42	137.26	132.16
6 Weight (gsm)AW	161.65	159.65	161.65	157.35	158.46	157.40
7 Courses per 3cm BW	56.60	55.70	55.80	55.30	56.00	53.60
8 Courses per 3cm TD	59.50	59.60	59.30	60.00	60.60	60.00
9 Courses per 3cm AW	59.90	59.60	59.90	60.90	61.10	60.80
10 Wales per 3cm BW	46.50	46.50	46.80	42.80	42.20	42.50
11 Wales per 3cm TD	46.90	46.50	46.90	45.00	44.80	45.20
12 Wales per 3cm AW	47.20	47.10	47.10	45.50	45.80	46.30
13 Stitch length (mm) BW	2.80	2.77	2.80	2.76	2.77	2.76
14 Stitch length (mm) AW	2.79	2.78	2.78	2.76	2.80	2.76
15 Burst strength. BW	638.10	584.20	591.60	577.00	576.70	568.70
16 Burst strength. AW	589.70	596.90	600.20	544.20	559.80	560.70
17 Distension at burst. BW	19.38	19.58	19.65	18.14	18.03	18.02
18 Distension at burst. AW	20.50	20.16	20.11	20.02	20.24	20.08
19 Angle of spirality. BW	13.86	13.04	15.40	9.20	10.42	8.60
20 Angle of spirality. AW	14.31	14.26	14.81	14.12	14.80	13.79
21 Width. BW	145.53	147.17	145.50	159.93	157.50	158.13
22 Yarn strength. BW	274.00	263.81	271.84	313.99	304.96	313.77
23 Yarn strength. AW	296.11	293.83	287.23	306.77	310.80	308.03
24 Yarn extension at break. BW	7.47	7.35	7.35	7.33	7.12	7.42
25 Yarn extension at break. AW	7.22	7.20	7.18	7.02	7.44	6.96
26 Yarn count (tex). BW	18.62	18.94	18.76	18.79	18.82	18.67
27 Yarn count (tex). AW	18.66	18.75	18.84	18.79	18.60	18.71
28 Thickness. BW	635.30	639.10	637.10	574.20	574.10	563.60
29 Thickness. AW	736.70	741.10	743.60	714.60	721.20	711.80
30 Free Formaldehyde (p.p.m.)						
31 Total Nitrogen (%)	0.10	0.09	0.10	0.10	0.08	0.07
32 Fixed Nitrogen (%)	0.10	0.10	0.08	0.08	0.06	0.09
33 Colour - R value	85.02	84.60	85.27	58.26	58.07	57.93
34 Colour - G value	79.58	79.38	79.98	34.08	34.10	33.71
35 Colour - B value	41.32	41.70	42.16	29.71	29.69	29.04
36 Yarn Count (Ne). BW	31.71	31.18	31.48	31.43	31.38	31.62
37 Yarn Count (Ne). AW	31.64	31.49	31.35	31.43	31.74	31.56

CORAH-SINGLE JERSEY '85

DYED ONLY

Sample Identification

Test Method	7	8	9	10	11	12
1 Length shrinkage, TD	6.40	9.46	6.97	15.94	15.40	15.11
2 Width shrinkage, TD	0.86	-0.43	1.29	-2.83	-2.26	-2.90
3 Length shrinkage, 5x	7.25	10.90	8.52	18.14	17.61	17.04
4 Width shrinkage, 5x	1.57	0.26	1.73	-2.98	-2.67	-3.13
5 Weight (gsm)BW	147.28	143.26	146.67	136.41	136.82	135.19
6 Weight (gsm)AW	159.71	161.65	160.75	154.11	156.12	157.00
7 Courses per 3cm BW	56.70	54.60	56.50	48.70	49.00	48.70
8 Courses per 3cm TD	60.60	59.50	60.30	57.70	57.90	57.00
9 Courses per 3cm AW	61.80	60.80	61.30	59.70	59.50	59.50
10 Wales per 3cm BW	45.50	47.00	44.40	46.70	47.80	47.70
11 Wales per 3cm TD	45.70	45.90	45.50	46.30	46.00	46.30
12 Wales per 3cm AW	46.30	46.40	46.20	45.80	46.00	46.20
13 Stitch length (mm) BW	2.80	2.74	2.75	2.76	2.76	2.78
14 Stitch length (mm) AW	2.76	2.74	2.74	2.75	2.73	2.75
15 Burst strength, BW	576.40	607.70	573.30	588.20	610.30	599.50
16 Burst strength, AW	596.60	563.60	578.30	585.20	576.70	564.10
17 Distension at burst, BW	19.75	21.14	19.89	16.55	16.36	16.92
18 Distension at burst, AW	20.75	20.10	20.34	20.10	20.51	19.68
19 Angle of spirality, BW	15.88	11.50	11.54	6.54	8.61	7.26
20 Angle of spirality, AW	16.01	14.67	14.59	10.48	10.82	10.38
21 Width, BW	152.40	145.97	151.67	145.27	144.87	144.53
22 Yarn strength, BW	273.65	307.44	276.56	286.44	295.49	280.09
23 Yarn strength, AW	291.59	299.85	302.25	289.29	293.39	296.95
24 Yarn extension at break, BW	7.86	8.35	7.50	7.15	7.06	6.65
25 Yarn extension at break, AW	7.00	8.00	8.08	7.51	7.42	7.53
26 Yarn count (tex), BW	18.65	19.14	19.22	18.91	18.94	18.74
27 Yarn count (tex), AW	18.91	19.17	19.06	19.09	19.52	19.14
28 Thickness, BW	625.20	621.90	643.30	571.00	563.90	560.90
29 Thickness, AW	726.10	736.80	748.80	752.40	759.90	736.40
30 Free Formaldehyde (p.p.m.)						
31 Total Nitrogen (%)	0.10	0.09	0.09	0.08	0.06	0.06
32 Fixed Nitrogen (%)	0.09	0.09	0.10	0.06	0.05	0.08
33 Colour - R value	30.84	30.85	31.28	85.31	85.51	85.70
34 Colour - G value	44.39	44.46	44.89	80.49	80.60	80.69
35 Colour - B value	61.12	62.01	62.28	41.52	41.49	41.84
36 Yarn Count (Ne), BW	31.66	30.85	30.72	31.22	31.18	31.51
37 Yarn Count (Ne), AW	31.23	30.80	30.98	30.94	30.25	30.86

CORAH-SINGLE JERSEY '85

DYED ONLY

Sample Identification

Test Method	13	14	15	16	17	18
1 Length shrinkage, TD	7.66	11.62	11.49	6.73	6.14	5.47
2 Width shrinkage, TD	0.56	-1.72	-1.58	5.34	6.14	5.83
3 Length shrinkage, 5x	8.69	12.43	12.17	7.27	7.07	6.42
4 Width shrinkage, 5x	0.73	-1.60	-1.98	5.58	5.76	6.20
5 Weight (gsm)BW	145.60	142.14	142.65	135.17	137.09	137.88
6 Weight (gsm)AW	161.13	159.56	155.83	155.73	155.48	154.05
7 Courses per 3cm BW	55.70	53.20	53.30	56.30	56.60	56.50
8 Courses per 3cm TD	60.30	60.30	59.90	60.10	59.90	58.60
9 Courses per 3cm AW	61.20	61.00	59.90	60.50	60.50	60.30
10 Wales per 3cm BW	45.80	46.30	47.40	43.60	43.40	42.90
11 Wales per 3cm TD	45.50	45.80	46.80	45.70	45.90	46.10
12 Wales per 3cm AW	46.20	46.30	47.40	46.70	46.80	46.80
13 Stitch length (mm) BW	2.77	2.78	2.77	2.79	2.76	2.79
14 Stitch length (mm) AW	2.77	2.74	2.76	2.79	2.77	2.78
15 Burst strength, BW	582.70	576.50	628.60	559.80	530.50	530.80
16 Burst strength, AW	560.30	575.10	566.80	551.10	528.50	557.10
17 Distension at burst, BW	18.39	18.30	18.94	18.04	19.20	17.38
18 Distension at burst, AW	20.12	19.78	19.69	19.24	18.99	19.23
19 Angle of spirality, BW	12.13	12.39	11.68	3.89	4.17	2.85
20 Angle of spirality, AW	13.60	13.92	13.75	12.39	12.08	11.42
21 Width, BW	151.33	146.10	147.30	158.97	162.17	158.83
22 Yarn strength, BW	288.56	257.93	257.31	311.31	307.01	305.49
23 Yarn strength, AW	302.84	298.51	311.25	312.87	312.68	313.39
24 Yarn extension at break, BW	7.24	7.19	7.52	7.40	7.98	8.13
25 Yarn extension at break, AW	8.18	8.38	8.67	6.36	7.27	6.94
26 Yarn count (tex), BW	19.08	19.30	18.76	18.82	18.99	18.70
27 Yarn count (tex), AW	18.97	19.33	18.79	18.72	18.91	18.74
28 Thickness, BW	625.50	605.10	635.00	627.30	623.00	615.00
29 Thickness, AW	737.70	735.10	754.00	749.50	748.50	744.10
30 Free Formaldehyde (p.p.m.)						
31 Total Nitrogen (%)	0.09	0.10	0.10	0.06	0.08	0.07
32 Fixed Nitrogen (%)	0.07	0.09	0.09	0.08	0.05	0.06
33 Colour - R value	31.36	31.03	31.16	85.31	86.69	86.62
34 Colour - G value	45.33	44.66	44.69	86.27	88.15	88.03
35 Colour - B value	63.10	61.46	61.49	98.38	100.28	100.04
36 Yarn Count (Ne), BW	30.95	30.59	31.48	31.38	31.09	31.58
37 Yarn Count (Ne), AW	31.12	30.56	31.43	31.54	31.23	31.51

CORAH-SINGLE JERSEY '85

DYED ONLY

Sample Identification

Test Method	19	20	21	22	23	24
1 Length shrinkage, TD	6.67	7.59	7.22	8.23	9.44	10.73
2 Width shrinkage, TD	6.56	6.08	5.65	1.12	-0.06	0.06
3 Length shrinkage, 5x	7.78	8.15	8.06	9.55	11.28	12.66
4 Width shrinkage, 5x	7.04	6.58	6.48	1.24	0.24	0.09
5 Weight (gsm)BW	132.98	129.40	131.20	140.57	144.47	136.70
6 Weight (gsm)AW	150.26	147.91	152.07	157.35	160.99	161.14
7 Courses per 3cm BW	55.80	54.90	53.30	55.10	54.20	52.90
8 Courses per 3cm TD	59.00	59.20	59.40	58.90	59.00	58.20
9 Courses per 3cm AW	60.00	59.30	59.40	60.70	60.00	59.90
10 Wales per 3cm BW	42.30	42.40	42.30	46.40	46.70	47.20
11 Wales per 3cm TD	45.10	45.40	44.90	47.00	46.50	47.00
12 Wales per 3cm AW	46.00	45.70	45.60	47.50	47.30	47.20
13 Stitch length (mm) BW	2.79	2.77	2.78	2.76	2.77	2.77
14 Stitch length (mm) AW	2.74	2.75	2.75	2.75	2.76	2.75
15 Burst strength, BW	556.30	543.30	552.50	604.40	605.00	649.50
16 Burst strength, AW	559.60	559.10	574.90	585.50	582.60	567.00
17 Distension at burst, BW	17.60	16.24	17.26	18.48	18.64	17.61
18 Distension at burst, AW	18.71	18.51	19.21	19.71	19.44	19.42
19 Angle of spirality, BW	2.31	4.58	4.76	7.26	5.52	5.69
20 Angle of spirality, AW	7.46	8.49	8.30	11.20	11.50	10.79
21 Width, BW	163.03	162.77	164.80	147.17	146.67	145.27
22 Yarn strength, BW	319.91	322.92	330.93	289.67	291.47	285.29
23 Yarn strength, AW	306.77	307.45	304.53	324.13	320.36	314.79
24 Yarn extension at break, BW	6.71	5.90	6.06	8.01	7.78	8.08
25 Yarn extension at break, AW	6.02	6.10	5.91	8.24	8.52	7.86
26 Yarn count (tex), BW	18.66	18.71	18.96	18.66	19.20	19.09
27 Yarn count (tex), AW	18.95	18.76	18.87	18.70	19.09	19.21
28 Thickness, BW	609.40	608.90	624.50	621.80	607.80	596.20
29 Thickness, AW	770.80	761.70	772.30	769.70	769.90	754.80
30 Free Formaldehyde (p.p.m.)						
31 Total Nitrogen (%)	0.04	0.04	0.06	0.08	0.14	0.06
32 Fixed Nitrogen (%)	0.05	0.06	0.06	0.14	0.14	0.13
33 Colour - R value	44.60	44.52	44.81	70.58	71.30	71.56
34 Colour - G value	60.44	60.26	60.58	51.23	51.90	52.00
35 Colour - B value	75.17	74.63	74.73	37.75	38.18	38.41
36 Yarn Count (Ne), BW	31.65	31.56	31.15	31.64	30.76	30.94
37 Yarn Count (Ne), AW	31.16	31.47	31.30	31.58	30.94	30.73

CORAH-SINGLE JERSEY '85

DYED ONLY

Sample Identification

Test Method	25	26	27	28	29	30
1 Length shrinkage, TD	5.94	5.38	4.01	10.02	10.00	9.96
2 Width shrinkage, TD	7.34	6.50	6.07	-0.99	-1.44	0.33
3 Length shrinkage, 5x	6.90	6.18	5.60	12.38	12.24	12.20
4 Width shrinkage, 5x	8.49	7.50	7.10	-0.34	-0.58	-0.18
5 Weight (gsm)BW	132.66	135.39	140.27	144.74	144.91	145.29
6 Weight (gsm)AW	154.55	153.77	157.90	160.59	159.49	162.22
7 Courses per 3cm BW	57.10	57.10	58.40	52.30	52.90	52.90
8 Courses per 3cm TD	60.60	60.00	61.00	58.20	59.20	59.20
9 Courses per 3cm AW	61.40	61.10	61.50	59.50	60.80	60.40
10 Wales per 3cm BW	41.90	41.80	41.50	47.70	47.60	46.80
11 Wales per 3cm TD	44.80	44.70	44.20	47.10	47.00	46.60
12 Wales per 3cm AW	45.60	45.40	45.50	47.50	47.50	47.00
13 Stitch length (mm) BW	2.76	2.76	2.75	2.76	2.76	2.76
14 Stitch length (mm) AW	2.79	2.77	2.74	2.76	2.73	2.78
15 Burst strength, BW	567.30	582.60	561.40	606.50	632.70	611.50
16 Burst strength, AW	551.00	546.20	562.00	572.80	574.30	566.00
17 Distension at burst, BW	17.49	17.83	17.81	18.19	17.80	19.18
18 Distension at burst, AW	19.66	19.02	20.14	19.85	20.40	19.99
19 Angle of spirality, BW	5.33	5.19	7.92	10.10	10.51	10.22
20 Angle of spirality, AW	10.85	10.80	14.05	13.40	12.84	13.21
21 Width, BW	162.33	160.97	162.23	143.13	143.80	144.80
22 Yarn strength, BW	313.51	331.39	349.92	308.71	283.61	271.29
23 Yarn strength, AW	335.99	320.77	327.03	309.88	300.56	293.93
24 Yarn extension at break, BW	7.75	8.56	9.98	8.32	8.19	7.59
25 Yarn extension at break, AW	6.59	6.80	8.16	8.24	8.75	8.51
26 Yarn count (tex), BW	18.74	18.72	18.88	19.08	18.77	18.56
27 Yarn count (tex), AW	18.34	18.46	19.05	18.94	18.96	18.63
28 Thickness, BW	615.50	611.80	614.30	618.90	619.00	618.50
29 Thickness, AW	754.80	739.70	753.70	763.20	768.50	768.60
30 Free Formaldehyde (p.p.m.)						
31 Total Nitrogen (%)	0.02	0.02	0.03	0.12	0.13	0.14
32 Fixed Nitrogen (%)	0.11	0.11	0.04	0.08	0.09	0.08
33 Colour - R value	71.38	71.26	70.25	84.62	84.20	84.41
34 Colour - G value	51.47	51.58	51.09	80.21	79.37	79.86
35 Colour - B value	37.79	37.67	37.59	40.57	38.84	39.29
36 Yarn Count (Ne), BW	31.51	31.54	31.28	30.96	31.46	31.82
37 Yarn Count (Ne), AW	32.20	31.99	30.99	31.18	31.15	31.70

CORAH-SINGLE JERSEY '85

DYED ONLY

Sample Identification

Test Method	31	32	33	34	35	36
1 Length shrinkage, TD	6.11	7.56	7.60	6.17	6.10	6.36
2 Width shrinkage, TD	4.37	4.49	5.35	6.54	6.04	5.63
3 Length shrinkage, 5x	8.35	7.54	7.73	5.98	6.50	6.06
4 Width shrinkage, 5x	5.77	4.31	4.61	6.84	4.98	5.52
5 Weight (gsm)BW	140.73	141.05	142.23	143.77	144.56	142.83
6 Weight (gsm)AW	159.42	155.46	159.33	158.91	158.46	159.70
7 Courses per 3cm BW	56.30	56.40	55.90	57.70	57.50	58.00
8 Courses per 3cm TD	59.90	60.10	59.90	60.20	60.30	60.30
9 Courses per 3cm AW	60.70	60.10	59.60	60.60	60.70	60.20
10 Wales per 3cm BW	43.80	43.60	43.60	42.30	43.30	42.80
11 Wales per 3cm TD	45.90	45.40	46.30	45.90	46.10	46.00
12 Wales per 3cm AW	46.50	45.90	46.50	46.30	45.90	46.00
13 Stitch length (mm) BW	2.77	2.75	2.77	2.76	2.78	2.78
14 Stitch length (mm) AW	2.76	2.75	2.77	2.75	2.75	2.76
15 Burst strength, BW	620.70	591.20	559.00	592.90	579.30	597.10
16 Burst strength, AW	575.60	553.40	565.20	573.20	580.50	572.40
17 Distension at burst, BW	18.75	18.19	19.89	19.40	19.98	21.01
18 Distension at burst, AW	20.36	19.72	19.96	19.45	20.03	20.22
19 Angle of spirality, BW	7.93	6.49	6.12	7.66	7.23	6.64
20 Angle of spirality, AW	13.73	11.88	14.11	13.96	14.36	14.85
21 Width, BW	156.13	161.00	155.93	158.53	158.07	158.17
22 Yarn strength, BW	313.33	289.67	313.27	268.73	276.19	282.61
23 Yarn strength, AW	315.71	345.63	336.23	322.55	328.52	331.12
24 Yarn extension at break, BW	8.48	7.77	8.24	7.36	7.49	7.79
25 Yarn extension at break, AW	8.13	9.71	7.95	8.27	7.78	8.13
26 Yarn count (tex), BW	18.91	18.74	18.73	18.67	18.92	18.88
27 Yarn count (tex), AW	18.81	18.78	18.96	18.77	18.99	19.11
28 Thickness, BW	615.10	608.40	595.90	594.90	610.70	605.80
29 Thickness, AW	767.00	728.30	721.80	716.80	720.30	721.60
30 Free Formaldehyde (p.p.m.)						
31 Total Nitrogen (%)	0.12	0.12	0.14	0.17	0.16	0.16
32 Fixed Nitrogen (%)	0.05	0.05	0.06	0.06	0.07	0.06
33 Colour - R value	70.73	71.19	71.29	69.35	69.14	69.95
34 Colour - G value	52.18	51.82	52.18	49.32	49.21	49.91
35 Colour - B value	38.02	37.55	38.13	36.12	36.24	36.94
36 Yarn Count (Ne), BW	31.23	31.50	31.53	31.62	31.21	31.28
37 Yarn Count (Ne), AW	31.39	31.44	31.14	31.45	31.10	30.90

CORAH-SINGLE JERSEY '85

DYED ONLY

ALL SAMPLES

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage, TD	36	8.1778	2.9003	35.47
2	Width shrinkage, TD	36	2.7097	3.3535	123.76
3	Length shrinkage, 5x	36	9.3823	3.2892	35.06
4	Width shrinkage, 5x	36	2.8979	3.4332	118.47
5	Weight (gsm)BW	36	140.4871	5.6501	4.02
6	Weight (gsm)AW	36	157.6895	3.3866	2.15
7	Courses per 3cm BW	36	54.9861	2.4485	4.45
8	Courses per 3cm TD	36	59.5472	0.9107	1.53
9	Courses per 3cm AW	36	60.3917	0.6737	1.12
10	Wales per 3cm BW	36	44.7167	2.1662	4.84
11	Wales per 3cm TD	36	45.9083	0.7610	1.66
12	Wales per 3cm AW	36	46.4167	0.6487	1.40
13	Stitch length (mm) BW	36	2.7688	0.0148	0.54
14	Stitch length (mm) AW	36	2.7598	0.0172	0.62
15	Burst strength, BW	36	586.4944	28.4814	4.86
16	Burst strength, AW	36	568.7833	15.5655	2.74
17	Distension at burst, BW	36	18.4721	1.1951	6.47
18	Distension at burst, AW	36	19.8173	0.5249	2.65
19	Angle of spirality, BW	36	8.3448	3.4698	41.58
20	Angle of spirality, AW	36	12.6661	2.0634	16.29
21	Width, BW	36	153.2769	7.2574	4.73
22	Yarn strength, BW	36	295.3354	22.4531	7.60
23	Yarn strength, AW	36	310.3767	14.4553	4.66
24	Yarn extension at break, BW	36	7.6144	0.7276	9.56
25	Yarn extension at break, AW	36	7.6122	0.8497	11.16
26	Yarn count (tex), BW	36	18.8533	0.1863	0.99
27	Yarn count (tex), AW	36	18.8910	0.2362	1.25
28	Thickness, BW	36	609.3861	22.1402	3.63
29	Thickness, AW	36	745.0500	18.2399	2.45
30	Free Formaldehyde (p.p.m.)	0	0.0000	0.0000	0.00
31	Total Nitrogen (%)	36	0.0882	0.0380	43.14
32	Fixed Nitrogen (%)	36	0.0767	0.0252	32.85
33	Colour - R value	36	65.7198	19.7134	30.00
34	Colour - G value	36	59.6675	17.1203	28.69
35	Colour - B value	36	50.0614	19.9699	39.89
36	Yarn Count (Ne), BW	36	31.3237	0.3075	0.98
37	Yarn Count (Ne), AW	36	31.2630	0.3900	1.25

CORAH-SINGLE JERSEY '85

DYED ONLY

Winch Dyed

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage, TD	18	7.3931	1.8612	25.18
2	Width shrinkage, TD	18	2.8687	2.8505	99.37
3	Length shrinkage, 5x	18	8.5729	2.4383	28.44
4	Width shrinkage, 5x	18	2.9954	2.6957	89.99
5	Weight (gsm)BW	18	142.9857	4.6797	3.27
6	Weight (gsm)AW	18	158.9603	2.4261	1.53
7	Courses per 3cm BW	18	55.5333	1.7697	3.19
8	Courses per 3cm TD	18	59.4667	0.6851	1.15
9	Courses per 3cm AW	18	60.2167	0.4218	0.70
10	Wales per 3cm BW	18	45.0833	1.9388	4.30
11	Wales per 3cm TD	18	46.3778	0.5264	1.14
12	Wales per 3cm AW	18	46.8222	0.5397	1.15
13	Stitch length (mm) BW	18	2.7716	0.0147	0.53
14	Stitch length (mm) AW	18	2.7635	0.0167	0.61
15	Burst strength, BW	18	593.6000	33.1504	5.58
16	Burst strength, AW	18	571.7778	17.3532	3.03
17	Distension at burst, BW	18	18.9078	0.9535	5.04
18	Distension at burst, AW	18	19.8213	0.4462	2.25
19	Angle of spirality, BW	18	8.0321	3.5032	43.61
20	Angle of spirality, AW	18	13.0611	1.3294	10.18
21	Width, BW	18	152.0463	6.9953	4.60
22	Yarn strength, BW	18	289.2944	16.7942	5.81
23	Yarn strength, AW	18	314.4163	15.8345	5.04
24	Yarn extension at break, BW	18	7.8199	0.3729	4.77
25	Yarn extension at break, AW	18	7.9029	0.7826	9.90
26	Yarn count (tex), BW	18	18.8350	0.1758	0.93
27	Yarn count (tex), AW	18	18.8648	0.1652	0.88
28	Thickness, BW	18	616.1000	13.4718	2.19
29	Thickness, AW	18	746.3333	18.9550	2.54
30	Free Formaldehyde (p.p.m.)	0	0.0000	0.0000	0.00
31	Total Nitrogen (%)	18	0.1106	0.0343	30.98
32	Fixed Nitrogen (%)	18	0.0794	0.0291	36.69
33	Colour - R value	18	77.8792	7.5773	9.73
34	Colour - G value	18	66.6983	16.3164	24.46
35	Colour - B value	18	48.8839	23.3898	47.85
36	Yarn Count (Ne), BW	18	31.3538	0.2916	0.93
37	Yarn Count (Ne), AW	18	31.3039	0.2730	0.87

CORAH-SINGLE JERSEY '85

DYED ONLY

Jet Dyed

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage, TD	18	8.9624	3.5426	39.53
2	Width shrinkage, TD	18	2.5507	3.8697	151.71
3	Length shrinkage, 5x	18	10.1918	3.8654	37.93
4	Width shrinkage, 5x	18	2.8003	4.1207	147.15
5	Weight (gsm)BW	18	137.9884	5.5321	4.01
6	Weight (gsm)AW	18	156.4187	3.7825	2.42
7	Courses per 3cm BW	18	54.4389	2.9286	5.38
8	Courses per 3cm TD	18	59.6278	1.1066	1.86
9	Courses per 3cm AW	18	60.5667	0.8317	1.37
10	Wales per 3cm BW	18	44.3500	2.3700	5.34
11	Wales per 3cm TD	18	45.4389	0.6696	1.47
12	Wales per 3cm AW	18	46.0111	0.4764	1.04
13	Stitch length (mm) BW	18	2.7661	0.0148	0.53
14	Stitch length (mm) AW	18	2.7562	0.0174	0.63
15	Burst strength, BW	18	579.3889	21.5460	3.72
16	Burst strength, AW	18	565.7889	13.3678	2.36
17	Distension at burst, BW	18	18.0363	1.2764	7.08
18	Distension at burst, AW	18	19.8132	0.6068	3.06
19	Angle of spirality, BW	18	8.6575	3.5083	40.52
20	Angle of spirality, AW	18	12.2711	2.5822	21.04
21	Width, BW	18	154.5074	7.5030	4.86
22	Yarn strength, BW	18	301.3763	26.0502	8.64
23	Yarn strength, AW	18	306.3370	12.0382	3.93
24	Yarn extension at break, BW	18	7.4088	0.9281	12.53
25	Yarn extension at break, AW	18	7.3216	0.8337	11.39
26	Yarn count (tex), BW	18	18.8717	0.1997	1.06
27	Yarn count (tex), AW	18	18.9172	0.2934	1.55
28	Thickness, BW	18	602.6722	27.0604	4.49
29	Thickness, AW	18	743.7667	17.9493	2.41
30	Free Formaldehyde (p.p.m.)	0	0.0000	0.0000	0.00
31	Total Nitrogen (%)	18	0.0658	0.0273	41.54
32	Fixed Nitrogen (%)	18	0.0739	0.0210	28.38
33	Colour - R value	18	53.5604	20.7264	38.70
34	Colour - G value	18	52.6367	15.2494	28.97
35	Colour - B value	18	51.2389	16.4632	32.13
36	Yarn Count (Ne), BW	18	31.2935	0.3283	1.05
37	Yarn Count (Ne), AW	18	31.2221	0.4848	1.55

CORAH-SINGLE JERSEY '85

DYED ONLY

Stenter

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage, TD	18	6.6384	1.1412	17.19
2	Width shrinkage, TD	18	5.8140	0.8515	14.65
3	Length shrinkage, 5x	18	7.4232	1.2223	16.47
4	Width shrinkage, 5x	18	6.0021	1.1115	18.52
5	Weight (gsm)BW	18	137.3926	4.5984	3.35
6	Weight (gsm)AW	18	155.9008	3.3408	2.14
7	Courses per 3cm BW	18	56.3722	1.1826	2.10
8	Courses per 3cm TD	18	59.9500	0.5894	0.98
9	Courses per 3cm AW	18	60.4833	0.6355	1.05
10	Wales per 3cm BW	18	42.7222	0.6984	1.63
11	Wales per 3cm TD	18	45.4111	0.6028	1.33
12	Wales per 3cm AW	18	46.0444	0.4693	1.02
13	Stitch length (mm) BW	18	2.7682	0.0122	0.44
14	Stitch length (mm) AW	18	2.7627	0.0175	0.63
15	Burst strength, BW	18	569.2833	23.2889	4.09
16	Burst strength, AW	18	559.6944	13.0361	2.33
17	Distension at burst, BW	18	18.3473	1.1601	6.32
18	Distension at burst, AW	18	19.5987	0.5699	2.91
19	Angle of spirality, BW	18	6.1828	2.2265	36.01
20	Angle of spirality, AW	18	12.3022	2.3385	19.01
21	Width, BW	18	159.9722	2.5420	1.59
22	Yarn strength, BW	18	309.3837	20.1140	6.50
23	Yarn strength, AW	18	319.2681	12.2710	3.84
24	Yarn extension at break, BW	18	7.6373	0.9309	12.19
25	Yarn extension at break, AW	18	7.3078	0.9849	13.48
26	Yarn count (tex), BW	18	18.7946	0.1056	0.56
27	Yarn count (tex), AW	18	18.7963	0.1955	1.04
28	Thickness, BW	18	605.1333	18.0322	2.98
29	Thickness, AW	18	739.9167	20.7289	2.80
30	Free Formaldehyde (p.p.m.)	0	0.0000	0.0000	0.00
31	Total Nitrogen (%)	18	0.0825	0.0481	58.33
32	Fixed Nitrogen (%)	18	0.0636	0.0195	30.60
33	Colour - R value	18	66.7403	13.1997	19.78
34	Colour - G value	18	55.7971	16.6805	29.89
35	Colour - B value	18	52.6494	26.3562	50.06
36	Yarn Count (Ne), BW	18	31.4196	0.1762	0.56
37	Yarn Count (Ne), AW	18	31.4189	0.3289	1.05

CORAH-SINGLE JERSEY '85

DYED ONLY

Kiefer

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage, TD	18	9.7171	3.3163	34.13
2	Width shrinkage, TD	18	-0.3947	1.4216	-360.20
3	Length shrinkage, 5x	18	11.3414	3.5570	31.36
4	Width shrinkage, 5x	18	-0.2063	1.6204	-785.34
5	Weight (gsm)BW	18	143.5816	4.9296	3.43
6	Weight (gsm)AW	18	159.4782	2.3826	1.49
7	Courses per 3cm BW	18	53.6000	2.6221	4.89
8	Courses per 3cm TD	18	59.1444	1.0083	1.70
9	Courses per 3cm AW	18	60.3000	0.7162	1.19
10	Wales per 3cm BW	18	46.7111	0.8656	1.85
11	Wales per 3cm TD	18	46.4056	0.5525	1.19
12	Wales per 3cm AW	18	46.7889	0.5940	1.27
13	Stitch length (mm) BW	18	2.7695	0.0174	0.63
14	Stitch length (mm) AW	18	2.7569	0.0169	0.61
15	Burst strength, BW	18	603.7056	22.3702	3.71
16	Burst strength, AW	18	577.8722	12.4075	2.15
17	Distension at burst, BW	18	18.5968	1.2497	6.72
18	Distension at burst, AW	18	20.0358	0.3760	1.88
19	Angle of spirality, BW	18	10.5068	3.1513	29.99
20	Angle of spirality, AW	18	13.0300	1.7368	13.33
21	Width, BW	18	146.5815	2.6543	1.81
22	Yarn strength, BW	18	281.2870	14.6777	5.22
23	Yarn strength, AW	18	301.4852	10.5929	3.51
24	Yarn extension at break, BW	18	7.5914	0.4714	6.21
25	Yarn extension at break, AW	18	7.9167	0.5658	7.15
26	Yarn count (tex), BW	18	18.9121	0.2303	1.22
27	Yarn count (tex), AW	18	18.9857	0.2401	1.26
28	Thickness, BW	18	613.6389	25.4116	4.14
29	Thickness, AW	18	750.1833	14.1233	1.88
30	Free Formaldehyde (p.p.m.)	0	0.0000	0.0000	0.00
31	Total Nitrogen (%)	18	0.0939	0.0244	26.00
32	Fixed Nitrogen (%)	18	0.0897	0.0238	26.52
33	Colour - R value	18	64.6993	24.9731	38.60
34	Colour - G value	18	63.5379	17.1316	26.96
35	Colour - B value	18	47.4733	10.5935	22.31
36	Yarn Count (Ne), BW	18	31.2277	0.3798	1.22
37	Yarn Count (Ne), AW	18	31.1071	0.3917	1.26

CORAH-SINGLE JERSEY '85

DYED ONLY

Winch/Kiefer

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage, TD	9	8.3167	2.2233	26.73
2	Width shrinkage, TD	9	0.2120	0.9264	437.00
3	Length shrinkage, 5x	9	10.1560	2.5178	24.79
4	Width shrinkage, 5x	9	0.4827	0.7882	163.29
5	Weight (gsm)BW	9	145.3820	4.8226	3.32
6	Weight (gsm)AW	9	160.5273	1.4954	0.93
7	Courses per 3cm BW	9	54.2667	1.5819	2.92
8	Courses per 3cm TD	9	59.0111	0.5085	0.86
9	Courses per 3cm AW	9	60.0778	0.4577	0.76
10	Wales per 3cm BW	9	46.9111	0.4807	1.02
11	Wales per 3cm TD	9	46.8333	0.2345	0.50
12	Wales per 3cm AW	9	47.2667	0.1936	0.41
13	Stitch length (mm) BW	9	2.7729	0.0170	0.61
14	Stitch length (mm) AW	9	2.7631	0.0194	0.70
15	Burst strength, BW	9	613.7222	21.8389	3.56
16	Burst strength, AW	9	581.6667	12.4954	2.15
17	Distension at burst, BW	9	18.7233	0.7651	4.09
18	Distension at burst, AW	9	19.9534	0.3859	1.93
19	Angle of spirality, BW	9	10.1776	3.5268	34.65
20	Angle of spirality, AW	9	12.9244	1.4634	11.32
21	Width, BW	9	145.4481	1.4111	0.97
22	Yarn strength, BW	9	282.1874	13.6353	4.83
23	Yarn strength, AW	9	304.5348	13.1419	4.32
24	Yarn extension at break, BW	9	7.7912	0.3739	4.80
25	Yarn extension at break, AW	9	7.9690	0.6265	7.86
26	Yarn count (tex), BW	9	18.8523	0.2286	1.21
27	Yarn count (tex), AW	9	18.8627	0.2013	1.07
28	Thickness, BW	9	621.5222	14.1131	2.27
29	Thickness, AW	9	757.3444	13.6069	1.80
30	Free Formaldehyde (p.p.m.)	0	0.0000	0.0000	0.00
31	Total Nitrogen (%)	9	0.1050	0.0273	25.97
32	Fixed Nitrogen (%)	9	0.1017	0.0247	24.34
33	Colour - R value	9	80.1731	6.7824	8.46
34	Colour - G value	9	70.3894	14.0162	19.91
35	Colour - B value	9	39.8017	1.6580	4.17
36	Yarn Count (Ne), BW	9	31.3266	0.3790	1.21
37	Yarn Count (Ne), AW	9	31.3083	0.3327	1.06

CORAH-SINGLE JERSEY '85

DYED ONLY

Winch/Stenter

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage, TD	9	6.4696	0.7067	10.92
2	Width shrinkage, TD	9	5.5253	0.7268	13.15
3	Length shrinkage, 5x	9	6.9898	0.8094	11.58
4	Width shrinkage, 5x	9	5.5082	0.7837	14.23
5	Weight (gsm)BW	9	140.5893	3.2186	2.29
6	Weight (gsm)AW	9	157.3933	2.1788	1.38
7	Courses per 3cm BW	9	56.8000	0.7365	1.30
8	Courses per 3cm TD	9	59.9222	0.5215	0.87
9	Courses per 3cm AW	9	60.3556	0.3539	0.59
10	Wales per 3cm BW	9	43.2556	0.4902	1.13
11	Wales per 3cm TD	9	45.9222	0.2587	0.56
12	Wales per 3cm AW	9	46.3778	0.3701	0.80
13	Stitch length (mm) BW	9	2.7704	0.0131	0.47
14	Stitch length (mm) AW	9	2.7639	0.0148	0.53
15	Burst strength, BW	9	573.4778	30.7781	5.37
16	Burst strength, AW	9	561.8889	16.2403	2.89
17	Distension at burst, BW	9	19.0923	1.1270	5.90
18	Distension at burst, AW	9	19.6892	0.4847	2.46
19	Angle of spirality, BW	9	5.8867	1.8120	30.78
20	Angle of spirality, AW	9	13.1978	1.2538	9.50
21	Width, BW	9	158.6444	2.0101	1.27
22	Yarn strength, BW	9	296.4015	17.3140	5.84
23	Yarn strength, AW	9	324.2978	11.8488	3.65
24	Yarn extension at break, BW	9	7.8486	0.3921	5.00
25	Yarn extension at break, AW	9	7.8368	0.9482	12.10
26	Yarn count (tex), BW	9	18.8177	0.1129	0.60
27	Yarn count (tex), AW	9	18.8669	0.1321	0.70
28	Thickness, BW	9	610.6778	10.9697	1.80
29	Thickness, AW	9	735.3222	17.4800	2.38
30	Free Formaldehyde (p.p.m.)	0	0.0000	0.0000	0.00
31	Total Nitrogen (%)	9	0.1161	0.0410	35.30
32	Fixed Nitrogen (%)	9	0.0572	0.0091	15.82
33	Colour - R value	9	75.5853	8.0104	10.60
34	Colour - G value	9	63.0072	18.4017	29.21
35	Colour - B value	9	57.9661	31.2123	53.85
36	Yarn Count (Ne), BW	9	31.3810	0.1882	0.60
37	Yarn Count (Ne), AW	9	31.2995	0.2182	0.70

CORAH-SINGLE JERSEY '85

DYED ONLY

Jet/Kiefer

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage, TD	9	11.1176	3.7437	33.67
2	Width shrinkage, TD	9	-1.0013	1.6149	-161.28
3	Length shrinkage, 5x	9	12.5269	4.1695	33.28
4	Width shrinkage, 5x	9	-0.8953	1.9724	-220.30
5	Weight (gsm)BW	9	141.7811	4.5923	3.24
6	Weight (gsm)AW	9	158.4291	2.7111	1.71
7	Courses per 3cm BW	9	52.9333	3.3328	6.30
8	Courses per 3cm TD	9	59.2778	1.3645	2.30
9	Courses per 3cm AW	9	60.5222	0.8772	1.45
10	Wales per 3cm BW	9	46.5111	1.1274	2.42
11	Wales per 3cm TD	9	45.9778	0.4265	0.93
12	Wales per 3cm AW	9	46.3111	0.4457	0.96
13	Stitch length (mm) BW	9	2.7661	0.0181	0.66
14	Stitch length (mm) AW	9	2.7507	0.0120	0.44
15	Burst strength, BW	9	593.6889	18.9926	3.20
16	Burst strength, AW	9	574.0778	11.7730	2.05
17	Distension at burst, BW	9	18.4703	1.6424	8.89
18	Distension at burst, AW	9	20.1182	0.3691	1.83
19	Angle of spirality, BW	9	10.8361	2.9018	26.78
20	Angle of spirality, AW	9	13.1356	2.0600	15.68
21	Width, BW	9	147.7148	3.1766	2.15
22	Yarn strength, BW	9	280.3867	16.4334	5.86
23	Yarn strength, AW	9	298.4356	6.6940	2.24
24	Yarn extension at break, BW	9	7.3916	0.4925	6.66
25	Yarn extension at break, AW	9	7.8644	0.5306	6.75
26	Yarn count (tex), BW	9	18.9720	0.2288	1.21
27	Yarn count (tex), AW	9	19.1086	0.2190	1.15
28	Thickness, BW	9	605.7556	32.1436	5.31
29	Thickness, AW	9	743.0222	11.1058	1.49
30	Free Formaldehyde (p.p.m.)	0	0.0000	0.0000	0.00
31	Total Nitrogen (%)	9	0.0828	0.0156	18.89
32	Fixed Nitrogen (%)	9	0.0778	0.0164	21.10
33	Colour - R value	9	49.2256	27.2128	55.28
34	Colour - G value	9	56.6864	17.9329	31.64
35	Colour - B value	9	55.1450	10.1638	18.43
36	Yarn Count (Ne), BW	9	31.1288	0.3753	1.21
37	Yarn Count (Ne), AW	9	30.9059	0.3525	1.14

CORAH-SINGLE JERSEY '85

DYED ONLY

Jet/Stenter

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage, TD	9	6.8073	1.4846	21.81
2	Width shrinkage, TD	9	6.1027	0.9084	14.88
3	Length shrinkage, 5x	9	7.8567	1.4481	18.43
4	Width shrinkage, 5x	9	6.4960	1.2093	18.62
5	Weight (gsm)BW	9	134.1958	3.4030	2.54
6	Weight (gsm)AW	9	154.4082	3.7360	2.42
7	Courses per 3cm BW	9	55.9444	1.4205	2.54
8	Courses per 3cm TD	9	59.9778	0.6815	1.14
9	Courses per 3cm AW	9	60.6111	0.8343	1.38
10	Wales per 3cm BW	9	42.1889	0.3951	0.94
11	Wales per 3cm TD	9	44.9000	0.3428	0.76
12	Wales per 3cm AW	9	45.7111	0.2848	0.62
13	Stitch length (mm) BW	9	2.7661	0.0116	0.42
14	Stitch length (mm) AW	9	2.7616	0.0207	0.75
15	Burst strength, BW	9	565.0889	12.8712	2.28
16	Burst strength, AW	9	557.5000	9.3028	1.67
17	Distension at burst, BW	9	17.6022	0.5837	3.32
18	Distension at burst, AW	9	19.5082	0.6609	3.39
19	Angle of spirality, BW	9	6.4789	2.6560	40.99
20	Angle of spirality, AW	9	11.4067	2.8713	25.17
21	Width, BW	9	161.3000	2.3925	1.48
22	Yarn strength, BW	9	322.3659	13.4436	4.17
23	Yarn strength, AW	9	314.2385	11.0754	3.52
24	Yarn extension at break, BW	9	7.4261	1.2599	16.97
25	Yarn extension at break, AW	9	6.7787	0.7296	10.76
26	Yarn count (tex), BW	9	18.7714	0.0987	0.53
27	Yarn count (tex), AW	9	18.7258	0.2292	1.22
28	Thickness, BW	9	599.5889	22.3933	3.73
29	Thickness, AW	9	744.5111	23.6652	3.18
30	Free Formaldehyde (p.p.m.)	0	0.0000	0.0000	0.00
31	Total Nitrogen (%)	9	0.0489	0.0264	54.06
32	Fixed Nitrogen (%)	9	0.0700	0.0251	35.89
33	Colour - R value	9	57.8953	11.4040	19.70
34	Colour - G value	9	48.5869	11.6477	23.97
35	Colour - B value	9	47.3328	20.9361	44.23
36	Yarn Count (Ne), BW	9	31.4582	0.1649	0.52
37	Yarn Count (Ne), AW	9	31.5383	0.3876	1.23

CORAH-SINGLE JERSEY '85

DYED ONLY

Reactive

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage, TD	30	8.4863	3.0762	36.25
2	Width shrinkage, TD	30	2.0650	3.3109	160.33
3	Length shrinkage, 5x	30	9.7675	3.4727	35.55
4	Width shrinkage, 5x	30	2.2231	3.3687	151.54
5	Weight (gsm)BW	30	141.7939	5.0989	3.60
6	Weight (gsm)AW	30	158.7110	2.3901	1.51
7	Courses per 3cm BW	30	54.8033	2.6355	4.81
8	Courses per 3cm TD	30	59.5833	0.9689	1.63
9	Courses per 3cm AW	30	60.4700	0.6783	1.12
10	Wales per 3cm BW	30	45.0967	2.1701	4.81
11	Wales per 3cm TD	30	45.9867	0.7895	1.72
12	Wales per 3cm AW	30	46.4467	0.6689	1.44
13	Stitch length (mm) BW	30	2.7670	0.0150	0.54
14	Stitch length (mm) AW	30	2.7594	0.0170	0.62
15	Burst strength, BW	30	594.6867	23.1154	3.89
16	Burst strength, AW	30	571.5300	14.3433	2.51
17	Distension at burst, BW	30	18.6426	1.1742	6.30
18	Distension at burst, AW	30	19.9843	0.3780	1.89
19	Angle of spirality, BW	30	9.2618	3.0243	32.65
20	Angle of spirality, AW	30	13.1947	1.6088	12.19
21	Width, BW	30	151.5800	6.6870	4.41
22	Yarn strength, BW	30	291.1500	21.9662	7.54
23	Yarn strength, AW	30	310.5289	15.7967	5.09
24	Yarn extension at break, BW	30	7.7310	0.6303	8.15
25	Yarn extension at break, AW	30	7.8481	0.6885	8.77
26	Yarn count (tex), BW	30	18.8629	0.1945	1.03
27	Yarn count (tex), AW	30	18.9042	0.2543	1.35
28	Thickness, BW	30	607.6600	23.7085	3.90
29	Thickness, AW	30	742.4967	18.3202	2.47
30	Free Formaldehyde (p.p.m.)	0	0.0000	0.0000	0.00
31	Total Nitrogen (%)	30	0.0945	0.0383	40.52
32	Fixed Nitrogen (%)	30	0.0805	0.0257	31.89
33	Colour - R value	30	65.7789	19.4828	29.62
34	Colour - G value	30	56.8102	16.2822	28.66
35	Colour - B value	30	42.6329	10.3488	24.27
36	Yarn Count (Ne), BW	30	31.3080	0.3208	1.02
37	Yarn Count (Ne), AW	30	31.2419	0.4200	1.34

CORAH-SINGLE JERSEY '85

DYED ONLY

Direct

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage, TD	3	7.1573	0.4640	6.48
2	Width shrinkage, TD	3	6.0953	0.4593	7.54
3	Length shrinkage, 5x	3	7.9953	0.1943	2.43
4	Width shrinkage, 5x	3	6.6987	0.2971	4.44
5	Weight (gsm)BW	3	131.1953	1.7920	1.37
6	Weight (gsm)AW	3	150.0787	2.0857	1.39
7	Courses per 3cm BW	3	55.3333	0.4509	0.81
8	Courses per 3cm TD	3	59.2000	0.2000	0.34
9	Courses per 3cm AW	3	59.5667	0.3786	0.64
10	Wales per 3cm BW	3	42.3333	0.0577	0.14
11	Wales per 3cm TD	3	45.1333	0.2517	0.56
12	Wales per 3cm AW	3	45.7667	0.2082	0.45
13	Stitch length (mm) BW	3	2.7780	0.0062	0.22
14	Stitch length (mm) AW	3	2.7454	0.0029	0.11
15	Burst strength, BW	3	550.7000	6.6843	1.21
16	Burst strength, AW	3	564.5333	8.9813	1.59
17	Distension at burst, BW	3	17.0323	0.7054	4.14
18	Distension at burst, AW	3	18.8107	0.3621	1.92
19	Angle of spirality, BW	3	3.8833	1.3655	35.16
20	Angle of spirality, AW	3	8.0833	0.5481	6.78
21	Width, BW	3	163.5333	1.1050	0.68
22	Yarn strength, BW	3	324.5867	5.6991	1.76
23	Yarn strength, AW	3	306.2533	1.5279	0.50
24	Yarn extension at break, BW	3	6.2261	0.4310	6.92
25	Yarn extension at break, AW	3	6.0102	0.0959	1.60
26	Yarn count (tex), BW	3	18.7752	0.1613	0.86
27	Yarn count (tex), AW	3	18.8598	0.0947	0.50
28	Thickness, BW	3	614.2667	8.8659	1.44
29	Thickness, AW	3	768.2667	5.7361	0.75
30	Free Formaldehyde (p.p.m.)	0	0.0000	0.0000	0.00
31	Total Nitrogen (%)	3	0.0467	0.0115	24.74
32	Fixed Nitrogen (%)	3	0.0533	0.0029	5.41
33	Colour - R value	3	44.6400	0.1484	0.33
34	Colour - G value	3	60.4217	0.1604	0.27
35	Colour - B value	3	74.8408	0.2858	0.38
36	Yarn Count (Ne), BW	3	31.4526	0.2690	0.86
37	Yarn Count (Ne), AW	3	31.3105	0.1574	0.50

CORAH-SINGLE JERSEY '85

DYED ONLY

White

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage, TD	3	6.1127	0.6285	10.28
2	Width shrinkage, TD	3	5.7707	0.4019	6.96
3	Length shrinkage, 5x	3	6.9173	0.4451	6.43
4	Width shrinkage, 5x	3	5.8453	0.3195	5.47
5	Weight (gsm)BW	3	136.7100	1.3940	1.02
6	Weight (gsm)AW	3	155.0853	0.9056	0.58
7	Courses per 3cm BW	3	56.4667	0.1528	0.27
8	Courses per 3cm TD	3	59.5333	0.8145	1.37
9	Courses per 3cm AW	3	60.4333	0.1155	0.19
10	Wales per 3cm BW	3	43.3000	0.3606	0.83
11	Wales per 3cm TD	3	45.9000	0.2000	0.44
12	Wales per 3cm AW	3	46.7667	0.0577	0.12
13	Stitch length (mm) BW	3	2.7784	0.0151	0.54
14	Stitch length (mm) AW	3	2.7787	0.0114	0.41
15	Burst strength, BW	3	540.3667	16.8304	3.11
16	Burst strength, AW	3	545.5667	15.0816	2.76
17	Distension at burst, BW	3	18.2063	0.9244	5.08
18	Distension at burst, AW	3	19.1540	0.1438	0.75
19	Angle of spirality, BW	3	3.6367	0.6955	19.12
20	Angle of spirality, AW	3	11.9633	0.4954	4.14
21	Width, BW	3	159.9889	1.8872	1.18
22	Yarn strength, BW	3	307.9378	3.0149	0.98
23	Yarn strength, AW	3	312.9778	0.3662	0.12
24	Yarn extension at break, BW	3	7.8364	0.3854	4.92
25	Yarn extension at break, AW	3	6.8556	0.4574	6.67
26	Yarn count (tex), BW	3	18.8357	0.1483	0.79
27	Yarn count (tex), AW	3	18.7903	0.1007	0.54
28	Thickness, BW	3	621.7667	6.2421	1.00
29	Thickness, AW	3	747.3667	2.8729	0.38
30	Free Formaldehyde (p.p.m.)	0	0.0000	0.0000	0.00
31	Total Nitrogen (%)	3	0.0667	0.0076	11.46
32	Fixed Nitrogen (%)	3	0.0617	0.0126	20.40
33	Colour - R value	3	86.2083	0.7746	0.90
34	Colour - G value	3	87.4858	1.0526	1.20
35	Colour - B value	3	99.5667	1.0327	1.04
36	Yarn Count (Ne), BW	3	31.3513	0.2465	0.79
37	Yarn Count (Ne), AW	3	31.4264	0.1679	0.53

A P P E N D I X D

DYED & RESINATED DATA

Resinated

Knitted On : Monarch 3FA 24 Guage
Diameter 30 inches
Needles 2268

IIC No.	Pc.No.	Ref. Number	Resin Bath	Colour	Fin. Width(cm)	Trimmings (cms)
1	1	305339	300	MED YELLOW	148.0	4.0
2	2	305339	300	MED YELLOW	148.0	4.0
3	3	305339	300	MED YELLOW	149.0	4.0
4	1	315313	300	MED PINK	150.5	4.0
5	2	315313	300	MED PINK	151.5	4.0
6	3	315313	300	MED PINK	149.0	4.0
7	1	295314	300	MED TURQ.	149.0	4.0
8	2	295314	300	MED TURQ.	149.0	4.0
9	3	295314	300	MED TURQ.	149.0	4.0
10	1	325352	300	MED YELLOW	149.0	4.5
11	2	325352	300	MED YELLOW	150.0	4.5
12	3	325352	300	MED YELLOW	151.0	4.5
13	1	295313	300	MED TURQ.	149.5	4.0
14	2	295313	300	MED TURQ.	149.0	4.0
15	3	295313	300	MED TURQ.	150.0	3.5
16	1	305313	300W	WHITE(OBA)	150.0	4.0
17	2	305313	300W	WHITE(OBA)	148.5	4.0
18	3	305313	300W	WHITE(OBA)	148.0	4.0
19	1	305342	300	DIR. TURQ.	150.5	4.0
20	2	305342	300	DIR. TURQ.	149.0	4.0
21	3	305342	300	DIR. TURQ.	150.5	4.0
22	1	365319	300	MED ORANGE	149.5	5.0
23	2	365319	300	MED ORANGE	150.5	5.0
24	3	365319	300	MED ORANGE	149.5	5.0
25	1	325339	300	MED ORANGE	148.0	4.5
26	2	325339	300	MED ORANGE	150.0	4.5
27	3	325339	300	MED ORANGE	149.5	4.5
28	1	345315	300	MED YELLOW	149.0	4.5
29	2	345315	300	MED YELLOW	149.5	4.5
30	3	345315	300	MED YELLOW	150.0	4.5
31	1	325345	300	MED ORANGE	150.0	4.0
32	2	325345	300	MED ORANGE	150.5	4.0
33	3	325345	300	MED ORANGE	150.0	4.0
34	1	325343	300	MED ORANGE	150.5	4.0
35	2	325343	300	MED ORANGE	150.0	4.0
36	3	325343	300	MED ORANGE	150.0	4.0

All Fabrics as Dyed + Stenter Resin,Gum and Cut

MEMORANDUM

D2

TO: Mr. E.M. Lodge Ref:	FROM: A. Bonsell Ref: AB/MWP.
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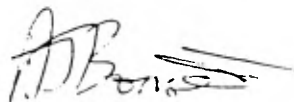
(Date) 15th August 1985.

Re: "Starfish" Project:

The following information regarding Resin recipes used in the "Starfish" project will be eventually required by I.I.C. I have prepared the necessary details assuming their representatives will contact yourself when such information is required.

	Resin Formula 300	Resin Formula 300W
Permafresh ULF	6600	4950
Dicrylan WK	1500	1500
Phobotone WS	600	600
Perapret PE40	1500	5500
Sandolube NV	6000	2000
BN30	2000	2000
Hoe T3282 Catalyst NKB-X	2200	1485
Catalyst AP	300	300

The above formulae are diluted in 200 litres of water. All measurements are in grammes.


A. BONSELL

CORAH-SINGLE JERSEY '85

DYED & RESINATED

Sample Identification

Test Method	1	2	3	4	5	6
1 Length shrinkage, TD	5.66	5.53	4.63	7.63	7.11	7.51
2 Width shrinkage, TD	5.77	6.38	6.58	4.88	4.44	4.63
3 Length shrinkage, 5x	5.95	5.90	5.48	7.43	6.60	7.31
4 Width shrinkage, 5x	5.53	5.99	6.06	3.85	3.45	4.14
5 Weight (gsm)BW	137.62	137.23	138.96	136.16	136.89	133.02
6 Weight (gsm)AW	153.95	154.42	153.86	148.29	149.18	147.65
7 Courses per 3cm BW	53.90	54.40	54.20	54.20	54.50	53.30
8 Courses per 3cm TD	57.00	57.10	57.00	57.80	57.80	56.70
9 Courses per 3cm AW	57.20	57.90	58.00	58.00	57.60	56.40
10 Wales per 3cm BW	43.90	43.30	43.40	42.70	42.50	42.70
11 Wales per 3cm TD	46.40	46.10	46.10	44.50	44.60	45.10
12 Wales per 3cm AW	46.40	45.70	46.30	44.60	44.70	44.80
13 Stitch length (mm) BW	2.76	2.77	2.78	2.76	2.77	2.75
14 Stitch length (mm) AW	2.76	2.76	2.77	2.75	2.75	2.75
15 Burst strength, BW	478.90	461.10	496.80	437.40	401.80	414.80
16 Burst strength, AW	467.90	513.40	497.40	437.30	420.50	384.70
17 Distension at burst, BW	17.41	18.51	17.76	17.41	18.07	16.87
18 Distension at burst, AW	20.23	19.43	21.24	19.59	20.91	19.42
19 Angle of spirality, BW	2.55	2.87	1.34	-1.79	-1.26	-0.63
20 Angle of spirality, AW	8.56	9.02	8.85	7.03	6.57	6.27
21 Width, BW	147.20	148.77	148.33	150.27	151.73	149.97
22 Yarn strength, BW	203.84	224.80	213.00	197.24	184.64	183.25
23 Yarn strength, AW	226.71	235.13	231.72	219.88	207.69	201.68
24 Yarn extension at break, BW	6.67	7.05	7.22	6.63	6.36	6.17
25 Yarn extension at break, AW	6.03	6.59	6.47	6.56	6.42	6.21
26 Yarn count (tex), BW	19.36	19.56	19.23	19.30	19.37	19.66
27 Yarn count (tex), AW	19.25	19.35	19.31	19.16	19.35	19.14
28 Thickness, BW	584.10	580.80	586.90	574.40	569.40	557.90
29 Thickness, AW	694.00	701.80	722.10	690.90	690.90	671.80
30 Free Formaldehyde (p.p.m.)	202.53	197.43	168.00	148.17	74.71	63.35
31 Total Nitrogen (%)	0.20	0.21	0.20	0.21	0.22	0.19
32 Fixed Nitrogen (%)	0.16	0.16	0.16	0.17	0.17	0.17
33 Colour - R value	83.96	84.20	84.68	58.32	58.51	58.16
34 Colour - G value	78.85	79.15	79.35	34.22	34.33	33.83
35 Colour - B value	41.27	41.81	42.17	30.10	30.24	29.83
36 Yarn Count (Ne), BW	30.51	30.19	30.71	30.59	30.49	30.04
37 Yarn Count (Ne), AW	30.68	30.52	30.58	30.81	30.52	30.85

CORAH-SINGLE JERSEY '85

DYED & RESINATED

Test Method	Sample Identification					
	7	8	9	10	11	12
1 Length shrinkage, TD	6.84	6.00	6.85	7.95	6.42	7.80
2 Width shrinkage, TD	5.02	6.20	5.54	5.63	6.01	5.59
3 Length shrinkage, 5x	6.81	5.91	7.18	7.56	5.99	7.63
4 Width shrinkage, 5x	4.72	5.31	5.43	4.50	5.02	5.17
5 Weight (gsm)BW	137.03	135.48	134.88	134.06	133.20	131.41
6 Weight (gsm)AW	155.62	151.83	152.43	148.57	147.68	148.77
7 Courses per 3cm BW	54.90	53.70	53.80	52.30	53.10	51.70
8 Courses per 3cm TD	58.50	56.40	57.50	56.10	56.10	56.00
9 Courses per 3cm AW	59.10	59.10	58.40	55.80	55.70	56.60
10 Wales per 3cm BW	42.90	43.70	43.10	42.90	42.30	42.80
11 Wales per 3cm TD	45.50	46.40	45.70	45.90	45.60	46.10
12 Wales per 3cm AW	44.90	45.90	45.40	45.90	45.10	45.70
13 Stitch length (mm) BW	2.76	2.76	2.78	2.76	2.78	2.77
14 Stitch length (mm) AW	2.76	2.76	2.77	2.76	2.76	2.76
15 Burst strength, BW	489.90	470.00	479.70	452.20	461.00	446.60
16 Burst strength, AW	501.40	486.10	471.40	476.70	473.60	467.70
17 Distension at burst, BW	18.54	18.05	18.58	18.40	18.24	18.22
18 Distension at burst, AW	20.93	19.64	22.26	19.63	18.76	19.60
19 Angle of spirality, BW	3.32	4.12	2.37	2.13	0.51	3.08
20 Angle of spirality, AW	9.55	10.24	9.11	6.62	7.37	6.92
21 Width, BW	149.37	148.07	148.23	149.30	149.43	150.10
22 Yarn strength, BW	218.75	215.76	212.51	190.56	181.76	187.47
23 Yarn strength, AW	248.81	230.31	236.15	202.71	202.92	195.83
24 Yarn extension at break, BW	7.17	6.88	7.16	6.45	6.04	5.72
25 Yarn extension at break, AW	6.23	5.95	6.05	7.12	6.79	6.67
26 Yarn count (tex), BW	19.39	19.43	19.16	19.58	19.47	19.54
27 Yarn count (tex), AW	19.51	19.16	19.16	19.67	19.30	19.23
28 Thickness, BW	574.80	570.00	569.80	593.80	591.40	584.90
29 Thickness, AW	699.10	688.20	686.90	727.80	720.90	717.80
30 Free Formaldehyde (p.p.m.)	378.81	258.74	315.87	166.51	173.49	115.02
31 Total Nitrogen (%)	0.19	0.22	0.18	0.16	0.17	0.17
32 Fixed Nitrogen (%)	0.17	0.19	0.17	0.16	0.03	0.15
33 Colour - R value	31.47	31.53	31.46	85.63	85.88	85.74
34 Colour - G value	44.90	44.69	44.80	80.33	80.56	80.34
35 Colour - B value	61.91	62.21	61.83	40.75	41.06	40.66
36 Yarn Count (Ne), BW	30.46	30.39	30.82	30.16	30.33	30.22
37 Yarn Count (Ne), AW	30.27	30.81	30.81	30.02	30.60	30.71

CORAH-SINGLE JERSEY '85

DYED & RESINATED

Test Method	Sample Identification					
	13	14	15	16	17	18
1 Length shrinkage, TD	5.64	6.62	6.11	8.26	8.48	8.07
2 Width shrinkage, TD	4.93	4.74	5.10	5.47	5.61	5.47
3 Length shrinkage, 5x	5.85	6.55	5.64	8.54	8.87	8.55
4 Width shrinkage, 5x	4.71	4.92	4.43	5.20	5.22	5.60
5 Weight (gsm)BW	138.84	138.39	138.43	132.79	132.98	133.42
6 Weight (gsm)AW	152.17	152.48	151.66	152.54	149.75	152.90
7 Courses per 3cm BW	54.10	53.70	55.40	53.70	52.70	53.90
8 Courses per 3cm TD	57.70	57.30	57.80	57.50	57.30	57.80
9 Courses per 3cm AW	57.70	57.30	58.30	58.00	57.80	58.00
10 Wales per 3cm BW	42.80	43.60	42.70	42.60	42.50	42.50
11 Wales per 3cm TD	45.30	46.20	45.20	45.60	45.60	45.70
12 Wales per 3cm AW	45.30	46.00	45.00	45.20	44.90	45.60
13 Stitch length (mm) BW	2.78	2.77	2.77	2.79	2.77	2.78
14 Stitch length (mm) AW	2.76	2.75	2.75	2.77	2.78	2.78
15 Burst strength, BW	458.20	485.00	458.40	525.80	488.70	514.90
16 Burst strength, AW	475.80	504.50	473.10	501.10	498.90	490.80
17 Distension at burst, BW	18.56	19.76	18.47	18.23	18.58	18.92
18 Distension at burst, AW	19.82	20.65	19.11	19.29	18.69	19.41
19 Angle of spirality, BW	9.41	8.46	6.72	5.95	4.61	2.16
20 Angle of spirality, AW	9.80	9.84	9.75	11.71	11.48	11.45
21 Width, BW	150.60	147.62	150.47	149.53	148.67	148.27
22 Yarn strength, BW	212.21	215.88	208.73	232.95	239.28	239.65
23 Yarn strength, AW	225.04	234.81	210.99	236.47	238.32	253.91
24 Yarn extension at break, BW	6.10	6.15	6.53	6.35	6.80	7.04
25 Yarn extension at break, AW	7.33	7.32	7.16	7.64	7.91	8.81
26 Yarn count (tex), BW	19.46	19.28	19.46	19.21	19.24	19.05
27 Yarn count (tex), AW	19.34	19.48	19.38	19.18	19.12	18.88
28 Thickness, BW	581.40	576.30	578.40	551.00	547.30	554.10
29 Thickness, AW	689.10	680.10	699.10	705.60	709.60	716.10
30 Free Formaldehyde (p.p.m.)	243.17	299.63	247.14	308.19	228.02	209.63
31 Total Nitrogen (%)	0.22	0.22	0.23	0.13	0.15	0.15
32 Fixed Nitrogen (%)	0.19	0.19	0.20	0.13	0.12	0.12
33 Colour - R value	32.47	31.93	32.01	86.33	86.54	86.61
34 Colour - G value	45.97	45.34	45.40	87.50	87.87	87.99
35 Colour - B value	63.42	61.97	62.98	99.02	99.05	99.53
36 Yarn Count (Ne), BW	30.34	30.62	30.34	30.73	30.70	31.00
37 Yarn Count (Ne), AW	30.54	30.31	30.47	30.79	30.89	31.27

CORAH-SINGLE JERSEY '85

DYED & RESINATED

Test Method	Sample Identification					
	19	20	21	22	23	24
1 Length shrinkage, TD	7.50	6.02	6.58	6.17	5.38	5.76
2 Width shrinkage, TD	4.90	4.95	5.01	5.82	6.13	5.10
3 Length shrinkage, 5x	8.19	6.54	6.85	5.77	5.39	6.17
4 Width shrinkage, 5x	4.89	5.06	5.04	5.84	5.65	5.64
5 Weight (gsm)BW	132.82	135.42	136.47	133.76	136.59	135.67
6 Weight (gsm)AW	147.05	148.79	147.05	147.04	151.07	148.94
7 Courses per 3cm BW	52.70	53.50	54.20	53.60	53.70	53.10
8 Courses per 3cm TD	56.60	56.70	57.00	56.40	56.80	56.30
9 Courses per 3cm AW	57.10	57.20	57.40	56.50	56.90	56.10
10 Wales per 3cm BW	42.20	42.70	42.20	42.70	42.60	42.40
11 Wales per 3cm TD	44.00	44.30	44.30	45.10	45.20	45.40
12 Wales per 3cm AW	44.50	44.80	44.50	45.50	45.30	45.00
13 Stitch length (mm) BW	2.75	2.76	2.76	2.77	2.78	2.79
14 Stitch length (mm) AW	2.74	2.74	2.74	2.76	2.75	2.77
15 Burst strength, BW	446.70	427.10	446.90	437.20	447.00	397.20
16 Burst strength, AW	487.00	452.70	446.40	434.50	449.10	419.30
17 Distension at burst, BW	16.75	16.58	17.09	17.98	17.78	19.38
18 Distension at burst, AW	18.18	18.57	20.82	19.31	19.09	20.35
19 Angle of spirality, BW	3.67	3.60	0.71	3.30	1.68	2.12
20 Angle of spirality, AW	8.97	6.19	6.08	9.02	7.88	8.07
21 Width, BW	151.97	152.53	152.43	151.10	149.97	150.37
22 Yarn strength, BW	185.17	175.57	178.60	190.40	188.27	182.37
23 Yarn strength, AW	205.45	188.95	208.61	190.97	208.61	191.51
24 Yarn extension at break, BW	7.41	6.75	6.43	6.55	6.57	6.47
25 Yarn extension at break, AW	7.07	7.00	7.09	6.11	6.39	6.27
26 Yarn count (tex), BW	18.72	19.87	19.36	18.82	19.25	19.43
27 Yarn count (tex), AW	19.31	19.21	19.10	18.86	19.15	19.12
28 Thickness, BW	548.80	568.40	566.10	551.40	555.10	561.80
29 Thickness, AW	672.80	669.90	672.20	654.40	666.00	666.40
30 Free Formaldehyde (p.p.m.)	124.21	84.30	138.21	127.65	130.78	105.44
31 Total Nitrogen (%)	0.18	0.14	0.16	0.17	0.17	0.16
32 Fixed Nitrogen (%)	0.14	0.14	0.16	0.15	0.15	0.15
33 Colour - R value	44.25	44.80	44.94	70.52	70.53	69.92
34 Colour - G value	59.46	60.13	60.10	51.48	51.45	51.13
35 Colour - B value	73.09	73.33	73.36	38.13	38.20	38.20
36 Yarn Count (Ne), BW	31.54	29.72	30.49	31.37	30.68	30.39
37 Yarn Count (Ne), AW	30.57	30.73	30.91	31.31	30.84	30.88

CORAH-SINGLE JERSEY '85

DYED & RESINATED

Test Method	Sample Identification					
	25	26	27	28	29	30
1 Length shrinkage, TD	6.22	6.71	6.74	5.44	5.83	5.47
2 Width shrinkage, TD	4.15	4.08	3.92	5.22	4.93	4.94
3 Length shrinkage, 5x	7.90	7.47	6.82	6.06	6.62	6.72
4 Width shrinkage, 5x	4.00	3.98	3.99	6.10	6.11	5.59
5 Weight (gsm)BW	132.10	136.75	133.16	135.89	134.73	136.23
6 Weight (gsm)AW	148.06	150.09	147.74	153.67	152.19	153.05
7 Courses per 3cm BW	54.20	54.70	54.20	53.00	53.80	53.50
8 Courses per 3cm TD	57.10	58.00	57.20	56.30	56.60	56.90
9 Courses per 3cm AW	57.70	58.30	58.00	56.10	56.90	56.90
10 Wales per 3cm BW	42.70	42.60	42.80	43.00	42.90	42.40
11 Wales per 3cm TD	44.50	44.40	44.00	45.70	44.80	45.00
12 Wales per 3cm AW	44.60	44.30	44.20	45.20	45.20	45.40
13 Stitch length (mm) BW	2.77	2.78	2.78	2.76	2.75	2.78
14 Stitch length (mm) AW	2.76	2.75	2.76	2.78	2.75	2.75
15 Burst strength, BW	433.20	454.00	421.30	453.20	478.20	470.20
16 Burst strength, AW	431.90	458.00	392.20	414.90	455.20	442.50
17 Distension at burst, BW	17.97	16.85	17.63	17.17	17.29	18.53
18 Distension at burst, AW	19.09	20.11	20.17	19.78	19.27	20.23
19 Angle of spirality, BW	4.10	3.25	3.82	5.41	5.57	4.73
20 Angle of spirality, AW	9.11	8.93	8.15	10.74	11.79	10.57
21 Width, BW	152.87	152.00	152.40	147.77	147.07	147.30
22 Yarn strength, BW	193.03	207.68	194.53	201.84	201.89	219.64
23 Yarn strength, AW	223.08	221.56	204.11	232.13	214.29	220.93
24 Yarn extension at break, BW	6.72	7.97	7.58	7.95	8.25	7.93
25 Yarn extension at break, AW	7.07	7.34	7.41	7.79	7.26	7.38
26 Yarn count (tex), BW	19.20	18.43	19.28	19.57	19.15	19.26
27 Yarn count (tex), AW	18.89	19.03	18.82	19.13	19.00	19.13
28 Thickness, BW	560.40	558.20	554.00	552.00	551.30	551.00
29 Thickness, AW	648.30	656.50	643.00	645.50	639.50	644.20
30 Free Formaldehyde (p.p.m.)	112.52	201.61	136.06	107.77	167.80	173.51
31 Total Nitrogen (%)	0.16	0.16	0.17	0.20	0.19	0.21
32 Fixed Nitrogen (%)	0.14	0.14	0.15	0.18	0.19	0.18
33 Colour - R value	70.49	71.04	71.24	84.64	84.52	84.61
34 Colour - G value	51.26	51.73	51.91	80.19	80.09	80.29
35 Colour - B value	38.58	38.46	38.43	40.55	39.62	39.98
36 Yarn Count (Ne), BW	30.76	32.04	30.63	30.18	30.84	30.66
37 Yarn Count (Ne), AW	31.26	31.02	31.38	30.86	31.09	30.86

CORAH-SINGLE JERSEY '85

DYED & RESINATED

Test Method	Sample Identification					
	31	32	33	34	35	36
1 Length shrinkage, TD	5.63	5.56	5.25	6.25	6.16	5.35
2 Width shrinkage, TD	3.60	4.51	3.48	3.27	2.92	3.67
3 Length shrinkage, 5x	6.15	7.01	5.78	7.21	6.91	6.68
4 Width shrinkage, 5x	4.65	5.00	4.51	4.03	3.80	3.99
5 Weight (gsm)BW	138.08	135.93	136.10	134.10	135.41	136.32
6 Weight (gsm)AW	153.93	150.02	152.95	152.65	152.58	152.94
7 Courses per 3cm BW	54.90	53.70	53.90	53.50	53.60	53.60
8 Courses per 3cm TD	58.00	57.00	57.20	57.80	57.50	57.30
9 Courses per 3cm AW	57.60	56.60	57.40	58.60	57.80	58.50
10 Wales per 3cm BW	42.40	42.70	43.00	42.80	42.60	42.70
11 Wales per 3cm TD	44.90	44.60	45.20	45.00	44.70	44.90
12 Wales per 3cm AW	44.60	44.40	45.10	45.40	45.00	45.20
13 Stitch length (mm) BW	2.77	2.75	2.77	2.76	2.79	2.77
14 Stitch length (mm) AW	2.75	2.75	2.78	2.76	2.76	2.76
15 Burst strength, BW	479.80	475.30	493.80	498.50	473.50	476.70
16 Burst strength, AW	471.70	488.90	499.40	485.70	449.70	472.40
17 Distension at burst, BW	20.28	19.37	18.92	17.70	19.07	18.26
18 Distension at burst, AW	19.60	20.85	20.91	20.40	19.85	18.51
19 Angle of spirality, BW	3.42	6.58	3.91	8.92	4.03	4.16
20 Angle of spirality, AW	10.31	10.77	10.28	13.03	10.73	10.84
21 Width, BW	149.27	149.50	149.83	150.07	149.93	148.80
22 Yarn strength, BW	218.93	178.28	214.73	214.79	206.12	202.80
23 Yarn strength, AW	218.08	198.16	215.04	211.91	210.19	212.96
24 Yarn extension at break, BW	7.72	6.77	8.00	6.85	6.68	6.37
25 Yarn extension at break, AW	6.81	6.35	6.52	6.45	6.38	6.18
26 Yarn count (tex), BW	19.45	19.54	19.37	19.38	18.99	19.23
27 Yarn count (tex), AW	19.33	19.27	19.27	18.92	19.22	18.97
28 Thickness, BW	556.80	560.50	553.70	552.90	552.60	554.40
29 Thickness, AW	657.10	649.20	646.00	649.50	651.80	644.90
30 Free Formaldehyde (p.p.m.)	193.26	138.69	135.54	181.60	140.09	141.33
31 Total Nitrogen (%)	0.14	0.14	0.15	0.14	0.15	0.19
32 Fixed Nitrogen (%)	0.15	0.13	0.14	0.13	0.14	0.14
33 Colour - R value	71.75	71.58	71.30	69.88	70.19	69.49
34 Colour - G value	53.50	52.82	52.65	50.34	50.82	50.11
35 Colour - B value	39.71	38.88	38.75	37.37	37.87	37.56
36 Yarn Count (Ne), BW	30.35	30.22	30.48	30.47	31.10	30.70
37 Yarn Count (Ne), AW	30.54	30.65	30.64	31.21	30.73	31.12

CORAH-SINGLE JERSEY '85

DYED & RESINATED ALL SAMPLES

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage, TD	36	6.4206	0.9702	15.11
2	Width shrinkage, TD	36	4.9612	0.8970	18.08
3	Length shrinkage, 5x	36	6.7783	0.9086	13.41
4	Width shrinkage, 5x	36	4.9204	0.7423	15.09
5	Weight (gsm)BW	36	135.4536	2.0208	1.49
6	Weight (gsm)AW	36	150.9323	2.5022	1.66
7	Courses per 3cm BW	36	53.7472	0.7339	1.37
8	Courses per 3cm TD	36	57.1139	0.6202	1.09
9	Courses per 3cm AW	36	57.4583	0.8686	1.51
10	Wales per 3cm BW	36	42.7861	0.3936	0.92
11	Wales per 3cm TD	36	45.2111	0.6697	1.48
12	Wales per 3cm AW	36	45.1556	0.5474	1.21
13	Stitch length (mm) BW	36	2.7685	0.0116	0.42
14	Stitch length (mm) AW	36	2.7589	0.0102	0.37
15	Burst strength, BW	36	461.9722	29.4930	6.38
16	Burst strength, AW	36	463.7167	31.9612	6.89
17	Distension at burst, BW	36	18.1441	0.8593	4.74
18	Distension at burst, AW	36	19.8247	0.8774	4.43
19	Angle of spirality, BW	36	3.5806	2.5515	71.26
20	Angle of spirality, AW	36	9.2111	1.8001	19.54
21	Width, BW	36	149.7523	1.6127	1.08
22	Yarn strength, BW	36	203.2481	17.4134	8.57
23	Yarn strength, AW	36	217.1006	16.3027	7.51
24	Yarn extension at break, BW	36	6.8734	0.6325	9.20
25	Yarn extension at break, AW	36	6.8364	0.6318	9.24
26	Yarn count (tex), BW	36	19.3065	0.2678	1.39
27	Yarn count (tex), AW	36	19.1863	0.1884	0.98
28	Thickness, BW	36	564.8917	13.5855	2.40
29	Thickness, AW	36	677.4722	27.0147	3.99
30	Free Formaldehyde (p.p.m.)	36	176.0745	71.9550	40.87
31	Total Nitrogen (%)	36	0.1757	0.0285	16.24
32	Fixed Nitrogen (%)	36	0.1503	0.0295	19.61
33	Colour - R value	36	65.8637	19.4888	29.59
34	Colour - G value	36	59.8572	16.9631	28.34
35	Colour - B value	36	50.2744	19.5585	38.90
36	Yarn Count (Ne), BW	36	30.5914	0.4312	1.41
37	Yarn Count (Ne), AW	36	30.7801	0.3021	0.98

CORAH-SINGLE JERSEY '85

DYED & RESINATED Resin 300

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage, TD	33	6.2525	0.8229	13.16
2	Width shrinkage, TD	33	4.9108	0.9209	18.75
3	Length shrinkage, 5x	33	6.6078	0.7357	11.13
4	Width shrinkage, 5x	33	4.8821	0.7624	15.62
5	Weight (gsm)BW	33	135.6709	1.9686	1.45
6	Weight (gsm)AW	33	150.8597	2.5684	1.70
7	Courses per 3cm BW	33	53.7758	0.7437	1.38
8	Courses per 3cm TD	33	57.0758	0.6315	1.11
9	Courses per 3cm AW	33	57.4152	0.8952	1.56
10	Wales per 3cm BW	33	42.8091	0.4034	0.94
11	Wales per 3cm TD	33	45.1727	0.6871	1.52
12	Wales per 3cm AW	33	45.1485	0.5652	1.25
13	Stitch length (mm) BW	33	2.7676	0.0115	0.42
14	Stitch length (mm) AW	33	2.7576	0.0094	0.34
15	Burst strength, BW	33	457.6242	26.3574	5.76
16	Burst strength, AW	33	460.6970	31.6640	6.87
17	Distension at burst, BW	33	18.1047	0.8837	4.88
18	Distension at burst, AW	33	19.8878	0.8852	4.45
19	Angle of spirality, BW	33	3.5206	2.6163	74.31
20	Angle of spirality, AW	33	8.9987	1.7277	19.20
21	Width, BW	33	149.8369	1.6522	1.10
22	Yarn strength, BW	33	200.1531	14.5679	7.28
23	Yarn strength, AW	33	214.7554	14.7274	6.86
24	Yarn extension at break, BW	33	6.8867	0.6540	9.50
25	Yarn extension at break, AW	33	6.7200	0.4952	7.37
26	Yarn count (tex), BW	33	19.3193	0.2752	1.42
27	Yarn count (tex), AW	33	19.1977	0.1890	0.98
28	Thickness, BW	33	566.1727	13.4475	2.38
29	Thickness, AW	33	674.4758	26.1791	3.88
30	Free Formaldehyde (p.p.m.)	33	169.4804	70.3787	41.53
31	Total Nitrogen (%)	33	0.1786	0.0278	15.59
32	Fixed Nitrogen (%)	33	0.1529	0.0294	19.21
33	Colour - R value	33	63.9881	19.2843	30.14
34	Colour - G value	33	57.3180	15.3274	26.74
35	Colour - B value	33	45.8266	13.1750	28.75
36	Yarn Count (Ne), BW	33	30.5714	0.4435	1.45
37	Yarn Count (Ne), AW	33	30.7618	0.3028	0.98

CORAH-SINGLE JERSEY '85

DYED & RESINATED Resin 300W

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage, TD	3	8.2700	0.2032	2.46
2	Width shrinkage, TD	3	5.5153	0.0803	1.46
3	Length shrinkage, 5x	3	8.6533	0.1876	2.17
4	Width shrinkage, 5x	3	5.3427	0.2265	4.24
5	Weight (gsm)BW	3	133.0633	0.3259	0.24
6	Weight (gsm)AW	3	151.7313	1.7251	1.14
7	Courses per 3cm BW	3	53.4333	0.6429	1.20
8	Courses per 3cm TD	3	57.5333	0.2517	0.44
9	Courses per 3cm AW	3	57.9333	0.1155	0.20
10	Wales per 3cm BW	3	42.5333	0.0577	0.14
11	Wales per 3cm TD	3	45.6333	0.0577	0.13
12	Wales per 3cm AW	3	45.2333	0.3512	0.78
13	Stitch length (mm) BW	3	2.7782	0.0075	0.27
14	Stitch length (mm) AW	3	2.7735	0.0072	0.26
15	Burst strength, BW	3	509.8000	19.0686	3.74
16	Burst strength, AW	3	496.9333	5.4243	1.09
17	Distension at burst, BW	3	18.5780	0.3455	1.86
18	Distension at burst, AW	3	19.1310	0.3850	2.01
19	Angle of spirality, BW	3	4.2400	1.9219	45.33
20	Angle of spirality, AW	3	11.5467	0.1422	1.23
21	Width, BW	3	148.8222	0.6475	0.44
22	Yarn strength, BW	3	237.2933	3.7689	1.59
23	Yarn strength, AW	3	242.8978	9.5789	3.94
24	Yarn extension at break, BW	3	6.7276	0.3503	5.21
25	Yarn extension at break, AW	3	8.1174	0.6128	7.55
26	Yarn count (tex), BW	3	19.1650	0.1034	0.54
27	Yarn count (tex), AW	3	19.0603	0.1552	0.81
28	Thickness, BW	3	550.8000	3.4044	0.62
29	Thickness, AW	3	710.4333	5.2994	0.75
30	Free Formaldehyde (p.p.m.)	3	248.6100	52.4060	21.08
31	Total Nitrogen (%)	3	0.1433	0.0115	8.06
32	Fixed Nitrogen (%)	3	0.1217	0.0076	6.28
33	Colour - R value	3	86.4950	0.1513	0.17
34	Colour - G value	3	87.7883	0.2568	0.29
35	Colour - B value	3	99.2000	0.2861	0.29
36	Yarn Count (Ne), BW	3	30.8120	0.1668	0.54
37	Yarn Count (Ne), AW	3	30.9820	0.2532	0.82

CORAH-SINGLE JERSEY '85

DYED & RESINATED Winch

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage, TD	18	6.0488	1.0908	18.03
2	Width shrinkage, TD	18	4.9367	1.1202	22.69
3	Length shrinkage, 5x	18	6.6538	1.0570	15.89
4	Width shrinkage, 5x	18	5.2513	0.7582	14.44
5	Weight (gsm)BW	18	135.6553	1.7563	1.29
6	Weight (gsm)AW	18	152.1380	1.9983	1.31
7	Courses per 3cm BW	18	53.7056	0.5011	0.93
8	Courses per 3cm TD	18	57.1000	0.5076	0.89
9	Courses per 3cm AW	18	57.3778	0.7651	1.33
10	Wales per 3cm BW	18	42.8000	0.4000	0.93
11	Wales per 3cm TD	18	45.3333	0.5224	1.15
12	Wales per 3cm AW	18	45.3000	0.4994	1.10
13	Stitch length (mm) BW	18	2.7702	0.0124	0.45
14	Stitch length (mm) AW	18	2.7626	0.0105	0.38
15	Burst strength, BW	18	474.8222	29.4574	6.20
16	Burst strength, AW	18	469.6000	29.7426	6.33
17	Distension at burst, BW	18	18.3971	0.8310	4.52
18	Distension at burst, AW	18	19.8021	0.7653	3.86
19	Angle of spirality, BW	18	4.0728	1.9334	47.47
20	Angle of spirality, AW	18	10.2832	1.4260	13.87
21	Width, BW	18	148.9852	1.1655	0.78
22	Yarn strength, BW	18	209.6437	18.1011	8.63
23	Yarn strength, AW	18	219.2800	16.8729	7.69
24	Yarn extension at break, BW	18	7.0691	0.6251	8.84
25	Yarn extension at break, AW	18	6.8518	0.7702	11.24
26	Yarn count (tex), BW	18	19.2822	0.2014	1.04
27	Yarn count (tex), AW	18	19.1366	0.1535	0.80
28	Thickness, BW	18	558.7611	12.1150	2.17
29	Thickness, AW	18	670.2056	28.9895	4.33
30	Free Formaldehyde (p.p.m.)	18	169.8451	49.5843	29.19
31	Total Nitrogen (%)	18	0.1675	0.0277	16.55
32	Fixed Nitrogen (%)	18	0.1456	0.0199	13.68
33	Colour - R value	18	77.8464	7.5401	9.69
34	Colour - G value	18	66.9764	16.1025	24.04
35	Colour - B value	18	49.3150	22.9995	46.64
36	Yarn Count (Ne), BW	18	30.6273	0.3216	1.05
37	Yarn Count (Ne), AW	18	30.8590	0.2484	0.80

CORAH-SINGLE JERSEY '85

DYED & RESINATED Jet

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage, TD	18	6.7924	0.6748	9.93
2	Width shrinkage, TD	18	4.9857	0.6327	12.69
3	Length shrinkage, 5x	18	6.9028	0.7414	10.74
4	Width shrinkage, 5x	18	4.5896	0.5725	12.48
5	Weight (gsm)BW	18	135.2519	2.2883	1.69
6	Weight (gsm)AW	18	149.7267	2.4123	1.61
7	Courses per 3cm BW	18	53.7889	0.9241	1.72
8	Courses per 3cm TD	18	57.1278	0.7307	1.28
9	Courses per 3cm AW	18	57.5389	0.9769	1.70
10	Wales per 3cm BW	18	42.7722	0.3982	0.93
11	Wales per 3cm TD	18	45.0889	0.7866	1.74
12	Wales per 3cm AW	18	45.0111	0.5687	1.26
13	Stitch length (mm) BW	18	2.7668	0.0107	0.39
14	Stitch length (mm) AW	18	2.7553	0.0086	0.31
15	Burst strength, BW	18	449.1222	23.9464	5.33
16	Burst strength, AW	18	457.8333	33.8410	7.39
17	Distension at burst, BW	18	17.8912	0.8332	4.66
18	Distension at burst, AW	18	19.8473	0.9992	5.03
19	Angle of spirality, BW	18	3.0883	3.0252	97.96
20	Angle of spirality, AW	18	8.1389	1.4845	18.24
21	Width, BW	18	150.5194	1.6582	1.10
22	Yarn strength, BW	18	196.8526	14.4921	7.36
23	Yarn strength, AW	18	214.9211	15.8882	7.39
24	Yarn extension at break, BW	18	6.6777	0.5930	8.88
25	Yarn extension at break, AW	18	6.8210	0.4774	7.00
26	Yarn count (tex), BW	18	19.3308	0.3254	1.68
27	Yarn count (tex), AW	18	19.2359	0.2105	1.09
28	Thickness, BW	18	571.0222	12.3946	2.17
29	Thickness, AW	18	684.7389	23.4587	3.43
30	Free Formaldehyde (p.p.m.)	18	182.3039	90.1045	49.43
31	Total Nitrogen (%)	18	0.1839	0.0277	15.05
32	Fixed Nitrogen (%)	18	0.1550	0.0367	23.65
33	Colour - R value	18	53.8810	20.5195	38.08
34	Colour - G value	18	52.7379	15.0265	28.49
35	Colour - B value	18	51.2337	16.0202	31.27
36	Yarn Count (Ne), BW	18	30.5555	0.5261	1.72
37	Yarn Count (Ne), AW	18	30.7012	0.3363	1.10

CORAH-SINGLE JERSEY '85

DYED & RESINATED Stenter

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage, TD	18	6.7243	1.0116	15.04
2	Width shrinkage, TD	18	4.3876	0.7995	18.22
3	Length shrinkage, 5x	18	7.2683	0.8575	11.80
4	Width shrinkage, 5x	18	4.4680	0.6259	14.01
5	Weight (gsm)BW	18	134.8848	1.8196	1.35
6	Weight (gsm)AW	18	150.2309	2.3942	1.59
7	Courses per 3cm BW	18	53.8333	0.5990	1.11
8	Courses per 3cm TD	18	57.3500	0.4515	0.79
9	Courses per 3cm AW	18	57.6667	0.5881	1.02
10	Wales per 3cm BW	18	42.6056	0.2014	0.47
11	Wales per 3cm TD	18	44.7722	0.5200	1.16
12	Wales per 3cm AW	18	44.8000	0.3865	0.86
13	Stitch length (mm) BW	18	2.7674	0.0123	0.44
14	Stitch length (mm) AW	18	2.7582	0.0116	0.42
15	Burst strength, BW	18	461.6778	35.5234	7.69
16	Burst strength, AW	18	459.4056	35.7218	7.78
17	Distension at burst, BW	18	18.0310	1.0280	5.70
18	Distension at burst, AW	18	19.6869	0.8784	4.46
19	Angle of spirality, BW	18	3.2894	2.7011	82.11
20	Angle of spirality, AW	18	9.3277	2.1837	23.41
21	Width, BW	18	150.5574	1.5133	1.01
22	Yarn strength, BW	18	202.6252	20.7562	10.24
23	Yarn strength, AW	18	215.3356	15.6028	7.25
24	Yarn extension at break, BW	18	6.9211	0.5734	8.29
25	Yarn extension at break, AW	18	6.9546	0.6855	9.86
26	Yarn count (tex), BW	18	19.2583	0.3253	1.69
27	Yarn count (tex), AW	18	19.1211	0.1665	0.87
28	Thickness, BW	18	557.8278	7.4818	1.34
29	Thickness, AW	18	669.2278	23.9831	3.58
30	Free Formaldehyde (p.p.m.)	18	153.3032	59.6133	38.89
31	Total Nitrogen (%)	18	0.1606	0.0252	15.69
32	Fixed Nitrogen (%)	18	0.1411	0.0162	11.50
33	Colour - R value	18	66.9678	13.2765	19.83
34	Colour - G value	18	56.1417	16.6122	29.59
35	Colour - B value	18	52.9533	25.5956	48.34
36	Yarn Count (Ne), BW	18	30.6704	0.5251	1.71
37	Yarn Count (Ne), AW	18	30.8844	0.2699	0.87

CORAH-SINGLE JERSEY '85

DYED & RESINATED Kiefer

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage, TD	18	6.1169	0.8481	13.86
2	Width shrinkage, TD	18	5.5348	0.5661	10.23
3	Length shrinkage, 5x	18	6.2882	0.6752	10.74
4	Width shrinkage, 5x	18	5.3729	0.5562	10.35
5	Weight (gsm)BW	18	136.0224	2.1002	1.54
6	Weight (gsm)AW	18	151.6338	2.4732	1.63
7	Courses per 3cm BW	18	53.6611	0.8569	1.60
8	Courses per 3cm TD	18	56.8778	0.6856	1.21
9	Courses per 3cm AW	18	57.2500	1.0562	1.84
10	Wales per 3cm BW	18	42.9667	0.4576	1.07
11	Wales per 3cm TD	18	45.6500	0.4950	1.08
12	Wales per 3cm AW	18	45.5111	0.4471	0.98
13	Stitch length (mm) BW	18	2.7696	0.0110	0.40
14	Stitch length (mm) AW	18	2.7596	0.0088	0.32
15	Burst strength, BW	18	462.2667	22.9945	4.97
16	Burst strength, AW	18	468.0278	28.0665	6.00
17	Distension at burst, BW	18	18.2572	0.6606	3.62
18	Distension at burst, AW	18	19.9625	0.8794	4.41
19	Angle of spirality, BW	18	3.8717	2.4346	62.88
20	Angle of spirality, AW	18	9.0944	1.3690	15.05
21	Width, BW	18	148.9472	1.3006	0.87
22	Yarn strength, BW	18	203.8711	13.8798	6.81
23	Yarn strength, AW	18	218.8656	17.2378	7.88
24	Yarn extension at break, BW	18	6.8257	0.7000	10.25
25	Yarn extension at break, AW	18	6.7183	0.5677	8.45
26	Yarn count (tex), BW	18	19.3546	0.1923	0.99
27	Yarn count (tex), AW	18	19.2514	0.1907	0.99
28	Thickness, BW	18	571.9556	14.7764	2.58
29	Thickness, AW	18	685.7167	27.9891	4.08
30	Free Formaldehyde (p.p.m.)	18	198.8458	77.5099	38.98
31	Total Nitrogen (%)	18	0.1908	0.0236	12.36
32	Fixed Nitrogen (%)	18	0.1594	0.0367	23.02
33	Colour - R value	18	64.7596	24.5585	37.92
34	Colour - G value	18	63.5726	16.9475	26.66
35	Colour - B value	18	47.5954	10.8278	22.75
36	Yarn Count (Ne), BW	18	30.5124	0.3065	1.00
37	Yarn Count (Ne), AW	18	30.6759	0.3035	0.99

CORAH-SINGLE JERSEY '85

DYED & RESINATED White

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage, TD	3	8.2700	0.2032	2.46
2	Width shrinkage, TD	3	5.5153	0.0803	1.46
3	Length shrinkage, 5x	3	8.6533	0.1876	2.17
4	Width shrinkage, 5x	3	5.3427	0.2265	4.24
5	Weight (gsm)BW	3	133.0633	0.3259	0.24
6	Weight (gsm)AW	3	151.7313	1.7251	1.14
7	Courses per 3cm BW	3	53.4333	0.6429	1.20
8	Courses per 3cm TD	3	57.5333	0.2517	0.44
9	Courses per 3cm AW	3	57.9333	0.1155	0.20
10	Wales per 3cm BW	3	42.5333	0.0577	0.14
11	Wales per 3cm TD	3	45.6333	0.0577	0.13
12	Wales per 3cm AW	3	45.2333	0.3512	0.78
13	Stitch length (mm) BW	3	2.7782	0.0075	0.27
14	Stitch length (mm) AW	3	2.7735	0.0072	0.26
15	Burst strength, BW	3	509.8000	19.0686	3.74
16	Burst strength, AW	3	496.9333	5.4243	1.09
17	Distension at burst, BW	3	18.5780	0.3455	1.86
18	Distension at burst, AW	3	19.1310	0.3850	2.01
19	Angle of spirality, BW	3	4.2400	1.9219	45.33
20	Angle of spirality, AW	3	11.5467	0.1422	1.23
21	Width, BW	3	148.8222	0.6475	0.44
22	Yarn strength, BW	3	237.2933	3.7689	1.59
23	Yarn strength, AW	3	242.8978	9.5789	3.94
24	Yarn extension at break, BW	3	6.7276	0.3503	5.21
25	Yarn extension at break, AW	3	8.1174	0.6128	7.55
26	Yarn count (tex), BW	3	19.1650	0.1034	0.54
27	Yarn count (tex), AW	3	19.0603	0.1552	0.81
28	Thickness, BW	3	550.8000	3.4044	0.62
29	Thickness, AW	3	710.4333	5.2994	0.75
30	Free Formaldehyde (p.p.m.)	3	248.6100	52.4060	21.08
31	Total Nitrogen (%)	3	0.1433	0.0115	8.06
32	Fixed Nitrogen (%)	3	0.1217	0.0076	6.28
33	Colour - R value	3	86.4950	0.1513	0.17
34	Colour - G value	3	87.7883	0.2568	0.29
35	Colour - B value	3	99.2000	0.2861	0.29
36	Yarn Count (Ne), BW	3	30.8120	0.1668	0.54
37	Yarn Count (Ne), AW	3	30.9820	0.2532	0.82

CORAH-SINGLE JERSEY '85

DYED & RESINATED Reactive

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage, TD	30	6.2079	0.8283	13.34
2	Width shrinkage, TD	30	4.9061	0.9672	19.71
3	Length shrinkage, 5x	30	6.5490	0.7105	10.85
4	Width shrinkage, 5x	30	4.8704	0.7996	16.42
5	Weight (gsm)BW	30	135.7477	1.9914	1.47
6	Weight (gsm)AW	30	151.1829	2.4537	1.62
7	Courses per 3cm BW	30	53.8067	0.7488	1.39
8	Courses per 3cm TD	30	57.1067	0.6528	1.14
9	Courses per 3cm AW	30	57.4333	0.9375	1.63
10	Wales per 3cm BW	30	42.8533	0.3893	0.91
11	Wales per 3cm TD	30	45.2700	0.6412	1.42
12	Wales per 3cm AW	30	45.2033	0.5623	1.24
13	Stitch length (mm) BW	30	2.7689	0.0113	0.41
14	Stitch length (mm) AW	30	2.7590	0.0086	0.31
15	Burst strength, BW	30	459.3633	26.8931	5.85
16	Burst strength, AW	30	460.5633	32.7597	7.11
17	Distension at burst, BW	30	18.2343	0.8159	4.47
18	Distension at burst, AW	30	19.9575	0.8184	4.10
19	Angle of spirality, BW	30	3.6067	2.6967	74.77
20	Angle of spirality, AW	30	9.1906	1.6401	17.85
21	Width, BW	30	149.5894	1.5196	1.02
22	Yarn strength, BW	30	202.1902	13.6123	6.73
23	Yarn strength, AW	30	216.1304	14.4957	6.71
24	Yarn extension at break, BW	30	6.8890	0.6744	9.79
25	Yarn extension at break, AW	30	6.6869	0.5079	7.60
26	Yarn count (tex), BW	30	19.3194	0.2470	1.28
27	Yarn count (tex), AW	30	19.1965	0.1965	1.02
28	Thickness, BW	30	566.6800	13.7367	2.42
29	Thickness, AW	30	674.7600	27.4802	4.07
30	Free Formaldehyde (p.p.m.)	30	174.8713	71.2803	40.76
31	Total Nitrogen (%)	30	0.1808	0.0279	15.44
32	Fixed Nitrogen (%)	30	0.1535	0.0306	19.95
33	Colour - R value	30	65.9209	19.1791	29.09
34	Colour - G value	30	57.0602	16.0769	28.18
35	Colour - B value	30	43.0829	10.2896	23.88
36	Yarn Count (Ne), BW	30	30.5701	0.4000	1.31
37	Yarn Count (Ne), AW	30	30.7640	0.3149	1.02

CORAH-SINGLE JERSEY '85

DYED & RESINATED Direct

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage, TD	3	6.6980	0.7480	11.17
2	Width shrinkage, TD	3	4.9573	0.0551	1.11
3	Length shrinkage, 5x	3	7.1960	0.8766	12.18
4	Width shrinkage, 5x	3	4.9987	0.0932	1.86
5	Weight (gsm)BW	3	134.9027	1.8790	1.39
6	Weight (gsm)AW	3	147.6280	1.0081	0.68
7	Courses per 3cm BW	3	53.4667	0.7506	1.40
8	Courses per 3cm TD	3	56.7667	0.2082	0.37
9	Courses per 3cm AW	3	57.2333	0.1528	0.27
10	Wales per 3cm BW	3	42.3667	0.2887	0.68
11	Wales per 3cm TD	3	44.2000	0.1732	0.39
12	Wales per 3cm AW	3	44.6000	0.1732	0.39
13	Stitch length (mm) BW	3	2.7545	0.0018	0.07
14	Stitch length (mm) AW	3	2.7433	0.0012	0.04
15	Burst strength, BW	3	440.2333	11.3742	2.58
16	Burst strength, AW	3	462.0333	21.8500	4.73
17	Distension at burst, BW	3	16.0080	0.2612	1.55
18	Distension at burst, AW	3	19.1907	1.4226	7.41
19	Angle of spirality, BW	3	2.6600	1.6891	63.50
20	Angle of spirality, AW	3	7.0800	1.6377	23.13
21	Width, BW	3	152.3111	0.3025	0.20
22	Yarn strength, BW	3	179.7822	4.9080	2.73
23	Yarn strength, AW	3	201.0044	10.5612	5.25
24	Yarn extension at break, BW	3	6.8632	0.4963	7.23
25	Yarn extension at break, AW	3	7.0508	0.0464	0.66
26	Yarn count (tex), BW	3	19.3187	0.5722	2.96
27	Yarn count (tex), AW	3	19.2101	0.1054	0.55
28	Thickness, BW	3	561.1000	10.7140	1.91
29	Thickness, AW	3	671.6333	1.5308	0.23
30	Free Formaldehyde (p.p.m.)	3	115.5717	27.9763	24.21
31	Total Nitrogen (%)	3	0.1567	0.0176	11.21
32	Fixed Nitrogen (%)	3	0.1467	0.0115	7.87
33	Colour - R value	3	44.6600	0.3662	0.82
34	Colour - G value	3	59.8958	0.3755	0.63
35	Colour - B value	3	73.2633	0.1468	0.20
36	Yarn Count (Ne), BW	3	30.5841	0.9094	2.97
37	Yarn Count (Ne), AW	3	30.7397	0.1686	0.55

CORAH-SINGLE JERSEY '85

DYED & RESINATED Winch/Kiefer

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage, TD	9	5.5413	0.4219	7.61
2	Width shrinkage, TD	9	5.6513	0.6304	11.15
3	Length shrinkage, 5x	9	6.0073	0.4549	7.57
4	Width shrinkage, 5x	9	5.8340	0.2355	4.04
5	Weight (gsm)BW	9	136.2962	1.5527	1.14
6	Weight (gsm)AW	9	152.0238	2.5453	1.67
7	Courses per 3cm BW	9	53.6889	0.4595	0.86
8	Courses per 3cm TD	9	56.7111	0.3180	0.56
9	Courses per 3cm AW	9	56.9444	0.6821	1.20
10	Wales per 3cm BW	9	42.9556	0.5028	1.17
11	Wales per 3cm TD	9	45.5333	0.5657	1.24
12	Wales per 3cm AW	9	45.5556	0.4927	1.08
13	Stitch length (mm) BW	9	2.7694	0.0125	0.45
14	Stitch length (mm) AW	9	2.7606	0.0097	0.35
15	Burst strength, BW	9	457.7556	29.1151	6.36
16	Burst strength, AW	9	454.9111	33.2951	7.32
17	Distension at burst, BW	9	17.9789	0.7146	3.97
18	Distension at burst, AW	9	19.8809	0.6945	3.49
19	Angle of spirality, BW	9	3.2856	1.5911	48.43
20	Angle of spirality, AW	9	9.3889	1.3347	14.22
21	Width, BW	9	148.6519	1.5004	1.01
22	Yarn strength, BW	9	202.8948	14.3901	7.09
23	Yarn strength, AW	9	216.8904	16.9154	7.80
24	Yarn extension at break, BW	9	7.1863	0.6937	9.65
25	Yarn extension at break, AW	9	6.7009	0.6236	9.31
26	Yarn count (tex), BW	9	19.2907	0.2294	1.19
27	Yarn count (tex), AW	9	19.1443	0.1505	0.79
28	Thickness, BW	9	563.8222	15.5221	2.75
29	Thickness, AW	9	670.4333	29.0870	4.34
30	Free Formaldehyde (p.p.m.)	9	153.4311	36.6302	23.87
31	Total Nitrogen (%)	9	0.1883	0.0198	10.54
32	Fixed Nitrogen (%)	9	0.1606	0.0153	9.53
33	Colour - R value	9	79.7289	7.0620	8.86
34	Colour - G value	9	70.2203	14.1588	20.16
35	Colour - B value	9	39.9919	1.5833	3.96
36	Yarn Count (Ne), BW	9	30.6145	0.3670	1.20
37	Yarn Count (Ne), AW	9	30.8465	0.2434	0.79

CORAH-SINGLE JERSEY '85

DYED & RESINATED Winch/Stenter

Column Statistics

No.	Test Method	N	Mean	Std. Dev	%C.V.
1	Length shrinkage, TD	9	6.5562	1.3308	20.30
2	Width shrinkage, TD	9	4.2220	1.0583	25.07
3	Length shrinkage, 5x	9	7.3002	1.1077	15.17
4	Width shrinkage, 5x	9	4.6687	0.6343	13.59
5	Weight (gsm)BW	9	135.0144	1.7943	1.33
6	Weight (gsm)AW	9	152.2522	1.4064	0.92
7	Courses per 3cm BW	9	53.7222	0.5674	1.06
8	Courses per 3cm TD	9	57.4889	0.3257	0.57
9	Courses per 3cm AW	9	57.8111	0.5968	1.03
10	Wales per 3cm BW	9	42.6444	0.1810	0.42
11	Wales per 3cm TD	9	45.1333	0.4123	0.91
12	Wales per 3cm AW	9	45.0444	0.3745	0.83
13	Stitch length (mm) BW	9	2.7709	0.0131	0.47
14	Stitch length (mm) AW	9	2.7647	0.0114	0.41
15	Burst strength, BW	9	491.8889	18.4634	3.75
16	Burst strength, AW	9	484.2889	16.9053	3.49
17	Distension at burst, BW	9	18.8152	0.7505	3.99
18	Distension at burst, AW	9	19.7232	0.8649	4.39
19	Angle of spirality, BW	9	4.8600	2.0043	41.24
20	Angle of spirality, AW	9	11.1776	0.8603	7.70
21	Width, BW	9	149.3185	0.6210	0.42
22	Yarn strength, BW	9	216.3926	19.6646	9.09
23	Yarn strength, AW	9	221.6696	17.4928	7.89
24	Yarn extension at break, BW	9	6.9520	0.5642	8.12
25	Yarn extension at break, AW	9	7.0027	0.9059	12.94
26	Yarn count (tex), BW	9	19.2736	0.1827	0.95
27	Yarn count (tex), AW	9	19.1289	0.1652	0.86
28	Thickness, BW	9	553.7000	3.6503	0.66
29	Thickness, AW	9	669.9778	30.6539	4.58
30	Free Formaldehyde (p.p.m.)	9	186.2592	57.2412	30.73
31	Total Nitrogen (%)	9	0.1467	0.0162	11.05
32	Fixed Nitrogen (%)	9	0.1306	0.0101	7.77
33	Colour - R value	9	75.9639	7.9351	10.45
34	Colour - G value	9	63.7325	18.0789	28.37
35	Colour - B value	9	58.6381	30.4302	51.90
36	Yarn Count (Ne), BW	9	30.6402	0.2910	0.95
37	Yarn Count (Ne), AW	9	30.8716	0.2675	0.87

CORAH-SINGLE JERSEY '85

DYED & RESINATED Jet/Kiefer

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage, TD	9	6.6924	0.7779	11.62
2	Width shrinkage, TD	9	5.4182	0.5030	9.28
3	Length shrinkage, 5x	9	6.5691	0.7644	11.64
4	Width shrinkage, 5x	9	4.9118	0.3514	7.15
5	Weight (gsm)BW	9	135.7487	2.6065	1.92
6	Weight (gsm)AW	9	151.2438	2.4854	1.64
7	Courses per 3cm BW	9	53.6333	1.1608	2.16
8	Courses per 3cm TD	9	57.0444	0.9139	1.60
9	Courses per 3cm AW	9	57.5556	1.3020	2.26
10	Wales per 3cm BW	9	42.9778	0.4381	1.02
11	Wales per 3cm TD	9	45.7667	0.4123	0.90
12	Wales per 3cm AW	9	45.4667	0.4213	0.93
13	Stitch length (mm) BW	9	2.7698	0.0101	0.37
14	Stitch length (mm) AW	9	2.7587	0.0083	0.30
15	Burst strength, BW	9	466.7778	15.1693	3.25
16	Burst strength, AW	9	481.1444	13.3509	2.77
17	Distension at burst, BW	9	18.5356	0.4923	2.66
18	Distension at burst, AW	9	20.0441	1.0705	5.34
19	Angle of spirality, BW	9	4.4578	3.0481	68.38
20	Angle of spirality, AW	9	8.8000	1.4163	16.09
21	Width, BW	9	149.2426	1.0710	0.72
22	Yarn strength, BW	9	204.8474	14.1477	6.91
23	Yarn strength, AW	9	220.8407	18.3444	8.31
24	Yarn extension at break, BW	9	6.4652	0.5172	8.00
25	Yarn extension at break, AW	9	6.7356	0.5434	8.07
26	Yarn count (tex), BW	9	19.4185	0.1293	0.67
27	Yarn count (tex), AW	9	19.3586	0.1697	0.88
28	Thickness, BW	9	580.0889	8.6142	1.48
29	Thickness, AW	9	701.0000	17.1201	2.44
30	Free Formaldehyde (p.p.m.)	9	244.2606	82.3659	33.72
31	Total Nitrogen (%)	9	0.1933	0.0278	14.40
32	Fixed Nitrogen (%)	9	0.1583	0.0512	32.36
33	Colour - R value	9	49.7903	26.9736	54.17
34	Colour - G value	9	56.9250	17.6192	30.95
35	Colour - B value	9	55.1989	10.7960	19.56
36	Yarn Count (Ne), BW	9	30.4103	0.2036	0.67
37	Yarn Count (Ne), AW	9	30.5053	0.2665	0.87

CORAH-SINGLE JERSEY '85

DYED & RESINATED Jet/Stenter

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage, TD	9	6.8924	0.5830	8.46
2	Width shrinkage, TD	9	4.5531	0.4202	9.23
3	Length shrinkage, 5x	9	7.2364	0.5773	7.98
4	Width shrinkage, 5x	9	4.2673	0.5827	13.65
5	Weight (gsm)BW	9	134.7551	1.9438	1.44
6	Weight (gsm)AW	9	148.2096	1.0049	0.68
7	Courses per 3cm BW	9	53.9444	0.6425	1.19
8	Courses per 3cm TD	9	57.2111	0.5326	0.93
9	Courses per 3cm AW	9	57.5222	0.5761	1.00
10	Wales per 3cm BW	9	42.5667	0.2236	0.53
11	Wales per 3cm TD	9	44.4111	0.3333	0.75
12	Wales per 3cm AW	9	44.5556	0.2068	0.46
13	Stitch length (mm) BW	9	2.7639	0.0111	0.40
14	Stitch length (mm) AW	9	2.7518	0.0078	0.28
15	Burst strength, BW	9	431.4667	16.9430	3.93
16	Burst strength, AW	9	434.5222	32.1350	7.40
17	Distension at burst, BW	9	17.2468	0.5464	3.17
18	Distension at burst, AW	9	19.6506	0.9426	4.80
19	Angle of spirality, BW	9	1.7189	2.4366	141.75
20	Angle of spirality, AW	9	7.4778	1.3013	17.40
21	Width, BW	9	151.7963	1.0137	0.67
22	Yarn strength, BW	9	188.8578	10.1156	5.36
23	Yarn strength, AW	9	209.0015	11.0027	5.26
24	Yarn extension at break, BW	9	6.8903	0.6151	8.93
25	Yarn extension at break, AW	9	6.9064	0.4155	6.02
26	Yarn count (tex), BW	9	19.2430	0.4370	2.27
27	Yarn count (tex), AW	9	19.1132	0.1775	0.93
28	Thickness, BW	9	561.9556	8.2031	1.46
29	Thickness, AW	9	668.4778	16.7736	2.51
30	Free Formaldehyde (p.p.m.)	9	120.3472	42.7953	35.56
31	Total Nitrogen (%)	9	0.1744	0.0255	14.65
32	Fixed Nitrogen (%)	9	0.1517	0.0144	9.47
33	Colour - R value	9	57.9717	11.3801	19.63
34	Colour - G value	9	48.5508	11.3989	23.48
35	Colour - B value	9	47.2686	19.8355	41.96
36	Yarn Count (Ne), BW	9	30.7007	0.7065	2.30
37	Yarn Count (Ne), AW	9	30.8972	0.2879	0.93

A P P E N D I X E

TEST DATA VERIFICATION

CORAH SINGLE JERSEY 85

E1

Averages

No.	Test Method	Grey	Dyed Only	Resinated
1	Length shrinkage, TD	(n.a.)	8.1778	6.4206
2	Width shrinkage, TD	(n.a.)	2.7097	4.9612
3	Length shrinkage, 5x	1.2891	9.3823	6.7783
4	Width shrinkage, 5x	27.8651	2.8979	4.9204
5	Weight (gsm)BW	128.1194	140.4871	135.4536
6	Weight (gsm)AW	170.9958	157.6895	150.9323
7	Courses per 3cm BW	63.4083	54.9861	53.7472
8	Courses per 3cm TD	(n.a.)	59.5472	57.1139
9	Courses per 3cm AW	63.8528	60.3917	57.4583
10	Wales per 3cm BW	32.7519	44.7167	42.7861
11	Wales per 3cm TD	(n.a.)	45.9083	45.2111
12	Wales per 3cm AW	45.8333	46.4167	45.1556
13	Stitch length (mm) BW	2.8038	2.7688	2.7685
14	Stitch length (mm) AW	2.7633	2.7598	2.7589
15	Burst strength, BW	600.2000	586.4944	461.9722
16	Burst strength, AW	595.8333	568.7833	463.7167
17	Distension at burst, BW	18.1351	18.4721	18.1441
18	Distension at burst, AW	21.5220	19.8173	19.8247
19	Angle of spirality, BW	10.1136	8.3448	3.5806
20	Angle of spirality, AW	17.2031	12.6661	9.2111
21	Width, BW	101.9639	153.2769	149.7523
22	Yarn strength, BW	264.4211	295.3354	203.2481
23	Yarn strength, AW	255.1930	310.3767	217.1006
24	Yarn extension at break, BW	7.3502	7.6144	6.8734
25	Yarn extension at break, AW	7.9492	7.6122	6.8364
26	Yarn count (tex), BW	19.4530	18.8533	19.3065
27	Yarn count (tex), AW	19.2342	18.8910	19.1863
28	Thickness, BW	630.2556	609.3861	564.8917
29	Thickness, AW	818.6944	745.0500	677.4722
30	Free Formaldehyde (p.p.m.)	(n.a.)	(n.a.)	176.0745
31	Total Nitrogen (%)	(n.a.)	0.0882	0.1757
32	Fixed Nitrogen (%)	(n.a.)	0.0767	0.1503
33	Colour - R value	(n.a.)	65.7198	65.8637
34	Colour - G value	(n.a.)	59.6675	59.8572
35	Colour - B value	(n.a.)	50.0614	50.2744
36	Yarn Count (Ne), BW	30.3572	31.3237	30.5914
37	Yarn Count (Ne), AW	30.7036	31.2630	30.7801
38	Turns per metre	846.2500	(n.a.)	(n.a.)

CORAH SINGLE-JERSEY '85

GREY

Comparison of Measured vs Calculated - Weight & %Shrinkage (5x)

Smpl No.	Mea.Wt (BW)	Cal.Wt (BW)	Mea.Wt (AW)	Cal.Wt (AW)	Mea.Sh (Len)	Cal.Sh (Len)	Mea.Sh (Wid)	Cal.Sh (Wid)
1	127.25	124.76	171.22	176.43	3.03	1.72	29.28	29.49
2	124.80	123.48	172.17	177.60	3.72	3.58	28.92	29.70
3	124.49	125.94	169.74	176.43	2.48	0.63	29.44	29.70
4	131.37	127.77	172.34	176.73	2.49	1.57	28.07	27.93
5	128.18	130.72	171.23	173.25	2.35	0.47	28.64	28.54
6	129.74	129.78	172.95	177.54	2.40	1.10	27.74	27.87
7	121.98	118.16	168.50	163.25	2.96	2.20	27.79	27.69
8	124.87	121.43	169.04	163.14	2.40	1.89	27.66	26.54
9	126.19	125.79	169.13	162.41	2.39	0.16	27.53	26.61
10	128.40	125.08	167.38	165.23	0.81	0.78	27.34	26.15
11	128.51	124.76	170.05	165.40	0.63	0.16	26.99	25.98
12	126.70	123.85	168.79	164.71	0.46	0.16	27.02	26.54
13	127.88	126.55	169.27	170.59	0.01	-0.31	27.48	28.04
14	132.98	128.57	169.27	170.63	-0.77	-0.31	25.48	26.39
15	126.35	127.48	169.11	171.41	0.49	0.62	27.30	27.05
16	134.37	131.93	172.98	175.85	-1.69	-1.09	26.32	28.39
17	133.88	134.91	174.07	176.96	-2.14	-2.66	27.53	27.31
18	136.04	130.82	173.94	180.13	-1.93	-2.35	26.76	29.27
19	126.30	122.96	172.20	177.37	3.36	3.70	27.92	29.35
20	125.41	120.84	171.21	175.71	3.09	4.02	28.21	30.02
21	125.34	120.22	172.65	175.19	2.94	3.58	28.73	29.93
22	126.43	125.22	171.94	174.75	2.76	0.16	28.36	29.93
23	125.62	126.51	172.16	176.14	1.84	0.00	28.44	29.87
24	123.85	122.23	171.53	176.85	2.74	2.94	27.89	30.39
25	128.12	122.19	172.57	170.57	2.17	0.32	28.62	29.57
26	125.13	123.78	170.64	172.16	2.32	1.25	28.65	29.10
27	124.08	124.07	169.77	170.45	1.88	0.79	28.54	28.88
28	130.64	128.86	172.41	175.92	-1.04	-2.54	28.35	29.59
29	131.95	125.06	172.33	174.60	0.75	-0.32	28.53	29.96
30	133.87	126.92	171.56	176.08	-0.85	-1.27	28.58	29.09
31	125.71	125.55	170.38	175.77	0.16	0.47	27.73	29.83
32	132.95	124.79	170.57	171.04	0.63	0.78	28.41	29.29
33	125.71	125.40	170.84	172.98	1.01	0.78	28.01	29.28
34	127.44	127.74	171.30	173.73	1.04	0.78	27.00	27.80
35	126.82	127.35	170.60	173.68	0.53	0.62	27.48	28.73
36	132.97	129.77	170.00	171.23	1.00	0.47	26.40	26.90
Ave.	128.12	125.87	171.00	172.83	1.29	0.69	27.87	28.52
Std.d	3.54	3.47	1.60	4.68	1.59	1.61	0.86	1.32

CORAH-SINGLE JERSEY '85

DYED ONLY

Comparison of Measured vs Calculated - Weight & %Shrinkage (5x)

Smpl No.	Mea.Wt (BW)	Cal.Wt (BW)	Mea.Wt (AW)	Cal.Wt (AW)	Mea.Sh (Len)	Cal.Sh (Len)	Mea.Sh (Wid)	Cal.Sh (Wid)
1	150.41	152.42	161.65	163.29	6.98	5.51	1.21	1.48
2	149.13	151.09	159.65	162.76	7.12	6.54	1.33	1.27
3	152.21	152.57	161.65	163.89	6.99	6.84	1.33	0.64
4	136.42	136.57	157.35	159.79	8.70	9.20	5.34	5.93
5	137.26	136.94	158.46	161.72	9.19	8.35	5.12	7.86
6	132.16	130.51	157.40	161.49	10.17	11.84	4.82	8.21
7	147.28	149.77	159.71	165.96	7.25	8.25	1.57	1.73
8	143.26	149.64	161.65	164.88	10.90	10.20	0.26	-1.29
9	146.67	147.42	160.75	164.54	8.52	7.83	1.73	3.90
10	136.41	131.66	154.11	159.50	18.14	18.43	-2.98	-1.97
11	136.82	135.80	156.12	162.12	17.61	17.65	-2.67	-3.91
12	135.19	134.50	157.00	160.87	17.04	18.15	-3.13	-3.25
13	145.60	149.55	161.13	165.06	8.69	8.99	0.73	0.87
14	142.14	146.69	159.56	166.35	12.43	12.79	-1.60	0.00
15	142.65	145.72	155.83	163.80	12.17	11.02	-1.98	0.00
16	135.17	143.04	155.73	163.87	7.27	6.94	5.58	6.64
17	137.09	143.13	155.48	164.52	7.07	6.45	5.76	7.26
18	137.88	140.35	154.05	163.49	6.42	6.30	6.20	8.33
19	132.98	136.27	150.26	159.39	7.78	7.00	7.04	8.04
20	129.40	134.19	147.91	155.07	8.15	7.42	6.58	7.22
21	131.20	136.79	152.07	156.07	8.06	6.90	6.48	7.24
22	140.57	146.24	157.35	164.54	9.55	9.23	1.24	2.32
23	144.47	149.70	160.99	165.99	11.28	9.67	0.24	1.27
24	136.70	146.69	161.14	165.89	12.66	11.69	0.09	0.00
25	132.66	137.28	154.55	159.25	6.90	7.00	8.49	8.11
26	135.39	137.13	153.77	157.59	6.18	6.55	7.50	7.93
27	140.27	139.60	157.90	162.27	5.60	5.04	7.10	8.79
28	144.74	145.77	160.59	163.86	12.38	12.10	-0.34	-0.42
29	144.91	144.90	159.49	166.16	12.24	12.99	-0.58	-0.21
30	145.29	141.12	162.22	163.51	12.20	12.42	-0.18	0.43
31	140.73	143.30	159.42	162.68	8.35	7.25	5.77	5.81
32	141.05	140.79	155.46	158.19	7.54	6.16	4.31	5.01
33	142.23	140.49	159.33	161.91	7.73	6.21	4.61	6.24
34	143.77	139.69	158.91	160.71	5.98	4.79	6.84	8.64
35	144.56	145.26	158.46	161.81	6.50	5.27	4.98	5.66
36	142.83	144.72	159.70	162.45	6.06	3.65	5.52	6.96
Ave.	140.49	142.42	157.69	162.37	9.38	8.96	2.90	3.69
Std.d	5.65	5.99	3.39	2.84	3.29	3.70	3.43	3.90

CORAH-SINGLE JERSEY '85

DYED ONLY

Comparison of Measured vs Calculated - Weight & %Shrinkage (TD)

Smpl No.	Mea.Wt (BW)	Cal.Wt (BW)	Mea.Wt (AW)	Cal.Wt (AW)	Mea.Sh (Len)	Cal.Sh (Len)	Mea.Sh (Wid)	Cal.Sh (Wid)
1	150.41	152.42	161.65	161.17	5.47	4.87	0.87	0.85
2	149.13	151.09	159.65	160.68	5.48	6.54	1.19	0.00
3	152.21	152.57	161.65	161.55	5.51	5.90	0.83	0.21
4	136.42	136.57	157.35	155.70	7.83	7.83	7.13	4.89
5	137.26	136.94	158.46	156.89	7.75	7.59	4.97	5.80
6	132.16	130.51	157.40	155.58	8.88	10.67	4.63	5.97
7	147.28	149.77	159.71	160.63	6.40	6.44	0.86	0.44
8	143.26	149.64	161.65	159.61	9.46	8.24	-0.43	-2.40
9	146.67	147.42	160.75	159.40	6.97	6.30	1.29	2.42
10	136.41	131.66	154.11	155.84	15.94	15.60	-2.83	-0.86
11	136.82	135.80	156.12	157.76	15.40	15.37	-2.26	-3.91
12	135.19	134.50	157.00	154.45	15.11	14.56	-2.90	-3.02
13	145.60	149.55	161.13	160.17	7.66	7.63	0.56	-0.66
14	142.14	146.69	159.56	162.67	11.62	11.77	-1.72	-1.09
15	142.65	145.72	155.83	161.73	11.49	11.02	-1.58	-1.28
16	135.17	143.04	155.73	159.30	6.73	6.32	5.34	4.60
17	137.09	143.13	155.48	159.75	6.14	5.51	6.14	5.45
18	137.88	140.35	154.05	156.50	5.47	3.58	5.83	6.94
19	132.98	136.27	150.26	153.67	6.67	5.42	6.56	6.21
20	129.40	134.19	147.91	153.79	7.59	7.26	6.08	6.61
21	131.20	136.79	152.07	153.68	7.22	6.90	5.65	5.79
22	140.57	146.24	157.35	157.98	8.23	6.45	1.12	1.28
23	144.47	149.70	160.99	160.46	9.44	8.14	-0.06	-0.43
24	136.70	146.69	161.14	160.50	10.73	9.11	0.06	-0.43
25	132.66	137.28	154.55	154.42	5.94	5.78	7.34	6.47
26	135.39	137.13	153.77	152.37	5.38	4.83	6.50	6.49
27	140.27	139.60	157.90	156.35	4.01	4.26	6.07	6.11
28	144.74	145.77	160.59	158.93	10.02	10.14	-0.99	-1.27
29	144.91	144.90	159.49	160.08	10.00	10.64	-1.44	-1.28
30	145.29	141.12	162.22	158.90	9.96	10.64	0.33	-0.43
31	140.73	143.30	159.42	158.46	6.11	6.01	4.37	4.58
32	141.05	140.79	155.46	156.47	7.56	6.16	4.49	3.96
33	142.23	140.49	159.33	162.03	7.60	6.68	5.35	5.83
34	143.77	139.69	158.91	158.27	6.17	4.15	6.54	7.84
35	144.56	145.26	158.46	161.45	6.10	4.64	6.04	6.07
36	142.83	144.72	159.70	162.72	6.36	3.81	5.63	6.96
Ave.	140.49	142.42	157.69	158.33	8.18	7.69	2.71	2.63
Std.d	5.65	5.99	3.39	2.87	2.90	3.14	3.35	3.56

CORAH-SINGLE JERSEY '85

DYED & RESINATED

Comparison of Measured vs Calculated - Weight & %Shrinkage (5x)

Smpl No.	Mea.Wt (BW)	Cal.Wt (BW)	Mea.Wt (AW)	Cal.Wt (AW)	Mea.Sh (Len)	Cal.Sh (Len)	Mea.Sh (Wid)	Cal.Sh (Wid)
1	137.62	140.21	153.95	156.83	5.95	5.77	5.53	5.39
2	137.23	141.88	154.42	156.70	5.90	6.04	5.99	5.25
3	138.96	139.57	153.86	159.39	5.48	6.55	6.06	6.26
4	136.16	136.91	148.29	151.67	7.43	6.55	3.85	4.26
5	136.89	137.95	149.18	152.22	6.60	5.38	3.45	4.92
6	133.02	136.88	147.65	147.90	7.31	5.50	4.14	4.69
7	137.03	140.24	155.62	158.77	6.81	7.11	4.72	4.45
8	135.48	139.84	151.83	159.69	5.91	9.14	5.31	4.79
9	134.88	137.42	152.43	156.52	7.18	7.88	5.43	5.07
10	134.06	134.47	148.57	154.56	7.56	6.27	4.50	6.54
11	133.20	135.27	147.68	148.57	5.99	4.67	5.02	6.21
12	131.41	132.96	148.77	152.47	7.63	8.66	5.17	6.35
13	138.84	138.98	152.17	154.97	5.85	6.24	4.71	5.52
14	138.39	139.05	152.48	156.77	6.55	6.28	4.92	5.22
15	138.43	141.43	151.66	155.08	5.64	4.97	4.43	5.11
16	132.79	136.06	152.54	154.50	8.54	7.41	5.20	5.75
17	132.98	132.64	149.75	153.00	8.87	8.82	5.22	5.35
18	133.42	134.65	152.90	154.25	8.55	7.07	5.60	6.80
19	132.82	127.36	147.05	149.52	8.19	7.71	4.89	5.17
20	135.42	138.98	148.79	150.11	6.54	6.47	5.06	4.69
21	136.47	135.58	147.05	148.77	6.85	5.57	5.04	5.17
22	133.76	132.37	147.04	148.73	5.77	5.13	5.84	6.15
23	136.59	136.16	151.07	151.05	5.39	5.62	5.65	5.96
24	135.67	135.39	148.94	148.69	6.17	5.35	5.64	5.78
25	132.10	136.90	148.06	149.17	7.90	6.07	4.00	4.26
26	136.75	132.69	150.09	150.37	7.47	6.17	3.98	3.84
27	133.16	138.03	147.74	148.18	6.82	6.55	3.99	3.17
28	135.89	136.56	153.67	149.61	6.06	5.53	6.10	4.87
29	134.73	135.20	152.19	149.06	6.62	5.45	6.11	5.09
30	136.23	134.82	153.05	151.15	6.72	5.98	5.59	6.61
31	138.08	139.28	153.93	151.63	6.15	4.69	4.65	4.93
32	135.93	136.84	150.02	147.98	7.01	5.12	5.00	3.83
33	136.10	138.32	152.95	154.00	5.78	6.10	4.51	4.66
34	134.10	135.96	152.65	154.48	7.21	8.70	4.03	5.73
35	135.41	134.41	152.58	153.29	6.91	7.27	3.80	5.33
36	136.32	135.31	152.94	153.98	6.68	8.38	3.99	5.53
Ave.	135.45	136.57	150.93	152.60	6.78	6.45	4.92	5.24
Std. d	2.02	2.94	2.50	3.45	0.91	1.22	0.74	0.83

CORAH-SINGLE JERSEY '85

DYED & RESINATED

Comparison of Measured vs Calculated - Weight & %Shrinkage (TD)

Smpl No.	Mea.Wt (BW)	Cal.Wt (BW)	Mea.Wt (AW)	Cal.Wt (AW)	Mea.Sh (Len)	Cal.Sh (Len)	Mea.Sh (Wid)	Cal.Sh (Wid)
1	137.62	140.21	153.95	156.28	5.66	5.44	5.77	5.39
2	137.23	141.88	154.42	155.89	5.53	4.73	6.38	6.07
3	138.96	139.57	153.86	155.97	4.63	4.91	6.58	5.86
4	136.16	136.91	148.29	150.81	7.63	6.23	4.88	4.04
5	136.89	137.95	149.18	152.41	7.11	5.71	4.44	4.71
6	133.02	136.88	147.65	149.68	7.51	6.00	4.63	5.32
7	137.03	140.24	155.62	159.26	6.84	6.15	5.02	5.71
8	135.48	139.84	151.83	154.05	6.00	4.79	6.20	5.82
9	134.88	137.42	152.43	155.12	6.85	6.43	5.54	5.69
10	134.06	134.47	148.57	155.39	7.95	6.77	5.63	6.54
11	133.20	135.27	147.68	151.30	6.42	5.35	6.01	7.24
12	131.41	132.96	148.77	152.17	7.80	7.68	5.59	7.16
13	138.84	138.98	152.17	154.97	5.64	6.24	4.93	5.52
14	138.39	139.05	152.48	157.45	6.62	6.28	4.74	5.63
15	138.43	141.43	151.66	154.43	6.11	4.15	5.10	5.53
16	132.79	136.06	152.54	154.52	8.26	6.61	5.47	6.58
17	132.98	132.64	149.75	154.04	8.48	8.03	5.61	6.80
18	133.42	134.65	152.90	154.06	8.07	6.75	5.47	7.00
19	132.82	127.36	147.05	146.54	7.50	6.89	4.90	4.09
20	135.42	138.98	148.79	147.14	6.02	5.64	4.95	3.61
21	136.47	135.58	147.05	147.07	6.58	4.91	5.01	4.74
22	133.76	132.37	147.04	147.16	6.17	4.96	5.82	5.32
23	136.59	136.16	151.07	150.45	5.38	5.46	6.13	5.75
24	135.67	135.39	148.94	150.55	5.76	5.68	5.10	6.61
25	132.10	136.90	148.06	147.29	6.22	5.08	4.15	4.04
26	136.75	132.69	150.09	149.93	6.71	5.69	4.08	4.05
27	133.16	138.03	147.74	145.47	6.74	5.24	3.92	2.73
28	135.89	136.56	153.67	151.80	5.44	5.86	5.22	5.91
29	134.73	135.20	152.19	146.96	5.83	4.95	4.93	4.24
30	136.23	134.82	153.05	149.82	5.47	5.98	4.94	5.78
31	138.08	139.28	153.93	153.71	5.63	5.34	3.60	5.57
32	135.93	136.84	150.02	149.70	5.56	5.79	4.51	4.26
33	136.10	138.32	152.95	153.81	5.25	5.77	3.48	4.87
34	134.10	135.96	152.65	151.03	6.25	7.44	3.27	4.89
35	135.41	134.41	152.58	151.47	6.16	6.78	2.92	4.70
36	136.32	135.31	152.94	149.82	5.35	6.46	3.67	4.90
Ave.	135.45	136.57	150.93	151.88	6.42	5.89	4.96	5.35
Std.d	2.02	2.94	2.50	3.45	0.97	0.87	0.90	1.06