

CORAH INTERLOCK
VARIABILITY STUDY

AUTHORS: J. T. EATON/D. SEWSUNKER
DATE: MAY, 1987.
CLASSIFICATION: FABRIC/KNITTED/PROPERTIES
KEY WORDS: INTERLOCK, GREIGE, RELAXED STRUCTURE, VARIATION.
JTE/DS/DM

CONTENTS

1. INTRODUCTION
2. WORK PLAN
3. TESTING PROCEDURES
4. SUMMARY
5. CONCLUSIONS
6. GREIGE SAMPLE IDENTIFIER
7. FINISHED FABRIC IDENTIFIER
8. YARN IDENTIFIER AND TEST RESULTS
9. GREIGE FABRIC INDIVIDUAL TEST RESULTS
10. GREIGE - SPECIAL FABRIC TEST RESULTS
11. GREIGE DATA STATISTICS - ALL SAMPLES/YARN TYPE/MACHINE DIAMETER
12. FINISHED FABRIC INDIVIDUAL TEST RESULTS
13. FINISHED FABRIC STATISTICS - ALL SAMPLES/ALL SAMPLES -No. 11/YARN TYPE/
MACHINE DIAMETER
14. GREIGE FABRIC - GRAPH PLOTS
15. FINISHED FABRIC - GRAPH PLOTS

1. INTRODUCTION

During a joint meeting at Corah PLC in Leicester between representatives of Corah, British Home Stores and IIC, in which we discussed the findings of a previous study we had carried out on single-jersey fabric, B.H.S. said they would like a similar study to be carried out by IIC to look at the current interlock fabric being produced by Corah PLC.

As it was in everybody's interest, it was agreed that this study should take place.

It was agreed that samples of yarns, greige fabrics and finished fabrics should be collected over a period of time from Corah's production in order to ascertain the quality control and variability of this particular quality, and also to ascertain the final performance of this quality to a tumble dry shrinkage test.

B.H.S. stated that they were looking for a fabric of approximately 165 gms/M² and shrinkage performances of not more than 12% in length and 12% in width to a one-wash and tumble cycle.

As well as looking at their ongoing production, it was an ideal opportunity to see the effects of both tightening and slackening the stitch length and processing the resultant fabric through Corah's standard finishing routes, together with their standard quality in order to determine the effect of these changes upon the final product.

2. WORK PLAN

Cones of yarn were collected from the three yarn suppliers being used during this period.

The three yarns in question were:-

- | | |
|-----------|-------------|
| 1. Legano | - 10 cones |
| 2. Sektas | - 14 cones |
| 3. Volos | - 10 cones. |

All were 1/38^{cc} combed.

Greige fabric was collected from three different diameters of knitting machines using all the three yarn types. In total 20 samples were tested

Finished fabric was collected from the three finishing routes used by Corah for this quality. The quality is designated 1001.

Lists of the greige fabrics collected are given on page 5, together with the IIC sample numbers.

Lists of the finished fabric collected are given on page 6, together with the IIC sample numbers and finishing route used.

On all the data lists and graphs the samples are identified as per these lists.

On the greige fabric two special qualities were produced, one with a stitch length of 0.300 cms and one with a stitch length of 0.370 cms. The rest of the samples were made to a target of 0.335 cms.

On the finished fabric list there are four special qualities - 2 tight and 2 slack. This was obtained by splitting the original pieces to enable two processing routes to be investigated:

1. Jet dyed - tubular finished, and
 2. Jet dyed - open width finished.
- (See page 6.)

17 samples in total were tested.

3. TESTING

The full IIC testing procedure was carried out on all the samples, and the following abbreviations were used:-

- B.W. = Before wash.
- A.W. = After wash (reference state).
- T.D. = 1 wash and tumble dry/
- 5X = Reference state, i.e. five wash and tumble dry cycles.

The individual samples are shown, together with the mean and standard deviations (excluding the specials).

4. SUMMARY OF RESULTS

Yarns

The three yarns used in this exercise were delivered near to the nominal 38s cc. The twist factor was between 3.88 and 4.02, making the yarns very similar in characteristics in respect of count and twist.

Knitting

The overall mean of the 18 greige fabrics collected from the standard production indicated that the mean stitch length was maintained near to the target of 3.35 mm with a percentage CV of 0.72, which can be regarded as

good quality control when three different diameters are being used although each of the machines differed.

Greige or Grey Fabrics

The reference dimensions, i.e. fully relaxed by 5 wash and tumble cycles, indicated that the relaxed courses had a mean of 50.78 per 3 cms and a % CV of 1.63, and the relaxed wales had a mean of 42.65 and a % CV of 3.0.

If one looks at the plots of the results (page 34) it suggests that a lot of the spread could be attributed to the differing behaviour of the three yarns. As the Legano, Volos and Sokas appear to locate themselves in blocks, this indicates that less variability could be achieved by using a single yarn source.

Finished Fabric - designated Dyed Only

Shrinkage: Two column statistic sheets have been compiled.

This is because one sample, No.11, exhibited a very low level of length shrinkage and a very high level of width shrinkage so far away from the other samples as to suggest that wrong targets had been applied during finishing.

The exclusion of this sample does not affect the means too much, but it changes the Standard Deviation and the % CV.

Both columns indicate that the mean shrinkage in the finished fabric is in the region of 12% length and 12% width after a one wash and tumble dry cycle, and therefore could not conform to the maximum 12 x 12% being stipulated by the customer.

The IIC relaxation procedure of 5 wash and tumble cycles resulted in mean length shrinkages of approximately 16% and width of 12%.

Weight

The mean recorded weight in the as delivered state of 150 gm/M² is somewhat lower than the weight of 165 gm/M² being sought.

This, of course, covers both dyed and white samples, and maybe there is a case for making separate specifications for white and dyed fabrics, especially on weight requirements.

Courses and Wales

Courses in the as delivered state were 38.95 per 3 cms with a % CV of 3.13.

Wales in the as delivered state were 36.77 per 3 cms with a % CV of 2.81.

Individual finishing routes exhibited less spread and differing means, which suggests that, by using a single route, variability could be reduced.

5. CONCLUSIONS

This fabric does not fit the customers requirements in respect of both shrinkage performance to a wash and tumble test and weight as delivered.

This fabric needs to be re-engineered either by changing the knitting, i.e. stitch length and finishing targets. or by increasing the number of courses and wales on the existing quality which could go some way towards reducing shrinkages and increasing weight. Of course, this only applies if the majority of fabrics are either white or pale shades as the weight will increase if deeper shades are used.

There is a good case for different specifications on weight between whites and pale colours one one hand, and deep shade.

Variability could be reduced by using both a single source of yarn and type, and also by using a single finishing route.

CORAH/IIC INTERLOCK CASE STUDY

6. GREIGE FABRICS - QUALITY 1001

<u>IIC NO.</u>	<u>TARGET STITCH LENGTH CMS</u>	<u>M/C DIAM</u>	<u>NO. OF NEEDLES</u>	<u>YARN USED</u>
1	0.335	30"	1860	1/38'scc LEGANO
2	0.335	30"	1860	1/38'scc "
3	0.335	30"	1860	1/38'scc "
4	0.300*	30"	1860	1/38's cc VOLOS
5	0.370*	30"	1860	1/38'scc "
6	0.335	20"	1236	1/38'scc SOKTAS
7	0.335	20"	1236	1/38'scc "
8	0.335	20"	1236	1/38'scc "
9	0.335	20"	1236	1/38'scc "
10	0.335	20"	1236	1/38'scc "
11	0.335	18"	1116	1/38'scc "
12	0.335	18"	1116	1/38'scc "
13	0.335	18"	1116	1/38'scc "
14	0.335	18"	1116	1/38'scc "
15	0.335	18"	1116	1/38'scc "
16	0.335	30"	1860	1/38'scc VOLOS
17	0.335	30"	1860	1/38'scc "
18	0.335	30"	1860	1/38'scc "
19	0.335	30"	1860	1/38'scc "
20	0.335	30"	1860	1/38'scc "

* specials to investigate the effect of tight and slack stitch lengths

CORAH/IIC INTERLOCK CASE STUDY

7. FINISHED FABRICS - QUALITY 1001

<u>IIC NO.</u>	<u>SL CMS</u>	<u>PIECE NO.</u>	<u>DYE ROUTE</u>	<u>COLOUR</u>	<u>SHADE REF</u>	<u>YARN</u>
1	0.335	BM396025(18")	JT	WHITE	-	SOKTAS
2	0.335	BM416076(20")	JT	WHITE	-	SOKTAS
3	0.335	BM406045(20")	JT	WHITE	-	SOKTAS
4	0.335	BM406043(18")	JT	WHITE	-	SOKTAS
5	0.300*	SPECIAL (30")	JT	WHITE	-	VOLOS
6	0.370*	SPECIAL (30")	JT	WHITE	-	VOLOS
7	0.300*	SPECIAL (30")	J OW	WHITE	-	VOLOS
8	0.370*	SPECIAL (30")	J OW	WHITE	-	VOLOS
9	0.335	BM416186 (?)	J OW	WHITE	-	LEGANO
10	0.335	BK386225 (?)	J OW	WHITE	-	VOLOS
11	0.335	BK416158 (?)	W OW (D)	PINK	MCS60124A	LEGANO
12	0.335	BK386163 (?)	W OW (D)	PINK	MCS60124A	VOLOS
13	0.335	BK386187 (?)	W OW (R)	TURQ.	60956	LEGANO
14	0.335	BK366187 (?)	W OW (D)	YELLOW	SC 129	LEGANO
15	0.335	BK396176 (?)	W OW (R)	Bt. RED	60934	LEGANO
16	0.335	BM336085 (20")	JT	WHITE	-	SOKTAS
17	0.335	BM436062 (18")	JT	WHITE	-	SOKTAS

DYE ROUTES

JT = R-Jet 95/Pegg Dried Tubular

J OW = R-Jet 95/open width finished (stenter)

W OW = Winch dyed/open width finished (stenter)

(D) = direct dye

(R) = reactive dye

CORAH INTERLOCK CASE STUDY

8. YARN DATA

Test Method	Sample Identification		
	1	2	3
1 Yarn count (Tex)	15.58	15.36	15.43
2 Twist (turns per metre)	940.00	948.00	979.00
3 Single end strength (g)	202.16	173.69	233.47
4 Extension at break (%)	5.76	6.12	5.56
5 Coefficient of friction (μ)	0.12	0.13	0.20
6 Twist liveliness (tpa)	70.10	71.57	75.05
7 Yarn Count (Ne)	37.89	38.46	38.28
8 Turns per inch	23.86	24.07	24.87
9 Twist Factor - alpha Tex	37.09	37.13	38.45
10 Twist Factor - English	3.88	3.88	4.02
11 Tenacity (g./Tex)	12.97	11.31	15.13

- 1 - LEGANO
- 2 - SOKTAS
- 3 - VOLOS

CORAH INTERLOCK STUDY 86

GREY DATA

Sample Identification

Test Method

	1	2	3	4	5
1 Length shrinkage (%), TD	16.46	17.81	16.95	13.57	20.26
2 Width shrinkage (%), TD	17.59	18.64	18.04	22.48	8.61
3 Length shrinkage (%), 5x	18.69	19.23	18.88	15.53	22.37
4 Width shrinkage (%), 5x	17.17	18.48	18.10	24.13	8.74
5 Weight (gsm), BW	165.60	169.83	163.25	179.64	169.17
6 Weight (gsm), AW	241.36	240.86	237.95	258.36	230.49
7 Courses per 3cm, BW	40.60	40.20	40.30	50.30	34.90
8 Courses per 3cm, TD	49.00	48.70	48.70	57.50	43.10
9 Courses per 3cm, AW	49.50	49.20	49.80	58.70	43.60
10 Wales per 3cm, BW	36.40	36.60	36.60	35.00	39.60
11 Wales per 3cm, TD	44.00	44.60	44.10	45.30	42.90
12 Wales per 3cm, AW	45.10	44.30	44.50	46.20	43.70
13 Stitch length (mm) BW	3.33	3.32	3.34	2.97	3.68
14 Stitch length (mm) AW	3.29	3.29	3.29	2.91	3.63
15 Width (cm), BW	75.80	75.93	76.47	77.77	70.13
16 Yarn strength (g), BW	182.07	181.49	176.11	207.04	182.20
17 Yarn strength (g), AW	163.92	181.16	165.38	180.79	167.56
18 Yarn ext. at break (%), BW	5.76	5.71	5.71	6.12	5.89
19 Yarn ext. at break (%), AW	6.42	6.79	6.34	6.58	6.67
20 Yarn count (tex), BW	15.61	15.57	15.47	15.11	15.42
21 Yarn count (tex), AW	15.08	15.06	14.96	14.94	15.18
22 Thickness (mm x 1000), BW	1056.40	1049.60	1052.90	893.70	1102.60
23 Thickness (mm x 1000), AW	1384.00	1388.20	1395.10	1278.50	1453.70
24 Turns per metre, BW	957.50	938.00	933.50	963.50	942.50
25 Turns per metre, AW	947.50	904.50	847.50	874.50	900.50
26 Yarn Count (Ne), BW	37.82	37.93	38.16	39.08	38.31
27 Yarn Count (Ne), AW	39.15	39.20	39.49	39.53	38.90

CORAH INTERLOCK STUDY 86

9.1 GREY DATA

Sample Identification

Test Method	6	7	8	9	10
1 Length shrinkage (%), TD	18.40	17.60	17.91	17.69	17.46
2 Width shrinkage (%), TD	14.87	15.69	17.04	15.42	15.90
3 Length shrinkage (%), 5x	19.61	19.46	20.02	20.28	20.30
4 Width shrinkage (%), 5x	16.73	16.53	16.36	14.70	14.75
5 Weight (gsm), BW	163.06	161.51	160.52	161.11	163.66
6 Weight (gsm), AW	232.16	232.58	232.66	228.71	231.00
7 Courses per 3cm, BW	40.70	41.30	41.70	40.90	40.90
8 Courses per 3cm, TD	49.80	49.80	49.60	49.30	49.00
9 Courses per 3cm, AW	51.10	51.30	51.50	51.70	51.10
10 Wales per 3cm, BW	35.10	34.90	34.80	35.10	34.70
11 Wales per 3cm, TD	41.70	42.00	41.70	41.60	41.60
12 Wales per 3cm, AW	42.80	42.00	41.50	41.00	41.50
13 Stitch length (mm) BW	3.37	3.38	3.38	3.36	3.37
14 Stitch length (mm) AW	3.32	3.32	3.32	3.33	3.31
15 Width (cm), BW	51.53	52.50	52.87	53.17	52.63
16 Yarn strength (g), BW	167.36	159.80	170.35	166.03	167.07
17 Yarn strength (g), AW	155.54	161.52	149.89	149.63	142.20
18 Yarn ext. at break (%), BW	6.28	6.36	6.40	6.28	6.14
19 Yarn ext. at break (%), AW	7.36	7.80	7.14	7.15	6.84
20 Yarn count (tex), BW	15.29	15.40	15.21	15.19	15.24
21 Yarn count (tex), AW	15.00	14.86	15.21	14.95	14.65
22 Thickness (mm x 1000), BW	1003.50	1008.90	1007.40	1017.30	1003.60
23 Thickness (mm x 1000), AW	1371.20	1373.80	1376.00	1390.50	1362.70
24 Turns per metre, BW	957.00	983.50	935.00	968.50	909.50
25 Turns per metre, AW	926.50	913.00	891.00	863.00	919.00
26 Yarn Count (No), BW	38.61	38.34	38.81	38.87	38.74
27 Yarn Count (No), AW	39.37	39.75	38.82	39.50	40.32

CORAH INTERLOCK STUDY 86

9.2 GREY DATA

Sample Identification

Test Method	11	12	13	14	15
1 Length shrinkage (%), TD	16.62	16.46	19.91	18.82	18.18
2 Width shrinkage (%), TD	16.09	16.06	13.13	15.81	12.75
3 Length shrinkage (%), 5x	18.53	18.63	19.33	20.81	20.04
4 Width shrinkage (%), 5x	14.59	14.62	12.46	16.43	12.31
5 Weight (gsm), BW	165.40	161.86	169.53	162.85	169.22
6 Weight (gsm), AW	226.19	227.41	231.09	230.50	225.96
7 Courses per 3cm, BW	42.00	41.40	40.60	40.20	40.50
8 Courses per 3cm, TD	50.10	49.80	49.20	49.40	49.90
9 Courses per 3cm, AW	50.40	50.60	49.50	50.70	50.70
10 Wales per 3cm, BW	35.90	35.40	37.20	35.30	37.10
11 Wales per 3cm, TD	42.20	42.90	42.20	41.90	42.60
12 Wales per 3cm, AW	41.30	41.90	41.30	41.80	41.40
13 Stitch length (mm) BW	3.39	3.37	3.37	3.38	3.36
14 Stitch length (mm) AW	3.30	3.30	3.31	3.34	3.39
15 Width (cm), BW	47.23	47.50	45.93	47.33	45.45
16 Yarn strength (g), BW	158.85	162.13	144.92	154.64	156.68
17 Yarn strength (g), AW	148.81	153.53	158.26	165.73	159.83
18 Yarn ext. at break (%), BW	6.30	6.30	6.25	6.14	6.42
19 Yarn ext. at break (%), AW	7.63	7.77	7.83	7.96	7.82
20 Yarn count (tex), BW	15.18	15.45	15.61	15.65	15.72
21 Yarn count (tex), AW	15.11	15.05	15.39	15.11	14.88
22 Thickness (mm x 1000), BW	1090.30	1092.10	1079.40	991.10	1091.80
23 Thickness (mm x 1000), AW	1372.50	1372.90	1364.90	1348.00	1365.00
24 Turns per metre, BW	991.50	944.50	964.00	935.50	970.50
25 Turns per metre, AW	990.50	1031.00	981.50	967.00	991.00
26 Yarn Count (No), BW	38.90	38.21	37.82	37.73	37.56
27 Yarn Count (No), AW	39.09	39.25	38.36	39.09	39.68

CORAH INTERLOCK STUDY 86

9.3 GREY DATA

Sample Identification

Test Method	16	17	18	19	20
1 Length shrinkage (%), TD	16.41	16.59	17.17	15.59	15.88
2 Width shrinkage (%), TD	14.12	14.29	16.26	14.97	16.79
3 Length shrinkage (%), 5x	17.69	18.13	19.20	17.51	17.37
4 Width shrinkage (%), 5x	11.70	13.64	15.26	13.66	16.12
5 Weight (gsm), BW	180.34	182.93	172.22	182.36	170.50
6 Weight (gsm), AW	239.01	238.90	233.01	237.90	232.01
7 Courses per 3cm, BW	42.60	42.20	41.40	42.60	42.20
8 Courses per 3cm, TD	50.60	50.70	50.50	50.20	50.80
9 Courses per 3cm, AW	51.90	51.20	51.10	51.80	51.00
10 Wales per 3cm, BW	38.10	38.00	36.60	37.50	37.60
11 Wales per 3cm, TD	44.40	43.90	44.30	44.40	43.80
12 Wales per 3cm, AW	43.70	43.30	43.50	43.30	43.50
13 Stitch length (mm) BW	3.32	3.32	3.34	3.32	3.32
14 Stitch length (mm) AW	3.27	3.27	3.27	3.28	3.27
15 Width (cm), BW	73.23	73.23	75.37	73.67	76.02
16 Yarn strength (g), BW	223.48	214.64	206.28	208.23	213.03
17 Yarn strength (g), AW	208.57	195.48	189.87	189.12	194.47
18 Yarn ext. at break (%), BW	6.67	6.44	6.47	6.23	6.29
19 Yarn ext. at break (%), AW	7.75	7.50	7.41	7.35	7.39
20 Yarn count (tex), BW	15.84	15.39	15.20	15.41	15.37
21 Yarn count (tex), AW	15.27	15.46	14.92	15.37	15.26
22 Thickness (mm x 1000), BW	1121.30	1105.20	1034.40	1109.20	1072.20
23 Thickness (mm x 1000), AW	1332.00	1345.70	1338.30	1350.40	1339.10
24 Turns per metre, BW	1006.50	1003.00	960.50	972.50	967.00
25 Turns per metre, AW	1056.00	1050.50	953.00	1040.00	1030.00
26 Yarn Count (No), BW	37.28	38.38	38.84	38.32	38.41
27 Yarn Count (No), AW	38.67	38.19	39.59	38.42	38.69

CORAH INTERLOCK STUDY 86

10.0 GREY DATA - Special Fabrics

Test Method	Specials	
	0.30 St.len 4	0.37 St.len 5
1 Length shrinkage (%), TD	13.57	20.26
2 Width shrinkage (%), TD	22.48	8.61
3 Length shrinkage (%), 5x	15.53	22.37
4 Width shrinkage (%), 5x	24.13	8.74
5 Weight (gsm), BW	179.64	169.17
6 Weight (gsm), AW	258.36	230.49
7 Courses per 3cm, BW	50.30	34.90
8 Courses per 3cm, TD	57.50	43.10
9 Courses per 3cm, AW	58.70	43.60
10 Wales per 3cm, BW	35.00	39.60
11 Wales per 3cm, TD	45.30	42.90
12 Wales per 3cm, AW	46.20	43.70
13 Stitch length (mm) BW	2.97	3.68
14 Stitch length (mm) AW	2.91	3.63
15 Width (cm), BW	77.77	70.13
16 Yarn strength (g), BW	207.04	182.20
17 Yarn strength (g), AW	180.79	167.56
18 Yarn ext. at break (%), BW	6.12	5.89
19 Yarn ext. at break (%), AW	6.58	6.67
20 Yarn count (tex), BW	15.11	15.42
21 Yarn count (tex), AW	14.94	15.18
22 Thickness (mm x 1000), BW	893.70	1182.60
23 Thickness (mm x 1000), AW	1278.50	1453.70
24 Turns per metre, BW	963.50	942.50
25 Turns per metre, AW	874.50	900.50
26 Yarn Count (Ne), BW	39.08	38.31
27 Yarn Count (Ne), AW	39.53	38.90

CORAH INTERLOCK STUDY 86

11.0

GREY DATA - All Samples

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage (%), TD	18	17.3281	1.0918	6.30
2	Width shrinkage (%), TD	18	15.7473	1.5782	10.02
3	Length shrinkage (%), 5x	18	19.0941	1.0051	5.26
4	Width shrinkage (%), 5x	18	15.1999	1.9540	12.86
5	Weight (gsm), BW	18	168.0987	7.2783	4.33
6	Weight (gsm), AW	18	233.2919	4.9174	2.11
7	Courses per 3cm, BW	18	41.2389	0.8161	1.98
8	Courses per 3cm, TD	18	49.7278	0.6693	1.35
9	Courses per 3cm, AW	18	50.7833	0.8184	1.61
10	Wales per 3cm, BW	18	36.2722	1.1529	3.18
11	Wales per 3cm, TD	18	43.0389	1.2127	2.82
12	Wales per 3cm, AW	18	42.6500	1.2798	3.00
13	Stitch length (mm) BW	18	3.3522	0.0241	0.72
14	Stitch length (mm) AW	18	3.3037	0.0308	0.93
15	Width (cm), BW	18	60.8815	13.1940	21.67
16	Yarn strength (g), BW	18	178.5121	24.0768	13.49
17	Yarn strength (g), AW	18	168.4956	19.5403	11.60
18	Yarn ext. at break (%), BW	18	6.2313	0.2628	4.22
19	Yarn ext. at break (%), AW	18	7.3481	0.4853	6.61
20	Yarn count (tex), BW	18	15.4356	0.1984	1.29
21	Yarn count (tex), AW	18	15.0882	0.2114	1.40
22	Thickness (mm x 1000), BW	18	1054.8111	42.2668	4.01
23	Thickness (mm x 1000), AW	18	1365.0611	19.0891	1.40
24	Turns per metre, BW	18	961.0000	25.6205	2.67
25	Turns per metre, AW	18	961.2500	64.7373	6.73
26	Yarn Count (Ne), BW	18	38.2643	0.4897	1.28
27	Yarn Count (Ne), AW	18	39.1465	0.5487	1.40

N.B. Specials are not included

CORAH INTERLOCK STUDY 86

11.1

GREY DATA - 1/38's LEGANO

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage (%), TD	3	17.0728	0.6837	4.00
2	Width shrinkage (%), TD	3	18.0878	0.5252	2.90
3	Length shrinkage (%), 5x	3	18.9333	0.2755	1.46
4	Width shrinkage (%), 5x	3	17.9178	0.6737	3.76
5	Weight (gsm), BW	3	166.2297	3.3348	2.01
6	Weight (gsm), AW	3	240.0547	1.8399	0.77
7	Courses per 3cm, BW	3	40.3667	0.2082	0.52
8	Courses per 3cm, TD	3	48.0000	0.1732	0.35
9	Courses per 3cm, AW	3	49.5000	0.3000	0.61
10	Wales per 3cm, BW	3	36.5333	0.1155	0.32
11	Wales per 3cm, TD	3	44.5000	0.3606	0.81
12	Wales per 3cm, AW	3	44.6333	0.4163	0.93
13	Stitch length (mm) BW	3	3.3322	0.0069	0.21
14	Stitch length (mm) AW	3	3.2915	0.0028	0.08
15	Width (cm), BW	3	76.0667	0.3528	0.46
16	Yarn strength (g), BW	3	179.8878	3.2845	1.83
17	Yarn strength (g), AW	3	170.1533	9.5600	5.62
18	Yarn ext. at break (%), BW	3	5.7274	0.0240	0.42
19	Yarn ext. at break (%), AW	3	6.5179	0.2367	3.63
20	Yarn count (tex), BW	3	15.5525	0.0723	0.46
21	Yarn count (tex), AW	3	15.0347	0.0688	0.46
22	Thickness (mm x 1000), BW	3	1052.9667	3.4005	0.32
23	Thickness (mm x 1000), AW	3	1389.3667	5.2482	0.38
24	Turns per metre, BW	3	943.0000	12.7574	1.35
25	Turns per metre, AW	3	899.8333	50.1631	5.57
26	Yarn Count (Ne), BW	3	37.9712	0.1767	0.47
27	Yarn Count (Ne), AW	3	39.2791	0.1803	0.46

N.B. Specials are not included

CORAH INTERLOCK STUDY 86

11.2

BREY DATA - 1/38's VOLOS

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage (%), TD	5	16.3283	0.6197	3.80
2	Width shrinkage (%), TD	5	15.2860	1.1887	7.78
3	Length shrinkage (%), 5x	5	17.9790	0.7394	4.11
4	Width shrinkage (%), 5x	5	14.0757	1.7026	12.10
5	Weight (gsm), BW	5	177.6718	5.8728	3.31
6	Weight (gsm), AW	5	236.1664	3.3854	1.43
7	Courses per 3cm, BW	5	42.2000	0.4899	1.16
8	Courses per 3cm, TD	5	50.5600	0.2302	0.46
9	Courses per 3cm, AW	5	51.4000	0.4183	0.81
10	Wales per 3cm, BW	5	37.5600	0.5941	1.58
11	Wales per 3cm, TD	5	44.1600	0.2881	0.65
12	Wales per 3cm, AW	5	43.4600	0.1673	0.39
13	Stitch length (mm) BW	5	3.3251	0.0089	0.27
14	Stitch length (mm) AW	5	3.2709	0.0040	0.12
15	Width (cm), BW	5	74.3033	1.3001	1.75
16	Yarn strength (g), BW	5	213.1307	6.7153	3.15
17	Yarn strength (g), AW	5	195.5020	7.8168	4.00
18	Yarn ext. at break (%), BW	5	6.4208	0.1735	2.70
19	Yarn ext. at break (%), AW	5	7.4788	0.1624	2.17
20	Yarn count (tex), BW	5	15.4429	0.2368	1.53
21	Yarn count (tex), AW	5	15.2561	0.2070	1.36
22	Thickness (mm x 1000), BW	5	1088.4600	35.2694	3.24
23	Thickness (mm x 1000), AW	5	1341.1000	7.1116	0.53
24	Turns per metre, BW	5	981.9000	21.3231	2.17
25	Turns per metre, AW	5	1025.9000	41.9559	4.09
26	Yarn Count (Ne), BW	5	38.2474	0.5785	1.51
27	Yarn Count (Ne), AW	5	38.7143	0.5313	1.37

N.B. Specials are not included

CORAH INTERLOCK STUDY 86

11.3

GREY DATA - 1/38's SOKTAS

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage (%), TD	10	17.9847	1.0151	5.67
2	Width shrinkage (%), TD	10	15.2758	1.3506	8.84
3	Length shrinkage (%), 5x	10	19.6998	0.7358	3.73
4	Width shrinkage (%), 5x	10	14.9467	1.6084	10.76
5	Weight (gsm), BW	10	163.8728	3.2157	1.96
6	Weight (gsm), AW	10	229.8258	2.5776	1.12
7	Courses per 3cm, BW	10	41.0200	0.5673	1.38
8	Courses per 3cm, TD	10	49.5900	0.3510	0.71
9	Courses per 3cm, AW	10	50.8600	0.6328	1.24
10	Wales per 3cm, BW	10	35.5500	0.9095	2.56
11	Wales per 3cm, TD	10	42.0400	0.4402	1.05
12	Wales per 3cm, AW	10	41.6500	0.5061	1.22
13	Stitch length (mm) BW	10	3.3718	0.0091	0.27
14	Stitch length (mm) AW	10	3.3238	0.0262	0.79
15	Width (cm), BW	10	49.6150	3.1720	6.39
16	Yarn strength (g), BW	10	160.7902	7.5592	4.70
17	Yarn strength (g), AW	10	154.4950	7.0603	4.57
18	Yarn ext. at break (%), BW	10	6.2877	0.0937	1.49
19	Yarn ext. at break (%), AW	10	7.5318	0.3796	5.04
20	Yarn count (tex), BW	10	15.3969	0.2050	1.33
21	Yarn count (tex), AW	10	15.0203	0.2063	1.37
22	Thickness (mm x 1000), BW	10	1038.5400	43.5284	4.19
23	Thickness (mm x 1000), AW	10	1369.7500	10.9263	0.80
24	Turns per metre, BW	10	955.9500	24.9527	2.61
25	Turns per metre, AW	10	947.3500	52.7315	5.57
26	Yarn Count (Ne), BW	10	38.3607	0.5081	1.32
27	Yarn Count (Ne), AW	10	39.3228	0.5402	1.37

N.B. Specials are not included

CORAH INTERLOCK STUDY 86

11.4
GREY DATA - Machine Diameter 18"

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage (%), TD	5	17.9963	1.4705	8.17
2	Width shrinkage (%), TD	5	14.7660	1.6773	11.36
3	Length shrinkage (%), 5x	5	19.4670	0.9667	4.97
4	Width shrinkage (%), 5x	5	14.0823	1.7170	12.19
5	Weight (gsm), BW	5	165.7712	3.5328	2.13
6	Weight (gsm), AW	5	228.2288	2.4140	1.06
7	Courses per 3cm, BW	5	40.9400	0.7403	1.81
8	Courses per 3cm, TD	5	49.6800	0.3701	0.75
9	Courses per 3cm, AW	5	50.3800	0.5070	1.01
10	Wales per 3cm, BW	5	36.1800	0.9149	2.53
11	Wales per 3cm, TD	5	42.3600	0.3912	0.92
12	Wales per 3cm, AW	5	41.5400	0.2881	0.69
13	Stitch length (mm) BW	5	3.3736	0.0119	0.35
14	Stitch length (mm) AW	5	3.3273	0.0381	1.15
15	Width (cm), BW	5	46.6900	0.9321	2.00
16	Yarn strength (g), BW	5	155.4437	6.5035	4.18
17	Yarn strength (g), AW	5	157.2333	6.4166	4.08
18	Yarn ext. at break (%), BW	5	6.2831	0.0990	1.58
19	Yarn ext. at break (%), AW	5	7.0034	0.1191	1.53
20	Yarn count (tex), BW	5	15.5245	0.2165	1.39
21	Yarn count (tex), AW	5	15.1072	0.1850	1.22
22	Thickness (mm x 1000), BW	5	1068.9400	43.8283	4.10
23	Thickness (mm x 1000), AW	5	1364.6600	10.0883	0.74
24	Turns per metre, BW	5	961.2000	22.0896	2.30
25	Turns per metre, AW	5	992.2000	23.7660	2.40
26	Yarn Count (Ne), BW	5	38.0452	0.5363	1.41
27	Yarn Count (Ne), AW	5	39.0947	0.4760	1.22

N.B. Specials are not included

CORAH INTERLOCK STUDY 86

11.5

GREY DATA - Machine Diameter 20"

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage (%), TD	5	17.8130	0.3676	2.06
2	Width shrinkage (%), TD	5	15.7857	0.8006	5.07
3	Length shrinkage (%), 5x	5	19.9327	0.3849	1.93
4	Width shrinkage (%), 5x	5	15.8110	1.0025	6.34
5	Weight (gsm), BW	5	161.9744	1.3325	0.82
6	Weight (gsm), AW	5	231.4228	1.6571	0.72
7	Courses per 3cm, BW	5	41.1000	0.4000	0.97
8	Courses per 3cm, TD	5	49.5000	0.3464	0.70
9	Courses per 3cm, AW	5	51.3400	0.2608	0.51
10	Wales per 3cm, BW	5	34.9200	0.1789	0.51
11	Wales per 3cm, TD	5	41.7200	0.1643	0.39
12	Wales per 3cm, AW	5	41.7600	0.6804	1.63
13	Stitch length (mm) BW	5	3.3699	0.0061	0.18
14	Stitch length (mm) AW	5	3.3203	0.0080	0.24
15	Width (cm), BW	5	52.5400	0.6171	1.17
16	Yarn strength (g), BW	5	166.1367	3.8485	2.32
17	Yarn strength (g), AW	5	151.7567	7.2277	4.76
18	Yarn ext. at break (%), BW	5	6.2924	0.0996	1.58
19	Yarn ext. at break (%), AW	5	7.2601	0.3542	4.88
20	Yarn count (tex), BW	5	15.2692	0.0835	0.55
21	Yarn count (tex), AW	5	14.9334	0.2065	1.38
22	Thickness (mm x 1000), BW	5	1008.1400	5.6385	0.56
23	Thickness (mm x 1000), AW	5	1374.8400	10.1031	0.73
24	Turns per metre, BW	5	950.7000	29.0530	3.06
25	Turns per metre, AW	5	902.5000	25.7439	2.85
26	Yarn Count (Ne), BW	5	38.6762	0.2107	0.54
27	Yarn Count (Ne), AW	5	39.5510	0.5475	1.38

N.B. Specials are not included

CORAH INTERLOCK STUDY 86

11.6
GREY DATA - Machine Diameter 30"

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage (%), TD	8	16.6075	0.7081	4.26
2	Width shrinkage (%), TD	8	16.3367	1.7289	10.58
3	Length shrinkage (%), 5x	8	18.3369	0.7603	4.15
4	Width shrinkage (%), 5x	8	15.5165	2.3959	15.44
5	Weight (gsm), BW	8	173.3810	7.6128	4.39
6	Weight (gsm), AW	8	237.6245	3.4009	1.43
7	Courses per 3cm, BW	8	41.5125	1.0246	2.47
8	Courses per 3cm, TD	8	49.9000	0.9320	1.87
9	Courses per 3cm, AW	8	50.6875	1.0453	2.06
10	Wales per 3cm, BW	8	37.1750	0.6985	1.88
11	Wales per 3cm, TD	8	44.2875	0.3399	0.77
12	Wales per 3cm, AW	8	43.9000	0.6590	1.50
13	Stitch length (mm) BW	8	3.3277	0.0085	0.26
14	Stitch length (mm) AW	8	3.2786	0.0112	0.34
15	Width (cm), BW	8	74.9646	1.3544	1.81
16	Yarn strength (g), BW	8	200.6646	18.0238	8.98
17	Yarn strength (g), AW	8	185.9963	15.2690	8.21
18	Yarn ext. at break (%), BW	8	6.1607	0.3823	6.21
19	Yarn ext. at break (%), AW	8	7.1185	0.5276	7.41
20	Yarn count (tex), BW	8	15.4840	0.1918	1.24
21	Yarn count (tex), AW	8	15.1731	0.1974	1.30
22	Thickness (mm x 1000), BW	8	1075.1500	32.4278	3.02
23	Thickness (mm x 1000), AW	8	1359.2000	25.7058	1.89
24	Turns per metre, BW	8	967.3125	26.6766	2.76
25	Turns per metre, AW	8	978.6250	77.3424	7.90
26	Yarn Count (Ne), BW	8	38.1438	0.4697	1.23
27	Yarn Count (Ne), AW	8	38.9261	0.5060	1.30

N.B. Specials are not included

CORAH INTERLOCK STUDY 86

12.0 DYED ONLY DATA

Sample Identification

Test Method	1	2	3	4	5
1 Length shrinkage (%), TD	14.80	15.73	15.75	16.00	10.04
2 Width shrinkage (%), TD	10.65	11.81	10.11	10.74	13.27
3 Length shrinkage (%), 5x	18.16	19.79	19.52	19.13	13.60
4 Width shrinkage (%), 5x	10.26	11.46	9.42	10.92	12.59
5 Weight (gsm), BW	151.19	143.70	147.17	145.42	171.75
6 Weight (gsm), AW	206.26	200.25	204.32	199.46	228.39
7 Courses per 3cm, BW	38.00	37.80	37.10	37.40	46.90
8 Courses per 3cm, TD	44.70	44.70	45.00	44.70	52.40
9 Courses per 3cm, AW	46.20	46.10	46.90	47.10	53.90
10 Wales per 3cm, BW	36.80	36.27	38.00	35.67	39.60
11 Wales per 3cm, TD	41.30	41.40	42.40	40.90	45.10
12 Wales per 3cm, AW	41.10	41.20	42.90	40.70	45.10
13 Stitch length (mm) BW	3.36	3.34	3.30	3.37	2.92
14 Stitch length (mm) AW	3.29	3.30	3.25	3.32	2.91
15 Width (cm), BW	45.57	51.80	49.23	46.43	71.53
16 Yarn strength (g), BW	191.15	175.07	190.84	181.28	210.89
17 Yarn strength (g), AW	228.81	217.16	220.56	221.12	228.40
18 Yarn ext. at break (%), BW	6.94	6.81	6.90	6.91	6.55
19 Yarn ext. at break (%), AW	7.02	7.00	6.76	7.20	6.45
20 Yarn count (tex), BW	14.95	14.54	14.55	14.60	14.70
21 Yarn count (tex), AW	15.19	14.44	14.67	14.58	14.54
22 Thickness (mm x 1000), BW	735.10	719.80	694.30	727.40	766.10
23 Thickness (mm x 1000), AW	1172.90	1154.00	1136.00	1147.40	1081.60
24 Turns per metre, BW	860.00	898.50	918.00	914.00	954.00
25 Turns per metre, AW	947.50	904.50	847.50	874.50	900.50
26 Yarn Count (No), BW	39.51	40.61	40.60	40.45	40.18
27 Yarn Count (No), AW	38.87	40.90	40.25	40.51	40.63

CORAH INTERLOCK STUDY 86

12.1 DYED ONLY DATA

Sample Identification

Test Method	6	7	8	9	10
1 Length shrinkage (%), TD	12.16	10.21	16.53	13.00	10.63
2 Width shrinkage (%), TD	16.69	11.09	11.02	11.66	12.80
3 Length shrinkage (%), 5x	15.81	13.71	19.78	15.53	13.74
4 Width shrinkage (%), 5x	17.11	10.98	13.19	12.51	12.93
5 Weight (gsm), BW	135.08	173.65	136.45	143.15	153.02
6 Weight (gsm), AW	196.62	228.17	194.69	196.74	206.74
7 Courses per 3cm, BW	33.70	46.20	33.30	39.13	39.90
8 Courses per 3cm, TD	39.20	52.00	39.50	44.90	44.80
9 Courses per 3cm, AW	39.90	53.90	40.70	45.90	46.70
10 Wales per 3cm, BW	34.85	40.70	36.00	35.40	36.20
11 Wales per 3cm, TD	40.93	45.20	40.60	41.10	42.00
12 Wales per 3cm, AW	41.50	45.60	40.80	41.60	42.00
13 Stitch length (mm) BW	3.63	2.92	3.65	3.30	3.30
14 Stitch length (mm) AW	3.62	2.90	3.61	3.27	3.26
15 Width (cm), BW	80.80	138.43	158.00	155.40	153.07
16 Yarn strength (g), BW	198.09	194.79	204.05	194.03	211.11
17 Yarn strength (g), AW	228.61	228.52	233.89	209.95	229.84
18 Yarn ext. at break (%), BW	6.31	6.15	6.27	6.63	6.42
19 Yarn ext. at break (%), AW	6.38	6.43	6.30	6.18	6.69
20 Yarn count (tex), BW	15.11	14.39	14.97	14.60	14.76
21 Yarn count (tex), AW	14.90	14.66	15.02	14.87	15.06
22 Thickness (mm x 1000), BW	770.00	778.00	802.70	778.90	793.30
23 Thickness (mm x 1000), AW	1225.00	1068.90	1212.30	1127.60	1137.20
24 Turns per metre, BW	925.50	924.50	896.00	926.00	922.00
25 Turns per metre, AW	926.50	913.00	891.00	863.00	919.00
26 Yarn Count (No), BW	39.09	41.03	39.44	40.45	40.82
27 Yarn Count (No), AW	39.63	40.27	39.32	39.71	39.22

CORAH INTERLOCK STUDY 86

12.2 DYED ONLY DATA

Sample Identification

Test Method	11	12	13	14	15
1 Length shrinkage (%), TD	4.34	10.65	8.06	10.27	9.48
2 Width shrinkage (%), TD	16.61	12.57	13.65	13.16	12.64
3 Length shrinkage (%), 5x	9.38	15.43	12.63	15.28	14.04
4 Width shrinkage (%), 5x	17.88	12.97	14.38	14.58	12.69
5 Weight (gsm), BW	154.26	156.24	159.08	146.97	164.30
6 Weight (gsm), AW	213.44	208.60	211.60	201.50	215.20
7 Courses per 3cm, BW	41.20	39.60	40.70	39.10	39.20
8 Courses per 3cm, TD	43.60	43.70	44.10	43.60	43.50
9 Courses per 3cm, AW	45.80	46.20	46.80	45.90	45.40
10 Wales per 3cm, BW	36.50	37.60	38.30	36.50	38.60
11 Wales per 3cm, TD	43.40	42.00	43.10	42.40	43.40
12 Wales per 3cm, AW	44.00	42.70	43.70	42.90	44.30
13 Stitch length (mm) BW	3.36	3.33	3.29	3.33	3.36
14 Stitch length (mm) AW	3.33	3.30	3.26	3.30	3.33
15 Width (cm), BW	159.90	151.32	148.63	154.52	147.75
16 Yarn strength (g), BW	193.87	179.51	180.01	193.92	170.58
17 Yarn strength (g), AW	226.07	205.52	216.60	224.16	198.77
18 Yarn ext. at break (%), BW	6.71	6.95	6.29	6.30	6.22
19 Yarn ext. at break (%), AW	7.15	7.10	6.98	6.79	6.56
20 Yarn count (tex), BW	14.82	14.75	15.05	14.68	15.25
21 Yarn count (tex), AW	14.94	14.87	14.96	14.63	15.12
22 Thickness (mm x 1000), BW	906.50	842.30	863.20	829.30	897.80
23 Thickness (mm x 1000), AW	1226.10	1184.70	1197.40	1163.60	1239.50
24 Turns per metre, BW	951.50	1010.50	958.00	902.00	944.00
25 Turns per metre, AW	881.50	956.50	898.00	910.00	931.50
26 Yarn Count (No), BW	39.84	40.04	39.23	40.23	38.72
27 Yarn Count (No), AW	39.52	39.72	39.49	40.36	39.05

CORAH INTERLOCK STUDY 86

12.3 DYED ONLY DATA

Sample Identification

Test Method	16	17
1 Length shrinkage (%), TD	11.71	14.53
2 Width shrinkage (%), TD	13.07	10.50
3 Length shrinkage (%), 5x	17.48	18.51
4 Width shrinkage (%), 5x	13.22	10.32
5 Weight (gsm), BW	145.55	148.54
6 Weight (gsm), AW	197.00	201.19
7 Courses per 3cm, BW	38.70	38.60
8 Courses per 3cm, TD	42.90	40.80
9 Courses per 3cm, AW	45.90	46.80
10 Wales per 3cm, BW	35.80	36.40
11 Wales per 3cm, TD	42.90	40.80
12 Wales per 3cm, AW	41.60	40.50
13 Stitch length (mm) BW	3.26	3.29
14 Stitch length (mm) AW	3.25	3.35
15 Width (cm), BW	50.98	46.32
16 Yarn strength (g), BW	162.24	179.20
17 Yarn strength (g), AW	213.43	222.29
18 Yarn ext. at break (%), BW	7.04	7.29
19 Yarn ext. at break (%), AW	7.87	7.96
20 Yarn count (tex), BW	14.97	15.01
21 Yarn count (tex), AW	15.03	14.49
22 Thickness (mm x 1000), BW	676.90	751.30
23 Thickness (mm x 1000), AW	1117.90	1151.30
24 Turns per metre, BW	943.00	967.50
25 Turns per metre, AW	928.00	942.00
26 Yarn Count (Ne), BW	39.45	39.35
27 Yarn Count (Ne), AW	39.28	40.74

CORAH INTERLOCK STUDY 86

13.0

DYED DATA - All Samples

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage (%), TD	13	11.9185	3.4930	29.31
2	Width shrinkage (%), TD	13	12.3051	1.7324	14.08
3	Length shrinkage (%), 5x	13	16.0472	3.0935	19.28
4	Width shrinkage (%), 5x	13	12.5786	2.2456	17.85
5	Weight (gsm), BW	13	150.6606	6.4261	4.27
6	Weight (gsm), AW	13	204.7937	6.1150	2.99
7	Courses per 3cm, BW	13	38.9564	1.2180	3.13
8	Courses per 3cm, TD	13	43.9231	1.1534	2.63
9	Courses per 3cm, AW	13	46.2846	0.5210	1.13
10	Wales per 3cm, BW	13	36.7718	1.0323	2.81
11	Wales per 3cm, TD	13	42.0846	0.9344	2.22
12	Wales per 3cm, AW	13	42.2462	1.2653	3.00
13	Stitch length (mm) BW	13	3.3211	0.0343	1.03
14	Stitch length (mm) AW	13	3.2935	0.0349	1.06
15	Width (cm), BW	13	104.6859	54.3568	51.92
16	Yarn strength (g), BW	13	184.8299	12.6500	6.84
17	Yarn strength (g), AW	13	210.0215	9.1683	4.21
18	Yarn ext. at break (%), BW	13	6.7232	0.3305	4.92
19	Yarn ext. at break (%), AW	13	7.0198	0.4838	6.89
20	Yarn count (tex), BW	13	14.8093	0.2217	1.50
21	Yarn count (tex), AW	13	14.8348	0.2476	1.67
22	Thickness (mm x 1000), BW	13	785.8538	76.4037	9.72
23	Thickness (mm x 1000), AW	13	1165.8154	37.2229	3.19
24	Turns per metre, BW	13	931.9231	37.1998	3.99
25	Turns per metre, AW	13	907.9615	33.8720	3.73
26	Yarn Count (Ne), BW	13	39.8846	0.5935	1.49
27	Yarn Count (Ne), AW	13	39.8180	0.6672	1.68

N.B. Specials are not included

CORAH INTERLOCK STUDY 86

13.1

DYED DATA - All Samples (except no.11)

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage (%), TD	12	12.5500	2.7666	22.04
2	Width shrinkage (%), TD	12	11.9464	1.2037	10.00
3	Length shrinkage (%), 5x	12	16.6024	2.4634	14.84
4	Width shrinkage (%), 5x	12	12.1369	1.6538	13.63
5	Weight (gsm), BW	12	150.3604	6.6159	4.40
6	Weight (gsm), AW	12	204.0732	5.7819	2.83
7	Courses per 3cm, BW	12	38.7694	1.0596	2.73
8	Courses per 3cm, TD	12	43.9500	1.2004	2.73
9	Courses per 3cm, AW	12	46.3250	0.5225	1.13
10	Wales per 3cm, BW	12	36.7944	1.0749	2.92
11	Wales per 3cm, TD	12	41.9750	0.8843	2.11
12	Wales per 3cm, AW	12	42.1000	1.2015	2.85
13	Stitch length (mm) BW	12	3.3179	0.0337	1.02
14	Stitch length (mm) AW	12	3.2904	0.0345	1.05
15	Width (cm), BW	12	100.0847	54.0650	54.02
16	Yarn strength (g), BW	12	104.0766	12.9044	7.01
17	Yarn strength (g), AW	12	217.3511	9.2372	4.25
18	Yarn ext. at break (%), BW	12	6.7239	0.3452	5.13
19	Yarn ext. at break (%), AW	12	7.0086	0.5036	7.19
20	Yarn count (tex), BW	12	14.8000	0.2315	1.56
21	Yarn count (tex), AW	12	14.8258	0.2564	1.73
22	Thickness (mm x 1000), BW	12	775.8000	70.2475	9.05
23	Thickness (mm x 1000), AW	12	1160.7917	33.9644	2.93
24	Turns per metre, BW	12	930.2917	38.3651	4.12
25	Turns per metre, AW	12	910.1667	34.3897	3.78
26	Yarn Count (No), BW	12	39.8886	0.6197	1.55
27	Yarn Count (No), AW	12	39.8428	0.6906	1.73

N.B. Specials are not included

CORAH INTERLOCK STUDY 86
13.2

DYED DATA - 1/38's LEGANO

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage (%), TD	5	9.0290	3.1783	35.20
2	Width shrinkage (%), TD	5	13.5423	1.8678	13.79
3	Length shrinkage (%), 5x	5	13.3720	2.5092	18.76
4	Width shrinkage (%), 5x	5	14.4070	2.1576	14.98
5	Weight (gsm), BW	5	153.5510	8.6318	5.62
6	Weight (gsm), AW	5	207.6972	8.1100	3.90
7	Courses per 3cm, BW	5	39.8667	1.0053	2.52
8	Courses per 3cm, TD	5	43.9400	0.5857	1.33
9	Courses per 3cm, AW	5	45.9600	0.5128	1.12
10	Wales per 3cm, BW	5	37.0600	1.3502	3.64
11	Wales per 3cm, TD	5	42.6800	0.9731	2.28
12	Wales per 3cm, AW	5	43.3000	1.0840	2.50
13	Stitch length (mm) BW	5	3.3265	0.0352	1.06
14	Stitch length (mm) AW	5	3.2995	0.0348	1.06
15	Width (cm), BW	5	153.2400	5.0501	3.30
16	Yarn strength (g), BW	5	186.4813	10.7431	5.76
17	Yarn strength (g), AW	5	215.1093	11.1548	5.19
18	Yarn ext. at break (%), BW	5	6.4316	0.2256	3.51
19	Yarn ext. at break (%), AW	5	6.7325	0.3806	5.65
20	Yarn count (tex), BW	5	14.8810	0.2687	1.81
21	Yarn count (tex), AW	5	14.9045	0.1787	1.20
22	Thickness (mm x 1000), BW	5	855.1400	52.4474	6.13
23	Thickness (mm x 1000), AW	5	1190.8400	45.8132	3.85
24	Turns per metre, BW	5	936.3000	22.6042	2.41
25	Turns per metre, AW	5	896.8000	26.2502	2.93
26	Yarn Count (Ne), BW	5	39.6944	0.7129	1.80
27	Yarn Count (Ne), AW	5	39.6261	0.4778	1.21

N.B. Specials are not included

CORAH INTERLOCK STUDY 86

13.3

DYED DATA - 1/38's SOKTAS

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage (%), TD	6	14.7528	1.5994	10.84
2	Width shrinkage (%), TD	6	11.1472	1.1007	9.87
3	Length shrinkage (%), 5x	6	18.7644	0.8774	4.68
4	Width shrinkage (%), 5x	6	10.9314	1.3132	12.01
5	Weight (gsm), BW	6	146.9288	2.6627	1.81
6	Weight (gsm), AW	6	201.4147	3.3672	1.67
7	Courses per 3cm, BW	6	37.9333	0.6377	1.68
8	Courses per 3cm, TD	6	43.8000	1.6541	3.78
9	Courses per 3cm, AW	6	46.5000	0.4940	1.06
10	Wales per 3cm, BW	6	36.4889	0.8471	2.32
11	Wales per 3cm, TD	6	41.6167	0.8472	2.04
12	Wales per 3cm, AW	6	41.3333	0.8595	2.08
13	Stitch length (mm) BW	6	3.3188	0.0414	1.25
14	Stitch length (mm) AW	6	3.2928	0.0412	1.25
15	Width (cm), BW	6	48.3889	2.6519	5.48
16	Yarn strength (g), BW	6	179.9614	10.8069	6.01
17	Yarn strength (g), AW	6	220.5622	5.1746	2.35
18	Yarn ext. at break (%), BW	6	6.9805	0.1673	2.40
19	Yarn ext. at break (%), AW	6	7.3007	0.4961	6.80
20	Yarn count (tex), BW	6	14.7681	0.2275	1.54
21	Yarn count (tex), AW	6	14.7342	0.3074	2.09
22	Thickness (mm x 1000), BW	6	717.4667	27.3572	3.81
23	Thickness (mm x 1000), AW	6	1146.5833	18.4674	1.61
24	Turns per metre, BW	6	916.8333	36.9522	4.03
25	Turns per metre, AW	6	907.3333	39.7702	4.38
26	Yarn Count (Ne), BW	6	39.9954	0.6161	1.54
27	Yarn Count (Ne), AW	6	40.0939	0.8273	2.06

N.B. Specials are not included

CORAH INTERLOCK STUDY 86

13.4

DYED DATA - 1/38's VOLOS

Column Statistics

No.	Test Method	N	Mean	Btd.Dev	%C.V.
1	Length shrinkage (%), TD	2	10.6392	0.0130	0.12
2	Width shrinkage (%), TD	2	12.6858	0.1662	1.31
3	Length shrinkage (%), 5x	2	14.5833	1.1974	8.21
4	Width shrinkage (%), 5x	2	12.9492	0.0247	0.19
5	Weight (gsm), BW	2	154.6300	2.2825	1.48
6	Weight (gsm), AW	2	207.6720	1.3124	0.63
7	Courses per 3cm, BW	2	39.7500	0.2121	0.53
8	Courses per 3cm, TD	2	44.2500	0.7778	1.76
9	Courses per 3cm, AW	2	46.4500	0.3536	0.76
10	Wales per 3cm, BW	2	36.9000	0.9899	2.68
11	Wales per 3cm, TD	2	42.0000	0.0000	0.00
12	Wales per 3cm, AW	2	42.3500	0.4950	1.17
13	Stitch length (mm) BW	2	3.3145	0.0184	0.55
14	Stitch length (mm) AW	2	3.2808	0.0279	0.85
15	Width (cm), BW	2	152.1917	1.2374	0.81
16	Yarn strength (g), BW	2	195.3065	22.3449	11.44
17	Yarn strength (g), AW	2	217.6800	17.1968	7.90
18	Yarn ext. at break (%), BW	2	6.6807	0.3756	5.62
19	Yarn ext. at break (%), AW	2	6.8954	0.2861	4.15
20	Yarn count (tex), BW	2	14.7532	0.0049	0.03
21	Yarn count (tex), AW	2	14.9624	0.1334	0.89
22	Thickness (mm x 1000), BW	2	817.8000	34.6482	4.24
23	Thickness (mm x 1000), AW	2	1160.9500	33.5876	2.89
24	Turns per metre, BW	2	966.2500	62.5790	6.48
25	Turns per metre, AW	2	937.7500	26.5165	2.83
26	Yarn Count (Ne), BW	2	40.0279	0.0133	0.03
27	Yarn Count (Ne), AW	2	39.4699	0.3520	0.89

N.B. Specials are not included

CORAH INTERLOCK STUDY 86

13.5

DYED DATA - JT

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage (%), TD	6	14.7528	1.5994	10.84
2	Width shrinkage (%), TD	6	11.1472	1.1007	9.87
3	Length shrinkage (%), 5x	6	18.7644	0.8774	4.68
4	Width shrinkage (%), 5x	6	10.9314	1.3132	12.01
5	Weight (gsm), BW	6	146.9288	2.6627	1.81
6	Weight (gsm), AW	6	201.4147	3.3672	1.67
7	Courses per 3cm, BW	6	37.9333	0.6377	1.68
8	Courses per 3cm, TD	6	43.8000	1.6541	3.78
9	Courses per 3cm, AW	6	46.5000	0.4940	1.06
10	Wales per 3cm, BW	6	36.4889	0.8471	2.32
11	Wales per 3cm, TD	6	41.6167	0.8472	2.04
12	Wales per 3cm, AW	6	41.3333	0.8595	2.08
13	Stitch length (mm) BW	6	3.3188	0.0414	1.25
14	Stitch length (mm) AW	6	3.2928	0.0412	1.25
15	Width (cm), BW	6	48.3889	2.6519	5.48
16	Yarn strength (g), BW	6	179.9614	10.8069	6.01
17	Yarn strength (g), AW	6	220.5622	5.1746	2.35
18	Yarn ext. at break (%), BW	6	6.9805	0.1673	2.40
19	Yarn ext. at break (%), AW	6	7.3007	0.4961	6.80
20	Yarn count (tex), BW	6	14.7681	0.2275	1.54
21	Yarn count (tex), AW	6	14.7342	0.3074	2.09
22	Thickness (mm x 1000), BW	6	717.4667	27.3572	3.81
23	Thickness (mm x 1000), AW	6	1146.5833	18.4674	1.61
24	Turns per metre, BW	6	916.8333	36.9522	4.03
25	Turns per metre, AW	6	907.3333	39.7702	4.38
26	Yarn Count (Ne), BW	6	39.9954	0.6161	1.54
27	Yarn Count (Ne), AW	6	40.0939	0.8273	2.06

N.B. Specials are not included

CORAH INTERLOCK STUDY 86

13.6

DYED DATA - J OW

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage (%), TD	2	11.8142	1.6747	14.18
2	Width shrinkage (%), TD	2	12.2308	0.8096	6.62
3	Length shrinkage (%), 5x	2	14.6342	1.2693	8.67
4	Width shrinkage (%), 5x	2	12.7200	0.2993	2.35
5	Weight (gsm), BW	2	148.0820	6.9777	4.71
6	Weight (gsm), AW	2	201.7420	7.0739	3.51
7	Courses per 3cm, BW	2	39.5167	0.5421	1.37
8	Courses per 3cm, TD	2	44.8500	0.0707	0.16
9	Courses per 3cm, AW	2	46.3000	0.5657	1.22
10	Wales per 3cm, BW	2	35.8000	0.5657	1.58
11	Wales per 3cm, TD	2	41.5500	0.6364	1.53
12	Wales per 3cm, AW	2	41.8000	0.2828	0.68
13	Stitch length (mm) BW	2	3.2995	0.0028	0.09
14	Stitch length (mm) AW	2	3.2660	0.0071	0.22
15	Width (cm), BW	2	154.2333	1.6499	1.07
16	Yarn strength (g), BW	2	202.5667	12.0774	5.96
17	Yarn strength (g), AW	2	219.8933	14.0667	6.40
18	Yarn ext. at break (%), BW	2	6.5246	0.1549	2.37
19	Yarn ext. at break (%), AW	2	6.4366	0.3627	5.63
20	Yarn count (tex), BW	2	14.6778	0.1116	0.76
21	Yarn count (tex), AW	2	14.9634	0.1319	0.88
22	Thickness (mm x 1000), BW	2	786.1000	10.1823	1.30
23	Thickness (mm x 1000), AW	2	1132.4000	6.7882	0.60
24	Turns per metre, BW	2	924.0000	2.8284	0.31
25	Turns per metre, AW	2	891.0000	39.5980	4.44
26	Yarn Count (Ne), BW	2	40.2347	0.3058	0.76
27	Yarn Count (Ne), AW	2	39.4671	0.3480	0.88

N.B. Specials are not included

CORAH INTERLOCK STUDY 86

13.7

DYED DATA - W OW

Column Statistics

No.	Test Method	N	Mean	Std.Dev	%C.V.
1	Length shrinkage (%), TD	5	8.5590	2.5578	29.88
2	Width shrinkage (%), TD	5	13.7243	1.6715	12.18
3	Length shrinkage (%), 5x	5	13.3517	2.4877	18.63
4	Width shrinkage (%), 5x	5	14.4987	2.0645	14.24
5	Weight (gsm), BW	5	156.1702	6.3789	4.08
6	Weight (gsm), AW	5	210.0692	5.3784	2.56
7	Courses per 3cm, BW	5	39.9600	0.9397	2.35
8	Courses per 3cm, TD	5	43.7000	0.2345	0.54
9	Courses per 3cm, AW	5	46.0200	0.5215	1.13
10	Wales per 3cm, BW	5	37.5000	0.9823	2.62
11	Wales per 3cm, TD	5	42.8600	0.6309	1.47
12	Wales per 3cm, AW	5	43.5200	0.6943	1.60
13	Stitch length (mm) BW	5	3.3326	0.0314	0.94
14	Stitch length (mm) AW	5	3.3054	0.0311	0.94
15	Width (cm), BW	5	152.4233	4.9425	3.24
16	Yarn strength (g), BW	5	183.5772	10.1392	5.52
17	Yarn strength (g), AW	5	214.2240	11.8227	5.52
18	Yarn ext. at break (%), BW	5	6.4940	0.3194	4.92
19	Yarn ext. at break (%), AW	5	6.9160	0.2446	3.54
20	Yarn count (tex), BW	5	14.9112	0.2356	1.58
21	Yarn count (tex), AW	5	14.9041	0.1788	1.20
22	Thickness (mm x 1000), BW	5	867.8200	33.7318	3.89
23	Thickness (mm x 1000), AW	5	1202.2600	30.7479	2.56
24	Turns per metre, BW	5	953.2000	38.7792	4.07
25	Turns per metre, AW	5	915.5000	29.2810	3.20
26	Yarn Count (Ne), BW	5	39.6116	0.6213	1.57
27	Yarn Count (Ne), AW	5	39.6272	0.4780	1.21

N.B. Specials are not included

CORAH INTERLOCK STUDY 86

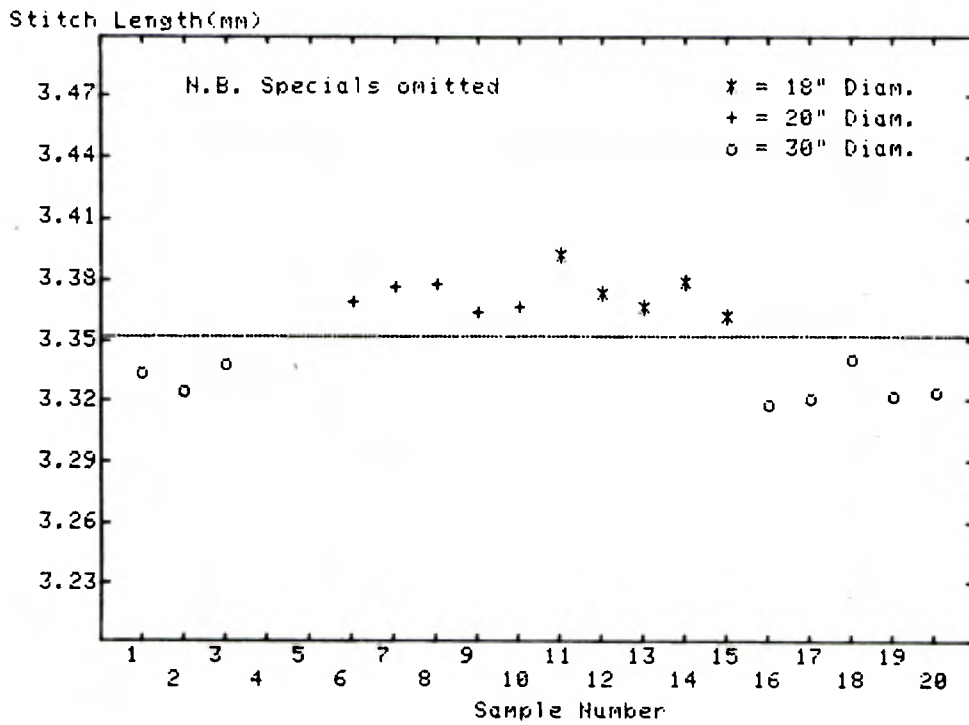
13.8 DYED ONLY DATA - Special Fabrics

Test Method	Specials			
	0.30	0.37	0.30	0.37
	St.len 5	St.len 6	St.len 7	St.len 8
1 Length shrinkage (%), TD	10.04	12.16	10.21	16.53
2 Width shrinkage (%), TD	13.27	16.69	11.09	11.02
3 Length shrinkage (%), 5x	13.60	15.01	13.71	19.78
4 Width shrinkage (%), 5x	12.59	17.11	10.98	13.19
5 Weight (gsm), BW	171.75	135.00	173.65	136.45
6 Weight (gsm), AW	220.39	196.62	220.17	194.69
7 Courses per 3cm, BW	46.90	33.70	46.20	33.30
8 Courses per 3cm, TD	52.40	39.20	52.00	39.50
9 Courses per 3cm, AW	53.90	39.90	53.90	40.70
10 Wales per 3cm, BW	39.60	34.85	40.70	36.00
11 Wales per 3cm, TD	45.10	40.93	45.20	40.60
12 Wales per 3cm, AW	45.10	41.50	45.60	40.80
13 Stitch length (mm) BW	2.92	3.63	2.92	3.65
14 Stitch length (mm) AW	2.91	3.62	2.90	3.61
15 Width (cm), BW	71.53	80.00	138.43	158.00
16 Yarn strength (g), BW	210.09	190.09	194.79	204.05
17 Yarn strength (g), AW	228.40	228.61	228.52	233.89
18 Yarn ext. at break (%), BW	6.55	6.31	6.15	6.27
19 Yarn ext. at break (%), AW	6.45	6.38	6.43	6.30
20 Yarn count (tex), BW	14.70	15.11	14.39	14.97
21 Yarn count (tex), AW	14.54	14.90	14.66	15.02
22 Thickness (mm x 1000), BW	766.10	770.00	778.00	802.70
23 Thickness (mm x 1000), AW	1081.60	1225.00	1068.90	1212.30
24 Turns per metre, BW	954.00	925.50	924.50	896.00
25 Turns per metre, AW	900.50	926.50	913.00	891.00
26 Yarn Count (Ne), BW	40.18	39.09	41.03	39.44
27 Yarn Count (Ne), AW	40.63	39.63	40.27	39.32

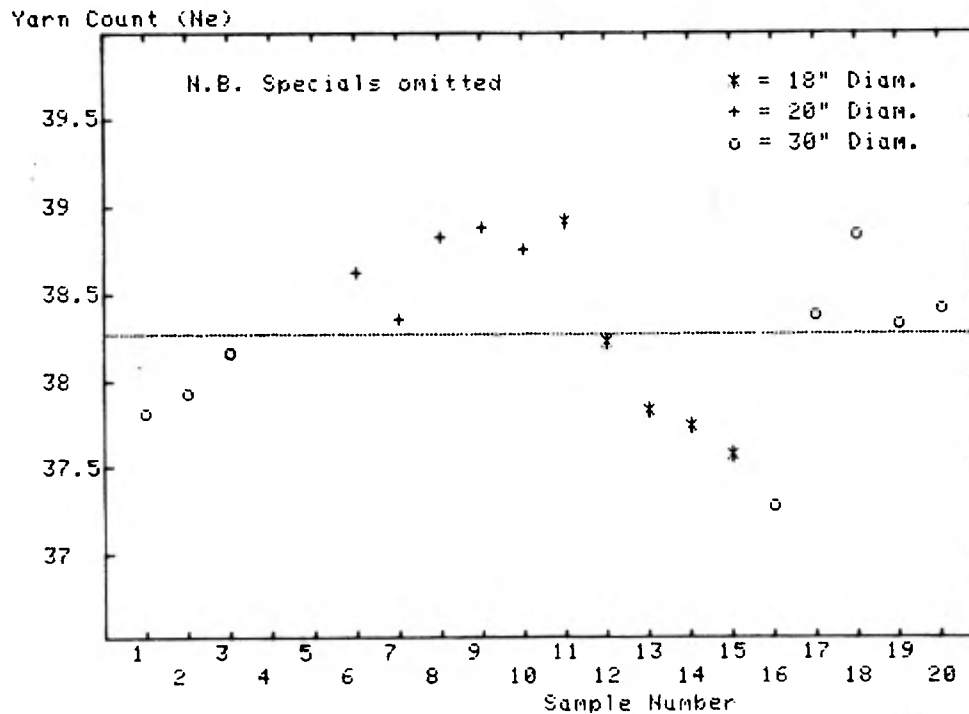
5,6 - RJet 95(Dried Tubular)
 7,8 - Rjet 95(Dried Open Width)

14.0

GREY STITCH LENGTH VARIATION (BW)

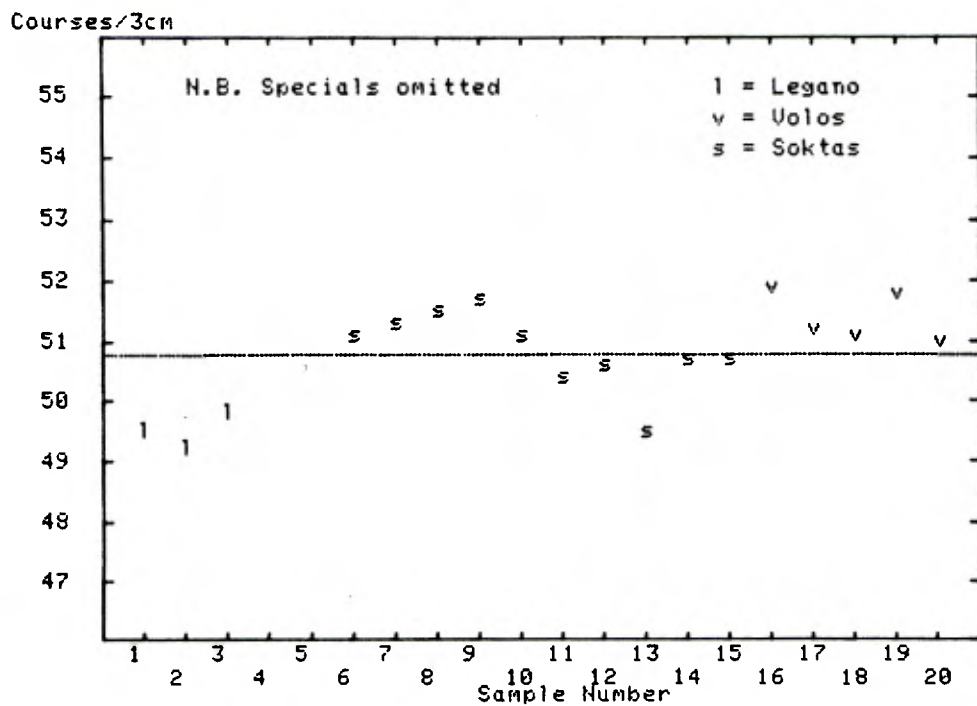


GREY YARN COUNT VARIATION (BW)

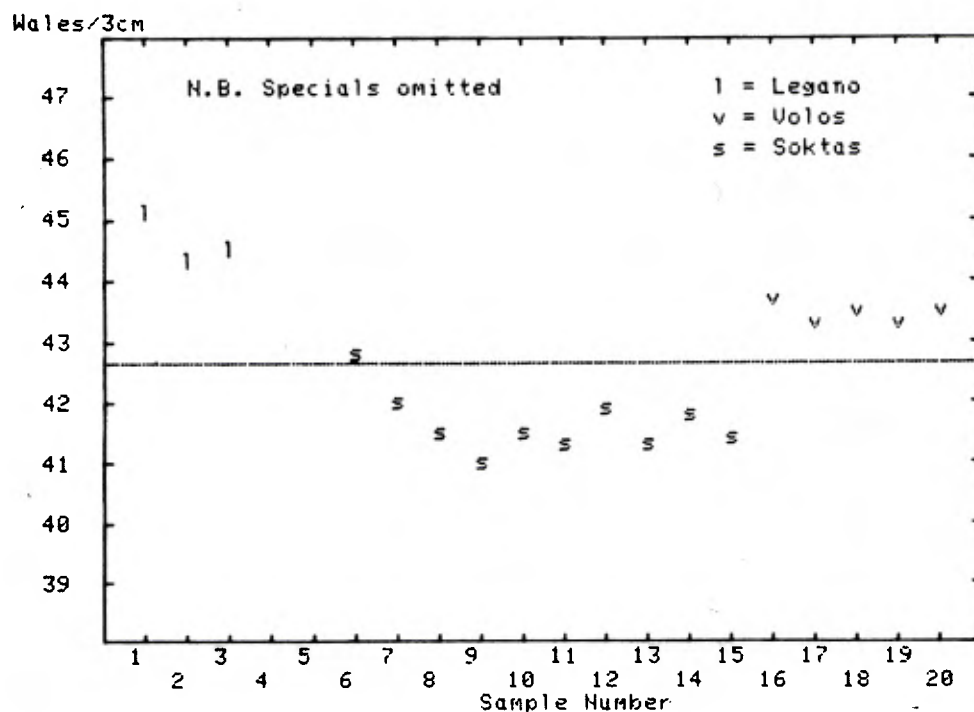


14.1

COURSES/3CM AFTER 5 WASHES (GREY)

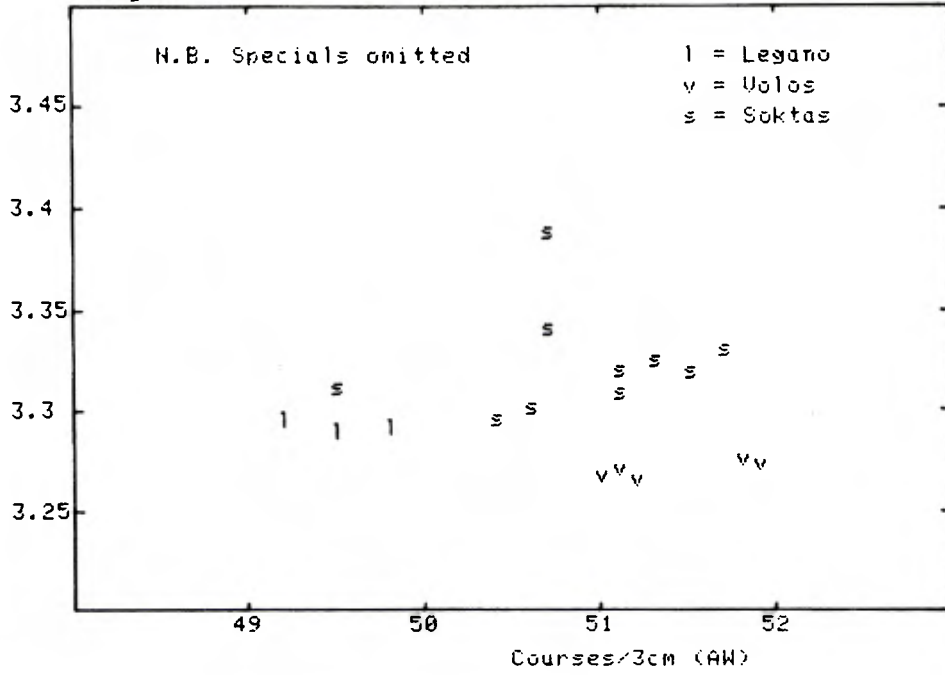


WALES/3CM AFTER 5 WASHES (GREY)



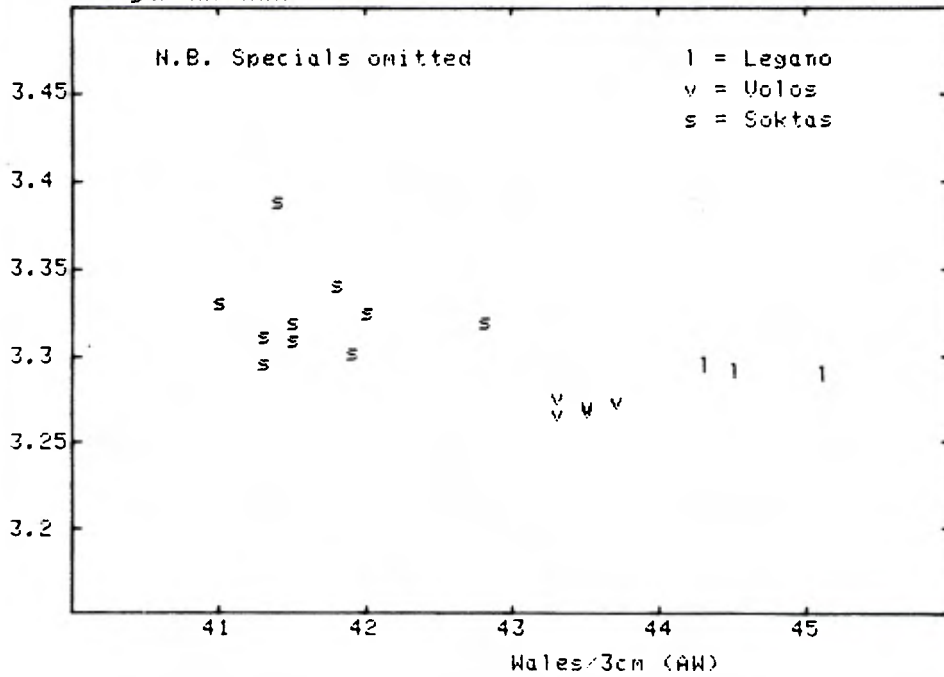
14.2 COURSES(3cm) vs STITCH LENGTH(MM) - GREY (AW)

Stitch Length mm (AW)



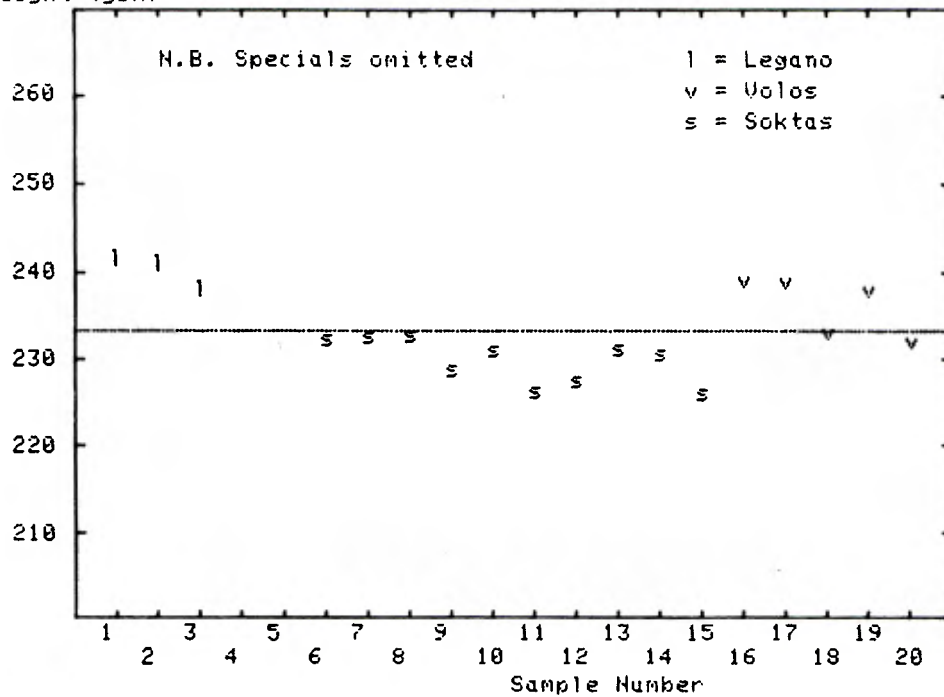
WALES(3cm) vs STITCH LENGTH(MM) - GREY (AW)

Stitch Length mm (AW)

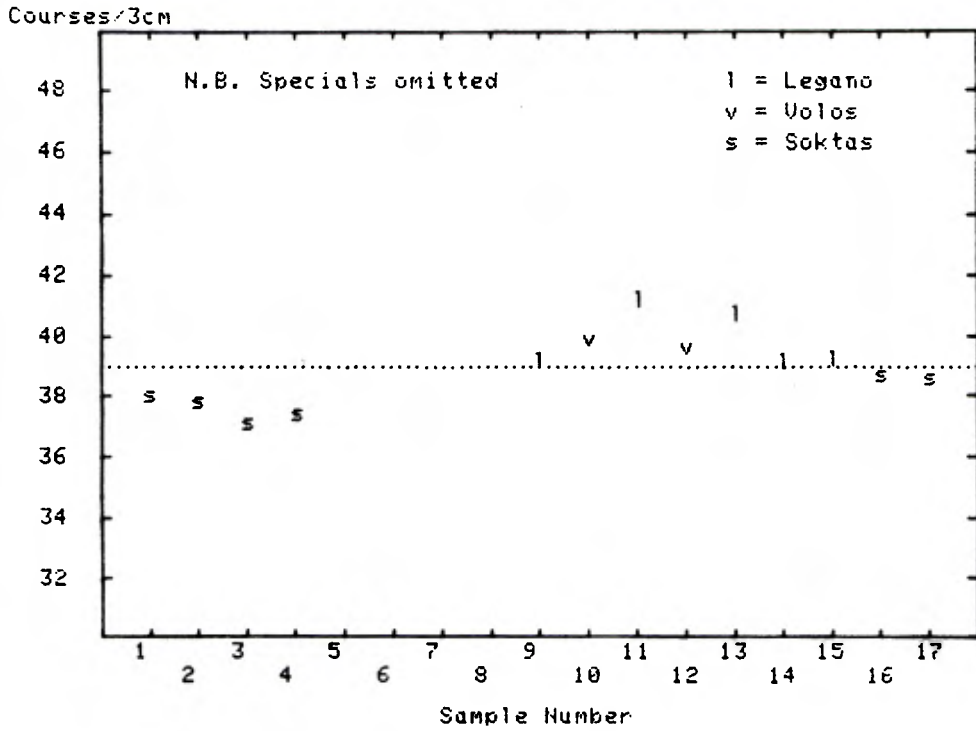


14.3 WEIGHT (GSM) AFTER 5 WASHES (GREY)

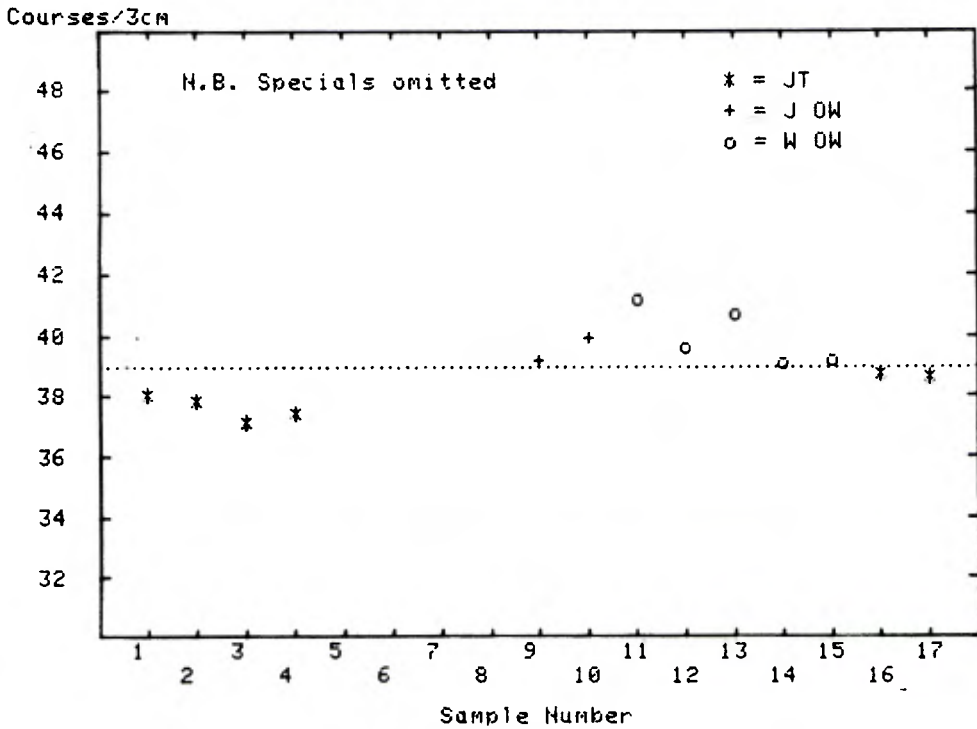
Weight (gsm)



15.0 DYED ONLY - COURSES/3CM (BW)

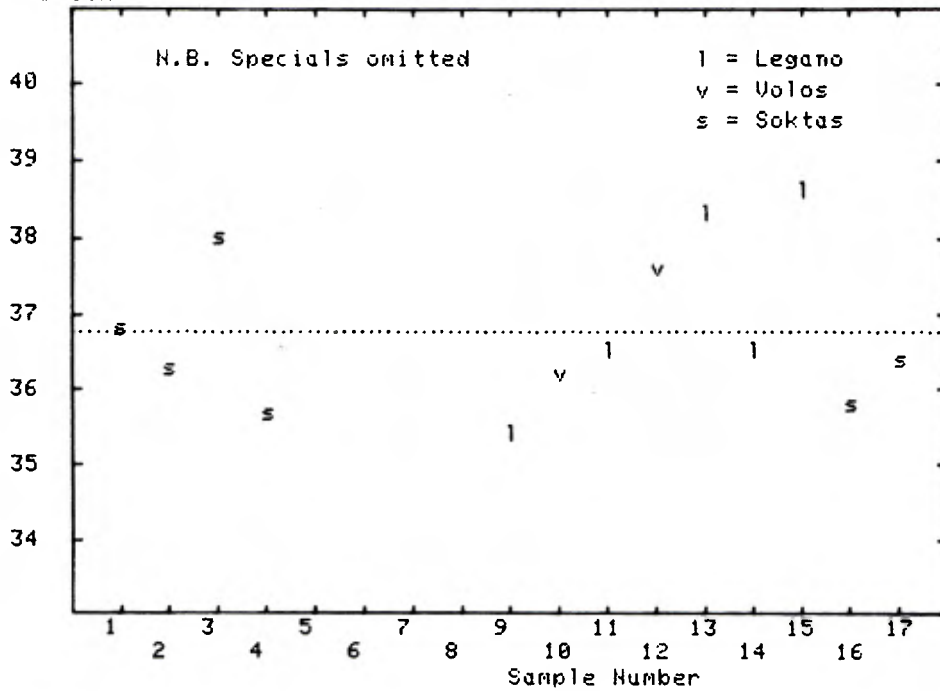


DYED ONLY - COURSES/3CM (BW)



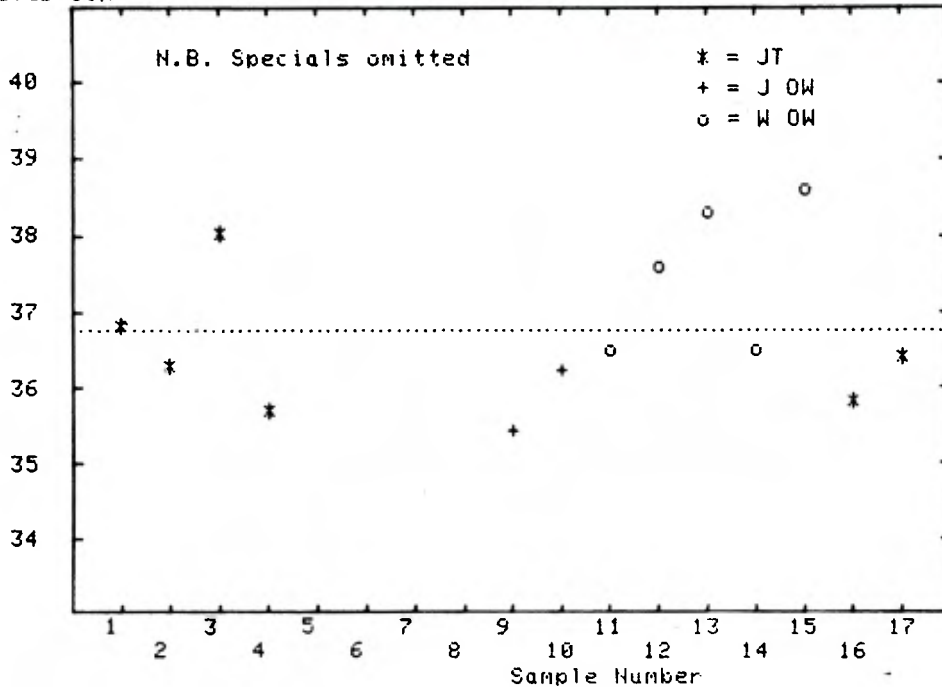
15.1 DYED ONLY - WALES/3CM (BW)

Wales/3cm



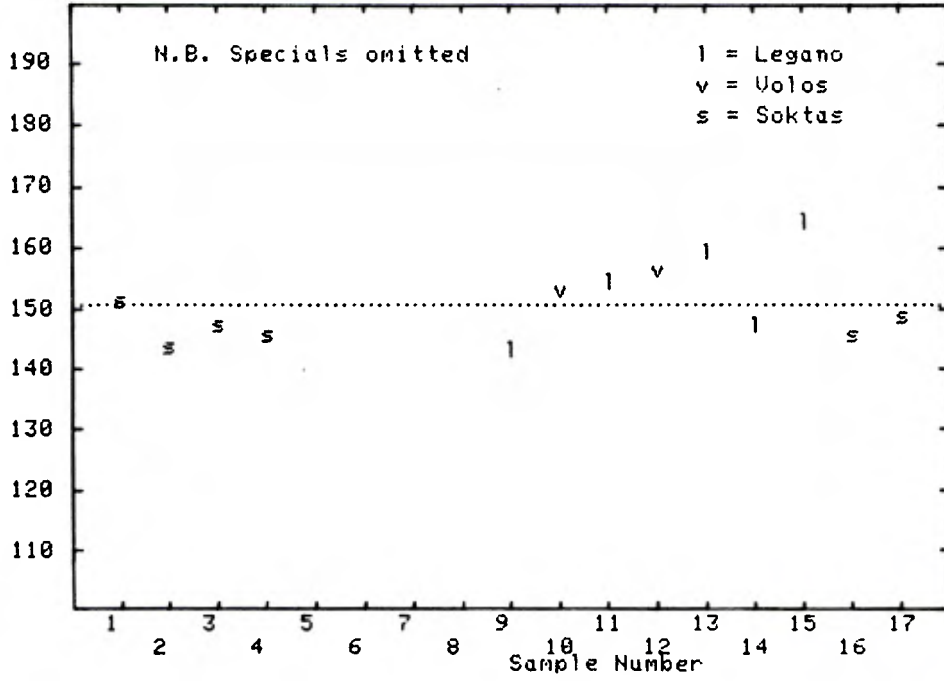
DYED ONLY - WALES/3CM (BW)

Wales/3cm



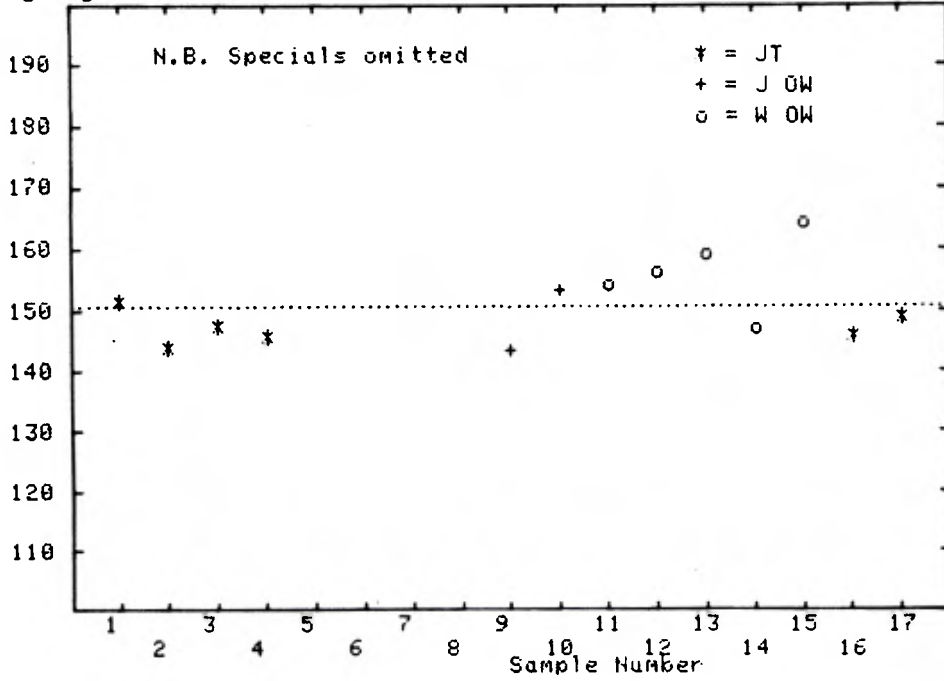
15.2 DYED ONLY - WEIGHT(GSM) (BW)

Weight(gsm)



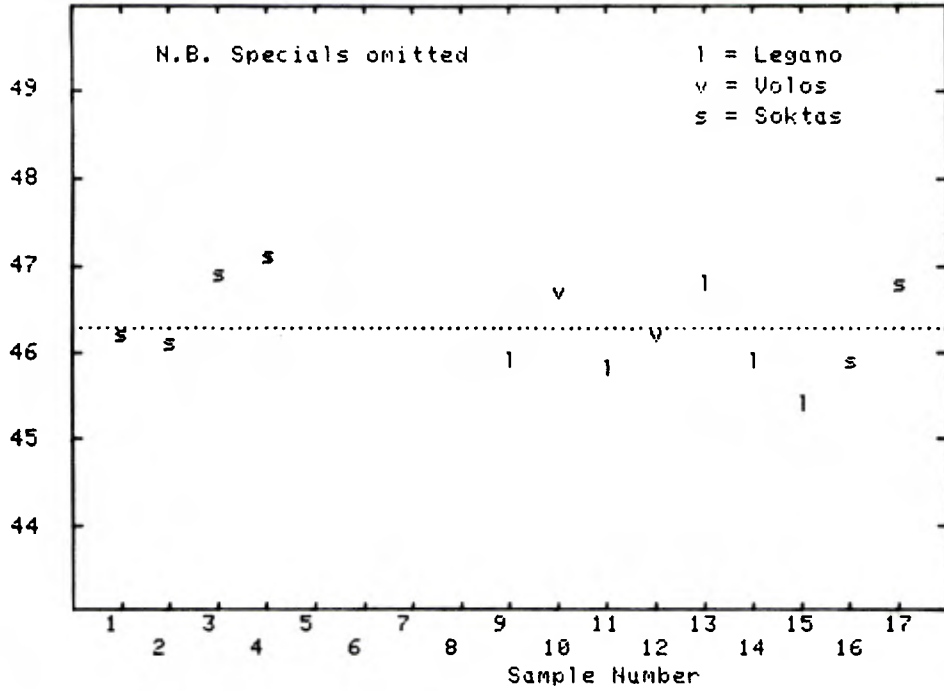
DYED ONLY - WEIGHT(GSM) (BW)

Weight(gsm)



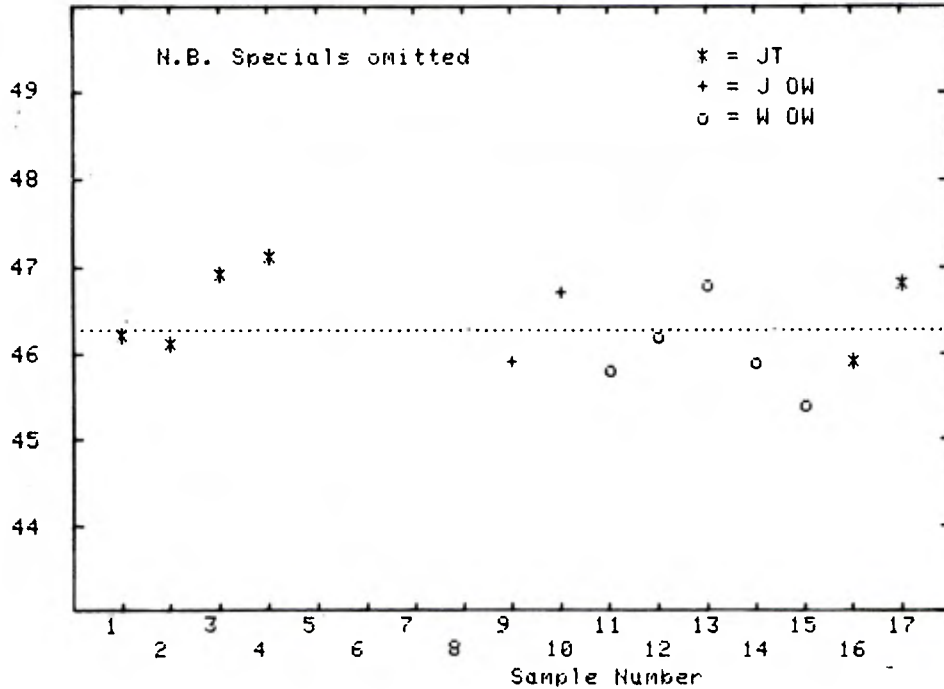
15.3 DYED ONLY - COURSES/3CM (AW)

Courses/3cm



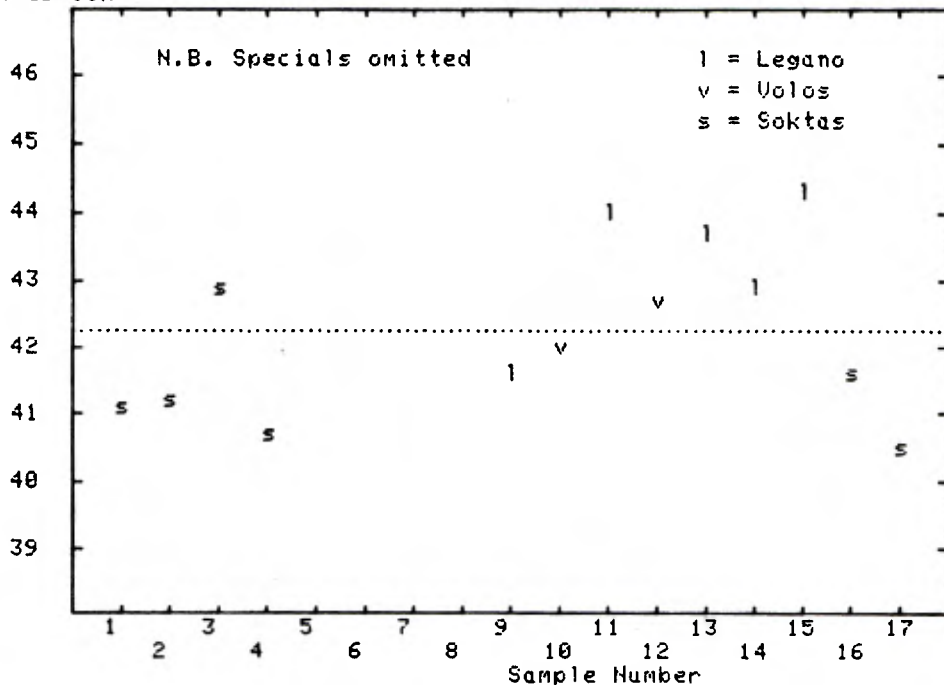
DYED ONLY - COURSES/3CM (AW)

Courses/3cm



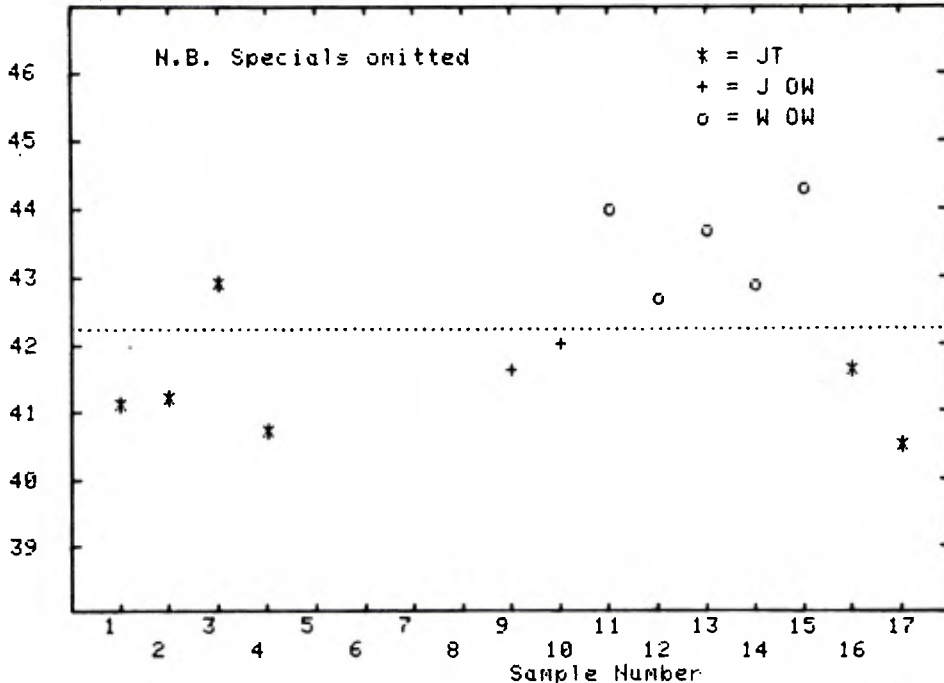
15.4 DYED ONLY - WALES/3CM (AW)

Wales/3cm



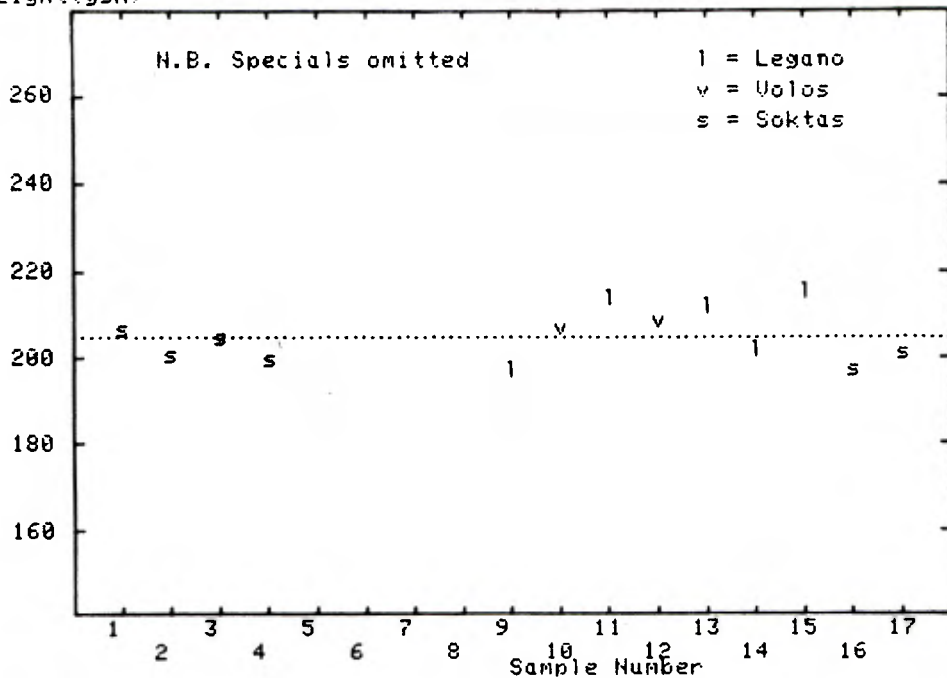
DYED ONLY - WALES/3CM (AW)

Wales/3cm



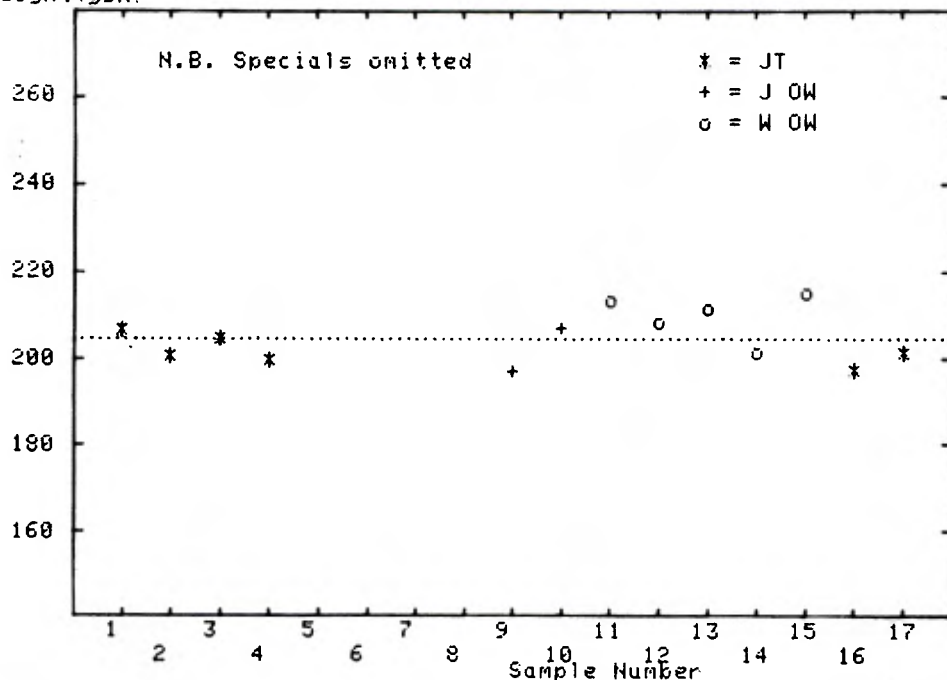
15.5 DYED ONLY - WEIGHT(GSM) (AW)

Weight(gsm)



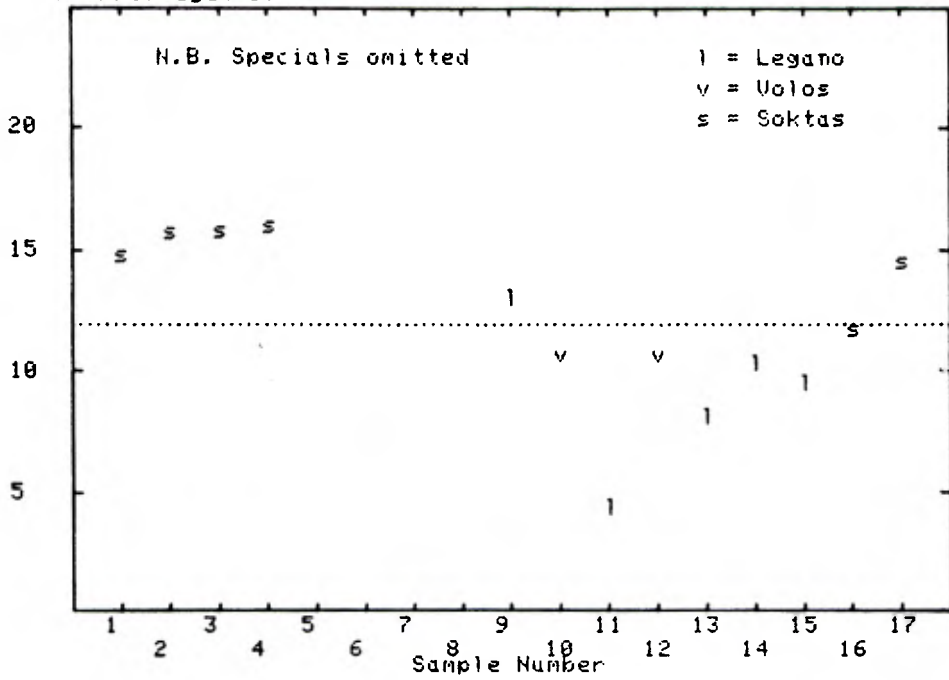
DYED ONLY - WEIGHT(GSM) (AW)

Weight(gsm)



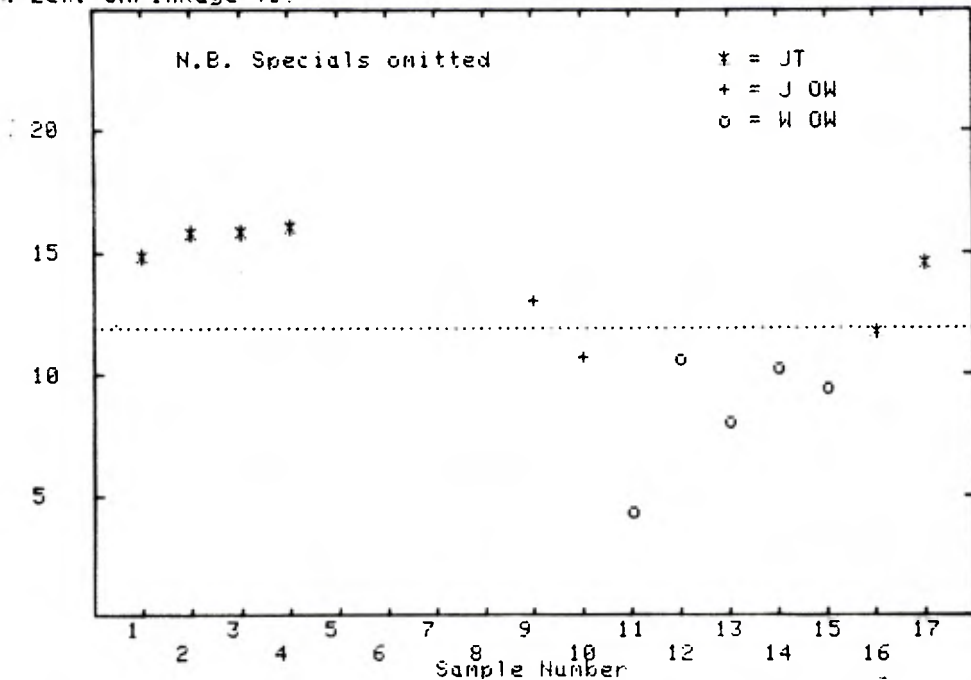
15.6 DYED ONLY - % LENGTH SHRINKAGE (TD)

% Len. Shrinkage(TD)



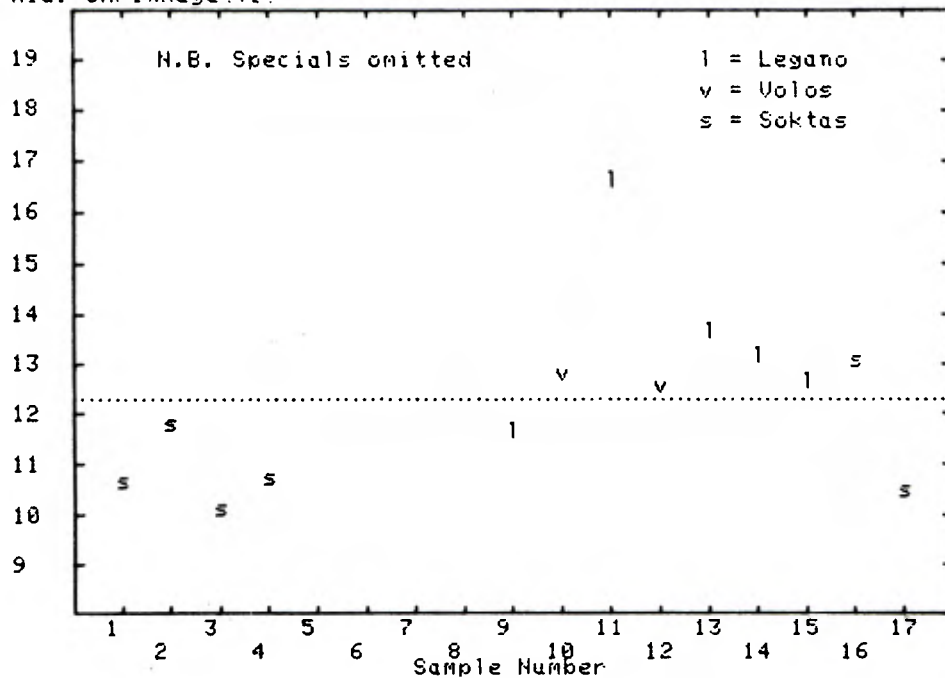
DYED ONLY - % LENGTH SHRINKAGE (TD)

% Len. Shrinkage(TD)



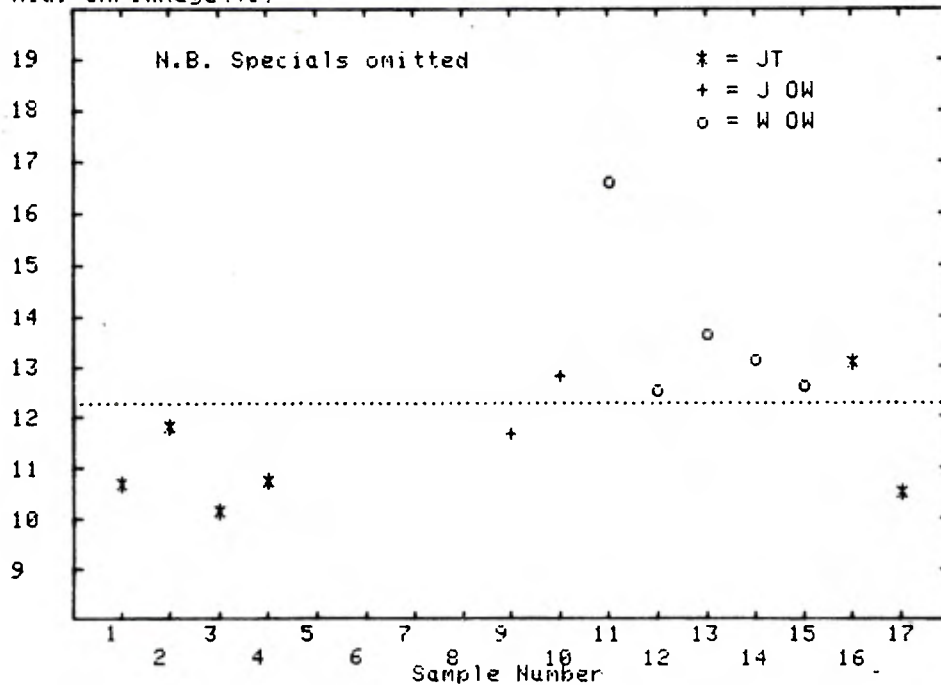
15.7 DYED ONLY - % WIDTH SHRINKAGE (TD)

% Wid. Shrinkage(TD)



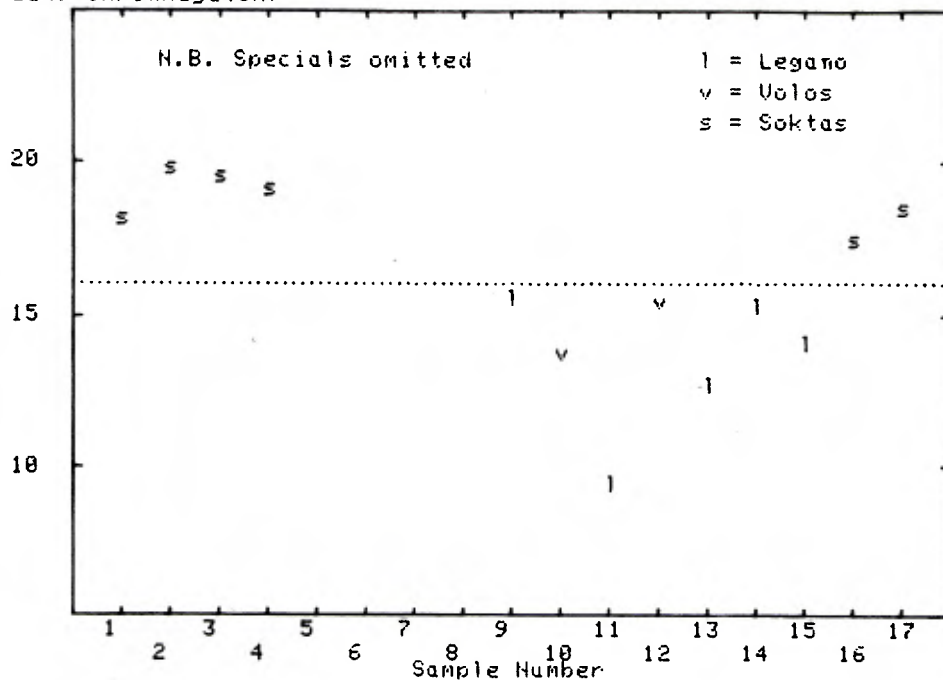
DYED ONLY - % WIDTH SHRINKAGE (TD)

% Wid. Shrinkage(TD)



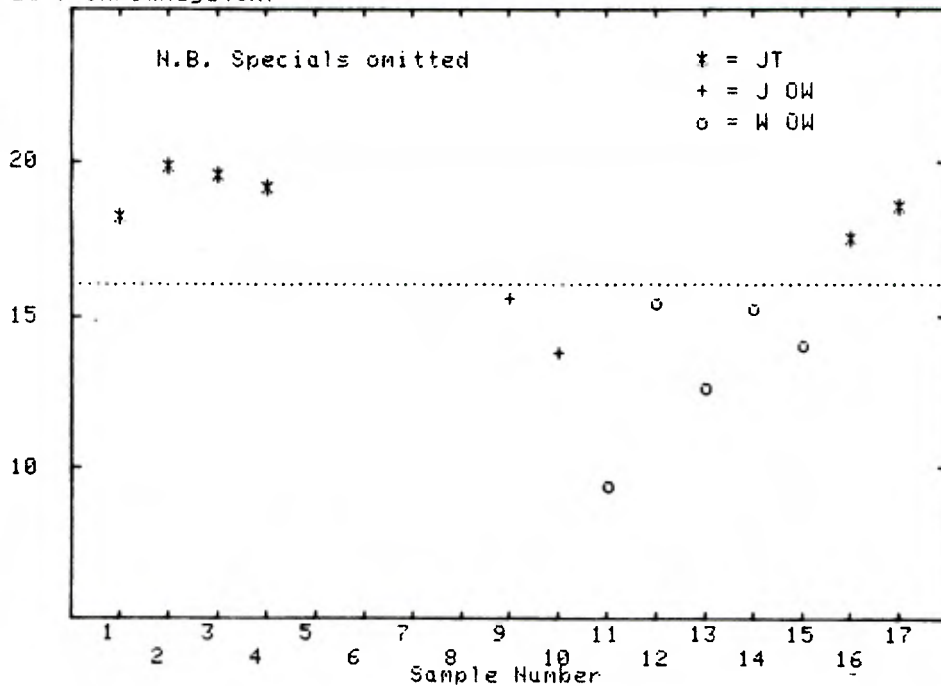
15.8 DYED ONLY - % LENGTH SHRINKAGE (5x)

% Len. Shrinkage(5x)



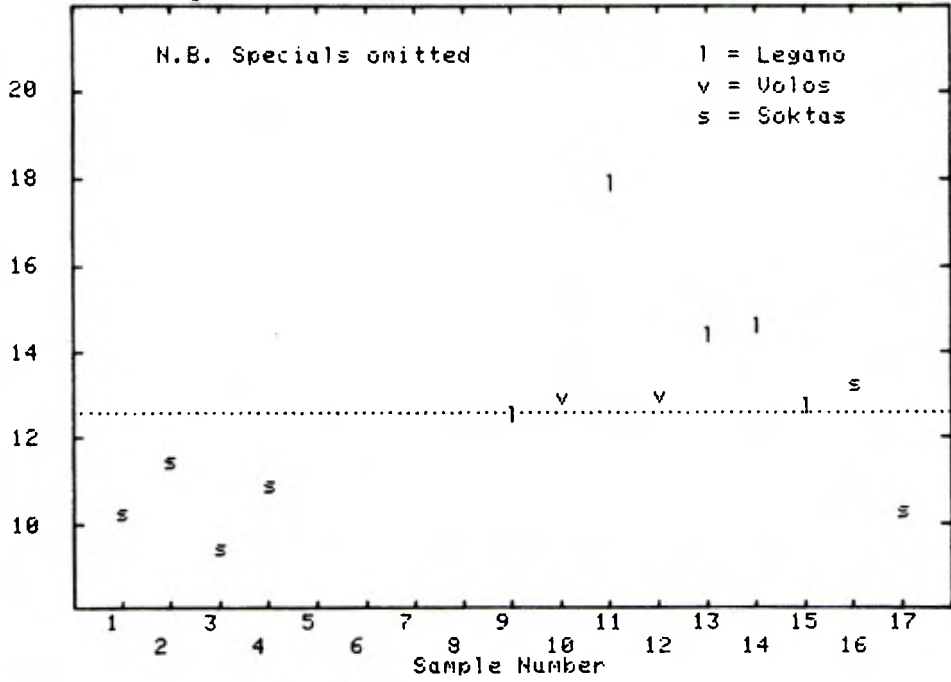
DYED ONLY - % LENGTH SHRINKAGE (5x)

% Len. Shrinkage(5x)



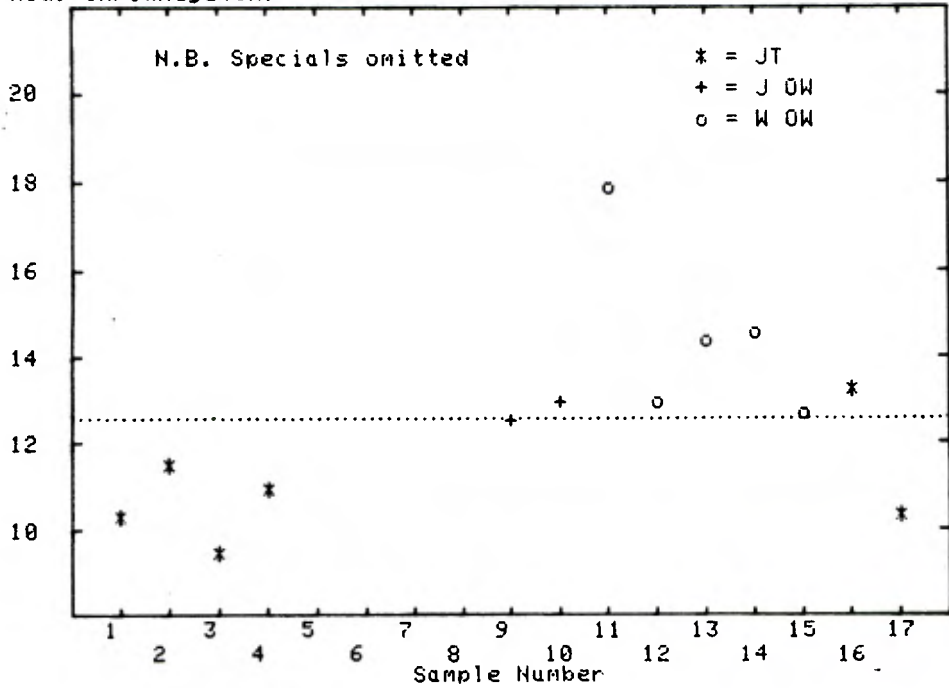
15.9 DYED ONLY - % WIDTH SHRINKAGE (5x)

% Wid. Shrinkage(5x)



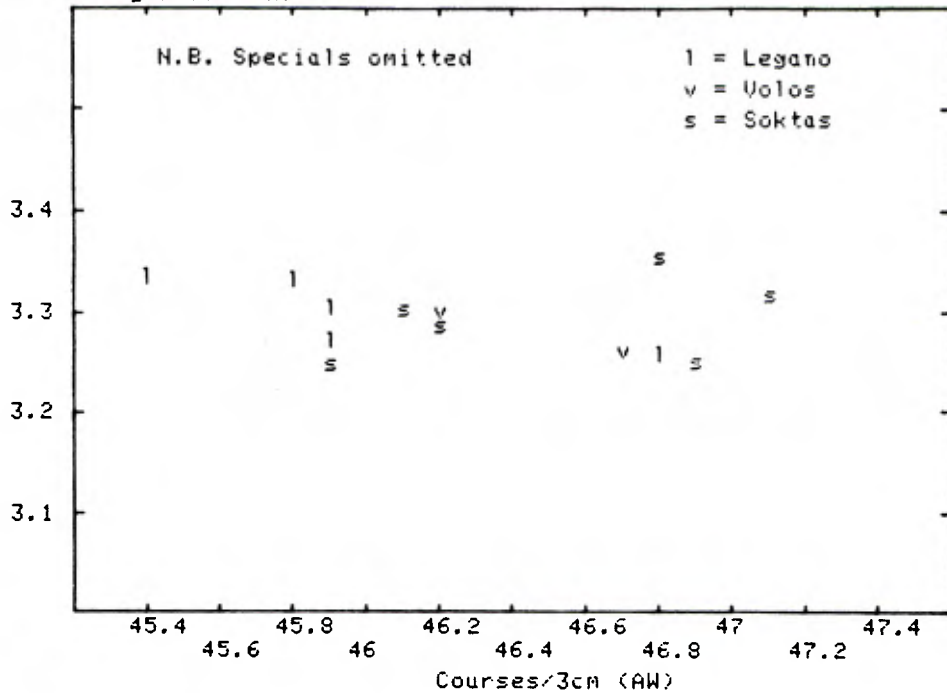
DYED ONLY - % WIDTH SHRINKAGE (5x)

% Wid. Shrinkage(5x)



15.9A COURSES(3cm) vs STITCH LENGTH(MM) - DYED ONLY (AW)

Stitch Length mm (AW)



WALES(3cm) vs STITCH LENGTH(MM) - DYED ONLY (AW)

Stitch Length mm (AW)

