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An Analysis of Finished Samples from Tebe

First Report

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TEBE CASE STUDY - INTERIM REPORT

Introduction

The Portuguese company, Empresa Textil de Barcelos (TEBE), has for the past six months been submitting samples from its production of knitted cotton fabrics for examination by IIC in Manchester.

The range of samples includes single jersey and 1 x 1 rib, some of which have been piece-mercerised on a Dornier continuous mercerising range. This report describes the analysis of the first 38 samples submitted, all of which were in the fully finished state.

This study forms a useful background for a series of co-operative trials with TEBE which is designed to examine the effects produced by the Dornier merceriser.

Fabric Qualities

The series of fabrics submitted by TEBE consists of two main qualities, with minor variations. Details of the fabrics are given in the table below.

Fabric	G	Diam (in)	Ndles	Yarn (Ne)	Stitch Len (cm)	No. Unmerc.	No. Merc
1x1 Rib	18	30	2 x 1680	30	0.268	5	7
1x1 Rib	18	30	2 x 1680	36	~0.265	1	1
Single Jersey	28	26	2304	30	0.277	8	13
Single Jersey	28	30	2640	30	0.315	1	2

Analysis of the results in this report is limited to the two main qualities, as the amount of sampling which has been carried out on the other fabrics is considered to be inadequate for reliable conclusions to be made.

Mercerising and Dyeing

Piece mercerisation at TEBE is carried out on a Dornier continuous machine with three "cigar" washing units. The diameter ranges for these units were said to be:

for the first two, 558 mm to 863 mm,

for the third, 350 mm to 750 mm

A typical Dornier installation is shown in Figure 1.

Three types of dyeing machine have been used in processing these samples; winch, Barriquand "Gyrostock" Type GKO1, and Moline overflow. The exact model of the Moline machine is not known, but a drawing of the Gyrostock machine is given in Figure 2.

Three of the unmercerised single jersey samples (nos. 14, 15 and 20) and one unmercerised rib (no. 26) were winch dyed, one mercerised single jersey (no. 13) and one unmercerised rib (no. 28) were dyed in the Moline machine, the remaining 32 samples were all processed through one of the six Gyrostock machines in the TEBE dyehouse. A list of the samples, together with details on knitting and dyeing, is given in Table 1 at the end of this report.

Testing

The tests which were carried out on these fabrics included:

shrinkage after five wash/rinse and tumble dry cycles,

weight (g/m^2),

courses and wales per 3cm,

yarn count,

stitch length,

bursting strength and distension at burst,

yarn strength and extension at break,

spirality,

thickness.

All the above tests (apart from shrinkage of course) were carried out on the fabrics in both the "as received" (BW) state and also after the five-cycle wash/rinse and tumble dry relaxation treatment (AW).

Results and Comments

Table II gives the results of shrinkage tests carried out on the 1 x 1 rib fabrics, using the five-cycle wash and tumble dry test. Length shrinkage levels are rather high.

Table III shows measurements of yarn count (tex) and stitch length (cm) carried out on the main 1 x 1 rib fabric (Ne 30) in, of course, the finished state (BW) and after the five-cycle laundering process (AW). Among the statistics data, the CV% figures give indications on the level of

uniformity of knitting which for this fabric are reasonably good.

Fabric weight and course and wale spacings data are given in Table IV for the same rib fabrics, together with measurements of the tubular widths, as received. Width variation is, in fact, rather high, and this may be the main reason for the large variation in fabric weight per square metre, especially for the mercerised samples.

Tables V to VII give parallel data for the single jersey samples. From the shrinkage figures it is clear that the mercerised single jersey should have been finished much wider, and this could have resulted in an improvement in the very high level of length shrinkage.

Variations in single jersey stitch length, given in the CV% figures in Table VI, are rather high, and the results for unmercerised fabric range from 0.264 to 0.283 cm, a variability which should be capable of improvement. This is probably the main cause of the generally high variabilities shown in the results in Table VII.

Tables VIII to XI show the remaining test data, covering burst strength, yarn strength, spirality and thickness.

The Effect of Mercerising

It is known that mercerisation of knitted cotton fabrics, especially in the tubular form, results in marked changes to the fabric structure. From the data in this report, it is possible to calculate the magnitude of these effects, at least for the two main structures included in this study.

Some of the results of such calculations on the data in this study are given in Table XII.

Yarn shrinkage due to mercerising is indicated by the change in stitch length, about 6% for the rib, rather less for the single jersey. Other conclusions to be drawn, all rather tentative at this stage, are that the mercerisation treatment results in a lengthening of the relaxed structure by 4 - 6%, a reduction in the fabric width, in the relaxed state, of about 10 - 13%, and consequently an increase in the relaxed weight of the fabric by 6 - 7%.

A study of the spirality measurements on the single jersey fabrics indicates that mercerisation may have effected a distinct reduction. This will be examined more closely when further samples have been tested.

Conclusion

This is in the nature of an interim report, as further samples are expected when TEBE returns to production following the summer vacation. However, some possibilities for quality improvement uncovered by this study, have already been discussed with TEBE staff, and it was therefore considered useful to set down the current position, so that comparisons can be made with future production samples.

It is hoped that later sampling in this study will include fabric in the grey state, so that the influences of knitting and finishing variations on the overall variability can be separated.

TABLE I - List of samples

TEBE CASE STUDY

IIC No.	Description	TEBE identification
J1M	Single Jersey, Mercerised	30inch
J2	Single Jersey, Unmercerised	30 inch
J3M	Single Jersey, Mercerised	26 inch
J4	Single Jersey, Unmercerised	26 inch
R5M	1x1 Rib, Mercerised	30 inch
R6	1x1 Rib, Unmercerised	30 inch
R7M	1x1 Rib, Mercerised	30 inch
R8	1x1 Rib, Unmercerised	30 inch
R9M	1x1 Rib, Mercerised	M/c151 GK4
J10M	Single Jersey, Mercerised	M/c179 GK6 LOTE24377D1
J11M	Single Jersey, Mercerised	M/c192 GK4 LOTE24287D1
J12M	Single Jersey, Mercerised	M/c170 GK1 LOTE24356D1
J13M	Single Jersey, Mercerised	M/c170 ESP1 LOTE24205D1
J14	Single Jersey, Unmercerised	M/c181 WIN3 LOTE24440D2
J15	Single Jersey, Unmercerised	M/c181 WIN4 LOTE24475D3
J16	Single Jersey, Unmercerised	M/c181 GK6 LOTE24472D2
J17M	Single Jersey, Mercerised	M/c181 GK5 LOTE 24537D4
J18M	Single Jersey, Mercerised	M/c173 GK1 LOTE24454D4
J19M	Single Jersey, Mercerised	M/c173 GK6 LOTE24525D1
J20	Single Jersey, Unmercerised	M/c170 WIN4 LOTE24449D3
J21M	Single Jersey, Mercerised	M/c176 GK6 LOTE24530D3
J22M	Single Jersey, Mercerised	M/c176 GK3 LOTE24463D3
J23M	Single Jersey, Mercerised	M/c173 GK4 LOTE2412D1
J24M	Single Jersey, Mercerised	M/c173 GK4 LOTE2412D1
J25M	Single Jersey, Mercerised	M/c173 GK5 LOTE24524D1
R26	1x1 Rib, Unmercerised	M/c151 WIN3 LOTE12140A1
R27M	1x1 Rib, Mercerised	M/c151 GK4 LOTE1281A1
R28	1x1 Rib, Unmercerised	M/c171 ESP1 LOTE1288A1
J29	Single Jersey, Unmercerised	M/c170 GK6 LOTE24541D2
J30	Single Jersey, Unmercerised	M/c173 GK4 LOTE24561D2
R31	1x1 Rib, Unmercerised	M/c185 GK6
J32M	Single Jersey, Mercerised	M/c170 GK1 LOTE24523D1
R33M	1x1 Rib, Mercerised	M/c171 GK4 LOTE12153A1
J34	Single Jersey, Unmercerised	M/c170 GK4 LOTE24597D2
R35M	1x1 Rib, Mercerised	M/c171 GK6 LOTE12147A1
R36	1x1 Rib, Unmercerised	M/c185 GK2 LOTE1427A1
R37M	1x1 Rib, Mercerised	M/c151 GK3 LOTE12161A1
R38M	1x1 Rib, Mercerised	M/c151 GK6 LOTE12156A1

TABLE II - 1x1 Rib, Shrinkage Data.

1x1 Rib, Unmercerised

	Shrinkage % length	width
R8	16.8	4.9
R26 WD	14.7	1.7
R28 Mahné	12.0	6.5
R31	14.5	2.7
R36	15.2	3.7

	Shrinkage % length	width
R7M	10.3	12.5
R9M	15.2	12.4
R27M	16.4	12.0
R33M	17.0	11.7
R35M	13.6	10.1
R37M	15.7	11.6
R38M	16.3	12.6

1x1 Rib (36's), unmercerised

	Shrinkage % length	width
R6	14.7	6.7

1x1 Rib (36's), mercerised

	Shrinkage % length	width
R5M	16.0	5.4

TABLE III - 1x1 Rib, Yarn count & Stitch length.

1x1 Rib, Unmercerised

	Tex		St.Len. (cm)	
	BW	AW	BW	AW
R8 ? Cyp?	19.0	19.0	0.255	0.254
R26 WIN	19.3	19.1	0.253	0.249
R28 ~~BLOCINE~~	19.4	19.4	0.255	0.253
R31 G-120	20.0	20.1	0.260	0.258
R36 G-120	19.9	19.9	0.256	0.255

	Mean	SD	CV%	Max	Min
Tex BW	19.520	0.421	2.16	20.000	19.000
Tex AW	19.500	0.485	2.49	20.100	19.000
St.Len.BW	0.256	0.003	1.01	0.260	0.253
St.Len.AW	0.254	0.003	1.29	0.258	0.249

1x1 Rib, Mercerised

	Tex		St.Len. (cm)	
	BW	AW	BW	AW
R7M	20.5	20.1	0.240	0.243
R9M G-120	20.6	20.5	0.237	0.235
R27M G-120	20.1	20.1	0.243	0.242
R33M G-120	20.2	20.1	0.245	0.243
R35M G-120	20.2	20.3	0.242	0.243
R37M G-120	20.5	20.4	0.239	0.239
R38M G-120	20.1	20.1	0.241	0.239

	Mean	SD	CV%	Max	Min
Tex BW	20.314	0.212	1.04	20.600	20.100
Tex AW	20.229	0.170	0.84	20.500	20.100
St.Len.BW	0.241	0.003	1.10	0.245	0.237
St.Len.AW	0.241	0.003	1.27	0.243	0.235

1x1 Rib (36's), unmercerised

	Tex		St.Len. (cm)	
	BW	AW	BW	AW
R6	16.1	16.3	0.256	0.256

1x1 Rib (36's), mercerised

	Tex		St.Len. (cm)	
	BW	AW	BW	AW
R5M	17.4	17.3	0.245	0.246

TABLE IV - 1x1 Rib, Weight, Stitch spacing & Finished width.

1x1 Rib, Unmercerised

	Weight(g/sm) BW	AW	Courses/3cm BW	AW	Wales/3cm BW	AW	Width cm.BW
R8	192.4	229.3	48.6	58.8	35.2	38.4	70.6
R26	201.7	232.2	50.2	58.5	37.4	38.3	67.1
R28	195.8	233.0	51.2	57.8	35.7	37.5	71.5
R31	204.5	243.4	49.5	57.6	36.8	37.4	69.6
R36	200.8	243.4	50.1	58.6	37.0	37.5	69.9

	Mean	SD	CV%	Max	Min
Weight BW	199.040	4.862	2.44	204.500	192.400
Weight AW	236.260	6.662	2.82	243.400	229.300
Courses/3cm BW	49.920	0.958	1.92	51.200	48.600
Courses/3cm AW	58.260	0.527	0.91	58.800	57.600
Wales/3cm BW	36.420	0.928	2.55	37.400	35.200
Wales/3cm AW	37.820	0.487	1.29	38.400	37.400
Width BW	69.740	1.647	2.36	71.500	67.100

1x1 Rib, Mercerised

	Weight(g/sm) BW	AW	Courses/3cm BW	AW	Wales/3cm BW	AW	Width cm.BW
R7M	185.5	234.0	48.4	55.5	35.6	41.8	71.4
R9M	205.0	259.4	49.4	56.7	37.6	41.5	66.7
R27M	189.6	253.9	46.9	55.9	37.1	42.5	67.6
R33M	183.3	254.4	47.0	56.6	37.3	42.1	68.0
R35M	194.5	260.5	48.8	56.4	38.2	42.5	65.6
R37M	192.2	257.3	47.9	56.7	38.0	42.5	67.0
R38M	187.1	250.9	46.7	55.1	38.3	43.5	66.4

	Mean	SD	CV%	Max	Min
Weight BW	191.029	7.262	3.80	205.000	183.300
Weight AW	252.914	8.980	3.55	260.500	234.000
Courses/3cm BW	47.871	1.045	2.18	49.400	46.700
Courses/3cm AW	56.129	0.640	1.14	56.700	55.100
Wales/3cm BW	37.443	0.929	2.48	38.300	35.600
Wales/3cm AW	42.343	0.643	1.52	43.500	41.500
Width BW	67.529	1.879	2.78	71.400	65.600

1x1 Rib (36's), unmercerised

	Weight(g/sm) BW	AW	Courses/3cm BW	AW	Wales/3cm BW	AW	Width cm.BW
R6	162.6	192.1	48.5	57.6	35.3	38.0	70.8

1x1 Rib (36's), mercerised

	Weight(g/sm) BW	AW	Courses/3cm BW	AW	Wales/3cm BW	AW	Width cm.BW
R5M	169.3	206.9	42.4	51.8	42.1	45.3	59.8

TABLE V - Single Jersey, Shrinkage Data.

Single Jersey, Unmercerised

	Shrinkage % length	width
J4	10.9	8.3
J14 W	15.0	5.0
J15 W	10.9	6.1
J16	15.8	6.6
J20 W	12.9	6.2
J29	11.8	6.5
J30	12.9	6.0
J34	15.0	4.8

Single Jersey, Mercerised

	Shrinkage % length	width
J3M	15.3	2.2
J10M	19.2	2.8
J12M	17.8	3.7
J13M MOLINÉ	18.6	0.6
J17M	20.8	1.8
J18M	19.2	1.8
J19M	18.7	3.5
J21M	18.6	2.7
J22M	18.3	2.0
J23M	17.5	3.4
J24M	15.8	1.9
J25M	16.6	4.5
J32M	20.4	-0.7

Single Jersey (30 inch),unmercerised

	Shrinkage % length	width
J2	11.7	3.6

Single Jersey (30 inch), mercerised

	Shrinkage % length	width
J1M	16.6	3.4
J11M	20.2	-0.9

TABLE VI - Single Jersey, Yarn count & Stitch length.

Single Jersey, Unmercerised

	Tex		St.Len. (cm)	
	BW	AW	BW	AW
J4	19.7	19.5	0.269	0.269
J14 WD	19.7	19.8	0.280	0.279
J15 WD	19.6	19.7	0.264	0.261
J16	19.1	19.2	0.283	0.281
J20 WD	18.8	19.2	0.270	0.269
J29	19.8	19.8	0.279	0.278
J30	19.5	19.1	0.279	0.277
J34	20.1	20.2	0.279	0.278

	Mean	SD	CV%	Max	Min
Tex BW	19.538	0.410	2.10	20.100	18.800
Tex AW	19.563	0.381	1.95	20.200	19.100
St.Len.BW	0.275	0.007	2.45	0.283	0.264
St.Len.AW	0.274	0.007	2.52	0.281	0.261

Single Jersey, Mercerised

	Tex		St.Len. (cm)	
	BW	AW	BW	AW
J3M	20.2	20.1	0.263	0.263
J10M	21.1	20.4	0.262	0.262
J12M	20.8	20.7	0.265	0.265
J13M Marwat	19.9	20.0	0.270	0.270
J17M	19.7	19.8	0.273	0.273
J18M	20.0	20.0	0.268	0.269
J19M	19.7	19.6	0.265	0.263
J21M	19.3	19.3	0.272	0.268
J22M	19.5	19.9	0.270	0.267
J23M	20.1	20.2	0.266	0.263
J24M	20.2	20.2	0.258	0.259
J25M	20.1	20.0	0.262	0.262
J32M	21.5	21.0	0.269	0.271

	Mean	SD	CV%	Max	Min
Tex BW	20.162	0.632	3.13	21.500	19.300
Tex AW	20.092	0.441	2.19	21.000	19.300
St.Len.BW	0.266	0.004	1.66	0.273	0.258
St.Len.AW	0.266	0.004	1.58	0.273	0.259

Single Jersey (30 inch),unmercerised

	Tex		St.Len. (cm)	
	BW	AW	BW	AW
J2	19.7	19.3	0.293	0.295

Single Jersey (30 inch), mercerised

	Tex		St.Len. (cm)	
	BW	AW	BW	AW
J1M	20.8	20.6	0.276	0.277
J11M	19.1	21.1	0.280	0.279

TABLE VII - Single Jersey, Weight, Stitch spacing & Finished width.

Single Jersey, Unmercerised

	Weight(g/sm) BW	AW	Courses/3cm BW	AW	Wales/3cm BW	AW	Width cm.BW
J4	133.6	160.7	55.3	62.2	41.4	44.0	83.1
J14	127.0	160.0	48.4	52.7	44.6	45.2	81.3
J15	141.3	172.4	57.0	64.1	44.0	47.1	80.3
J16	116.5	156.2	48.4	57.7	42.2	45.6	83.3
J20	132.4	163.7	54.6	62.3	43.3	46.5	80.6
J29	133.7	164.5	52.7	58.4	43.3	46.1	81.2
J30	134.6	162.0	52.6	59.4	43.2	46.5	80.7
J34	134.1	167.9	51.2	59.3	43.4	46.3	80.3

	Mean	SD	CV%	Max	Min
Weight BW	131.650	7.246	5.50	141.300	116.500
Weight AW	163.425	5.003	3.06	172.400	156.200
Courses/3cm BW	52.525	3.113	5.93	57.000	48.400
Courses/3cm AW	59.513	3.526	5.92	64.100	52.700
Wales/3cm BW	43.175	0.992	2.30	44.600	41.400
Wales/3cm AW	45.913	0.967	2.11	47.100	44.000
Width BW	81.350	1.200	1.48	83.300	80.300

Single Jersey, Mercerised

	Weight(g/sm) BW	AW	Courses/3cm BW	AW	Wales/3cm BW	AW	Width cm.BW
J3M	143.6	170.4	47.5	56.0	51.0	53.6	67.2
J10M	140.1	175.2	46.3	56.0	54.5	56.0	66.3
J12M	141.5	177.1	46.8	58.9	51.3	51.6	68.4
J13M Molimé	134.6	166.9	46.0	55.0	51.3	50.6	68.8
J17M	129.6	165.7	42.3	53.6	52.0	52.5	66.8
J18M	139.8	174.6	45.4	56.6	51.6	52.4	67.4
J19M	135.7	173.1	46.9	57.5	51.3	53.1	68.1
J21M	133.4	167.1	45.6	56.1	51.1	52.2	67.6
J22M	135.8	170.3	46.0	56.9	50.8	51.6	69.0
J23M	139.4	174.2	47.0	57.6	50.5	52.8	68.2
J24M	144.5	174.6	47.9	57.6	52.0	53.8	66.8
J25M	139.5	173.0	48.0	57.8	50.1	52.3	68.7
J32M	147.6	184.8	46.0	55.7	52.3	52.8	66.5

	Mean	SD	CV%	Max	Min
Weight BW	138.854	4.948	3.56	147.600	129.600
Weight AW	172.846	5.054	2.92	184.800	165.700
Courses/3cm BW	46.285	1.459	3.15	48.000	42.300
Courses/3cm AW	55.946	1.928	3.45	57.800	50.900
Wales/3cm BW	51.523	1.085	2.11	54.500	50.100
Wales/3cm AW	52.715	1.306	2.48	56.000	50.600
Width BW	67.677	0.920	1.36	69.000	66.300

Single Jersey (30 inch),unmercerised

	Weight(g/sm) BW	AW	Courses/3cm BW	AW	Wales/3cm BW	AW	Width cm.BW
J2	126.6	150.5	48.0	56.3	42.5	45.1	93.2

Single Jersey (30 inch), mercerised

	Weight(g/sm) BW	AW	Courses/3cm BW	AW	Wales/3cm BW	AW	Width cm.BW
J1M	142.7	169.4	44.1	53.5	49.5	51.1	79.8
J11M	146.1	177.7	43.3	54.9	51.1	51.1	78.6

TABLE VIII - 1x1 Rib, Strength Data.

1x1 Rib, Unmercerised

	BstBW	BstAW	DistBW	DistAW	YStrB	YStrA	extBW	extAW
R8	701.4	701.8	15.1	15.8	219.5	264.1	7.3	7.8
R26	663.8	631.6	18.5	21.6	188.4	217.5	5.7	6.9
R28	702.6	683.1	19.0	21.6	246.4	266.5	6.9	7.6
R31	623.0	584.4	18.2	20.9	293.5	194.5	6.4	6.4
R36	745.0	722.8	17.4	20.9	273.6	293.6	6.4	7.1

1x1 Rib, Mercerised

	BstBW	BstAW	DistBW	DistAW	YStrB	YStrA	extBW	extAW
R7M	802.1	764.2	11.1	15.6	313.3	331.1	8.4	7.3
R9M	751.9	764.0	16.7	16.4	278.0	278.0	8.9	8.0
R27M	793.6	833.6	15.2	20.1	280.4	294.3	6.9	7.7
R33M	741.4	776.7	16.3	19.5	269.9	281.6	6.4	6.8
R35M	785.4	755.2	14.3	19.9	241.8	269.5	6.7	7.3
R37M	772.8	779.7	14.8	19.4	260.9	270.9	6.4	6.7
R38M	779.1	786.7	13.7	18.6	241.7	260.6	6.1	6.7

1x1 Rib (36's), Unmercerised

	BstBW	BstAW	DistBW	DistAW	YStrB	YStrA	extBW	extAW
R6	574.4	568.2	16.5	15.5	198.2	222.4	7.0	7.0

1x1 Rib (36's), Mercerised

	BstBW	BstAW	DistBW	DistAW	YStrB	YStrA	extBW	extAW
R5M	680.7	687.4	12.0	15.9	244.2	239.0	7.2	7.0

TABLE IX - 1x1 Rib, Spirality & Thickness.

1x1 Rib, Unmercerised

	SprBW	SprAW	ThknsB	ThknsA
R8	-2.5	-0.6	695	970
R26	-2.7	0.4	779	999
R28	4.0	3.0	809	972
R31	1.0	-0.1	763	1095
R36	0.8	-0.8	737	1037

1x1 Rib, Mercerised

	SprBW	SprAW	ThknsB	ThknsA
R7M	1.2	2.0	610	854
R9M	0.5	0.0	707	1020
R27M	1.9	0.4	690	917
R33M	-1.5	-1.1	667	974
R35M	0.2	-2.1	672	984
R37M	-0.4	-1.1	665	964
R38M	0.2	0.5	638	943

1x1 Rib (36's), Unmercerised

	SprBW	SprAW	ThknsB	ThknsA
R6	0.6	2.4	668	935

1x1 Rib (36's), Mercerised

	SprBW	SprAW	ThknsB	ThknsA
R5M	-0.7	1.1	613	840

TABLE X- Single Jersey, Strength Data.

Single Jersey, Unmercerised

	BstBW	BstAW	DistBW	DistAW	YStrB	YStrA	extBW	extAW
J4	526.5	577.2	15.4	15.7	225.5	261.8	7.0	7.4
J14	535.2	522.4	17.1	16.2	269.2	269.2	7.8	6.9
J15	532.2	552.0	16.1	19.6	286.7	290.7	7.8	7.7
J16	483.0	499.8	16.3	19.7	279.4	262.6	7.3	7.0
J20	572.4	568.1	17.1	20.9	227.6	259.2	6.3	7.6
J29	563.9	550.6	17.8	20.2	267.6	266.2	6.6	6.7
J30	575.1	605.4	17.9	19.8	287.2	325.1	6.8	6.6
J34	593.6	571.4	17.7	20.1	282.4	303.9	6.3	6.6

Single Jersey, Mercerised

	BstBW	BstAW	DistBW	DistAW	YStrB	YStrA	extBW	extAW
J3M	683.4	636.5	14.0	14.8	279.7	309.2	7.5	7.5
J10M	664.7	602.3	17.0	16.1	294.0	294.0	7.9	7.1
J12M	660.4	645.5	16.4	16.1	283.1	283.1	7.4	6.5
J13M	548.3	492.9	17.0	16.3	285.9	285.9	8.7	6.6
J17M	649.1	649.4	14.5	20.3	291.9	285.2	6.9	7.1
J18M	684.8	637.3	16.0	20.1	273.0	270.2	6.8	6.8
J19M	652.6	661.6	14.8	20.6	259.8	261.2	6.6	7.0
J21M	649.6	622.0	14.7	19.8	272.3	288.9	6.2	7.2
J22M	630.2	646.9	15.2	20.5	257.9	277.8	6.5	7.5
J23M	657.6	607.0	16.7	20.3	246.0	258.2	6.0	6.7
J24M	655.3	606.4	15.7	19.3	241.4	259.3	5.5	6.9
J25M	604.5	593.5	15.2	20.1	252.3	276.4	5.6	6.9
J32M	682.9	671.6	15.8	20.0	294.7	289.2	6.3	7.3

Single Jersey (30 inch), Unmercerised

	BstBW	BstAW	DistBW	DistAW	YStrB	YStrA	extBW	extAW
J2	514.8	534.8	15.6	15.9	289.8	324.2	8.0	7.4

Single Jersey (30 inch), Mercerised

	BstBW	BstAW	DistBW	DistAW	YStrB	YStrA	extBW	extAW
J1M	606.9	691.0	15.9	15.9	284.2	316.9	8.7	8.2
J11M	598.8	605.7	17.0	16.2	278.1	278.1	7.9	7.3

TABLE XI - Single Jersey, Spirality & Thickness.

Single Jersey, Unmercerised

	SprBW	SprAW	ThknsB	ThknsA
J4	-1.0	5.9	471	723
J14	0.5	3.6	511	813
J15	-2.5	6.6	500	703
J16	4.9	7.6	459	690
J20	-0.1	5.2	495	707
J29	0.9	10.0	503	801
J30	3.1	10.0	498	785
J34	0.9	9.7	490	774

Single Jersey, Mercerised

	SprBW	SprAW	ThknsB	ThknsA
J3M	-1.5	2.4	493	700
J10M	-0.7	0.4	528	822
J12M	-1.4	0.5	524	833
J13M	-0.3	2.1	510	829
J17M	-2.3	4.8	472	702
J18M	-1.0	5.2	501	714
J19M	-3.0	3.9	494	705
J21M	-1.2	3.3	493	706
J22M	-0.6	3.7	492	713
J23M	-0.4	4.1	494	709
J24M	-1.0	3.4	503	683
J25M	-1.5	3.3	487	700
J32M	-0.2	5.9	544	795

Single Jersey (30 inch), Unmercerised

	SprBW	SprAW	ThknsB	ThknsA
J2	-1.9	11.9	516	751

Single Jersey (30 inch), Mercerised

	SprBW	SprAW	ThknsB	ThknsA
J1M	-2.6	1.2	504	718
J11M	-1.0	1.3	565	896

TABLE XII - The Effects of Mercerising on the Fabric Structure.

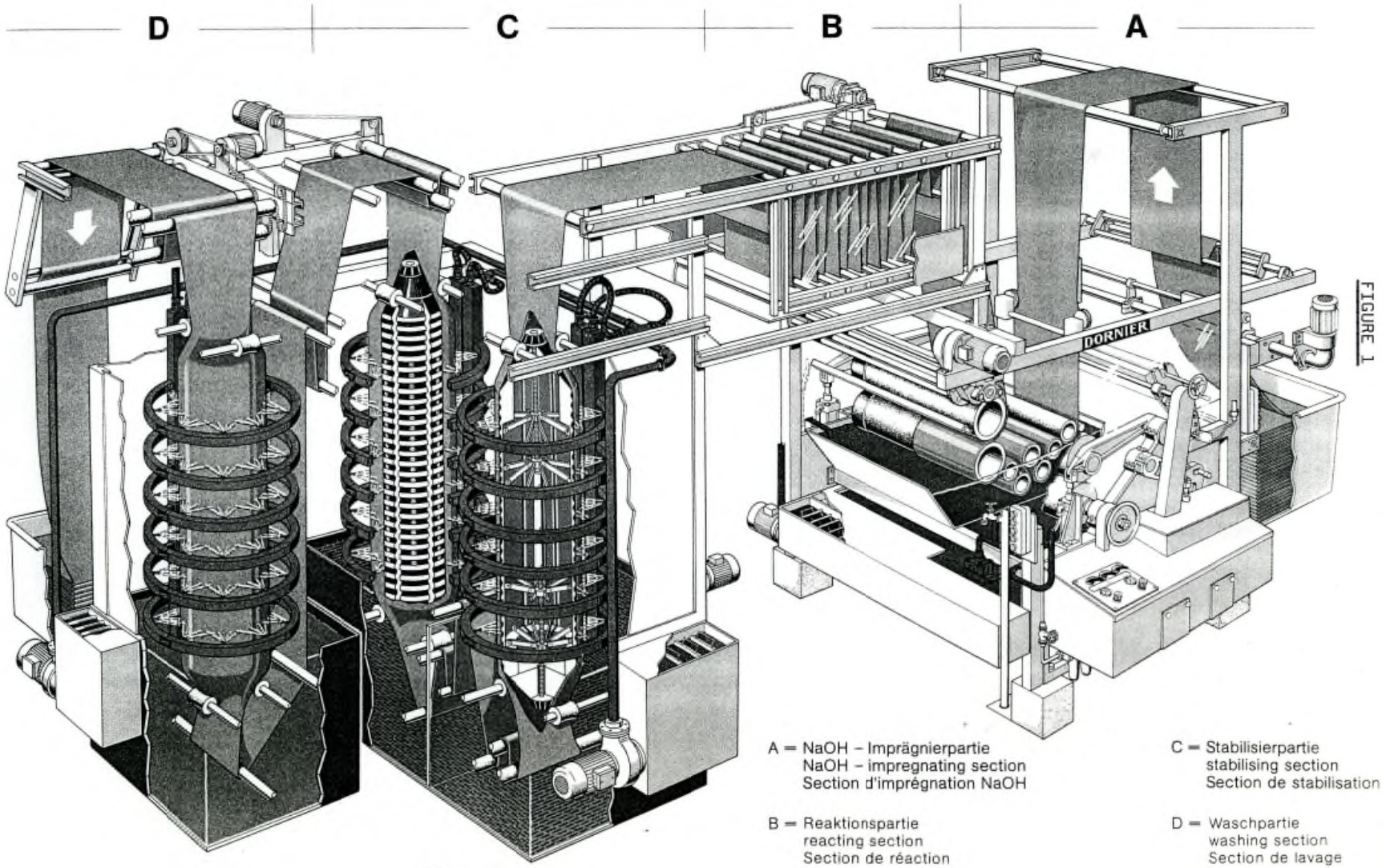
	Mean Values		%difference
	Not Merc.	Merc.	
1x1 Rib			
Tex BW	19.52	20.31	+4.0
Stitch Length BW(cm.)	0.256	0.241	-5.9
Weight AW(g./sq.m.)	236.3	252.9	+7.0
Courses/3cm AW	58.3	56.1	-3.8
Wales/3cm. AW	37.8	42.3	+11.9
Change in relaxed width			-10.6
Single Jersey			
Tex BW	19.54	20.16	+3.2
Stitch Length BW(cm.)	0.275	0.266	-3.3
Weight AW(g./sq.m.)	163.4	172.8	+5.8
Courses/3cm. AW	59.5	55.9	-6.1
Wales/3cm. AW	45.9	52.7	+14.8
Change in relaxed width			-12.9

DORNIER

Schlauchwirkwaren – Mercerisieranlage

Mercerizing range for tubular knit goods

Installation de mercerisage de tricots tubulaires



A = NaOH – Imprägnierpartie
NaOH – impregnating section
Section d'imprégnation NaOH

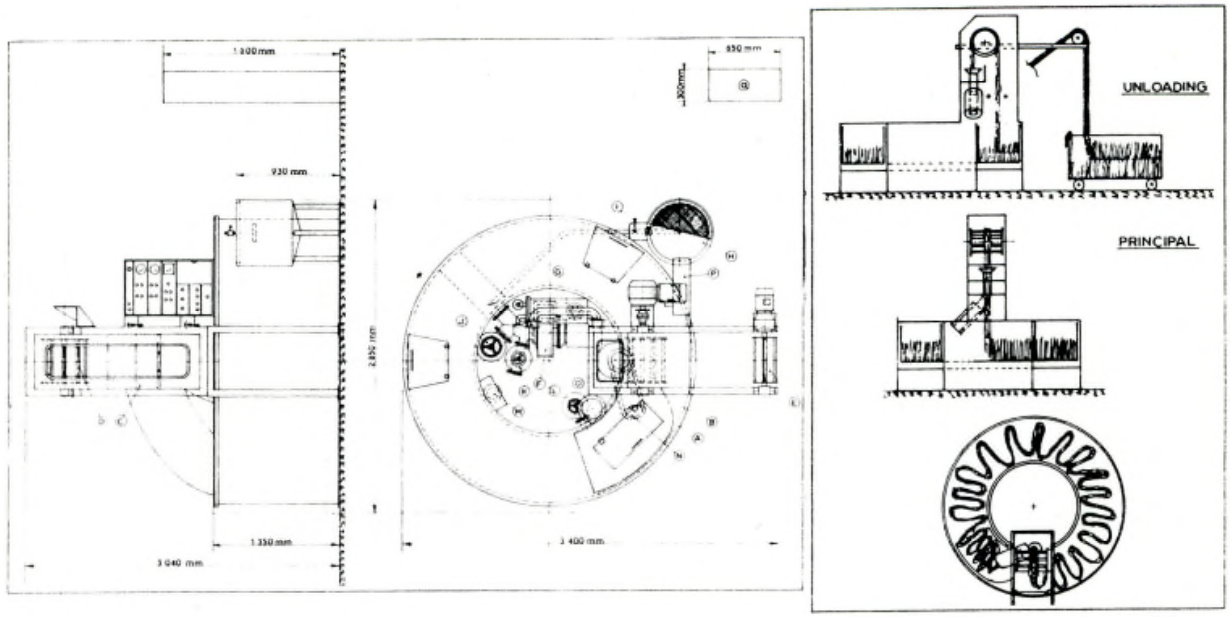
B = Reaktionspartie
reacting section
Section de réaction

C = Stabilisierpartie
stabilising section
Section de stabilisation

D = Waschpartie
washing section
Section de lavage

FIGURE 1

FIGURE 2



A- Fixed cylinder
B- Revolving cylinder
C- Head of machine (Dyeing head)
D- Winch
E- Unloading winch
F- Circulation pump
G- Head exchanger
H- Addition tank with filter
I- Inlet tap
J- Emptying valve
K- Water inlet valve
L- Contint
M- Overflow (Continuous rinsing-High level)
N- Impregnation area
O- Impregnation compartment
P- Centralized control panel

Figure 27 — Barriquand Girostock machine