



**International Institute For Cotton
Technical Research Division**

Research Record No: 122

Projects K1 And K2

The Operations Of Dyeing And Finishing In The Tubular State

**A report of the processing carried out at Meridian Dyers
during the period April - June 1980**

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Introduction

Towards the end of 1978, a number of project proposals were submitted to the Tropical Products Institute, a branch of the Overseas Development Administration of the UK Government. Amongst these proposals was a project in which a full investigation of the major aspects of the knitting, dyeing, and finishing of single jersey fabrics would be carried out.

The main objectives can be summarised as follows.

- to investigate the interactions of yarn count and stitch length on the properties of single jersey fabrics;
- to investigate the effect of variations in the dyeing and mercerising processes on the properties of single jersey fabrics.

The project as such was split into two interrelated projects, designated K1 and K2 with the following specific objectives.

Project K1

1. To develop a systematic and comprehensive data base relating manufacturing and processing parameters to final specifications and performance of single jersey fabric.
2. To discover the range of qualities in which single yarns can be successfully used for single jersey.
3. To quantify the effects of the yarn/stitch length interaction and certain finishing procedures upon spirality of single jersey.
4. To develop recommendations for production specifications and quality control procedures which can be used by developing country industries when producing single jersey fabrics for western markets.

Project K2

1. To discover and quantify the changes in fabric specifications and performance which are caused by using different types of dyeing and mercerising processes.
2. To quantify the economic costs and benefits of the mercerising process.

The production of the several hundred pieces of knitted fabric is detailed in Research Record No. 114 (Appendix W of the report to the TPI Steering Group, May 1980).

The finishing plan calls for processing to be carried out by both tubular and open-width routes and therefore, a number of industrial co-operators were recruited for this purpose, as follows.

Meridian Limited,	PO Box 54, Haydn Road, Nottingham NG5 1DH, UK	For the tubular processing
Strines Printing Co.	Strines, Stockport Cheshire SK12 3AQ, UK	For the open-width processing
Joh. Mich. Engel KG	Günnerbacherweg 1-3, 7880 Bad Sackingen, Germany	For the open-width mercerising
Tintoria Giuseppe Tosi	Via San G. Bosco 10 21052 Busto Arsizio, Italy	For the tubular mercerising

This report describes the tubular dyeing and finishing operations carried out at Meridian Dyers

Limited during the months of April - June 1980.

Fabric Coding

With almost four hundred knitting and finishing variables within K1 and K2, a simple and easily understandable fabric marking system was required. The knitting department devised a code which not only gives information about fabric construction, but also about the finishing route followed. Several examples will serve to illustrate this marking system.

Code	Decode
18/1-16/344/1	18g knitting machine 1/16 Ne yarn count 3.44 mm stitch length processing route #1
28/2-72/301/5	28g knitting machine 2/72 Ne yarn count 3.01 mm stitch length processing route #5

The processing route variants will be described in greater detail later in the report.

Outline Of Trials

During a previous study of the yarn count/stitch length interaction on the properties of interlock and 1x1 rib fabrics it became apparently clear that variations in processing conditions, especially the use of different types of dyeing machine, also had a considerable effect on fabric properties.

In this present project where, again, the yarn count/stitch length interaction is being quantified this additional effect due to dyeing method must be standardised for all of the fabric constructional variants. In other words, where we are only interested in comparing the effect of yarn count and stitch length on the properties of the finished fabric, the dyeing and finishing of all the fabric variants must be carried out in an identical manner.

The K1 project is also designed to study the effect of construction on final fabric properties, finished both in tubular and in open-width form.

Two complete sets of fabric were therefore knitted covering the whole range of yarn count/stitch length combinations, which were of possible commercial and technical interest. One set for tubular finishing and the other set for open-width finishing.

In the fabric coding system already described, the complete set of fabrics to be finished by the tubular route at Meridian Dyers are designated LOT 1.

e.g. gauge/yarn count/stitch length/1

Where the effect of using a different dyeing machine on final fabric properties is being investigated (K2 project), the fabrics are designated LOTS 3, 4 and 5.

Processing Route

4.1 Dyeing Machines

In preliminary discussions with members of the Meridian technical staff, the various possible processing routes were discussed in some detail. In particular, the choice of dyeing machine in which all of the LOT 1 fabrics would be dyed. Meridian have a number of different jet dyeing machines, some perhaps being more suitable than others. For the K1 fabrics it was agreed that the Thies R-Jet 95 (*Figure 1*) should be used.

Although many millions of metres of cotton fabric have been dyed in this machine, it is not now considered to be the best machine for dyeing cotton hose, due to its relatively "rough" action which results in somewhat hairy fabrics. Some of the newer machines have gentler or softer actions which it is claimed generally overcome this problem.

However, this machine was chosen for the following reasons.

- it was used in the previous investigation of interlock and 1 x 1 rib fabrics;
- it is a very common machine, particularly in Europe;
- the somewhat newer designs of machine which are claimed to be softer in action could be compared with it.

For K2 processing, the dyeing machines which were selected as being of particular interest were the Scholl Subtilo (*Figure 2*) and the Thies Rotostream (*Figure 3*).

An additional dye batch was planned for processing in a winch, since some considerable differences in the fully relaxed structure of 1x1 rib and interlock were observed between the winch and the Thies R-Jet 95 during the evaluation of the Central Project 78 data.

4.2. Dyestuff Selection

In terms of selection of dyestuff, it was decided that throughout the whole of the K1 and K2 projects the dyestuff to be used should be standardised.

Procion Blue H-EG (ICI) was selected for the following reasons.

- it gives a rather attractive shade;
- it is relatively cheap;
- Meridian have considerable experience of its use and have modified the recommended procedure to suit their particular conditions.

The level of shade required was standardised as 2% Procion Blue H-EG on weight of fabric.

Prior to dyeing, the fabric was to be given a mild hydrogen peroxide bleach, using the following recipe.

2.5 g/l 7°Tw NaOH

1.0 g/l Viscavin CA stabiliser (Tubingen)

8.0 g/l 130 vol. H₂O₂

4.3. Softening

Softening was carried out after dyeing in the dyeing vessel, using a combination of:

Alcamine 544 (Allied Colloids), and

Bradsyn PC12 (Hickson and Welch)

which are both cationic softeners and lubricants.

Full details of the processing are given later in the report.

4.4. Hydroextraction and Drying

By far the most common method of hydroextracting fabrics after dyeing is the use of the centrifuge. However, fine gauge single jersey fabrics in particular are rather prone to creasing during centrifuging and, sometimes, these creases are still apparent on the fully finished fabrics.

An alternative method of removing excess water is to use a mangle extractor such as the Calator Airtex (*Figure 4*). Meridian have two of these machines and one of them had been used for the stage 2 processing of the Central Project 78 fabrics (*Research Record No. 94*).

There has been a lot of discussion recently about the use of "wet stretching" as a means of reducing residual length shrinkage of tubular finished fabrics. This technique consists of stretching the wet fabric in the width direction by as much as 30% over the finished width and overfeeding in length direction. The fabric is then dried under low tension conditions on a machine such as the Tubetex Superrelax dryer, or similar, and the fabric width allowed to relax to approximately the required finished width. It is claimed that this technique can give fabrics with relatively low residual length shrinkage figures without having to resort to mechanical compactors which are currently out of favour.

Some work has been done at Meridian in this area using the Calator Airtex to wet stretch the fabric.

During initial planning discussions it was suggested that the KI project fabrics should be processed by the wet-stretch route. However, it very soon became apparent that some of the more slacker fabrics in the series had a proposed finished width of about 100 centimetres. To wet stretch these would have meant a width of 130 cm from the Airtex and this is impossible since the machine has a width limitation of about 100 cm.

Since only a limited number of the fabrics in the series could be finished in this way, it was decided that wet stretching evaluation should be a separate exercise. It was therefore decided that the fabrics should be simply dewatered on the Airtex and that drying would be carried out on the Pegg drying and finishing machine (*Figure 5*). Following drying, the fabrics would be dressed to width on the Heliot Plimatic calender (*Figure 6*).

TARGETS

In an exercise such as this, where many of the fabrics are not in regular commercial production, little is known of their behaviour during processing and no specifications exist which the finisher can use to help him set up his finishing machinery to handle such fabrics.

All that can be done therefore is to attempt to finish the fabrics to a predetermined width which should take into account the fact that knitted structures are generally expected to have a certain amount of elasticity in the width direction.

To arrive at this target width figure it is necessary to know the fully-relaxed dimensions of a particular fabric construction.

From the grey-state test data it is possible to obtain the fully-relaxed wale spacings for all of the fabric variants. Knowing this figure, and also knowing the number of needles on the knitting machine on which the fabric was produced, it is a simple mathematical division to determine the fully-relaxed width of any of the knitted variants.

For single jersey fabrics, it was considered that, after finishing, the width should be such that the fabric would have a residual shrinkage value in width direction of 10-12% when tested by the IIC method (*Appendix 1*).

However, experience obtained during the Central Project 78 exercise has taught us that if the target widths are calculated on the basis of the grey-state fully relaxed wale spacings, then the residual width shrinkage values tend to be too low. This is due to the fact that the fully-relaxed wale spacing after dyeing is different from the grey-state fully-relaxed wale spacing (difference varies with processing route).

At the time when the target width figures have to be determined however (when assembling dye lots) the only data available relate to the grey-state fully-relaxed structure and, therefore, the targets have to be calculated on the basis of these data. To allow for the differences between grey-state and dyed-state structures, the 10-12% residual width shrinkage target is increased to 15% based on the grey fully-relaxed width.

The calculation to determine the target width of each variant is therefore as follows.

Tubular fully-relaxed width, cm = Number of Needles / 2 x Relaxed Wales/cm

Fully-relaxed width = Target finished width x 0.85

Target width = Fully-relaxed width / 0.85

Target width = Fully-relaxed width x 1.17 (+17%)

Dye Lot Assembly

Target finished widths were calculated for each piece of fabric and these were listed in increasing order together with the individual weights of each piece. For ease of processing, where fabrics of differing width are involved, the fabrics must be assembled in a particular order so that machine adjustments can be made in a systematic manner.

For the Thies R-95 jet dyeing machine, three equal-length ropes are required with a total weight of 240-280 Kg.

These ropes were assembled from the previously-prepared list using Weiss unrolling and plaiting machines. With the weight limitation being the main determining factor, some dye loads consisted of $3 \times 6 = 18$ pieces, and some of $3 \times 7 = 21$ pieces.

At the beginning/end of each rope a small length of polyester fabric was sewn in so that the dyer would know the point at which he should break the rope after the dyeing cycle, ensuring that the fabrics were removed from the machine in precise width order. Each rope was also to be kept separate when unloading the machine.

In the case of the K2 project, different dyeing vessels were used, namely:

LOT 3: Scholl Subtilo;

LOT 4: Thies Rotostream;

LOT 5: Winch.

Both the Subtilo and the Rotostream are two-tube machines and therefore the dye lots had to be assembled accordingly: two ropes of 10 pieces each.

Note: The overall length of fabric in a rope consisting of 10 pieces is 750 metres. This is too much for the Rotostream and therefore, each piece in turn had to be reduced from 75 metres to 60 metres.

In the case of the winch batch, the fabrics were simply plaited off into wagons in precise order so that easy winch loading was facilitated.

During the knitting operation, a cutting line had been introduced into all of the fabrics to aid slitting in the case of the open-width treatments, and as a reference for controlling spiralling in

the case of tubular finishing.

During preparation of the dye lots, extreme care was taken to ensure that the cutting lines were aligned during the sewing operation.

Processing Details

The complete dyeing and finishing operation for projects K1 and K2 at Meridian involved eight individual dyeing batches, 5 for K1 and 3 for K2. These were carried out at a frequency of 1 per week and IIC personnel were present throughout the finishing operations, to monitor various parameters such as width and course spacings and also to make on-site decisions regarding machine settings.

It is intended for the purpose of this report to describe one such dyeing and finishing cycle. Individual dye cycle (batch) particulars together with in-process measurements are to be found in *Appendix 2*.

The fabric was loaded into the jet in the grey state and, prior to the dyeing operation, was given a mild peroxide bleach, details of which are given on the individual processing sheets. The dyeing operation followed a procedure which has been developed at Meridian for this particular dyestuff, in which the salt is added in three equal portions over an extended period (130 minutes) following dyestuff addition, and part of the soda ash has been replaced by bicarbonate of soda. The speed of fabric circulation was adjusted so that the rope was cycled once every 22 minutes (approx. 250 metres/minute). The liquor to goods ratio was approximately 7:1.

Following dyeing, the fabric was back-scoured and finally softened with cationic softeners. The total time in the jet machine from bleaching to final softening was approximately 7 hours.

When unloading the machine, the individual ropes were broken at the point where a polyester leader had been placed. This was easily located due to the fact that the polyester resists the reactive dyestuff. Each rope was removed into a separate wagon ready for hydroextraction. The fabric was de-twisted and hydroextracted on the Calator Airtex. The width of the driven expander on this machine is preset by placing two spacer bars between the longitudinal end-pieces which carry the fabric transport bands.

The spacer bars are in three-centimetre increments over most of the width range, but occasional spacers were not available which meant that an adjustment of six centimetres was necessary in some instances. The frame width was adjusted so that the individual variants were at a width which was 3-5 centimetres below the target finished width. In most instances, this was achieved with most of the fabrics in a jet load with only three or four changes of spacer bar.

Following the dyeing cycle, the fabric ropes were very badly twisted and the Airtex operator had some difficulty in guiding the fabric so that the cutting line was always at the edge of the expander. Where the cutting line was not kept to the edge, creases put in by the Airtex nip tend to be permanent and show once the fabric is straightened on the dryer and calender.

As the fabric was plaited into wagons, the width and course spacings were measured and are recorded on the process sheets in the *Appendix*.

Drying was carried out on a Pegg drying and finishing machine which has been slightly modified from the standard machine. These modifications are to the calender roller at the top of the drying zone. The rollers are usually of smooth metal and are under pressure to form a nip. The modifications consist of a covering of textured rubber on the calender rollers and a reduction in the nip pressure to an extent that the nip pressure is minimal and just sufficient to allow fabric transport up the drying zone. The modifications have been made to reduce glazing and also to reduce the severity of the edge crease, particularly on single jersey fabrics.

The trial fabrics were dried to a width which was one centimetre below the proposed target finished widths. This operation was carried out with some degree of accuracy since width adjustments can be carried out continuously due to spring-tensioned expanders being used.

The fabric was guided onto the drying frame by hand to ensure that the cutting/ reference line was always on the edge of the fabric tube. This was carried out in some degree of discomfort as the air emerging from the fabric tube is at a temperature of 150°C. Guiding was carried out throughout the three hour drying time in relays of about 10 minutes. Overfeed was set at maximum, consistent with crease-free running.

After the folder, fabric width and course spacings were measured and these are recorded on the process sheets in the *Appendix*.

Calendering was commenced on the Heliot calender equipped with Plimatic folding device. This machine has two frames for adjusting fabric width.

The main stretcher frame prior to the calender rollers is normally adjustable from outside the fabric tube by means of a pneumatic device. During the duration of these trials, the pneumatic jack was away for repair, and therefore a normal, manually-adjusted stretcher frame was used.

A small secondary stretcher housed in the plaiting mechanism is used to give precision folding.

The first dye batch (Lot 1, Batch 1) was calendered on this machine, but all subsequent dye lots were calendered on the older Heliot H67 calender with reciprocating folder. The reasons for this are as follows.

- The Heliot Plimatic calender is difficult for the operator to run when a batch of fabric of differing widths is being processed - two frames have to be adjusted to obtain correct fabric width.
- Variation in fabric width was being experienced within a single piece. (It was later discovered that a fault in the calender bowl closing mechanism was placing variable back-tension on the fabric).

Fabrics were calendered with light steaming and the stretcher was adjusted so that the fabrics plaited at target finished width.

Following calendering, the fabrics were taken to the sampling room and representative samples of 5-metre and 1-metre lengths were removed from the middle of each piece for testing and reference respectively. At the sampling point, width and course spacings were measured and are recorded on the process sheets in the *Appendix*.

Unless otherwise stated on the process sheets all of the dye batches were processed in this manner with the following exceptions.

- K2, Lot 4: the dyer thought the shade was a little too thin and made a dyestuff addition contrary to instruction.
- The winch-dyed fabrics had to be removed from the winch in precise width order and had to be sewn together following Airtex plaiting.
- K2, Lot 3: this dye lot was originally destined for processing in the Thies Rotostream. The fabric was in fact loaded into the Rotostream, but during the first 30 minutes of processing it was realised that the ropes were too long for this machine causing jamming, and consequently the batch was reloaded into the Scholl Subtilo and the processing cycle continued.

The dye lot destined for the SCHOLL machine was reduced in length and switched to the Rotostream as Lot 4.

It was considered that the short length of time that Lot 3 spent in the Rotostream would have no bearing on the final outcome when compared with an overall processing cycle of some 7 hours.

Concluding Remarks

The processing described in this report was largely carried out to plan, and with only a few minor problems. Where problems have arisen, these have been reported either in the main text or on the individual batch processing records.

The success of the operation was due in no small measure to the excellent co-operation extended to IIC personnel by management and operatives at Meridian.

FIG 1

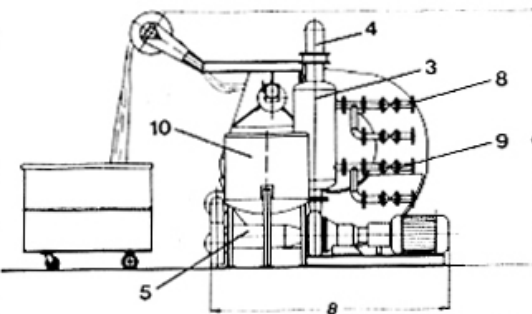
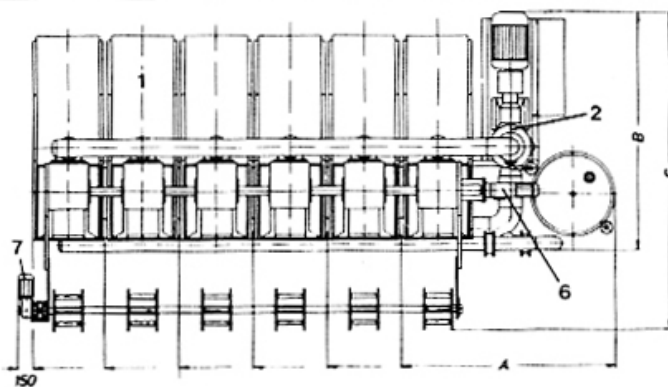
Thies

R-jet 95

With its energy-saving short liquor ratios (5:1 to 8:1), the piece dyeing machine R-jet 95 is the ideal replacement for the uneconomical winch.

Offering high output and high speed fabric transport, it is suitable for dyeing woven and knitted fabrics of natural and synthetic fibres and their blends.

Design features: Available with 1—6 tubes of nominal capacity 100 or 130 kg. Standard model consists of: tube with internal transport winch; speed adjustable to 400 m/min; circulation pump with connecting lines and heat exchanger with common heating and cooling system; addition tank; loading and unloading device; control system with heating and cooling valve; choice of degree of automation; seam detector; sampling device; filter.



- 1 «G»-Box
- 2 Circulation pump
- 3 Heat exchanger
- 4 Pressure line
- 5 Suction line
- 6 Variable speed gearing for transport winch
- 7 Loading and unloading winch with drive
- 8, 9 Heating and cooling valves
- 10 Addition tank

Dimensions:

Type	95/100 95/130	95/200 95/260	95/300 95/390	95/400 95/520	95/500 95/650	95/600 95/780
A	2100	2820	3550	4675	5400	6125
B	2300	2300	2300	2300	2300	2900
100 kg C	2050	2050	2050	2050	2100	2100
130 kg C	2550	2550	2550	2550	2600	2600
D	2450	2450	2450	2450	2450	2450

Technical specification:

	Models					
	95/100 95/130	95/200 95/260	95/300 95/390	95/400 95/520	95/500 95/650	95/600 95/780
Actual liquor capacity, l	500/650	1000/1300	1500/1950	2000/2600	2500/3250	3000/3900
Liquor ratio	5:1	5:1	5:1	5:1	5:1	5:1
Addition tank — capacity in l	300	300	300	500	500	500
Circulation pump motor — 1500 rpm in kW/HP Rated	11/15	15/20	22/30	30/40	37/50	45/60
Drive winch motor in kW — HP Rated	1.5/2				2.2/3	
Unloading winch motor in kW/HP Rated	0.55/0.75					

Der kritische Färber
kauft SCHOLL,
denn SCHOLL färbt selbst

Discriminating Dyers buy
SCHOLL, because SCHOLL are
Dyers themselves

Le teinturier exigeant
achète SCHOLL,
car SCHOLL est teinturier

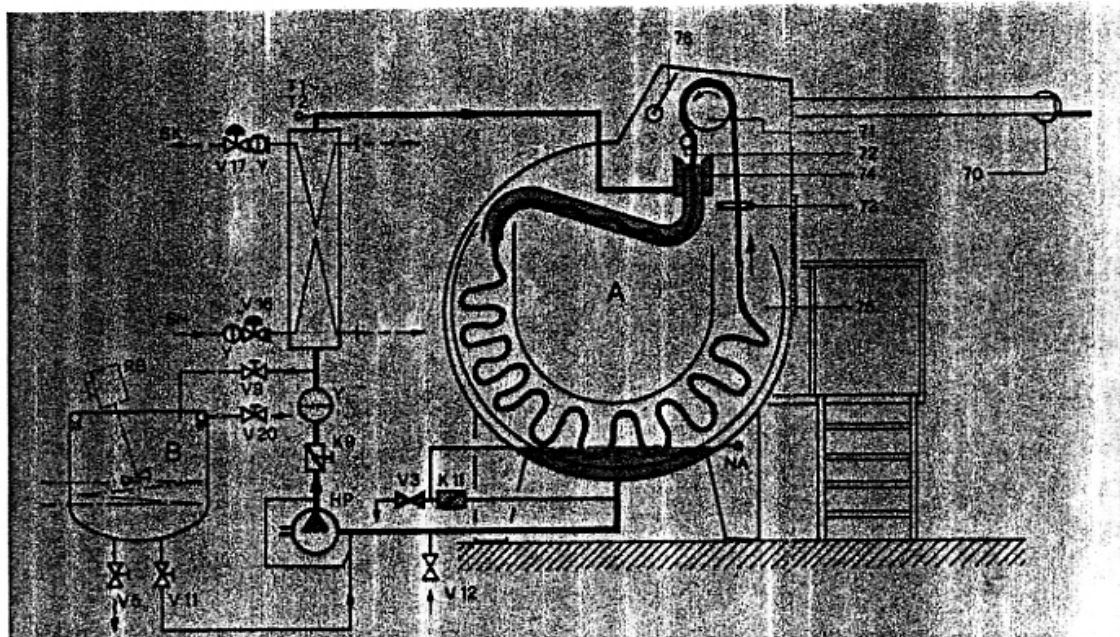
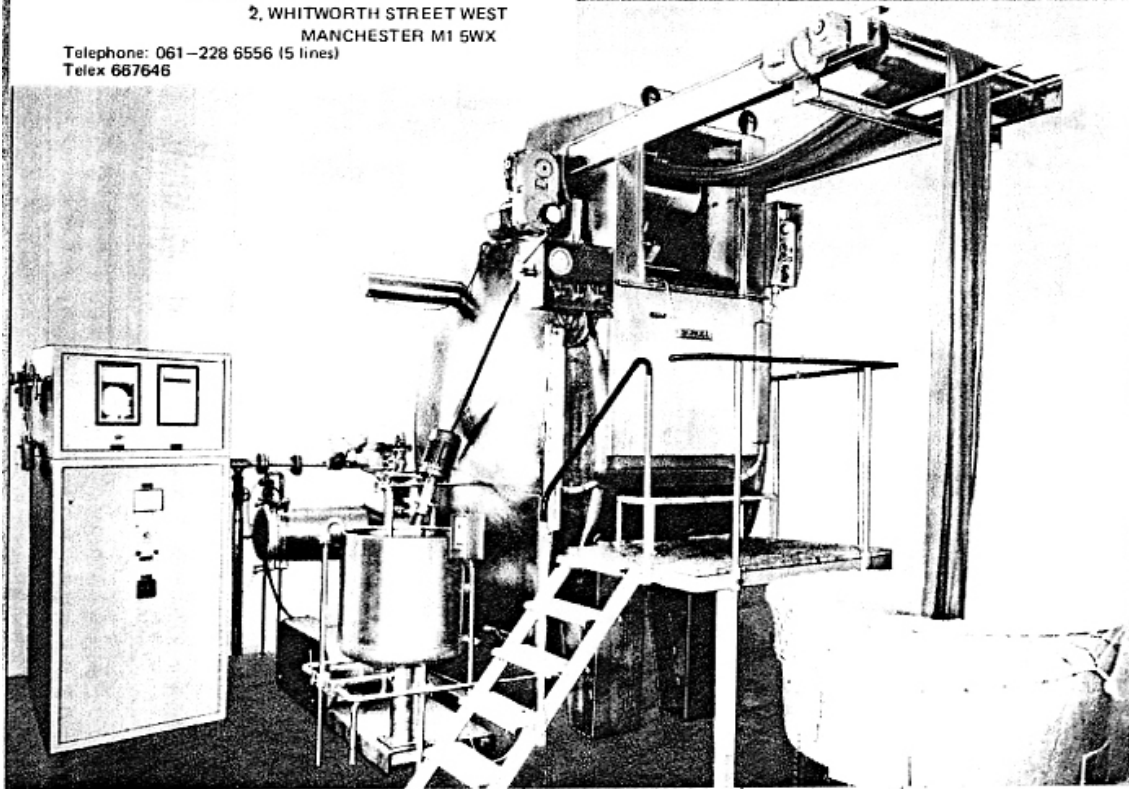
El tintorero exigente
compra SCHOLL,
porque SCHOLL es tintorero

SCHOLL

FIG 2.

SOLE AGENTS FOR GREAT BRITAIN & IRELAND:
A. E. ASPINALL LIMITED,
WRENDAL HOUSE
2, WHITWORTH STREET WEST
MANCHESTER M1 5WX
Telephone: 061-228 6556 (5 lines)
Telex 667646

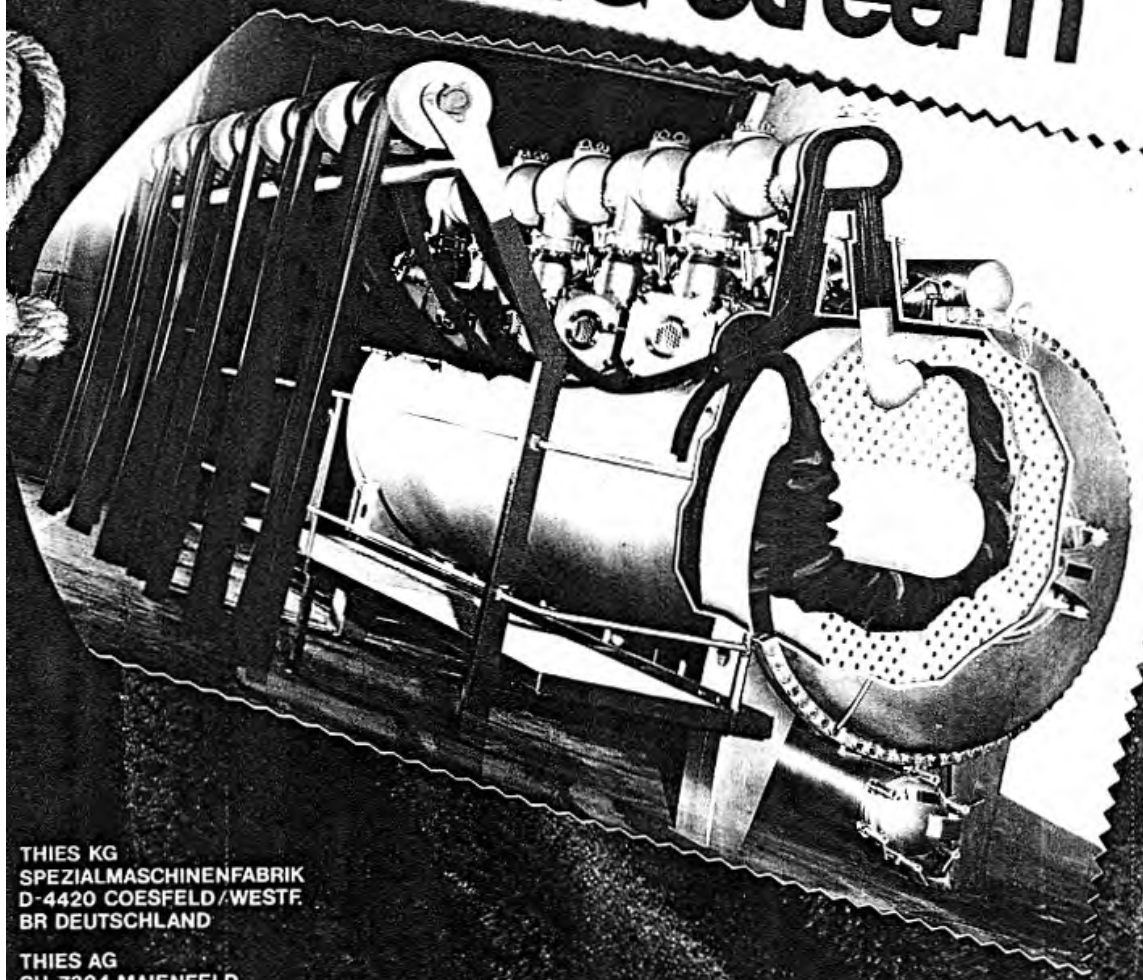
Subtillo 10/2301



Thies

FIG 3

roto-stream



THIES KG
SPEZIALMASCHINENFABRIK
D-4420 COESFELD/WESTF.
BR DEUTSCHLAND

THIES AG
CH-7304 MAIENFELD
SCHWEIZ

THIES Ges.mBH
A-6850 DORNBIRN
OESTERREICH

THIES LDA.
APARTADO 20
PERAFITA-LECA DA PALMEIRA
PORTUGAL

THIES CORP.
RIVER VIEW ROAD
ROCK HILL S.C. 29730
USA

FIG 4.

Airtex de-twists, relaxes, extracts water and plaits
Airtex uses the air balloon principle
Airtex is automatic. Requires only threading and starting
Airtex gives higher quality
Airtex saves time

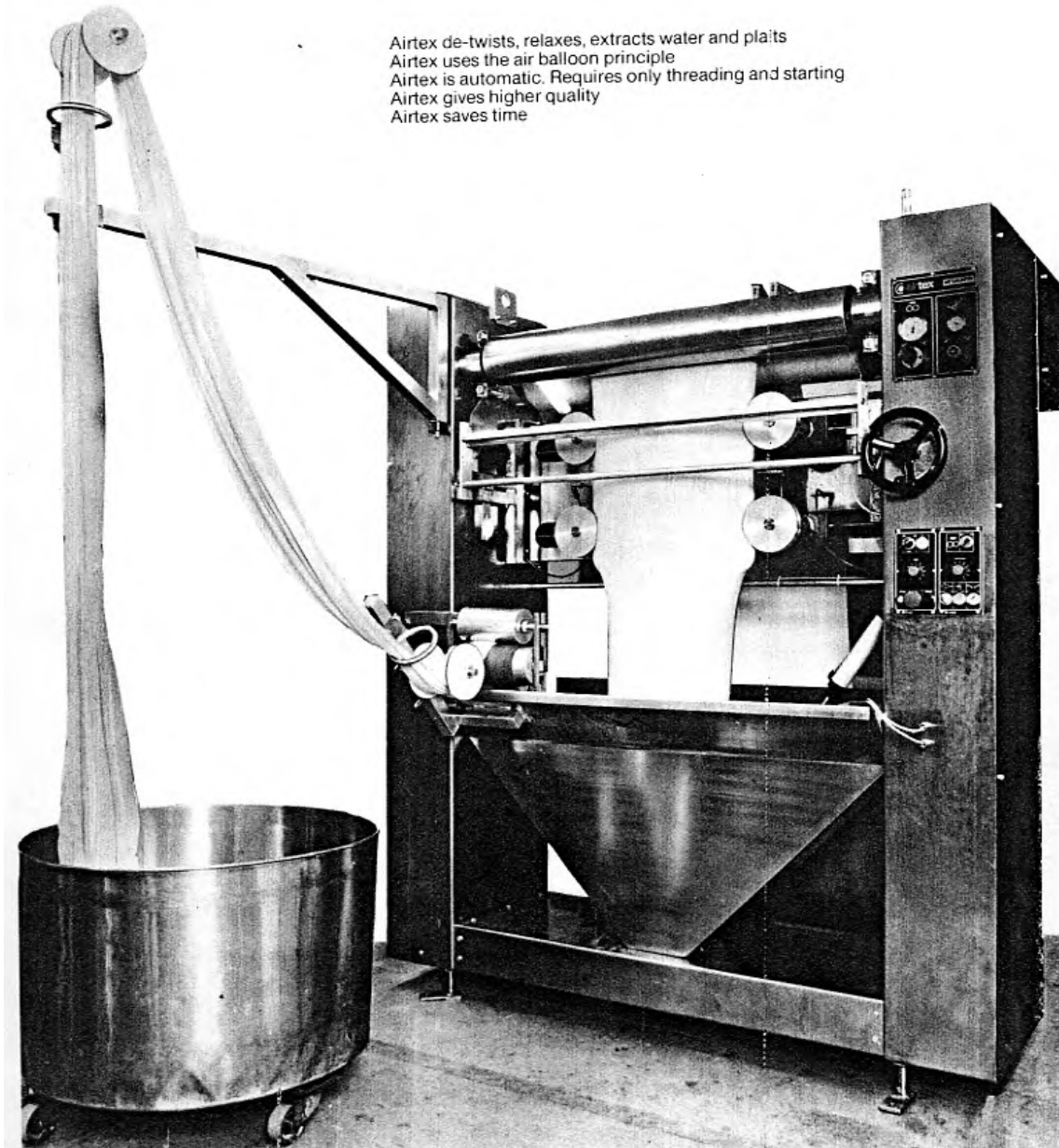


FIG 5.

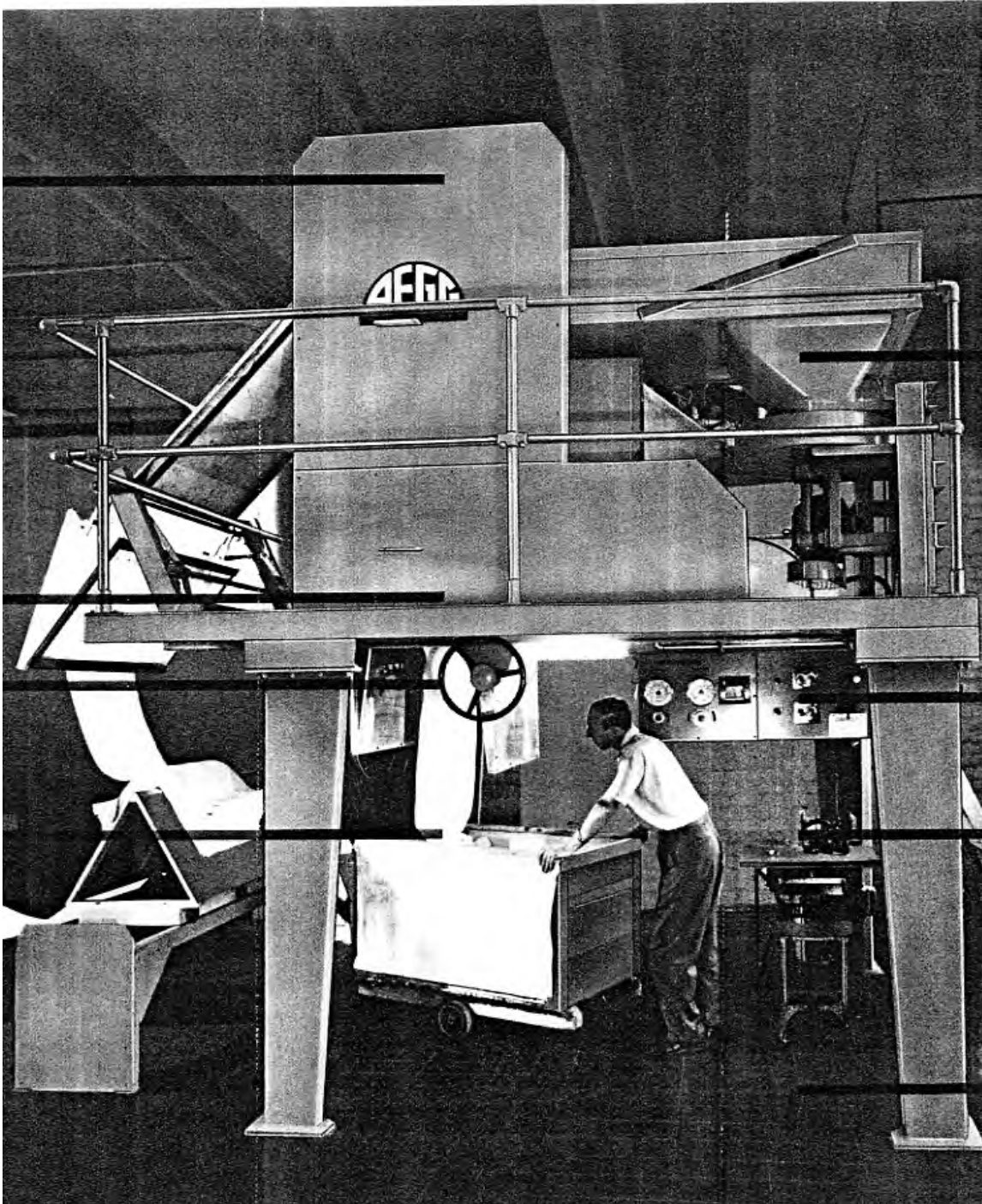


FIG 6.

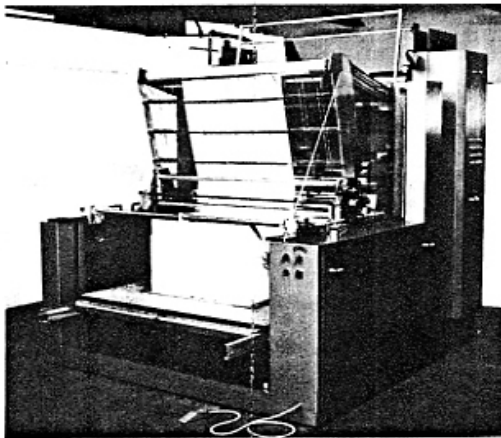
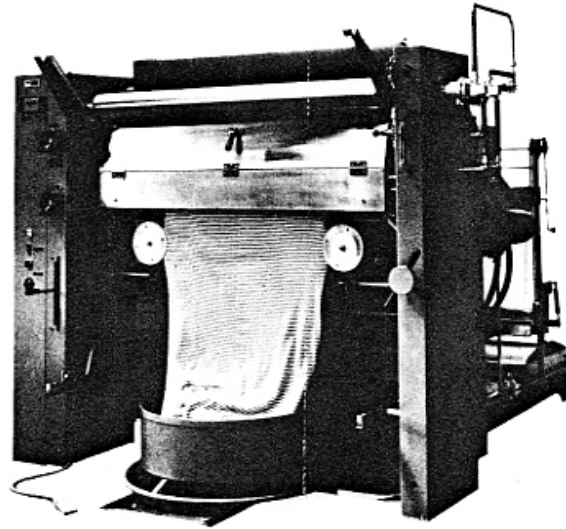
H 67 calender

USEFUL WIDTH OF 1 M - 1,50 M - 2 M

H 67 WITH ROLLING

H 67 WITH FOLDING AND ROLLING

H 67 WITH DECATIZING, FOLDING
AND ROLLING



PLUS PLIMATIC FOLDING

PRECISION

HIGH PRODUCTION

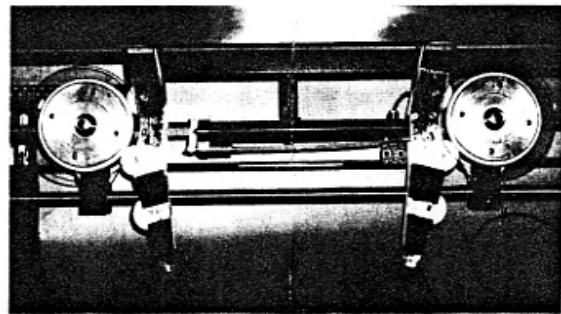
EASY HANDLING

OPTIONAL AUTOMATIC EVACUATION

SPEED : UP TO 40 M/MN

AND PNEUMATIC STRETCHER

AUTOMATIC ADJUSTMENT IN WIDTH
BY MEANS OF PNEUMATIC JACK
CONTROLLED FROM OUTSIDE THE FABRIC



GENERAL SALE AGENT :
LA CONTINENTALE TEXTILE sarl
B.P. 22
F - 10600 La Chapelle St Luc
Tél. : (25) 43.30.96 - Telex 840701

Sole agent for UK & Eire :
Muschamp Knitting Machinery Ltd
Bank House - 536 Valley Road
Basford - Nottingham NG 5 1JJ
Tél. : 0602 71064/5/6

heliot

For other agents in the world contact La Continentale Textile

Appendix 1

International Institute For Cotton

Method Of Test

KT1B

Determination Of The Dimensional Changes Induced In Cotton Weft Knitted Fabrics By A Specified Relaxation Procedure.

May 1978

Principle

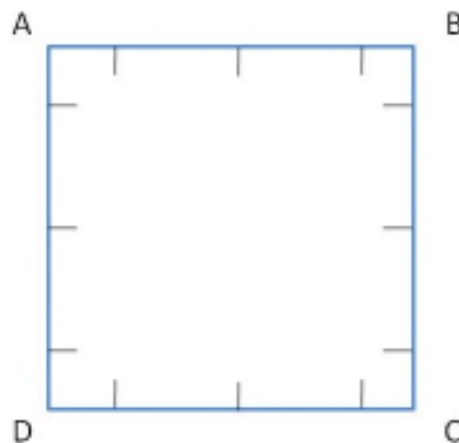
A fabric is subjected to a specified procedure and dried under the appropriate conditions, and any changes in dimensions are determined.

Method 2: By washing and tumble drying followed by soaking and tumble drying.

Apparatus

1. Hoover automatic De-Luxe washing machine.
2. Hoover tumble dryer.
3. Two Perspex templates a) 25 x 25 cm and b) 50 x 50 cm, both having equidistantly located measuring marks on all sides (*Figure 1*).

Figure 1



NB: Markings on AD are opposite those on BC (width measurement) and the markings on AB are opposite those on DC (length measurement).

4. Ruler and indelible pen.
5. A domestic automatic washing powder.
6. Lissapol NX or equivalent wetting agent.
7. Means for providing the standard atmosphere for testing textiles specified in B.S. 1051, namely $65 \pm 2\%$ RH and $20 \pm 2^\circ\text{C}$.

Test Procedure

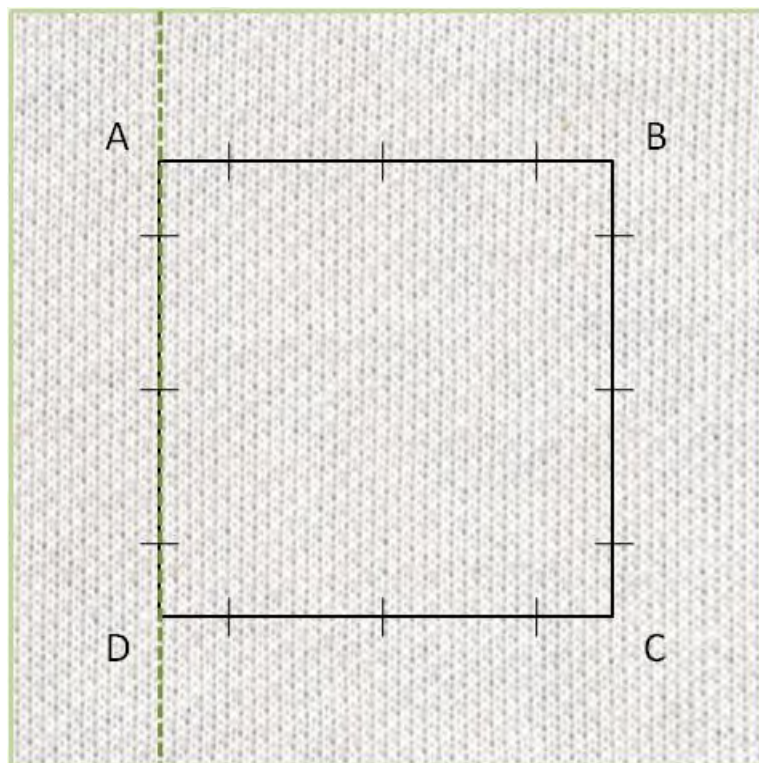
Conditioning

Samples are allowed to condition until they have reached equilibrium in the standard atmosphere for testing textiles (minimum 4 hours).

Specimen Preparation

1. The sample is laid on a flat surface removing wrinkles without stretching.
2. Five test specimens are prepared for each conditioned fabric sample, a minimum of 20cm larger in both directions than the required size of template, e.g. the 25 x 25 cm template requires a specimen of at least 45 x 45 cm.
3. The required size of template is placed centrally on the specimen so that one edge follows a wale line.
4. The test area is defined by drawing round the template. The three measuring marks are then drawn on each side of the square ABCD (*Figure 2*).

Figure 2



Laundering

1. Recommended loading for absorbent materials in a Hoover De-Luxe washing machine is 2.75 kilos (6 lb).
2. The specimens are weighed and placed in the machine. Where necessary, the load is made up to 6 lb.

3. The prescribed amount of washing powder is placed in the dispenser and the machine set to wash at 60°C with a long spin.
4. On completion of the wash cycle, the load is tumble dried at the highest temperature setting, establishing the required drying time.
5. After the first wash-and-tumble-dry cycle has been completed, the specimens are soaked in cold water with a few drops of Lissapol NX for 10 min, hydroextracted and then tumble dried for the same time as was established in 4.
6. The soaking and tumble drying is repeated a further three times, making a total of five cycles.
7. After the fifth tumble drying cycle the test specimens are conditioned before measuring.

Measurement

The specimens are laid on a flat surface, removing wrinkles without stretching.

The distances between the pairs of marks are measured and recorded.

Calculation Of Results

The mean changes in dimensions in both length and width directions are calculated and expressed as percentages of the original mean length and width respectively. The 95% Confidence Limits and the % Accuracy are also calculated.

An extension is indicated by the prefix Ext.

References

B.S. 1051

Appendix 2
Processing Details

Lot 1, Batch 1

Lot 1, Batch 2

Lot 1, Batch 3

Lot 1, Batch 4

Lot 1, Batch 5

Lot 3, Scholl Subtilo

Lot 4, Thies Rotostream

Lot 5, Winch

PROCESS COTTON BATCH 1.

LOT No. 1/B1 DATE. 14/4/80

No. Pieces 18 FABRIC SINGLE JERSEY SPEC No.

WIDTH VARIOUS (SEE OVER) TRIMS SPEC No.

Weight 266 kg

SHADE 2% PROCION BLUE H-EG.

PREPARATION

* WASH FLEISSNER * THIES R-95

SECUR SOFTEN

DYE PAD DYE AIRTEX N^o2

SPECIAL INSTRUCTIONS

MERIDIAN - INTERNATIONAL

INSTITUTE FOR COTTON

JOINT PROJECT

DRY ON

PEGG N^o2 STRAIGHTEN SLIT

CUT OFF TUBETEX STENTER @.....°C

FLEISSNER ROLL/EXAMINE

Ready for parceling

FINISH ON

TUBETEX PRIMATIC CALLENDER FLAT FOLD

HUNT & MOSCROP ARBACH

Weight	Size	Pce	Weight	Size	QUALITY CHECKS					
13.6 kg	18/1-24/311	16	12.7	24/1-38/276	SHADE <u>PASS</u>					
13.9	18/2-48/311	17	10.0	28/1-40/259	FASTNESS <u>PASS</u>					
13.2	18/1-24/327	18	12.7	24/1-32/276/1	Piece	cpi	wpi	Width	Kn.m/c	Dia.
17.3	18/2-40/327	19								
14.3	18/2-48/327	20								
13.4	18/1-24/344	21								
17.5	18/1-20/327	22								
10.5	28/1-40/246	23								
12.3	18/1-24/362	24								
15.0	18/2-40/344	25								
11.6	18/1-24/380	26								
13.2	18/2-48/344	27								
16.6	18/1-20/344	28								
24.1	18/1-16/344	29								
24.1	18/2-32/344	30								

COMMENTS

Repe 1 P_c N^os 1-6

Repe 2 P_c N^os 7-12

Repe 3 P_c N^os 13-18

Sew in 1/2 metre of polyester to indicate start/finish of each repe.

DYECARD

SHADE: **BLUE.** DATE **14.4.80**
 CUSTOMER/LOT NO: **IIC. 1181** SS. THIS MACHINE NO: **9**
 WEIGHT: **266 K.** NO. OF PIECES: METRES. MACHINE CAPACITY: LITRES
1818

IIC TRIAL.

1. SCOUR.
 K. LYOCL HEB
 K. SODA ASH.
 K. .
 START AT °C. RAISE TO THE BOIL,
 BOIL FOR MINS.
 WASH OFF WELL.

BLEACH.
 2 K. VISCALVIN CA
~~K. STABILISE~~
 4 K. CAUSTIC LIQ.
~~K. TAPRALON B.~~
 1 1/2 K. HYDROGEN PEROXIDE.
 START AT 50°C. RAISE TO 95°C. IN 30 MINS.
 RUN FOR 30 MINS. ^{SHOW} WASH OFF WELL.
 NEUTRALIZE WITH 1 1/2 K. ACETIC. COOL
 FOR 20 MINS. WASH OFF WELL.

3. DYE (METHOD) ^{WITH MATEXIL A 5} START AT 50°C. ADD DYE OVER 10 MINS. RUN FOR 20 MINS. RAISE TO 80°C TAKING 20 MINS. RUN FOR 20 MINS. ADD 55K. SALT OVER 20 MINS. RUN 20 MINS. ADD 55K. SALT OVER 20 MINS. RUN FOR 20 MINS. ADD REMAINING 55K. SALT OVER 20 MINS. RUN FOR 30 MINS. ADD 9K BICARBONATE OVER 10 MINS. RUN FOR 15 MINS. ADD SODA ASH IN TWO PARTS OVER 20 MINS. RUN FOR 45 MINS. SHOW.
 PLEASE FOLLOW METHOD EXACTLY - SPECIAL TRIAL.

CHEMICALS.
 4 K. RESIST SALT.
 165 K. SALT
 27 K. SODA ASH
 9 K. GLAUBERS BICARBONATE
~~K. CAUSTIC LIQ.~~

G/L
 SHADE PASSED.
 IF ANY ADDS
 COOL DOWN

DYESTUFF	ADDITIONS					TOTAL DYE	TOTAL
	1	2	3	4	5		
5320 gms Procion Blue HEG							

4. BACKSCOUR:
 1 K. SCOURER R
 K.
 RAISE TO THE BOIL, BOIL FOR 20 MINS.
 WASH OFF WELL.

5. SOFTEN
 5/2K. ALCAMINE 544
 2/4K. BRADSYN PC12
~~K. HYDROLUBE TX~~
 20 MINS. AT 30°C PH 5.5

LOT N° 1 BATCH 1. (THIES R-SET 95)

VARIANT	TARGET FINISHED WIDTH (ROUNDED)	AIRTEX			PEGG.		CALENDER	SAMPUNG	
		FRAME WIDTH	COURSES / 3 CM.	FABRIC WIDTH	COURSES / 3 CM.	FABRIC WIDTH	FABRIC WIDTH	COURSES / 3 CM.	FABRIC WIDTH
18/1-24/311	61	61	48/49	60	48	60.5	61	46	61 $\frac{1}{4}$
18/2-48/311	65	65	48/49	63	47	65	65	47	65 $\frac{1}{4}$
18/1-24/327	65	65	44/45	63	44	65	65	44	65 $\frac{1}{2}$
18/2-40/327	68	65	44/45	64	46	68	68	45/46	68 $\frac{1}{4}$
18/2-48/327	69	71	45/46	67	44	69	69	43	68 $\frac{1}{4}$
18/1-24/344	69	71	38/39	67	39	68.5	69	40	69 $\frac{1}{2}$
18/1-20/327	69	71	49	67	49	69	69	47	69 $\frac{1}{2}$
28/1-40/246	70	71	58	68 $\frac{1}{2}$	55	70	70	57	70
18/1-24/362	71	71	37	69	37	71	71	37	71
18/2-40/344	71	71	43/44	69 $\frac{1}{2}$	43/44	71	71	43	71
18/1-24/380	72	71	33	69	33/34	72	72	33 $\frac{1}{2}$	72
18/2-48/344	72	71	41	68	41	72	72	40 $\frac{1}{2}$	72
18/1-20/344	72	71	44/45	66	44/45	72	72	44	72
18/1-16/344	74	71	47	68	47/48	73 $\frac{1}{2}$	74	47 $\frac{1}{2}$	74 $\frac{1}{2}$
18/2-32/344	74	71	47	68/69	47	73 $\frac{1}{2}$	74	46	74
24/1-32/276	74	71	51/52	69	51/52	74	74	51	74
28/1-40/259	74	71	52/53	70	53/54	74	74	53	74 $\frac{1}{2}$
24/1-32/276/A	74	71	52	70	53	74	74	51 $\frac{1}{2}$	74

COMMENTS

THIS BATCH WAS CALENDED ON THE HELIOT PLIMATIC.

PROCESS COTTON BATCH 2

LOT No. 1/B2

22 APR 1980

DATE.

No. Pieces	18	FABRIC	SINGLE JERSEY	SPEC No.
WIDTH	VARIOUS (SEE OVER)	TRIMS		SPEC No.
Weight	245 Kg.			

SHADE 2% PROCION BLUE H-EG

PREPARATION

~~T WASH~~ FLEISSNER

~~SOFTEN BLEACH~~ SOFTEN

DYE PAD DYE

AIRTEX N°2

SPECIAL INSTRUCTIONS

MERIDIAN - INTERNATIONAL
INSTITUTE FOR COTTON
JOINT PROJECT

DRY ON

PEGG N°2 STRAIGHTEN SLIT

CUT OFF TUBETEX STENTER
@.....°C
FLEISSNER ROLL/EXAMINE

FINISH ON

TUBETEX PUMATIC CALLENDER FLAT FOLD

HUNT & MOSCROP ARBACH

OK for
parcelling
RDL

Weight	Size	Pce	Weight	Size	QUALITY CHECKS/
10.9 Kg	28/1-34/259	16	21.4	18/1-16/362	SHADE Passed
10.5	28/2-30/246	17	15.0	18/1-20/380	FASTNESS Passed
12.7	24/1-32/291	18	12.7	24/1-32A/306	
16.8	18/1-20/362	19			Piece cpi wpi Width Kn.m/c Dia.
13.2	18/2-48/362	20			
15.5	18/2-40/362	21			
13.6	24/2-64/276	22			
12.0	24/1-32A/291	23			
9.5	28/1-40/273	24			
10.5	28/2-80/259	25			OTHER TESTS
11.8	28/2-72/259	26			
21.8	18/2-32/362	27			
11.4	18/1-36/273	28			
9.3	28/1-40/287	29			
16.8	24/1-28/291	30			

COMMENTS ROPE 1 Pc N°s 1-6
ROPE 2 Pc N°s 7-12
ROPE 3 Pc N°s 13-18

Sew in 1/2 metre of Polyester to indicate start/finish of each rope

SHADE; **BLUE IIC** DATE: **22.4.80.**
 CUSTOMER/LOT NO: **1/B2** FABRIC: M/C. NO: **9**
 WEIGHT: **245** KILOS. NO. PIECES: **IIC TRAIL** M/C. CAPACITY **1818** LITRES

1. SCOUR:
 K. DYSOL
 K. SANDOPAN DLCL
 K. SOVATEX EM/O
 K. SODA ASH
 K. VISCAMINCA
 RAISE TO THE BOIL, BOIL FOR
 MINS. WASH OFF WELL. NEUTRALIZE
 WITH ACETIC ACID.

2 K. CONTAVAN HW.
4 K. CAUSTIC LIQ.
14 K. HYDROGEN PEROXIDE.
 RAISE TO THE BOIL IN 30MINS.
 BOIL FOR 30MINS. SHOW.
 NEUTRALIZE WITH **1 1/2** K. ACETIC ACID.
 10MINS. AT 60°C. WASH OFF WELL.

3. DYE (METHOD): **START WITH MATERIAL PALE AT 50°C ADD DYE OVER 10MINS RUN FOR 20MINS RAISE TO 80°C TAKING 20MINS RUN FOR 20MINS ADD 55K SALT OVER 20MINS RUN 20MINS ADD 55K SALT OVER 20MINS RUN 20MINS ADD REMAINING 55K SALT OVER 20MINS RUN FOR 30MINS ADD 9K BICARBONATE OVER 10MINS RUN FOR 15MINS ADD SODA ASH IN TWO PARTS OVER 30MINS RUN FOR 15MINS SHOW PLEASE FOLLOW METHOD EXACTLY**

CHEMICALS. **4** K. RESIST SALT MATERIAL G/L SHADE PASSED **IIC TRAIL**
165 K. SALT.
27 K. SODA ASH.
27 K. CAUSTIC.
 K. GLAUBERS BICARBONATE
 K. SANDOPUR. DK.
 K. LYOGEN MG.
 K. SPA.

DYESTUFF.	1	2	3	4	5	TOTAL DYE	TOTAL %
4900 PROCION BLUE HEG							

4. BACKSCOUR.
 1 K. SCOUREXR.
 K. TRIAMINE PR.
 K.
 RAISE TO THE BOIL, BOIL FOR **20** MINS
 WASH OFF WELL.

5. SOFTEN
5 1/2 K. ALCAMINE 544
2 1/2 K. BRADSYN. PC12
2 1/2 K. MYSTOLUBE TX.
 20 MINS. AT **30°C** PH.

COMMENTS **ROPE 1 P_c N_o 1-6 Sew in 1/2 metre of Polyester to indicate start/finish of each r**
ROPE 2 P_c N_o 7-12
ROPE 3 P_c N_o 13-18

LOT N° 1 BATCH 2 (THIES R-JET 95)

VARIANT	TARGET FINISHED WIDTH (ROUND)	AIRTEX			PEGG.		CALENDER	SAMPUNG	
		FRAME WIDTH	COURSES / 3 CM.	FABRIC WIDTH	COURSES / 3 CM.	FABRIC WIDTH	FABRIC WIDTH	COURSES / 3 CM.	FABRIC WIDTH
28/1-36/259	74	72	56/57	72	55	74	74	55/56	74
28/2-80/246	74	72	62/63	71/72	61	74	74	60	74
24/1-32/291	75	72	48	71	50	75	75	48	74½
18/1-20/362	75	72	42	73	41	75	75	40	74¼
18/2-48/362	75	72	36	71	38	75	75	38	74¾
18/2-40/362	76	72	40	70	40	76	76	39/40	76
24/2-64/276	76	75	55	73	54	76	76	54	76
24/1-32A/291	76	75	48	73	48	76	76	50	75½
28/1-40/273	76	75	48/49	73	49/50	76	76	50	76
28/2-80/259	76	75	55/56	72	55	76	76	53	74
28/2-72/259	76	75	57	73	58	76	76	56/57	76
18/2-32/362	77	75	44	73	43	77	77	43	76½
28/1-36/273	77	77½	50	75	50/51	77	77	50	76½
28/1-40/287	77	77½	44/45	75	45	77	77	45	76½
24/1-28/291	77	77½	53/54	73	53	77	77	51/52	76
18/1-16/362	78	77½	45	75	44	78	78	43	78
18/1-20/380	78	77½	38	74	38	78	78	38	77½
24/1-32A/306	78	77½	44	73	45	78	78	44/45	79

COMMENTS Target width for Pegg dries was same as finished target width, but for further lots this should be reduced by 1cm to allow a little more scope on the Calender.
Also Nip creases from the AIRTEX are permanent.

WASH PROCESS COTTON BATCH 3

LOT No. 1/B3 DATE _____

No. Pieces 18 FABRIC SINGLE JERSEY SPEC No. _____

WIDTH VARIOUS (SEE OVER) TRIMS _____ SPEC No. _____

Weight 248 kg

SHADE 2% PROcion BLUE H-EG

PREPARATION

~~WASH~~ FLEISSNER *THRES R-95

BLEACH SOFTEN AIRTEX N^o2

DYE PAD DYE

SPECIAL INSTRUCTIONS

MERIDIAN -- INTERNATIONAL INSTITUTE FOR COTTON JOINT PROJECT

DRY ON

PEGG N^o2 STRAIGHTEN SLIT

CUT OFF TUBETEX STENTER @.....°C

FLEISSNER ROLL/EXAMINE

FINISH ON

TUBETEX PLIMATIC CALLENDER FLAT FOLD

HUNT & MOSCROP ARBACH

OK for packing

Weight	Size	Pce	Weight	Size	QUALITY CHECKS
15 kg	18/1-20/399	16	13.2	24/1-29/306	SHADE <i>Passed</i>
14.5	18/2-40/380	17	8.9	28/1-40/301	FASTNESS <i>Passed</i>
12.5	24/2-44/291	18	20	18/2-32/399	
13.2	28/1-32/273	19			Piece cpi wpi Width Kn.m/c Dia.
12.7	18/2-48/380	20			
12.3	24/1-32/306	21			
11.8	28/2-72/273	22			
14.1	24/2-56/291	23			
13.6	28/1-32/273	24			
10.0	28/1-36/297	25			OTHER TESTS
10.0	28/2-80/273	26			
20.5	18/1-16/380	27			
21.4	18/2-32/380	28			
13.4	28/2-44/273	29			
11.4	24/1-32/273	30			

REMARKS

Rope 1 Pc Nos 1-6

Rope 2 Pc Nos 7-12

Rope 3 Pc Nos 13-18

Sew in 1/2 metre of Polyester to indicate start/finish of each rope.

SHADE: **BLUE** DATE: **28 4 60**
 CUSTOMER/LOT NO: **IIC K1/B3** **SS** THIES MACHINE NO: **9**
 WEIGHT: **248** K: NO. OF PIECES: METRES: MACHINE CAPACITY: LITRE
IIC TRIAL **1818**

1. SCOUR:
 K. LYOCOL HEB
 K. SODA ASH
 K.
 START AT $^{\circ}$ C. RAISE TO THE BOIL,
 BOIL FOR MINS.
 WASH OFF WELL.

2. BLEACH
2 K. VISCAVIN CA
~~K. STABILISER~~
4 K. CAUSTIC LIQ.
~~K. TETRALON B.~~
14 K. HYDROGEN PEROXIDE
 START AT **50** $^{\circ}$ C. RAISE TO **95** $^{\circ}$ C. IN **30**
 MIN. **SHOW** WASH OFF WELL.
 RUN FOR **30** MINS. **NEUTRALIZE WITH 1/8K ACETIC. 60** $^{\circ}$ C
FOR 20 MINS. WASH OFF WELL.

3. START AT 50 $^{\circ}$ C WITH MATEXIL PAL. ADD DYE OVER 10 MINS. RUN FOR 20 MINS. RAISE TO 80 $^{\circ}$ C TAKING 20 MINS. RUN FOR 20 MINS. ADD 55K SALT OVER 20 MINS. RUN 20 MINS. ADD 55K SALT OVER 20 MINS. RUN 20 MINS. ADD REMAINING 55K SALT OVER 20 MINS. RUN FOR 30 MINS. ADD 9K BICARBONATE OVER 10 MINS. RUN FOR 10 MINS. ADD SODA ASH IN TWO PARTS OVER 20 MINS. RUN FOR 15 MINS. **SHOW**

*** PLEASE FOLLOW METHOD EXACTLY ***

CHEMICALS.	G/L	SHADE PASSED.
4 K. RESIST SALT.		
165 K. SALT.		
27 K. SODA ASH		
9 K. CLAUBERS BICARBONATE		
K. CAUSTIC LIQ.		

DYESTUFF	ADDITIONS					TOTAL DYE	TOT %
	1	2	3	4	5		
4960 gms Procion Blue HEG							

4. BACK SCOUR.
 K. SCOUREX R
 K.
 RAISE TO THE BOIL, BOIL FOR **20** MINS.
 WASH OFF WELL.

5. SOFTEN.
5 K. ALCAMINE 544
2 1/2 K. BRADSYN PC12
 K. MYSTOLUBE TX
 20 MINS. AT 30 $^{\circ}$ C PH 5.5

LOT N° 1 BATCH 3 (THIES R-95)

VARIANT	TARGET FINISHED WIDTH (ROUND)	AIRTEX			PEGG.		CALENDER	SAMPLING	
		FRAME WIDTH	COURSES / 3 CM.	FABRIC WIDTH	COURSES / 3 CM.	FABRIC WIDTH	FABRIC WIDTH	COURSES / 3 CM.	FABRIC WIDTH
18/1-20/399	78	75	33	74	34/35	77	78	34	77
18/2-40/380	78	75	36	73	35/36	76½	78	36	77½
24/2-64/291	78	75	47	72	46/47	77	78½	48	77¾
28/1-329/273	78	75	53	72	53	77	78	53	78
18/2-48/380	79	75	34/35	73	35	78	79½	34/35	78½
24/1-32/306	79	75	43	72	45	78	79	44	78½
28/2-72/273	79	75	50	72	51	78	79	50	78½
24/2-56/291	79	75	49	72	49	77½	79	50	78
28/1-32/273	79	75	51	72	51	78	79	50	80½
28/1-36/287	80	75	44/45	72	45	79	80	53	79
28/2-80/273	80	75	48/49	72	49	79	80	46	80
18/1-16/380	80	75	39	74	39/40	79	80	49½	79½
18/2-32/380	80	75	37/38	74	39/40	79	80	40/41	80½
28/2-64/273	80	75	54	74	53	79	80	53/54	82-84
24/1-329/321	80	75	38/39	74	41	79	80	42	80½
24/1-28/306	81	75	45	75	45	80	81	45/46	81¼
24/1-40/301	81	75	39	76	40	79½	81½	41/42	82½
18/2-32/399	81	75	34	76	34	80	81	36/37	81

COMMENTS Mechanical problems on the Plimatic
 forced a change to standard HELIOT
 Suggest the standard machine is used for
 subsequent dye lots. Pcs 9-18 - PLIMATIC
 Pcs 1-8 - STANDARD HELIOT

PROCESS COTTON BATCH 4

LOT No. K1/B4 DATE. _____

No. Pieces 21 FABRIC SINGLE JERSEY SPEC No. _____

WIDTH VARIOUS (SEE OVER) TRIMS _____ SPEC No. _____

Weight 274 kg

GRADE 2% PRODIGON BLUE H-EG

PREPARATION THIES R-95

WET FLEISSNER

SOFTEN

DYE PAD DYE ARTEX N°2 ✓

SPECIAL INSTRUCTIONS
 MERIDIAN -- INTERNATIONAL
 INSTITUTE FOR COTTON
 JOINT PROJECT

FINISH ON

PEGG N°2 STRAIGHTEN SLIT

CUT OFF TUBETEX STENTER @.....°C

FLEISSNER ROLL/EXAMINE

Ready for
Pacelling

FINISH ON

TUBETEX HELIOT CALLENDER FLAT FOLD

HUNT & ARBACH

MOSCROP

Weight	Size	Pce	Weight	Size	QUALITY CHECKS					
18.6 kg	18/1-16/399	16	15.7	24/1-24/321	SHADE	Pass				
14.5	18/2-40/399	17	11.4	28/1-32/301	FASTNESS	Pass				
15.9	24/1-24/306	18	12.7	24/1-28/337						
10.0	24/2-64/306	19	11.8	28/2-64/301	Piece	cpi	wpi	Width	Kn.m/c	Dia.
0.0	28/1-36/301	20	11.4	24/2-64/321						
7.3	28/2-80/287	21	17.3	24/2-48/321						
1.4	24/1-32/337	22								
4.5	24/2-56/306	23								
10.9	28/2-72/287	24								
7.7	24/2-48/306	25								
3.6	24/1-28/321	26								
2.7	28/2-64/287	27								
3.0	24/2-56/321	28								
1.8	28/1-32/337	29								
0.0	28/1-36/301	30								

OTHER TESTS
 MERIDIAN -- INTERNATIONAL
 INSTITUTE FOR COTTON
 JOINT PROJECT

MENTS

PE 1	PC N°S	1-7
PE 2	PC N°S	8-14
PE 3	PC N°S	15-21

Sew in 1/2 metre polyester to indicate start/finish of each reel

GRADE: BLUE 7/1

DATE: 6.5.80

CUSTOMER/LOT NO: IIC K1/B4

SS THIES MACHINE CAPACITY NO: 9

WEIGHT: 274 K. NO. OF PIECES: METRES: MACHINE CAPACITY: LITRES 1818

SCOUR.
 LYOCL HER
 SODA ASH.
 START AT °C. RAISE TO THE BOIL,
 BOIL FOR MINS.
 WASH OFF WELL.

2 K. CONTAVAN HW. VISCAVIN CA.
 4 K. CAUSTIC LIQ.
 14 K. HYDROGEN PEROXIDE.
 RAISE TO THE BOIL IN 30MINS,
 BOIL FOR 30MINS. SHOW.
 NEUTRALIZE WITH 1 1/2 K. ACETIC ACID.
 20MINS. AT 60°C. WASH OFF WELL.

DYE (METHOD) START AT 50°C WITH MATEXIL PAL ADD DYE OVER 10MINS.
 RUN FOR 20MINS. RAISE TO 80°C TAKING 20MINS RUN FOR 20MINS
 ADD 55K SALT OVER 20MINS RUN 20MINS ADD 55K SALT
 OVER 20MINS RUN 20MINS. ADD REMAINING 55K SALT OVER
 20MINS. RUN FOR 30MINS. ADD 9K BICARBONATE OVER 10MINS
 RUN FOR 15MINS ADD SODA ASH IN TWO PARTS OVER 20MINS
 RUN FOR 15MINS SHOW.
 PLEASE FOLLOW METHOD EXACTLY - SPECIAL TRIAL

CHEMICALS
 4K. RESIST SALT.
 5K. SALT
 7K. SODA ASH
 9K. GLAUBERS BICARBONATE
 K. CAUSTIC LIQ.

DYESTAUFF	1	2	3	4	5	TOTAL DYE	TOTAL %
5480gms PROCION BLUE HEG							

ACKSCOUR:
 1 K. SCOUDEX R
 K.
 RAISE TO THE BOIL, BOIL FOR 20 MINS
 WASH OFF WELL.

5. SOFTEN
 52K. ALCAMINE 544
 24K. BRADSYN PC12
 24K. MYSTICLUBE TX
 20 MINS. AT 30°C PH 5.5

LOT N° 1 BATCH 4

VARIANT	TARGET FINISHED WIDTH (ROUND)	AIRTEX			PEGG.		CALENDER	SAMPLING	
		FRAME WIDTH	COURSES / 3 CM.	FABRIC WIDTH	COURSES / 3 CM.	FABRIC WIDTH	FABRIC WIDTH	COURSES / 3 CM.	FABRIC WIDTH
18/1-16/399	81	80	36	78	36	80	81	35/36	81
18/2-40/399	81	80	34	77	35	80	81	33/34	81
24/1-24/306	82	80	47/49	76	50	81	82	48/49	82
24/2-64/306	82	80	44	77	45	81	82	44/45	82
28/1-36/301	82	80	40/41	77	42/43	81	82	43	82
28/2-80/287	82	80	44/46	76	47	81	82	45	82
24/1-32A/337	82	80	36	77	37	81	82	38	82½
24/2-56/306	82	80	46/47	79	49	81	82	46	82
28/2-72/287	83	80	47	79	47	82	83	47/48	83
24/2-48/306	83	80	48/50	78	50	82	83	49/50	83
24/1-28/321	83	80	41/42	78	43	82	83	44	83
28/2-64/287	83	80	50	78	48	82	83	49	83
24/2-56/321	84	80	42/43	79	43	83	84	43	84
28/1-32A/287	84	80	49/50	78	51	83	84	49	84
28/1-36/316	84	80	40/41	80	40	83	84	40/41	84
24/1-24/321	84	80	48/49	80	46	83	84	45/46	84
28/1-32A/301	85	80	46	80	47	84	85	45	85
24/1-28/337	85	80	39/40	80	39	84	85	39/40	85
28/2-64/301	85	80	44/45	80	46	84	85	44/45	85
24/2-64/321	85	80		80	43	84	85	41/42	85
24/2-48/321	86	80	46/47	80	44	85	86	44/45	85/86

COMMENTS

PROCESS COTTON BATCH 5

LOT No. K1/BS DATE _____

No. Pieces 19 + FABRIC SINGLE JERSEY SPEC No. _____

WIDTH VARIOUS (SEE OVER) TRIMS _____ SPEC No. _____

Weight 275 Kg

SHADE 2% PROCION BLUE HEG

REPARATION * TIES R-95

* WASH FLEISSNER

SECUR BLEACH SOFTEN

DYE PAD DYE AIRTEX N°2

SPECIAL INSTRUCTIONS

MERIDIAN - INTERNATIONAL
INSTITUTE FOR COTTON
JOINT PROJECT

DRY ON

PEGG N°2 STRAIGHTEN SLIT

CUT OFF TUBETEX STENTER
@.....°C

FLEISSNER ROLL/EXAMINE

FINISH ON

TUBETEX CALLENDER FLAT FOLD

HUNT & MOSCROP ARBACH

Weight	Size	Pce	Weight	Size	QUALITY CHECKS					
18.2	18/1-16/419	16	14.1	24/1-24/372	SHADE					
11.2	28/1-32A/316	17	13.0	24/2-56/354	FASTNESS					
19.9	18/2-32/419	18	11.4	28/2-64/332	Piece	cpi	wpi	Width	Kn.m/c	Dia.
12.7	24/1-28/354	19	14.5	24/2-48/372						
14.5	24/1-24/337	20	3.3	FENT						
9.1	28/2-80/301	21	6.5	FENT						
12.3	28/2-64/316	22	6.1	FENT						
12.7	24/2-56/337	23	5.7	FENT						
10.0	28/2-72/301	24			OTHER TESTS					
15.5	24/2-48/337	25								
15.0	24/1-24/354	26								
16.3	24/2-48/354	27								
10.0	28/2-72/316	28								
11.4	28/1-32A/332	29								
11.4	24/2-64/337	30								

COMMENTS

ROPE 1 PCN° 1-7

ROPE 2 PCN° 8-14

ROPE 3 PCN° 15-19 + FENTS

Sew in 1/2 metre of polyester to indicate start/finish of each rope.

TIC TRIAL

DATE: 13.5.80
MACHINE CAPACITY NO: 9

OF NO: K1 B5

75 K. NO. OF PIECES: 55 METRES: MACHINE CAPACITY: LITRES 1818

CL. HEB
A ASH.

RAISE TO THE BOIL,
MINS.
WELL.

- 2 K. CONTAVAN 18.
- 4 K. CAUSTIC LIQ.
- 14 K. HYDROGEN PEROXIDE.

RAISE TO THE BOIL IN 50MINS,
BOIL FOR 30MINS. SHOW.
NEUTRALIZE WITH 1/2 K. AMERIC ACID.
10MINS. AT 60°C. WASH OFF WELL.

FOLLOW METHOD EXACTLY!

10) START AT 50°C WITH MATEXIL PAL. ADD DYE OVER 10MINS
20MINS RAISE TO 80°C TAKING 20 mins RUN 20mins
OF SALT OVER 20 mins RUN 20 mins ADD REMAINING
20 mins RUN FOR 30 mins ADD 9K BICARBONATE
RUN FOR 15 mins ADD SODA ASH IN 2 PARTS
mins RUN FOR 45 mins ADD SNOW

~~100 G/L~~ MATEXIL PAL
T
A ASH
MINS
~~100 G/L~~ BICARBONATE

SHADE PASSED.

DYE	ADDITIONS					TOTAL	TOTAL
	1	2	3	4	5	DYE	%
300ION BLUE HEG							

UR:
COURX R
THE BOIL, BOIL FOR
WELL. 20 MINS

- 5. SOFTEN
- 6 K. ALCAMINE 514
- K. BRAISYL PC12
- 3 K. MYSTOLUBE TX
- 20 MINS. AT 30°C PH 5.

LOT N° 1 BATCH 5 (THIES R-JET 95)

VARIANT	TARGET FINISHED WIDTH (ROUND)	AIRTEX			PEGG.		CALENDER	SAMPLING	
		FRAME WIDTH	COURSES / 3 CM.	FABRIC WIDTH	COURSES / 3 CM.	FABRIC WIDTH	FABRIC WIDTH	COURSES / 3 CM.	FABRIC WIDTH
18/1-16/419	86	86	34	84	35/36	85	86	35	85
28/1-32A/316	86	86	42	83	43	85	86	42/43	86
18/2-32/419	87	86	35	83½	35	85½	87½	34/35	86½
24/1-28/354	87	86	36	84	36	86	87½	37	87
24/1-24/337	88	86	40/41	84	42/44	87	88½	42/43	88
28/2-80/301	88	86	43	83	44	87	88	44	87½
28/2-64/316	88	86	45	85	43/44	87	88	42/43	88
24/2-56/337	88	88	41	85½	40	86½	88	39/40	87½
28/2-72/301	88	88	44/45	84	45	87	88	45	87½
24/2-48/337	89	88	41/42	86	40	88	89	43	88
24/1-24/354	89	88	38	86	40	88	89	39	88½
24/2-48/354	90	88	39	86	38	89	90	38	89
28/2-72/316	90	88	42	85	42	89	90	41/42	90
28/1-32A/332	90	88	38	85	40	90	91	38/39	90
24/2-64/337	91	91	39	89	39	90	91	38	91
24/1-24/372	91	91	35	89½	36	90	91	36	90½
24/2-56/354	93	91	36	89	37	92(MAX)	92½	37/38	92
28/2-64/332	94	91	39	89	41	93(MAX)	94	39	93½
24/2-48/372	97	91	35	90½	36/37	93½(MAX)	94(MAX)	36	94½
FENTS.		91							

COMMENTS

The last 3 pieces in the series are a little too wide for the Pegg dyes.

PROCESS COTTON LOT 3

No. K2/L3 DATE. _____

Pieces 20 FABRIC SPEC No. _____

WIDTH VARIOUS (see ans) TRIMS SPEC No. _____

Weight 255 kg

GRADE 2% Ploian BLUE HEG

SEPARATION
 SET * FLEISSNER ~~SOFTEN~~ "SCHOLL"
 BLEACH SOFTEN
 DYE PAD DYE AIRTEX N°2

SPECIAL INSTRUCTIONS
 MERIDIAN -- INTERNATIONAL
 INSTITUTE FOR COTTON
 JOINT PROJECT.

FINISH ON
 PEGG STRAIGHTEN SLIT
 CUT OFF TUBETEX STENTER @.....°C
 FLEISSNER ROLL/EXAMINE

FINISH ON
 TUBETEX CALLENDER FLAT FOLD
 HUNT & MOSCROP ARBACH

Weight	Size	Pce	Weight	Size	QUALITY CHECKS					
10.5	28/1-36/259	16	13.2	24/1-36/354	SHADE	<i>Pass</i>				
10.9	28/2-70/259	17	13.4	24/2-56/357	FASTNESS					
11.8	28/1-36/273	18	10.5	24/2-70/301	Piece	cpl	wpi	Width	Kn.m/c	Dia.
16.9	24/1-28/291	19	10.5	28/2-70/316						
12.7	24/2-70/273	20	13.6	24/2-56/354						
15.0	24/2-36/291	21								
10.9	28/1-36/287	22								
14.1	24/1-28/306	23								
10.2	28/1-36/301	24								
15.5	24/2-56/306	25								
11.8	28/2-70/287	26								
13.6	24/1-28/381	27								
13.9	24/2-56/291	28								
10.5	28/1-36/316	29								
13.6	24/1-28/337	30								

OTHER TESTS

REMARKS
 Rope 1 Pc N°s 1-10
 Rope 2 Pc N°s 11-20

Sew in 1/2 metre polyester to indicate start/stop of each rope

LOT N° K2 LOT 3 (SCHOLL SUBTILO)

VARIANT	TARGET FINISHED WIDTH (Rounded)	AIRTEX			PEGG.		CALENDER	SAMPNER	
		FRAME WIDTH	COURSES / 3 CM.	FABRIC WIDTH	COURSES / 3 CM.	FABRIC WIDTH	FABRIC WIDTH	COURSES / 3 CM.	FABRIC WIDTH
28/1-36/259	74	74½	58	71	56	73½	74	55	74
28/2-72/259	76	77	57	73½	57	75	76	55	76
28/1-36/273	77	77	53	75	52	76	77	49	77
24/1-28/291	77	77	52	75	52	76	77	50	77
28/2-72/273	79	80	53	77	54	78	79	51	79
24/2-56/291	79	80	53	77½	52	78	79	50	79
28/1-36/287	80	82½	49	78½	51	79	80	47	80
24/1-28/306	81	82½	49	78	48	80	81	47	81
28/1-36/301	82	82½	44	79	46	81	82	44	82
24/2-56/306	82	82½	49	80	47	81	82	46	82
28/2-72/287	83	85	49	80½	51	82	83	46	83
24/1-28/321	83	85	45	82	43	82	83	43	83
24/2-56/321	84	85	45	82	43	83	84	43	84
28/1-36/316	84	85	41	82½	41	83	84	40	84
24/1-28/337	85	88	41	84	40	84	85	40/41	85
24/1-28/354	87	90½	38	86	38	86	87	37	86
24/2-56/337	88	90½	41	86	39	87	88	39/40	88
28/2-72/301	88	93	46	89	44	87	88	44	88
28/2-72/316	90	93	43	86	43	89	90	41	89
24/2-56/354	93	93	38	86	38	92	93	37	93

COMMENTS

PROCESS COTTON

LOT No. K2 / LOT 4 DATE _____

No. Pieces 20 FABRIC _____ SPEC No. _____

WIDTH VARIOUS (SEE OVER) TRIMS _____ SPEC No. _____

Weight 195 kg

SHADE 2% PROCON BLUE H-EG

PREPARATION

SET FLEISSNER * THIES KOTO-STREAM

BLEACH SOFTEN ARTEX N° 2

DYE PAD DYE

SPECIAL INSTRUCTIONS
MERIDIAN - INTERNATIONAL
INSTITUTE FOR COTTON
JOINT PROJECT

DRY ON

PEGG STRAIGHTEN SLIT

CUT OFF TUBETEX STENTER @.....°C

FLEISSNER ROLL/EXAMINE

FINISH ON

TUBETEX CALLENDER FLAT FOLD

HUNT & MOSCROP ARBACH

						QUALITY CHECKS					
P	Weight	Size	Pce	Weight	Size	SHADE	Pcs				
1	11.8	28/1-36/259	16	13.2	24/1-28/354	FASTNESS	Pcs				
2	12.3	28/2-72/259	17	13.9	24/2-56/337		Pcs				
3	11.8	28/1-36/273	18	10.5	28/2-72/301						
4	16.8	24/1-36/291	19	10.5	28/2-72/316	Piece	cpi	wpi	Width	Kn.m/c	Dia.
5	12.7	28/2-72/273	20	13.6	24/2-56/354						
6	15.5	24/2-56/291	21								
7	10.9	28/1-36/287	22								
8	12.7	24/1-28/306	23								
9	10.2	28/1-36/301	24								
0	15.5	24/2-56/306	25								
1	11.6	28/2-72/287	26								
2	13.6	24/1-36/321	27								
3	13.6	24/2-56/321	28								
4	10.5	28/1-36/316	29								
5	13.4	24/1-28/337	30								

OTHER TESTS MERIDIAN - INTERNATIONAL
INSTITUTE FOR COTTON
JOINT PROJECT

COMMENTS

Row 1 Pc N°s 1-10. Sew in 1/2 metre of polyester to indicate start/fin

Row 2 Pc N°s 11-20.

SHADE: BLUE 1/3
 CUSTOMER/LOT NO: IIC K2 1074
 WEIGHT: 195 K. NO. OF PIECES: IIC TRIAL

DATE: 4 - 6 - 80
 THIS MACHINE CAPACITY NO. Rotosteam
 MACHINE CAPACITY: LIT 1500

1. SCOUR.
 K. LYOCL HEB
 K. SODA ASH
 K.
 START AT 50 °C. RAISE TO THE BOIL,
 BOIL FOR 30 MINS.
 WASH OFF WELL.

1/2 K. GONAVAN-HW. VISCARIN C
1/4 K. CAUSTIC LIQ.
1/3 K. HYDROGEN PEROXIDE.
 RAISE TO THE BOIL IN 30MINS,
 BOIL FOR 30MINS. SHOW.
 NEUTRALIZE WITH 1/4 K. ACERIC ACID.
20 MINS. AT 60°C. WASH OFF WELL.

3. DYE (METHOD) START AT 50°C WITH MATEXIL PAL. ADD DYE OVER 20'
 RUN FOR 20MINS RAISE TO 80°C TAKING 20MINS. RUN FOR 20MINS
 ADD 15K GLAUBERS OVER 20MINS RUN 20MINS ADD 15K
 GLAUBERS OVER 20MINS RUN 20MINS. ADD REMAINING 55K GLAUBERS
 OVER 20MINS. RUN FOR 30MINS. ADD 8K BICARBONATE OVER 10
 RUN FOR 15MINS ADD SODA ASH IN TWO PARTS OVER 20MINS RUN
 15 MINS. SHOW. PLEASE FOLLOW METHOD EXACTLY - SPECIAL TRIAL

CHEMICALS
3 K. RESIST SALT.
23 K. SALT
135 K. SODA ASH
3 K. GLAUBERS
3 K. ~~CAUSTIC LIQ.~~
BICARBONATE.

G/L	SHADE PASSED.

DYESTAUFF	ADDITIONS					TOTAL	TOTAL
	2	3	4	5	DYE	%	
3900 gms Procion Blue HEG.					1		

BACKSCOUR:
34 K. SCUREX R
 K.
 RAISE TO THE BOIL, BOIL FOR 40
20 MINS
 WASH OFF WELL.

5. SOFTEN
1/2 K. ALCAMINE 544
 K. BRADSYN PC12
 K. MYOTOLUBE-TX
 20 MINS. AT 20°C PH 5.5.

LOT N° K2 LOT4 (THIES ROTOSTREAM)

VARIANT	TARGET FINISHED WIDTH (ROUNDED)	AIRTEX			PEGG.		CALENDER	SAMPLING	
		FRAME WIDTH	COURSES / 3 CM.	FABRIC WIDTH	COURSES / 3 CM.	FABRIC WIDTH	FABRIC WIDTH	COURSES / 3 CM.	FABRIC WIDTH
28/1-36/259	74	77	57	72	56	73	74	54	73½
28/2-72/259	76	77	57	73	53	75	76	56	76
28/1-36/273	77	77	52	73½	49	76	77	51	77
24/1-28/291	77	77	51	75	52	76	77	51	77
28/2-72/273	79	77	53	74	50	78	79	50	78½
24/2-56/291	79	77	54	75	51	78	79	50½	79
28/1-36/287	80	82½	48	77	50	79	80	47	79½
24/1-28/306	81	82½	48	78½	46	80	81	46	80½
28/1-36/301	82	82½	45	80	48	81	82	43	82
24/2-56/306	82	82½	50	79	47	81	82	45½	82
28/2-72/287	83	85	49	80	51	82	83	47	83
24/1-28/321	83	85	43	81	43	82	83	44	82½
24/2-56/321	84	85	45	81	43	83	84	43	84
28/1-36/316	84	85	41	81	40	83	84	40	84
24/1-28/337	85	90½	43	84	41	84	85	41	85
24/1-28/354	87	90½	37	84½	38	86	87	37/38	87
24/2-56/337	88	90½	43	83	40	87	88	40	88
28/2-72/301	88	90½	45½	85	46	87	88	45/46	88
28/2-72/316	90	93	43	88	40	89	90	42/43	90
24/2-56/354	93	93	39	90	38	92	93	37	93

COMMENTS

Each piece in this dyelot had to be reduced in length from 75 metres to 60 metres to avoid tangling.

WINCH PROCESS COTTON

LOT No. K2. LOT 5.

DATE. 17th June 80

No. Pieces	<u>20</u>				FABRIC <u>SINGRE TRESSE</u>	SPEC No.
WIDTH	<u>various</u>	<u>(SEE OVER)</u>			TRIMS	SPEC No.
Weight	<u>255 kg</u>					
SHADE	<u>2% PROCIEN BLUE H-FG (NO ADDITIONS)</u>					

PREPARATION

WINCH FLEISSNER WINCH DYE

BLEACH SOFTEN

DYE PAD DYE AIRTEX N^o 2

SPECIAL INSTRUCTIONS

MERIDIAN INTERNATIONAL
INSTITUTE FOR COTTON
TRADING PROJECT

DRY ON

PEGG STRAIGHTEN SLIT

CUT OFF TUBETEX STENTER
@.....°C

FLEISSNER ROLL/EXAMINE

FINISH ON

TUBETEX CALLENDER FLAT FOLD

HUNT & MOSCROP ARBACH

Weight	Size	Pce	Weight	Size	QUALITY CHECKS					
11.8 kg	28/1-36/259	16	13.2	24/1-26/254	SHADE					
12.3	28/2-32/259	17	13.2	24/2-26/237	FASTNESS					
11.8	28/1-36/273	18	10.5	28/2-28/301	Piece	cpi	wpi	Width	Kn.m/c	Dia.
17.0	24/1-28/291	19	10.5	28/2-28/216						
12.7	28/2-28/273	20	13.6	24/2-26/254						
15.5	24/2-26/291	21								
10.9	28/1-36/287	22								
14.1	24/1-28/306	23								
10.2	28/1-36/301	24								
15.5	24/2-26/306	25								
11.6	28/2-28/287	26								
13.6	24/1-28/321	27								
13.6	24/2-26/321	28								
10.4	28/1-36/216	29								
13.4	24/1-28/337	30								

REMARKS IMPORTANT

PLEASE LOAD AND UNLOAD WINCH IN
PRECISE ORDER AS THE FABRICS ARE

WINCH

SHADE; BLUE IIC.

DATE: 18-6-80

CUSTOMER/LOT NO: K2 LOTS FABRIC: SJ.

M/C. NO: 3

WEIGHT: 255 KILOS.

NO. PIECES: IIC TRIAL

M/C. CAPACITY LITRES

4600

1. SCOUR:

- K. DYSOL
- K. SANDOPAN DTOL
- K. SOVATEX PN/O
- K. SODA ASH
- K. VISCAMINCA

RAISE TO THE BOIL, BOIL FOR MINS. WASH OFF WELL. NEUTRALIZE WITH ACETIC ACID.

2 1/2 K. CONTAVAN HW.
 8 K. CAUSTIC LIQ.
 10 1/2 K. HYDROGEN PEROXIDE.
 RAISE TO THE BOIL IN 30 MINS.
 BOIL FOR 30 MINS. SHOW.
 NEUTRALIZE WITH 4 K. ACETIC ACID.
 20 MINS. AT 60°C. WASH OFF WELL.

3. DYE (METHOD): START AT 50°C WITH MATEXIL PAL ADD DYE OVER 15 MINS
 RUN FOR 30 MINS. RAISE TO 80°C TAKING 20 MINS. RUN FOR 30 MINS
 ADD 100 K. SALT OVER 20 MINS. RUN FOR 30 MINS ADD 150 K SALT
 OVER. 20 MINS RUN FOR 30 MINS ADD REMAINING 16 K SALT OVER 20 MINS
 RUN FOR 40 MINS. ADD 23 K BICARBONATE DISSOLVED OVER 15 MINS
 RUN FOR 30 MINS. ADD SODA ASH, DISSOLVED IN TWO PARTS. OVER
 30 MINS. RUN FOR 60 MINS. SHOW.

* PLEASE FOLLOW METHOD EXACTLY - TRIAL *

CHEMICALS.

6
 4 1/2
 10
 23

- K. RESIST-SALT MATEXIL PAL
- K. SALT.
- K. SODA ASH.
- K. CAUSTIC. BICARBONATE
- K. GLAUBERS.
- K. SANDOPUR. DK.
- K. LYOGEN M3.
- K. SFA.

SHADE PASSED

NO ADDITIONS TO BE MADE

DYESTUFF.

5100 gms. Procion Blue HEG

1	2	3	4	5	TOTAL DYE	TOTAL %

4. BACKSCOUR.

- 2 1/2 K. SCOUERX.
- K. TRIAMINE PR.
- K.

RAISE TO THE BOIL, BOIL FOR MINS WASH OFF WELL.

5. SOFTEN.

- 5 1/2 K. ALCAMINE 544
- K. BRADSYN PC12
- K. MYSTOLUBE TX.

20 MINS. AT 20°C PH. 5.5

LOT N° K2. LOT 5 (WINCH)

VARIANT	TARGET FINISHED WIDTH (ROUNDED)	AIRTEX			PEGG.		CALENDER	SAMPUNG	
		FRAME WIDTH	COURSES / 3 CM.	FABRIC WIDTH	COURSES / 3 CM.	FABRIC WIDTH	FABRIC WIDTH	COURSES / 3 CM.	FABRIC WIDTH
28/1-36/259	74	77	57	69½	58	73	74	56	73½
28/2-72/259	76	77	57	69	58	75	76	57	76
28/1-36/273	77	77	51	73	51	76	77	51	77
24/1-28/291	77	77	49	72	51	76	77	50	77
28/2-72/273	79	81½	51½	75½	53	78	79	52	78½
24/2-56/291	79	81½	48½	76½	51	78	79	51	78
28/1-36/287	80	81½	50	78	48	79	80	48	80
24/1-28/306	81	81½	46	78	47½	80	81½	47/48	81¼
28/1-36/301	82	81½	42	78	45/46	81	82	44	81¼
24/2-56/306	82	81½	46½	77½	46	81	82	47	81
28/2-72/287	83	84	46	81	50	82	83	48	82
24/1-28/321	83	84	41	79	43	82	83	43	82
24/2-56/321	84	84	43½	80	43/44	83	84	43	83
28/1-36/316	84	84	37	76	40	83	84	40	83½
24/1-28/337	85	84	39	82	41	84	85	40/41	84
24/1-28/354	87	89	35½	82	37/38	86	87	37	86
24/2-56/337	88	89	40	83	40	87	88	40	87
28/2-72/301	88	89	43	81½	45/46	87	88	44/45	86½
28/2-72/316	90	92	42	87½	42	89	90½	41	88
24/2-56/354	93	92	35	87	38	92	93	37/38	92

COMMENTS A lot of wind rope weaves are present in this dye lot.

Fabric tends to creep in ϕ width following calendaring.