OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.

DISCLAIMER

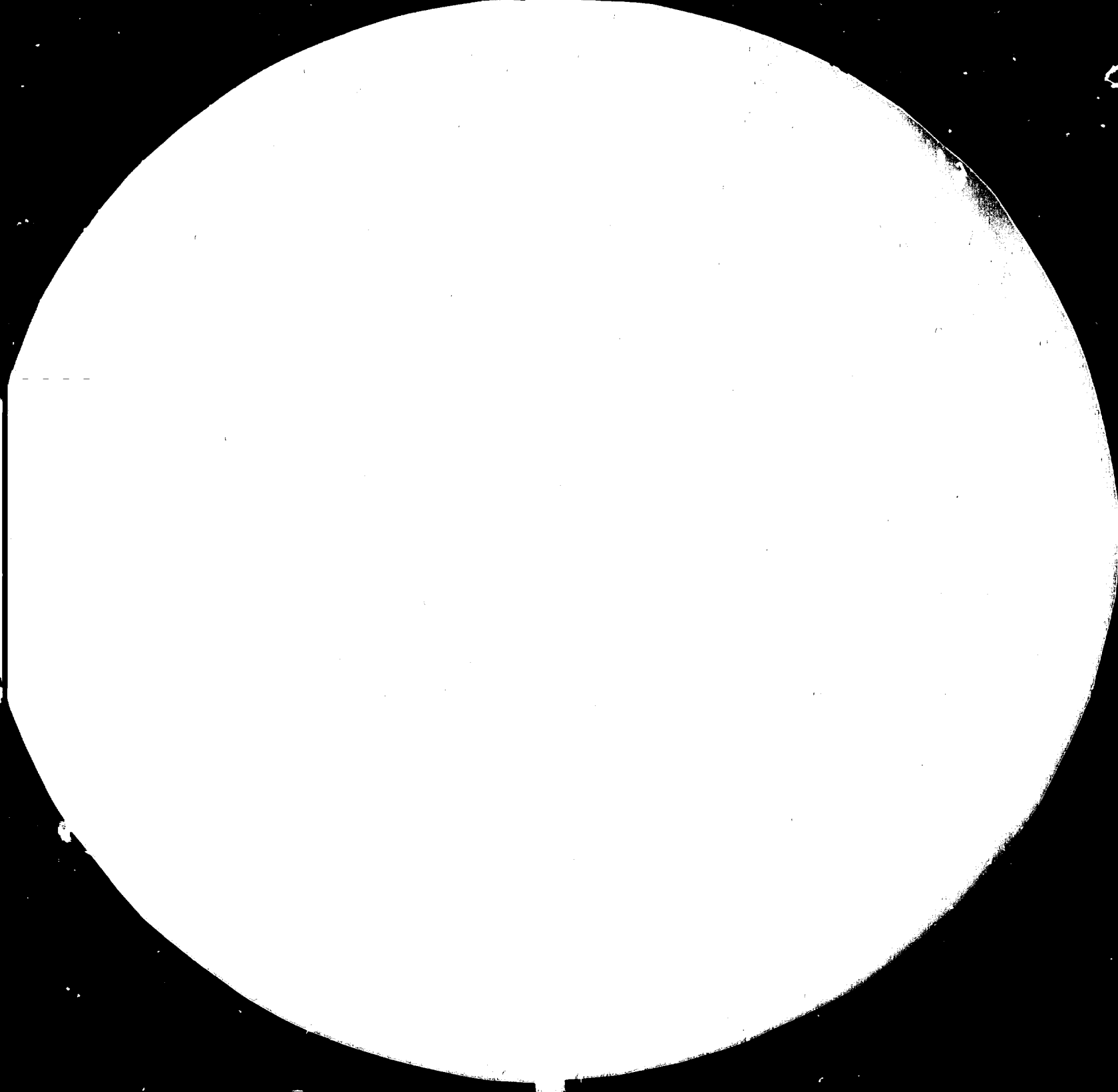
FAIR USE POLICY

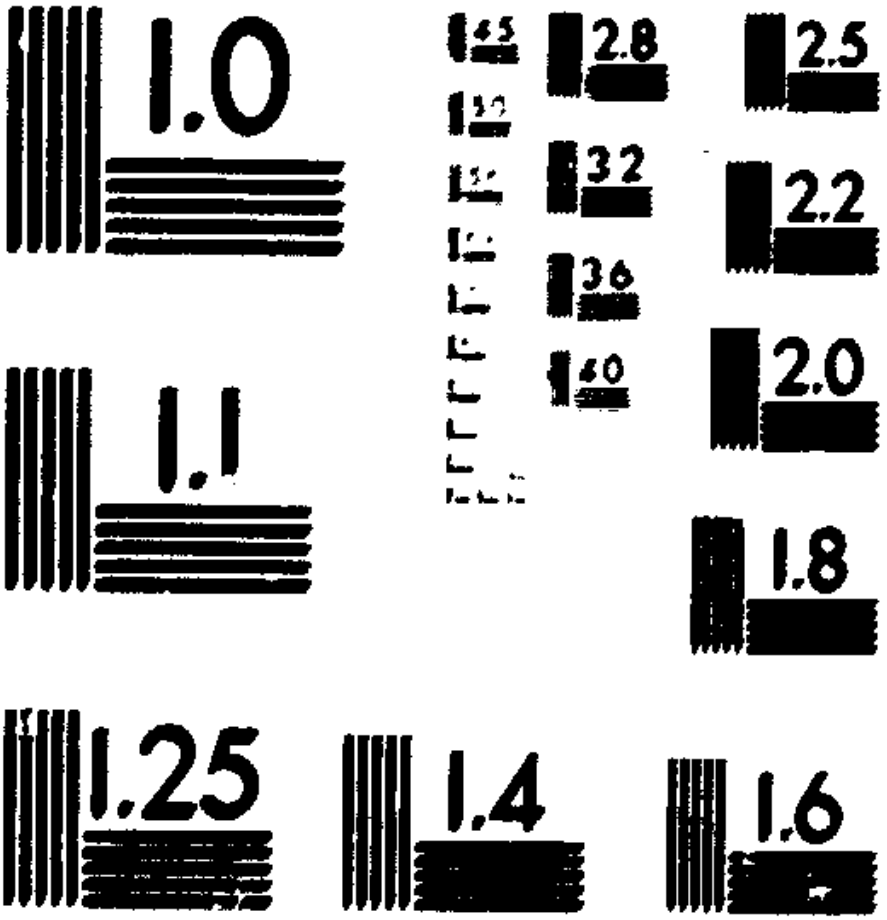
CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org





RESTRICTED

14629

DP/ID/SER.A/584
26 April 1985
ENGLISH

TEXTILE DEVELOPMENT CENTRE

DP/EGY/77/008

EGYPT

Technical report: Assistance to Cotton Knitwear Factories through the Textile Development Centre (TDC)* (1st mission)

Prepared for the Government of Egypt
by the United Nations Industrial Development Organization,
acting as executing agency for the United Nations Development Programme

Based on the work of J. Gordon,
Expert in the Stability of Knitted Cotton

United Nations Industrial Development Organization
Vienna

5

14506

* This document has been reproduced without formal editing.

V.85 25508

CONTENTS

INTRODUCTION

1.A. The Textile Development Centre

A Textile Development Centre has been set up over the past six years at the Textile Consolidation Fund in Alexandria where there already exists a Textile Testing and Quality Control Organisation, itself the result of an earlier UNDP programme.

The purpose of the Textile Development Centre is to provide assistance to the textile industry through applied research and development activities in all aspects of textile manufacture from fibres to finished garments.

The Centre when fully established will have the objectives of:-

(i) providing pilot plant and testing laboratories for work on industrial problems of immediate use to the textile industry

(ii) carrying out pilot plant studies of materials, particularly cotton and its blends, including fibres, dyes, finishes, machines and processes;

(iii) carrying out quantitative and operational studies on industrial processes in textile mills to increase productivity and efficiency;

(iv) providing technical consultancy in management and technological problems and extending modern testing techniques to industry;

(v) communicating to industry at all levels by organising seminars, conferences, symposia, group discussions and training courses;

(vi) disseminating technical information to industry; and

(vii) assisting the industry to set and maintain standards.

1.B. The Expert in the Dimensional Stability of Knitted Cotton Garments

According to Job Description DP/EGY/77/008/11-11/K/31.7.B, the expert was assigned to the Textile Development Centre but the vast majority of the work was undertaken in the three largest vertically integrated weft knitting, dyeing and finishing and garment making companies within the public sector of the Egyptian Textile Industry.

The main tasks of the expert was to:-

1. Study the current levels of dimensional stability achieved in the different companies and compare the results with customer demands and international standards.

2. Make critical surveys of the equipment, technique and procedures used in the companies.

3. Give practical advice on how the dimensional stability of the knitted fabrics can be improved and how these improvements can be ensued in the finished garment.

1.C. The Nature and Duration of the Assignment

The purpose of the assignment was to carry out the duties as specified in section 1.B. The total assignment was for a total of two months of which this report deals with the first period of one month which commenced in mid February 1985. It is proposed that the second period will commence during October 1985. Details of the work programme are given in Appendix 1 but can be broken down into three main areas.

A) Assessment of procedures and conducting trials in the three knitting companies comprised over 80% of the experts time when on station in Egypt.

B) Training at the T.D.C. and production staff by practical demonstration of a logical approach to problem solving.

C) Discussions with Production and T.D.C. staff on applied research and fabric development programmes.

2. ACTIVITIES

2.1 Direct Assistance Through Technical Consultancy

A study was made of the organisation and from patterns of fabric from the knitting mill through the dyeing and finishing and final making up departments of the three largest weft knitting companies in the public sector of the Egyptian Textile Industry.

The three companies involved were:

(a) El-Nasr Clothing and Textile Co. (KABO)

(b) Cairo Clothing and Hosiery Co. (TRICONA)

(c) El-Nasr Wool and Selected Textile Co. (STIA)

Critical assessments were made of the bleaching, dyeing and finishing machinery currently in use within the companies. Recommendations were made as to the areas which would benefit from mechanical improvements and further capital expenditure.

2.2 Works Processing Trials

The major part of the time on station was taken up with the organisation and implementation of practical trials within the three above named companies. These trials included the comparison of the alternative bleaching and finishing methods available in each of the companies on their major fabric qualities. An analysis was made of each step of the processing sequences and their effect on the stability and final performance of the completed garments was assessed.

2.3 Training of TDC Staff in Technical Quality Investigations

Scientific and technical staff members of the TDC were instructed in the planning and practical implementation of processing trials within production companies. These trials were conducted so that the current quality performance could be critically analysed and recommendation for improvements could be made, if applicable.

It is expected that the counterparts Chem. Abdel Hamid Khairallah and Eng. Soheir Seif El-Nasr will be able to give assistance to the public sector mills in the planning of suitable trials and quality control procedure.

3. RECOMMENDATIONS

3.1 Regarding The TDC

Discussions at the three knitting companies visited indicated areas where development work carried out at the TDC could facilitate considerable improvements in the performance of knitted garments. Examples are given below.

a) It was noticed that there was a difference in the degree of whiteness in fabrics from different companies, whilst one mill was using an Organo phosphate stabiliser, the other two are still using Sodium Silicate as a stabiliser in hydrogen peroxide bleaching. If silicate could be replaced by Organo phosphate stabilisers then the fabric would have a softer handle with a reduced risk of sewing damage at making up. Work should be initiated at the TDC comparing whiteness levels and assisting each mill to achieve maximum whiteness.

b) An automatic washing machine has recently been installed at TDC as part of the quality control procedure It is suggested that a tumble drier be purchased, this allows a faster assessment to be obtained and ensures full relaxation of washed samples to meet the internationally accepted testing standards.

c) There is a clear need for the TDC to advise and assist in the establishment of quality control procedures within the public sector knitting mills.

During our discussions with Tricona the Chairman requested that a member of the TDC staff should spend some time at the factory to assist in the setting up of quality control.

d) There is an obvious need for work to be undertaken to establish the optimum finished width of each knitted structure with regard to yarn count and stitch length.

3.2 Regarding the Operating Companies

Regarding the companies visited, recommendations were give in the technical reports submitted to each individual company. One important area is the need to implement the study of the relationship between the width of the relaxed bleached fabric and the finished width.

The time spent at each company was allocated in relation to the production volume. The Kabo company processes 22 tons of yarn per day whilst Tricona and Stia process 6 and 2.5 tons respectively. From an analysis of the results it appears that in my next visit to Egypt less time should be devoted to Kabo whose performance has shown marked improvement and more time should be spent at Tricona and Stia where improvements could be introduced.

There is a need to install quality control at both Stia and Tricona and the appointment of a suitably qualified person to lead the operation at Tricona is recommended.

In two of the three companies studied machine maintenance is an area which requires further improvement.

APPENDIX 1

WORK PROGRAMME

POST: 11-11/K/31.7.B. EXPERT IN THE DIMENSIONAL STABILITY OF COTTON KNITTED GARMENTS

NAME: JOHN GORDON

FEBRUARY 1985

14	Travel to VIENNA
15	UNIDO Briefing
16	Travel to Cairo
17	UNDP Cairo briefing/travel to Alexandria
18	Discussions with the staff of TDC
19	Initial Visit to EL-NASR WOOL and SELECTED TEXTILES "STIA" and to EL-NASR Clothing and Textile Co. "KABO"
20	TRIALS AT STIA
21	TRIALS AT STIA AND KABO
23	Initial Visit to CAIRO CLOTHING AND HOSIERY CO "TRICONA"
24-27	TRIALS AT KABO
28	Discussions on KABO Trials

MARCH 1985

2	Testing at the TDC
3-5	TRIALS AT TRICONA
6	Trials at KABO
7	Discussions at STIA on Recommendations
9	Discussion at the TDC
10	Discussion at KABO on Recommendations
11	Report Writing at TDC
12	Travel to Cairo, Discussion at Tricona, UNDP debriefing
13	Travel to ENGLAND

STIA

APPENDIX II

TABLES OF PRODUCTION TRIALS

PRODUCTION STEPS	20 GAUGE INTERLOCK PRODUCED FROM 1/30'scc CARDED YARN				14 GAUGE 2x2 RIBS (DERBY) PRODUCED FROM 1/30cc CARDED YARN.			
	CUMULATIVE % CHANGE		% CHANGE ON EACH STEP		CUMULATIVE % CHANGE		% CHANGE ON EACH STEP	
	LENGTH	WIDTH	LENGTH	WIDTH	LENGTH	WIDTH	LENGTH	WIDTH
GREIGE FABRIC	0	0			0	0		
WINCH BLEACHED	-9.2%	-1.9%	-9.2%	-1.9%	-6.3%	+10.1%	-6.3%	+10.1%
CENTRIFUGE + SCUTCHER (WITH STRETCHER)	-7.4%	+10.4%	+1.8%	+12.3%	-3.5%	+12.2%	+2.8%	+ 2.1%
TEXTIMA DRYER	-6.0%	-11.7%	+1.4%	-22.1%	-0.8%	-8.5%	+2.7%	-20.7%
WEISS CALLENDER (WITH STRETCHER)	-5.2%	+2.5%	+0.8%	+14.2%	+0.8%	+24.5%	+1.6%	+33.0%
after 24 hrs RELAXATION	-5.8%	-0.4%	-0.6%	-2.9%	-1.6%	+20.0%	-2.4%	- 4.5%
1 WASH CYCLE AT 60°C + FLAT DRY	-11.2%	-3.6%	-5.4%	-3.2%	-4.0%	+2.2%	-3.6%	-17.8%
5 WASH CYCLES AT 60°C + FLAT DRY	-16.2%	-4.0%	-5.0%	-0.4%	-8.2%	+6.6%	-4.2%	+4.4%

KABO

FINE RIB QUALITY 21814 PRODUCED FROM 1/33'cc COMBED YARN

PRODUCTION STEPS	17" DIAMETER				18" DIAMETER			
	CUMULATIVE % SHRINKAGE		CUMULATIVE % SHRINKAGE		CUMULATIVE % SHRINKAGE		CUMULATIVE % SHRINKAGE	
	LENGTH	WIDTH	LENGTH	WIDTH	LENGTH	WIDTH	LENGTH	WIDTH
JEMCO BLEACHED	+1.2%	-20.2%	-0.8%	-17.5%				
JEMCO BLEACHED + WINCH SOFTENED	-0.8%	-20.6%	-2.6%	-15.2%				
WINCH BLEACHED					-3.8%	-21.7%	-0.8%	-22.6%
TRI-PAD EXTRACTION (WITH STRETCHER)	-0.8%	-12.7%			+0.6%	-22.9%		
CENTRIFUGE AND SCUTCHER WITH STRETCHER			-2.8%	-17.3%			+0.2%	-23.8%
FLEISSNER DRY	-2.4%	-18.3%	-4.2%	-13.8%	-3.6%	-25.7%	-5.6%	-24.4%
PEGG WHITELY EXTRACTOR + DRYER								
HELIOT CALLENDER (WITH STRETCHER)	0	-9.9%	-0.8%	-7.2%	-0.4%	-12.7%	-0.2%	-11.6%
AFTER 48 hrs RELAXATION	-0.4%	-20.2%	-1.0%	-17.5%	-2.0%	-23.5%	-1.2%	-23.8%
1 WASH CYCLE AT 60°C + FLAT DRY	-5.8%	-19.6%	-5.6%	-17.3%	-6.4%	-22.5%	-6.2%	-21.6%
5 WASH CYCLES AT 60°C + FLAT DRY	-7.6%	-20.4%	-9.2%	-16.6	-6.6%	-23.0%	-9.4%	-20.8%

KABO

18 GAUGE SINGLE JERSY QUALITY No. 62413 PRODUCED FROM 2/60'cc COMBED AND SINGED YARN.

PRODUCTION STEPS	19" DIAMETER				20" DIAMETER			
	CUMULATIVE % SHRINKAGE		CUMULATIVE % SHRINKAGE		CUMULATIVE % SHRINKAGE		CUMULATIVE % SHRINKAGE	
	LENGTH	WIDTH	LENGTH	WIDTH	LENGTH	WIDTH	LENGTH	WIDTH
JEMCO BLEACHED	+11.2%	-27.3%	+13.8%	-28.7%				
JEMCO BLEACHED + WINCH SOFTENED	+8.2%	-25.0%	+12.2%	-27.4%				
WINCH BLEACHED					-1.0%	-24.0%	+0.2%	-24.9%
TRI-PAD EXTRACTION (WITH STRETCHER)								
CENTRIFUGE AND SCUTCHER WITH STRETCHER			+13.2%	-28.5%			+2.0%	-26.1%
FLEISSNER DRY			+10.2%	-28.9%			-0.2%	-27.4%
PEGG WHITELY EXTRACTOR + DRYER	+16.6%	-23.0%			+4.8%	-17.5%		
HELIOT CALLENDER (WITH STRETCHER)	+13.0%	-15.5%	+12.0%	-18.8%	+3.6%	-13.7%	+2.8%	-18.4%
AFTER 48 hrs RELAXATION	+11.0%	-24.8%	+11.0%	-24.7%	+3.0%	-22.3%	+2.4%	-26.9%
1 WASH CYCLE AT 60°C + FLAT DRY	+3.4%	-24.5%	+6.2%	-25.0%	+1.2%	-21.9%	+1.8%	-26.1%
5 WASH CYCLES AT 60°C + FLAT DRY	+3.8%	-24.7%	+7.2%	-27.2	-0.2%	-22.6%	+2.8%	-26.6%

KABO

20 GAUGE INTERLOCK PRODUCED FROM 1/30'cc CARDED YARN

PRODUCTION STEPS	21" DIAMETER CUMULATIVE % SHRINKAGE		19" DIAMETER CUMULATIVE % SHRINKAGE		17" DIAMETER CUMULATIVE % SHRINKAGE		20" DIAMETER CUMULATIVE % SHRINKAGE	
	LENGTH	WIDTH	LENGTH	WIDTH	LENGTH	WIDTH	LENGTH	WIDTH
JEMCO BLEACHED	+11.4%	-24.6%			+14.2%	-26.7%		
JEMCO BLEACHED + WINCH SOFTENED	+2.6%	-15.8%			+10.6%	-26.5%		
WINCH BLEACHED			+3.2%	-18.1%			-0.4%	-21.3%
TRI-PAD EXTRACTION (WITH STRETCHER)			+8.8%	-18.8%	+14.4%	-22.2%		
CENTRIFUGE AND SCUTCHER WITH STRETCHER	+9.0%	-23.8%						
FLEISSNER DRY	+3.4%	-25.7%	+2.4%	-20.7%	+7.6%	-26.1%		
PEGG WHITELY EXTRACTOR + DRYER							+10.8%	-19.8%
HELIOT CALLENDER (WITH STRETCHER)	-0.6%	-4.5%	-0.2%	-4.7%	+6.8%	-10.7%	+2.8%	-9.1%
AFTER 48 hrs RELAXATION	-1.2%	-18.0%	0	-13.6%	+6.4%	-21.2%	+1.4%	-18.5%
1 WASH CYCLE AT 60°C + FLAT DRY	-4.8%	-18.6%	-3.2%	-16.7%	+0.4%	-21.2%	-3.2%	-18.5%
5 WASH CYCLES AT 60°C + FLAT DRY	-6.0%	-17.2%	-2.0%	-16.4%	-0.8%	-22.0%	-6.2%	-17.0

DIMENSIONAL CHANGES ON WASHING

	20 gauge Interlock				18 gauge Single Jersey				Fine Rib			
	17" diameter Jemco Bleached		19" diameter Winch Bleached		19" diameter Jemco Bleached		20" diameter Winch Bleached		17" diameter Jemco Bleached		18" diameter Winch Bleached	
	Length	Width	Length	Width	Length	Width	Length	Width	Length	Width	Length	Width
From calender dimensions to after 5 wash cycles	-7.6%	-11.3%	-1.8%	-11.7%	-4.8%	-8.4%	0.0%	-8.2%	-7.6%	-10.5%	-6.2%	-10.3%
After 48 hrs relaxation to after 5 wash cycles	-7.2%	-0.8%	-2.0%	-2.8%	-3.8%	-2.5%	-0.4%	+0.3%	-7.2%	-0.2%	-4.6%	+0.5%

TRICONA

PRODUCTION STEPS	14 GAUGE 2x2 RIB (DERBY) PRODUCED FROM 1/30'cc CARDED YARN.				28 GAUGE SINGLE JERSEY PRODUCED FROM 1/60'cc COMBED YARN.			
	16" DIAMETER SOGAT MILL CUMULATIVE % SHRINKAGE		20" DIAMETER WADI ELNILE MILL CUMULATIVE % SHRINKAGE		15" DIAMETER SOGAT MILL CUMULATIVE % SHRINKAGE		13" DIAMETER WADI ELNILE MILL CUMULATIVE % SHRINKAGE	
	LENGTH	WIDTH	LENGTH	WIDTH	LENGTH	WIDTH	LENGTH	WIDTH
JEMCO BLEACHED	+7.6%	-6.0%			+37.4%	-30.5%		
WINCH BLEACHED			-7.8%	-11.9%			+24.8%	-29.6%
TRI-PAD EXTRACTION (WITH STRETCHER)	+16.4%	+0.4%			+43.0%	-31.9%		
CENTRIFUGE AND SCUTCHER WITH STRETCHER			-6.2%	-10.8%			+22.3%	-31.3%
FLEISSNER DRY			+1.8%	-16.6%			+35.6%	-35.2%
TUBE-TEX DRYER	+16.6%	-6.0%			+43.8%	-34.2%		
HELIOT CALLENDER (WITH STRETCHER)	+12.4%	+24.5%	+0.9%	+9.1%	+36.2%	-20.9%	+26.8%	-19.7%
AFTER 48 hrs RELAXATION	+14.2%	+12.4%	+0.7%	+7.1%	+36.4%	-21.5%	+26.2%	-21.9%
1 WASH CYCLE AT 60°C + FLAT DRY	-2.4%	+1.6%	-11.8%	-8.1%	+13.6%	-28.0%	+11.4%	-31.5%
5 WASH CYCLES AT 60°C + FLAT DRY	-4.6%	+2.4%	-11.8%	-6.2%	+13.4%	-25.9%	+16.2%	-31.0%

TRICONA

PRODUCTION STEPS	20 GAUGE INTERLOCK PRODUCED FROM 1/30'cc CARDED YARN				28 GAUGE INTERLOCK PRODUCED FROM 1/60'cc COMBED YARN			
	15" DIAMETER SOGAT MILL CUMULATIVE % SHRINKAGE		19" DIAMETER WADI ELNILE MILL CUMULATIVE % SHRINKAGE		30" DIAMETER SOGAT MILL CUMULATIVE % SHRINKAGE		30" DIAMETER WADI ELNILE MILL CUMULATIVE % SHRINKAGE	
	LENGTH	WIDTH	LENGTH	WIDTH	LENGTH	WIDTH	LENGTH	WIDTH
JEMCO BLEACHED	+9.6%	-16.1%			+19.0%	-15.7%		
WINCH BLEACHED			-4.4%	+0.4%			-4.6%	-5.6%
TRI-PAD EXTRACTION (WITH STRETCHER)	+12.2%	-13.7%			+20.2%	-11.1%		
CENTRIFUGE AND SCUTCHER WITH STRETCHER			-2.9%	-7.2%			-4.4%	-9.2%
FLEISSNER DRY			+6.3%	-17.0%			+2.9%	-16.2%
TUBE-TEX DRYER	+13.8%	-20.1%			+23.2%	-15.9%		
HELIOT CALLENDER (WITH STRETCHER)	+7.0%	+4.0%	+2.8%	+0.3%	+18.4%	+1.6%	+3.5%	-8.5%
AFTER 48 hrs RELAXATION	+6.4%	-0.5%	+1.3%	-0.4%	+18.7%	-0.9%	+1.8%	-9.1%
1 WASH CYCLE AT 60°C + FLAT DRY	-5.2%	-9.9%	-11.0%	-4.2%	+4.6%	-12.6%	-13.2%	-8.9%
5 WASH CYCLES AT 60°C + FLAT DRY	-5.0%	-9.7%	-10.6%	-2.3%	+4.6%	-11.3%	-12.8%	-5.8%

DIMENSIONAL CHANGES ON WASHING

	14 Gauge 2 x 2 Rib (Derby)				28 Gauge Single Jersey			
	16" diameter Sogat Mill		20" diameter Wadi Elnile Mill		15" diameter Sogat Mill		13" diameter Wadi Elnile Mill	
	Length	Width	Length	Width	Length	Width	Length	Width
From calender dimensions to after 5 wash cycles	-17.0%	-22.1%	-12.7%	-15.3%	-20.8%	-5.0%	-10.6%	-11.3%
After 48 hrs relaxation to after 5 wash cycles	-18.8%	-10.0%	-12.5%	-13.3%	-23.0%	-4 4%	-10.0%	-9.1%

	20 Gauge Interlock				28 Gauge Interlock			
	15" diameter Sogat Mill		19" diameter Wadi Elnile Mill		30" diameter Sogat Mill		30" diameter Wadi Elnile Mil	
	Length	Width	Length	Width	Length	Width	Length	Width
From calender dimensions to after 5 wash cycles	-12.0%	-13.7%	-13.4%	-2.6%	-13.8%	-12.9%	-16.3%	-2.8%
After 48 hrs relaxation to after 5 wash cycles	-11.4%	-9.3%	-11.9%	-1.9%	-14.1%	-10.4%	-14.6%	-3.3%

TRICONA

DESCRIPTION	GREIGE					FINISHED					
	Wt m^{-2} gm	Width cm	Width After Washing * cm	% Width Shrinkage	% Length Shrinkage	Wt of M gm	Width cm	Width After Washing * cm	% Width Shrinkage	% Length Shrinkage	Finisher Width as % of Gre Width
17" Diameter 20 Gauge Interlock	203.5	42.6	45.5	+6.8%	-23.4%	175.5	41.7	38.7	-7.2%	-11.6%	-2.3%
18" Diameter 20 Gauge Interlock	193.5	43.8	45.6	+4.1%	-21.8%	159.5	46.9	40.9	-12.8%	-10.8%	+7.1%
19" Diameter 20 Gauge Interlock	203.0	47.8	49.6	+3.8%	-23.6%	171.0	46.2	45.3	-1.9%	-14.2%	-3.3%
20" Diameter 20 Gauge Interlock	197.0	50.7	50.3	-0.6%	-20.0%	167.5	48.5	46.3	-4.5%	-17.2%	-4.3%
16" Diameter 14 Gauge 2x2 Rib	308.0	24.4	23.8	-2.5%	-16.4%	225.0	31.5	26.4	-16.2%	-16.6%	+29.1%
17" Diameter 14 Gauge 2x2 Rib	343.0	27.9	30.1	+7.9%	-21.6%	230.0	34.1	28.8	-15.5%	-14.6%	+22.2%

* WASHING 5 CYCLES AT 60°C + FLAT DRYING