
MAURITIUS RESEARCH COUNCIL

INNOVATION FOR TECHNOLOGY

# FABRIC WASTE RECYCLING

## Final Report

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# REPORT ON A PRELIMINARY INVESTIGATION INTO THE FEASIBILITY OF RECYCLING TEXTILE WASTE IN MAURITIUS

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# 1. INTRODUCTION

The CSIR was commissioned by the EPZDA to undertake a preliminary investigation into the feasibility of recycling textile waste in Mauritius. The main objective of the study was to provide sufficient information to support a decision on whether to proceed with a detailed feasibility study or not. This phased approach was agreed upon to reduce the risk of incurring unnecessary expenditure.

The study comprised three parts :

1) A survey of the well established South African textile waste market to capture lessons and to provide benchmarks.

2) A high level scan of the technologies typically employed in the recycling of textile waste.

3) A survey, conducted with the assistance of the University of Mauritius, of the quantity and types of textile waste generated in Mauritius.

This report commences with a brief overview of the sources and end uses of textile waste before describing the findings of each of the above surveys. The report concludes with recommendations on how to proceed further.

## 2. TEXTILE WASTE OVERVIEW

Considerable quantities of waste are generated during textile processing along the entire pipeline from fibre production through to clothing manufacture. Textile waste is also generated by the retail trade in the form of rejects and second hand garments.

### 2. 1 Soft waste

Waste generated during early processing (fibre preparation / blowroom to sliver) is in the form of fibre or "soft" waste. Wool and acrylic soft waste is utilised mainly by the woollen spinning industry, while most cotton soft waste is re-used by the mills or is utilised in cotton wool production.

### 2.2 Hard waste

Yarn and fabric waste is referred to as hard waste. Typical end uses of waste yarn are as follows :

* production of low quality fabric such as mutton cloth
* rewinding and re-use
* rag tearing to recover fibre, referred to as flock fibre

Waste thread is usually of poor quality and the bulk ends up in the rag tearing trade. Waste fabric from weaving, knitting and clothing production is utilised in two main ways:

* cutting up into industrial cleaning rags/wipes
* rag tearing to generate flock fibre

### 2.3 Flock fibre

The bulk of textile waste is converted through rag tearing into flock fibre which can be further processed in a number of ways. The most common of these are the following:

* carding to produce wadding for use as filling material in, for example, furniture manufacture
* in the manufacture of nonwoven materials for applications such as automotive insulating material, underfelt, mattress pads and dog blankets
* spinning into carpet yarns and woolen spun blanket yarns (wool and acrylic flock fibre)
* pillow and duvet fillings

Depending on the end use and targeted quality level, it is sometimes necessary to blend in virgin fibre with the flock fibre.

## 3. THE SOUTH AFRICAN SITUATION

Recycling is a significant component of the South African textile industry and offers useful comparisons and lessons for Mauritius.

### 3.1 Soft waste

Approximately 10 000 tons of soft waste (blow room to rovings) was generated by the S.A. industry in 1995, consisting mainly of cotton. It is estimated that only 15 - 20 % of this waste is available for resale, since a large number of mills have introduced

technologies capable of recycling soft waste ( open end, Dreff and rotor spinning) over the last decade.

The quantity of soft waste that is recycled in spinning mills is influenced greatly by the price of virgin fibre. For example, the cotton price increased by 36 % in South Africa in 1989 resulted in an influx of recycling equipment in that year. A similar situation started to develop in 1994.

Of the cotton soft waste that is sold to third parties, the bulk is used in the manufacture of cotton wool (e.g. John Grant). Most of the acrylic soft waste is sold to woollen spinning mills for conversion into blankets and apparel (e.g. Waverley, Aranda, Mediterranean Woollen Mills). The waste fibre requirements of such mills cannot be satisfied internally, requiring the importation of about 8000 tons per annum.

## 3.2 Yarn waste

The quantities of yarn waste generated at various stages of the textile S.A. pipeline during 1995 are shown in the following table.

| Source | Yarn waste, tons |
|---|---|
| Spinning | 4000 |
| Weaving | 2200 |
| Knitting | 2500 |
| **TOTAL** | **8700** |

Cotton and polycotton make up about 75 % of this waste, with wool contributing less than 5 %.

About a third of the spinning waste is utilised within the Frame group in recycling and nonwoven operations. Most of the remainder is bought by waste merchants such as Bowling Mills / Connacher and ends up in the rag tearing and nonwoven industry (e.g. Beier Carpets and Felts, PSI, Altex).

Some of the yarn waste from weaving operations is sold to jobbers for rewinding, although the bulk is sold to waste merchants and is processed via rag tearing. The knitting industry recycles most of its yarn waste through, for example, the production of mutton cloth.

### 3.3 Fabric Waste

The various sources and quantities of fabric waste generated in the South African textile and clothing industry in 1995 are shown below.

| Source | Fabric waste, tons |
|---|---|
| Weaving | 1800 |
| Weft/circular knitting | 1200 |
| Clothing manufacture | 2500 |
| Knitwear/hosiery knitting | 600 |
| **TOTAL** | **6100** |

The breakdown by fibre composition is similar to that for yarn waste.

Fabric waste is generally competed for by waste merchants (for resale or sorting and cutting into industrial cleaning rags and wipes) and the rag tearing / nonwoven industry.

An important benchmark for Mauritius is the fact that fabric waste in the South African clothing and knitwear industry (formal) has been reduced from an average level of about 10 % a decade ago to the current level of 4 - 5 %. The waste levels in the informal sector are, however, still high.

## 4. THE MAURITIAN SITUATION

In April 1996 the University of Mauritius surveyed a sample of textile and clothing companies, and also calculated the overall waste generated during garment manufacture based on fabric consumption and efficiency levels. The findings are documented in a report titled "A survey of the textile / garment industry to assess volume and type of textile waste".

The main findings of the report are described and interpreted here, and form the basis of the recommendations made later. The reader is referred to the University report for detailed company level data.

### 4.1 Waste levels and composition

From the above mentioned report and information gathered during an earlier visit by CSIR personnel, it is estimated that 3500 - 4000 tons of textile waste is currently

generated in Mauritius per year. This consists predominantly of waste fabric in the form of cutting room clippings, with reject pieces, selvedge waste and yarn waste contributing to a smaller extent.

Fabric waste is more or less equally divided between wovens and knits. Yarn waste contributes less than 10 % of the total waste.

The breakdown of waste by fibre composition is estimated as follows :

| | | |
|---|---|---|
| Wool and wool blends | : | 10 - 20 % ( 300 - 600 tons) |
| 100 % cotton | : | 60 - 70 % ( 2200 - 2500 tons) |
| Polycotton and other | : | 20 - 30 % ( 600 - 900 tons) |

It should be noted that these are very rough estimates only, based on a relatively small sample of companies. Furthermore, it is not completely clear how much waste is generated by Floreal, which contributes a major portion of the wool containing waste.

The actual breakdown of waste by fibre composition may therefore differ slightly from the above, but this should not influence the recommendations made in this report.

It is also unfortunate that a separate value for the volume of acrylic waste was not established in view of the additional reprocessing options this may provide, such as blanket manufacture. However, the survey findings suggest that acrylic waste constitutes a relatively small proportion (less than 15 %) of the total waste and is therefore not investigated in detail in this report.

## 4.2 End uses

Cotton and synthetic waste is disposed of in a number of ways in Mauritius. Most is sold to waste merchants such as Lagtex for export, although a significant amount of clippings (estimated at 500 - 800 tons) is thrown away or burnt. Smaller amounts are given away or used in-house as carrying bags and machine covers.

Most of the wool waste (yarn and fabric) appears to be exported for reprocessing although, similar to the acrylic situation, details are lacking at this stage.

## 4.3 Forecast

In order to assess the feasibility of introducing recycling technologies to Mauritius, it is important to try to predict the future supply of textile waste. This supply will be determined by two main factors, production waste levels and industry growth rate.

### *a) Production waste levels*

As mentioned earlier, the average fabric waste level in the formal South African clothing industry is about 4 - 5 %. World Class companies perform considerably better. The University survey suggests that fabric waste levels in excess of 10 % are common amongst Mauritian manufacturers, which can be ascribed mainly to the manual nature of design and cutting operations as well as quality control deficiencies.

The pressures to remain globally competitive will undoubtedly force the Mauritian textile and garment industry to reduce its waste levels through, for example, the greater use of technology such as computer aided design and cutting.

If the output of the industry remains at its present level, it is therefore likely that the availability of textile waste for recycling will slowly diminish. From the South African experience, it will take 6-8 years to reduce production waste to more competitive levels, although this could be shortened through aggressive technology diffusion policies.

*b) Industry outlook*

After a period of strong growth in the 1980s and early 1990s, the export focused Mauritian textile and garment industry is now growing at more modest levels, as reported in a recent EPZDA annual report.

It is well known that the industry faces a major threat from more efficient lower cost producers, particularly in the Far East. Improvements in areas such as product design and development, quality, productivity and investment in new technology are consequently needed to remain globally competitive.

*c) Waste scenarios*

Four scenarios for future trends in overall textile waste levels in Mauritius are offered in the following matrix, based on various assumptions of company level waste management and rate of industry growth.

The first scenario is one of a bleak future which will not materialise if current initiatives aimed at improving competitiveness (such as those of the EPZDA) are sucessful. Scenario 3 is even more unlikely in view of the contradictory nature of the assumptions made (high company waste and high industry growth) but is included for the sake of completion.

| Company waste levels | Low | High |
|---|---|---|
| High | **Scenario 1**<br>Industry shrinks as companies respond poorly to global challenges, including the need to minimise waste.<br>Total waste generated remains high initially but decreases in the longer term. | **Scenario 3**<br>This scenario is contradictory (high growth coupled with poor efficiencies) and not sustainable in the long term.<br>Total waste generated would increase but only in the short term. |
| Low | **Scenario 2**<br>Industry remains at current size or shrinks slightly. Companies that survive become more efficient and produce less waste.<br>Total waste generated gradually decreases to about half current levels. | **Scenario 4**<br>Industry growth is maintained and even accelerates, fuelled by rapid adoption of WCM concepts.<br>Total waste generated remains more or less at current levels, with growth in textile production offset by higher efficiencies. |

**Industry Growth Rate**

The total amount of textile waste generated annually by the textile and garment industry is therefore likely to remain at current levels (scenario 4) or to slowly decrease in the longer term (scenario 2).

The composition of the waste is unlikely to change significantly, although the proportion of fibres with greater value-added potential (e.g. wool and polyviscose) may increase if the current efforts to promote fashion design are successful.

Any strategy to implement textile waste recycling in Mauritius should ideally be robust enough to accommodate the realisation of any of the scenarios described here, and any new ones that may develop.

## 5. WASTE PROCESSING TECHNOLOGIES

An overview of the technologies involved in converting textile waste through ragtearing into nonwoven material is given in this section, since this processing route is the most commonly employed for the types of waste that make up the bulk of the textile waste in Mauritius. It also provides some flexibility in terms of end product.

### 5.1 The Conversion Process

*a) Sorting*

The textile waste firsts needs to be sorted, which is essentially a manual process. This can be done on site where the waste is generated and/or at the textile waste processing plant. Textile waste can be sorted in a number of ways, such as by colour, hard vs. soft waste or fibre composition, depending on the end use.

*b) Pre-cutting*

Fabric and garment waste needs to be cut into small pieces that can be managed by the rag tearing equipment. The amount of pre-cutting, together with the nature of the waste, will determine the rag-tearing equipment specifications in terms of the number and size of cylinders as well as the electric motor requirements.

*c) Rag tearing*

This operation tears and separates the textile waste into usable fibre for further processing. Three to four cylinder machines are the norm, although some waste (e.g. denim fabric) requires passing through 6 or more cylinders to achieve complete separation.

Ragtorn fibre can be stored in bins or storage rooms, or it can be baled. In the latter case additional equipment is required which may include automatic bale opening and feeding.

*d) Blending*

Depending on the end use, the regenerated fibre sometimes needs to be properly blended in, for example, automatic blending boxes. It is also usually necessary to blend in a small percentage (say 10 - 15 %) of carrier fibre such as low quality cotton to provide sufficient long fibre for the subsequent needling and handling operations.

*e) Carding and Cross-lapping*

Carding essentially disentangles the ragtorn fibre and forms it into an even web which is then fed onto cross-lapping equipment to produce a piled (multilayer) web.

Carding / cross-lapping equipment is available in various widths (2,0 to 3,5m) depending on end-use requirements. Mattress padding, for example, requires 2m width while carpet underfelt requires up to 3,5m.

This part of the overall process is critical, especially if the end use requires a high degree of uniformity with respect to thickness or density.

It should be noted that Airlay web forming equipment is a modern alternative to traditional carding and cross-lapping.

*f) Needling*

The needling process entangles the fibre web through the rapid insertion of barbed needles mounted in a needleloom which reciprocates vertically at rates of up to 2000 cycles per minute.

The transfer of the web from the cross-lapper to the first row of needles is a critical step to ensure the thickness and integrity of the web is maintained.

Pre-needlelooms are sometimes installed, particularly for wide widths ( >2,5m). Pre-needlelooms are available in a variety of designs, equipped with anything from 2 000 - 6 000 needles per linear metre.

Actual needlelooms typically have 5 000 - 6 000 needles per linear metre for end products such as carpet underfelt, soundproofing and filtration pads. More sophisticated end products require up to 12 000 needles per linear metre.

## 5.2 Equipment Considerations

There are a number of equipment suppliers to choose from, most of which are Italian or German. Some of these companies and the equipment they provide are summarised

dollars. The higher price would be all inclusive of shipping, commissioning and initial plant management and training.

## 6. CONCLUSIONS AND RECOMMENDATIONS

This preliminary investigation has shown that the relatively large amount of textile waste generated in Mauritius represents a source of untapped potential which could become the basis of a successful industry.

In section 4.1, it was estimated that about 3500 - 4000 tons of textile waste is currently produced in Mauritius. Not all of this waste can be considered as available for recycling, since some of it is already put to good use in-house or sold/given away for low quality apparel manufacture. Furthermore, there is some uncertainty regarding the wool and acrylic waste levels and destinations. Considering the above, it is likely that about 2500 - 3000 tons of waste is theoretically available for reprocessing per year at the moment.

The nature and composition of the waste (the bulk being hard waste composed of cotton or cotton blends) limits the reprocessing options which, together with the need to add as much value as possible, favours full conversion to nonwovens through ragtearing. The forecast for future waste levels (section 4.3), coupled with the reality that some of the available waste will find other outlets, suggests that a plant capable of processing about 150 tons per month would suffice.

The technology risk associated with such a project is relatively low since the processing technologies are mature and the expertise required can be learnt quite easily. The commercial risk can also be substantially reduced by investing in refurbished plant, at least initially.

The biggest challenge would be a marketing one, since the success of such a project will depend heavily on the ability to identify suitable end products to make and a market segment to target.

It is therefore recommended that a more detailed study be conducted to assess the feasibility of implementing a rag tearing / nonwoven plant in Mauritius with particular emphasis on identifying suitable products and markets. Developing a financial model to help support investment decision making should form part of this study.

An additional (as opposed to an alternative) option concerns the recycling of wool and acrylic fibre into end products such as blankets. However, as mentioned earlier, there is insufficient information curently available to properly assess the feasibility of this option. The detailed study referred to above could include sourcing this information and assessing this option.

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in the following table, but this does not imply that they are favoured or recommended by the CSIR above any other suppliers.

| Company | Country | Equipment |
|---|---|---|
| Dell 'Orco & Villani | Italy | rag tearing, blending, nonwoven manufacture |
| Bettarini e Serafini | Italy | carding machines for wadding and felts, nonwoven manufacture |
| Automatex | Italy | cross lapping machines for needlepunch / nonwoven lines |
| Schirp | Germany | rotary cutting / ragtearing, airlay blending |
| Dilo | Germany | needlepunching in 2 to 4 metre widths |
| La Roche | France | specialists in rag tearing lines |
| Rolando | France | specialists in rag tearing lines |

Most of these companies offer a variety of equipment configurations depending on need. Various combinations of the above are also possible to provide a complete processing line.

The cost of new equipment from the different suppliers varies greatly with the Italian equipment generally the least expensive. As a rough estimate, a plant capable of converting 150 tons of waste per month into nonwoven form would cost from 1,0 to 1,6 million US dollars.

Fully reconditioned second-hand equipment can usually be sourced at a large discount to the new prices. The CSIR, for example, is aware of a fully equipped plant in South Africa (cutting, rag tearing, carding, cross-lapping and needling) that is capable of processing 150 tons per month and which is available at a price of 400 - 450 000 US

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# A SURVEY OF THE TEXTILE / GARMENT INDUSTRY TO ASSESS VOLUME AND TYPE OF WASTE PRODUCTION

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# TOTAL WASTE OF FABRICS IN THE MANUFACTURE OF GARMENTS

# A SURVEY OF THE TEXTILE / GARMENT INDUSTRY TO ASSESS VOLUME AND TYPE OF WASTE PRODUCTION


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## TOTAL WASTE OF FABRICS IN THE MANUFACTURE OF GARMENTS

| | ITEMS | WASTE IN TONS | | TOTAL |
|---|---|---|---|---|
| | | Year 1993 | Year 1994 | |
| 1. | Men's Jacket | 6 | 14 | 20 |
| 2. | Woven Trousers / Shorts | 889 | 610 | 1499 |
| 3. | Knitted Trousers / Shorts | 150 | 225 | 375 |
| 4. | Woven Shirt | 935 | 872 | 1807 |
| 5. | Knitted Polo Shirt | 61 | 124 | 185 |
| 6. | Brassiere | 23 | - | 23 |
| 7. | Briefs / Panties | 180 | 184 | 364 |
| 8. | T-Shirts | 944 | 946 | 1890 |
| 9. | Ladies Dress / Blouse / Skirt / Shorts | 81 | 270 | 351 |
| 10. | Pullovers / Cardigans | 119 | 113 | 232 |
| 11. | Knitted Jackets / Sweatshirts | 76 | 84 | 160 |
| | **TOTAL** | **3464** | **3442** | **6906** |

***Note : The survey has been conducted among 22 enterprises.***

***The extrapolation for calculation only was done on statistical figures collected in 1993 and 1994.***

*Prepared by B. Venkatasamy*
*20 June 1996*

# Table 5.1:

## EXPORTS OF GARMENTS BY SITC CODE IN VOLUME AND VALUE

| | | | 1992 | | | 1993 | | |
|---|---|---|---|---|---|---|---|---|
| ITEM | FABRIC | SITC CODE | QTY '000 UNITS | VALUE (Rs) | AVERAGE PRICE | QTY '000 UNITS | VALUE (Rs) '000 | AVERAGE PRICE |
| JACKETS | WOVEN | 8413010 | 49 | 41,947 | 856 | 118 | 97,150 | 823.31 |
| TROUSERS/SHORTS | WOVEN | 8414020 | 9,919 | 994,747 | 100 | 10,549 | 1,245,153 | 118.04 |
| TROUSERS/SHORTS | WOVEN | 8414090 | 885 | 85,266 | 96 | 896 | 96,584 | 107.79 |
| SHIRTS | WOVEN | 8413100 | 8,998 | 1,279,709 | 142 | 13,164 | 2,216,346 | 168.3 |
| SHIRTS | WOVEN | 8413990 | 3,456 | 347,317 | 100 | 2,657 | 279,617 | 105.2 |
| TROUSERS/SHORTS | WOVEN | 8426020 | 3,678 | 332,850 | 90 | 4,179 | 404,250 | 96.7 |
| TROUSERS/SHORTS | WOVEN | 8426090 | 560 | 59,473 | 106 | 885 | 76,526 | 86.4 |
| BLOUSES | WOVEN | 8430 | 1,332 | 140,472 | 105 | 2,156 | 218,450 | 101.3 |
| TROUSERS/SHORTS | KNITTED | 8432430 | 731 | 54,673 | 75 | 1,185 | 87,309 | 73.6 |
| SHIRTS | KNITTED | 843 100 | 1,399 | 82,234 | 59 | 2,399 | 168,125 | 70.0 |
| JACKETS | KNITTED | 8442390 | 480 | 50,685 | 106 | 831 | 134,687 | 162.0 |
| TROUSERS/SHORTS | KNITTED | 8442690 | 2,024 | 93,090 | 46 | 1,791 | 92,801 | 51.8 |
| BLOUSES | KNITTED | 8447010 | 1,540 | 81,185 | 53 | 1,225 | 69,628 | 56.8 |
| BRIEFS/PANTIES | KNITTED | 8448210 | 11,978 | 106,976 | 8.93 | 15,330 | 154,033 | 10.0 |
| PULLOVERS | KNITTED | 8453010 | 9,149 | 1,646,278 | 180 | 9,471 | 1,858,917 | 196.2 |
| PULLOVERS | KNITTED | 8453020 | 4,700 | 720,308 | 153 | 3,849 | 580,554 | 150.8 |
| PULLOVERS | KNITTED | 8453090 | 2,457 | 398,775 | 162 | 2,397 | 479,708 | 200.1 |
| T-SHIRTS | KNITTED | 8454010 | 42,019 | 2,314,542 | 55 | 44,483 | 2,607,820 | 58.6 |
| T-SHIRTS | KNITTED | 8454090 | 4,046 | 153,819 | 38 | 5,685 | 253,120 | 44.5 |
| BRASSIERES | KNITTED | 8455100 | 3,050 | 83,644 | 27 | 3,127 | 89,854 | 28.7 |
| | | | 112,450 | 9,067,990 | 80.6 | 126,377 | 11,210,632 | 88.7 |

Table 23 (cont'd) - Main EPZ exports by main countries of destination, quantity and value, 1994[1]

Value (f.o.b) : Thousand Rupees

| S.I.T.C. (Rev. 3) Item | Country of destination | Unit | Quantity | Value |
|---|---|---|---|---|
| **655.12.10** | | | | |
| Pile fabrics, including "long pile" fabrics, and terry fabrics knitted or crocheted of cotton | Germany | -.- | -.- | 26,722 |
| | Malagassy, Rep of | " | " | 34,599 |
| | Other | " | " | 47 |
| | | | | **61,368** |
| **658.42.10** | | | | |
| Other bed linen, printed, of cotton | Reunion | -.- | -.- | 2,093 |
| | Hong Kong | " | " | 42,243 |
| | | " | " | 2,662 |
| | | | | **46,998** |
| **658.47.10** | | | | |
| Toilet & kitchen of linen, of cotton | Germany | -.- | -.- | 63,121 |
| | Other | " | - | 184 |
| | | | | **63,305** |
| **664.94.90** | | | | |
| Clock and watch glasses and similar glasses, glasses for non-corrective spectacles, etc. | Switzerland | tonne | 3 | 56,227 |
| | " | | -.- | 456 |
| | | | 3 | **56,683** |
| **667.29.00** | | | | |
| Non-industrial diamonds, otherwise worked but not mounted or set | Belgium | -.- | -.- | 317,234 |
| | United Kingdom | -.- | -.- | 29,656 |
| | U.S.A. | -.- | -.- | 65,193 |
| | Other | -.- | -.- | 16,032 |
| | | | | **428,115** |
| **841.21.00** | | | | |
| Curtains & interior blinds or bed valances of cotton, knitted or crocheted | Germany | Thousand | 78 | 103,508 |
| | | | **78** | **103,508** |
| **841.30.10** | | | | |
| Men's or boy's jac... & blazers of wool or fine animal hair not knitted/crocheted | Germany | Thousand | 62 | 55,795 |
| | Other | " | 8 | 5,927 |
| | | | **70** | **61,722** |
| **841.30.20** | | | | |
| Men's or boy's jacket & blazers of cotton, not knitted/crocheted | France | Thousand | 125 | 28,214 |
| | Netherlands | " | 14 | 4,757 |
| | United Kingdom | " | 14 | 4,015 |
| | U. S. A. | " | 29 | 7,066 |
| | Other | " | 13 | 3,450 |
| | | | 195 | **47,502** |

1. Provisional

Table 23 (cont'd) - Main EPZ exports by main countries of destination, quantity and value, 1994[1]

Value (f.o.b) : Thousand Rupees

| S.I.T.C. (Rev. 3) Item | Country of destination | Unit | Quantity | Value |
|---|---|---|---|---|
| 841.40.10 | | | | |
| Men's or boy's trousers, bib & brace overalls, breeches& shorts of wool or fine animal hair | France | Thousand | 6 | 2,000 |
| | Germany | " | 83 | 37,528 |
| | Other | " | 5 | 716 |
| | | | 94 | 40,244 |
| 841.40.20 | | | | |
| Men's or boy's trousers, bib & brace overalls, breeches& shorts of cotton, not knitted or crocheted | France | Thousand | 1,216 | 145,350 |
| | Netherlands | " | 221 | 34,333 |
| | Reunion | " | 176 | 17,085 |
| | United Kingdom | " | 1,838 | 228,218 |
| | Canada | " | 135 | 16,534 |
| | U.S.A. | " | 5,955 | 787,297 |
| | Other | " | 202 | 29,736 |
| | | | 9,743 | 1,218,553 |
| 841.40.30 | | | | |
| Men's or boy's trousers, bib & brace overalls, breeches& shorts of synthetic fibres, not knitted or crocheted | France | Thousand | 81 | 16,188 |
| | Italy | " | 58 | 4,726 |
| | Canada | " | 61 | 9,908 |
| | U. S. A. | " | 138 | 10,190 |
| | Other | " | 46 | 5,133 |
| | | | 384 | 46,145 |
| 841.40.90 | | | | |
| Trousers, bib & brace overalls, breeches & shorts of other textile materials | France | Thousand | 177 | 38,704 |
| | Germany | " | 68 | 12,716 |
| | United Kingdom | " | 131 | 17,904 |
| | Austria | " | 668 | 30,407 |
| | Other | " | 58 | 9,322 |
| | | | 1,102 | 109,053 |
| 841.51.00 | | | | |
| Men's or boy's shirts of cotton not knitted or crocheted | France | Thousand | 1,757 | 308,600 |
| | Germany | " | 126 | 18,714 |
| | Italy | " | 256 | 45,392 |
| | Netherlands | " | 318 | 68,686 |
| | Reunion | " | 150 | 15,054 |
| | Spain | " | 563 | 88,024 |
| | United Kingdom | " | 1,197 | 238,039 |
| | Canada | " | 117 | 23,078 |
| | U.S.A. | " | 8,205 | 1,558,727 |
| | Other | " | 90 | 18,230 |
| | | | 12,779 | 2,382,544 |

[1] Provisional

Table 23 (cont'd) - Main EPZ exports by main countries of destination, quantity and value, 1994[1]

Value (f.o.b) : Thousand Rupe

| S.I.T.C. (Rev. 3) Item | Country of destination | Unit | Quantity | Valu |
|---|---|---|---|---|
| **843.24.20** | | | | |
| Men's & boys' trousers, bib & brace overalls breeches & shorts of cotton , knitted or crocheted | France | Thousand | 147 | 13,3 |
| | Italy | " | 161 | 16,6 |
| | Reunion | " | 76 | 5,4 |
| | United Kingdom | " | 206 | 11,4 |
| | U.S.A. | " | 672 | 65,7 |
| | Other | " | 39 | 3,5 |
| | | | **1,301** | **116,20** |
| **843.71.00** | | | | |
| Men's or boys' shirts knitted or crocheted of cotton | France | Thousand | **428** | 55,57 |
| | Germany | " | 118 | 10,65 |
| | United Kingdom | " | 223 | 16,93 |
| | U.S.A | " | **2,643** | **162,41** |
| | Other | " | 127 | 12,93 |
| | | | **3,539** | **258,51** |
| **843.81.10** | | | | |
| Men's or boys' underpants and briefs, knitted or crocheted, of cotton | France | Thousand | **203** | 3,29 |
| | Italy | " | **153** | 2,76 |
| | Reunion | " | **278** | 3,16 |
| | United Kingdom | " | **1,164** | 16,90 |
| | Canada | " | 290 | 1,82 |
| | U.S.A. | " | **1,859** | **22,78** |
| | Other | " | 83 | 1,34 |
| | | | **4,030** | **52,071** |
| **843.82.10** | | | | |
| Men's or boys' nightshirts and pyjamas, knitted or crocheted, of cotton | France | Thousand | 206 | 29,676 |
| | Germany | " | 137 | 8,507 |
| | Other | " | 34 | 2,890 |
| | | | **377** | **41,073** |
| **844.23.90** | | | | |
| Women's or girls' jackets knitted or crocheted of other textile materials | U.S.A. | Thousand | 879 | 126,591 |
| | Other | " | **43** | 3,761 |
| | | | **922** | **130,352** |
| **844.26.20** | | | | |
| Trousers, bib & brace overalls breeches & shorts, knitted or crochetted, of cotton | France | Thousand | 311 | 27,191 |
| | Germany | " | 63 | 3,882 |
| | Italy | " | 120 | 10,525 |
| | Reunion | " | 40 | 2,715 |
| | Spain | " | 50 | 4,346 |
| | United Kingdom | " | 43 | 3,291 |
| | U.S.A | " | 149 | 14,636 |
| | Other | " | 22 | 1,281 |
| | | | **798** | **67,867** |

[1] Provisional

Table 23 (cont'd) - Main EPZ exports by main countries of destination, quantity and value, 1994[1]

Value (f.o.b) : Thousand Rupees

| S.I.T.C. (Rev. 3 ) Item | Country of destination | Unit | Quantity | Value |
|---|---|---|---|---|
| **841.59.90** | | | | |
| Men's or boys' shirts of other textile materials, not knitted or crocheted | France | Thousand | 535 | 82,484 |
| | United Kingdom | " | 1,108 | 134,944 |
| | Other | " | 342 | 55,004 |
| | | | **1,985** | **272,432** |
| **842.40.20** | | | | |
| Dresses of cotton, not knitted or crochetted | France | Thousand | 138 | 10,177 |
| | United Kingdom | " | 146 | 22,457 |
| | Other | " | 63 | 7,903 |
| | | | **347** | **40,537** |
| **842.60.20** | | | | |
| Women's or girls' trousers, bib & brace overalls , breeches & shorts of cotton not knitted or crocheted | France | Thousand | 223 | 29,331 |
| | Netherlands | " | 166 | 24,982 |
| | United Kingdom | " | 196 | 24,998 |
| | Canada | " | 74 | 8,719 |
| | U.S.A | " | 3,591 | 357,007 |
| | Other | " | 130 | 13,549 |
| | | | **4,380** | **458,586** |
| **842.60.90** | | | | |
| Women's or girls' trousers, bib & brace overalls, breeches& shorts of other textile materials | France | Thousand | 88 | 22,675 |
| | Germany | " | 170 | 12,064 |
| | Italy | " | 23 | 6,525 |
| | U.S.A | " | 175 | 13,432 |
| | Other | " | 49 | 5,903 |
| | | | **505** | **60,599** |
| **842.70.30** | | | | |
| Women's or girls' blouses, shirts & short - blouses of cotton, not knitted or crocheted | France | Thousand | 297 | 39,214 |
| | Italy | " | 153 | 32,233 |
| | U.S.A. | " | 621 | 40,771 |
| | Other | " | 196 | 29,887 |
| | | | **1,267** | **142,105** |
| **842.70.90** | | | | |
| Women's or girls blouses, etc of other textile materials | France | Thousand | 54 | 7,908 |
| | Germany | " | 33 | 4,939 |
| | Italy | " | 30 | 9,537 |
| | Reunion | " | 23 | 1,426 |
| | United Kingdom | " | 62 | 5,388 |
| | U.S.A. | " | 432 | 26,063 |
| | Other | " | 1 | 30 |
| | | | **635** | **55,291** |

" Provisional

# Table 23 (cont'd) - Main EPZ exports by main countries of destination, quantity and value, 1994[1]

Value (f.o.b) : Thousand Rupees

| S.I.T.C. (Rev. 3 ) Item | Country of destination | Unit | Quantity | Value |
|---|---|---|---|---|
| **845.51.00** | | | | |
| Brassieres | France | -.- | -.- | 34,623 |
| | Germany | -.- | -.- | 23,543 |
| | Netherlands | -.- | -.- | 39,668 |
| | Other | -.- | -.- | 5,874 |
| | | | | **103,708** |
| **845.91.90** | | | | |
| Track suits of other textile materials | France | Thousand | 237 | 76,736 |
| | Other | " | 34 | 8,594 |
| | | | **271** | **85,330** |
| **846.12.19** | | | | |
| Other shawls , scarves , mufflers etc | France | Thousand | 363 | 37,203 |
| of silk or silk waste | Other | " | 21 | 612 |
| | | | **384** | **37,815** |
| **874.46.00** | | | | |
| Other instruments & apparatus for | Netherlands | Thousand | 476 | 76,996 |
| physical or chemical analysis | Other | " | 13 | 2,310 |
| | | | **489** | **79,306** |
| **884.15.00** | | | | |
| Spectacle lenses of glass | France | -.- | -.- | 9,521 |
| | Italy | -.- | -.- | 6,959 |
| | United Kingdom | -.- | -.- | 6,746 |
| | Hong Kong | -.- | -.- | 3,048 |
| | Other | -.- | -.- | 2,102 |
| | | | | **28,376** |
| **884.23.10** | | | | |
| Sunglasses | France | -.- | -.- | 18,300 |
| | U.S.A | " | -.- | 42,133 |
| | Other | " | -.- | 20,598 |
| | | | | **81,031** |
| **884.23.95** | | | | |
| Spectacles,goggles,corr./protective gears | U.S.A | -.- | -.- | 43,215 |
| | Other | -.- | -.- | 2,854 |
| | | | | **46,069** |
| **885.51.20** | | | | |
| Watch movements, battery or accumulator | France | Thousand | 1,442 | 88,576 |
| powered with opto electronic display only | Hong kong | " | 1,144 | 84,040 |
| | Switzerland | " | 571 | 12,922 |
| | | | **3,157** | **185,538** |
| **885.93.92** | | | | |
| Watch straps, watch bands & watch | France | -.- | -.- | 60,169 |
| bracelets & part thereof of leather | Switzerland | " | -.- | 22,159 |
| | Other | " | -.- | 1,095 |
| | | | | **83,423** |

[1] Provisional

## Table 23 (cont'd) - Main EPZ exports by main countries of destination, quantity and value, 1994[1]

Value (f.o.b) : Thousand Rupees

| S.I.T.C. (Rev. 3 ) Item | Country of destination | Unit | Quantity | Value |
|---|---|---|---|---|
| **845.30.20** | | | | |
| Jerseys, pullovers, cardigans, waistcoats & similar articles, knitted or crocheted of cotton | France | Thousand | 972 | 176,265 |
| | Germany | " | 1,078 | 132,861 |
| | Italy | " | 496 | 80,086 |
| | Netherlands | " | 102 | 16,157 |
| | Spain | " | 117 | 15,683 |
| | United Kingdom | " | 1,270 | 167,137 |
| | U.S.A | " | 111 | 15,761 |
| | Other | " | 318 | 47,974 |
| | | | **4,353** | **636,163** |
| **845.30.90** | | | | |
| Jerseys, pullovers, cardigans, waistcoats & similar articles, knitted or crocheted of other textile materials | France | Thousand | 1,245 | 273,756 |
| | Germany | " | 332 | 76,809 |
| | Spain | " | 182 | 75,543 |
| | United Kingdom | " | 565 | 78,834 |
| | Other | " | 298 | 61,507 |
| | | | **2,622** | **566,449** |
| **845.40.10** | | | | |
| T.Shirts ,singlets & other vests knitted or crocheted of cotton | Belgium | Thousand | 260 | 20,108 |
| | France | " | 18,581 | 1,248,854 |
| | Denmark | " | 170 | 10,207 |
| | Germany | " | 5,470 | 318,173 |
| | Italy | " | 5,477 | 396,176 |
| | Netherlands | " | 552 | 45,669 |
| | Reunion | " | 1,590 | 71,017 |
| | Spain | " | 568 | 44,246 |
| | United Kingdom | " | 8,604 | 458,953 |
| | U.S.A. | " | 1,481 | 83,341 |
| | Sweden | " | 225 | 11,673 |
| | Switzerland | " | 245 | 16,294 |
| | Other | " | 707 | 30,589 |
| | | | **43,930** | **2,755,300** |
| **845.40.90** | | | | |
| T.Shirts ,singlets & other vests knitted or crocheted of other textile materials | France | Thousand | 628 | 47,862 |
| | Germany | " | 213 | 13,972 |
| | United Kingdom. | " | 710 | 32,526 |
| | Canada | " | 988 | 41,745 |
| | U.S.A. | " | 3,999 | 184,584 |
| | Other | " | 96 | 6,852 |
| | | | **6,634** | **327,541** |

[1] Provisional

Table 23 (cont'd) - Main EPZ exports by main countries of destination, quantity and value, 1994[1]

Value (f.o.b) : Thousand Rupees

| S.I.T.C. (Rev. 3 ) Item | Country of destination | Unit | Quantity | Value |
|---|---|---|---|---|
| **844.26.90** | | | | |
| Trousers, bib & brace overalls, breeches & shorts of other textile materials | France | Thousand | 248 | 23,241 |
| | Canada | | 281 | 16,232 |
| | U.S.A. | " | 1,681 | 70,205 |
| | Other | " | 159 | 10,526 |
| | | | **2,369** | **120,204** |
| **844.70.10** | | | | |
| Women's or girls' blouses, shirts, etc., of cotton, knitted or crocheted | U.S.A | Thousand | 855 | 56,476 |
| | Other | " | 144 | 12,093 |
| | | | **999** | **68,569** |
| **844.70.90** | | | | |
| Women's or girls' blouses, shirts, etc., of other textile materials, knitted or crocheted | Germany | Thousand | 266 | 37,184 |
| | U.S.A | " | 95 | 5,900 |
| | Other | " | 15 | 2,027 |
| | | | **376** | **45,111** |
| **844.82.10** | | | | |
| Women's or girls' briefs & panties of cotton knitted or crocheted | France | Thousand | 2,021 | 33,514 |
| | United Kingdom | " | 3,831 | 44,221 |
| | Canada | " | 1,040 | 6,900 |
| | U.S.A. | " | 4,272 | 32,622 |
| | Other | " | 455 | 6,134 |
| | | | **11,619** | **123,391** |
| **845.12.20** | | | | |
| Babies' garments and clothing accessories, knitted or crocheted of cotton | Germany | -.- | -.- | 8,193 |
| | U.S.A. | " | " | 14,874 |
| | Other | " | " | 7,996 |
| | | | | **31,063** |
| **845.30.10** | | | | |
| Jerseys, pullovers, cardigans, waistcoats & similar articles, knitted or crocheted of wool or fine animal hair | Belgium | Thousand | 153 | 31,568 |
| | France | " | 2,864 | 665,699 |
| | Germany | " | 862 | 157,174 |
| | Italy | " | 887 | 148,116 |
| | Netherlands | " | 328 | 66,053 |
| | Spain | " | 600 | 93,183 |
| | United Kingdom | " | 1,715 | 265,493 |
| | U.S.A | " | 278 | 48,950 |
| | Other | " | 181 | 36,454 |
| | | | 7,868 | 1,512,690 |

[1] Provisional

# TEXTILE

# WASTE

# CHECKLIST

# UNIVERSITY OF MAURITIUS
# FACULTY OF ENGINEERING

## TEXTILE WASTE CHECKLIST

| | Garment | Yarn | Clippings | Fabric Panels | Cotton Waste | Wool Waste | Blends | Recycled / Yarn | Stored | Sold | Burnt | Dumped | Recycled Blanket/Vinyl | Total Waste Tons/year |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Floreal Knitwear | Pullovers | ✓ | | | ✓ | ✓ | ✓ | ✓ | | ✓ | | | ✓ | 1680 |
| George Mahadeo Industry | Trousers | | ✓ | ✓ | ✓ | | | | | ✓ | | ✓ | | 10 |
| Southern Textiles | Pullovers | ✓ | | ✓ | ✓ | ✓ | ✓ | | | ✓ | | ✓ | | 28 |
| Essar | Woven Fabrics | ✓ | | ✓ | ✓ | | ✓ | | | ✓ | | | | 24 |
| J O B Textiles | Shirt | | ✓ | ✓ | ✓ | | | | | | ✓ | | | 18 |
| Bonair | Knitwear | | ✓ | ✓ | ✓ | | | | ✓ | ✓ | | | | 660 |
| Ferney Spinning | Yarn | ✓ | | | ✓ | ✓ | ✓ | ✓ | | ✓ | | | ✓ | 192 |
| Fusion | Knitwear | | ✓ | | ✓ | | | | | | ✓ | | | 14 |
| Tee-Sun Ltd | T-Shirts | | ✓ | ✓ | ✓ | | | | | ✓ | | | ✓ | 167 |
| Olympic Knitting | T-Shirts/Polo | | ✓ | ✓ | ✓ | | | | | ✓ | ✓ | | | 25 |
| Cosmos Knit | Underwears | | ✓ | | ✓ | | ✓ | | | ✓ | | ✓ | | 22 |
| Noblesse Ltd | Shirts | | ✓ | ✓ | ✓ | | | | | ✓ | | | | 259 |
| World Knits | T-Shirts/Polo | | ✓ | ✓ | ✓ | | | | | ✓ | | | | 126 |
| C M T | T-Shirts/Polo | | ✓ | ✓ | ✓ | | | | ✓ | ✓ | | ✓ | | 4200 |
| N I C | Shirts | | ✓ | ✓ | ✓ | | | | | | ✓ | ✓ | | 550 |
| Contessa Fashion | Shirts | | ✓ | ✓ | ✓ | | | | | | | ✓ | | 2 |
| **TOTAL** | | | | | | | | | | | | | | 7977 |

NOTE :

**According to the data obtained from sixteen enterprises the bulk of the waste comprises of cotton and is sold to both local and external recycling industries.**

**The rest is either stored, destroyed by burning or thrown away as garbage in dumping sites.**

*Prepared by B. Venkatasamy*
*3rd June 1996*

# FABRIC WASTED

# IN THE

# MANUFACTURE

# OF GARMENTS

# POLO SHIRT

# (KNITTED)

UNIVERSITY OF MAURITIUS
FACULTY OF ENGINEERING

# FABRIC WASTED IN THE MANUFACTURE OF GARMENTS

**Item : Polo Shirt (Knitted)**

**Fabric : 100% Cotton Piqué**

| Polo Shirts | Quantity Units x 1000 | Length/Garment m | Total Length x 1000 | Fabric Efficiency % | Fabric Waste % | Fabric Waste m | Fabric Width m | Total area wasted m^2 | Mass kg/m^2 | Waste Produced Tons |
|---|---|---|---|---|---|---|---|---|---|---|
| Year 1993 | 2,399 | 0.70 | 1,692 | 83 | 17 | 288 | 1.18 | 340 | 0.18 | 61 |
| Year 1994 | 4,914 | 0.70 | 3,440 | 83 | 17 | 585 | 1.18 | 690 | 0.18 | 124 |
| TOTAL | | | | | | | | | | 185 |

Note : An average of parameters has been worked out based on data obtained from six different enterprises as per attached sheet.

Prepared by Ms. B. Venkatasamy

3rd June 1996

UNIVERSITY OF MAURITIUS
FACULTY OF ENGINEERING

# MAIN EPZ EXPORTS

**Item** : **Polo Shirt**

**Fabric Type** : **Knitted Cotton Piqué**

| SITC CODE* | YEAR | QUANTITY x 1000 | TOTAL x 1000 |
|---|---|---|---|
| 843.71.00 | 1993 | 2,399 | 2,399 |
| 843.81.10<br>844.70.10<br>844.70.90 | 1994<br>1994<br>1994 | 3,539<br>999<br>376 | 4,914 |

* Figures obtained from Table 5.1/1993 and Table 23/1994 SITC CODE

Prepared by Ms. B. Venkatasamy

3rd June 1996

**UNIVERSITY OF MAURITIUS**
**FACULTY OF ENGINEERING**

## COMPARATIVE EFFICIENCY CHART WITH RESPECT TO FABRIC UTILIZATION

**GARMENT : POLO SHIRT**
**FABRIC : PIQUE S/Y**

| ENTERPRISE | TEE SUN LTD | OLYMPIC | WORLD KNITS | BONAIR | TARA KNITWEAR | CMT |
|---|---|---|---|---|---|---|
| No of Employees * | 850 | 350 | 500 | 4,000 | 400 | 1500 |
| Daily Production in Units * | 4,000 | 8,000 | 14,000 | 6,000 | 3,000 | 20,000 |
| Client | JCB | ALDERS | GDP | EUROPE | TALO | EUROPE |
| Order (Cut pieces) | 1140 | 3,000 | 1750 | 1,200 | 11,900 | 900 |
| Computer / Manual | MANUAL | MANUAL | MANUAL | COMPUTER | MANUAL | COMPUTER |
| Length/Garment (m) | 0.75 | 0.73 | 0.63 | 0.70 | 0.72 | 0.70 |
| Fabric Width Mt | 1.14 | 1.85 | 1.25 | 0.94 | 0.93 | 0.97 |
| Mass / $Gm^2$ | 190 | 212.5 | 145 | 190 | 160 | 160 |
| Efficiency | 79.5 | 84.9 | 90 | 85.7 | 72.5 | 85.14 |
| Total weight of fabric (kg) | 317 | 945 | 525 | 350 | 2625.9 | 185 |
| Mass in kg per garment | 0.278 | 0.267 | 0.27 | 0.25 | 0.16 | 0.175 |
| Total mass of cut pieces (kg) | 251.9 | 802 | 472.5 | 300 | 1904 | 157.5 |
| Waste (%) | 20.5 | 15.1 | 10 | 14.3 | 27.5 | 14.86 |

** Figures are given as an indi. ation only of the size of the company*

UNIVERSITY OF MAURITIUS
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# FABRIC WASTED IN THE MANUFACTURE OF GARMENTS

**Item** : **T- Shirt**

**Fabric** : **100% Cotton Jersey Single Yarn**

| Garment T-Shirt | Quantity Units x 1000 | Length/Garment m | Total Length x 1000 | Fabric Efficiency % | Fabric Waste % | Fabric Waste m | Fabric Width m | Total area wasted m^2 | Mass kg/m^2 | Waste Produced Tons |
|---|---|---|---|---|---|---|---|---|---|---|
| Year 1993 | 50,168 | 0.73 | 36,838 | 84 | 16 | 5,894 | 1.04 | 6,129 | 154 | 944 |
| Year 1994 | 50,564 | 0.73 | 36,912 | 84 | 16 | 5,906 | 1.04 | 6,142 | 154 | 946 |
| TOTAL | | | | | | | | | | 1890 |

Note : An average of parameters has been worked out based on data obtained from seven different enterprises as per attached sheet.

Prepared by Ms. B. Venkatasamy

3rd June 1996

UNIVERSITY OF MAURITIUS
FACULTY OF ENGINEERING

MAIN EPZ EXPORTS

Item : T-Shirt

Fabric Type : 100% Cotton Jersey Single Yarn

| SITC CODE* | YEAR | QUANTITY x 1000 | TOTAL x 1000 |
|---|---|---|---|
| 843.40.10 | 1993 | 44,483 | 50,168 |
| 845.40.90 | 1993 | 5,685 | |
| 845.40.10 | 1994 | 43,930 | 50,564 |
| 845.40.90 | 1994 | 6,634 | |

* Figures obtained from Table 5.1/1993 and Table 23/1994 SITC CODE

Prepared by Ms. B. Venkatasamy

3rd June 1996

**UNIVERSITY OF MAURITIUS**
**FACULTY OF ENGINEERING**

## COMPARATIVE EFFICIENCY CHART WITH RESPECT TO FABRIC UTILIZATION

**GARMENT TYPE : BASIC T-SHIRT** **FABRIC : JERSEY SINGLE YARN**

| ENTERPRISE | OLYMPIC KNITTING | WORLD KNITS | BONAIR | TARA KNITWEAR | TEE SUN LTD | ST MALO LTD | CMT |
|---|---|---|---|---|---|---|---|
| No of Employees * | 350 | 500 | 4,000 | 400 | 850 | 700 | 1,500 |
| Daily Production in Units * | 8,000 | 14,000 | 6,000 | 3,000 | 15,000 | 15,000 | 20,000 |
| Client | GO-SPORT | LA REDOUTE | EUROPE | CACHAREL | GAP | KARSDATT | UK |
| Computer or Manual System | MANUAL | MANUAL | COMPUTER | MANUAL | MANUAL | MANUAL | COMPUTER |
| Order | 4,000 | 1,600 | 1,200 | 2,142 | 912 | 10,000 | 540 |
| Length / Garment (m) | 0.74 | 0.68 | 0.79 | 0.69 | 0.83 | 0.70 | 0.71 |
| Fabric Width Mt | 1.84 | 0.96 | 0.73 | 1.05 | .80 | 0.98 | 0.95 |
| Mass G/m² | 167 | .56 | 140 | 155 | 180 | 140 | 140 |
| Total weight of fabric (kg) | 1000 | 352 | 310 | 540.4 | 305.7 | 1390 | 104 |
| Mass in kg/garment | 0.216 | 0.187 | 0.220 | 0.195 | 0.335 | 0.124 | 0.168 |
| Total mass of cut pieces | 867.7 | 299.2 | 264 | 416.8 | 229.7 | 1240 | 90.72 |
| Efficiency (%) | 86.77 | 85 | 87.2 | 77.13 | 75.1 | 89 | 87.2 |
| Waste % | 13.23 | 15 | 12.84 | 22.87 | 24.9 | 11 | 12.8 |

* ***Figures are given as an indication only of the size of the company***

# KNITTED

# TROUSERS / SHORTS

**UNIVERSITY OF MAURITIUS**
**FACULTY OF ENGINEERING**

## FABRIC WASTED IN THE MANUFACTURE OF GARMENTS

**ITEM :** **KNITTED TROUSERS / SHORTS**

**FABRIC :** **KNITTED COTTON & OTHER TEXTILE MATERIALS**

| KNITTED GARMENTS | Quantity Units x 1000 | Length/Garment m | Total Length x 1000 | Fabric Efficiency % | Fabric Waste % | Fabric Waste m | Fabric Width m | Total Area Wasted m^2 | Mass kg/m^2 | Waste Produced Tons |
|---|---|---|---|---|---|---|---|---|---|---|
| Year 1993 Trousers/Shorts | 2976 | 1.1 | 3274 | 81 | 19 | 622 | 0.73 | 454 | 0.33 | 150 |
| Year 1994 Trousers/Shorts | 4468 | 1.1 | 4915 | 81 | 19 | 934 | 0.73 | 682 | 0.33 | 225 |
| **TOTAL** | | | | | | | | | | 375 |

*Note : The lengths for trousers and shorts have been averaged to a more realistic figure for more accurate calculation. The data given for trouser & short have been combined.*

*Prepared by Ms. B. Venkatasamy*
*3rd June 1996*

**UNIVERSITY OF MAURITIUS**
**FACULTY OF ENGINEERING**

# MAIN EPZ EXPORTS

**ITEM :** KNITTED TROUSERS / SHORTS

**FABRIC TYPE :** KNITTED COTTON & OTHER TEXTILE MATERIALS

| SITC CODE * | YEAR | QUANTITY X 1000 | TOTAL |
|---|---|---|---|
| 833.24.20 | 1993 | 1185 | 2976 |
| 844.26.90 | 1993 | 1791 | |
| 843.24.20 | 1994 | 1301 | 4468 |
| 844.26.20 | 1994 | 798 | |
| 844.26.90 | 1994 | 2369 | |

*Figures obtained from Table 5.1/1993 and Table 23/1994 SITC CODE*

*Prepared by Ms. B . Venkatasamy*
*3rd June 1996*

# UNIVERSITY OF MAURITIUS
# FACULTY OF ENGINEERING

## COMPARATIVE EFFICIENCY CHART WITH RESPECT TO FABRIC UTILIZATION

| GARMENT | SHORTS IN SINGLE JERSEY | LADIES VEST IN 1 x 1 RIB | SWEATSHIRT IN FLEECE | JOG PANTS IN FLEECE | SHORTS PLAIN INTERLOCK | FANCY TSHIRT FINE RIB | SWEATSHIRT | SLEEVELESS CARD |
|---|---|---|---|---|---|---|---|---|
| ENTERPRISE | ST MALO | ST MALO | TEE SUN LTD | TEE SUN LTD | TEE SUN LTD | TARA KNITWEAR | BONAIR | OLYMPIC |
| No of Employees * | 700 | 700 | 850 | 850 | 850 | 400 | 4,000 | 350 |
| Daily Production * | 15,000 | 15,000 | 2,000 | 2,500 | 600 | 3,000 | 1920 | 8,000 |
| Client | DOROTHY PERKINS | DOROTHY PERKINS | ALAMANDA | GAP | ALLDERS | TULCHAN | EUROPE | FORMAL |
| Order | 11,800 | 3,800 | 213 | 581 | 322 | 2685 | 640 | 5,000 |
| Length /Garment (m) | 0 85 | 0 80 | 1 80 | 1 35 | 0 85 | 0 80 | 2 07 | 0 85 |
| Fabric Width Mt | 1 68 | 0 70 | 0 89 | 0 73 | 0 8 | 0 100 | 0 96 | 1 53 |
| Mass G/m² | 145 | 210 | 280 | 330 | 240 | 182 | 280 | 236 |
| Computer Manual | MANUAL | MANUAL | MANUAL | MANUAL | MANUAL | MANUAL | COMPUTER | MANUAL |
| Total weight of fabric (kg) | 1487 | 464 | 114 | 350 | 118 6 | 743 4 | 350 | 530 |
| Mass / Garment (kg) | 0 102 | 093 | 0 535 | 0 602 | 0 368 | 0 179 | 0 462 | 0 100 |
| Total mass of cut pieces (kg) | 1204 | 353 | 90 | 282 9 | 101 6 | 480 6 | 295 68 | 500 |
| Efficiency % | 81 | 76 | 78 9 | 80 8 | 85 7 | 64 6 | 86 47 | 94 4 |
| Waste (%) | 19 | 24 | 21 1 | 19 2 | 14 3 | 35 4 | 15 52 | 5 6 |

** Figures are given as an indication only of the size of the company*

# KNITTED JACKET

# (SWEATSHIRT)

UNIVERSITY OF MAURITIUS
FACULTY OF ENGINEERING

# MAIN EPZ EXPORTS

ITEM : WOVEN SHIRT

FABRIC TYPE : 100% COTTON 100% VISCOSE

| SITC CODE * | YEAR | QUANTITY X 1000 | TOTAL |
|---|---|---|---|
| 841.51.00<br>841.59.90 | 1993<br>1993 | 13,164<br>2,657 | 15,821 |
| 841.51.00<br>841.59.90 | 1994<br>1994 | 12,779<br>1,985 | 14,764 |

** Figures obtained from Table 5.1/ 1993 and Table 23/1994 SITC CODE*

*Prepared by Ms. B. Venkatasamy*
*3rd June 1996*

# UNIVERSITY OF MAURITIUS
# FACULTY OF ENGINEERING

## COMPARATIVE EFFICIENCY CHART WITH RESPECT TO FABRIC UTILIZATION

**GARMENT : SHIRT**

| ENTERPRISE | NIC | NIC | NIC | NIGHTINGALE | Job Textiles |
|---|---|---|---|---|---|
| No of Employees * | 590 | 590 | 590 | 80 | 200 |
| Daily Production in Units * | 6200 to 7000 | 6200 to 7000 | 6200 to 7000 | 350 | 1200 |
| Client | Marks & Spencer | Marks & Spencer | Marks & Spencer | Kiabi France | EUROPE |
| Order (Cut pieces) | 488 | 1276 | 440 | 1148 | 200 |
| Style | Casual Short Sleeve | Formal Long Sleeve | Casual Short Sleeve | Casual Long Sleeve | CASUAL SHIRT |
| Fabric Woven | 100% Cotton Wide Checks | 100% Cotton Oxford | Printed Cotton Viscose 60/40 | 100% Cotton Socota | 100% COTTON |
| Fabric Width Mt | 1.55 | 1.5 | 1.4 | 1.15 | 1.5 |
| Mass G/m² | 122.9 | 182.9 | 166 | 206.5 | 120 |
| Computer or Manual System | COMPUTER | COMPUTER | COMPUTER | MANUAL | COMPUTER |
| Length/Garment (m) | 1.48 | 1.51 | 1.46 | 1.5 | 1.7 |
| Total fabric length (m) | 725 | 1930 | 646 | 2814 | 334 |
| Fabric used (mt) | 560.6 | 1746.6 | 534.2 | 2290.6 | 283.3 |
| Efficiency % | 77.32 | 90.5 | 82.7 | 81.4 | 84.83 |
| Waste % | 22.68 | 9.5 | 17.3 | 18.6 | 15.17 |

**** Figures are given as an indication only of the size of the company***

# FABRIC CONSUMPTION

# IN

# TEXTILE

# INDUSTRIES

# T-SHIRT

# UNIVERSITY OF MAURITIUS
# FACULTY OF ENGINEERING

## FABRIC CONSUMPTION IN TEXTILE INDUSTRIES

COMPUTERISED SYSTEM ☑ MANUAL SYSTEM ☐

| | |
|---|---|
| Organisation | BOWAIR SPORTSWEAR |
| Contact Person | REZA TOORTOO SAKIAN |
| No of Employees | 4000 |
| Daily production | 6000 |
| Garment Type | BASIC T-SHIRT |
| Fabric Type | SINGLE JERSEY |
| Client | EUROPE |
| Marker Length | 10.75 m |
| Fabric Length | 10.75 m |
| Quantity (cut pieces) | 1200 |
| Width of Fabric | 0.73 m |
| Usable Width | 0.73 m |
| Fabric utilized per garment | 0.79 m |
| Total weight of fabric | 310 kg |
| Mass g/m² | 140 |
| Mass g/garment | 0.220 kg |
| Total mass of cut pieces | 264 kg |
| Efficiency | 87.5 |
| Total waste | 46 kg |
| % waste | 12.5 |
| Waste in equivalent length | |

*Date* : 30.04.96 *Prepared by* :

[redacted]

UNIVERSITY OF MAURITIUS
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# FABRIC CONSUMPTION IN TEXTILE INDUSTRIES

COMPUTERISED SYSTEM ☐ MANUAL SYSTEM ☐

| | |
|---|---|
| Organisation | FUSION |
| Contact Person | SARAH HENRY |
| No of Employees | 150 |
| Daily production | 2000 |
| Garment Type | T-SHIRT |
| Fabric Type | 100% COTTON JERSEY |
| Client | EUROPE |
| Marker Length | |
| Fabric Length | |
| Quantity (cut pieces) | 2000 |
| Width of Fabric | 1.60 m |
| Usable Width | 1.60 m |
| Fabric utilized per garment | 1.00 to 1.3 m |
| Total weight of fabric | |
| Mass g/m² | 150 |
| Mass g/garment | 250 g |
| Total mass of cut pieces | 85 kg |
| Efficiency | 85% |
| Total waste | 15 kg |
| % waste | 15% |
| Waste in equivalent length | |

*Date* : [redacted] *Prepared by* : [redacted]

# UNIVERSITY OF MAURITIUS
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## FABRIC CONSUMPTION IN TEXTILE INDUSTRIES

COMPUTERISED SYSTEM ☐ MANUAL SYSTEM ☑

| | |
|---|---|
| Organisation | ST MALO LTD |
| Contact Person | ASLAM NOHUR |
| No of Employees | 700 |
| Daily production | 15,000 |
| Garment Type | BASIC T-SHIRT |
| Fabric Type | SINGLE JERSEY |
| Client | KARSDATT |
| Marker Length | 6.00 m |
| Fabric Length | |
| Quantity (cut pieces) | 14,000 |
| Width of Fabric | 0.98 m |
| Usable Width | |
| Fabric utilized per garment | 0.70 m |
| Total weight of fabric | 1390 kg |
| Mass g/m² | 140 |
| Mass g/garment | 0.124 kg |
| Total mass of cut pieces | 1240 |
| Efficiency | 89 |
| Total waste | 150 kg. |
| % waste | 11 |
| Waste in equivalent length | |

*Date* : 30.04.96

*Prepared by* : BL

# UNIVERSITY OF MAURITIUS
# FACULTY OF ENGINEERING

## FABRIC CONSUMPTION IN TEXTILE INDUSTRIES

**COMPUTERISED SYSTEM** ☑ **MANUAL SYSTEM** ☐

| | |
|---|---|
| **Organisation** | C.M.T |
| **Contact Person** | DONALD WONG |
| **No of Employees** | 1500 |
| **Daily production** | 20 000 |
| **Garment Type** | BASIC T-SHIRT |
| **Fabric Type** | JERSEY S/Y. |
| **Client** | U.K. GERMANY. FRANCE |
| **Marker Length** | 9.00 m |
| **Fabric Length** | 183.4 m |
| **Quantity (cut pieces)** | 540 |
| **Width of Fabric** | 0.96 m |
| **Usable Width** | 0.92 m |
| **Fabric utilized per garment** | 0.71 m |
| **Total weight of fabric** | 104 kg |
| **Mass g/m²** | 140 |
| **Mass g/garment** | 0.168 kg. |
| **Total mass of cut pieces** | 90.72 |
| **Efficiency %** | 87.2 |
| **Total waste** | 13.28 kg |
| **% waste** | 12.8 |
| **Waste in equivalent length** | |

*Date* : 20.04.96

*Prepared by* :

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## FABRIC CONSUMPTION IN TEXTILE INDUSTRIES

COMPUTERISED SYSTEM ☐ MANUAL SYSTEM

| | |
|---|---|
| Organisation | OLYMPIC KNITTING |
| Contact Person | CLÉMENT WONG |
| No of Employees | 350 |
| Daily production | 8000 |
| Garment Type | BASIC T-SHIRT |
| Fabric Type | SINGLE JERSEY 100% |
| Client | GO-SPORT FRANCE |
| Marker Length | 9.00 m |
| Fabric Length | |
| Quantity (cut pieces) | 4000 |
| Width of Fabric | 1.84 m |
| Usable Width | 1.81 m |
| Fabric utilized per garment | 0.74 m |
| Total weight of fabric | 968 kg |
| Mass g/m² | 167 |
| Mass g/garment | 0.216 kg |
| Total mass of cut pieces | 1000 kg |
| Efficiency | 86.77 % |
| Total waste | |
| % waste | 13.23 % |
| Waste in equivalent length | |

*Date* : 30.04.96 *Prepared by* :

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## FABRIC CONSUMPTION IN TEXTILE INDUSTRIES

COMPUTERISED SYSTEM ☐ MANUAL SYSTEM ☑

| | |
|---|---|
| Organisation | T&E Sun Ltd. |
| Contact Person | Samad Peerboccus |
| No of Employees | 850 |
| Daily production | 15,000 |
| Garment Type | Basic T-shirt |
| Fabric Type | Jersey s/j. |
| Client | Gap |
| Marker Length | 8.5 m |
| Fabric Length | 1061.5 |
| Quantity (cut pieces) | 912 |
| Width of Fabric | .80 m |
| Usable Width | .78 m |
| Fabric utilized per garment | .83 m |
| Total weight of fabric | 305.7 kg |
| Mass g/m² | 180 |
| Mass g/garment | 0.335 kg |
| Total mass of cut pieces | 229.7 |
| Efficiency % | 75.1 |
| Total waste | 76 |
| % waste | 24.9 |
| Waste in equivalent length | 263.89 |

*Date* : 30.04.96 *Prepared by* :

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FACULTY OF ENGINEERING

## FABRIC CONSUMPTION IN TEXTILE INDUSTRIES

COMPUTERISED SYSTEM ☐ MANUAL SYSTEM

| | |
|---|---|
| Organisation | WORLD KNITS |
| Contact Person | HUBERT HAREL |
| No of Employees | 500 |
| Daily production | 14 000 |
| Garment Type | BASIC T-SHIRT |
| Fabric Type | 100% COTTON JERSEY |
| Client | LA REDOUTE |
| Marker Length | 11.0 m |
| Fabric Length | 1100 m |
| Quantity (cut pieces) | 1600 |
| Width of Fabric | 0.96 m |
| Usable Width | |
| Fabric utilized per garment | 0.68 m |
| Total weight of fabric | 352 kg |
| Mass g/m² | 156 |
| Mass g/garment | 0.187 kg |
| Total mass of cut pieces | 299.2 kg |
| Efficiency | 85 % |
| Total waste | 52.8 kg |
| % waste | 15 % |
| Waste in equivalent length | |

*Date* : [illegible] *Prepared by* : [illegible]

# UNIVERSITY OF MAURITIUS
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## FABRIC CONSUMPTION IN TEXTILE INDUSTRIES

COMPUTERISED SYSTEM ☐ MANUAL SYSTEM ☑

| | |
|---|---|
| **Organisation** | TARA KNITWEAR |
| **Contact Person** | ALAIN CHAN SON |
| **No of Employees** | 400 |
| **Daily production** | 3000 |
| **Garment Type** | BASIC T-SHIRT |
| **Fabric Type** | 100% Cotton Jersey 8/4 |
| **Client** | CACHAREL |
| **Marker Length** | 6.1 m |
| **Fabric Length** | 1898 m |
| **Quantity (cut pieces)** | 2142 |
| **Width of Fabric** | 1.05 m |
| **Usable Width** | |
| **Fabric utilized per garment** | 0.69 m |
| **Total weight of fabric** | 540.5 kg |
| **Mass g/m²** | 155 |
| **Mass g/garment** | 0.195 kg |
| **Total mass of cut pieces** | 416.8 kg |
| **Efficiency** | 77.13 % |
| **Total waste** | 123.7 kg |
| **% waste** | 22.87 % |
| **Waste in equivalent length** | |

***Date*** : 30.04.06 ***Prepared by*** :

# POLO SHIRT

# (KNITTED)

UNIVERSITY OF MAURITIUS
FACULTY OF ENGINEERING

# FABRIC CONSUMPTION IN TEXTILE INDUSTRIES

COMPUTERISED SYSTEM ☑ MANUAL SYSTEM ☐

| | |
|---|---|
| Organisation | BOOKAR SPORTSWEAR |
| Contact Person | REZA TOORBOOSAKHAN |
| No of Employees | 4000 |
| Daily production | 6000 |
| Garment Type | POLO SHIRT |
| Fabric Type | PIQUE 1/24 |
| Client | EUROPE |
| Marker Length | 12.50 m |
| Fabric Length | 12.53 m |
| Quantity (cut pieces) | 1200 |
| Width of Fabric | 0.94 m |
| Usable Width | 0.94 m |
| Fabric utilized per garment | 0.70 m |
| Total weight of fabric | 350 kg |
| Mass g/m² | 190 |
| Mass g/garment | .250 kg |
| Total mass of cut pieces | 300 |
| Efficiency | 85.7 |
| Total waste | 50 kg |
| % waste | 14.3 |
| Waste in equivalent length | |

*Date* : 30.04.96 *Prepared by* :

UNIVERSITY OF MORATUWA
FACULTY OF ENGINEERING

# FABRIC CONSUMPTION IN TEXTILE INDUSTRIES

COMPUTERISED SYSTEM ☐ MANUAL SYSTEM ☐

| | |
|---|---|
| Organisation | [illegible] |
| Contact Person | [illegible] |
| No of Employees | 400 |
| Daily production | 3000 |
| Garment Type | Polo Shirt |
| Fabric Type | 100% Cotton Piqué s/j |
| Client | S. W. Mills |
| Marker Length | 7.40 m |
| Fabric Length | 140.6 m |
| Quantity (cut pieces) | 11 905 |
| Width of Fabric | 0.93 m |
| Usable Width | |
| Fabric utilized per garment | 0.72 m |
| Total weight of fabric | 2625.9 kg |
| Mass g/m² | 160 |
| Mass g/garment | .16 kg |
| Total mass of cut pieces | 1905 kg |
| Efficiency | 72.46 % |
| Total waste | 720.9 kg |
| % waste | 27.5 % |
| Waste in equivalent length | |

*Date* : [illegible]

*Prepared by* : [illegible]

# UNIVERSITY OF MAURITIUS
# FACULTY OF ENGINEERING

## FABRIC CONSUMPTION IN TEXTILE INDUSTRIES

COMPUTERISED SYSTEM ☑ MANUAL SYSTEM ☐

| | |
|---|---|
| Organisation | C. M — |
| Contact Person | DONALD JONES |
| No of Employees | 1 500 |
| Daily production | 2000 |
| Garment Type | POLO SHIRT |
| Fabric Type | PIQUE S/J |
| Client | EUROPE U.K. |
| Marker Length | 4.00 m |
| Fabric Length | 6.30 m |
| Quantity (cut pieces) | 900 |
| Width of Fabric | 1.00 m |
| Usable Width | 0.97 m |
| Fabric utilized per garment | 0.70 m |
| Total weight of fabric | 185 kg |
| Mass g/m² | 160 |
| Mass g/garment | 125 |
| Total mass of cut pieces | 157.5 kg |
| Efficiency | 85.1 % |
| Total waste | 27.5 kg |
| % waste | 14.9 % |
| Waste in equivalent length | |

*Date* : 30.04.96 *Prepared by* : [signature]

# UNIVERSITY OF MAURITIUS
# FACULTY OF ENGINEERING

## FABRIC CONSUMPTION IN TEXTILE INDUSTRIES

COMPUTERISED SYSTEM ☐ MANUAL SYSTEM ☐

| | |
|---|---|
| Organisation | [illegible] |
| Contact Person | [illegible] |
| No of Employees | 500 |
| Daily production | 14 000 |
| Garment Type | Polo Shirt |
| Fabric Type | 100% Cotton Piqué S/J |
| Client | G.D.P |
| Marker Length | 11.0 m |
| Fabric Length | |
| Quantity (cut pieces) | 1250 |
| Width of Fabric | 1.25 m |
| Usable Width | |
| Fabric utilized per garment | 0.63 m |
| Total weight of fabric | 525 kg |
| Mass g/m² | 1.5 |
| Mass g/garment | 0.267 kg |
| Total mass of cut pieces | 472.5 kg |
| Efficiency | 90 % |
| Total waste | |
| % waste | 5 % |
| Waste in equivalent length | |

*Date* : [illegible] *Prepared by* : [illegible]

UNIVERSITY OF MAURITIUS
FACULTY OF ENGINEERING

## FABRIC CONSUMPTION IN TEXTILE INDUSTRIES

COMPUTERISED SYSTEM ☐ MANUAL SYSTEM ☑

| | |
|---|---|
| **Organisation** | OLYMPIC KNITTING |
| **Contact Person** | CLEMENT WONG |
| **No of Employees** | 350 |
| **Daily production** | 8000 |
| **Garment Type** | POLO SHIRT |
| **Fabric Type** | 100% PIQUE S/J |
| **Client** | ALDERS |
| **Marker Length** | 9.00 m |
| **Fabric Length** | 4500 m |
| **Quantity (cut pieces)** | 3000 |
| **Width of Fabric** | 1.85 m |
| **Usable Width** | |
| **Fabric utilized per garment** | 0.73 m |
| **Total weight of fabric** | 945 kg |
| **Mass g/m²** | 212.5 |
| **Mass g/garment** | 0.267 kg |
| **Total mass of cut pieces** | 802 kg |
| **Efficiency** | 84.9 % |
| **Total waste** | 143 kg |
| **% waste** | 15.1 % |
| **Waste in equivalent length** | |

*Date* : 30-04-16 *Prepared by* :

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# FACULTY OF ENGINEERING

## FABRIC CONSUMPTION IN TEXTILE INDUSTRIES

COMPUTERISED SYSTEM ☐ MANUAL SYSTEM

| | |
|---|---|
| **Organisation** | Tee Sun Ltd |
| **Contact Person** | Samad Peerbocus |
| **No of Employees** | 850 |
| **Daily production** | 4000 |
| **Garment Type** | Polo Shirt |
| **Fabric Type** | P. 80's s/j |
| **Client** | S.C.B. |
| **Marker Length** | 7.2 m |
| **Fabric Length** | 731.76 |
| **Quantity (cut pieces)** | 1140 |
| **Width of Fabric** | 1.14 m |
| **Usable Width** | 1.12 m |
| **Fabric utilized per garment** | 0.25 m |
| **Total weight of fabric** | 317 kg |
| **Mass g/m²** | 190 |
| **Mass g/garment** | 0.228 kg |
| **Total mass of cut pieces** | 251.7 |
| **Efficiency %** | 79.5 |
| **Total waste** | 65.1 |
| **% waste** | 20.5 |
| **Waste in equivalent length** | 150.3 |

*Date* : 30 Oct 96 *Prepared by* :

# KNITTED

# TROUSERS / SHORTS

# UNIVERSITY OF MAURITIUS
# FACULTY OF ENGINEERING

## FABRIC CONSUMPTION IN TEXTILE INDUSTRIES

COMPUTERISED SYSTEM ☐ MANUAL SYSTEM ☑

| | |
|---|---|
| Organisation | TSS S.N |
| Contact Person | SAMAD PEERBOCCUS |
| No of Employees | 550 |
| Daily production | 2500 |
| Garment Type | JOGGING PANTS |
| Fabric Type | FLEECE |
| Client | GAP |
| Marker Length | 9.5 m |
| Fabric Length | 726 m |
| Quantity (cut pieces) | 581 |
| Width of Fabric | 0.73 m |
| Usable Width | 0.72 m |
| Fabric utilized per garment | 1.4 m |
| Total weight of fabric | 350 kg |
| Mass g/m² | 330 |
| Mass g/garment | 0.602 |
| Total mass of cut pieces | 283 kg |
| Efficiency % | 80.8 |
| Total waste | 62.1 kg |
| % waste | 19.2 |
| Waste in equivalent length | 139.3 |

*Date* : 30.04.96 *Prepared by* :

UNIVERSITY OF MAURITIUS
FACULTY OF ENGINEERING

# FABRIC CONSUMPTION IN TEXTILE INDUSTRIES

COMPUTERISED SYSTEM ☐ MANUAL SYSTEM ☑

| | |
|---|---|
| Organisation | ST MALO LTD. |
| Contact Person | ISLAM NOOR. |
| No of Employees | 400 |
| Daily production | 15,000 |
| Garment Type | SHORTS. |
| Fabric Type | SINGLE JERSEY |
| Client | DOROTHY PERKINS |
| Marker Length | 3.85 m |
| Fabric Length | 181.092 m |
| Quantity (cut pieces) | 11,800 |
| Width of Fabric | 1.68 m |
| Usable Width | 1.62 m |
| Fabric utilized per garment | 0.85 |
| Total weight of fabric | 148? kg. |
| Mass g/m² | 145 |
| Mass g/garment | 0.102 kg |
| Total mass of cut pieces | 1204 kg. |
| Efficiency % | 81 |
| Total waste | 283.8 |
| % waste | 19 |
| Waste in equivalent length | |

*Date* : 30.04.96 *Prepared by* :

# UNIVERSITY OF MAURITIUS
# FACULTY OF ENGINEERING

## FABRIC CONSUMPTION IN TEXTILE INDUSTRIES

COMPUTERISED SYSTEM ☐ MANUAL SYSTEM ☑

| | |
|---|---|
| Organisation | The Sun Ltd |
| Contact Person | Samad Peerbocus |
| No of Employees | 350 |
| Daily production | 600 |
| Garment Type | Shorts |
| Fabric Type | Plain Interlock |
| Client | Aldsrs |
| Marker Length | 6.00 m |
| Fabric Length | 280.78 |
| Quantity (cut pieces) | 322 |
| Width of Fabric | .88 |
| Usable Width | .86 |
| Fabric utilized per garment | 0.857 |
| Total weight of fabric | 18.6 kg |
| Mass g/m² | 240 |
| Mass g/garment | 0.368 kg |
| Total mass of cut pieces | 10.6 |
| Efficiency % | 85.7 |
| Total waste | 17 kg |
| % waste | 14.3 |
| Waste in equivalent length | 46.25 |

*Date* : 20.04.96

*Prepared by* :

# KNITTED JACKET

# (SWEATSHIRT)

# UNIVERSITY OF MAURITIUS
# FACULTY OF ENGINEERING

## FABRIC CONSUMPTION IN TEXTILE INDUSTRIES

COMPUTERISED SYSTEM ☐ MANUAL SYSTEM ☐

| | |
|---|---|
| Organisation | TEE SUN LTD |
| Contact Person | SAMAD PEERBACCUS |
| No of Employees | 850 |
| Daily production | 2000 |
| Garment Type | SWEAT SHIRT |
| Fabric Type | FLEECE |
| Client | ALAMANDA |
| Marker Length | 9.00 m |
| Fabric Length | 228.7 m |
| Quantity (cut pieces) | 213 |
| Width of Fabric | 0.89 m |
| Usable Width | 0.88 m |
| Fabric utilized per garment | 1.8 m |
| Total weight of fabric | 114 kg |
| Mass g/m² | 280 |
| Mass g/garment | 0.535 kg |
| Total mass of cut pieces | 90 kg |
| Efficiency % | 78.9 |
| Total waste | 24 kg |
| % waste | 21.1 |
| Waste in equivalent length | 43.15 |

*Date* : 30.04.96 *Prepared by* :

# UNIVERSITY OF MAURITIUS
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## FABRIC CONSUMPTION IN TEXTILE INDUSTRIES

COMPUTERISED SYSTEM ☑ MANUAL SYSTEM ☐

| | |
|---|---|
| Organisation | BOGAIR SPORTSWEAR |
| Contact Person | REZA TOOBTOOSAKIMAN |
| No of Employees | 1000 |
| Daily production | 1420 |
| Garment Type | SWEATSHIRT |
| Fabric Type | COTTON FLEECE |
| Client | EUROPE |
| Marker Length | 13.26 |
| Fabric Length | 13.29 |
| Quantity (cut pieces) | 640 |
| Width of Fabric | 0.96 |
| Usable Width | 0.94 |
| Fabric utilized per garment | 2.07 m |
| Total weight of fabric | 350 kg |
| Mass g/m² | 280 |
| Mass g/garment | 0.462 kg |
| Total mass of cut pieces | |
| Efficiency | 85.47 |
| Total waste | 55 kg |
| % waste | 13.53 |
| Waste in equivalent length | |

*Date :*

*Prepared by :*

# KNITTED PULLOVERS

# UNIVERSITY OF MAURITIUS
# FACULTY OF ENGINEERING

## FABRIC CONSUMPTION IN TEXTILE INDUSTRIES

COMPUTERISED SYSTEM ☑ MANUAL SYSTEM ☐

| | |
|---|---|
| Organisation | SOUTHERN TEXTILES |
| Contact Person | MUKESH GOPAL |
| No of Employees | 500 |
| Daily production | 2000 |
| Garment Type | PULLOVERS |
| Fabric Type | |
| Client | ITALY - FRANCE - ENGLAND |
| Marker Length | |
| Fabric Length | .85 m |
| Quantity (cut pieces) | 300 |
| Width of Fabric | .65 m |
| Usable Width | |
| Fabric utilized per garment | |
| Total weight of fabric | |
| Mass g/m² | 348 |
| Mass g/garment | .450 kg |
| Total mass of cut pieces | |
| Efficiency | 95 % |
| Total waste | |
| % waste | 5 % |
| Waste in equivalent length | |

*Date* : 30.04.96 *Prepared by* : [redacted]

# UNIVERSITY OF MAURITIUS
# FACULTY OF ENGINEERING

## FABRIC CONSUMPTION IN TEXTILE INDUSTRIES

COMPUTERISED SYSTEM ☐ MANUAL SYSTEM ☑

| | |
|---|---|
| Organisation | MANUDAN |
| Contact Person | S. BERGER |
| No of Employees | 250 |
| Daily production | 1200 |
| Garment Type | MEN'S TROUSERS |
| Fabric Type | POLYESTER 100% |
| Client | FRANCE |
| Marker Length | 10 m. |
| Fabric Length | 6750 m |
| Quantity (cut pieces) | 5000 |
| Width of Fabric | 1.5 m |
| Usable Width | 1.48 m |
| Fabric utilized per garment | 1.35 m |
| Total weight of fabric hangsta | 6750 m |
| Mass g/m² | 190.8 |
| Mass g/garment | |
| Total mass of cut pieces | 5405 m |
| Efficiency | 86% |
| Total waste | |
| % waste | 14 % |
| Waste in equivalent length | |

*Date* : 30-04-96 *Prepared by* : SC

# UNIVERSITY OF MAURITIUS
# FACULTY OF ENGINEERING

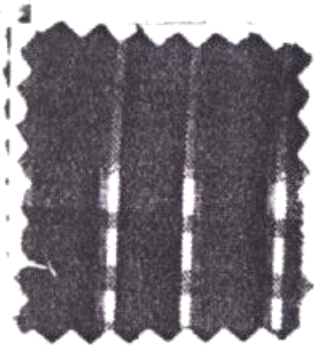
## FABRIC CONSUMPTION IN TEXTILE INDUSTRIES

COMPUTERISED SYSTEM ☐ MANUAL SYSTEM ☑

| | |
|---|---|
| **Organisation** | ANSL CARMENTS |
| **Contact Person** | ABDOOL ACTAR LATIFF |
| **No of Employees** | 55 |
| **Daily production** | 300 to 500 |
| **Garment Type** | MEN'S TROUSERS |
| **Fabric Type** | POLY/COTON 65/35 |
| **Client** | WOOREGATE - REUNION |
| **Marker Length** | |
| **Fabric Length** | 2620 m |
| **Quantity (cut pieces)** | 2085 |
| **Width of Fabric** | 1.5 m |
| **Usable Width** | |
| **Fabric utilized per garment** | 1.3 m |
| **Total weight of fabric** | |
| **Mass g/m²** | 239.4 |
| **Mass g/garment** | |
| **Total mass of cut pieces** Fabric used | 2235 |
| **Efficiency** | 85.3 % |
| **Total waste** | |
| **% waste** | 14.7 % |
| **Waste in equivalent length** | |

***Date*** : 28-04-96 ***Prepared by :*** [signature]

# WOVEN SHIRT



UNIVERSITY OF MAURITIUS
FACULTY OF ENGINEERING

# FABRIC CONSUMPTION IN TEXTILE INDUSTRIES

COMPUTERISED SYSTEM ☑ MANUAL SYSTEM ☐

| | |
|---|---|
| Organisation | SOB TEXTILES LTD |
| Contact Person | OLIVIER BARON |
| No of Employees | 200 |
| Daily production | 1200 |
| Garment Type | SHIRTS |
| Fabric Type | WOVEN (YARN DYED) |
| Client | EUROPE |
| Marker Length | |
| Fabric Length | 334 m |
| Quantity (cut pieces) | 200 |
| Width of Fabric | 1.50 m |
| Usable Width | 1.47 m \| 1.48 m |
| Fabric utilized per garment | 1.67 m |
| Total weight of fabric | 60.12 kg |
| Mass g/m² | 120 |
| Mass g/garment | 0.255 kg |
| Total mass of cut pieces | 51 kg |
| Efficiency | 84.83 % |
| Total waste | 9.12 kg |
| % waste | 15.17 % |
| Waste in equivalent length | 50 m. |

*Date* : 31-05-96 *Prepared by* : SB

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## FABRIC CONSUMPTION IN TEXTILE INDUSTRIES

COMPUTERISED SYSTEM ☐ MANUAL SYSTEM ☐

| | |
|---|---|
| Organisation | FLOREAL KNITWEAR |
| Contact Person | ROGER WOEL |
| No of Employees | 2750 |
| Daily production | 18 000 |
| Garment Type | WOOLLEN OUTERWEAR |
| Fabric Type | 100% WOOL / 10% COTTON |
| Client | EUROPE / USA |
| Marker Length | |
| Fabric Length | |
| Quantity (cut pieces) | |
| Width of Fabric | |
| Usable Width | |
| Fabric utilized per garment | |
| Total weight of fabric | YARN 6-9 TONS / DAY |
| Mass g/m² | |
| Mass g/garment | |
| Total mass of cut pieces | |
| Efficiency | |
| Total waste | APPROX 12 % |
| % waste | |
| Waste in equivalent length | |

*Date* : [illegible]

*Prepared by* : [illegible]

# MEN'S JACKET (WOVEN)

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## FABRIC CONSUMPTION IN TEXTILE INDUSTRIES

COMPUTERISED SYSTEM ☐ MANUAL SYSTEM ☐

| | |
|---|---|
| Organisation | MANCPAN |
| Contact Person | E. BOYER |
| No of Empioyees | 350 |
| Daily production | 300 |
| Garment Type | MEN'S JACKET |
| Fabric Type | POLYESTER / LINEN |
| Client | FRANCE |
| Marker Length | |
| Fabric Length | 297.5 m |
| Quantity (cut pieces) | 1750 |
| Width of Fabric | 1.5 m |
| Usable Width | 1.49 m |
| Fabric utilized per garment | 1.7 m |
| Total weight of fabric Length | 297.5 m |
| Mass g/m² | 168.4 |
| Mass g/garment | |
| Total mass of cut pieces Fabric used | 26.5 m |
| Efficiency | 98 % |
| Total waste | |
| % waste | 2 % |
| Waste in equivalent length | |

*Date* : 30 04 96

*Prepared by* :

# MEN'S

# TROUSERS / SHORTS

# UNIVERSITY OF MAURITIUS
# FACULTY OF ENGINEERING

## FABRIC CONSUMPTION IN TEXTILE INDUSTRIES

COMPUTERISED SYSTEM ☐ MANUAL SYSTEM ☑

| | |
|---|---|
| Organisation | CONTESSA FASHION LTD |
| Contact Person | SOUZIRAS SHINGORE |
| No of Employees | 180 |
| Daily production | 1200 - 300 |
| Garment Type | SHIRT |
| Fabric Type | 100% COTTON / COTTON / POLYESTER |
| Client | BRIXON / SKF / GLASSER |
| Marker Length | 4.80 m for 3 SIZES |
| Fabric Length | 1560 m |
| Quantity (cut pieces) | 325 |
| Width of Fabric | 1.49 m |
| Usable Width | 1.46 m |
| Fabric utilized per garment | 1.6 (Long Sleeve) 1.45 (Shorts) |
| Total weight of fabric | Ro. 35 kg. |
| Mass g/m² | |
| Mass g/garment | 0.3 kg 'L's 0.23 kg 'S's |
| Total mass of cut pieces | 25 kg. |
| Efficiency | |
| Total waste | Approx. 2.5 to 3 kg |
| % waste | |
| Waste in equivalent length | Approx. 10 m |

*Date* : 29.05.96 *Prepared by* : [illegible]

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## FABRIC CONSUMPTION IN TEXTILE INDUSTRIES

COMPUTERISED SYSTEM ☑ MANUAL SYSTEM ☐

| | |
|---|---|
| Organisation | Asia Island Clothing |
| Contact Person | Mr Singh |
| No of Employees | 590 |
| Daily production | 6200 to 7000 |
| Garment Type | Casual Shirt / Short Sleeve |
| Fabric Type | Printed Cotton / Viscose 60/40 |
| Client | Marks & Spencer |
| Marker Length | 5.85 m |
| Fabric Length | 646 m |
| Quantity (cut pieces) | 440 |
| Width of Fabric | 1.4 m |
| Usable Width | 1.3 m |
| Fabric utilized per garment | 1.46 |
| Total ~~weight of~~ fabric length | 646 m |
| Mass g/m² | 166 |
| Mass g/garment | |
| Total mass of cut pieces<br>Fabric Used | 524.2 m |
| Efficiency | 82.7 % |
| Total waste | 111.8 m |
| % waste | 17.3 |
| Waste in equivalent length | |

*Date* : 30.04.10 *Prepared by* : S

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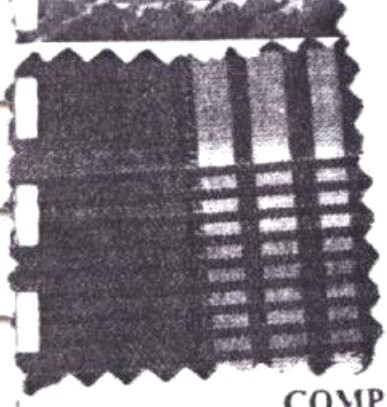
## FABRIC CONSUMPTION IN TEXTILE INDUSTRIES

COMPUTERISED SYSTEM ☐ MANUAL SYSTEM ☐

| | |
|---|---|
| Organisation | New Island Clothing |
| Contact Person | Mr Singh |
| No of Employees | 500 |
| Daily production | 6200 to 7000 |
| Garment Type | Formal Shirt, Long Sleeve |
| Fabric Type | 100% Cotton Oxford |
| Client | Marks & Spencer. |
| Marker Length | 16.04 m |
| Fabric Length | 1930 m |
| Quantity (cut pieces) | 1276 |
| Width of Fabric | 1.5 m |
| Usable Width | 1.48 m |
| Fabric utilized per garment | 1.51 m |
| Total weight of fabric length | 1930 m |
| Mass g/m² | 182.9 |
| Mass g/garment | |
| Total mass of cut pieces used | 1746.6 m |
| Efficiency | 90.5 % |
| Total waste | 183.4 m |
| % waste | 9.5 |
| Waste in equivalent length | |

Date : 04.96 Prepared by :



# UNIVERSITY OF MAURITIUS
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## FABRIC CONSUMPTION IN TEXTILE INDUSTRIES

COMPUTERISED SYSTEM ☑ MANUAL SYSTEM ☐

| | |
|---|---|
| Organisation | Ocean Island Clothing |
| Contact Person | [illegible] |
| No of Employees | 590 |
| Daily production | 6200 à 7000 |
| Garment Type | Casual Shirt \| Short Sleeve |
| Fabric Type | 100% Cotton. Wide Checks |
| Client | Marks & Spencer |
| Marker Length | 5.90 m |
| Fabric Length | 725 m |
| Quantity (cut pieces) | 488 |
| Width of Fabric | 1.55 m |
| Usable Width | 1.52 m. |
| Fabric utilized per garment | 1.48 m |
| Total ~~weight~~ of fabric length | 725 m |
| Mass g/m² | 122.9 |
| Mass g/garment | |
| Total mass of cut pieces<br>Fabric Used | 566.6 m |
| Efficiency | 77.3 % |
| Total waste | 164.4 m |
| % waste | 22.2 |
| Waste in equivalent length | |

*Date* : [illegible]

*Prepared by* : [illegible]

# UNIVERSITY OF MAURITIUS
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## FABRIC CONSUMPTION IN TEXTILE INDUSTRIES

COMPUTERISED SYSTEM ☐ MANUAL SYSTEM ☐

| | |
|---|---|
| Organisation | NIGHTINGALE |
| Contact Person | Mrs G. WINDLE |
| No of Employees | 80 |
| Daily production | 350 |
| Garment Type | CASUAL SHIRT - LONG SLEEVE |
| Fabric Type | 100% COTTON - SOCOTA MILL |
| Client | KIABI - FRANCE. |
| Marker Length | 9.84 m |
| Fabric Length | |
| Quantity (cut pieces) | |
| Width of Fabric | 1.15 m |
| Usable Width | |
| Fabric utilized per garment | 1.5 m |
| Total weight of fabric hangsten | 2514 m |
| Mass g/m² | 206.5 |
| Mass g/garment | |
| Total mass of cut pieces Fabric used | 2296.6 m |
| Efficiency | 81.4 % |
| Total waste | |
| % waste | 18.6 % |
| Waste in equivalent length | |

*Date* : 25.04.16 *Prepared by* :

# LADIES

# DRESS / BLOUSE /

# SKIRT / SHORTS

UNIVERSITY OF MAURITIUS
FACULTY OF ENGINEERING

# FABRIC CONSUMPTION IN TEXTILE INDUSTRIES

COMPUTERISED SYSTEM ☐ MANUAL SYSTEM ☐

| | |
|---|---|
| Organisation | ANSL GARMENTS |
| Contact Person | ABDEEL LATIFF ACTAR |
| No of Employees | 55 |
| Daily production | 300 to 350 |
| Garment Type | CASUAL DRESS Ref SOPHIE |
| Fabric Type | 100% PRINTED VISCOSE |
| Client | RAVATE - REUNION |
| Marker Length | |
| Fabric Length | 610 m |
| Quantity (cut pieces) | 316 |
| Width of Fabric | 1.50 m |
| Usable Width | |
| Fabric utilized per garment | 1.90 m |
| Total weight of fabric | 525 m |
| Mass g/m² | 120.25 |
| Mass g/garment | |
| Total mass of cut pieces | |
| Efficiency | 96 % |
| Total waste | |
| % waste | 14 % |
| Waste in equivalent length | |

*Date :* 25 04 96 *Prepared by :*

# UNIVERSITY OF MAURITIUS
# FACULTY OF ENGINEERING

## FABRIC CONSUMPTION IN TEXTILE INDUSTRIES

COMPUTERISED SYSTEM ☐ MANUAL SYSTEM ☑

| | |
|---|---|
| Organisation | ST MALO |
| Contact Person | ASLAM NOWUR |
| No of Employees | 700 |
| Daily production | 15,000 |
| Garment Type | LADIES VEST |
| Fabric Type | 1x1 RIB |
| Client | DOROTHY PERKINS |
| Marker Length | 5.17 m |
| Fabric Length | 34.074 m |
| Quantity (cut pieces) | 3800 |
| Width of Fabric | 0.70 |
| Usable Width | 0.68 |
| Fabric utilized per garment | 0.80 |
| Total weight of fabric | 464 kg |
| Mass g/m² | 210 |
| Mass g/garment | .093 kg |
| Total mass of cut pieces | 353 |
| Efficiency % | 76 |
| Total waste | 110.2 |
| % waste | 24 |
| Waste in equivalent length | |

*Date* : 30.04.96 *Prepared by* : ~~ST~~

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# FACULTY OF ENGINEERING

## FABRIC CONSUMPTION IN TEXTILE INDUSTRIES

COMPUTERISED SYSTEM ☐ MANUAL SYSTEM ☑

| | |
|---|---|
| Organisation | OLYMPIC KNITTING |
| Contact Person | CLEMENT WONG |
| No of Employees | 350 |
| Daily production | 8000 |
| Garment Type | SLEEVELESS CARDIGAN |
| Fabric Type | 1x1 RIB 100% COTTON |
| Client | FORMAT |
| Marker Length | 9.00 m |
| Fabric Length | 523 m |
| Quantity (cut pieces) | 5000 |
| Width of Fabric | 1.53 m |
| Usable Width | 1.51 m |
| Fabric utilized per garment | 0.65 m |
| Total weight of fabric | 530 kg |
| Mass g/m² | 236 |
| Mass g/garment | .100 kg |
| Total mass of cut pieces | 500 kg |
| Efficiency | 94.4 % |
| Total waste | 30 kg |
| % waste | 5.7 |
| Waste in equivalent length | |

*Date* : 30.04.96 *Prepared by* :

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## FABRIC CONSUMPTION IN TEXTILE INDUSTRIES

COMPUTERISED SYSTEM ☐ MANUAL SYSTEM ☑

| | |
|---|---|
| **Organisation** | TARA KNITWEAR |
| **Contact Person** | ALAIN CHAN SUN |
| **No of Employees** | 400 |
| **Daily production** | 3000 |
| **Garment Type** | FANCY T-SHIRT |
| **Fabric Type** | 1x1 RIB |
| **Client** | TULCHAN |
| **Marker Length** | |
| **Fabric Length** | 1352.9 m |
| **Quantity (cut pieces)** | 2685 |
| **Width of Fabric** | 1.00 m |
| **Usable Width** | |
| **Fabric utilized per garment** | 0.80 m |
| **Total weight of fabric** | 743.4 kg |
| **Mass g/m²** | 182 |
| **Mass g/garment** | 0.179 kg |
| **Total mass of cut pieces** | 480.6 kg |
| **Efficiency** | 64.6 % |
| **Total waste** | 262.8 kg |
| **% waste** | 35.4 % |
| **Waste in equivalent length** | |

*Date* : 30.04.96 *Prepared by* :

# UNIVERSITY OF MAURITIUS
# FACULTY OF ENGINEERING

## FABRIC CONSUMPTION IN TEXTILE INDUSTRIES

COMPUTERISED SYSTEM ☐ MANUAL SYSTEM ☐

| | |
|---|---|
| Organisation | YANOPAU |
| Contact Person | S. ROSER |
| No of Employees | 350 |
| Daily production | 1500 |
| Garment Type | SKIRT |
| Fabric Type | COTTON / ELASTANE 98 |
| Client | FRANCE |
| Marker Length | 6.5 m |
| Fabric Length | |
| Quantity (cut pieces) | 1600 |
| Width of Fabric | 1.30 m |
| Usable Width | 1.28 m |
| Fabric utilized per garment | 0.75 m |
| Total weight of fabric length | 1210 m |
| Mass g/m² | 244 |
| Mass g/garment | |
| Total mass of cut pieces | 1130 m |
| Efficiency | 93.4 % |
| Total waste | |
| % waste | 6.6 % |
| Waste in equivalent length | |

*Date* : 30.04.96 *Prepared by* :

# BRASSIERE

# UNIVERSITY OF MAURITIUS
# FACULTY OF ENGINEERING

## FABRIC CONSUMPTION IN TEXTILE INDUSTRIES

COMPUTERISED SYSTEM ☑ MANUAL SYSTEM ☐

| | |
|---|---|
| Organisation | Cosmos Knit |
| Contact Person | Steve Dupre |
| No of Employees | 200 |
| Daily production | 3000 Dz |
| Garment Type | Brassières |
| Fabric Type | Jersey S/J |
| Client | U.S.A. |
| Marker Length | 6.84 m |
| Fabric Length | 328.3 m |
| Quantity (cut pieces) | 224 Dz |
| Width of Fabric | 1.5' |
| Usable Width | 1.4 |
| Fabric utilized per garment | 0.123 |
| Total weight of fabric | 095 kg |
| Mass g/m² | 145 |
| Mass g/garment | .0258 kg |
| Total mass of cut pieces | 70.5 kg |
| Efficiency | 73.09 |
| Total waste | 35.56 kg |
| % waste | 26.91 |
| Waste in equivalent length | |

*Date* : 30.04.96 *Prepared by* : SC

# BRIEFS

# &

# PANTIES

# UNIVERSITY OF MAURITIUS
# FACULTY OF ENGINEERING

## FABRIC CONSUMPTION IN TEXTILE INDUSTRIES

COMPUTERISED SYSTEM ☑ MANUAL SYSTEM ☐

| | |
|---|---|
| **Organisation** | Cosmos knit |
| **Contact Person** | Steve Dupre' |
| **No of Employees** | 200 |
| **Daily production** | 3000 Dz |
| **Garment Type** | Ladies Briefs |
| **Fabric Type** | Jersey s/j |
| **Client** | J.S.A. |
| **Marker Length** | 10.59 m |
| **Fabric Length** | 762.48 m |
| **Quantity (cut pieces)** | 6192 |
| **Width of Fabric** | 1.5 m |
| **Usable Width** | 1.4 m |
| **Fabric utilized per garment** | 0.28 m |
| **Total weight of fabric** | 185 kg |
| **Mass g/m²** | 135 |
| **Mass g/garment** | .024 kg |
| **Total mass of cut pieces** | 148.6 kg |
| **Efficiency** | 80.33 |
| **Total waste** | 36.39 kg |
| **% waste** | 19.67 |
| **Waste in equivalent length** | |

*Date :* 30-04-96 *Prepared by :* [illegible]

UNIVERSITY OF MAURITIUS
FACULTY OF ENGINEERING

# FABRIC CONSUMPTION IN TEXTILE INDUSTRIES

COMPUTERISED SYSTEM ☐ MANUAL SYSTEM ☐

| | |
|---|---|
| **Organisation** | ESSAR TEXTILES |
| **Contact Person** | [illegible] |
| **No of Employees** | ~ 500 |
| **Daily production** | 18000 m |
| **Garment Type** | |
| **Fabric Type** | 100% COTTON / POLY/COTTON |
| **Client** | UK LOCAL. |
| **Marker Length** | |
| **Fabric Length** | 250 m. |
| **Quantity (cut pieces)** | |
| **Width of Fabric** | 1.50 m |
| **Usable Width** | 1.48 m |
| **Fabric utilized per garment** | |
| **Total weight of fabric** | |
| **Mass g/m²** | 150 |
| **Mass g/garment** | |
| **Total mass of cut pieces** | |
| **Efficiency** | 98 % |
| **Total waste** | 36c m / Daily |
| **% waste** | 2 % |
| **Waste in equivalent length** | |

*Date* : [illegible] *Prepared by* : [illegible]

# TEXTILE

# WASTE

# CHECKLIST

# UNIVERSITY OF MAURITIUS
# FACULTY OF ENGINEERING

## TEXTILE WASTE CHECKLIST

| | |
|---|---|
| Organisation | BONAIR |
| Address | |
| Contact Person | REZA MOORTOOSAKHAN |
| Telephone | |
| 1. Approximately how much textile waste do you generate per day / week/month/year | 600 TONS / YEAR |
| 2. In what form is this waste ?<br>Fabric Pieces ?<br>Cutting Room Clippings ?<br>Yarn ?<br>Other | FABRIC PIECES<br>CUTTING ROOM CLIPPINGS |
| 3. What is the composition of this waste ?<br>Cotton ? Cotton/Synthetic Blends ?<br>Wool ? Wool Blends ?<br>Polyester ? Other | 100 % COTTON. |
| 4. To what extent is this waste dyed ? | DYED CLIPPINGS |
| 5. What do you do with your textile waste at present ? | (i) Used as load in Dyeing Machine<br>(ii) Used to cover Machines.<br>(iii) 11% Sold to South Africa Monthly<br>(iv) 2% Panel Pieces Sold to Logtex<br>(v) REST IS STORED. |

*Prepared by Babs Venkatasamy*

*Date : 10 May 1996*

# UNIVERSITY OF MAURITIUS
# FACULTY OF ENGINEERING

## TEXTILE WASTE CHECKLIST

| | |
|---|---|
| Organisation | S.O.B. TEXTILES |
| Address | MEDIA BUILDING, GOODLANDS |
| Contact Person | SHARMILA LOCHUN |
| Telephone | 2839700 - 2839329 |
| 1. Approximately how much textile waste do you generate per day / week/month/year | 18 TONS / YEAR |
| 2. In what form is this waste ?<br>Fabric Pieces ?<br>Cutting Room Clippings ?<br>Yarn ?<br>Other | CUTTING ROOM CLIPPINGS |
| 3. What is the composition of this waste ?<br>Cotton ? Cotton/Synthetic Blends ?<br>Wool ? Wool Blends ?<br>Polyester ? Other | COTTON. |
| 4. To what extent is this waste dyed ? | NOT MUCH DYED FABRICS USED. |
| 5. What do you do with your textile waste at present ? | BURNT. |

*Prepared by Babs Venkatasamy*

*Date : 10 May 1996*

# UNIVERSITY OF MAURITIUS
# FACULTY OF ENGINEERING

## TEXTILE WASTE CHECKLIST

| | |
|---|---|
| Organisation | WORLD KNITS |
| Address | |
| Contact Person | HUBERT HAREL |
| Telephone | 4334635 |
| 1. Approximately how much textile waste do you generate per day / week/month/year | 126 TONS / YEAR |
| 2. In what form is this waste ?<br>Fabric Pieces ?<br>Cutting Room Clippings ?<br>Yarn ?<br>Other | i) FABRIC PIECES 3.5 Kg / Month<br>ii) CUTTING ROOM CLIPPINGS<br>10,500 Kg / Month |
| 3. What is the composition of this waste ?<br>Cotton ? Cotton/Synthetic Blends ?<br>Wool ? Wool Blends ?<br>Polyester ? Other | (i) COTTON. 100 %<br>(ii) POLYESTER / COTTON. |
| 4. To what extent is this waste dyed ? | |
| 5. What do you do with your textile waste at present ? | (i) 3.5 TONS OF FABRIC PIECES SOLD EVERY MONTH<br>(ii) CUTTING ROOM CLIPPINGS ARE GIVEN AWAY. |

*Prepared by Babs Venkatasamy*

*Date : 10 May 1996*

# UNIVERSITY OF MAURITIUS
# FACULTY OF ENGINEERING

## TEXTILE WASTE CHECKLIST

| | |
|---|---|
| Organisation | COSMOS KNIT |
| Address | BAMBOUS. |
| Contact Person | MAYA |
| Telephone | 452 0675 |
| 1. Approximately how much textile waste do you generate per day / week/month/year | 22 TONS / YEAR. |
| 2. In what form is this waste ?<br>Fabric Pieces ?<br>Cutting Room Clippings ?<br>Yarn ?<br>Other | CUTTING ROOM CLIPPINGS |
| 3. What is the composition of this waste ?<br>Cotton ? Cotton/Synthetic Blends ?<br>Wool ? Wool Blends ?<br>Polyester ? Other | (i) COTTON 100%.<br>(ii) COTTON / LYCRA<br>COTTON / NYLON |
| 4. To what extent is this waste dyed ? | |
| 5. What do you do with your textile waste at present ? | (i) SOLD (3%)<br>(ii) DUMPED (REST) |

*Prepared by Babs Venkatasamy*

*Date : 10 May 1996*

# UNIVERSITY OF MAURITIUS
# FACULTY OF ENGINEERING

## TEXTILE WASTE CHECKLIST

| | |
|---|---|
| Organisation | OLYMPIC KNITTING |
| Address | |
| Contact Person | SENNY HOW KEE CHUN |
| Telephone | 6967992 |
| 1. Approximately how much textile waste do you generate per day / week/month/year | 25 TONS / YEAR |
| 2. In what form is this waste ?<br>Fabric Pieces ?<br>Cutting Room Clippings ?<br>Yarn ?<br>Other | (i) FABRIC PIECES 20%<br>(ii) CUTTING ROOM CLIPPINGS 80% |
| 3. What is the composition of this waste ?<br>Cotton ? Cotton/Synthetic Blends ?<br>Wool ? Wool Blends ?<br>Polyester ? Other | (i) COTTON 95%<br>(ii) COTTON / SYNTHETIC BLENDS 5% |
| 4. To what extent is this waste dyed ? | 5% GREY STAGES |
| 5. What do you do with your textile waste at present ? | (i) FABRIC PIECES ARE SOLD TO RECYCLING INDUSTRIES (100% COTTON)<br>(ii) THE 80% CLIPPINGS ARE BURNT. |

*Prepared by Babs Venkatasamy*

*Date : 10 May 1996*

# UNIVERSITY OF MAURITIUS
# FACULTY OF ENGINEERING

## TEXTILE WASTE CHECKLIST

| | |
|---|---|
| Organisation | TEE SUN |
| Address | |
| Contact Person | SAMAD PEERBOCCUS |
| Telephone | |
| 1. Approximately how much textile waste do you generate per day / week/month/year | 167 TONS / YEAR |
| 2. In what form is this waste ?<br>Fabric Pieces ?<br>Cutting Room Clippings ?<br>Yarn ?<br>Other | (i) FABRIC PIECES 117 TONS/YEAR<br>(ii) CUTTING ROOM CLIPPINGS 50 TONS/YEAR. |
| 3. What is the composition of this waste ?<br>Cotton ? Cotton/Synthetic Blends ?<br>Wool ? Wool Blends ?<br>Polyester ? Other | COTTON<br>COTTON / SYNTHETIC BLENDS |
| 4. To what extent is this waste dyed ? | |
| 5. What do you do with your textile waste at present ? | (i) CLIPPINGS ARE BURNT.<br>(ii) FABRIC PIECES ARE SOLD TO LAGTEX.<br>(iii) EXPORTED TO SOUTH AFRICA TO BE RECYCLED INTO VINYL. |

*Prepared by Babs Venkatasamy*

*Date : 10 May 1996*

# UNIVERSITY OF MAURITIUS
# FACULTY OF ENGINEERING

## TEXTILE WASTE CHECKLIST

| | |
|---|---|
| Organisation | ESSAR |
| Address | ROYAL ROAD SOLITUDE |
| Contact Person | RAVIN LOCHANNA. |
| Telephone | 2615828. 2615829 |
| 1. Approximately how much textile waste do you generate per day / week/month/year | 24 TONS / YEAR. |
| 2. In what form is this waste ?<br>Fabric Pieces ?<br>Cutting Room Clippings ?<br>Yarn ?<br>Other | YARN WASTE UNSIZED<br>SELVEDGE WASTE UNSIZED<br>FABRIC PIECES.<br>YARN DYED / ECRU 350 KG / WEEK |
| 3. What is the composition of this waste ?<br>Cotton ? Cotton/Synthetic Blends ?<br>Wool ? Wool Blends ?<br>Polyester ? Other | 80 % COTTON<br>THE REST. POLY/VISCOSE<br>POLYESTER/COTTON. |
| 4. To what extent is this waste dyed ? | 25 % ECRU<br>75 % DYED |
| 5. What do you do with your textile waste at present ? | (i) MOST WASTE IS SOLD<br>(ii) ONE COMPANY BUYS ONLY SELVEDGE WASTE.<br>(iii) FABRIC PIECES ARE SOLD TO LOCAL MANUFACTURER OF CHILDRENS' GARMENTS. |

*Prepared by Babs Venkatasamy*

*Date : 10 May 1996*

# UNIVERSITY OF MAURITIUS
# FACULTY OF ENGINEERING

## TEXTILE WASTE CHECKLIST

| | |
|---|---|
| Organisation | FUSION |
| Address | Le Hochet Terre Rouge |
| Contact Person | |
| Telephone | 212 37 15 - 16 |
| 1. Approximately how much textile waste do you generate per day / week/month/year | 14 TONS / YEAR |
| 2. In what form is this waste ?<br>Fabric Pieces ?<br>Cutting Room Clippings ?<br>Yarn ?<br>Other | CUTTING ROOM CLIPPINGS |
| 3. What is the composition of this waste ?<br>Cotton ? Cotton/Synthetic Blends ?<br>Wool ? Wool Blends ?<br>Polyester ? Other | 100 % COTTON |
| 4. To what extent is this waste dyed ? | |
| 5. What do you do with your textile waste at present ? | BURNT. |

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# UNIVERSITY OF MAURITIUS
# FACULTY OF ENGINEERING

## TEXTILE WASTE CHECKLIST

| | |
|---|---|
| Organisation | NEW ISLAND CLOTHING |
| Address | QUATRE - BORNES |
| Contact Person | M. SINGH |
| Telephone | 464 0339 - 40 - 41 |
| 1. Approximately how much textile waste do you generate per day / week/month/year | 550 TONS / YEAR |
| 2. In what form is this waste ?<br>Fabric Pieces ?<br>Cutting Room Clippings ?<br>Yarn ?<br>Other | (i) FABRIC PIECES<br>(ii) CUTTINGS ROOM CLIPPINGS |
| 3. What is the composition of this waste ?<br>Cotton ? Cotton/Synthetic Blends ?<br>Wool ? Wool Blends ?<br>Polyester ? Other | (i) COTTON (80 %)<br>(ii) COTTON / SYNTHETIC BLENDS (20 %) |
| 4. To what extent is this waste dyed ? | |
| 5. What do you do with your textile waste at present ? | DUMPED |

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# FACULTY OF ENGINEERING

## TEXTILE WASTE CHECKLIST

| | |
|---|---|
| Organisation | GEORGES MAHADEO INDUSTRIES |
| Address | IBL BLDG, TERRE ROUGE |
| Contact Person | MAHADEO SINGH |
| Telephone | |
| 1. Approximately how much textile waste do you generate per day / week/month/year | 10 TONS / YEAR |
| 2. In what form is this waste ?<br>Fabric Pieces ?<br>Cutting Room Clippings ?<br>Yarn ?<br>Other | (i) FABRIC PIECES<br>(iii) CUTTING ROOM CLIPPINGS |
| 3. What is the composition of this waste ?<br>Cotton ? Cotton/Synthetic Blends ?<br>Wool ? Wool Blends ?<br>Polyester ? Other | (i) 100 % COTTON<br>(iii) POLYESTER / VISCOSE |
| 4. To what extent is this waste dyed ? | |
| 5. What do you do with your textile waste at present ? | BURNT. |

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# UNIVERSITY OF MAURITIUS
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## TEXTILE WASTE CHECKLIST

| | |
|---|---|
| Organisation | FLOREAL KNITWEAR |
| Address | ROGER WOEL |
| Contact Person | |
| Telephone | 6863995 |
| 1. Approximately how much textile waste do you generate per day / week/month/year | 1680 TONS / YEAR |
| 2. In what form is this waste ?<br>Fabric Pieces ?<br>Cutting Room Clippings ?<br>Yarn ?<br>Other | (i) FABRIC PIECES<br>(ii) YARN |
| 3. What is the composition of this waste ?<br>Cotton ? Cotton/Synthetic Blends ?<br>Wool ? Wool Blends ?<br>Polyester ? Other | (i) 75 % WOOL<br>(ii) 25 % COTTON |
| 4. To what extent is this waste dyed ? | |
| 5. What do you do with your textile waste at present ? | (i) SENT BACK TO FERNEY TO BE RECYCLED INTO YARN<br>(i) RECYCLED INTO BLANKETS |

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# UNIVERSITY OF MAURITIUS
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## TEXTILE WASTE CHECKLIST

| | |
|---|---|
| Organisation | CONTESSA FASHION LTD |
| Address | MEDIA BLDG. Q. MILITAIRE |
| Contact Person | S. SHINGOOR. |
| Telephone | 435 5138 |
| 1. Approximately how much textile waste do you generate per day / week/month/year | 1.5 TONS / YEAR. |
| 2. In what form is this waste ?<br>Fabric Pieces ?<br>Cutting Room Clippings ?<br>Yarn ?<br>Other | FABRIC PIECES<br>SELVEDGES. |
| 3. What is the composition of this waste ?<br>Cotton ? Cotton/Synthetic Blends ?<br>Wool ? Wool Blends ?<br>Polyester ? Other | COTTON<br>COTTON / SYNTHETIC BLENDS |
| 4. To what extent is this waste dyed ? | |
| 5. What do you do with your textile waste at present ? | BURNT. |

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## TEXTILE WASTE CHECKLIST

| | |
|---|---|
| Organisation | SOUTHERN TEXTILES |
| Address | ALLÉE JACQUES P/ MAGNIEN |
| Contact Person | MUKESH GOPAL |
| Telephone | 637 3676 |
| 1. Approximately how much textile waste do you generate per day / week/month/year | 28 TONS / YEAR. |
| 2. In what form is this waste ?<br>Fabric Pieces ?<br>Cutting Room Clippings ?<br>Yarn ?<br>Other | i) CUTTING ROOM CLIPPINGS<br>ii) YARN |
| 3. What is the composition of this waste ?<br>Cotton ? Cotton/Synthetic Blends ?<br>Wool ? Wool Blends ?<br>Polyester ? Other | i) WOOL<br>iii) COTTON / SYNTHETIC BLENDS |
| 4. To what extent is this waste dyed ? | i) 75 % RAW WHITE<br>ii) 25 % DYED |
| 5. What do you do with your textile waste at present ? | THROWN AWAY. |

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# UNIVERSITY OF MAURITIUS
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## TEXTILE WASTE CHECKLIST

| | |
|---|---|
| Organisation | C. M. T |
| Address | PHOENIX |
| Contact Person | DONALD WONG |
| Telephone | |
| 1. Approximately how much textile waste do you generate per day / week/month/year | 4200 TONS / YEAR |
| 2. In what form is this waste ?<br>Fabric Pieces ?<br>Cutting Room Clippings ?<br>Yarn ?<br>Other | (i) FABRIC PIECES (1%)<br>(ii) CUTTING ROOM CLIPPINGS (5 to 7 %)<br>(iii) (1.5 to 2 %) FINISHED GARMENTS |
| 3. What is the composition of this waste ?<br>Cotton ? Cotton/Synthetic Blends ?<br>Wool ? Wool Blends ?<br>Polyester ? Other | (i) COTTON<br>(ii) COTTON / ACRYLIC<br>(iii) POLYESTER / COTTON |
| 4. To what extent is this waste dyed ? | HEAVY SHADES |
| 5. What do you do with your textile waste at present ? | (i) STOCKED<br>(ii) EXPORTED TO CMT INTERNATIONAL AFRICAN MARKET |

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## TEXTILE WASTE CHECKLIST

| | |
|---|---|
| Organisation | SINOTEX |
| Address | TERRE ROUGE |
| Contact Person | |
| Telephone | 248 8277 |
| 1. Approximately how much textile waste do you generate per day / week/month/year | OUT OF 8000 Yd FABRIC ISS<br>DAILY. |
| 2. In what form is this waste ?<br>Fabric Pieces ?.<br>Cutting Room Clippings ?<br>Yarn ?<br>Other | (i) 80 yd AS FABRIC DEFECT<br>(ii) 250 yd AS WASTE / DAY<br>(iii) 2.5% SLUDGE / END LOSS<br>(iv) 88% ON MARKER<br>(v) 12% CUTTING ROOM CLIPPI |
| 3. What is the composition of this waste ?<br>Cotton ? Cotton/Synthetic Blends ?<br>Wool ? Wool Blends ?<br>Polyester ? Other | 175 yd COTTON TWILL<br>75 yd POLY/COTON. |
| 4 To what extent is this waste dyed ? | |
| 5 What do you do with your textile waste at present ? | (i) FABRIC PIECES 2x1 yd USED TO MAKE WASTE ?<br>(ii) GIVEN AWAY<br>(iii) DUMPED<br>(iv) 20% SOLD. |

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## TEXTILE WASTE CHECKLIST

| | |
|---|---|
| Organisation | FERGUS SPINNING M |
| Address | FOREST SIDE. |
| Contact Person | RICO SIOU |
| Telephone | 675 6127 |
| 1. Approximately how much textile waste do you generate per day / week/month/year | 192 TONS / YEAR |
| 2. In what form is this waste ?<br>Fabric Pieces ?<br>Cutting Room Clippings ?<br>Yarn ?<br>Other | YARN . HARD WASTE.<br>SLUBBING - SOFT WAST |
| 3. What is the composition of this waste ?<br>Cotton ? Cotton/Synthetic Blends ?<br>Wool ? Wool Blends ?<br>Polyester ? Other | (i) COTTON / SYNTHE<br>WOOL BLENDS — 50<br>(ii) 50 % WOOL. |
| 4. To what extent is this waste dyed ? | MIXED DYED & UNDYE |
| 5. What do you do with your textile waste at present ? | 16 TONS EXPORTED TO SOUTH AFRICA / MON |

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