SRI LANKA STANDARD 837 : 1988

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SPECIFICATION FOR

KNITTED FABRICS FOR GENTS' AND LADIES' UNDERWEAR

SRI LANKA STANDARDS INSTITUTION

SPECIFICATION FOR KNITTED FABRICS FOR GENTS' AND LADIES' UNDERWEAR

SLS 837 : 1988
(Attached AMD 175 and AMD 208)

Gr. 6

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SRI LANKA STANDARD

SPECIFICATION FOR KNITTED FABRICS FOR GENTS' AND LADIES' UNDERWEAR

FOREWORD

This Sri Lanka Standard was authorized for adoption and publication by the Council of the Sri Lanka Standards Institution on 1988-12-12, after the draft, finalized by the Drafting Committee on Knitted Fabrics had been approved by the Textiles Divisional Committee.

This specification is intended to help the knitters in manufacturing fabrics, so that the underwear made out of these fabrics are also of satisfactory quality. However, some of the knitted fabrics covered in this specification are not suitable for children's wear. Hence due consideration was given to the fabrics which are suitable for Gents' and Ladies' underwear. A separate specification will be formulated to cover knitted fabrics for childrens' underwear.

Some commonly used constructional details for plain, interlock and rib knitted fabrics are given in Appendix A as a guidance to the manufacturers.

In this specification provision has been made for agreement between the purchaser and the suppliers on the width of the fabric.

Terminology used in this specification are in accordance with "Textile terms and definitions" (7th edition) published by the Textile Institute of the United Kingdom.

All standard values in this specification are given in SI units.

For the purpose of deciding whether a particular requirement of this specification is complied with, the final value, observed or calculated, expressing the result of a test or an analysis, shall be rounded off in accordance with CS 102. The number of significant places retained in the rounded off value shall be the same as that of the specified value in this specification.

In the preparation of this specification, valuable assistance derived from the publications of the British Standards Institution, the Bureau of Indian Standards , the Kenya Bureau of Standards, the Amercian Society for Testing and Materials and The Textile Institute of United Kingdom is gratefully acknowledged.

1 SCOPE

1.1 This specification prescribes the requirements and methods of sampling and test for fabric made from yarn of 100 per cent cotton, cotton_synthetic blends and 100 per cent regenerated cellulose (such as viscose) and its blends.

1.2 These fabrics shall have plain, interlock, rib and modified plain, interlock and rib structures.

1.3 These fabrics shall be either bleached or dyed.

2 REFERENCES

BS 5811 Determination of the resistance to pilling of woven fabrics (pill testing box method).
CS 16 Standard atmosphere for conditioning and testing textiles
CS 42 Determination of mass per unit length and per unit area of woven or knitted fabrics.
CS 46 Determination of width of woven fabrics (First Revision).
CS 55 Determination of colour fastness of textile materials to washing at 95 °C for 30 minutes (Test 4).
CS 62 Determination of colour fastness of textile materials to daylight.
CS 63 Determination of colour fastness of textile materials to rubbing.
CS 67 Determination of colour fastness of textile materials to perspiration.
CS 86 Determination of pH value of aqueous extracts of textile materials.
CS 87 Determination of scouring loss in grey and finished cotton textile materials.
CS 102 Presentation of numerical values.
SLS 137 Grey cotton yarn
Part 3 Hosiery (First Revision)
SLS 428 Random sampling methods.
SLS 582 Determination of bursting strength and bursting distension of fabrics -diaphram method
SLS 711 Polyester cotton yarn.
SLS 774 Tests for knitted fabric construction.

3 DEFINITION

For the purpose of this specification, the following definition shall apply:

3.1 **blended yarn** : A single yarn spun from a blend or mixture of different fibre species.

4 REQUIREMENTS

4.1 Composition

The amount of fibre other than cotton and regenerated cellulose (viscose) used in cotton_synthetic blends shall not exceed 65 per cent.

4.2 Yarn

The yarn conforming to SLS 137 : Part 3, SLS 711 or better is suitable for use in the manufacture of the fabric.

4.3 Fabric

4.3.1 *Courses to wales ratio*

The courses to wales ratio shall be not less than 1.3 for plain knitted fabrics and not less than 1.1 for interlock, interlock variations, rib, rib eyelet, rib tuck and rib with miss effect knitted fabrics when determined by the method prescribed in 8.3.

4.3.2 *Defects*

4.3.2.1 The knitted fabrics shall not be over boarded or pulled in length while calendering.

4.3.2.2 The fabric shall be evenly knitted and reasonably free from mends, ladders, dropped stitches, holes, cuts, and other defects which affect the appearance and the performance of the fabric.

4.3.3 *Scouring loss*

Scouring loss of the finished fabric shall not exceed 2 per cent when determined by the method prescribed in CS 87.

4.3.4 *pH value of the aqueous extract*

The pH value of the aqueous extract of the fabric shall be not less than 6.0 and not more than 8.5 when determined by the cold method prescribed in CS 86.

4.3.5 *Tube width*

The width of the fabric shall be as agreed to between the buyer and the seller. A tolerance of +3 per cent of the specified width shall be permitted, when determined by the method prescribed in SLS 46.

4.3.6 *Other requirements*

The fabric shall also comply with requirements given in Table 1 when determined according to the relevant methods given in Column 7 of the table.

TABLE 1 - Requirements for knitted fabrics for underwear

Sl. No.	Characteristic	Plain	Inter-lock	Rib	Rib eyelet, rib with miss effect rib tuck, and inter-lock variations	Method of test
(1)	(2)	(3)	(4)	(5)	(6)	(7)
i)	Mass per unit area g/m^2, min.	90	120	100	100	CS 42
ii)	Bursting strength, kPa, min.	350	500	410	400	SLS 582 8.2
iii)	Dimensional change (due to relaxation), per cent max.	5.0	5.0	5.0	5.0	
iv	Colour fastness					
	a) to daylight, min.	5	5	5	5	CS 62
	b) to washing, min.	4	4	4	4	CS 55 CS 63
	c) to rubbing, dry and wet, min.	4	4	4	4	CS 67
	d) to perspiration, min.	4	4	4	4	
	e) to pilling* (at the end of 5 hours) min.	3	3	3	3	BS 5811

* *Applicable only for cotton-synthetic blends.*

5 PACKAGING

The fabric shall be packed in roll form or as agreed to between the buyer and the seller. The fabric shall be wrapped in polyethylene or any other suitable material. The wrapper shall not contain any colourant capable of staining the fabric on wetting.

6 MARKING

6.1 The following information shall be marked or labelled legibly on the fabric or on a label securely attached thereto .

a) Name of the material;
b) Name and address of the manufacturer (including country of origin);
c) Type of fibre (including the composition);
d) Tube width, in millimetres;
e) Mass,in killograms;
f) Length, in metres;
g) Registered trade mark, if any;
h) Brand name, if any; and
j) Batch identification mark.

7 SAMPLING

7.1 Lot

In any consignment all the rolls of knitted fabrics belonging to one batch of manufacture or supply shall constitute a lot.

7.2 Scale of sampling

7.2.1 Samples shall be tested from each lot for ascertaining conformity to the requirements of this specification.

7.2.2 The number of rolls to be selected from a lot shall be in accordance with the following table.

TABLE 2 - Scale of sampling

No. of rolls in the lot (1)	No. of rolls to be selected (2)
Up to 50	4
51 to 100	6
101 to 150	8
151 to 300	10
301 and above	13

7.2.3 The rolls shall be selected at random. In order to ensure randomness of selection, tables of random numbers as given in SLS 428 shall be used.

7.3 **Number of tests**

7.3.1 Each roll selected as in 7.2.2 shall be inspected for packaging and marking requirements.

7.3.2 Each roll selected as in 7.2.2 shall be tested for the requirements given in 4.3.1, 4.3.2, 4.3.3, 4.3.4, 4.3.5, and 4.3.6 (see Note).

NOTE

Required test specimens shall be cut from each roll in accordance with the relevant method.

8 METHODS OF TEST

8.1 Tests for the requirements given in 4.3.1 and 4.3.3 to 4.3.6 shall be carried out by the methods prescribed therein.

8.2 **Determination of dimensional change (due to relaxation)**

8.2.1 *Marking of test specimens*

8.2.1.1 Cut from each sample a test specimen measuring approximately 200 mm x 200 mm in such a way that two of its sides are parallel in the direction of wales and the other two parallel in the direction of courses. Mark the directions of wales and courses in the test specimen.

8.2.1.2 Mark centrally on the test specimen by means of indelible ink or a fast dyed cotton sewing thread, an area 150 mm x 150 mm with two of its sides in the direction of wales and the other two in the direction of courses. Spread this test specimen on a flat smooth surface, carefully remove by hand all creases and wrinkles. Within this area, mark six pairs of marks, three pairs each in the direction of wales and the direction of courses (see Figure 1) so that the distance between each pair of marks is the same.

8.2.2 *Procedure*

8.2.2.1 Place the test specimen on a glass plate and carefully remove by hand all creases and wrinkles without distorting it and place the other glass plate on the test specimen. Measure, to the nearest millimetre, the distance between each pair of marks separately.

8.2.2.2 Lay the specimen flat in a water-tight tray of suitable size and a depth of at least 10 mm. Soak it under a head of 25mm water containing 0.5 per cent suitable wetting agent at room temperature (30 °C to 35 °C) for 2 hours. Drain out the water and remove the test specimen carefully so that it is not stretched and lay it flat on a smooth surface. Remove the excess of water by absorbent material and dry it at room temperature.

8.2.2.3 After drying, condition the test specimen. The atmospheres required for pre-conditioning, for conditiining and testing are those specified in CS 16. Place it on the glass plate, carefully remove all wrinkles and creases and place the other glass plate on the test specimen. Measure to the nearest millimetre, the distance between each of the marks.

8.2.3 *Calculation*

8.2.3.1 Calculate, the percentage of dimensional change both in the direction of wales and in the direction of courses by the following formula :

$$\text{Dimensional change, per cent} = \frac{(a - b)}{a} \times 100$$

where,

a = the distance in millimetres, between a pair of marks (along the wales or courses as the case may be) before soaking; and

b = the distance in millimetres, between the same pair of marks after soaking.

8.2.3.2 Calculate separately the dimensional change between all three pairs of marks in the direction of wales and in the direction of courses and calculate the average dimensiional change in each direction.

8.3 Determine the number of visible wales and courses per centimetre as given in Clause 7 of SLS 774 : 1987 and compute the courses to wales to ratio accordingly.

9 CONFORMITY TO STANDARD

A lot shall be declared as conforming to the requirements of this specification, if the following conditions are satisfied.

9.1 Each roll inspected as in 7.3.1 satisfies the relevant requirements.

9.2 Each roll examined as in 7.3.2 satisfies the requirements for defects (4.3.2) and colour fastness (4.3.6).

9.3 The values of expression ($\bar{x}$ -0.8s) (see Notes) calculated using the test results on courses to wales ratio (4.3.1), mass per unit area (4.3.6) and bursting strength (4.3.6) is not less than the specified value.

9.4 The values of the expression ($\bar{x}$ + 0.8s) calculated using the test results on scouring loss (4.3.3) and dimensional change (due to relaxation) (4.3.6) is less than the specified values.

9.5 The values of the expression ($\bar{x}$ - 0.8s) and ($\bar{x}$ + 0.8s) calculated using test results on pH value (4.3.4) and width (4.3.5) lie between the relevant specification limits.

NOTES

1. *Mean ($\bar{x}$) = The sum of values of the observations divided by the number of observations.*
2. *Standard deviation (s) = The positive square root of the quotient obtained by dividing the sum of squares of the deviations of the observations from their mean by one less than the number of observations in the sample.*

APPENDIX A
COMMONLY USED CONSTRUCTIONAL DETAILS

i) Plain knite single jersey fabrics

Gauge of Machine	Linear density of yarn in tex	Courses to wales ratio min
18	33 to 30	1.3
20	30 to 20	1.3
22	27 to 16.5	1.3
24	16.5 to 14.5	1.3
26	16.5 to 13	1.3
28	16.5 to 12	1.3
30	12.5 to 8.4	1.3

ii) **Interlock knit fabrics**

Gauge of Machine	Linear density of yarn in tex	Courses to wales ratio min
18	30 to 25	1.1
20	25 to 20	1.1
22	20 to 16.5	1.1
24	16.5 to 13	1.1
26	16.5 to 12	1.1
28	13 to 11	1.1

iii) **Rib knit (1x1 rib) fabrics**

Gauge of Machine	Linear density of yarn in tex	Courses to wales ratio min
14	37 to 25	1.1
16	25 to 12.5	1.1
18	20 to 12.5	1.1
20	14.5 to 11	1.1
22	12.5 to 10	1.1

AMENDMENT NO. 01 APPROVED ON 1995-04-27
to SLS 837 : 1988

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Clause 4.3.5

Delete the existing Title and text of **Clause 4.3.5** and substitute the following.

4.3.5 Width of Fabric

The width of fabric either tabular or open width shall be agreed to between the purchaser and supplier. A tolerance of +3 per cent of the specified width shall be permitted, when determined by the method prescribed in **SLS 46**.

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Clause 6.1

Delete the phrase "Tube width" in **Clause 6.1 (d)** and substitute with "width of fabric (tube/open), in centimeters.

AMD 208

AMENDMENT NO. 02 APPROVED ON 1996-01-18 TO SLS 837 : 1988 SPECIFICATION FOR KNITTED FABRICS FOR GENTS' AND LADIES' UNDERWEAR

Page 5

Clause 4.3.1

Delete the existing text in clause **4.3.1** and substitute the following:

"The courses to wales ratio shall be not less than 1.3 for plain knitted fabrics and not less than 1.1 for interlock, interlock variations, rib, rib eyelet, rib tuck and rib with miss affect knitted fabrics and knitted fabrics with floral and decorative effects when determined by the method prescribed in 8.3."

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Table 1

Delete the heading of table in Column 6 and substitute the following:

"Rib eyelet, rib tuck, rib with miss effect, interlock variations and floral and decorative designs."

SRI LANKA STANDARDS INSTITUTION

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