**SRI LANKA STANDARD 137 PART 1 : 2000**
UDC 677.21.061

# SPECIFICATION FOR
# GREY COTTON YARN
## PART 1: FOR POWERLOOM
## (SECOND REVISION)

**SRI LANKA STANDARDS INSTITUTION**

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**SLS 137 : Part 1: 2000**

**Gr. 6**

**SRI LANKA STANDARDS INSTITUTION**
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**Sri Lanka.**

Sri Lanka Standards are subject to periodical revision in order to accommodate the progress made by industry. Suggestions for improvement will be recorded and brought to the notice of the Committees to which the revisions are entrusted.

This standard does not purport to include all the necessary provisions of a contract.

# SRI LANKA STANDARD
# SPECIFICATION FOR GREY COTTON YARN
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## FOREWORD

This standard was approved by the Sectoral Committee on Textiles, Clothing and Leather and was authorized for adoption and publication as a Sri Lanka Standard by the Council of the Sri Lanka Standards Institution on 2000-07-27.

This standard is the revision of SLS 137 : Part 1 : 1980. Part 2 and Part 3 of this standard cover handloom and knitting industry requirements. In this Revision definitions of grey cotton yarn and tenacity are included. Requirement for moisture regain is included. Rewinding test has been deleted. Packaging and marking clauses are amended to be in line with current practices.

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 of 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.

Guidelines for the determination of compliance of a lot with the requirements of this standard based on statistical sampling and inspection are given in Appendix A.

In the preparation of this standard the assistance derived from the following publications is gratefully acknowledged:

ISO 10290 : 1993 Cotton yarns - Specification
IS 171 : 1993 Ring Spun Grey Cotton Yarn For Weaving

## 1 SCOPE

This specification prescribes the requirements and methods of test for grey cotton yarns (single and doubled) intended for use in powerlooms.

## 2 REFERENCES

SLS 17 Moisture content in textile materials
SLS 20 Determination of the size of yarns
SLS 22 Breaking force and elongation at break of yarn
SLS 23 Twist in yarns - Direct counting method
CS 102 Presentation of numerical values
SLS 428 Random sampling methods

## 3 DEFINITIONS

For the purpose of this specification following definitions shall apply:

**3.1 grey cotton yarn** : Ring spun or open end spun yarn, waxed or unwaxed, as it leaves the spinning frame, without any bleaching, dyeing or finishing treatment.

**3.2 linear density** : Mass per unit length of a yarn. It is expressed in tex.

**3.3 tex** : The mass in grams of 1 kilometre of yarn.

**3.4 nep (cotton yarn)** : A defect in a yarn characterized by a small knot of entangled fibres.

**3.5 slub** : A defect in a yarn characterized by a segment not over 6 mm in length that shows an abrupt increase in diameter caused by more fibres matted in this particular place.

**3.6 snarl** : A short length of yarn which has twisted on itself due to twist liveliness.

**3.7 thick place** : A defect in a yarn, extending for 6 mm or more characterized by a diameter greater than the average diameter. The unevenness is normally caused by a greater number of fibres per yarn cross-section than usual.

**3.8 thin place** : A defect in a yarn characterized by a segment that is substantially (at least 25 per cent) smaller in diameter than the average diameter of the yarn. A thin place may be of any length.

**3.9 irregularity - U per cent** : The mean deviation in mass/unit length of 8 mm increments of yarn determined by an electronic type unevenness tester.

**3.10 tenacity** : The maximum specific stress that is developed in a tensile test taken to rupture.

## 4 REQUIREMENTS

### 4.1 General

The yarn shall be 100 per cent cotton. The yarn shall be reasonably clean, free from foreign matter and neps, snarls, slubs, thick and thin places. A list of common defects of yarn on cones is given in Appendix **B**.

## 4.2 Count of yarn

**4.2.1** The average count of yarn shall conform to the requirements specified in Tables **1** and **2** when determind as given in **SLS 20.**

**4.2.2** A tolerance of ± 3 per cent on the sample average shall be permissible.

**4.2.3** The coefficient of variation of yarn count shall not exceed 3.5 per cent.

**TABLE 1 - Requirements for ring spun grey cotton yarn for powerloom**

| Sl. No. | Count of yarn tex | Carded or combed | Tenacity, cN/tex min. | | Twist * per metre, max. | |
|---|---|---|---|---|---|---|
| | | | Warp | Weft | Warp | Weft |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| 1 | 72 | Carded | 15.8 | 12.6 | 510 | 460 |
| 2 | 60 | do | 15.5 | 12.4 | 560 | 500 |
| 3 | 42 | do | 15.2 | 12.2 | 660 | 590 |
| 4 | 36 | do | 15.0 | 12.0 | 700 | 630 |
| 5 | 30 | do | 15.0 | 12.0 | 775 | 700 |
| 6 | 25 | do | 14.8 | 11.8 | 840 | 750 |
| 7 | 20 | Carded<br>Combed | 14.8<br>15.5 | 11.8<br>12.4 | 950<br>860 | 850<br>775 |
| 8 | 15 | Carded<br>Combed | 14.8<br>16.0 | 11.8<br>12.8 | 1040<br>900 | 935<br>810 |
| 9 | 12 | Carded<br>Combed | 14.8<br>19.5 | 11.8<br>15.6 | 1160<br>1100 | 1045<br>990 |
| 10 | 10 | Combed | 19.5 | 15.6 | 1210 | 1090 |
| 11 | 7.2 | do | 19.3 | 15.4 | 1415 | 1275 |
| 12 | 12.0 | Voile | 21.0 | 16.8 | 1540 | 1390 |
| 13 | 10.0 | do | 21.0 | 16.8 | 1650 | 1485 |
| 14 | 2 X 60 | Carded | 18.0 | 14.4 | 395 | 355 |
| 15 | 2 x 30 | do | 18.0 | 14.4 | 542 | 480 |
| 16 | 2 x 20 | do | 18.0 | 14.4 | 665 | 600 |
| 17 | 2 x 15 | do | 18.0 | 14.4 | 730 | 660 |
| 18 | 2 x 10 | do | 18.0 | 14.4 | 870 | 780 |
| 19 | 2 x 10 | Combed | 22.0 | 17.6 | 830 | 750 |
| 20 | 2 x 7.2 | ” | 22.0 | 17.6 | 985 | 885 |
| 21 | 2 x 6.0 | ” | 22.0 | 17.6 | 1060 | 950 |
| 22 | 2 x 5.0 | ” | 22.0 | 17.6 | 1140 | 1025 |

* Twist specified in case of doubled yarns is the resultant yarn twist.

**TABLE 2 - Requirements for open end spun grey cotton yarn for powerloom**

| Sl. No | Count of yarn tex | Carded or combed | Tenacity, cN/tex min. |
|---|---|---|---|
| | | | Warp |
| (1) | (2) | (3) | (4) |
| 1 | 72 | Carded | 12.3 |
| 2 | 60 | - do - | 12.0 |
| 3 | 42 | - do - | 12.0 |
| 4 | 36 | - do - | 12.0 |
| 5 | 30 | - do - | 11.8 |
| 6 | 25 | - do - | 11.8 |
| 7 | 20 | - do - | 11.8 |
| 8 | 15 | - do - | 11.6 |

### 4.3 Twist in yarn

Twist per metre of yarns shall be not more than the values specified in Table **1** when determined as in **SLS 23.**

### 4.4 Tenacity

Tenacity of yarns shall be not less than the values specified in Tables **1** and **2** when determined as in **SLS 22**.

### 4.5 Irregularity

The unevenness percentage (U per cent) of yarn shall be not more than the values specified in Table **3.**

Coefficient of variation of unevenness, per cent = U X 1.25

where U is the percentage of mean deviation of irregularity.

**TABLE 3 - Unevenness requirements for ring spun and open end spun grey cotton yarn for powerloom**

| Sl No. | Count of yarn tex | Carded or combed | U per cent | | Thin places | | Thick places | | Neps | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | ring spun | open end spun | ring spun | open end spun | ring spun | open end spun | ring spun | open end spun |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
| 1 | 72 | Carded | 11.0 | 10.0 | 13 | 0 | 85 | 25 | 85 | 5 |
| 2 | 60 | do | 11.5 | 10.4 | 18 | 0 | 125 | 35 | 125 | 10 |
| 3 | 42 | do | 12.3 | 11.0 | 35 | 5 | 200 | 60 | 175 | 20 |
| 4 | 36 | Carded<br>Combed | 12.8<br>9.5 | 11.3 | 40<br>5 | 6 | 250<br>22 | 70 | 225<br>60 | 25 |
| 5 | 30 | Carded<br>Combed | 13.0<br>9.8 | 11.8 | 60<br>7 | 10 | 300<br>30 | 80 | 325<br>70 | 40 |
| 6 | 25 | Carded<br>Combed | 13.5<br>10.5 | 12.2 | 80<br>9 | 25 | 375<br>50 | 110 | 375<br>95 | 60 |
| 7 | 20 | Carded<br>Combed | 14.0<br>10.8 | 12.5 | 125<br>20 | 70 | 500<br>80 | 160 | 550<br>130 | 100 |
| 8 | 15 | Carded<br>Combed | 14.8<br>11.8 | - | 200<br>25 | - | 750<br>175 | - | 800<br>175 | - |
| 9 | 12 | Carded<br>Combed | 15.0<br>12.0 | - | 300<br>25 | - | 1000<br>80 | - | 1250<br>125 | - |
| 10 | 10 | Combed | 12.5 | - | 35 | - | 200 | - | 150 | - |
| 11 | 7.2 | do | 13.0 | - | 100 | - | 250 | - | 200 | - |
| 12 | 12 | Voile | 12.0 | - | 17 | - | 75 | - | 125 | - |
| 13 | 10 | Voile | 12.2 | - | 35 | - | 100 | - | 140 | - |
| 14 | 2 x 60 | Carded | 10.0 | - | 0 | - | 25 | - | 30 | - |
| 15 | 2 x 30 | do | 10.5 | - | 0 | - | 55 | - | 40 | - |
| 16 | 2 x 20 | do | 11.0 | - | 6 | - | 110 | - | 55 | - |
| 17 | 2 x 15 | do | 11.5 | - | 7 | - | 115 | - | 120 | - |
| 18 | 2 x 10 | do | 14.0 | - | 50 | - | 540 | - | 860 | - |
| 19 | 2 x 10 | Combed | 10.0 | - | 1 | - | 5 | - | 75 | - |
| 20 | 2 x 7.2 | do | 10.0 | - | 5 | - | 65 | - | 110 | - |
| 21 | 2 x 6.0 | do | 10.5 | - | - | - | - | - | - | - |
| 22 | 2 x 5.0 | do | 10.5 | - | - | - | - | - | - | - |

### 4.6 Moisture regain

**4.6.1** Unless otherwise agreed to between the buyer and the seller, the moisture regain shall not exceed 8.5 per cent.

**4.6.2** Moisture content shall be determined as given in **SLS 17**. Moisture content so determined shall be converted to moisture regain using the following formula;

$$\text{Moisture regain, per cent by mass} = \frac{100 \times m}{100 - m}$$

where m is the moisture content, percent by mass.

## 5 PACKAGING

All yarn in cones shall be individually wrapped in polyethylene or similar material to avoid damage. At the base of each cone, an insert to prevent collapsing is to be included. A tolerance of $\pm$ 3 per cent of the declared net mass of a cone may be permitted. Number of such cones shall be packed in cartons.

## 6 MARKING

**6.1** Each cone shall be labelled with the following information :

a) Count of yarn in tex; and
b) Name of the manufacturer.

**6.2** Each carton shall be marked or labelled with the following information :

a) Name of material;
b) Count of yarn in tex;
c) Name of the manufacturer;
d) Net mass of a cone;
e) Gross mass in kilograms; and
f) Net mass in kilograms.

# APPENDIX A
# COMPLIANCE OF A LOT

The sampling scheme given in this appendix should be applied where compliance of a lot to the requirements of this standard is to be assessed based on statistical sampling and inspection.

Where compliance with the standard is to be assured based on manufacturers control systems coupled with type testing and check tests or any other procedure, an appropriate scheme of sampling and inspection should be adopted.

## A.1 LOT

All the grey cotton yarn of the same count manufactured in one batch under relatively uniform conditions of production shall constitute a lot.

## A.2 SCALE OF SAMPLING

**A.2.1** Samples shall be tested from each lot for ascertaining the conformity of the yarn to the requirements of this specification.

**A.2.2** Number of cartons to be selected from a lot shall be as given in Table **4.**

**TABLE 4 - Scale of sampling**

| Number of cartons in the lot (1) | Number of cartons to be selected (2) | Acceptance number (3) |
|---|---|---|
| Up to 8 | 3 | 1 |
| 9 to 15 | 4 | 1 |
| 16 to 25 | 5 | 1 |
| 26 to 50 | 7 | 2 |
| 51 to 100 | 8 | 2 |
| 101 to 150 | 9 | 3 |
| 151 to 300 | 0 | 3 |
| 301 and above | 12 | 4 |

**A.2.3** Cartons and cones shall be drawn at random. In order to ensure randomnes of selection random number tables as given in **SLS 428** shall be used.

## A.3 NUMBER OF TESTS

**A.3.1** Five cones shall be selected from each carton selected as in **A.2.2**. Each carton/ cone selected shall be inspected for packaging and marking requirements.

**A.3.2** From each cone selected as in **A.3.1,** one test specimen shall be selected discarding at least first 50 m from the cone. Each test specimen so selected shall be tested for the requirements given in **4**.

**A.3.3.1** The length of the test specimen to test for requirements given in **4.1** to **4.6** except **4.5** shall be in accordance with Table **5.**

**TABLE 5 - Length of test specimen**

| Count | Length in metres |
|---|---|
| 5 tex and above | 100 |
| below 5 tex | 200 |

**A.3.3.2** The length required for the test prescribed in **4.5** shall be in accordance with the length specified in the tester.

## A.4 CRITERIA FOR CONFORMITY

The lot shall be declared as conforming to the requirements of this specification if the following conditions are satisfied:

**A.4.1** Each carton/cone inspected as in **A.3.1** satisfies the packaging and marking requirements.

**A.4.2** Number of test specimens not conforming to any one or more requirements when tested as in A.3.2 is less than or equal to the corresponding acceptance number given in column **3** of Table **4.**

## APPENDIX B
## COMMON DEFECTS OF YARN PACKAGES

a) Stitches of more than 2.5 cm length at the base
b) Excessive stitches on cones or cheeses
c) Soft cones or cheeses
d) Collapsed cones or cheeses
e) Prominent stains including chalk and other markings
f) Cut threads
g) Absence of tail end where it is required and the length of tail end less than 30 cm
h) Ribbon formation
j) Drum cuts

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## SRI LANKA STANDARDS INSTITUTION

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