SRI LANKA STANDARD 112:2012

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SPECIFICATION FOR
COTTON SEWING THREADS
(Second Revision)

SRI LANKA STANDARDS INSTITUTION

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Gr.6

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SRI LANKA.

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

Sri Lanka Standard
SPECIFICATION FOR COTTON SEWING THREADS
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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 2012-01-27.

This standard was first published in 1971. In the first revision, a test for sewability has been included to establish sewing performance of threads used for industrial purposes. In this revision requirements and limits for linear density and breaking strength have been revised.

Sewing thread is designated by a ticket number which is an indication of the amount of raw fibre in the thread. It is widely used by the manufacturers and industrial thread consumers to describe approximately the thickness of the thread. The method of deriving metric ticket number is given in Appendix **B** as guidance.

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

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 **SLS 102**. The number of significant places to be retained in the rounded off value shall be the same as that of the specified value in this specification.

In the preparation of this standard, the valuable assistance derived from the following publication is gratefully acknowledged.

BS 7318: 1990 British Standard Industrial sewing threads made from linen (flax) or cotton.

1 SCOPE

1.1 This specification prescribes the requirements and methods of test and sampling for bleached or dyed cotton sewing threads.

2 REFERENCES

SLS	16	Standard atmosphere for conditioning and testing of textiles
SLS	20	Method for the determination of linear density (mass per unit length) of yarn from packages by the skein method
SLS	22	Determination of singles end breaking force and elongation at break of yarn from packages
SLS	62	Method for determination of colour fastness of textile materials Part 2: Colour fastness to artificial light xenon arc fading lamp test
SLS	67	Method for determination of colour fastness of textile materials to perspiration
SLS	102	Rules for rounding off numerical values
SLS	428	Random sampling methods
SLS	1357	Method for the determination of colour fastness of textile materials to washing soap or soap & soda

3 REQUIREMENTS

3.1 The threads shall be evenly twisted and shall have a uniform thickness. Threads shall be free from knots, snarls and major faults.

3.2 Sewing thread shall have a uniform bleached or / and dyed to the required shade and shall be free from dyeing defects.

3.3 The threads shall be finished soft, mercerized or glazed as required. The finishing and dressing materials liable to cause subsequent tendering shall not be used.

3.4 The direction of final twist of sewing thread shall be Z. twist.

Note: *In special circumstances S twist is also allowed.*

3.5 The linear density of sewing thread shall be within 5 per cent of the value specified in Column 3 of Table **1** when tested by the method prescribed in **SLS 20**. The co-efficent of variation for linear density shall be less than 3 per cent.

3.6 The breaking strength of thread shall be not less than the value specified in Column 4 of Table **1** when tested by the method prescribed in **SLS 22**.

TABLE 1 – Requirements for linear density and strength of cotton sewing threads

Sl No.	Ticket number	Resultant linear density dtex	Breaking strength N,/ min.
(1)	(2)	(3)	(4)
i)	200	97	2.0
ii)	180	110	2.2
iii)	160	120	2.5
iv)	140	140	2.8
v)	120	160	3.3
vi)	100	195	4.0
vii)	90	215	4.4
viii)	80	245	5.0
ix)	70	280	5.7
x)	60	325	6.6
xi)	50	390	8.0
xii)	40	485	10.0
xiii)	36	540	11.0
xiv)	30	650	13.0
xv)	24	810	17.0
xvi)	20	975	20.0
xvii)	18	1080	22.0
xviii)	16	1220	25.0

3.7 The length of thread in a package shall equal or exceed 95% of the labelled length when tested by the method prescribed in Appendix **D**.

3.8 The colour fastness ratings shall conform to the requirements specified in Table **2** when tested by the methods given in Column 4 of Ta ble **2**.

3.9 The sewing thread when subject to the sewability test prescribed in Appendix **C** shall be able to be sewn with lock stitch (stitch type 301) for 20 metres continuously without any thread breakage.

TABLE 2 – Requirements for colour fastness of cotton sewing threads

Sl No. (1)	Fastness to (2)	Numerical rating (3)	Method of test (4)
i) ii) iii)	Washing Light Perspiration	4 or better 5 or better 4 or better	**Test B of SLS 1357** **SLS 62 Part 2** **SLS 67**

4. PACKAGING AND MARKING

4.1 The sewing thread shall be uniformly and compactly wound in the form of balls, tubes, cones skeins, spools or any other form as required. It shall be wrapped suitably.

4.2 The construction and finish of cones, reels, cops and tubes shall be such that they shall not impede the smooth and even unwinding of the thread.

4.3 The free end of the sewing thread shall be securely fastened to prevent unraveling.

4.4 Each unit package of thread shall be legibly and indelibly marked or labeled with the following:

a) Type of material/s and composition ;
b) Ticket Number and/or Linear density in Tex or Cotton count;
c) Number of plies;
d) Shade number except for threads of black or white in colour;
e) Length, in metres or Mass, in grams;
f) Name and address of the manufacturer and/or supplier; or
g) Registered trade mark, if any; or
h) Brand Name, if any; and
i) Batch identification mark.

4.5 A number of unit packages may be packed in a carton/bale. Each such package shall be marked with the information given in (a) to (i) of **4.4**. In addition, the number of packages in the carton/bale shall also be marked.

NOTE: *Attention is drawn to the certification marking facilities offered by the Sri Lanka Standards Institution. See inside back cover of this standard.*

5. METHODS OF TEST

5.1 Tests for the requirements given to Clause 3 shall be carried out as prescribed in the relevant Sri Lanka Standards given therein and Appendix **C** and Appendix **D** of this specification.

5.2 The conditioning and testing atmosphere shall be the standard atmosphere for conditioning and testing textiles as defined in **SLS 16**. i.e. a relative humidity of 65 ± 4 per cent and a temperature of 27 ± 2 °C.

APPENDIX A
COMPLIANCE OF A LOT

The sampling scheme given in this Appendix shall 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 this standard is to be assessed based on manufacturer's 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

In any consignment all packages of cotton sewing thread of the same linear density and number of plies and belonging to one batch of manufacture or supply shall constitute a lot.

A.2 SCALE OF SAMPLING

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

A.2.2 The number of packages to be selected from a lot shall be in accordance with Table **3**.

TABLE 3 - Scale of sampling

Number of unit packages in the lot (1)	Number of unit packages to be selected (2)	Size of sub sample (3)
Up to 100	5	3
101 to 300	10	5
301 to 500	15	7
501 to 1200	20	10
1201 and above	30	15

A.2.3 If the unit packages are packed in cartons or bales ten (10) per cent of cartons or bales shall be selected from the lot. As far as possible an equal number of unit packages shall be selected from each carton or bale so as to form the size of sample given in Column 2 of Table **3**.

A.2.4 The unit packages shall be selected at random. In order to ensure randomness of selection, tables of random numbers as given in **SLS 428** may be used.

A.3 NUMBER OF TESTS

A.3.1 Each package as in **4.5** shall be examined for packaging and marking requirements.

A.3.2 Each unit package selected as in **A.2.2** or **A.2.3** shall be examined for packaging and marking requirements.

A.3.3 Each unit package selected as in **A.2.2** or **A.2.3** shall be examined for the requirements given in **3.1**, **3.2**, **3.3**, and **3.4**.

A.3.4 Each unit package in the sub sample shall be tested for the requirements given in **3.5**, **3.6**, **3.7** and **3.8**.

A.3.5 Two, unit packages selected as in **A.2.2** shall be tested for the requirements given in **3.9**.

A.4 CRITERIA FOR CONFORMITY

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

A.4.1 Each package examined as in **A.3.1** satisfies the relevant requirements.

A.4.2 Each unit package examined/tested as in **A.3.2**, **A.3.3**, and **A.3.5** satisfies the relevant requirements.

A.4.3 The average linear density calculated from the test results when tested as in **A.3.4** lies within 5 per cent of the linear density specified and co-efficent of variation for the linear density is less than 3 per cent.

A.4.4 The value of the expression $\bar{X}$ - 1.6s calculated using the test results on breaking strength when tested as in **A.3.4** is not less than the value specified.

NOTE:

$\bar{X}$ - The value obtained by dividing the sum of the observed values by the number of tests.

s - Standard deviation – 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.

A.4.5 Each unit package tested for length of thread shall not be less than 5 per cent of the length declared.

A.4.6 Each unit package tested for sewability shall show no thread breakages when tested for the requirements given in 3.9.

APPENDIX B
DESIGNATION OF TICKET NUMBER

The ticket number shall be designated from the total nominal input decitex value regardless of thread construction (1-ply, 2-ply, 3-ply etc.) converted to the 3-ply cotton count equivalent.

The 3-ply cotton count equivalent is calculated by using following :

3-ply cotton count equivalent = cotton count (in Ne_C) x 3

Cotton count is given by the following :

$$\textit{Cotton Count (in } Ne_C\textit{)} = \frac{5905}{\textit{Total nominal input linear density in dtex}}$$

Therefore,

$$\textit{3-ply cotton count equivalent} = \frac{17\,715}{\textit{Total nominal input linear density in dtex}}$$

3-ply cotton count equivalent shall be rounded off as follows:

a) for ticket numbers more than 90, round off to the nearest multiple of 20.
b) for ticket numbers from 50 to 90, round off to the nearest multiple of 10.
c) For ticket numbers less than 50, round off to the nearest even number.

APPENDIX C
DETERMINATION OF SEWABILITY OF SEWING THREAD

C.1 APPARATUS

C.1.1 Lock stitch sewing machine; Power- driven and having a capability of sewing at **3600** stitches per minute.

C.1.2 Sewing pad: 3 ply unbleached woven cotton cloth of which construction having yarn 37 tex, ends 23/cm, picks 23/cm and mass 190 g/m^2 and made up into a circular bend of 1m circumference.

NOTE:

Tolerances on constructional requirements of sewing pad may be applied as follows:

Linear density of yarn - $\pm$ 5 per cent
Threads per cm - Not less than the specified value
Mass per unit area - Not less than the specified value

C.2 PROCEDURE

Adjust the sewing machine to be able to operate with a minimum of 24 stitches per 5 cm and as given in Table **4**. Select suitable size of needle for corresponding Ticket number of sewing thread. Place the sewing pad on the bed of the sewing machine. With the sewing thread being tested in the needle and the rotary hook or oscillatory shuttle run the machine and sew for 20 metres through the pad.

Observe the number of breakages during sewing.

TABLE 4 - Size numbers of sewing machine needles for sewability test

Ticket Number (1)	Needle size, metric, max. (2)
100	60
90	65
80	70
70	75
60	80
50	90
44	100
42	100
40	110
30	110

APPENDIX D
DETERMINATION OF LENGTH

D.1 PROCEDURE

Weigh, to the nearest milligram, the mass of thread in the package. With the use of linear density of thread determined by the method given in **SLS 20**, calculate the length of thread in the package.

D.2CALCULATION

$$\textit{Length, in m, of thread in the package} = \frac{1000\ m}{t}$$

where,

m is the mass, in g, of thread in the package ; and
t is the linear density of thread, in tex.

SRI LANKA STANDARDS INSTITUTION

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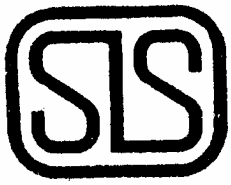

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