SRI LANKA STANDARD 337 : 2002
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SPECIFICATION FOR
ABSORBENT COTTON LINT
(FIRST REVISION)

SRI LANKA STANDARDS INSTITUTION

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SLS 337 : 2002

(Attached Corrigendum No.1)

Gr. 9

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FOREWORD

This standard was approved by the sectoral committee on Textile 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 2002-06-03.

Absorbent cotton lint is used as an external absorbent, protective dressing, and also for the application of ointments and lotions.

This standard was first published in 1974. In this revision the method for determination of pH has been amended. Also the style of presentation is changed along with the introduction of a new sampling plan, and guidelines for the determination of compliance of a lot with the requirements of this standard.

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 standard.

In the preparation of this standard, the valuable assistance derived from British and Indian pharmacopoeias and following foreign standards is gratefully acknowledged.

SABS	469 : 1991	South African Standard Specification for Absorbent Lint.
IS	757 : 1992	Indian Standard Specification for Handloom Cotton Lint, absorbent, bleached (First Revision)

1 SCOPE

This specification prescribes the constructional details and other requirements of Absorbent Cotton Lint bleached and woven.

2 REFERENCES

SLS	16	Standard atmospheres for conditioning and testing textiles.
SLS	41	Determination of the number of threads per centimeter in woven fabrics
SLS	42	Determination of mass per unit length and per unit area of woven or knitted Fabrics
SLS	45	Measurement of length of woven fabric
SLS	46	Measurement of width of woven fabric
SLS	86	pH value of aqueous extracts of textile material
CS	102	Presentation of numerical values.
SLS	137	Grey cotton yarn (powerloom)
SLS	428	Random sampling methods

3 REQUIREMENTS

3.1 General requirements

3.1.1 The yarn used in the manufacture shall be made from cotton conforming to SLS 137 evenly spun and bleached to an acceptable white.

3.1.2 The cloth shall be woven in plain weave, fully bleached and free from blueing and finishing agents and free from weaving defects, neps, and other foreign substances.

3.1.3 The cloth shall be raised on one side and the length of the raised fibres shall be approximately 4.8 mm (0.19 in) from the threads and the raising shall be of uniform density.

3.1.4 The constructional details of absorbent cotton lint shall comply with the following requirements.

3.1.4. a) *Number of threads per unit length.*

The Number of threads per 10 mm in the warp and weft directions shall be 16 ± 5% and 10 ± 5% respectively when tested in accordance with SLS **41**.

3.1.4.b) *Area per unit weight*

The superficial area of one gram of absorbent cotton lint shall be 54 ± 5 cm^2 when tested in accordance with SLS **42**.

3.1.4.c) Width

The width of the absorbent cotton lint shall not be less than 305 ± 2% mm when tested in accordance with SLS **46**.

3.2 Specific requirements

3.2.1 Absorbency

Absorbent cotton lint shall not exceed 10 seconds for complete saturation when tested in accordance with the method prescribed in Appendix **B**.

3.2.2 Fluorescent Brightening Agents

Fluorescent brightening agents shall not be used in the manufacture of absorbent cotton lint. When examined under screened ultra-violet light (having a wave length of 365 nm) not more than an occasional point of fluorescence shall be visible on the cloth.

3.2.3 Water Soluble Extract

Water soluble extract of absorbent cotton lint shall not exceed 0.5 per cent by mass when determined in accordance with the method given in Appendix **C.**

3.2.4 Ash Content

Ash content of absorbent cotton lint shall not exceed 0.5 per cent by mass when determined in accordance with the method prescribed in Appendix **D.**

3.2.5 pH of aqueous extract

The pH value of absorbent cotton lint shall be between 6.5 and 8.5 when determined in accordance with SLS 86.

3.2.6 Resistance to Heat

Absorbent cotton lint shall not turn brown or shall not show any appreciable signs of disintegration when heated to 110 ^{o}C for 20 minutes.

3.2.7 Freedom from oxidizing substances

The absorbent cotton lint shall not develop a blue colour (except on neps, leaf and shell) when tested in accordance with the method given in Appendix **E.**

3.2.8 Freedom from dyes

When absorbent cotton lint is tested in accordance with the method given in Appendix **F,** the percolate may show a yellow colour, but not a blue or a green tint.

3.2.9 Detergents

Detergents shall not be present in absorbent cotton lint.

a) The aqueous extract on gentle shaking shall show no appreciable signs of frothing when tested accordance with Method **A** given in Appendix **G**

b) Presence of anionic, cationic or non-ionic detergents shall not be indicated when tested in accordance with the method **B** given in Appendix **G**

3.2.10 Freedom from dextrin or starch

Absorbent cotton lint shall be free from starch when tested in accordance with the method given in Appendix **H.**

4 PACKAGING

4.1 Absorbent cotton lint shall be suitably folded and placed one over the other and a number of these shall be wrapped neatly to form a package.

4.2 Absorbent cotton lint in rolls shall be in one piece per roll and shall be packed in entirely enclosed packages, wrapped in suitable packaging materials free from wax which do not adversely affect the absorbent cotton lint and which protects it from contamination.

4.3 Packages obtained as in clauses 4.1 and 4.2 may be packed in suitable bulk containers. Only absorbent cotton lint of the same net mass shall be packed together in a bulk container.

5 MARKING

5.1 The following information shall appear in legible and indelible marking on a label securely attached to each package.

a) Manufacturer’s name and Address
b) Trade mark, if any
c) The words “Absorbent Cotton Lint”
d) Nett mass of contents
e) Words “not sterilized”
f) Country of manufacture
g) Date of manufacture

NOTE

Absorbent cotton lint shall be sterilized before used in medical applications.

5.2 Following information shall appear on each bulk container.

a) Information required in clause 5.1
b) Quantity of packages

5.3 Any additional information required by the purchaser may appear in packages and bulk containers.

APPENDIX A
COMPLIANCE OF A LOT

A.1 LOT

All packages of absorbent cotton lint of same net mass belonging to one batch of manufacture or supply shall constitute a lot.

A.2 SCALE OF SAMPLING

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

A.2.2 The number of samples to be selected from a lot shall be in accordance with Column **1** and Column **2** of Table **1.**

TABLE 1 – Scale of Sampling

Number of packages in the Lot (1)	Number of packages to be selected (2)	Acceptance Number (3)
Up to 150	5	0
151 to 500	8	0
501 to 1200	10	1
1201 to 3200	13	1
3201 and above	20	2

A.2.3 If the packages are packed in bales 10 per cent of bales subjected to a minimum of five, shall be selected. As far as possible an equal number of packages shall be drawn from each bale selected, to form the required sample size given in Column **2** of Table **2** .

NOTE

If the lot contains less than five bales, packages shall be selected from each bale.

A.2.4 The packages and bales shall be selected at random. In order to ensure randomness of selection, random number tables as given in SLS 428 shall be used.

A.3 NUMBER OF TESTS

A.3.1 Each bale selected as in **A.2.3** shall be inspected for packaging and marking requirements.

A.3.2 Each package selected as in **A.2.2** shall be inspected for packaging and marking requirements.

A.3.3 The required quantity of material from each package selected as in **A.2.2** shall be visually examined for the requirements given in **3.1.2** and **3.1.3.**

A.3.4 The required quantity of material shall be cut from each package selected as in **A.2.2** and tested for requirements given under **3.1.4.**

A.3.5 The required quantity of material shall be taken from each package selected as in **A.2.2** and tested for the requirements given in **3.2.1** to **3.2.10.**

NOTE

The required test pieces shall be obtained in accordance with relevant test methods.

A.4 CRITERIA FOR CONFORMITY

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

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

A.4.2 Each package inspected as in **A.3.2** satisfies the relevant requirements.

A.4.3 Each package examined as in **A.3.3** shall be satisfies the relevant requirements.

A.4.4 The number of samples of material not conforming any one or more requirements when tested as in **A.3.4** and **A.3.5** is less than or equal to the corresponding acceptance number given in Column **3** of Table **1**.

APPENDIX B
DETERMINATION OF ABSORBENCY

B.1 TEST SPECIMENS

Cut from each sample under test specimens measuring approximately 3 in x 3 in (80 mm x 80 mm).

B.2 CONDITIONING OF TEST SPECIMENS

Prior to test, specimens shall be conditioned to moisture equilibrium in a standard atmosphere for testing at 65 ± 2 per cent relative humidity and 27 ± 2 ^{o}C temperature as specified in **SLS 16.**

B.3 PROCEDURE

Place lightly, by means of forceps, one of the test specimens unraised side downwards, on the surface of water. Note the time taken for the test specimen to get saturated (before completely submerged) and sink in water. Repeat the test with remaining test specimens & takes the mean value of all.

APPENDIX C
DETERMINATION OF WATER SOLUBLE EXTRACT

C.1 TEST SPECIMENS

Draw test specimens of mass approximately 12 g from the sample under test. Prior to test the specimens shall preferably be conditioned to moisture equilibrium in a standard atmosphere for testing as specified in **SLS 16.**

C.2 PROCEDURE

Determine the mass of the conditioned test specimen to the nearest milligrame. Cut the test specimen into small pieces and boil the pieces in 200 ml of distilled water in a beaker for half an hour and filter into a 500 ml measuring flask. Extract the test specimen twice again for 15 minutes and filter the aqueous extracts into the same flask. Pour the solution into a beaker and concentrate it into a small volume. Transfer it into a basin of known mass, washing the beaker with a little distilled water. Evaporate the contents of the basin on a steam bath and dry to constant mass in an air oven maintained at 105 ^{o}C to 110 ^{o}C. Determine the mass of the residue.

C.3 CALCULATION AND EXPRESSION OF RESULTS

$$\text{Water soluble extract, \% by mass} = \frac{m_1}{m_0} \times 100$$

where,

m_0 is the mass, in g. of the test specimen and

m_1 is the mass, in g. of the residue

Repeat the test with the remaining test specimens and the water soluble extract of the absorbent cotton lint shall be calculated by the mean value of all.

APPENDIX D
DETERMINATION OF ASH CONTENT

D.1 CONDITIONING OF TEST SPECIMENS

Prior to test, specimens shall be conditioned to moisture equilibrium in a standard atmosphere for testing as specified in **SLS 16.**

D.2 APPARATUS

D.2.1 Silica or platinum crucible muffle furnace capable of being heated to 900 °C

D.2.2 Muffle furnace capable of being heated to 900 °C

D.3 PROCEDURE

Draw from the samples at least two test specimens of mass 5 g weighed to the nearest 0.01 g. Slowly ignite the test specimen in the crucible over a bunsen flame, transfer the crucible to the muffle furnace and ash at 900 °C for one hour or more until it attains constant mass.

D.4 CALCULATION

$$\text{Ash, per cent by mass} = \frac{m_1}{m_0} \times 100$$

where,

m_0 is the mass, in g. of the test specimen and

m_1 is the mass, in g. of the residue in ash

APPENDIX E
TEST FOR FREEDOM FROM OXIDIZING SUBSTANCES

E.1 TEST SPECIMENS

Draw test specimens of mass approximately1g from each sample under test.

E.2 PROCEDURE

Take a test specimen and immerse in 100 ml of starch mucilage containing 0.5 g of cadmium iodide and 0.5 ml glacial acetic acid, allow to stand for 10 minutes. Repeat the test with the remaining test specimens.

APPENDIX F
TEST FOR FREEDOM FROM DYES

F.1 CONDITIONING OF TEST SPECIMENS

Prior to test, specimens shall be conditioned to moisture equilibrium in a standard atmosphere for testing as specified in **SLS 16.**

F.2 APPARATUS

F.2.1 Test-tube 250 mm test-tube having an inside diameter of 12 mm

F.2.2 Measuring cylinder, with a capacity of 500 ml

F.3 REAGENT

Absolute alcohol or any suitable solvent

F.4 PROCEDURE

Form 10 g of the conditioned sample into a wad and pack it tightly into the measuring cylinder, about 50 mm below the top rim. Extract the specimen slowly with absolute alcohol or any suitable solvent at room temperature until the percolate measures 50 ± 5 ml. Mix the percolate thoroughly and then pour it into the test tube to a depth of 150 mm and note whether the column of percolate when viewed downwards against a white background shows a blue or green .

Repeat the test with the remaining test specimens.

APPENDIX G
METHODS OF TEST FOR DETECTION OF DETERGENTS

METHOD A

G.A.1 TEST SPECIMENS

Draw test specimens of mass approximately 12 g from the sample under test.

G.A.2 PROCEDURE

Cut the test specimen into small pieces and boil the pieces in 200 ml of distilled water in a beaker for half an hour and filter into a 500 ml measuring flask. Extract the test specimen twice again for 15 minutes and filter the aqueous extracts into the same flask.

Note whether the extract froths on gently shaking

METHOD B

G.B.1 PREPARATION OF TEST SPECIMEN

G.B.1.1 Principle

The sample (of about 10 g) is extracted with hot ethanol and the extract rendered alkaline if necessary, is evaporated to dryness. It is redissolved in water, acidified extracted with light petroleum to remove fatty acids derived from soap and the residual aqueous solution of the detergent is adjusted to pH 7 ± 0.5 for further qualititive tests.

G.B.1.2 Reagents

The reagents shall be of a recognized analytical reagent quality. Distilled water or water of at least equal purity shall be used throughout.

a) *Ethanol,* absolute, neutralized to Phenolphthalein indicator

b) *Light petroleum.* b.p. 40 ^{o}C to 60 ^{o}C

c) *Sodium hydroxide* approximately 0.1 N solution

d) *Sulphuric acid,* approximately 0.1 N solution

e) *Phenolphthalein indicator* 0.5 per cent solution in 50 per cent (*v/ v*) ethanol

G.B.1.2 Procedure

Extract the active agent in the sample with the hot ethanol in the ratio of 200 ml of solvent to 10 g of sample.

Add a few drops of phenolphthalein indicator to the extract. If it is alkaline, evaporate to dryness on a steam or water bath. If it is not alkaline divide into approximately equal portions. Make one portion just alkaline to phenolphthalein indicator with the sodium hydroxide solution and evaporate to dryness as above. The addition of sodium hydroxide will prevent hydrolysis of sulphate esters if these are present but may decompose other materials. Evaporate the second portion to dryness without making alkaline and test both residues separately.

Dissolve the residue in water to make an approximately one per cent solution. Test a portion of the solution at room temperature for soap by making just acid (about pH 5) with the sulphuric acid solution. The immediate separation of fatty acids or development of a milkiness usually indicates soap. However if synthetic detergent is also present there may be no visible change. In either case extract the acidified solution with the light petroleum, wash the extract with water, and add to the extract an equal volume of the ethanol and a few drops of phenolphathalein indicator. Add dilute sodium hydroxide solution dropwise. An acid extract confirms the presence of soap.

If soap is present acidify the remainder of the aqueous solution and extract with light petroleum as above. Discard the extract.

Adjust the pH of the aqueous solution if necessary to 7 ± 0.5

G.B.2 QUALITATIVE TESTS

G.B.2.1 Reagents

The reagents shall be of a recognized analytical reagent quality. Distilled water or water of at least equal purity shall be used.

a) *Chloroform*

b) *Buffered bromophenol blue solution. Mix together 7.5 ml of 0.2 N sodium acetate solution, 92.5 ml of 0.2 N acetic acid solution and 2.0 ml of 0.1 per cent (m/v) bromophenol blue solution in ethanol. The pH of this solution should be between 3.6 and 3.9.*

c) *Cetyltrimethylammonium bromide solution. Dissolve 10 g of cetyltrimethylammonium bromide in 1000 ml of water, warm if necessary*

d) *Iodine-potassium iodide solution. Dissolve 1.27 g of iodine and 2.0 g of potassium iodide in water and dilute to 1000 ml.*

e) *Ammonium hexathiocyanate-cobaltate reagent. Dissolve 200 g of ammonium thiocyanate and 30 g of cobalt nitrate in water and dilute to 1000 ml.*

f) *Methylene blue solution. Dissolve 50 g of sodium sulphate in about 500 ml of water Add 6.8 ml of sulphuric acid (d = 1.84) then add 30 ml of 0.1 per cent aqueous solution of methylene blue and dilute to 1000 ml.*

G.B.2.2 Procedure

Make an approximately 1 per cent solution of the prepared sample. Adjust the pH of the solution if necessary to 7 ± 0.5

a) TEST 1

Shake 5 ml of the test solution with 25 ml of methylene blue solution and 10 ml of chloroform. A blue colour in the chloroform layer indicates the presence of anionic detergent. Confirm that the colour can be discharged by the addition of cetyltrimethylammonium bromide solution.

NOTE

If chlorine compounds are present the original 5 ml of test solution should first be well shaken with sufficient crystals of sodium thiosullphate to de-chlorinate it.The presence of chlorine would invalidate this test since it yields an apparently positive reaction for anionic detergent.

b) TEST 2

To 10 ml of buffered bromophenol blue solution add 2 to 5 drops of the solution under test. A sky blue colour indicates the presence of cationic detergent.

If anionic or cationic compounds are shown to be present by the above tests remove them by mixed bed ion exchange methods before performing Tests 3 and 4.

c) TEST 3

Add a few drops of the solution under test to 10 ml of iodine-potassium iodide reagent. A discoloration from orange to red or reddish brown or the formation of a dirty greyish-brown precipitate indicates the presence of non-ionic detergent.

NOTE

A positive indication by this test is given by ethylene oxide condensates and esters of polyhydric alcohols.

Shake 20 ml of ammonium hexathiocyanate-cobaltate reagent with 10 ml of test solution and 10 ml of chloroform. A blue colour in the chloroform layer indicates the presence of non-ionic detergent.

NOTE

A blue colour in the test is given by ethytlene oxide condensates of average polymer length three or more units.

APPENDIX H
TEST FOR FREEDOM FROM DEXTRIN OR STARCH

H.1 TEST SPECIMEN

Draw approximately 10 g from the sample and shred the sample into small bits and mix them thoroughly. From this draw two test specimens each weighing about 5 g.

H.2 PROCEDURE

H.2.1 Boil the test specimen in about 500 ml of distilled water in a conical flask for about 45 minutes. Cool the contents in the flask. Put a drop of iodine solution on a small quantity taken from the flask. Observe whether there's any appearance of blue colour.

H.2.2 Repeat the test with the remaining test specimen.

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2001-08-27

CORRIGENDUM No 1 TO SLS 337 : 2002 (FIRST REVISION)

Clause 3.1.4 a) Number of threads per unit length

In line 1, delete "16 ± 5 %" and substitute "16 ± 2"

In line 2, delete "10 ± 5 %" and substitute "10 ± 1"

Clause 3.1.4 c) width

In line 1, delete "305 ± 2 %" and substitute "305"

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