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SPECIFICATION FOR
COCONUT FIBRE
PART 4 — RETTED WHITE FIBRE

BUREAU OF CEYLON STANDARDS

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SLS 115 : Part 4 : 1975

Gr.4

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SRI LANKA STANDARD
SPECIFICATION FOR COCONUT FIBRE (COIR FIBRE)
PART 4 - RETTED WHITE FIBRE

FOREWORD

This Sri Lanka Standard Specification has been prepared by the Drafting Committee of the Bureau on Coir Fibre. It was approved by the Agricultural and Chemicals Divisional Committee of the Bureau of Ceylon Standards and was authorised for adoption and publication by the Council of the Bureau on 1975-09-03.

Sri Lanka is the largest exporter of coir fibre. Two main grades of coir fibre, namely, bristle and mattress fibre are exported.

This specification is one of the series of Sri Lanka Standards relating to coconut fibres. Other standards in this series are

Part 1 Bristle Fibre
Part 2 Mattress Fibre*
Part 3 Decorticated Fibre*

Retted white fibre is the unseparated fibre extracted either by hand or mechanically from the green coconut husks after soaking these husks normally for a period of about nine months usually in brackish water.

The standard values are given in Metric Units (SI units).

**Under preparation.*

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

This standard specification has been prepared with the assistance and co-operation of the Coconut Processing Board.

1 SCOPE

This standard prescribes the requirements and methods of test for retted white fibre.

2 DEFINITIONS

The following definitions shall apply for the purpose of this specification:

2.1 consignment: The bales or ballots of retted white fibre of the same grade delivered to one purchaser against one despatch note shall constitute a consignment.

2.2 long: These are fibres which are 150 mm or more in length.

2.3 medium: These are fibres of length more than 100 mm and less than 150 mm.

2.4 short: These are fibres of length more than 50 mm and less than or equal to 100 mm.

2.5 bit: These are fibres of length less than or equal to 50 mm.

**CS 102 Presentation of numerical values.*

3 GRADES

Retted white fibre shall be divided as given in Table 1.

TABLE 1 - Colour & percentage impurities of the various grades of retted white fibre

Grade	Colour in accordance with the approved samples maintained by the Coconut Processing Board	Maximum impurities per cent by mass
1	Natural bright	2.0
2	Natural light brown and/or light grey	3.0

4 REQUIREMENTS

4.1 Length of fibre

The proportion by mass of "long", "medium", "short" and "bit" fibres shall be as agreed to between the purchaser and the supplier. Where no such agreement exists, the proportion by mass of long, medium, short and bit fibres in any supply shall be not less than 60 per cent long and not more than 5 per cent bit and the remainder being medium and/or short.

4.1.1 The proportion by mass of long, medium, short and bit fibres shall be determined by the method prescribed in Appendix A.

4.2 Colour

The colour of the grades of fibre shall be as described in Table 1.

4.3 Impurities

The maximum permissible impurities, chiefly pith and dust in white retted fibre of the various grades shall be in accordance with Table 1. The percentage impurities in a consignment shall be determined by the method described in Appendix B.

4.4 Moisture

The moisture content for natural colour white retted fibre shall not exceed 15 per cent as determined by the method described in Appendix C. However, a moisture content of not more than 19 per cent may be accepted for internal transactions.

4.5 Salt content

The salt content expressed as sodium chloride in fibre of various grades shall not exceed 4 per cent by mass when determined in accordance with the method described in Appendix D.

5 PACKING AND MARKING

The retted white fibre shall be suitably packed in bales, ballots/coils or as otherwise agreed between the purchaser and the supplier. Each bale or package shall be marked with the grade, net mass and any other information required by the purchaser or by the law in force.

6 SAMPLING

6.1 Samples for determining the conformity of the material to this standard shall be selected so as to be representative of the consignment.

6.2 Unless otherwise agreed upon between the purchaser and the supplier, the sampling plan and criteria for conformity shall be given as in Appendix E.

APPENDIX A

METHOD FOR DETERMINATION OF THE PROPORTION BY MASS OF "LONG", "MEDIUM", "SHORT" AND "BIT" FIBRES

A.1 TEST SPECIMENS

A.1.1 Draw three test specimens weighing approximately 2 g each from the test sample. See E.1.2(c).

A.2 EQUIPMENT

For the purpose of this test, a flat table marked with a scale with 10 mm graduations to measure up to 150 mm shall be used.

A.3 PROCEDURE

A.3.1 Take one of the test specimens and measure the length of its individual fibre on the scale marked on the table by holding one end of each fibre with the fore finger of the left hand stretching the other end with the fingers of the other hand. Put the fibres so measured into four groups according to their length as specified in 2.

A.3.2 Weigh the fibres in each group and calculate the percentage of the mass of fibres in each group to the total mass of fibres in all the four groups.

A.3.3 Repeat the test with the remaining two test specimens.

A.3.4 Average of the percentage by mass, of fibres in the 4 relevant groups shall be deemed to be the proportion by mass of "long", "medium", "short" and "bit" fibres in the consignment.

APPENDIX B

METHOD FOR DETERMINATION OF THE PERCENTAGE OF IMPURITIES

B.1 TEST SPECIMENS

B.1.1 Draw 5 test specimens weighing approximately 60 g each from the test sample See E.1.2(c).

B.2 PROCEDURE

B.2.1 Dry one of the test specimens in a conditioning oven (see 1.1) and determine its oven-dry mass correct to the nearest 0.05 g.

B.2.2 Immediately after drying remove all pith, dust and other impurities adhering to the fibre and determine the oven-dry mass of the cleaned test specimen correct to the nearest 0.05 g.

B.2.3 Calculate the percentage of impurities in the test specimen by the following formula:

$$\text{Impurities, per cent by mass} = \frac{(m_1 - m_2)\ 100}{m_1}$$

where,

m_1 = oven-dry mass of the test specimen before cleaning, and

m_2 = oven-dry mass of the test specimen after cleaning.

B.2.4 Repeat the test with the remaining test specimens. The average of all values thus obtained shall be deemed to be the percentage of impurities in the whole fibre consignment.

APPENDIX C

METHOD FOR DETERMINATION OF MOISTURE CONTENT

C.1 APPARATUS

C.1.1 Conditioning oven

With forced ventillation provided with positive valve control and capable of maintaining a temperature of 100 °C to 110 °C, equipped with weighing balance arranged to weigh fibre with an accuracy of 0.5 g while suspended within the drying chamber, the holder of the fibre to be of such a type as to ensure free access of the dry air to all portions of the fibre.

C.2 PROCEDURE

C.2.1 Remove about 200 g of fibre from the test sample (see E.1.2(c))and weigh it correct to the nearest 0.5 g. Place the test specimen in the conditioning oven and dry for one hour and weigh to the nearest 0.5 g. Dry for another 15 minutes and weigh to the nearest 0.5 g. Provided the loss in mass in drying of the test specimen, as disclosed by the first and second weighings, does not exceed 0.25 per cent of the first mass, take the second mass to be the dry mass of the test specimen. If the loss exceeds 0.25 per cent, weigh the test specimen at 15 minute intervals till the loss between two successive weighings is 0.25 per cent or less of the first of the two masses.

C.2.2 Calculate the percentage of moisture content by the following formula:

$$\text{Moisture content, per cent by mass} = \frac{(m_1 - m_2)\ 100}{m_1}$$

where,

m_1 = mass of the original test specimen, and

m_2 = mass of the oven dried test specimen.

APPENDIX D

METHOD FOR DETERMINATION OF SALT CONTENT

D.1 TEST SPECIMEN

D.1.1 Draw one test specimen weighing approximately 5 g from the test sample (see E.1.2(c)).

D.2 CONDITIONING OF TEST SPECIMEN

D.2.1 Prior to evaluation the test specimen shall be conditioned to moisture equilibrium in a standard atmosphere at 65 ± 2 per cent relative humidity and 27 ± 2 °C temperature.

D.2.2 When the test specimen has been left in such an atmosphere for 48 hours in such a way as to expose as far as possible all portions of the test specimen to the atmosphere it shall be deemed to have reached moisture equilibrium.

D.3 PROCEDURE

D.3.1 Immediately after conditioning (see D.2), weigh the test specimen. Boil it in 200 ml of distilled water for 30 minutes. Decant the extract into a beaker and re-extract the test specimen twice each time boiling with 100 ml of distilled water for 15 minutes and decanting the extract into the same beaker (see Note). Filter the extract so decanted and make up the volume to 500 ml with distilled water. Transfer 25 ml of the extract to a conical flask and add 5 ml of 6 N nitric

acid. Add to this a measured excess of 0.05 N silver nitrate solution from a burette. Add also 3 ml of reagent grade nitrobenzene and 1 ml of ferric alum indicator and shake the mixture vigorously to coagulate the precipitate. Titrate the mixture against standard 0.05 N solution of potassium thiocyanate. Take the end point to have been reached when the aqueous solution turns red, which does not fade after five minutes.

NOTE - In case sodium chloride is not completely extracted, it may be necessary to repeat the boiling of the test specimen with more water.

D.3.1.1 Make a blank determination with all the reagents but taking distilled water instead of the extract.

D.3.2 Calculate the percentage of sodium chloride by the following formula:

$$\text{Sodium chloride per cent by mass} = \frac{N \times (V_1 - V_2)\ 20 \times 5.846}{m} \times 100$$

where

N = normality of the potassium thiocyanate solution,

V_1 = volume of the potassium thiocyanate solution required for blank titration (see D.3.1.1),

V_2 = volume of the potassium thiocyanate solution required for titration (see D.3.1), and

m = mass of the test specimen after conditioning.

D.3.3 The value so obtained shall be deemed to be the percentage of salt in the fibre in the lot.

APPENDIX E

SAMPLING SCHEME AND CRITERION FOR CONFORMITY

E.1 SAMPLING

E.1.1 The conformity of a consignment to the requirements of this standard shall be determined on the basis of tests carried out on the bales or packages selected from it.

E.1.2 20 per cent of all bales or packages selected at random and consisting of a fair average of the entire consignment shall be drawn.

25 per cent of these bales or packages shall be subjected to sampling.

a) *Bales* - Shall be split into four equal sizedzed slabs. From the upper side of each slab 8 samples of equal mass (50 g to 100 g) shall be taken at equally spaced intervals so that they are representative of the surface of the slab the aggregate sample from each bale weighing 1600 g to 3200 g.

b) *Ballots/coils* - Approximately 500 g shall be drawn from the surface, centre and middle third of each package.

c) The samples from each base or package so drawn shall be bulked, sealed into an air tight container and marked with the following information:

1) Supplier's name
2) Marks
3) Number of bale or package (if any).

The samples representing each bale or package shall be tested individually for the requirements of the standard.

E.1.3 Criterion for conformity

The consignment shall be considered as in conformity with the requirements of the standard if the following conditions are satisfied.

a) The colour satisfies the requirements specified in Table 1 and the proportion by mass of 'long', 'medium', 'short' and 'bit' fibre of each test sample satisfy the requirements specified in 4.1.

b) From the observed values of impurities, salt and moisture content, the averages ($\bar{x}$) (see Note 1) and the range (R) (see Note 2) are calculated separately for each requirement and the value of the expression ($\bar{X}$ + 0.4R) for each requirement is found to be less than or equal to the corresponding specified value.

NOTES :

1. The average ($\bar{X}$) is the value obtained by dividing the sum of observed values by the number of tests.

2. The range (R) is the difference between the maximum and minimum in a set of observed values.

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