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मानक

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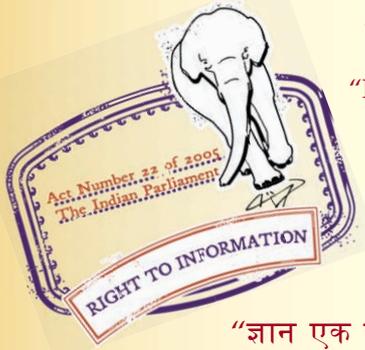
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IS 898 (1985): Retted Coir Fibre [TXD 25: Coir and Coir Products]



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Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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IS : 898 - 1985

Indian Standard
SPECIFICATION FOR
RETTED COIR FIBRE
(*Second Revision*)

UDC 677.181 : 677.071.5



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INDIAN STANDARDS INSTITUTION
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NEW DELHI 110002

AMENDMENT NO. 1 APRIL 1989

TO

IS:898-1985 SPECIFICATION FOR RETTED COIR FIBRE

(Second Revision)

[Page 11, clause E-1.5 (b), lines 2 and 4] -
Substitute '(x)' for '(x)'.

(TDC 50)

Reprography Unit, BIS, New Delhi, India

Indian Standard

SPECIFICATION FOR RETTED COIR FIBRE

(*Second Revision*)

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(*Continued on page 2*)

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Indian Standard
SPECIFICATION FOR
RETTED COIR FIBRE
(*Second Revision*)

0. FOREWORD

0.1 This Indian Standard (Second Revision) was adopted by the Indian Standards Institution on 10 September 1985, after the draft finalized by the Coir and Coir Products Sectional Committee had been approved by the Textile Division Council.

0.2 This standard was first revised in the year 1964, the present revision has been taken up in the light of the experience gained since its first revision.

0.3 In the present revision the following major changes have been made:

- a) The requirement for correct invoice mass; has not been included in the specification.
- b) Change has been made in the formula for determining salt content in coir fibre for correcting the same.
- c) Changes have been made in Table 2.

0.4 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 IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes the requirements for four grades of retted coir fibre designated as Grade 1, Grade 2, Grade 3 and Grade 4.

*Rules for rounding off numerical values (*revised*).

2. TERMINOLOGY

2.1 Retted Coir Fibre — The fibre extracted from the green natural coconut husks after retting in flowing, circulating or changed water for a period of minimum three months. However, if the fibre is made out of precrushed husks the retting period may be reduced suitably.

3. REQUIREMENTS

3.1 Grades — Coir fibre shall be graded as shown in Table 1 in accordance with colour and maximum permissible impurities.

TABLE 1 CHARACTERISTICS OF COIR FIBRE OF VARIOUS GRADES

SL No.	GRADE	COLOUR	MAXIMUM IMPURITIES, PERCENT BY MASS
i)	1	Natural bright	2.0
ii)	2	Natural light brown and/or light grey	3.0
iii)	3	Natural brown and/or grey	5.0
iv)	4	Natural dark brown and/or dark grey	7.0

3.1.1 The percentage of impurities in the fibre shall be determined by the method prescribed in Appendix A.

3.2 Length of Fibre — The lengths of fibres shall be designated as follows:

<i>Designation</i>	<i>Length</i> cm
'long'	Over 15
'medium'	Over 10 and up to 15
'short'	Over 5 and up to 10
'bit'	Up to and including 5

3.2.1 The percent 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 50 percent 'long', not more than 5 percent 'bit' and the remainder being 'medium' 'short'.

3.2.1.1 The percent by mass of 'long', 'medium', 'short' and 'bit' fibres shall be determined by the method prescribed in Appendix B.

3.3 Salt Content — The salt content expressed as sodium chloride in fibre of various grades shall not exceed 4 percent.

3.3.1 The percentage of salt in the fibre in a lot shall be determined by the method prescribed in Appendix C.

3.4 Moisture Content — The moisture content in fibre of various grades shall not exceed 15 percent.

3.4.1 The percentage of moisture in the fibre in a lot shall be determined by the method prescribed in Appendix D.

3.5 Atmospheric Conditions for Test — Unless otherwise provided for in an agreement between the buyer and the seller, all tests shall be carried out in a standard atmosphere at 65 ± 2 percent relative humidity and $27 \pm 2^\circ\text{C}$ temperature (*see also* IS : 196-1966*).

4. PACKING AND MARKING

4.1 Coir fibre shall be suitably packed in bales or as otherwise agreed to between the purchaser and the supplier.

4.2 A label giving the following particulars shall be attached to each bale or package:

- a) Grade number,
- b) Designation,
- c) Net mass of the bale, and
- d) Any other information required by the buyer.

4.2.1 The bales may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks), Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

5. SAMPLING AND CRITERIA FOR CONFORMITY

5.1 Samples for determining the conformity of a lot (or consignment) of the material to this standard shall be selected so as to be representative of the lot.

5.2 Unless otherwise agreed to between the purchaser and the supplier the sampling plan and criteria for conformity as given in Appendix E shall be followed.

*Atmospheric conditions for testing (*revised*).

A P P E N D I X A

(Clause 3.1.1)

METHOD FOR DETERMINATION OF THE PERCENTAGE OF IMPURITIES IN COIR FIBRE

A-1. TEST SPECIMEN

A-1.1 Draw 5 test specimens weighing approximately 60 g each from the test sample (see E-1.4).

A-2. PROCEDURE

A-2.1 Dry one of the test specimens in a conditioning oven and determine its oven-dry mass correct to the nearest 0.05 g.

A-2.2 Immediately after drying remove by hand all pith, husk 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.

A-2.3 Calculate the percentage of impurities in the specimen by the following formula:

$$\text{Impurities, percent} = \frac{(M_1 - M_2) 100}{M_1}$$

where

M_1 = oven-dry mass of the test specimen before cleaning, and

M_2 = oven-dry mass of the test specimen after cleaning.

A-2.4 Repeat the test with the remaining test specimens. The average of all the values thus obtained shall be deemed to be the percentage of impurities in the coir fibre in the lot.

A P P E N D I X B

(Clause 3.2.1.1)

METHOD FOR DETERMINATION OF THE PERCENT BY MASS OF 'LONG', 'MEDIUM', 'SHORT' AND 'BIT' FIBRES

B-1. TEST SPECIMENS

B-1.1 Draw 3 test specimens weighing approximately 2 g each from the test sample (see E-1.4).

B-2. EQUIPMENT

B-2.1 For the purpose of this test, a flat table marked with a scale in centimetre to measure up to 15 cm shall be used.

B-3. PROCEDURE

B-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 forefinger of the left hand and stretching the other and with the right hand fingers. Put the fibres so measured into four groups according to their length as given below:

<i>Length of Fibre</i>	<i>Group</i>
Up to and including 5.0 cm	1
Over 5.0 cm and up to 10.0 cm	2
Over 10.0 cm and up to 15.0 cm	3
Over 15.0 cm	4

B-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.

B-3.3 Repeat the test with the remaining two test specimens.

B-3.4 Average of the percentage by mass, of fibres in groups 4, 3, 2 and 1 shall be deemed to be the percentage by mass of 'long', 'medium', 'short' and 'bit' in the lot.

A P P E N D I X C

(*Clause 3.3.1*)

METHOD FOR DETERMINATION OF SALT CONTENT IN COIR FIBRES**C-1. TEST SPECIMEN**

C-1.1 Draw one test specimen weighing approximately 5 g from the test sample (*see E-1.4*).

C-2. CONDITIONING OF TEST SPECIMEN

C-2.1 Prior to evaluation, the test specimen shall be conditioned to moisture equilibrium in a standard atmosphere at 65 ± 2 percent relative humidity and $27 \pm 2^\circ\text{C}$ temperature (*see IS : 196-1966**).

*Atmospheric conditions for testing (*revised*).

C-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.

C-3. PROCEDURE

C-3.1 Immediately after conditioning (*see* C-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 5 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.

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

C-3.2 Calculate the sodium chloride by the following formula:

$$\text{Sodium chloride, percent} = \frac{N \times (V_1 - V_2) 20 \times 0.05846}{M} \times 100$$

where

N = normality of the potassium thiocyanate solution,

V_1 = volume of the potassium thiocyanate solution in millilitre required for blank titration (*see* C-3.1.1);

V_2 = volume of the potassium thiocyanate solution in millilitre required for titration (*see* C-3.1); and

M = mass in gm of the test specimen after conditioning.

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

APPENDIX D

(Clause 3.4.1)

METHOD FOR DETERMINATION OF MOISTURE CONTENT IN COIR FIBRE

D-1. APPARATUS

D-1.1 Conditioning Oven — With forced ventilation, provided with positive value control and capable of maintaining a temperature of 100°C to 110°C, equipped with a weighing balance arranged to weigh coir 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.

D-2. PROCEDURE

D-2.1 Remove the test sample from the sealed container and weigh it correct to the nearest 0.5 g. Place the test specimen in the conditioning oven and dry for 1 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 percent of the first weight, take the second weight to be the dry mass of the test specimen. If the loss exceeds 0.25 percent, weight the test specimen at 15 minutes intervals till the loss between two successive weighings is 0.25 percent or less of the first of the two weights.

D-2.2 Calculate moisture content, percent, by the following formula:

$$\text{Moisture content, percent} = \frac{(M_1 - M_2) 100}{M_1}$$

where

M_1 = mass of the original test specimen, and

M_2 = mass of the oven-dried test specimen.

APPENDIX E

(Clauses 5.2, A-1.1, B-1.1 and C-1.1)

SAMPLING AND CRITERIA FOR CONFORMITY FOR COIR FIBRE

E-1. SAMPLING

E-1.1 Lot — The bales of coir fibre of the same grade, delivered to one buyer against one despatch note shall constitute a lot.

E-1.2 The conformity of a lot to the requirements of this standard shall be determined on the basis of tests carried out on the bales selected from it.

E-1.3 Unless otherwise agreed to between the buyer and the seller, the number of bales to be selected from the lot shall be in accordance with col 2 of Table 2.

TABLE 2 NUMBER OF BALES TO BE SELECTED

Lot Size (N)	SAMPLE SIZE (n)
Up to 50	3
51 " 100	5
101 " 200	6
201 " 300	7
301 " 500	8
501 " 800	9
801 and above	10

E-1.3.1 These bales shall be selected at random. In order to ensure randomness of selection, all the bales in the lot may be serially numbered as 1, 2, 3, and so on and every r th bale may be selected until the requisite number is obtained, r being the integral part of N/n where N is the lot size and n is the sample size.

E-1.4 For evaluating (a) colour (b) percentage of impurities, (c) percent by mass of 'long', 'medium', 'short' and 'bit' fibres, and (d) salt content, about one kilogram of the coir fibre shall be collected from 20 different randomly distributed places in the bale by taking about 50 g of the fibre from each place. The quantity drawn from each bale shall be kept separately.

E-1.4.1 For evaluating moisture content about 500 g of the coir fibre shall be collected from 10 different randomly distributed places in the bale by taking 50 g of the fibre from each place. The quantity so drawn from each bale shall be immediately transferred to a suitable air-tight container and the container sealed to avoid any loss of moisture.

E-1.5 Criterion for Conformity — The lot 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 percent by mass of 'long', 'medium', 'short' and 'bit' fibres of each test sample satisfy the requirements specified in 3.2.

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

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

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

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

QUANTITY	UNIT	SYMBOL
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

QUANTITY	UNIT	SYMBOL
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

QUANTITY	UNIT	SYMBOL	DEFINITION
Force	newton	N	1 N = 1 kg.m/s ²
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m ²
Frequency	hertz	Hz	1 Hz = 1 c/s (s ⁻¹)
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W/A
Pressure, stress	pascal	Pa	1 Pa = 1 N/m ²



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