भारतीय मानक
Indian Standard

IS 15340 : 2019

नारियल के रेशे का नमदा — विशिष्टि

(पहला पुनरीक्षण)

Coir Felt — Specification

(First Revision)

ICS 59.060.10; 59.080.50

भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS
मानक भवन, 9 बहादुरशाह ज़फर मार्ग, नई दिल्ली – 110002
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI-110002
www.bis.gov.in www.standardsbis.in

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FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Coir and Coir Products Sectional Committee had been approved by the Textile Division Council.

This standard was first published in 2003in response to the long demand of coir felt by the coir industry for promoting environment friendly agro-based products and prescribes two grades of coir felt of seven varieties each according to mass and thickness of the felt.

Further it has now been revised to incorporate the additional requirements for Eco-mark.

The Ministry of Environment and Forests, Government of India has instituted a scheme for labelling environment friendly products known as 'Eco-mark scheme'. This standard is based on the criteria as notified by the Government of India *vide* Gazette Notification No. 893(E), dated 18 September 2018 for labelling Coir and Coir products as environment friendly.

The Eco-mark scheme is being operated by the Bureau of Indian Standards. However, to obtain the licence to use the Eco-mark on a product, it is also essential to obtain BIS licence to use the Standard Mark as per the relevant Indian Standard for that product.

The composition of the committee responsible for the formulation of this standard is given at Annex F.

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 or analysis shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

COIR FELT— SPECIFICATION

(First Revision)

1 SCOPE

This standard specifies the requirements and methods of test for two grades of coir felts having mass ranging from 600 g/m^2 to 1 200 g/m^2.

2 REFERENCES

The standards listed in Annex A contain provisions which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of standards indicated in Annex A.

3 MANUFACTURE

3.1 The coir felt is manufactured by needle punching the coir fibre web of required mass and width.

3.2 Fibre webs of required mass are made by either air lay or gravity lay process.

3.3 The coir felt shall be as far as possible free from ridges and creases and preferably have straight edges.

3.4 Unless otherwise specified the raw material used for the manufacture of coir felt shall conform to IS 9308 (Part 3).

3.5 Coir felt may also be manufactured with jute or HDPE scrim backing or any other material as agreed to between the buyer and the seller.

4 GRADE AND VARIETIES

Coir felt shall be of two grades depending upon the impurities and each grade shall be having seven varieties according to mass and thickness.

5 REQUIREMENTS

5.1 Impurities

The maximum permissible impurities mainly pith, cluster and dust in coir felt shall be in accordance with Table 1 when determined by the method prescribed in Annex B.

Table 1 Grades of Coir Felt

(*Clause* 5.1)

Sl No.	Grades	Impurities, Percent, *Max.*
(1)	(2)	(3)
i)	Grade 1	5
ii)	Grade 2	7

5.2 Mass per Square Metre and Thickness

The coir felt of different varieties of each grade shall conform to the requirements given in Table 2 when determined by the method prescribed in Annex C.

Table 2 Physical Requirements of Coir Felts

(*Clause* 5.2)

Sl No.	Variety No.	Mass g/m^2	Thickness mm	Preferred Length of Felt in Roll m
(1)	(2)	(3)	(4)	(5)
i)	1	600	9	25
ii)	2	700	10	25
iii)	3	800	11	25
iv)	4	900	12	25
v)	5	1000	13	25
vi)	6	1100	14	25
vii)	7	1200	15	25
Tolerance, Percent		±5	±5	—

5.3 Moisture Content

The moisture content of the coir felt shall not exceed 15 percent when determined by the method prescribed in Annex D.

5.4 Chloride Content

The chloride content of the coir felt, when determined by the method prescribed in Annex E shall not exceed 0.6 percent by mass.

5.5 Sulphate Content

The sulphate content of the coir felt, when determined by the method prescribed in IS 4203 shall not exceed 0.25 percent by mass.

5.6 *p*H Value

The *p*H value of the aqueous extract of the coir felt, when determined by the method prescribed in Annex E shall be between 5 to 8.5.

6 ADDITIONAL REQUIREMENTS FOR ECOMARK (OPTIONAL)

6.1 The product shall meet the requirement specified in this Indian Standard.

6.2 The manufacturer shall produce the consent clearance as per the provisions of *Water (Prevention and Control of Pollution) Act,* 1974 and *Air (Prevention and Control of Pollution) Act,*1981 and authorization(s), if required under the rules notified under the *Environment (Protection) Act*, 1986 and rules made there under as per *Bureau of Indian Standards Act*, 2016 while applying for the Ecomark.

6.3 The product(s) or product packaging(s) may display in brief the criteria based on which the product(s) has been labeled Environment Friendly.

6.4 The material used for product packaging(s) shall be recyclable, reusable or biodegradable.

6.5 The product shall meet the specific requirements as given in Table 3.

7 PACKING AND MARKING

7.1 Unless otherwise agreed to between the buyer and the seller, the felts shall be packed as mentioned in **7.2**.

7.2 The coir felts shall be rolled individually and tied with a coir yarn at two places minimum.

7.3 Each roll shall bear the following information:

a) Manufacturer's name, initials or trade-mark;
b) Name of the material;
c) Nominal length, width and thickness of the material;
d) Grade and variety number;
e) Month and year of manufacture;

Table 3 Specific Requirements for Eco-mark

(*Clause* 6.5)

Sl No.	Parameters	Requirement	Method of Test
(1)	(2)	(3)	(4)
i)	Residual pesticides (Sum parameter) (ppm) (*Max*)	1.0	Annex D of IS 15651
ii)	*p*H of aqueous extract	6-7	Annex H of IS 8391 (Part 1)
iii)	Free and releasable formaldehyde (*Max*)	300 ppm	
		(For coloured products only) (Total of free and released formaldehyde)	IS 14563 (Parts 1 and 2)
iv)	Extractable heavy metals by artificial acidic sweat (ppm) (*Max*)		Annex A of IS 15651,
	a) Antimony (Sb)	10	
	b) Arsenic (As)	1.0	
	c) Lead (Pb)	1.0	
	d) Cadmium (Cd)	0.1	
	e) Mercury (Hg)	0.1	
	f) Chromium Total (Cr)	2.0	
	g) Cobalt (Co)	4.0	
	h) Copper (Cu)	50.0	
	i) Nickel (Ni)	4.0	
		(For coloured products only)	
v)	Pentachlorophenols (PCP), (ppm) (*Max*)	0.5	Annex B of IS 15651
		(For coloured products only)	
vi)	Banned aryl amines from azo dyes, (ppm) (*Max*)	30.0	IS 15570
		(For coloured products only)	

f) Criteria for which coir felt has been labeled as Eco-mark; and

g) Any other information required by the buyer or by the law in the force.

7.4 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act,* 2016 and the Rules and Regulations framed there under, and the products may be marked with the Standard Mark.

7.5 The product may also be marked with Eco-mark in addition to Standard Mark if the requirements specified in **6.5** are also satisfied.

8 SAMPLING

8.1 Lot

The quantity of coir felt of the same grade and variety number delivered to a buyer against a despatch note shall constitute a lot.

8.2 The conformity of the lot to the requirements of this specification shall be determined on the basis of the tests carried out on the sample selected from it.

8.3 Unless otherwise agreed to between the buyer and the seller, the number of rolls to be selected at random from a lot shall be in accordance with Table 4.

8.4 The number of test samples and the criteria for conformity of a lot for various characteristics shall be as follows:

Characteristics	*Number of Test Samples*	*Criteria of Conformity*
Impurities, mass and thickness	According to col 3 of Table 4	Non-Conformity roll shall not exceed the corresponding number given in col 4 of Table 4
Length	According to col 3 of Table 4	None of the piece shall be less than the declared marked length
Moisture content, chloride content, sulphate content and *p*H value	According to col 5 of Table 4	All the test samples shall satisfy the relevant requirement

Table 4 Sample Size and Criteria for Conformity

(*Clauses* 8.3 *and* 8.4)

Sl No.	No. of Rolls in the Lot	No. of Rolls to be Selected	Acceptance Number	Sub-Sample Size
(1)	(2)	(3)	(4)	(5)
i)	Up to 100	5	0	2
ii)	101 to 150	8	1	2
iii)	151 to 300	13	1	3
iv)	301 to 500	20	2	3
v)	501 and above	32	3	5

ANNEX A

(*Clause* 2)

IS No.	*Title*
1070 : 1992	Reagent grade water (*third revision*)
2711 : 1979	Specification for direct reading *p*H meters (*second revision*)
4203 : 1967	Method for determination of sulphate content in textile materials
6359 : 1971	Method for conditioning of textiles
9308 : 1987	Specification for mechanically extracted coir fibres (*first revision*)
Part 1	Bristle coir fibre
Part 2	Mattress coir fibre
Part 3	Decorticated coir ibre
15651 : 2006	Textiles — Requirements for environmental labelling — Specification
8391 (Part 1) : 2018	Rubberized coir sheets for cushioning — Specification: Part 1 Curled (*second revision*)
14563 (Part 1) : 1998	Textiles— Determination of formaldehyde: Part 1 Free formaldehyde
14563 (Part 2) : 1999	Textiles — Determination of formaldehyde: Part 2 Released formaldehyde
15570 : 2005	Textiles — Method of test — Detection of banned Azo colorants in coloured textiles

ANNEX B

(*Clause* 5.1)

METHOD FOR DETERMINATION OF PERCENTAGE OF IMPURITIES IN COIR FELT

B-1 TEST SPECIMENS

Draw 5 test specimens of 0.5 mx0.5 m fromthe test sample.

B-2 PROCEDURE

B-2.1 Dry the test specimen in conditioned oven (*see* **D-2.1**). Determine its oven dry mass correct to the nearest 0.5 g.

B-2.2 Immediately after drying, remove all pith, dust and other impurities adhering to the felt and determine the oven dry mass of the clean felt correct to the nearest 0.5 g.

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

$$\text{Impurities, percent by mass} = \frac{m_1 - m_2}{m_1} \times 100$$

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 felt specimens. The average of all the values thus obtained shall be deemed to be the percentage of impurities in the felt.

ANNEX C

(*Clause* 5.2)

METHOD OF TEST FOR DETERMINATION OF MASS PER SQUARE METRE AND THICKNESS

C-1 ATMOSPHERIC CONDITIONS FOR CONDITIONING AND TESTING

C-1.1 The tests shall be carried out in the standard atmosphere at 27 ± 2°C temperature and 65 ± 2 percent relative humidity (*see* IS 6359).

C-1.2 Prior to test, the specimens shall be conditioned to moisture equilibrium in the standard atmosphere. When the specimens have been left in such atmosphere for48 h in such a way as to expose as far as possible all portions of the specimens to the atmosphere, they shall be deemed to have reached moisture equilibrium.

C-2 THICKNESS

C-2.1 Each roll in the test sample selected in accordance with Table 3 shall constitute a test specimen.

C-2.2 The instrument for measuring the thickness consists of a 250 mm long, rigid, narrow measuring needle made out of the suitable material and finished to give a smooth polished surface, one end of which is fixed vertically to the centre of a polished plate of 3 mm thickness and 50 mm x 50 mm size,the other end being tapered to a point, to facilitate insertion to the rod through the coir felt sample. The needle is calibrated in millimetre all along its length starting with the point fixing it with the plate as 0, every 5 and 10from this point being prominently marked out. A disc of 35 mm diameter, weighing 200 g with a central hole to facilitate movement of the weight all along the length of the calibrated needle also forms part of the measuring instrument.

C-2.2.1 *Procedure*

For measuring the thickness of the sample, the calibrated needle measuring instrument is inserted through the bottom side of the coir felt, so that the needleis in aplane perpendicular to the free surface of thecoir felt. There upon, the sliding weight is introduced on the projecting part of the needle and the combined thickness of the coir felt and that of the sliding weight read directly, correct to the nearest 1 mm, on the calibrated needle. The thickness of the sliding weight is deducted from this reading to obtain the thickness of the test sample. The measurements are recorded at least at four points at random on the test piece and the average value taken as the thickness of the test material.

C-3 DETERMINATION OF THE MASS PER SQUARE METRE

C-3.1 Select the sample of approximate length and width of 0.5 m. Measure the length (l) and width (w) of the sample using a steel rule nearest to 1 mm, ensuring the measurement along a line perpendicular to opposing faces of the sample. Express the measurements in metre.

C-3.2 Determine the mass (m) of the sample using analytical or electronic weighing balance to the nearest 0.5 g.

C-3.3 Calculate the mass per square metre by the following formula:

$$\text{Mass per square metre} = \frac{m}{l \times w}$$

where,

m = mass of the sample as determined in **C-3.2**, and

l and w = as determined in **C-3.1**.

C-3.4 Repeat the test with the remaining test specimens. The average of all the values thus obtained shall be deemed to be the mass per square metre of the consignment.

ANNEX D

(*Clause* 5.3)

METHOD FOR DETERMINATION OF MOISTURE CONTENT IN COIR FELT

D-1 TEST SPECIMEN

Draw 5 test specimens of 0.5 m x0.5 m from the test sample.

D-2 APPARATUS

D-2.1 Conditioning oven-with forced ventilation, provided with positive valve control and capable of maintaining a temperature of 100°C to 110°C.

D-2.2 Weighing balance of either of analytical type or electronic type capable of weighing 500 g with an accuracy of 0.5 g.

D-3 PROCEDURE

D-3.1 The test specimen is weighed correct to the nearest 0.5 g. Place the test specimen in the conditioning oven and dry for 1 h and weigh to the nearest 0.5 g. Dry for another 15 min 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 mass, take the second mass to be the dry mass of the test specimen. If the loss exceeds 0.25 percent weigh the test specimens at 15 min intervals till the loss between two successive weighings is 0.25 percent or less.

D-3.2 Calculate the percentage of moisture content by the following formula:

$$\text{Moisture content, percent by mass} = \frac{m_1 - m_2 \times 100}{m_1}$$

where,

m_1 = Mass of the original test specimen, and

m_2 = Mass of the oven dried test specimen.

D-3.3 Repeat the test with the remaining felt specimens. The average of all the values thus obtained shall be deemed to be the moisture content.

ANNEX E

(*Clause* 5.4 and 5.6)

METHOD FOR DETERMINATION OF *p*H VALUE AND CHLORIDE CONTENT OF COIR FELT

E-1 PRINCIPLE

The aqueous extract of the coir felt is prepared and then the chloride content is determined volumetrically by titration with standard silver nitrate solution using potassium chromate solution as indicator and expressed as percentage by mass of the material taken.

E-2 TEST SPECIMEN

Draw at least two test specimens each weighing about 10 g from the test sample.

E-3 CONDITIONING OF TEST SPECIMEN

Prior to the test, the test specimens shall be conditioned for 24 h to attain moisture equilibrium in a standard atmosphere at 65 ± 2 percent relative humidity and 27± 2 ºC temperature (*see* IS 6359).

E-4 PREPARATION OF AQUEOUS EXTRACT

E-4. 1 Procedure

Weigh the test specimen and transfer it toa clean, chemically resistant glass flask, fitted with ground glass joint for reflux condenser. Add distilled water (*see* 1S 1070) weighing 20 times the mass of the coir fibre taken for the test to the flask. Fit the flask to the reflux condenser and heat the contents of the flask to boil. Continue boiling for 1 h. Remove the flask and close while the liquid is still boiling gently using a clean ground glass stopper. Cool to room temperature.

E-5 DETERMINATION OF *p*H VALUE

Transfer a portion of the aqueous extract to the electrode of *p*H metre (IS 2711) and determine the *p*H.

E-6 DETERMINATION OF CHLORIDE CONTENT

E-6. 1 Reagents

E-6. 1.1 *Calcium Carbonate (Chloride Free)*

E-6. 1.2 *Standard Silver Nitrate Solution* — 0.1 N.

E-6.1.3 *PotassiumChromateSolution* — Prepared by dissolving 50 g of potassium chromate in about 250 ml distilled water. Add silver nitrate solution till a distinct red precipitate is formed. Allow to stand overnight and filter. Dilute the filtrate to 1 litre with distilled water.

E-6.2 Procedure

Take a suitable measured portion of the aqueous extract as prepared in **E-4.1**. Neutralize with calcium carbonate till a pale yellow colour is obtained (usually 0.5 g is sufficient). Add 1 ml of potassium chromate indicator solution and titrate with standard silver nitrate solution, till a red colour is obtained.

E-6.3 Calculation

$$\text{Chloride (as Cl) Percent by mass} = \frac{3.546\,(V_1 - V_2)\,N}{M}$$

Where,

V_1 = volume, in ml, of standard silver nitrate solution used in the titration with material;

V_2 = volume, in ml, of standard silver nitarate solution used in the blank determination;

N = normality of standard silver nitrate solution; and

M = mass, in g, of the material taken for the test.

E-6.3.1 Repeat the test with the remaining test specimens and calculate the percent by mass.

ANNEX F

(*Foreword*)

COMMITTEE COMPOSITION

Coir and Coir Products Sectional Committee, TXD 25

Organization	*Representative(s)*
Central Coir Research Institute, Kalavoor	Dr Anita Das Ravindranath (***Chairman***) Smt Sumi Sebastian (*Alternate*)
Coir Pith and Allied Products Manufacturers and Exporters Association, Coimbatore	President Secretary (*Alternate*)
All India Rubberized Coir Products Manufacturers Association, Tirunelveli	Shri Sundaresan Shri Mathew George (*Alternate*)
Central Institute of Coir Technology, Bengaluru	Joint Director Senior Scientific Officer (*Alternate*)
Coconut Development Board, Ernakulam	Shri Sugata Ghosh Dr K Muralidharan (*Alternate*)
Coir board, Kochi	Secretary Joint Director (*Alternate*)
Coir Mats and Mattings Association,	Shri V. A. Joeph Shri Pavithran (*Alternate*)
Coir on Foam Products, Coimbatore	Shri Harirajan Shri Philip Varghese (*Alternate*)
Coir Shippers' Council, Cherthala	Shri K. S. Sanjeev Shri Sajan B Nair (*Alternate*)
Federation of Indian Coir Exporters' Associations, Alleppey	Shri Jospaul Mathew Shri Sajan B. Nair (*Alternate*)
Hindustan Coir, Coir Board Complex, Alappuzha	Weaving Master Senior Scientific Officer (*Alternate*)
Karnataka State Coir Development Corporation Ltd. Bengaluru	Shri G. Kumaraswamy Shri K. R. Kumaraswamy (*Alternate*)
Kerala Organic Manure and Fertilizer, Kerala	Shri G. Rajesh
Kerala State Coir Corporation Ltd, Alappuzha	Shri G. Sreekumar Shri N. Sunuraj (*Alternate*)
Kerala State Small Scale Coir Manufacturer's Federation, Alappuzha	President Secretary (*Alternate*)
Kerala State Coir Marketing Federation, Kerala	Shri Suresh Kumar
Kurlon Enterprises Limited, Bengaluru	Shri Narendra Kudva Shri P. Anil (*Alternate*)
M M Rubber & Co,	Shri Joseph Cheriyan
National Coir Research & Management Institute (NCRMI), Thiruvanthapuram	Dr K. R. Anil Shri C. Abhishek (*Alternate*)
National Coir Training & Design Centre,	Assistant Director Alappuzha Regional Officer (*Alternate*)
Natural Green Tech (P) Ltd.,	Shri Tommy Mathew Shri Abhishek Thomas (*Alternate*)
Orissa Co operative Coir Corporation Ltd, Bhubaneshwar	Managing Director General Manager (*Alternate*)

Organization	*Representative(s)*
Rubber Board, Kottayam	Dr J. Thomas Dr James Jacob (*Alternate*)
Shaa Pith Media Co., Coimbatore	Shri S Prabhu Shri Ramesh (*Alternate*)
Sivanthi Joe Coirs, Tuticorin	Shri Dunsten Joseph Shri K. Sivakar (*Alternate*)
Tamil Nadu Coir Cooperative Federation, Chennai	Managing Director General Manager (*Alternate*)
Venugopal Fibre Industries, Pattukottai	Shri R. B. Shyam Sunder
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Member Secretary

Shri P. N. Murali
Scientist 'D' BIS

Bureau of Indian Standards

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Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards: Monthly Additions'.

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones: 2323 0131, 2323 3375, 2323 9402 *Website*: www.bis.gov.in

Regional Offices:		*Telephones*
Central	: Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002	2323 7617, 2323 3841
Eastern	: 1/14 C.I.T. Scheme VII M, V.I.P. Road, Kankurgachi, KOLKATA 700054	2337 8499, 2337 8561, 2337 8626, 2337 9120
Northern	: Plot No. 4-A, Sector 27-B, Madhya Marg, CHANDIGARH 160019	265 0206, 265 0290
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