भारतीय मानक
Indian Standard

IS 17734 : 2022

पी. वी. सी/लेटेक्स टफ्टेड नारियल के रेशों की चटाई — विशिष्टि

PVC/Latex Tufted Coir Mats — Specification

ICS 55.040; 59.060.10

भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS
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January 2022

Price Group 5

FOREWORD

This Indian Standard 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 Textiles Division Council.

The tufted coir mats are made by tufting natural coir yarn in to latex/PVC backing. The latex/PVC backing provides anti slipping properties and ensures low fibre shedding, structural stability and cut fastness. Tufting of coir yarn over the latex/PVC base using automatic device forms the brush pile of the mat. Mats with varying brush pile can be produced and the mats can be cut into any shape, size, and rolls are used as wall-to-wall carpeting material. Shaped mats, stenciled and flocked designs are available in tufted mats.

The composition of the Committee responsible for the formulation of this standard is given in Annex D.

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

PVC/LATEX TUFTED COIR MATS — SPECIFICATION

1 SCOPE

1.1 This standard prescribes the constructional particulars and performance requirements of tufted mats made from coir and PVC/latex backing.

1.2 This standard does not specify the general appearance; design etc. of the tufted coir mats.

2 REFERENCES

The standards listed in Annex A contain provisions which through reference in this text, constitute provision 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 the standards.

3 TERMINOLOGY

For the purpose of this standard, the following definitions shall apply:

3.1 Backing — Latex/PVC compound used as a medium into which the pile yarn is tufted.

3.2 Pile or Tuft — Length of the yarn, delivered to a single binding site, are considered to create one tuft which form the pile/tuft of a tufted coir mat.

3.3 Pile Yarn — The yarn used in the manufacture of pile or tufts of tufted coir mats shall be made from loose twisted coir yarn.

3.4 Tip-sheared Pile — Pile of a mat, which has been subjected to a shearing process after manufacture to cut the tips of the longer pile loops.

4 MANUFACTURE, WORKMANSHIP AND FINISH

4.1 In the manufacturing of tufted mats, spooled coir yarn shall be placed on the creel stand drawn through comber board which is cut into bits and positioned automatically upright by the cutting head over the moving conveyor platform over which PVC/Latex emulsion is pre-spread.

4.2 For feeding the compound to the spreading platform of tufting machine, the compound shall be stored in an over-head tank and the compound is pumped to the spreading platform through a PVC hose by force. The conveyor in its forward movement passes over the heated and cooling zone and by doing so, the bits of coir yarn gets implanted firmly over the PVC/latex base and forms the mats.

4.3 The mats shall be rolled out of the machine in continuous length or cutting to mat size by longitudinal and cross cutting. Starting from the creel stand to the delivery end, the machine performs automatically. The movement of this conveyor is regulated by the belt aligner. The conveyor belt is teflon coated, capable of withstanding temperature variations up to 250 °C, so as to facilitate easy removal of the sheet after cooling. An in built cutting system for cutting the tufted mat to preset rectangular sizes, both longitudinally and horizontally and a cross cutting station for cutting different size of mats automatically to the required length has been provided.

4.3 A circular blade mounted on a traveler moves from one side to the other to facilitate cutting of mat in preset lengths assisted by sensors. Shape mat cutting machine is used for cutting the PVC Tufted mats into different shapes using templates.

5 REQUIREMENTS

5.1 Length and Width

The length and width of the mat shall be as specified in the agreement between the buyer and the seller. Preference would, however, be given to the sizes of mats given below:

Size No.	*Dimensions (mm)*
1	550 × 330
2	600 × 350
3	600 × 400
4	700 × 400
5	750 × 450
6	850 × 500
7	900 × 550
8	1000 × 600
9	1050 × 650
10	1150 × 700
11	1200 × 750

5.1.1 A tolerance of ± 1 percent shall be permitted on the nominal value, in both length and width directions.

5.1.2 The length and width of the tufted coir mat shall be determined by the method prescribed in Annex B.

5.2 Pile Density

The pile density of the tufted coir mat shall be as agreed to between the buyer and the seller declared on the label subject to a minimum of 50 g/m^2/mm pile thickness. However, a tolerance of minus 5 percent shall be permitted on the agreed or declared value.

5.2.1 The pile density of the tufted coir mat shall be determined by the method prescribed in **C-1**.

5.3 Pile Thickness

The pile thickness of the tufted coir mat shall be as agreed to between the buyer and the seller subject to a minimum of 13 mm.

5.3.1 The pile thickness of the tufted coir mat shall be determined by the method prescribed in **C-1** or **C-2**.

5.4 Colour Fastness

The colour fastness to light for PVC tufted coir mats shall be minimum 3 when tested as per method prescribed in IS/ISO 105-B02. The colour fastness to dry rubbing for PVC tufted coir mats shall be minimum 3 when tested as per method prescribed in IS/ISO 105-X12.

5.5 Tuft Withdrawal Force

The minimum tuft withdrawal force shall be 3 kgf for cut pile.

5.5.1 The tuft withdrawal force shall be determined by the method given in **C-3**.

5.6 Tearing Strength

The minimum tearing strength shall be 20 N in both machine and cross machine directions.

5.6.1 The tearing strength shall be determined by the method prescribed in IS 6489 (Part 2).

6 ADDITIONAL REQUIREMENT FOR ECOMARK (OPTIONAL)

6.1 The mats manufactured 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 or product packaging may display in brief the criteria based on which the product has been labeled Environment Friendly.

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

6.5 The product shall meet the specific requirements as given in Table 1.

Table 1 Specific Requirements for Ecomark (Optional)

(*Clause* 6.5)

Sl No.	Parameter	Requirement	Method of Test
(1)	(2)	(3)	(4)
i)	Residual pesticides (sum parameter) (ppm) (*Max*)	1.0	IS 15651
ii)	*p*H of aqueous extract	6-7	IS 8391 (Part 1)
iii)	Free and releasable formaldehyde (ppm), (for coloured products only) Total of free and released formaldehyde, *Max*	300	IS 14563 (Parts 1 and 2)
iv)	Extractable heavy metals by artificial acidic sweat (ppm) (*Max*):	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	
	j) Nickel (Ni)	4.0	
		(for coloured products only)	
v)	Pentachlorophenols (PCP), ppm (*Max*) (for coloured products only)	0.5	IS 15651
vi)	Banned aryl amines from azo dyes, ppm (*Max*) (for coloured products only)	30.0	IS 15570

7 MARKING AND LABELLING

7.1 Each tufted coir mat shall be legibly and indelibly marked on the back or a label shall be attached with it giving the following particulars or in accordance with the agreement between the buyer and the seller:

a) Name of the material;

b) Gross weight;

c) Number of PVC tufted coir mats packed in the package;

d) Size number or dimensions;

e) Name, initials, trade-mark or any other identification mark of the manufacturer; and

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

7.2 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 product(s) may be marked with the Standard Mark.

8 PACKING

The mats shall be suitably packed as agreed to between the buyer and the seller, care being taken to see that the pile of mats shall not be crushed while packing.

9 SAMPLING AND CRITERIA FOR CONFORMITY

9.1 Lot In any consignment tufted coir mats of the same designation and size shall be grouped together to constitute a lot, unit being an individual piece of mat.

9.2 The conformity of a lot to the requirements of this standard shall be determined on the basis of the tests carried out on the mats selected from the lot.

9.3 The number of tufted coir mats to be selected at random from the lot shall be in accordance with column 2 of Table 2. The door mats shall be selected from at least 10 percent of the packages, and equal number of door mats, as far as possible being drawn at random from each package.

9.4 NUMBER OF TESTS AND CRITERIA FOR CONFORMITY

9.4.1 For evaluating:

a) pile height (wherever applicable);

b) mass per square metre; and

c) dimensions of the tufted coir mats in the lot, the sample selected as in column 2 of Table 2 shall constitute the test sample.

Table2 Sample Size and Permissible Number of Defectives

(*Clauses* 9.3, 9.4.1 *and* 9.4.2.1)

Lot Size	Sample Size	Permissible Number of Defective Mats
(1)	(2)	(3)
Up to 100	5	1
Above 100	10	2

9.4.2 *Criteria for Conformity*

The lot shall be considered to be in conformity with the requirements of the standard, if the following conditions are satisfied:

9.4.2.1 The number of coir mats found defective in respect of any characteristic mentioned in **9.4.1** does not exceed the limits specified in column 3 of Table 2.

9.4.2.2 For rest of the requirements all samples of coir mats shall meet the requirements.

10 ATMOSPHERIC CONDITIONS FOR TESTING AND CONDITIONING OF TEST SPECIMENS

10.1 The tests shall be carried out in a standard atmosphere of 65 ± 2 percent relative humidity and 27 ± 2 °C temperature (*see also* IS 196).

10.2 Prior to testing, the test specimens shall be conditioned to moisture equilibrium in the standard atmosphere. When the test specimen have been left in such an atmosphere for 72 h in such a way as to expose, as far as possible, all portions of the test specimens to the atmosphere, they shall be deemed to have reached moisture equilibrium.

ANNEX A

(*Clause* 2)

LIST OF REFERRED INDIAN STANDARDS

IS No.	*Title*
196 : 1966	Atmospheric conditions for testing
105-B02 : 2014	Textiles — Tests for colour fastness: Part B02 Colour fastness to artificial light : Xenon arc fading lamp test
105-X12 : 2016	Textiles — Tests for colour fastness: Part X12 Colour fastness to rubbing (*first revision*)
6489 (Part 2) : 2011	Textiles — Tear properties of fabrics: Part 2 Determination of tear force of trouser shaped test specimens (single tear method)
8391 (Part 1) : 2019	Rubberized coir sheets for cushioning — Specification: Part 1 Curled (*third revision*)
11205 : 2011	Textile floor coverings — Vocabulary (*first 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
15651 : 2006	Textiles — Requirements for environmental labelling — Specification

ANNEX B

(*Clause* 5.1.2)

METHODS OF TEST TO DETERMINE DIMENSIONS OF TUFTED COIR MATS

B-1 APPARATUS

A rule or instrument capable of measuring accurately to the nearest millimetre shall be used for determination of length, width and diagonals of rectangular and square tufted coir mats, diameter in case of circular tufted coir mats and major and minor axis in case of oval-shaped tufted coir mats.

B-2 PROCEDURE

Spread the tufted coir mat on a smooth flat surface taking care that no wrinkles are present. Make the measurements between the outer edges of the base of the pile on the opposite edges of the tufted coir mat. Make all the measurements to the nearest millimetre.

B-2.1 Rectangular and Square Tufted Coir Mats

B-2.1.1 *Length* — Make the measurement in the warp direction in such a way that two measurements are made at an approximately 10 cm within each selvedge of the tufted coir mats and one approximately in the middle. Calculate the average length to the nearest 5 mm for PVC/latex tufted coir mat measuring up to 100 cm and to the nearest 10 mm for larger PVC/latex tufted coir mats measuring above 100 mm.

B-2.1.2 *Width* — Make five measurements in the weft direction in such a way that two measurements are made at an approximately 10 cm within each edge of the tufted coir mat and three measurements made at distances approximately L/4, L/2 and 3L/4 from one edge of the tufted coir mat (L being the length of the tufted coir mat). Calculate the average width to the nearest 5 mm for tufted coir mats measuring up to 100 cm width and to the nearest 10 mm for larger tufted coir mats.

B-2.2 CIRCULAR TUFTED COIR MATS

B-2.2.1 *Diameter* — Make the measurement of the diameter of the tufted coir mat at four different points distributed along the periphery. Calculate the average of the four readings to the nearest 5 mm for tufted coir mats measuring upto 100 cm in diameter and to the nearest 10 mm for larger tufted coir mats.

NOTE — To facilitate the measurement of diameters the centre of the tufted coir mat may be determined by first folding the tufted coir mats into half and then refolding it into further half, making it into a quarter size. The point where the two folds cross may be taken as the centre of the tufted coir mats.

B-2.3 Oval/Shaped Tufted Coir Mats

B-2.3.1 *Major and Minor Axis* — Make the measurement of the major and minor axes of the tufted coir mats at least at two points. Calculate the average of the two readings to the nearest 5 mm for tufted coir mats measuring up to 100 cm in major or minor axes as the case may be and to the nearest 10 mm for larger tufted coir mats.

NOTE — To facilitate the measurement of major and minor axes the centre of the tufted coir mats may be determined by first folding the tufted coir mat into half along the major axis and then refolding it into further half along the minor axis thus making it into a quarter sizes. The point where the two folds cross may be taken as the centre of the tufted coir mat

ANNEX C

(*Clauses* 5.2.1, 5.3.1 *and* 5.5.1)

METHODS OF TEST TO DETERMINE PILE THICKNESS, PILE DENSITY AND TUFT WITHDRAWAL FORCE OF TUFTED COIR MATS

C-1 DETERMINATION OF PILE THICKNESS AND PILE DENSITY (METHOD A)

C-1.1 Test Specimens

C-1.1.1 Cut four specimens, each at least 200 × 200 mm with the two sides parallel and the other two perpendiculars to the selvedge.

C-1.1.2 If there is any tendency for the edges to fray, seal them with adhesive and allow to dry. Condition the specimens to constant weight in the standard atmosphere.

C-1.2 Apparatus

C-1.2.1 *Carpet Shearing Machine, c*apable of shearing the pile close to the backing of the tufted coir mat.

C-1.2.2 *Carpet Thickness Tester,* shall have a circular plane pressure-foot of area between 300 and 1000 mm^2.

a) Shall be capable of exerting a pressure of 20 gf/cm^2 normal to the plane of the specimen.

b) Shall be capable of measuring thickness to any accuracy of 0.1 mm over a range of 25 mm.

C-1.2.3 *Sharp Pointed Knife*

C-1.2.4 *Measuring Scale*, graduated in millimetres.

C-1.2.5 *Weighing Balance*, to weigh to an accuracy of 10 mg.

C-1.2.6 *Press and Cutter*, of known area of at least 10 000 mm^2, which may be circular or square in shape.

C-1.3 Test Procedure

C-1.3.1 Measure the thickness of each specimen at 5 places under the standard pressure of 20 gf/cm^2.

C-1.3.2 Determine the mass of pile using the method given below before the edges of the pile have been sealed.

a) Weigh each specimen to the nearest 10 mg (M1).

b) Measure the length and width at four places on the back of each specimen to the nearest mm.

c) Shear the pile from the specimen using forward strokes with the clipper in all directions. Shear as close as possible to the backing by running the points of the comb and cutter along the backing without digging in. Avoid plucking any tufts or damaging the backing yarn. Brush, blow or suction clean the specimen during and after shearing. Continue shearing until no further significant amount of pile yarn dust appears on the shearing blades or flies away when the specimen in shaken. It is not necessary 'to shear to the edges of the specimen provided the area of at least 10 000 mm^2 in the centre is closely shorn.

d) After shearing, cut the area of 10 000 mm^2 from the centre of each specimen using a cutter. The backing yarns in this area shall be undamaged and no tufts shall have been plucked from it.

e) Condition each area cut out of the shorn tufted coir mat specimen in the standard atmosphere until successive weighing at intervals of 2 h shown no progressive change greater than 0.25 percent. Record the final conditioned mass of the shorn area to the nearest 10 mg (M,).

f) From the measurements made in (b), calculate for each specimen the average length and width and the area in square millimetres (A1).

g) Calculate the total mass per square millimetre of tufted coir mat for each specimen separately : (M1)/(A1).

h) Measure the area of the specimen cut out of shorn tufted coir mat (A2).

j) For each area of shorn tufted coir mat, calculate the mass per square millimetre (M2)/(A2).

k) For each specimen, calculate the shorned mass of pile above unit area of backing, using the formula:

$$10^6\left[\frac{M_1}{A_1}-\frac{M_2}{A_2}\right] g/m^2$$

$\frac{M_1}{A_1}$ = mass per mm^2 of carpet before shearing, and

$\frac{M_2}{A_2}$ = mass per mm^2 of carpet after shearing

m) Calculate the mean value of the shorned mass of pile above unit area of backing from the values obtained from all the specimens (*M*).

C-1.3.3 Measure the thickness of each shorn specimen at 5 places under the standard pressure of 20 gf/m^2.

C-1.4 Calculations

C-1.4.1 *Pile Thickness*

For each specimen, calculate the mean thick-ness unshorn and the mean thickness shorn. Calculate for

each specimen the thickness of pile as the difference between these figures in mm to the nearest 0.02 mm. Calculate the mean value of pile thickness for all the specimens in mm to the nearest 0.1 mm (t).

C-1.4.2 *Pile Density*

The pile density (in g/m^2 per mm pile thickness) shall be calculated by dividing the mean value of mass of pile above unit area of backing (M) by mean value of pile thickness (t).

C-2 DETEREMINATION OF PILE THICKNESS (METHOD B)

C-2.1 Apparatus

Gauges made of a metal strips of shape as shown in Fig. 1, available in intervals of 1 mm shall be used.

C-2.2 Procedure

C-2.2.1 Insert a gauge between two rows of pile (tuft legs) ensuring that the firm contact is made with the woven ground. Select for measurement the row of pile lying adjacent to the gauge but towards the end of the tufted coir mat last woven. Stroke the pile into vertical position besides the gauge thus giving necessary support to the pile to keep them into vertical position. By successively using different gauges, select the gauge that corresponds to the pile height. Check that this is the nearest gauge by inserting in the same position gauges a unit higher and lower than selected. Determine the pile height to the nearest millimetre.

C-2.2.2 If the carpet, due to its design, contains pile of different heights, determine the pile height at all level portions.

C-2.2.3 Repeat the measurement in the different areas of tufted coir mat.

C-2.3 Report

Calculate the average pile height and report the same to the nearest millimetre.

C-3 DETERMINATION OF TUFT WITHDRAWAL FORCE OF PVC TUFTED COIR MAT

C-3 Apparatus

C-3.1 Tensile testing apparatus with suitable ranges and an accuracy of 5 percent. Full scale loads ranging from 0.5 to 10.0 kgf are generally adequate.

C-3.2 Apparatus shall preferably have a constant rate of loading but alternatively, constant rate of traverse or extension may be used. In any case the average test time for achievement of the maximum withdrawal force of the tufts and loops tested should be between 5 and 10 s. This may be achieved in machines which would give very short test time, for example, those using load cells, by inserting a spring between the loading mechanism and the specimen.

C-3.3 The apparatus shall have a means of clamping a specimen of tufted coir mat to a base plate so that it is flat in a plane perpendicular to the direction of pull upon the tuft or loop. The flat, horizontal part of the clamp, which is brought into contact with the specimen during testing, shall be at least 60 mm × 60 mm, shall have a circular cut out of 12 mm radius around the tuft, or loop to be withdrawn and shall retain the specimen inside this cut-out area (*see* Fig. 2). The cut-out may have a throat to allow easier positioning of the specimen with the tuft grip or hook attached.

C-3.4 The load sensing mechanism of the machine shall be calibrated with the tuft grip or hook in position.

C-3.5 Test Samples and Specimens

Samples shall be selected from at least five places across the width of the PVC tufted coir mat. Specimen should be cut one from each sample to a size which is convenient for clamping on the testing machine and which will allow for at least 10 tufts to be removed from each. No tufts shall be removed from within 25 mm of the edge of a specimen or of any previously withdrawn tuft.

C-3.6 Procedure

C-3.6.1 *Cut Pile Tufted Coir Mats*

Select one end of one tuft and attach the tuft grip. Clamp the specimen firmly and attach the tuft grip to the upper jaw. Set the machine in motion and withdraw the tuft completely in a direction essentially perpendicular to that of tufted coir mat specimen. Check that only one complete tuft is withdrawn, and record the maximum force.

C-3.6.2 Repeat the procedure for a minimum of 20 tufts or loops, spread evenly through available samples, taking care that these are at least 25 mm between the previously withdrawn tuft or from the edge of the specimen.

C-3.6.3 *Report*

Report the average of the tests to the nearest 50 gf as the tuft withdrawal force.

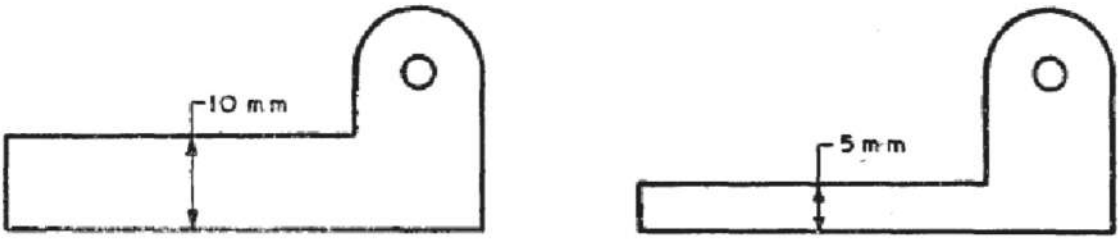

FIG. 1 GAUGES

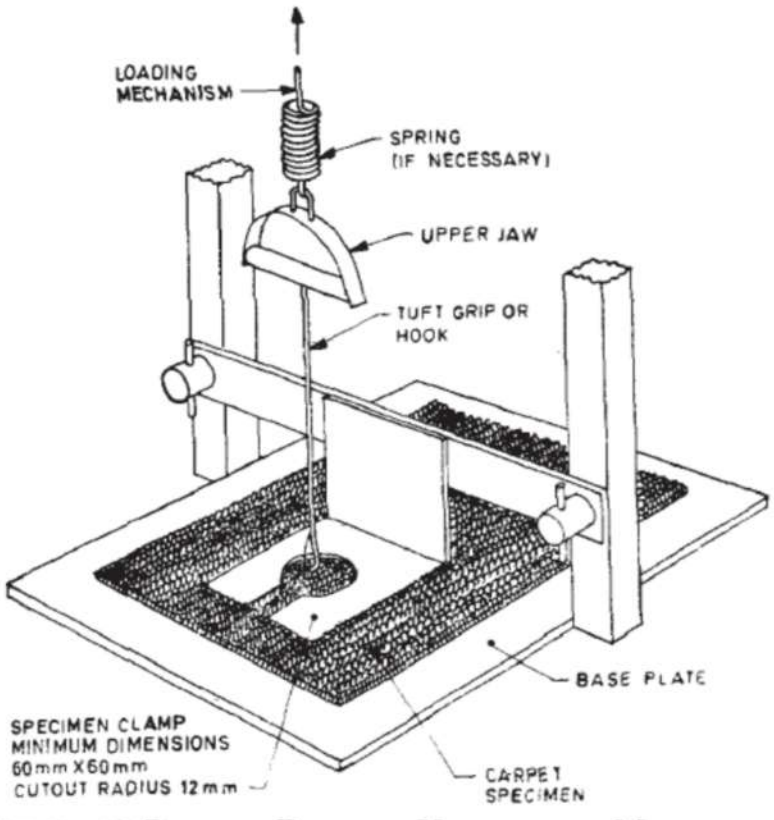

FIG.2 A TYPICAL FORM OF HORIZONTAL MOUNTING

ANNEX D

(*Foreword*)

COMMITTEE COMPOSITION

Coir and Coir Products Sectional Committee, TXD 25

Organization	*Representative(s)*
Coir board, Kochi	Shri M. Kumara Raja (***Chairman***)
All India Rubberized Coir Products Manufacturers Association, Tirunelveli	Ms Jyoti Pradhan Shri Mathew George (*Alternate*)
Central Coir Research Institute, Kalavoor	Director, RDTE Shrimati Sumi Sebastian (*Alternate*)
Central Institute of Coir Technology, Bengaluru	Joint Director Senior Scientific Officer (*Alternate*)
Charangathu Coir Mats and Matting Unit, Charangathu	Shri C. R. Devraj Shri Atulraj (*Alternate*)
Coimbatore District Coir Manufacturer's Association, Coimbatore	Shri Gowtham Shri Selvaraj (*Alternate*)
Coir board, Kochi	Director Joint Director (*Alternate*)
Coir Mats and Mattings Association	Shri V. A. Joseph Shri Pavithran (*Alternate*)
Coir on Foam Products, Coimbatore	Shri Harirajan Shri Philip Varghese (*Alternate*)
Coir Pith and Allied Products Manufacturers and Exporters Association, Coimbatore	President Secretary (*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*)
ICAR-Indian Institute of Horticultural Research, Bengaluru	Dr G. Selvakumar Dr D. Kalaivanan (*Alternate*)
Indian Institute of Technology, Chennai	Prof K. Rajagopal
Indian Plywood Industries Research and Training Institute, Bengaluru	Dr D. Sujatha
Karnataka State Coir Development Corporation Ltd, Bengaluru	Dr Arun Kumar Shri Ramesh (*Alternate*)
Kerala Organic Manure and Fertilizer	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	Shri Suresh Kumar
Kurlon Enterprises Limited, Bengaluru	Shri Narendra Kudva Shri P. Anil (*Alternate*)

Organization	*Representative(s)*
National Coir Research and Management Institute (NCRMI), Thiruvanthapuram	Dr K. R. Anil Shri C. Abhishek (*Alternate*)
National Coir Training and Design Centre, Alappuzha	Assistant Director Regional Officer (*Alternate*)
Natural Green Tech (P) Ltd	Shri Tommy Mathew Shri Abhishek Thomas (*Alternate*)
Rubber Board, Kottayam	Dr J. Thomas Dr James Jacob (*Alternate*)
SFURTI (Coir Cluster)	Shri Shiju Nesamony Shri Nagarajan (*Alternate*)
Shaa Pith Media Co, Coimbatore	Shri S. Prabhu Shri Ramesh (*Alternate*)
Travancore Coconut Private Limited, Kerala	Nomination Awaited
BIS Directorate General	Shri A. K. Bera, Scientist 'F' and Head (Textiles) [Representing Director General (*Ex-officio*)]

Member Secretary

Shri P. N. Murali
Scientist 'D' (Textiles)

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act*, 2016 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Review of Indian Standards

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'.

This Indian Standard has been developed from Doc No.: TXD 25 (14981).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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Published by BIS, New Delhi