भारतीय मानक
Indian Standard

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नारियल के रेशे से बने मैट के लिए विनिर्देशन

(पहला पुनरीक्षण)

Specification for Coir Mats

(First Revision)

ICS 55.040; 59.060.10; 59.080.40

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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 1985. Further it has now been revised to incorporate the additional requirements for Ecomark. In this revision the various varieties of coir mats have been covered in the different parts to bring them in line with the current trade and manufacturing practice.

The Ministry of Environment and Forests, Government of India has instituted a scheme for labelling environment friendly products known as 'Ecomark 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 Ecomark scheme is being operated by the Bureau of Indian Standards. However, to obtain the licence to use the Ecomark 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 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

SPECIFICATION FOR COIR MATS

PART 1 GENERAL REQUIREMENTS

(First Revision)

1 SCOPE

This standard (Part 1) covers general considerations like terminology, requirements of dimensions, marking or labelling and packing clauses and various methods of tests.

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 the standards.

3 TERMINOLOGY

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

3.1 Alapet Yarn — Wheel or hand spun 2-ply yarn, medium twisted, made out of retted coir fibre, varying in colour from bright natural to darkish grey, usually spun in 11 to 15 score.

3.2 Anjengo Yarn — Wheel spun 2-ply yarn, hard twisted, made out of long stapled well retted coir fibre, of uniform texture, natural bright coloured, usually spun in 12 to 20 score.

3.3 Aratory Yarn — Wheel spun 2-ply yarn with medium twisted single strand and hard twisted in doubling, made out of long or medium stapled retted coir fibre, appreciably hairy, light natural coloured, usually spun in 11 to 18 score.

3.4 Ashtamudy Yarn — Wheel spun 2-ply yarn, medium twisted, made out of medium and short stapled retted coir fibre, slightly varying in colour from brownish to grey, usually spun in 8 to 13 score.

3.5 Baypore Yarn — Wheel or hand spun, soft twisted, 2-ply yarn, made out of retted coir fibre, natural brown to light grey in colour, usually spun in 6 to 9 score.

3.6 Beach Yarn — Wheel or hand spun, soft twisted, 2-ply yarn, made out of coir fibre extracted from green husks soaked in water for brief periods, natural reddish brown in colour, usually spun in 9 to 14 score.

3.7 Bit Mat — A mat with the pile formed by insertion of bits of yarn on every alternate strand of chain.

3.8 Corridor Mat — A mat in which both warp and weft strands are continuous without tucking in or binding.

3.9 Creel Mat — A mat made up of two or more chains, one tight and the others slack working as pile or binding, the pile being formed by cutting slack chain bent over a grooved rod suitably inserted between slack and tight chain.

3.10 Fibre Mat — A mat made up of two chains, one tight and the other binding, the pile being formed by insertion of tufts of coir fibre on alternate strands of tight chain.

3.11 Gymnasia Mat — A mat with pile formed by cutting three or more yarns folded together and wound around a grooved iron rod along with alternate ends of warp. The pile is made thicker to meet the specific requirements.

3.12 Laccadive Yarn — Wheel or hand spun, medium twisted 2-ply yarn, made out of long or medium stapled retted coir fibre, natural brown to light grey in colour, usually spun in 6 to 8 score.

3.13 Loop Mat — A mat made up by three chains, one tight and other slack working as pile or binding. The pile is formed by loops formed out of slack chain in the weaving process.

3.14 Lot — The coir mats of the same designation and size delivered to one buyer against one despatch note, shall constitute a lot.

3.15 Mesh Mat — A mat made by laying coir yarn in crisscross manner between a number of nails fixed on a frame and knotting the intersecting points with coir yarn.

3.16 Quilandy Yarn — Wheel or hand spun, medium twisted 2-ply yarn made out of retted coir fibre, natural brown to light grey in colour, usually spun in 8 to 12 score.

3.17 Rod Mat —A mat with pile formed by cutting two or more strands of yarns folded together and wound around a grooved iron rod along with alternate ends of warp.

3.18 Rope Mat (Lover's Knot Mat) — A mat made with a coir rope guided through a number of upright nails fixed on a flat surface. This mat may be made either in oval or oblong shapes.

3.19 Runnage of Yarn — A measure of linear density of coir yarn denoted by the length in metre of coir yarn per kilogram mass.

3.20 Sinnet Mat — A mat made of plaited (or braided) coir yarn of 3 or more strands stitched together in a frame.

3.21 T. Vycome Yarn — Hand spun, soft twisted 2-ply yarn made out of coir fibre obtained by re-cycling bits of coir yarn of various types.

3.22 Vycome Yarn — Wheel or hand spun, soft or medium, twisted 2-ply yarn made out of retted coir fibre, varying in colour from bright natural to darkish grey, usually spun in 11to 17 score.

3.23 Score of Yarn — A measure of fineness of coir yarn denoted by the one-twentieth of the number of yarns that could be laid close to each other in a span of 0.91 metre.

3.24 Shroud-Laid Rope — Shroud laid (4 strand) coir ropes of diameter 24 to 176 mm with a linear density from 321 to 1710 ktex (*see* IS 1410 : 2001).

4 DIMENSIONS

4.1 The dimensions of mats 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*
0	550 × 330
1	600 × 350
2	700 × 400
3	750 × 450
4	850 × 500
5	900 × 550
6	1000 × 600
7	1050 × 650
8	1150 × 700
9	1200 × 750

4.2 Tolerances

A tolerance of ± 1 percent or ± 13 mm, whichever is higher, shall be permitted on the nominal value, in both length and width directions of all varieties of mats except corridor mats, mesh mats and rope mats, where a tolerance of $\pm \frac{19}{13}$ mm shall be permitted in the nominal length of the mat. However, in width direction the tolerance shall remain the same.

4.3 Method of Test

The dimensions of mats shall be determined by the method prescribed in **C-3**.

4.4 Door Mats — Rod and Door Mats — Creel, Bit and Fibre

These may also be supplied in half oval or in any other shape if required by the buyer. However, the dimensions of such mats shall be subject to an agreement between the buyer and the seller.

5 ADDITIONAL REQUIREMENTS FOR ECOMARK

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

5.2 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 the authorization(s), if required under the rules notified under the *Environment (Protection) Act*, 1986 and the rules made there under while applying for the Ecomarks per *Bureau of Indian Standards Act*, 2016.

5.3 The product(s) or product packaging(s) may display in brief the criteria based on which the product(s) has/ have been labeled environment friendly.

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

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

6 MARKING ANDLABELLING

6.1 Each 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) Designations;
b) Size or dimensions; and
c) Manufacturer's name, initials, trade-mark or any other identification mark.

6.2 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 products may be marked with the Standard Mark.

7 PACKING

7.1 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 is not crushed while packing.

7.2 Each package shall be marked with the following or in accordance with the agreement between the buyer and the seller:

a) Name of the material;

b) Gross mass;

c) Number of 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) Criteria based on which the product(s) has/have been labeled environment friendly.

8 SAMPLING AND CRITERIA FOR CONFORMITY

Unless otherwise agreed to between the buyer and the seller, the sampling plan and criteria for conformity as given in Annex B shall be followed.

9 METHODS OF TESTING AND INSPECTION

The procedure for testing and inspection of mats shall be as given in Annex C.

Table 1 Specific Requirements for Ecomark

(*Clause* 5.5)

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 (Part 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	
	j) Nickel (Ni)	4.0 (For coloured products only)	
v)	Pentachlorophenols (PCP), (ppm) (*Max*)	0.5 (For coloured products only)	Annex B of IS 15651
vi)	Banned aryl amines from azo dyes, (ppm) (*Max*)	30.0 (For coloured products only)	IS 15570

ANNEX A

(*Clause* 2)

LIST OF REFERRED INDIAN STANDARDS

IS No.	*Title*
1410 : 2001	Textiles — Coir ropes — Specification(*third revision*)
4202:1967	Method for determination of chloride content of textile materials
4203:1967	Method for determination of sulphate content of textile materials
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
15651 : 2006	Textiles — Requirements for environmental labelling
15570 : 2005	Textiles — Method of test— Detection of banned azo colorants in coloured textiles

ANNEX B

(*Clause* 8)

SAMPLING AND CRITERIA FOR CONFORMITY

B-1 SCALE OF SAMPLING

B-1.1 Lot

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

B-1.2 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.

B-1.3 The number of door 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.

B-2 NUMBER OF TESTS AND CRITERIA FOR CONFORMITY

B-2.1 For evaluating, pile height (wherever applicable), mass per square metre, and dimensions of the mats in the lot, the sample selected as in column 2 of Table 2 shall constitute the test sample.

B-2.2 For evaluating, construction, ends (chains) and picks, and number of strands per dm (wherever applicable) of the mats in the lot, the number of mats specified in column 4 of Table 2 shall constitute the test sample. The mats shall be selected at random from those selected as in column 2 of Table 2.

B-2.3 Criteria for Conformity

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

a) The number of coir mats found defective in respect of any characteristic mentioned in **B-2.1** does not exceed the limits specified in column 3 of Table 2; and

b) No mat is found defective in respect of any characteristic mentioned in **B-2.2**.

Table 2 Sample Size and Permissible Number of Defectives

[*Clauses* B-1.3, B-2.1, B-2.2 *and* B-2.3 a)]

Lot Size	Sample Size	Permissible Number of Defective Mats	Sub-sample Size
(1)	(2)	(3)	(4)
Up to 100	15	1	3
101 to 300	25	1	4
301 to 500	35	2	5
501 to 800	50	3	6
801 to 1300	75	4	7
1301 to 3200	110	6	8
3201 and above	150	8	10

ANNEX C

(*Clause* 9)

METHODS OF TESTING AND INSPECTION

C-1 DETERMINATION OF ENDS AND PICKS PER DECIMETRE

C-1.l Ends (or Chains) per Decimetre

Lay one test specimen on a horizontal surface with its face downward. Place a scale graduated in centimetres along the width of the test specimen. Count the number of ends (normally comprising of one yarn and one space and including as a fraction any portion of such unit) in a distance of 1 dm. Determine similarly the number of ends in 1 dm at two other different places.

C-1.1.1 Calculate the mean of three values obtained as in **C-1.1** which shall be taken as the number of ends (or chains) per decimetre for the test specimen.

C-1.1.2 Repeat the test with the remaining test specimens and determine the ends (or chains) per decimetre for each of the test specimen in accordance with **C-1.1.1**.

C-1.2 Picks per Decimetre

Lay one test specimen on a horizontal surface with its face downwards. Place a scale graduated in centimetre in a direction perpendicular to the weft. Count the number of picks (normally comprising of one yarn and one space and including as a fraction any portion of such unit) in a distance of 1 dm. Determine similarly the number of picks in 1 dm at two other different places.

C-1.2.1 Calculate the mean of the three values obtained in **C-1.2** which shall be taken as the number of picks per decimetre for the test specimen.

C-1.2.2 Repeat the test with the remaining test specimens and determine the picks per decimeter for each of the test specimen in accordance with **C-1.2.1.**

C-2 DETERMINATION OF PILE HEIGHT

C-2.1 Take one test specimen. Place it on a table or hard board with its face upwards. Insert a pointed and graduated metal rod through the pile till it just touches the board. Read off the depth of the pile on the rod. Repeat the test at ten different places at least 50 mm away from the edge in the test specimen. Calculate their average. This average value shall be the pile height of the test specimen.

C-2.2 Repeat the test with the remaining test specimens and determine the pile height of each of the test specimen in the test sample.

C-3 DETERMINATION OF DIMENSIONS

C-3.1 Place the test specimen upside down. Measure the length and width from edge to edge (including braid) at four places uniformally distributed along the test specimen. Calculate separately the average of length and width so measured.

C-3.2 Repeat the test with the remaining test specimens and determine the average length and width of each test specimen in the test sample.

C-4 DETERMINATION OF MASS

Weigh each test specimen accurate up to 10 g the dimensions of which have been determined in accordance with **C-3** and calculate its mass in grams per square metre.

C-5 DETERMINATION OF CONSTRUCTION

C-5.1 Cut one test specimen in the direction of its weft. Pull out one pick and note the number of strands in the picks. Pull out the piles one by one in one row and note the number of strands in each pile. Similarly, note the number of strands in the picks and the number of strands in the pile for five successive picks and five rows of piles.

C-5.1.1 The test specimen shall be considered to be in conformity with the requirements if all the observed values are equal to the values specified.

C-5.2 Repeat the test with the remaining test specimens.

Indian Standard

SPECIFICATION FOR COIR MATS

PART 2 CORRIDOR MATS

1 SCOPE

1.1 This standard (Part 2) prescribes the requirements for corridor mats made out of coir fibre.

1.2 The general requirements, designation, constructional details and other requirements are prescribed in this part.

1.3 Terminology, dimensions, additional requirements for Ecomark (optional) marking and labelling, packing, sampling and criteria for conformity and methods of tests are specified in Part 1 of the standard.

2 GENERAL REQUIREMENTS

2.1 The mats shall be firmly and evenly woven.

2.2 The mats may be plain or dyed or in designs as specified by the buyer.

2.3 The mat shall not contain extraneous matter.

3 SPECIFIC REQUIREMENTS

3.1 Designation

The designation shall be assigned in such a way also denote the type of yarn used for the weft by the first letter and the type of the mat by the second letter. For example, if the type of the yarn used for the weft is Anjengo or Vycome the designation of the mat would be AC or WC.

3.2 Constructions and Other Requirements

The mats shall conform to the constructional details and other requirements as specified in Table 1.

Table 1 Constructional Details and Other Requirements of Corridor Mats

(*Clause* 3.2)

Designation	Type of Warp Yarn	Ends per dm	Type of Weft Yarn	Runnage m/kg	Mass g/m^2
(1)	(2)	(3)	(4)	(5)	(6)
AC 1	Rope yarn	6	Anjengo	240	4 550
AC 2	do	5	do	240	4 250
AC 3	do	5	do	220	3 650
AC 4	Anjengodouble starndas 12 score	6	do	275	3 650
AC 5	Aratory 3 ply twisted 6.4 mm dia	5	Aratory 3 ply twisted 6.4 mm dia	-	5 400
RC 1	Rope yarn	6	Aratory	240	4 250
RC 2	do	5	do	240	4 000
RC 3	do	5	do	220	3 350
RC 4	Aratory Double starndas 12 score	6	do	280	3 350
RC 5	Rope yarn	6	do	280	3 650
LC 1	do	5	Alapat	190	4 250
WC 1	Rope yarn	5	Vycome	260	4 250
WC 2	do	5	do	240	3 650
WC 3	do	5	do	220	3 050
WC 4	do	3	Vycome/Aratory	220/220	5 800

Table 1 (*Concluded*)

Designation	Type of Warp Yarn	Ends per dm	Type of Weft Yarn	Runnage m/kg	Mass g/m²
(1)	(2)	(3)	(4)	(5)	(6)
QC 1	Rope yarn	5	Quilandy	110	4 000
QC 2	Wooden reepers fully covered with quilandy yarn	3	Quilandy	120	1 0750
YC 1	Beypore	5	Beypore	70	3 200
YC 2	do	5	do	80	4 250
CC 1	Laccadive rope No. 2	5	Laccadive rope No. 2	40	5 450
DC 1	2 ply yarn spun From un retted fibre	5	2 ply yarn spun from un retted fibre	-	4 050
Tolerance	-	-	-	-	+ 7.5
Percent					- 5.0
Method of test [*see* IS 11420 (Part 1)]	-	**C-1**	-	-	**C-4**

NOTES:

1 'W' stands for Vycome (weaving).

2 Runnage of weft yarn is given for guidance only

* Specification for coir mats Part 1 General requirements

Indian Standard

SPECIFICATION FOR COIR MATS

PART 3 DOOR MATS — CREEL, BIT AND FIBRE

1 SCOPE

1.1 This standard (Part 3) prescribes the requirements for creel, bit and fibre varieties of door mats and covers plain, dyed, stenciled and fancy inlaid mats.

1.2 The general requirements, designation, constructional details and the specific requirements are prescribed in this part.

1.3 Terminology, dimensions, additional requirement for Ecomark (optional) marking and labelling, packing, sampling, and criteria for conformity and methods of tests are specified in Part 1 of this standard.

2 GENERAL REQUIREMENTS

2.1 The mats shall be firmly and evenly woven, pile tufts shall be secure and the shearing of the pile shall be uniform and level. Mats may also be supplied without shearing of the pile, if so required by the buyer.

2.2 The mats may be plain, dyed or they may be stenciled or may have designs and/or lettering woven into them. The designs may be bevelled where required to give clarity of outline.

2.3 The mats shall be squared by removing one or more weft threads and the protruding warp threads shall be treated as follows:

a) In creel mats, threads shall be doubled-back and interlaced in the mat but in the case of creel mats sealed with rubber latex or other edge sealing compound at ends or braided ends, the threads need not be doubled back and interlaced in the mat.

b) In bit mats, threads shall be tied with jute twine and merged with the body of the mat.

c) In fibre mats, threads shall be doubled back and interlaced with the body of the mat.

2.4 Bit mat of thickness less than 45 mm shall be bound with a braid manufactured from five or more strands of hard-twisted coir yarn around the edges and with braid of seven strands for those having thickness 45 mm and above. The ends of braid shall be securely fastened. There shall be at least 3 stitches/dm of the braid.

2.5 The mats shall be reasonably free from extraneous matter.

3 SPECIFIC REQUIREMENTS

3.1 Designation

The designation of creel or bit mats shall beassigned in such a way as to denote the type of the yarn used for the pile by the first letter and the variety of mat by the second letter. As, for example, if the type of the yarn used for the pile is beach or Vycome the designation of the mat would be BC or VC for creel mat and BB or VB for bit mat.

However, in the designation of fibre mat, the variety of mat is denoted by the first letter and the type of yarn used for the pile by the second letter.

3.2 Construction

The mats shall conform to constructional details specified in Table 1.

3.3 Ends and Picks

The number of ends and picks per decimeter of mats shall be in accordance with the requirements of Tables 1, 2 and 3. The following tolerances are permitted:

Ends per dm	+ 1 - 0
Picks per dm for mats of width less than 76 cm	+ 0 - 5 percent
For mats of width 76 cm and above	+ 0 - 10 percent

3.4 Pile Height

The pile height of mats shall be in accordance with the requirements of Table 1, 2 and 3.

3.5 Mass

The mass in g/m^2 of mats shall be as given in Table 1, 2 and 3.

3.5.1 An increase of 1 200 g/m^2 shall be allowed for every increase of 6 mm pile height over the specified values for mats having mass below 6 000 g/m^{2}and above.

3.5.2 An increase of 600 g/m^2 will be allowed for every increase of 3 mm pile height over the specified values for mats having mass below 6 000 g/m^2. When the mass reaches 6 000 g/m^2 the lift in pile height and the

corresponding mass in g/m^2 as given in **3.5.1** shall be made applicable.

3.5.3 For mats of width 300 mm and below, the plus tolerance shall be 12.5 percent and minus tolerance shall be 5 percent of the specified nominal value.

Table 1 Requirements of Door Mat –Creel

(*Clauses* 3.2,3.3, 3.4, and 3.5)

Destination	Type of Yarn				Construction	Ends per dm	Picks per dm	Piles Height	Mass
	Slack Chain	Tight Chain	Weft	Pile					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
BC1	-	Beach/ Vycome/ Alapat	Beach	Beach	Warp cut	9	24	22	4 800
BC2	-	Do	Do	Do	Do	9	24	25	5 400
BC3	-	Do	Do	Do	Do	9	25	28	6 000
BC4	2 or 3 ply jute	Do	Do	Do	Do	9	24	22	6 000
VC1	-	Vycome/ Alapat	Vycome	Vycome	Do	9	25	22	5 400
VC2	-		Do	Do	Do	9	25	25	6 000
VC4	2 or 3 ply jute	Do	Do	Do	Do	9	25	22	5 400
VC5	Do	Do	Do	Do	Do	9	25	25	6 000
VC6	Do	Do	4 or 5 ply jute	Do	Do	14	40	19	5 100
VC8	Do	4 or 5 ply jute	3 ply jute	Do	Do	17	52	13	4 350
VC10	2 ply jute	Do	Vycome	Do	Do	14	40	19	4 500
VC11	3 ply jute	Vycome	Do	Vycome and other fibre	Do	17	24	25	6 300
VC12	Do	Do	Do	Vycome (centre) wool (border)	Do	9	28	19	5 100
VC13[#]	Anjengo A	Do	Do	Anjengo A	Do	10	24	15	3 965
TOLERANCE						*See* **3.3**		± 1.5 mm	*See* **3.5**
Method or test [*see* IS 11420 (Part 1)]*						**C-1**	**C-1**	**C-2**	**C-4**

Specification for coir mats: Part 1 General requirements

[#] Unsheared and larze size mats having a minimum width of 100 cm.

Table 2 Requirements of Door Mats –Bits

(*Clauses* 3.2,3.3, 3.4, and 3.5)

Destination	Type of Yarn			Construction	Ends perdm	Picks per dm	Piles Height	Mass
	Warp	Weft	Pile					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
BB1	Beach/ Vycome	Beach/ Vycome/Alapat	Beach	Inserted yarn bit	9	9	32	6 600
VB2	Vycome	Vycome	Vycome Bits	Do	9	9	35	7 800
AB1	Vycome -	Vycome	Hard twisted yarn bits	Do	9	9	35	8 400
TOLERANCE					*See* **3.3**		± 3 mm	*See* **3.5**
Method or test (*see* IS 11420 (Part 1) *]					**B-1**	**B-1**	**B-2**	**B-4**
*Specification for coir mats: Part 1 General requirements								

Table 3 Requirements of Door Mat –Fibre

(*Clauses* 3.2,3.3, 3.4, and 3.5)

Destination	Type of Yarn				Construction	Ends per dm	Picks per dm	Piles Height	Mass
	Slack Chain	Tight Chain	Weft	Pile				mm	g/m2
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
EM2+	Vycome/ Alapat/ Anjengo-	Vycome/ Alapat/ Anjengo	Vycome	Retied fibre or 1 or 2*	Inserted Fibre	12	12	28	7 800
EM3+	Do	Do	Do	Do	Do	14	14	32	8 400
FW1	Vycome	Do	Do	Wool border and retted fibre* at centre	Do	14	15	19 (boarder) 28 (insider)	6 600
FW2	Do	Alapat/ Vycome	Do	Retted fibre*and wool	Do	12	12	35	10 200
TOLERANCE						*See* **3.3**		± 3 mm	*See* **3.5**
Method or test [*see* IS 11420 (Part 1)]**						**C-1**	**C-1**	**C-2**	**C-4**
* IS 898 Specification for retted coir fibre (*first revision*)									
*M Stands for 'Retted coir fibre for mats'									
**Specification for coir mats: Part 1 General requirements									

3.5.4 For mats of width above 300 mm and below 760 mm the plus tolerance shall be 7.5 percent and minus tolerance shall be 5 percent of the specified nominal value.

3.5.5 For mats of width 760 mm and above, the plus tolerance shall be 5 percent and minus tolerance shall be 10 percent of the specified nominal value.

3.5.6 The following minus tolerance on the nominal value shall be allowed for mass of beveled mats.

a) Creel mats - 1 percent
b) Bits mats - 1.5 percent
c) Fibre mats - 2 percent

Indian Standard

SPECIFICATION FOR COIR MATS

PART 4 DOOR MATS — ROD

1 SCOPE

1.1 This standard (Part 4) prescribes the requirements for door rod, commonly known as rod mats, made out of beach and Vycome coir yearn mainly. It covers plain, dyed, stenciled an inlaid rod mats.

1.2 Terminology, additional requirement for Ecomark (optional), marking and labelling, packing sampling and criteria for conformity and methods of test are specified in Part 1 of this standard.

2 GENERAL REQUIREMENTS

2.1 The mats shall be firmly and evenly woven. Pile tufts shall be well secured and the shearing of the pile shall be uniform and level. Mats may also be supplied without shearing of the pile, if so required by the buyer.

2.2 The mats may be plain, dyed, stenciled or inlaid with coir fibre or coir yarn to form a design. When inlaid with coir fibre or coir yarn the designs may be bevelled to give clarity of outline. In-laid mats may also be supplied without bevelling if so required by the buyer. The mats shall be squared by removing one or more weft threads. The protruding warp threads shall be tied with jute twine and merged with the body of the mat.

2.3 Each mat shall be bound with braid made of five or more strands of hard twisted coir yarn around the edges in the case of mats having a pile thickness of less than 45 mm and above seven strands of hard twisted yarn for mats having pile thickness 45 mm and above. The ends of the braid shall be securely fastened. There shall be at least three stitches per decimeter in the braid.

2.4 The mats shall not be loaded with any extraneous matter.

3 SPECIFIC REQUIREMENTS

3.1 Designation

The designation of mats shall be assigned in such a way so as to denote the type of yarn used for the pile by the first letter and the variety of the mat by the second letter. As, for example, if the type of the yarn used for the pile is beach or Vycome, the designation would be BR or VR.

3.2 Construction

The construction of mats shall be in accordance with requirements of Table 1.

3.3 Ends (Chains) and Picks

The number of ends per decimetre and picks per decimetre of mats shall be in accordance with the requirements of Table 1. The following tolerance shall be permitted:

a) Ends (chains) per dm $^{+1}_{-0}$ Percent

b) Picks per dm:

1) For mats of width less than 76 mm $^{+0}_{-5}$ Percent

2) For mats of width 76 cm and above $^{+0}_{-10}$ Percent

3.4 Pile Height

The pile height of mats shall be as given in Table 1.

3.5 Mass

3.5.1 The mass per square metre of mats shall be as given in Table 1 subject to the following tolerance:

a) An increase of 1200 g/m^{2}shall be allowed for every increase of 6 mm pile height over the specified values for mats having mass 6000 g/m^2 and above.

b) An increase of 600 g/m^{2}shall be allowed for every increase of 3 mm pile height over the specified values for mats having mass below 6 000g/m^2. When the mass reaches 6000 g/m^2, the lift in pile height and the corresponding mass in g/m^{2}as given in **4.5** (a) shall be made applicable.

c) For mats of width 300 mm and below the plus tolerance shall be 125 percent and minus tolerance shall be 5 percent of the specified nominal value.

d) For mats of width above 300 mm and below 760 mm the plus tolerance shall be 7.5 percent and minus tolerance shall be 5 percent of the specified nominal value.

e) For mats of width 760 mm and above, the plus tolerance shall be 5 percent and minus tolerance shall be 10 percent of the specified nominal value.

f) A special minus tolerance of 1.5 percent of the nominal value shall be allowed in mass for bevelled mats.

g) In respect of qualities where the formula for increase in mass for increased pile height is

applied, the maximum and minimum limits of tolerance would stand raised by the applicable standard lift from the stipulated levels of the basic quality.

3.6 Dimensions

3.6.1 The dimensions of the mats and the tolerances shall be as given in **3.1**, **3.2** and **3.3** of Part 1 of this standard.

3.6.2 Over and above the dimensions as given in **4.6.1** the following dimension shall be permitted for another size number 10 mainly for mainly defence use:

Size No.	Dimensions Mm
10	910 × 550

Table 1 Requirements of Door Mats-Rod

(*Clauses* 3.1, 3.2, 3.3, 3.4*and* 3.5)

Designation	Type of Warp Yarm	Type of Weft Yarn	Typeof Pile Yarn	Construction	End (Chain) per dm	Picks per dm	Pile Height (mm)	Mass g/m^2
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
							mm	g/m^2
BR1	Beach or Vycome	Beach	Beach	2 × 2*	9	9	25	4 200
BR2	do	do	do	2 × 2	9	11	28	4 800
BR3	do	do	do	2 × 1	10	I1	25	4 800
BR4	do	do	do	2 × 1	10	13	28	5 400
BR5	do	do	do	3 × 2	10	9	28	5 400
BR6	do	do	do	3 × 2	10	9	32	6 000
BR7	do	do	do	3 × 1	10	11	28	5 400
IIR8	do	do	do	3 × 1	10	12	32	6 000
BR13	do	do	do	4 × 1	10	11	38	7 200
BR14	Beach	do	2 strands Beach 2 strands Vycome	4 × 1	10	10	35	6600
BR15	Beachor Vycome	do	Beach	3 × 3	10	8	32	5 100
VR1	Vycome	Vycome	Vycome	3 × 1	10	12	32	7 200
VRID**	do	do	do	4 × 1	10	12	40	8 400
VR2	do	do	do	4 × 2	10	9	32	7 200
VR3	Beach or Vycome	Vycome	Vvcome	4 × 1	10	10	32	7 200
VR7	do	do	do	6 × 1	12	13	35	7 800
VR8**	Tight-Vycome Slack-Vycome	do	do	—	12	20	-	5 490
TR1	Vycome	T.Vycome/ Vycome	T.Vycome	3 × 1	10	9	32	7 200
TR2	Vycome / Beach	T.Vycome/ Vycome	do	3 × 2	10	8	32	6 600
RR1	Vycome/ Alapat	Vycome	Aratory	4 × 1	10	I2	32	7 200
LR1	Vycome	Vycome	Alapat	4 × 1	10	10	32	7 200

Table 1 (*Concluded*)

Designation	Type of Warp Yarm	Type of Weft Yarn	Typeof Pile Yarn	Construction	End (Chain) per dm	Picks per dm	Pile Height (mm)	Mass g/m²
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
							mm	g/m²
FIBRE INLAID								
BR1	Beach/ Vycome	Beach	Beach	2 × 2	10	10	28	5 400
BR3	do	do	do	3 × 1	11	11	28	6 000
BR6	do	do	do	3 × 2	11	11	28	6 000
BR7	do	do	Beach/ Alapat/ T.Vycome	3 × 1	10	11	35	7 200
VR1	Vycome	Vycome	Vycome	4 × 1	11	12	32	7 800
TR1	do	do	T.Vycome	3 × 1	10	10	35	7 800
RR1	do	do	Aratory	4 × 1	10	12	38	8 400
LR1	Vycome/ Alapat	do	Alapat	4 × 1	10	I1	38	8 400
YARN IN LAID								
BRY1	Beach/ Vycome	Beach	Beach	3 × 1	11	12	32	6 000
TOLERANCE	-	-	-	-	*see* **3.3**	-	± 3 mm	*see* **3.5**
METHOD OR TEST [*see* IS 11420 (Part 1)]***	-	-	-	**C-5**	**C-1**	**C-1**	**C-2**	**C-4**

* The construction 2 × 2 for example, implies that the pile' is formed by two strands of coir yarn working as one and the weft comprising of two strands of coir yarn is inserted between two rows of pile.

** For defence use mainly.

*** Specification for coir mats: Part 1 General requirement.

Indian Standard

SPECIFICATION FOR COIR MATS

PART 5 GYMNASIA MATS

1 SCOPE

1.1 This standard (Part 5) prescribes the requirements for Gymnasia mats made from coir yarn.

1.2 Terminology, additional requirement for Ecomark (optional), marking, and labelling, packing, sampling and criteria for conformity and methods of tests are specified in Part 1 of this standard.

2 GENERAL REQUIREMENTS

2.1 The mats shall be manufactured from coir yarn as specified in Table 1.

2.2 The mats shall be firmly and evenly woven. Pile tufts shall be secured and the shearing of the pile shall be uniform and level. Mats may also be supplied without shearing of the pile, if so required by the buyer.

2.3 The mats shall be squared by removing one or more weft threads. The protruding warp threads shall be tied with jute twine and merged with the body of the mat.

2.4 Each mat shall be bound with a braid of eleven strands of hard twisted coir yarn and having a width of 30 mm around the edges. The cords of the braid shall be securely fastened and there shall be at least three stitches per decimetre in the braid. The cordage used shall be coir rope made out of hard twisted yarn and having a circumference of 38 mm.

2.5 The mats shall not contain any extraneous matter.

2.6 For defence requirement each mat shall be securely fitted with four cordage handles. The cordage handle shall be woven inside the mat up to a distance of 23 cm, 8 cm which shall be turned backward.

3 SPECIFIC REQUIREMENTS

3.1 Designation

The designation of a mat shall be assigned in such a way as to denote the type of the yarn used for the pile by the first letter and the variety of the mat by the second letter. As, for example, if the yarn used for the pile is beach or Vycome the designation would BG or VG.

3.2 Construction

The construction of mats shall be in accordance with the requirements of Table 1.

3.3 Dimensions

3.3.1 The dimensions of mats shall be as specified in an agreement between the buyer and the seller.

3.3.2 For defence requirements the dimension of the gymnasia mat shall be 183 cm × 183 cm.

3.3.3 A tolerance ± 13 mm or ± 1 percent whichever is higher shall be permitted on both length and width of the mat.

3.3.4 The dimensions of the mats in a lot shall be determined by the method prescribed in **C-3** of Part 1 of this standard.

3.4 Ends (Chains) and Picks

The minimum number of ends (chains) per decimetre and picks per decimetre of mats shall be in accordance with the requirements of Table 1.

3.5 Pile Height

The pile height of mats shall be as given in Table 1.

3.6 Mass

3.6.1 The mass per square metre of mats shall be as given in Table 1subject to the following tolerance:

a) An increase of 900 g/m^2 will be allowed for every increase of 6 mm pile height over the specified nominal value.

b) For mats of width below 760 mm the plus tolerance shall be 7.5 percent and minus tolerance shall be 5 percent of the specified nominal value.

c) For mats of width 760 mm and above the plus tolerances shall be 5 percent and minus tolerance shall be 10 percent of the specified nominal value.

3.6.2 For defence requirement the total mass of the mat of size 183 cm × 183 cm including four cordage handle shall be 38 kg.

3.6.2.1 A tolerance of $^{+4}_{-2}$kg shall be allowed on the total mass of the mat.

Table 1 Requirements of Gymnasia Mat

(*Clauses* 3.1, 3.2, 3.3 *and* 3.4)

Designation	Type of Warp Yarn	Typeof Weft Yarn	Ends (Chains) per dm	Picks per dm	Type of Pile Yarn	Pile Height	Mass
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
						mm	g/m^2
VG1	Vycome	Vycome yarn single, sufficient to guarantee tight weave	10	10	Vycome yarn free from impurities *Min* 4 fold yarn drawn together	63	12 200
BG1	do	Beach yarn single, sufficient to guarantee tight weave	10	10	Beach yarn *Min* 3 fold yarn drawn together	63	11 000
TOLERANCE			+1 -0	±1		±3 mm	*see* **3.6.1**
METHOD OF TEST		C-5	C-1	C-1	C-5	C-2	C-4

[*see* IS : 11420 (Part 1)]*

* Specification for coir mats: Part 1 General requirements.

Indian Standard

SPECIFICATION FOR COIR MATS

PART 6 LOOP MATS

1 SCOPE

1.1 This standard (Part 6) prescribes requirements for loop mats made out of coir yarn.

1.2 Terminology, dimensions, additional requirement for Ecomark (optional), marking and labelling, packing, sampling and criteria for conformity and methods of tests are specified in Part 1 of this standard.

2 GENERAL REQUIREMENTS

2.1 The mats shall be firmly and evenly woven.

2.2 The mats may be supplied plain, bleached, dyed, stenciled or with designs as may be specified by the buyer.

2.3 The chain threads in each mat shall be doubled back and interlaced in the mats. This finishing technique may be dispensed within case of mats sealed at the ends with rubber latex of other edge sealing compound.

2.4 The mats shall be reasonably free from salt and other extraneous matter.

3 SPECIFIC REQUIREMENTS

3.1 Designation

The designation shall be assigned in such a way so as to denote the type of the yarn used for the pile by the first letter and the variety of the mat by the second letter. As, for example, if the type of the yarn used for the pile is Anjengo or Vycome, the designation would the AL or VL.

3.2 Construction

The mats shall conform to the constructional details specified in Table 1.

3.3 Ends (Chains) and Picks

The minimum number of ends (chains) and picks per decimetre of mat shall be in accordance with the requirements specified in Table 1.

3.4 Mass

The mass in g/m^2, of mats shall meet the requirements as given in Table 1 subject to the following tolerances:

a) For mats of width 300 mm and below, the tolerances shall be $^{+12.5}_{-5}$ percent of the specified nominal value.

b) For mats of width above 300 mm and below 760 mm the tolerances shall be $^{+7.5}_{-5}$ percent of the specified nominal value.

c) For mats of width 760 mm and above the tolerances shall be $^{+5}_{-10}$ percent of the specified nominal value.

Table 1 Requirement of Loop Mats

(*Clauses* 3.2, 3.3 *and* 3.4)

Designation	**Type of Yarn for Tight Chain**	**Runnage***	**Type of Yarn for Binding Chain**	**Runnage***	**Type of Yarn for Loop Chain**	**Runnage***	**Type of Yarn for Weft**	**Ends per dm** *Min*	**Picks PER dm** *Min*	**Mass**
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
		m/kg		m/kg		m/kg				m/kg^2
RL1	Vycome	220	Vycome	240	Aratory	220	Vycome	10	22	4250
RL2	Vycome	220	Vycome	240	Aratory	240	Vycome	10	22	3650
VL1	Vycome	220	Vycome	240	Vycome	260	Vycome	10	28	3650
AL1	Vycome	220	-	-	Anjengo	220	Vycome	10	24	4880
AL2	Vycome	220	Anjengo	275	Anjengo	275	Vycome	10	20	3050
AL3	Vycome	220	Anjengo	240	Anjengo	240	Quilandy	10	20	5490
TOLERANCE								**C-1**	**C-1**	**C-4**
METHOD OF TEST										
[*see* IS :11420 (Part 1)**]										

* Runnage is given for guidance only.

** Specification for coir mats: Part 1 General requirements.

Indian Standard

SPECIFICATION FOR COIR MATS

PART 7 MESH MATS

1 SCOPE

1.1 This standard (Part 7) prescribes the requirements for mesh mats made out of coir yarn.

1.2 Terminology, dimensions, additional requirement for Ecomark (optional), marking and labelling, packing, sampling and criteria for conformity and methods of tests are specified in Part 1 of this standard.

2 GENERAL REQUIREMENTS

2.1 The mats shall be made firmly and evenly, the knots in the intersection of points shall be secure, tight and uniform.

2.2 The mats may be plain or in designs as specified by the buyer. The mats shall not contain any extraneous matter.

3 SPECIFIC REQUIREMENTS

3.1 Designation

The designation of a mat shall be assigned in such way as to denote the variety of the mat by the first letter. The type of yarn used for the base of the mat by the second letter and the type of yarn used for binding by the third letter. As, for example, if the type of yarn used for the base is 'Baypore' and the binding yarn is 'Anjengo', designation of the mat would be MBA.

3.2 Construction

The mats shall conform to the constructional details specified in Table 1.

3.3 Mass

The mass per square metre of mesh mats shall be in accordance with Table 1.

Table 1 Requirements of Mesh Mats

(*Clauses* 3.2 *and* 3.3)

Designation	Type of Yarn Used in the Base	No. of Strands per dm	Binding Yarn Minimum	Mass
(1)	(2)	(3)	(4)	(5)
				g/m^2
MBA	Baypore	10 × 10	Anjengo/aratory	3 660
MRA	Aratory	20 × 20	Anjengo	3 660
MVV	Vycome	20 × 20	Vycome	3 060
MQA	Quilandy	20 × 20	Anjengo	5 490
TOLERANCE	-	-	-	+ 7.5
PERCENT				- 5.0
Method or test [*see* IS 11420 (Part 1)*	-	-		**C-4**

NOTE — The number of strands used at the edge of MBA may be suitably increased and all the four edges may be knotted properly. All the four edge of MRA, MVV may be finished either by stitching with 7 ply braid on both sides or by plaiting with coir yarn to give the appearance of a braid and the edges of MQA may be finished by plaiting with coir yarn to give the appearance of a braid.

* Specification for coir mats: Part 1 General requirements.

Indian Standard

SPECIFICATION FOR COIR MATS

PART 8 ROPE MATS (LOVER'S KNOT MATS)

1 SCOPE

1.1 This standard (Part 8) prescribes the requirements for rope mats (Lover's knot mats) made out of coir yarn.

1.2 Terminology dimensions, additional requirement for Ecomark (optional), marking and labelling, packing, sampling and criteria for conformity and methods of tests are specified in the Part 1 of this standard.

2 GENERAL REQUIREMENTS

2.1 The ropes shall be uniformly twisted and spun and the mat shall be made firmly and evenly.

2.2 All the side slabs in the mats shall be stitched properly so as to prevent slippage of layers of rope.

2.3 In the mats, the starting and finishing ends of rope shall be merged into the adjacent layers of rope suitably so that the ends cannot be identified.

2.4 The mats may be plain or dyed or in designs as specified by the buyer.

2.5 The mats shal1not contain any extraneous matter.

3 SPECIFIC REQUIREMENTS

3.1 Designation

The designation of the mat shall be assigned in such a way as to denote the variety of the mat by the first two letters and the type of the yarn used for manufacturing rope by the third letter. As for example if the type of the yarn used is Anjengo or Aratory the designation of the mat would be LKA or LKR.

3.2 Construction

The mats shall conform to the constructional details specified in Table 1.

3.3 Mass

The mass per square metre of rope mat shall be in accordance with Table 1.

3.4 Diameter of Rope

The diameter of rope shall be as specified in Table 1.

Table 1 Requirement of Mesh Mats

(*Clauses* 3.2, 3.3 *and* 3.4)

Designation	Type Of Rope	Type of Yarn	Diameter of Rope	Mass
(1)	(2)	(3)	(4)	(5)
				mm g/m²*
LKA	Shroud laid	Anjengo	14	6 100
LKR	do	Aratory	14	5 490
LKV	do	Vycome	25	11 450
TOLERANCE	-	-	± 3 mm	+ 7.5 percent
METHOD OR	-	-	-	- 5 percent
TEST [see IS 11420 (Part 1)]**				**C-4**

* For oval shaped mats the nominal mass in g/ml shall be 10 percent less than specified.

** Specification for coir mats: Part 1 General requirements

Indian Standard

SPECIFICATION FOR COIR MATS

PART 9 SINNET MATS

1 SCOPE

1.1 This standard (Part 9) prescribes the requirements for sinnet mats made out of coir yarn.

1.2 Terminology, dimensions, additional requirement for Ecomark (optional), marking and labelling, packing, sampling and criteria for conformity and methods of tests are specified in the Part 1 of this standard.

2 GENERAL REQUIREMENTS

2.1 The mats shall be firmly and evenly manufactured.

2.2 The mats may be supplied plain, dyed or in designs as specified by the buyer.

2.3 The mats shall be free from extraneous matter.

3 SPECIFIC REQUIREMENTS

3.1 Designation

The designation of mat shall be assigned in such a way as to denote the type of yarn used for the plait by the second letter and the variety of the mat by the first letter for example, if the type of the yarn used for the plait is Anjengo or Aratory, the designation of mat would be SA or SR.

3.2 Construction

The mats shall conform to the constructional details specified in Table 1.

3.3 Thickness

The mats shall conform to the requirements for thickness as prescribed in Table 1.

3.4 Mass

The mass per square metre of Sinnet mats shall be in accordance with the requirements laid down in Table 1, subject to the following tolerances on the nominal mass as specified:

For mats of width 300 mm and below :	+ 12.5 percent
	– 5 percent
For the mats of width above 300 mm :	+ 7.5 percent
but below 760 mm	– 5 percent
For mats of width 760 mm and above :	+ 5 percent
	– 10 percent

Table 1 Requirements of Sinnet Mats

(*Clause* 3.2)

Designation	Type of Warp Yarn	Runnage*	Number of Strands of Ply	Thickness Minimum	Mass
(1)	(2)	(3)	(4)	(5)	(6)
		m/Kg		mm	g/m^2
SA1	Anjengo	220	9	19	3650
SA2	do	220	9	19	4250
SA3	do	220	11	25	4850
SA4	do	220	11	25	5450
SA5	do	220	11	25	6100
SA6	do	220	11	28	7300
SA7	do	275	9	19	5490
SA8	do	275	5	10	3000
SB1	Beach	250	9	19	3350
SB2	do	250	9	19	3950
SB3	do	250	11	25	4600
SR1	Aratory	220	9	19	3350
SR2	do	220	9	19	3950
SR3	do	220	11	25	4800
SR4	do	220	11	25	5200
SR5	do	220	11	25	5800
SR6	Anjengo/Aratory	220/220	19	28	7300
SL1	Alapat	180	11	25	7900
SL2	do	190	12	31	6700
SD1	Ashtamudy	110	9	25	6100
SV1	Vycome	220	9	19	3650
SV2	do	220	9	19	4250
SV3	do	220	11	25	4850
SV4	do	220	11	25	5450
SV5	do	240	19	28	6700
TOLERANCE	*See* **3.4**				
METHOD OF TEST [*see* IS 11420 (Part 1)]**					**C-4**

NOTE — Coir yarn for inner strands of the braid may be of a suitable quality

* Runnage is given for guidance only.

** Specification for coir mats: Part 1 General requirements.

ANNEX D

(*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, Kkochi	Secretary Joint Director (*Alternate*)
Coir Mats and Mattings Association, Ernakulam	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	Shrijospaul Mathew Shri Sajan B. Nair (*Alternate*)
Hindustan Coir, Coir Board Complex Alappuzha	Weaving Master Senior Scientific Officer (*Alternate*)
Karnataka State Coir Development Corporation Ltd, Bangalore	Shri G. Kumaraswamy Shri K. R. Kumaraswamy (*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, Bangalore	Shri Narendra Kudva Shri P. Anil (*Alternate*)
M M Rubber & Co, Chennai	Shri Joseph Cheriyan
National Coir Research & Management Institute (NCRMI), Thiruvanthapuram	Dr K. R. Anil Shri C. Abhishek (*Alternate*)
National Coir Training & Design Centre, Alappuzha	Assistant Director Alappuzharegional Officer (*Alternate*)
Natural Green Tech (P) Ltd, Bengaluru	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
BIS Directorate General	Shri A. K. Bera, Scientist 'F' and Head (TXD) [Representing Director General (*Ex-officio*)]

Member Secretary
Shri P. N. Murali
Scientist 'D' BIS

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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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