IS 15869 (2008): Textiles - Open weave coir Bhoovastra [TXD 30: Geotextiles and Industrial Fabrics]

BLANK PAGE

भारतीय मानक

वस्त्रादि — ओपन वीव नारियल जटा *भूवस्त्र* — विशिष्टि

Indian Standard

TEXTILES — OPEN WEAVE COIR *BHOOVASTRA* — SPECIFICATION

ICS 59.080.30

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

December 2008 **Price Group 2**

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Geosynthetics Sectional Committee had been approved by the Textile Division Council.

Open Weave Coir *Bhoovastra* (CBV) are permeable coir fabrics made from coir fibre extracted from coconut husk either by natural retting or by mechanical process. The open weave CBV are used for stabilization of soil through vegetation against erosion of landscape and soil slopes as well as protection of river bank, canal bank, road and railway embankment and reinforcement of mud wall of stream against erosion and other applications involving separation and filtration.

Open weave CBV control the soil erosion by acting as a ground cover or mulch. As a ground cover, it reduces the flow velocity of run off water by forming check dams with the help of net structured strands of open weave CBV in firm contact with the soil, which absorb the impact of water flow and resist washing down keeping the soil intact. Open weave CBV also provides support to the seeds sown and seedling, which could be otherwise easily washed away by water. The strands of the net reduce the wind velocity at the soil surface thereby trap soil particles from being blown away. As mulch, open weave CBV provide ideal environment for the seeds to germinate and healthy growth of seedling by regulation of soil humidity, temperature and manure and controlling weeds, by protection from direct sunlight and rain.

Open weave CBV are good insulators, resistant to dampness and moths, bio-degradable, absorb moisture equal to their own weight and conserve moisture in soil which is sufficient for the growth of vegetation. When the open weave CBV eventually disintegrates, it leaves only humus. There is no need for post-installation work.

Open weave CBV have been found to be ideal geo textiles for situations where land is sloppy which may lead to rilling and gullying. In such slopes, heavy rainfall causes loss of soil. In the areas of scanty rainfall where soil is non-cohesive and subject as to wind blowing, open weave CBV provide protection against erosion like in cut slopes of railways, roads, approaches of bridges, canal and drainage bank, bank of river, ponds, lakes, hill slopes and terraces requiring surface stabilization, reclamation of mine spoil heaps and sand dune stabilization.

The open weave CBV initially hold the ground for seeds and seedling and provide a mechanical support against water action, help the germination of seeds for better growth of the plants conserving moisture and add organic matter in the soil after degradation. In areas where vegetation is poor or takes longer time for establishment, open weave CBV can hold the soil together for a longer period of time.

Plants and grass for soil conservation is given in Annex A for information only.

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.

AMENDMENT NO. 1 SEPTEMBER 2012
TO
IS 15869 : 2008 TEXTILES — OPEN WEAVE COIR *BHOOVASTRA* — SPECIFICATION

[*Page* 2, *Table* 1, *Sl No.* vii (a), *col* 3] — Substitute '5.0' *for* '7.0'.

[*Page* 2, *Table* 1, *Sl No.* vii (a), *col* 5] — Substitute '17.0' *for* '15.0'.

[*Page* 2, *Table* 1, Sl No. vii (b), *col* 3] — Substitute '5.0' *for* '4.0'.

[*Page* 2, *Table* 1, *Sl No.* vii (b), *col* 5] — Substitute '15.0' *for* '8.0'.

[*Page* 2, *Table* 1, *Sl No.* viii a), *col* 5] — Substitute '15.0' *for* '12.5'.

[*Page* 2, *Table* 1, *Sl No.* viii (b), *col* 3] — Substitute '3.0' *for* '2.0'.

[*Page* 2, *Table* 1, *Sl No.* viii (b), *col* 4] — Substitute '5.0' *for* '4.5'.

[*Page* 2, *Table* 1, *Sl No.* viii (b), *col* 5] — Substitute '12.0' *for* '5.0'.

[*Page* 2, *Table* 1, *Sl No.* ix (a), *col* 5] — Substitute '18.5' *for* '18.0'.

[*Page* 2, *Table* 1, *Sl No.* ix (b), *col* 3] — Substitute '7.0' *for* '4.0'.

[*Page* 2, *Table* 1, *Sl No.* x (a), *col* 3] — Substitute '3.5' *for* '3.0'.

[*Page* 2, *Table* 1, *Sl No.* x (a), *col* 5] — Substitute '16.0' *for* '15.0'.

[*Page* 2, *Table* 1, *Sl No.* x (b), *col* 3] — Substitute '3.5' *for* '2.0'.

[*Page* 2, *Table* 1, *Sl No.* x (b), *col* 5] — Substitute '13.0' *for* '6.0'.

Reprography Unit, BIS, New Delhi, India

Indian Standard

TEXTILES — OPEN WEAVE COIR *BHOOVASTRA* — SPECIFICATION

1 SCOPE

This standard prescribes constructional details and other requirements of open weave coir *bhoovastra* (CBV) of three different grades used in prevention of erosion of soil and reinforcement of paved and unpaved roads.

2 REFERENCES

The standards listed below 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 standard indicated below.

IS No	*Title*
12503 (Parts 1 to 6) : 1988	Coir mattings, mourzouks and carpets — General
13162 (Part 5) : 1992	Geotextiles — Methods of test: Part 5 Determination of tensile properties using a wide width strip
14293 : 1995	Geotextiles — Method of test for trapezoid tear strength
15868 (Parts 1 to 6) : 2008	Natural fibre geotextiles (Jute geotextiles and coir *bhoovastra*) — Methods of test

3 TERMINOLOGY

For the purpose of this standard the definitions given in IS 12503 (Parts 1 to 6) along with the following shall apply.

3.1 Open Weave CBV — Woven fabric of two treadle weave in construction made from coir yarn in which the warp and weft strands are positioned at a distance to get a mesh (net) effect of 1", 3/4" and 1/2" square is termed as open weave CBV.

3.2 Mulch — Mulch refer to any material that would be decomposed fully or partially over a period of time and serving as a nutrient to the vegetation that is being nurtured. The mulch has a short-term role to play and not a long-term role in soil stabilization.

4 GRADES

The open weave CBV shall have the following grades based on the mass:

a) Grade I — having mass of 400 g/m^2,
b) Grade II — having mass of 700 g/m^2, and
c) Grade III — having mass of 900 g/m^2.

5 REQUIREMENTS

The CBV shall conform to the constructional and other requirements as given in Table 1.

6 PACKING

The fabric shall be packed in accordance with the procedure given in IS 12503 (Parts 1 to 6).

7 MARKING

7.1 Unless otherwise agreed to between the buyer and the seller, the rolls shall be marked with an indelible ink with the following information:

a) Roll No.;
b) Grade;
c) Length, in m;
d) Indication of the source of manufacture;
e) Month and year of packing;
f) Gross mass;
g) Number of pieces packed in the package; and
h) Any other information as required by the law in force.

7.2 BIS Certification Marking

The rolls may also be marked with the Standard Mark.

7.2.1 The use of the Standard Mark is governed by the provisions of *Bureau Indian Standards Act*, 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

8 SAMPLING AND CRITERIA FOR CONFORMITY

8.1 Lot

The quantity of open weave CBV of same grade and width, delivered to a buyer against one dispatch note shall constitute the lot.

Table 1 Requirements of Coir *Bhoovastra*

(*Clause* 5)

Sl No.	Characteristic	Grade			Method of Test, Ref to IS
		I	II	III	
(1)	(2)	(3)	(4)	(5)	(6)
i)	Mass per unit area, g/m^2, *Min*	400	700	900	IS 15868 (Parts 1 to 6)
ii)	Width, cm, *Min*	100.0 or as required	100.0 or as required	100.0 or as required	IS 12503 (Parts 1 to 6)
iii)	Length, m	50 or as required	50 or as required	50 or as required	IS 12503 (Parts 1 to 6)
iv)	Thickness at 20 kPa, mm, *Min*	6.5	6.5	6.5	IS 15868 (Parts 1 to 6)
v)	Ends (Warp)	180	150	210	IS 12503 (Parts 1 to 6)
vi)	Picks (Weft)	160	160	250	
vii)	Break load, dry (kN/m), *Min*				
	a) Machine direction	7.0	8.5	15.0	IS 13162 (Part 5)
	b) Cross machine direction	4.0	8.0	8.0	
viii)	Break load, wet (kN/m), *Min*				
	a) Machine direction	3.0	7.0	12.5	IS 13162 (Part 5)
	b) Cross machine direction	2.0	4.5	5.0	
ix)	Peak load, dry (kN/m), *Min*				
	a) Machine direction	7.5	9.0	18.0	IS 13162 (Part 5)
	b) Cross machine direction	4.0	8.0	9.0	
x)	Peak load, wet (kN/m), *Min*				
	a) Machine direction	3.0	8.5	15.0	IS 13162 (Part 5)
	b) Cross machine direction	2.0	5.5	6.0	
xi)	Trapezoidal tearing strength (kN) at 25 mm gauge length, *Min*				
	a) Machine direction	0.18	0.35	0.50	
	b) Cross machine direction	0.15	0.30	0.35	
xii)	Mesh size, mm, *Max*	20.0 × 16.75	7.50 × 7.30	4.2 × 5.1	IS 15868 (Parts 1 to 6)

8.2 Sampling Procedure

For assessing the conformity of a lot to the requirements of this standard, the number of rolls to be selected from the lot shall be in accordance with Table 2.

Table 2 Selection of Rolls for Testing

Sl No.	No. of Rolls in the Lot	No. of Rolls to be Selected
i)	1-20	1
ii)	21-50	2
iii)	51-100	3
iv)	101-200	4
v)	201 and above	4 +1 for every 100 rolls or part thereof above 200 rolls

8.2.1 From the rolls selected as per Table 2, the test sample shall drawn as follows:

Sl No.	*Test*	*Test Sample*
i)	Ends and picks	3 specimens from different locations per selected roll
ii)	Width	
iii)	Thickness	
iv)	Break load and peak load	
v)	Length	One specimen from roll selected
vi)	Mass	
vii)	Mesh size	
viii)	Trapezoidal tearing strength	

8.3 Criteria for Conformity

8.3.1 The lot shall be considered as conforming to the requirements of the standard if, the following conditions are satisfied:

a) Average machine direction and cross machine direction breaking load values for break load. Peak load and trapezoidal tear strength are not less than the corresponding specified requirements.

b) Average mass/m^2 (on roll mass basis) and the average ends and picks/dm are in accordance with the requirements specified.

c) Average width, length, thickness and mesh size of the rolls under test is in accordance with the requirements specified.

ANNEX A

(*Foreword*)

PLANTS AND GRASS FOR SOIL CONSERVATION

Sl No.	*Botanical Name*	*Suited for*
i)	*Avicennia officinnalis*	Shrub suitable for marshy places
ii)	*Rhizophora mucrunata*	do
iii)	*Cyperus exaltatus*	Grass suitable for highway slopes
iv)	*Acrostichuim aureum*	Shrub suitable for dam sites
v)	*Adiantum spices*	do
vi)	*Cyanodon dactylon*	For light sandy soils
vii)	*Cenehurs ciliaries*	For most types of soil
viii)	*Eragrostic curuvla*	For protecting terraces and channels
ix)	*Dianthum annulatum*	Sandy light soil
x)	*Pennisetum pedicellaltum*	Sandy loam soil
xi)	*Both rochola glabra*	For red semi-arid soil
xii)	*Stylosanthis gracilis*	For light soils with low moisture

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act*, 1986 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 30 (0881).

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 110 002
Telephones : 2323 0131, 2323 3375, 2323 9402

Telegrams : Manaksanstha
(Common to all offices)

Regional Offices :		Telephone
Central	: Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110 002	2323 7617, 2323 3841
Eastern	: 1/14 C.I.T. Scheme VII M, V. I. P. Road, Kankurgachi, KOLKATA 700 054	2337 8499, 2337 8561, 2337 8626, 2337 9120
Northern	: SCO 335-336, Sector 34-A, CHANDIGARH 160 022	260 3843, 260 9285
Southern	: C.I.T. Campus, IV Cross Road, CHENNAI 600 113	2254 1216, 2254 1442, 2254 2519, 2254 2315
Western	: Manakalaya, E9 MIDC, Marol, Andheri (East), MUMBAI 400 093	2832 9295, 2832 7858, 2832 7891, 2832 7892

Branches : AHMEDABAD. BANGALORE. BHOPAL. BHUBANESHWAR. COIMBATORE. FARIDABAD. GHAZIABAD. GUWAHATI. HYDERABAD. JAIPUR. KANPUR. LUCKNOW. NAGPUR. PARWANOO. PATNA. PUNE. RAJKOT. THIRUVANANTHAPURAM. VISAKHAPATNAM.

PRINTED BY THE GENERAL MANAGER, GOVT. OF INDIA PRESS, MINTO ROAD, NEW DELHI-2.