भारतीय मानक

Indian Standard

IS 6488 : 2024

वस्त्रादि — व्यक्तिगत वेब उपकरणों के लिए कॉटन वेबिंग — विशिष्टि

(चौथा पुनरीक्षण)

Textiles — Cotton Webbing for Personal Web Equipment — Specification

(Fourth Revision)

ICS 59.060.10

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Technical Textiles for Clothtech Applications including Narrow Fabrics and Braids Sectional Committee, TXD 39

FOREWORD

This Indian Standard (Fourth Revision) was adopted by the Bureau of Indian Standards after the draft finalized by the Technical Textiles for Clothtech Applications including Narrow Fabrics and Braids Sectional Committee had been approved by the Textile Division Council.

This standard was first published in 1972 and subsequently revised in 1975, 1987 and 1999. The current revision has been made in the light of experience gained since its publication and to incorporate the following major changes:

a) Title of the standard has been modified;

b) BIS certification marking clause has been modified; and

c) References to Indian Standard has been updated.

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

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 : 2022 'Rules for rounding off numerical values (*second revision*)'. 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

TEXTILES — COTTON WEBBING FOR PERSONAL WEB EQUIPMENT — SPECIFICATION

(Fourth Revision)

1 SCOPE

This standard prescribes the constructional particulars and other requirements of various types of cotton webbing. The standard covers webbing used in the manufacture of personal web equipment, carrier manpack, waterproof capes, snow shoes, map cases, holdalls, ammunition carriers, and stretcher bags, etc.

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 edition of these standards.

3 MANUFACTURE

3.1 Yarns

The yarns used for manufacture of webbing shall conform to IS 171. The yarn shall be bleached or dyed as required and given a moisture resistant finish by a suitable treatment. Direct dyes shall not be used in dyeing.

3.2 Webbing

The webbing shall be uniformly woven and reasonably free from weaving and finishing defects. The selvedges shall be firm and straight. Webbing may be grey (undyed) or dyed. The dyed webbing shall have a uniform depth of shade. Sulphur dyes shall not be used.

The webbing may be woven on needle looms if agreed to between the buyer and the manufacturer. However, selvedges of the needle loom woven webbings shall be made secure using one of the systems given in Fig. 1.

4 REQUIREMENTS

4.1 The webbing shall conform to the physical requirements specified in Table 1, Table 2 and Table 3.

4.2 The webbing shall also conform to the chemical requirements specified in Table 4.

5 PACKAGING

The webbing shall be delivered in clean and dry condition. It shall be made into rolls of 25 m length each or multiples thereof and supplied without joints. A 5 percent variation is, however, permissible in roll length. Lengths below specified lengths shall be classified as short lengths. Thirty percent of a consignment may be made up of rolls containing a maximum of 3 joints subject to individual piece lengths not being less than 5 m.

6 MARKING

6.1 Each roll of webbing shall be legibly marked with the following information:

a) Name of the material;

b) Width in millimetres;

c) Length, in metres;

d) Month and year of manufacture;

e) Manufacturer’s name, initials or trade-mark; if any; and

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

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 thereunder, and the product(s) may be marked with the Standard Mark.

7 PACKING

Unless otherwise agreed between the buyer and the seller, a suitable number of rolls shall be arranged in the form of cylindrical bundles and shall be secured by twine to form a pack. A suitable number of such packs shall be arranged and wrapped with polyethylene film (*see* IS 2508). The wrapped bundles shall be placed on a layer of heavy tee cloth or some other equivalent hessian cloth to form a rectangular bale having an approximate gross mass

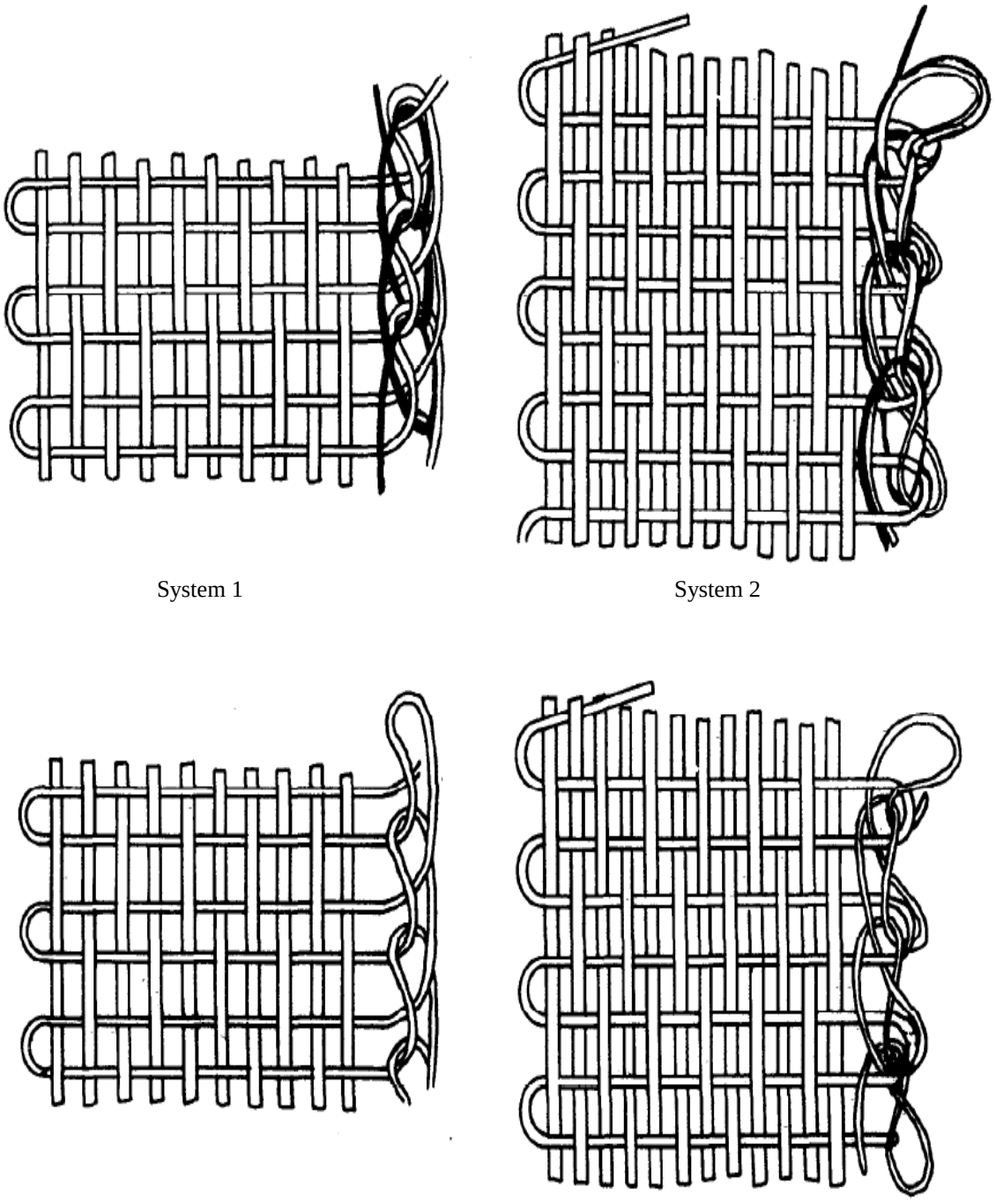
of 37 kg. The bale shall be properly stitched and provided with ears at the corners for ease in lifting.

8 SAMPLING AND CRITERIA FOR CONFORMITY

8.1 Unless otherwise agreed, the number of rolls to be selected at random shall be as given in Table 5.

8.2 Criteria for Conformity

The lot shall be considered as conforming to the requirements of the standard if confirmed to Table 6.



System 1 System 2

System 3 System 4

FIG. 1 NEEDLE LOOM SELVEDGE SYSTEM

Table 1 Physical Requirements of Cotton Thick and Thin Webbing

(*Clauses* 4.1 *and* B-1.1)

Sl No.	Width	Nominal Count of Yarn		Ends (Full Width)		Picks/cm		Mass, g/m		Breaking Load on Full Width × 20 cm Between Grips N		Weave	
		Warp	Weft	Thick	Thin	Thick	Thin	Thick	Thin	Thick	Thin	Thick	Thin
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
i)	13 ± 1.0	60 tex × 5 (or l0^s/5)		46	22	12	6	21	10	1 060	570	Double plain/ Double oxford	Plain/ oxford
ii)	19 ± 1.5			64	33			32	15	1 490	860		
iii)	25 ± 1.5			88	44			41	20	2 060	1 100		
iv)	32 ± 1.5			110	–			50	–	2 570	–		
v)	38 ± 2.0			130	66			62	30	3 020	1 670		
vi)	44 ± 2.0			–	77			–	35	–	1 960		
vii)	51 ± 2.0			196	88			90	40	4 560	2 210		
viii)	57 ± 2.0			202	100			99	45	4 720	2 490		
ix)	63 ± 2.0			222	110			105	50	5 190	2 900		
x)	70 ± 2.0			264	122			122	55	6 150	3 050		
xi)	76 ± 3.0			318	134			146	60	7 430	3 310		
xii)	82 ± 3.0			328	144			152	65	7 640	3 540		
xiii)	89 ± 3.0			340	158			158	70	7 940	3 970		
xiv)	95 ± 3.0			–	167			–	75	–	4 170		
xv)	102 ± 30			–	176			–	80	–	4 410		
xvi)	108 ± 30			404	–			186	–	9 410	–		
xvii)	114 ± 30			450	–			192	–	10 480	–		
Tolerances	–	–	–	± 5		±5		± 10		± 10		–	–
Method of Test	–	IS 1954		IS 1963				IS 1964		IS 1969		Visual	

Table 2 Physical Requirements of Extra-Wide Thin Webbing

(*Clauses* 4.1 *and* B-1.1)

Sl No.	Width mm	Nominal Count of Yarn		Ends/ cm	Picks/ cm	Mass (g/m)	Breaking Load on Full Width × 20 cm Between Grips N		Weave
		Warp	Weft				Warp	Weft	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
i)	115 ± 3.0	60 tex × 5 (or $l0^s/5$)		18	6	88	2210	–	-
ii)	120 ± 3.0					93		–	
iii)	127 ± 3.0					98		–	
iv)	130 ± 3.0					101		–	
v)	135 ± 3.0					106		–	
vi)	140 ± 3.0					110		–	Plain/ Oxford
vii)	145 ± 3.0					116		–	
viii)	290 ± 4.0					235		690	
ix)	300 ± 4.0					240			
x)	320 ± 4.0					253			
xi)	325 ± 4.0					257			
xii)	345 ± 4.0					270			
xiii)	710 ± 6.0					560			
xiv)	915 ± 6.0					720			
Tolerances	–	–		± 5	± 5	± 10	± 10	± 10	–
Method of test	–	IS1954		IS 1963		IS 1964	IS 1969		Visual

Table 3 Physical Requirements of Coarse Cotton Webbing and Cotton Webbing for Ammunition Carriers and Other Similar — Purposes

(*Clause* 4.1)

Sl No.	**Width** mm	**Nominal Count of Yarn**		**Ends in Full Width** *Min*	**Picks/ dm** *Min*	**Mass g/m²** *Max*	**Breaking Load on Full Width × 20 cm Between Grips N** (*see* Note 1)	**Weave**
		Warp	Weft					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
a) Particulars of coarse cotton webbing (*see* Notes 2, 3 and 4):								
i)	25 ± 1.5	59 tex × 5 (or $l0^s/5$)	108 tex × 2 (or $5.5^s/2$)	72	28	49	1990	Plain
ii)	38 ± 1.5			108		73	2980	
iii)	44 ± 1.5			126		85	3480	
iv)	50 ± 3.0			144		98	3980	
v)	63 ± 3.0			180		122	4980	
vi)	75 ± 3.0			216		146	5970	
vii)	100 ± 3.0			288		196	7960	
viii)	125 ± 3.0			360		244	9970	
b) Particulars of cotton webbing for ammunition carriers and other similar purposes								
i)	25^{+2}_{-0}	59 tex ($l0^s$)	59 tex ($l0^s$)	120	180	11	900	Plain
Method of test	–	IS 1954		IS 1963		IS 1964	IS 1969	Visual

NOTES

1 1 N is approximately equal to 0. 1 kgf.

2 Nominal thickness for coarse cotton webbing is 4 mm, Min.

3 For needleloom woven webbings approximate count of weft yarn shall be two times finer than the specified.

4 For needleloom woven webbings, number of pick per dm shall be 56 minimum since two threads work as one.

Table 4 Other Requirements of Cotton Webbings

(*Clause* 4.2)

Sl No.	Characteristic	Requirement	Method of Test, Ref to
(1)	(2)	(3)	(4)
i)	Colour fastness:		
	a) Light	3 or better	IS/ISO 105-B02
	b) Washing:		IS/ISO 105-C10
	1) Change in colour	3 or better	
	2) Standing of adjacent fabric	3 or better	
ii)	*p*H value	5.0 to 9.0	IS 1390
iii)	Water absorption, percent, *Max*	50	Annex B
iv)	Scouring loss, percent, *Max*:		IS 1383
	a) Grey	5	
	b) Dyed	2	

Table 5 Sampling

(*Clause* 8.1 *and Table* 6)

SI No.	No. of Rolls in the Lot	Sample Size	Permissible Number of Defective Rolls	Sub-Sample Size
(1)	(2)	(3)	(4)	(5)
i)	Up to 100	8	0	3
ii)	101 to 300	13	1	4
iii)	301 to 500	20	2	5
iv)	501 to 1 000	32	3	7
v)	1 001 and above	50	5	10

Table 6 Criteria for Conformity

(*Clause* 8.2)

Sl No.	Characteristics	Sample Size	Criteria for Conformity
(1)	(2)	(3)	(4)
i)	Length, width, ends in full width, picks	As per col (3) of Table 5	Defective rolls not to exceed the number given under co1 (4) of Table 5
ii)	Mass, breaking load, chemical and additional chemical requirements	As per col (5) of Table 5	All samples shall conform to the specified requirements

ANNEX A

(*Clause* 2)

LIST OF REFERRED STANDARDS

IS No.	*Title*
IS/ISO 105-C10 : 2006	Textiles — Tests for colour fastness: Part C10 Colour fastness to washing with soap or soap and soda
IS/ISO 105-B02 : 2014	Textiles — Tests for colour fastness: Part B02 Colour fastness to artificial light: Xenon arc fading lamp test
IS 171 : 1993	Textiles — Ring spun grey cotton yarn for weaving — Specification (*fourth revision*)
IS 1383 : 2023	Methods for determination of scouring loss in grey and finished cotton textile materials (*second revision*)
IS 1390 : 2022/ ISO 3071 : 2020	Textiles — Determination of *p*H of aqueous extract (*third revision*)
IS 1954 : 2024/ ISO 22198 : 2006	Textiles — Fabrics — Determination of width and length (*third revision*)
IS 1963 : 1981	Methods for determination of threads per unit length in woven fabrics (*second revision*)
IS 1964 : 2001	Textiles — Methods for determination of mass per unit length and mass per unit area of fabrics (*second revision*)
IS 1969 (Part 1) : 2018/ ISO 13934-1 : 2013	Textiles —Tensile properties of fabrics: Part 1 Determination of maximum force and elongation at maximum force using the strip method (*fourth revision*)
IS 2508 : 2016	Polyethylene films and sheets — Specification (*third revision*)

ANNEX B

[*Table* 4, *Sl No.* (iii)]

METHOD FOR DETERMINATION OF WATER ABSORPTION OF WEBBING

B-1 TEST SPECIMENS

B-1.1 For the purpose of the test, cut pieces of webbings from all the test samples with the following dimensions:

a) Length 10 cm

b) Width Full width in the case of webbings covered in Table 1, and 6 cm frayed down to 5 cm in the case of webbings covered in Table 2.

B-2 EQUIPMENT

B-2.1 An apparatus as illustrated in Fig. 2 consisting of the following:

a) A water tank (made of non-corrosive materials) having a dimension of approximately 40 cm × 20 cm × 20 cm or any other suitable size;

b) A steel roller of approximately 7.5 cm diameter weighing about 18 kg;

c) A vulcanized rubber pad of approximately 30 cm × 30 cm × 1.5 cm;

d) Blotting paper having a thickness of 0.2 mm to 0.25 mm and a weight of 120 g/m^2 to 150 g/m^2. The blotting paper should be capable of absorbing 0.3 ml of water in 30 s;

e) A metallic sinker, preferably a rod, of approximately 1 cm diameter and 35 cm length; and

f) Wire hooks.

B-3 PROCEDURE

B-3.1 Rig up the equipment as illustrated in Fig. 2. Take 5 test specimens previously conditioned in an atmosphere of (65 ± 2) percent relative humidity and (27 ± 2) ºC temperature for a period of 48 h. Weigh these test specimens together to the nearest 1 g. This weight shall be W_1.

B-3.2 Attach a wire hook to one end of each specimen and a length of thread to the other end as illustrated in Fig. 2. Keep the specimen immersed in the distilled water contained in the tank for 30 min at (27 ± 2) ºC after attaching the metallic sinker to the hooks so that the specimens remain immersed in the vertical position as showing in Fig. 2. The ends of threads attached to the other ends of the specimen are passed over a suitable rod placed over the tank in order to keep the specimens steady in the vertical position during the period of immersion. The water in the tank should be sufficient so as to keep the top edges of the specimens about 5 cm below the water level. At the expiry of 30 min, remove all the 5 specimens and after detaching the hooks and the threads, invert them by 180º so that the top edge becomes the bottom edge. Each edge of the specimen is then held in contact with the surface of a tray for about l0 s to 20 s to drain off any adhering water. Take one test specimen and enclose it between the two layers of blotting papers on each side. The size of the blotting paper pieces should be such that they extend about 2 cm beyond each edge of the specimen. Place the specimen enclosed by blotting papers on the rubber pad and roll over it a steel roller without exerting any additional pressure beyond the weight of the roller, the roller being rolled once with its length parallel to the long side of the specimen. Remove the pieces of blotting papers from the test specimen and put in between a set of fresh blotting papers as before and roll it over with the roller as before. Remove the test piece from the blotting paper pieces and place it in a beaker (without spout) covered with a lid.

B-3.3 Repeat the process on all the remaining specimens. Remove the test specimens from the beaker and weigh them collectively to the nearest 10 mg and this weight shall be W_2.

B-4 CALCULATION

B-4.1 The difference between W_1 and W_2 is the amount of water absorbed by the specimen and is expressed as percentage of the original weight of the specimens. Thus:

$$\text{Percentage absorption} = \frac{W_2 - W_1}{W_1} \times 100$$

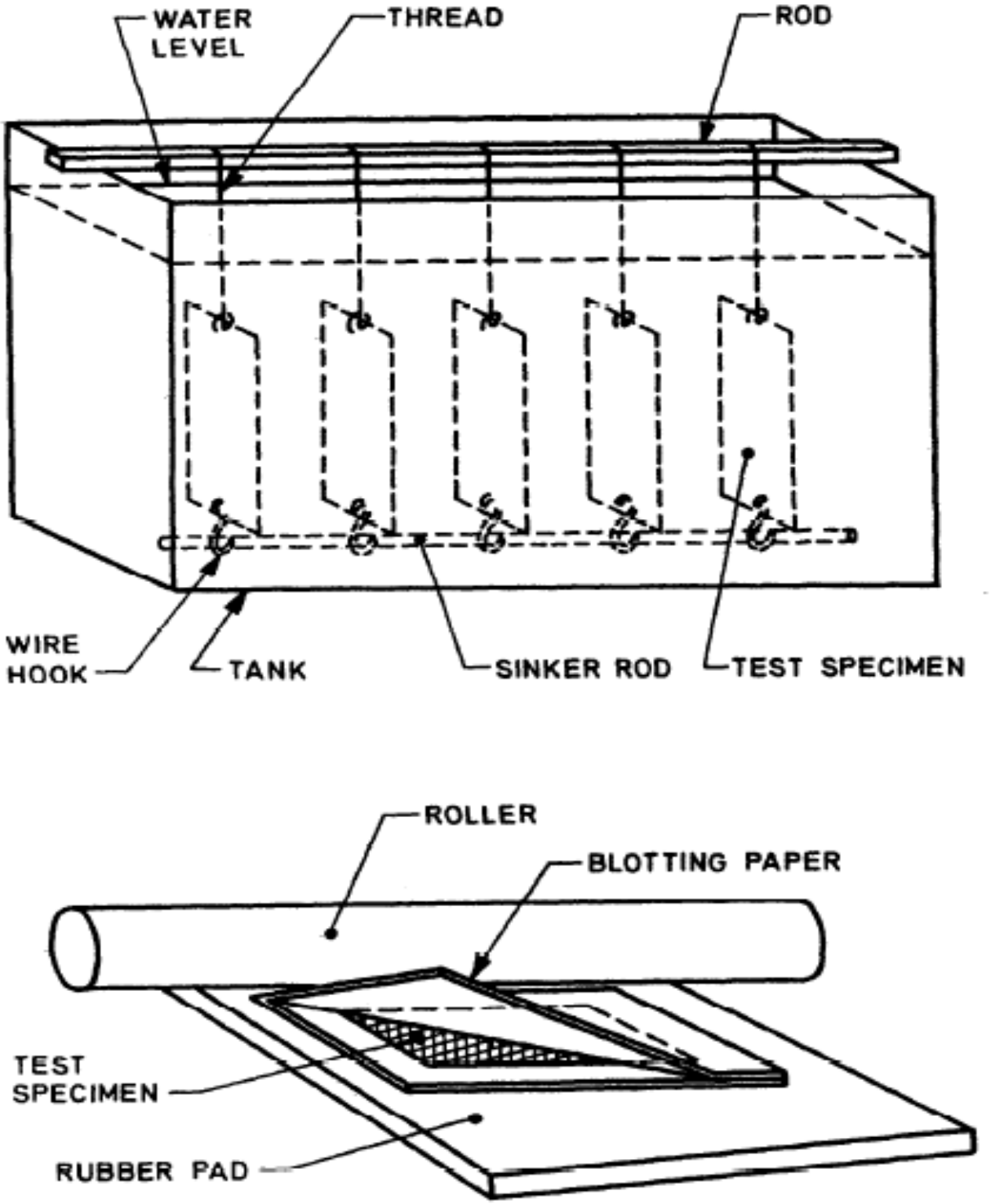


FIG. 2 EQUIPMENT FOR TESTING MOISTURE ABSORPTION

ANNEX C

(*Foreword*)

COMMITTEE COMPOSITION

Technical Textiles for Clothtech Applications including Narrow Fabrics and Braids Sectional Committee, TXD 39

Organization	*Representative*(*s*)
Additional Controller CQA (General Stores), DGQA, Ministry of Defence, Kanpur	SHRI A. CHOWDHURY **(*Chairperson*)**
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Review of Indian Standards

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Amendments Issued Since Publication

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