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BUREAU OF INDIAN STANDARDS
(*New Delhi*)

AGENDA

Made-up Textiles (Including Ready-Made Garments) Sectional Committee, TXD 20 **27th Meeting**

Date	Time	Venue
06 December 2024	11:00 h	Video Conference through CISCO Webex

CHAIRMAN: Dr Arindam Basu, Director General
Northern India Textile Research Association, Ghaziabad

MEMBER SECRETARY: Shri Gourav Mishra, Scientist B, Textiles
Bureau of Indian Standards, New Delhi

Item 0 WELCOME & INTRODUCTORY REMARKS

Item 1 CONFIRMATION OF THE MINUTES OF THE PREVIOUS MEETING

1.1 The minutes of the 26th meeting of the Committee held on 20 August 2024, through video conferencing (Cisco Webex) were circulated vide BISDG letter no. TXD 20/A2.26 email dated 04 September 2024. No comments have been received.

1.1.1 The Committee may **CONFIRM** the minutes as circulated.

Item 2 SCOPE AND COMPOSITION OF TXD 20

2.1 The present scope and composition of the Committee is given in **Annex 1 (Pages 5 to 6)**.

2.1.1 The Committee may **REVIEW**.

2.2 M/s **SIMA** has requested for the membership of TXD 20 sectional committee. The brochure of **SIMA** is given in **Annex 2(a) (Page 7)** to the agenda.

2.2.1 The committee may **DECIDE**.

2.3 M/s **Reliance** has requested for the membership of TXD 20 sectional committee. The brochure of **Reliance** is given in **Annex 2(b) (Page 8)** to the agenda.

2.3.1 The committee may **DECIDE**.

2.4 M/s **Syaahi Uniforms** has requested for the membership of TXD 20 sectional committee. The brochure of **Syaahi Uniforms** is given in **Annex 2(c) (Pages 9 to 10)** to the agenda.

2.4.1 The committee may **DECIDE**.

2.5 Revised nomination has been received from the following organizations:

a) National Institute of Fashion Technology, New Delhi, Dr. Ananya Mitra Pramanik will represent for principal member and Smt. Savita Sheoran Rana alternate member.

b) Textile committee, Mumbai, Shri K. Veluchamy will represent as principal member and Shri Chirag Dhingra will represent as an alternate member.

c) Shriram Institute for Industrial Research, Delhi, Shri Sanjay Kumar Singh will represent as principal member and Shrimati Geeta Kumari will represent as an alternate member.

2.5.1 The committee may please **NOTE**.

Item 3 ISSUES ARISING OUT OF PREVIOUS MEETING OF TXD 20

3.1 Summary of actions taken on the various decisions of the 26th meeting is given in **Annex 3 (Page 11).**

3.1.1 The Committee may **NOTE**.

Item 4 DRAFT STANDARD FOR FINALIZATION

4.1 As per the decision of the committee in the last meeting, the draft Indian Standard for **IS 13489 : 2000** was wide circulated for a period of two month after incorporating the inputs from ISPF for performance test as per ISO 23769 : 2021 and duly approved by chairperson TXD 20 vide mail dated 13 Sept, 2024. The wide circulation draft as issued given in **Annex 4 (Pages 12 to 21)** to the agenda.

Sl NO.	IS No.	Title
1	TXD/20/26575	Textiles — Bed mattress — Specification (second revision)

The comments have been received on wide circulation draft from M/s Aerocom (Shri Shirish Gupta) are given in **Annex 5 (Pages 22 to 23)**; Shri Joseph Cheriyan are given in **Annex 6 (Page 24)** and M/s ISPF (Shri S. Sundaresan) are given in **Annex 7 (Pages 25 to 32)** to the agenda.

4.1.1 The committee may **DELIBERATE** and **DECIDE.**

4.2 As per the decision of the committee in the last meeting, the draft Indian Standard for **IS 14354 : 1996** was wide circulated for a period of two month to elicit technical comments. The wide circulation draft as issued given in **Annex 8 (Pages 33 to 41)** to the agenda. No comments were received.

Sl NO.	IS No.	Title
1	TXD/20/26631	Textiles — Waterproof Covers — Specification

4.2.1 The committee may **DELIBERATE** and **DECIDE.**

Item 5 NEW WORK ITEM PROPOSALS

5.1 BIS has received request through online portal for the new work item proposals as below:

Sl No.	Name of Proposer	Subject Proposal
1	Shri Sandeep Jain	BIS for Pillow
2	Shri Sanjay Kisanrao Wankhede, M/s Anusaya Garments	Garments

5.1.1 The committee may **DELIBERATE** and **DECIDE.**

Item 6 FORMULATION OF INDIAN STANDARDS ON NEW SUBJECTS

6.1 In the 24th meeting of TXD 20, committee considered the below listed subjects for the formulation of Indian standards.

Identified subjects on Apparel and Fabrics:

1) Men's or boys' shirt
2) Men's or boys' trousers
3) Raincoats
4) Overcoats
5) Jackets
6) Frocks
7) Skirts
8) Blazers
9) Woven Fabrics made of monofilament, textured and non-textured polyester yarn. (Polyester >= 85%)
10) Polyester viscose rayon mixed woven Fabric (Polyester < 85%)
11) Nylon woven fabric (Nylon >= 85%)

12) Cardigan (Woven) (Cotton & Synthetic)
13) Waistcoat (Cotton & Synthetic)
14) Ties
15) Bow ties
16) Cravats

6.1.1 The committee may **DELIBERATE** and **DECIDE.**

Item 7 DATE AND PLACE OF NEXT MEETING

Item 8 ANY OTHER BUSINESS

ANNEX 1

(*Item* 2.1)

Scope & Composition of Made-up Textiles (Including Ready-Made Garments) Sectional Committee, TXD 20

Scope: To formulate Indian Standards for terminology and specifications for made-up textiles including ready-made garments.

Meeting(s) held	**Date & Place**
24th Meeting	05 April 2023 (Video Conferencing)
25th Meeting	19 April 2024 (Video Conferencing)
26th Meeting	20 August 2024 (Video Conferencing)

Sl No.	NAME OF THE ORGANISATION	REPRESENTED BY	ATTENDANCE
1.	Northern India Textile Research Association, Ghaziabad	Dr. Arindam Basu (Chairman)	3/3
2.	Ahmedabad Textile Industries Research Association, Ahmedabad	Smt Deepali Plawat Smt Fahim Khatib (Alternate)	2/3
3.	Apparel Export Promotion Council, Gurugram	Shri Saurabh Kumar Shri Sanjay Dudeja (Alternate)	1/3
4.	CSIR - Central Leather Research Institute, Chennai	Dr. K Krishnaraj Dr. R. Mohan (Alternate)	3/3
5.	Directorate General of Quality Assurance, CQA (Textiles and Clothing), Kanpur	Shri Col Jeevender Singh Shri Anuj Shukla (Alternate)	1/3
6.	H&M Hennes and Mauritz India Private Limited, Bengaluru	Shri Saroj Kumar Singh	1/1
7.	Indian Sleep Products Federation, Tamil Nadu	Shri S. Sundaresan Shri Vipul Kumar (Alternate)	1/1
8.	Ministry of Communications, Department of Posts, New Delhi	Shri S Buchchan Shri Kailash Sankhla (Alternate)	3/3
9.	National Institute of Fashion Technology, New Delhi	Dr. Ananya Mitra Pramanik Smt. Savita Sheoran Rana (Alternate)	2/3
10.	Northern India Textile Research Association, Ghaziabad	Shri Vivek Agarwal Dr. Neha Kapil (Alternate)	3/3
11.	Northern Railway, New Delhi	Shri Sanjeev Kumar Jain	1/1

		Shri Rajesh Kumar (Alternate)	
12.	Office of the Textile Commissioner, Mumbai	Shri C R Kalesan Shri B K Sahoo (Alternate)	2/3
13.	Pearl Global Industries Limited, Gurugram	Shri Rajesh Kumar Sawani Shri Vaman Balaji (Alternate)	0/0
14.	SGS India Private Limited, Mumbai	Dr. Karthikeyan K. Ms. Mahalakshmi R (Alternate)	2/3
15.	Shahi Exports Private Limited, Faridabad	Shri J D Giri Shri Rajneesh Rai (Alternate)	3/3
16.	Shriram Institute for Industrial Research, Delhi	Shri Sanjay Kumar Singh Mrs. Geeta Kumari (Alternate)	2/3
17.	Textiles Committee, Mumbai	Shri K. Veluchamy Shri Chirag Dhingra (Alternate)	1/3
18.	The South India Textile Research Association, Coimbatore	Shri Sounder Raj (Alternate)	1/3

ANNEX 2(a)
(*Item* 2.2)

Co-option request:

Shri J K Gupta,
Head (Textiles),
Bureau of Indian Standards,
New Delhi.
Dear Sir,
We thank you for taking various steps to address the quality issues in the textiles sector by formulating, implementing and monitoring the standards.

Our Association has been representing in two of the important technical committees viz., TXD-10 and TXD-31 with the participation of following members:

1) Dr. K. Selvaraju, Secretary General as the Principal Member
2) Mr. N. Esakkimuthu, Deputy Secretary as an Alternate Member

Due to preoccupancy and frequent travelling, Dr. K. Selvaraju could not attend the mandatory training programme for Principal Member.

Hence, we hereby nominate Mr. N. Esakkimuthu, Deputy Secretary of the Association to be the Principal Member and Dr. K. Selvaraju, Secretary General to be the Alternate Member from our Association.

Additionally, we also request you to include our Association in TXD-20 technical committees by including Mr. N. Esakkimuthu, Deputy Secretary of the Association as the Principal Member and Dr. K. Selvaraju, Secretary General as the Alternate Member in all the above two technical committees.

Regards,
Dr. K. Selvaraju
Secretary General
THE SOUTHERN INDIA MILLS' ASSOCIATION,41, Race Course, Coimbatore 641 018, INDIA.
Phone: 91 422 4225333
Email: info@simamills.org
Website: www.simamills.in

ANNEX 2(b)
(*Item* 2.3)

Dear Gaurav ji,

Ref discussion, we wish following to be considered from Reliance for the committee of Pillow/Fibre.
pls add name of undersigned to be part of committee from Reliance.

1. Aditya Kalani, AVP & Head – B&M, Sourcing – Home (RRL-F&L)
a. Total Experience in Home Textile – 27 years
b. Contact number - +91-98205-22050
c. Email: aditya.kalani@ril.com / adityakalani@gmail.com

2. Mr Pravin Gupta - Polyester Fiberfill products such as pillows, thermal insulation products (e.g., sleeping bags, jackets, ECWS products), and automobile acoustic products. (E: pravin3.gupta@ril.com)

Do confirm. In case of any further clarity pls feel free to connect.

Best Wishes
Aditya

ANNEX 2(c)
(*Item* 2.4)

REQUEST FOR COOPTION IN TXD20 SECTIONAL COMMITTEE OF BIS

I am writing to express my interest in becoming a member of the TXD20 Sectional Committee of the Bureau of Indian Standards (BIS). As the founder of Syaahi Uniforms, a leading B2B brand specializing in sustainable work wear and merchandise, I believe our expertise and commitment to sustainability would be a valuable addition to the committee.

Syaahi Uniforms offers a wide range of eco-friendly products, including:

- Shirts and Blouses
- Blazers and Jackets
- Polo Shirts and T-Shirts
- Knitwear
- Sweatshirts and Fleece
- Trousers and Shorts
- Skirts, Pinafores, Girl Trousers, and Dresses
- Outerwear
- Bags
- Caps
- Socks
- Ties and Accessories

Our products are designed with circular design principles, ensuring they are stylish, durable, and environmentally friendly. We emphasize material literacy, educating our clients about the sustainable materials used in our products, such as organic cotton and recycled polyester. Additionally, we are committed to ethical production practices, ensuring fair wages and safe working conditions for all workers involved in our manufacturing process. We also focus on supply chain traceability, maintaining transparency and accountability at every stage of production.

By joining the TXD20 Sectional Committee, I aim to contribute to the development and implementation of standards that promote sustainability and ethical practices in the textile industry. I am confident that my experience and the values upheld by Syaahi Uniforms align with the goals of the committee.

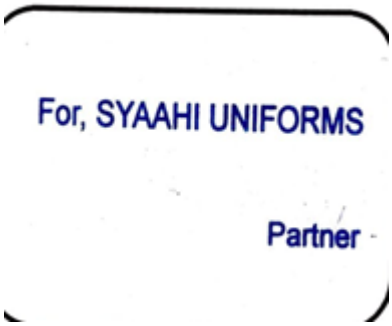
I would like to nominate two representatives from Syaahi Uniforms to be members of the committee:

1) Abrar Ahmad - Founder & CEO of Syaahi Uniforms
2) Ram Verma - Production Manager of Syaahi Uniforms

Thank you for considering our request. We look forward to the opportunity to contribute to the important work of the TXD20 Sectional Committee.

Details of Authorised Signatory:

Name	Designation	Signature
Abrar Ahmad	Partner	



Seal/Stamp	Date	Place
	26/11/2024	Noida

ANNEX 3

(*Item* 3.1)

SUMMARY OF ACTIONS TAKEN ON THE MINUTES OF THE PREVIOUS MEETING

Item No.	Decision	Action Taken
2.1	Updated representation in committee	Updated scope and composition are given in **Annex 1**.
4	**DRAFT STANDARD FOR FINALIZATION** The committee Finalized the wide circulation draft on Textiles — Polyester Fibre Filled Pillows — Specification TXD 20 (25789)	Published as IS 18930 : 2024
6	**REVIEW OF PUBLISHED STANDARDS** i) The committee considered the proposed revised draft prepared for IS 13489 : 2000 Textiles — Bed mattress — Specification (first revision) and IS 14354 : 1996 Textiles — Waterproof covers — Specification. ii) The committee considered the IS/ISO 8559-1 : 2017 Textiles – Size Designation of clothes – Anthropometric definitions for body measurement standard due for review.	Wide circulation completed and coming up for discussion under agenda item **4**. Reaffirmed for further 5 periods.

ANNEX 4
(*Item* 4.1)

WIDE CIRCULATION DRAFTS

भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS

Draft for comments only Doc No.: TXD 20 (26575)
2024

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भारतीय मानक मसौदा

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(आई एस 13489 का दूसरा पुनरीक्षण)

Draft Indian Standard

TEXTILES — BED MATTRESS — SPECIFICATION

(*Second Revision of* IS 13489)

ICS: 97.140

Made-up Textiles (Including Ready-Made Garments) Sectional Committee, TXD 20

last date for receipt of comments is 16 November 2024

FOREWORD
(*Formal clauses will be added later*)

The bed mattress plays a pivotal role in determining the quality of our rest and, by extension, our overall health. With right balance of support mattress ease pressure points, maintain spinal alignment and posture. The bed mattress has undergone significant transformations, offering a wide variety of materials, and technologies aimed at enhancing sleep experiences. Different kind of bed mattress are currently in use from traditional coir mattress to innerspring systems mattress, advanced memory foam, latex, and hybrid mattresses.

This standard was originally published in 1992 and has been revised in 2000.This standard has been revised again to incorporate the following:

1 Scope has been modified to include spring and rebound foam mattresses;
2 Performance test for the mattress firmness and durability has been incorporated;
3 GSM requirement of top quilt fabric has been incorporated;
4 Requirements for bonnel and pocket springs have been incorporated;
5 Stitch density for polyester and nylon sewing threads have been incorporated;
6 BIS certification marking clause has been modified; and
7 References to Indian Standard have been updated.

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, shall be rounded of 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.

1 SCOPE

This standard covers requirements for bed mattresses made from rubberized coir, flexible polyurethane or latex foam sheets, viscoelastic foam, re-bounded foam, bonnel/pocket spring or any of the combination of these materials.

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 indicated in Annex A.

3 TYPES

Bed mattress shall be of the following types:

Type 1 — Bed mattress made from rubberized coir sheet as cushioning/core material, mainly used by defence services, paramilitary organizations, police, railways, public works departments, etc.

Type 2 — Bed mattress made from rubberized coir, flexible polyurethane or latex foam sheet, Rebounded foam, bonnel/pocket spring either singly or in combination as core/cushioning materials.

NOTE — Single Rubberized coir sheets shall be covered under Type I and Rubberized coir sheets when used in combination with other core/cushioning materials shall be covered in Type 2.

4 DIMENSIONS

4.1 Type 1 Mattress

The principal dimensions of the finished mattress when measured to nearest 5 mm shall be as follows (*see* Fig. l)

Dimension, mm	*Requirement*
Length	2000 ± 15
Width	910 ± 15
Thickness, *Min*	75

4.2 Type 2 Mattress

The principal dimensions of the finished mattress shall be as specified in the contract or order, subject to the following tolerance when measured to nearest 5 mm.

Dimension, mm	*Tolerance*
Length	± 15 mm
Width	± 15 mm
Thickness	± 05 mm

NOTE — In case more than one material is used for cushioning, thickness of the finished mattress shall conform to the requirements given above and the order of layering of cushion materials shall also be indicated.

5 REQUIREMENTS

5.1 The fabric used for top quilting shall confirm to the requirements specified in Table 1.

Table 1 Physical requirement of Top Quilt fabric used in Mattresses
(*Clause* 5.1)

SI No	Fabric type	Requirement	Method of Test, Ref to
		GSM, *Min*	
(1)	(2)	(3)	(4)
i)	Knitted polyester	180	IS 1964
ii)	Woven Polyester cotton blended	130	
iii)	Woven polyester	90	

iv)	Woven Cotton	150	IS 1964
v)	Jacquard weave fabric	130	

NOTE — Any other suitable fabric with different weave, fibre composition, fabric type, and GSM shall be as agreed to between buyer and seller.

5.2 Materials used for cushioning/core layers of bed mattress shall conform to the requirement as specified in Table 2, Table 3 and Table 4.

Table 2 Physical requirement of Cushioning/Core layers used in Mattress
(*Clause* 5.2)

Sl No	Components	Material Requirement
(1)	(2)	(3)
i)	Cushioning/Core layers	a) Rubberized coir sheet conforming to IS 8391 (Part 1) b) Latex foam sheet conforming to IS 1741 c) Flexible polyurethane foam sheet conforming to IS 7933 d) Polyurethane Visco-elastic foam conforming to IS 7933 e) Re-bonded foam having minimum density 50kg/m^3 and conforming to IS 7933.

Table 3 Physical Requirements of Bonnel spring used in mattress
(*Clause* 5.2)

Sl No	Characteristic	Requirements	Tolerance	Method of Test, Ref to
(1)	(2)	(3)	(4)	(5)
i)	Wire diameter	2.0 to 2.4 mm	± 0.02 mm	Annex B
ii)	Outer diameter	85 to 90 mm	—	Annex B
iii)	OD of spring in centre	45 to 50 mm	—	Annex B
iv)	Height of spring	120 to 160 mm	± 10 mm	Annex B
v)	No of turns	4 to 6		Visual

Table 4 Physical requirements of Pocket-spring used in mattresses
(*Clause* 5.2)

Sl No	Characteristic	Requirements	Tolerance	Method of Test, Ref to
(1)	(2)	(3)	(4)	(5)
i)	Wire diameter	1.7 mm to 2.2 mm	± 0.02 mm	Annex B
ii)	End ring diameter	42 to 47 mm	—	Annex B
iii)	Outer diameter	50 to 70 mm	—	Annex B
iv)	Height of spring before pocketing	150 to 200 mm	± 10 mm	Annex B
v)	No of turns	5 to 8	—	Visual

5.3 The mattress when tested as per ISO 23769 shall have maximum height loss of 10% and firmness loss of 30%.

6 MANUFACTURE

6.1 The top and bottom pieces of the mattress case may be made from a single piece of fabric. One joint parallel to the length may, however, be permitted both in the top and bottom of the case but no piece less than 18 cm in width shall be used. The sides, shall also be made from the same fabric which shall have a maximum of four joints. However, no lateral joint of any cushioning material shall be allowed parallel to length/width. The mattress case shall be plain or quilted with single or multilayers of foam.

6.2 The piping shall be made by encasing a 4 mm hemp line (*see* IS 1920) or shroud-laid cotton line (*see* IS 3252) in a 50 mm wide strip of fabric used for case. The top portion of the piping and the side border shall be stitched together by one row of machine stitching. The stitching shall be at least 5 mm away from the raw edges. Similarly, the bottom portion of the piping and the border (sides) shall also be machine stitched.

NOTE — Piping and hemp line is only applicable to hand stitched mattresses.

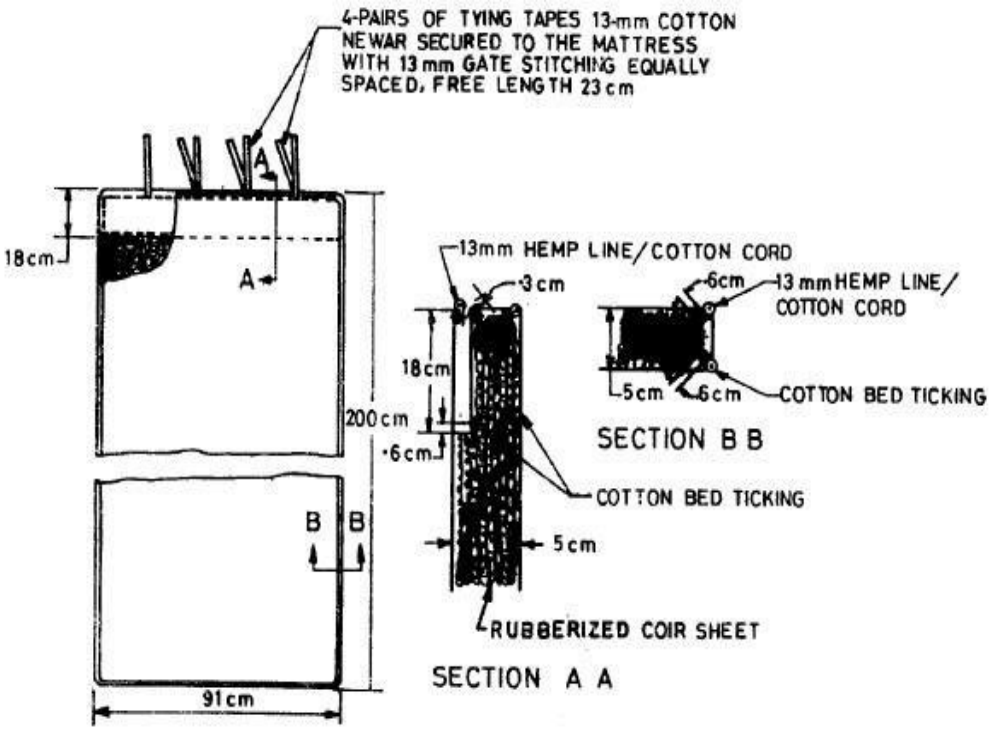


FIG 1 BED MATTRESS (HAND STITCHED)

6.3 The mattress shall be assembled throughout with lock stitch or chain stitch regulated at 37 to 43 stitches per decimetre for cotton sewing thread (*see* IS 1720) and minimum 25 stiches per decimeter for polyester or nylon sewing thread. All loose ends shall be securely fastened.

6.4 For the hand stitched mattresses, one of the ends shall however be unstitched and kept open for insertion of cushioning material. For Type 1, the free edge of the bottom and the piping shall be stitched with the lower edge of the border to which a flap of 18 cm width has been stitched. Four pairs of 13 mm tying tapes (*see* IS 1895) shall be stitched, as indicated in Fig. 1, one tape each to the free edge of the bottom and the other to the lower edge of the border. The other side of the flap shall be hemmed 10 mm wide with one row of stitching. The sheet of cushioning material shall be inserted into the case through the open end. The open end shall be closed by the flap and secured by tying tapes.

For Type 2 mattress, after inserting the cushioning material, the free edge of the bottom and the piping shall be stitched with the lower edge of the border after hemming it to 10 mm with single row of stitching.

NOTE — For the mattresses stitched using tape edge machine requirements listed in clause **6.4** shall not be applicable.

6.5 If a sealed sample is stipulated in the contract/order, the mattress shall conform to the same in respect of workmanship, finish, etc.

7 MARKING

7.1 Each mattress shall be marked with the following:

a) Name of manufacturer;
b) Type;
c) Dimensions;
d) Type of cushioning/core material used; and

NOTE — In case more than one material is used for cushioning, thickness and grade of each shall be indicated separately.

e) Other information stipulated in the contract/order.

7.2 BIS Certification Marking

The bed mattresses may also be marked with Standard Mark.

7.2.1 The Mattresses 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 mattresses may be marked with the Standard Mark.

8 PACKING

8.1 Type 1 mattress shall be packed as detailed in **8.1.1** to **8.1.3** when so specified in the contract or order:

8.1.1 *Materials*

a) Polythene film, 0.04 mm thick (*see* IS 2508);
b) Cloth heavy cee (*see* IS 3751) or Cloth hessian (Medium), 305g/m^2 (*see* IS 2818); and
c) Twine jute, 3-ply (*see* IS 1912) or String cord as specified in contract/order

8.1.2 *Method*

One mattress shall be wrapped with an inner layer of polythene film 0.04 mm thick (*Min*) and an outer layer of cloth heavy cee or equivalent hessian cloth to form a compact bale of rectangular shape as far as possible. The overlap of the inner wrapping shall be at least 10 cm so as to ensure full protection to the contents of the bale. The overlap of the outer layer of the hessian cloth shall be such that it can he properly and securely sewn around the bale. The hale shall be stitched with double 3-ply-jute twine, with not less than 12 stitches per decimetre taking care not to pierce the inner wrapping while stitching. Sufficient hessian cloth shall be provided at each corner to form `ears' of about 15 cm in length to facilitate easy handling during transit.

8.1.3 Each bale shall be legibly marked by stencil with indelible marking ink/paint showing the following details:

a) Manufacturer's name and address;
b) Name and type;
c) Quantity packed in the bale;
d) Lot number and serial number of the bale;
e) Month and year of packing;
f) Gross mass of the bale in kg;
g) Name and address of consignee; and
h) Any other information required by the buyer.

8.2 Type 2 mattresses may be supplied loose or packed in a manner as specified in the contract or order.

9 SAMPLING

9.1 Lot

The number of pieces of the mattresses of the same type and same quality delivered to a buyer against one dispatch note shall constitute a lot.

9.2 The conformity of the lot to the various requirements specified in the standard shall be determined on the basis of tests carried out on the sample selected from the lot.

9.3 Unless otherwise agreed, the number of pieces selected at random for inspection shall be in accordance with Table 5.

9.4 For selection of samples at random from the lot, procedure given in IS 4905 may be followed.

9.5 Number of Samples and Criteria for Conformity

It shall be as follows:

Table 5 Sample Size
(*Clauses* 9.3, 9.6 *and* 9.7)

Sl No.	Lot Size	Sample Size	Sub-sample Size	Permissible Number of Non-conforming Pieces
(1)	(2)	(3)	(4)	(5)
i)	Up to 50	5	3	0
ii)	50 to 150	8	5	0
iii)	151 to 280	13	8	0
iv)	281 to 500	20	8	0
v)	501 to 1 200	32	13	0
vi)	1 201 to 3 200	50	13	0
vii)	3 201 to above	80	20	1

9.6 The number of pieces to be selected for dimensions, stitches/dm shall be in accordance with col (3) of Table 5.

For all other tests such as Blend composition, identification of different components used in mattresses selected shall be as given in col (4) of Table 5.

9.7 The lot shall be considered as conforming to the requirements of this standard if all the samples tested in accordance with col (3) of Table 5 found conforming and also the total number of defective pieces is less than or equal to the acceptance number given in col (5) of Table 5 for sub sample size.

ANNEX A
(*Clause* 2)

LIST OF REFERRED STANDARDS

IS No	*Title*
IS 1720 : 1978	Specification for cotton sewing thread (*first revision*)
IS 1741 : 2019	Latex Foam Rubber Products — Specification (*first revision*)
IS 1895 : 1982	Specification for cotton NEWAR (*second revision*)
IS 1912 : 2023	Textiles — Country Jute Twine — Specification (*third revision*)
IS 1920 : 2023	Textiles - Hemp lines - Specification (*third revision*)

IS 1964 : 2001	Textiles — Methods for Determination of Mass Per Unit Length and Mass Per Unit Area of Fabrics (*second revision*)
IS 2508 : 2016	Polyethylene Films and Sheets — Specification (*third revision*)
IS 2818 : 2015	Textiles — Hessian — Specification (*third revision*)
IS 3252 : 2023	Textiles - Shroud-laid cotton line – Specification (*third revision)*
IS 3751 : 1993	Textiles — Heavy cee jute cloth — Specification (*first revision*)
IS 4905 : 2015	Random sampling and randomization procedures (*first revision*)
IS 7933 : 2022	Flexible Polyurethane Foam for Domestic Mattresses — Specification (*first revision*)
IS 8391 (Part 1) : 2019	Rubberized Coir Sheets for Cushioning — Specification Part 1 Curled (*third revision*)
ISO 23769:2021	Furniture — Mattresses — Test methods for the determination of functional characteristics

Annex B

(*Clause* 5.2)

METHOD OF TEST TO MEASURE DIAMETER AND HEIGHT OF SPRING

B-1 APPARATUS

Vernier calliper and measuring scale

B-2 PROCEDURE

Ensure the Vernier caliper is clean, and its jaws are free from debris. Zero the Vernier caliper by closing the jaws and adjusting the zero mark on the Vernier scale. Open the jaws of the caliper slightly wider than the wire's dimension. Diameter shall be measured at three different points along the length of the specimen. For the height of spring, keep the spring on a flat surface and use a gradated measuring scale, measure the height at three different locations.

B-3 RESULT

Report the average value of diameter and height of spring dimensions.

ANNEX 5

(*Item* 4.1)

COMMENTS RECEIVED ON WIDE CIRCULATION DRAFT

a) Comment received from M/s Aerocom (Shri Shirish Gupta), on 'Textiles — Bed Mattress — Specification'

Sl No.	Clause No.	Comment	Propose change
1	4.1	Dimensions for TYPE 1 - This should also include only the tolerance instead of the complete Length, Width and Thickness. This will permit the buyer to purchase the size they desire. Today they are compelled to buy only one particular size (length and width) vide this specification. Simultaneously a tolerance should be mentioned for the Thickness too.	Dimensions for TYPE 1 - This should also include only the tolerance instead of the complete Length, Width and Thickness. This will permit the buyer to purchase the size they desire. Today they are compelled to buy only one particular size (length and width) vide this specification. Simultaneously a tolerance should be mentioned for the Thickness too.
2	Table 2, 5.2	Table 2 - For the Cushioning materials against which there are BIS Standards available as on date, the specification must state that the Cushioning materials must necessarily carry the ISI Mark. This alone will ensure that the right quality material is supplied. However, clubbing both BIS specifications of cushioning and IS 13489 would adequately ascertain the quality. To check the marking inside the cover may not be very workable proposition. Even asking the Cover provider as per IS13489 to buy the cushion only from an ISI License manufacturer, would still leave the field wide open to manipulation. Also, instead of just IS 8391 (Part 1), both IS 8391 (Part 1) and IS 8391(Part 3) should be mentioned. The same is being procured by multiple paramilitary forces as on date.	a) Rubberized coir sheet with ISI Marking of IS 8391 (Part 1) or (Part 3), as required b) Latex foam sheet with ISI Marking of IS 1741 c) Flexible polyurethane foam sheet with ISI Marking of IS 7933 d) Polyurethane Visco-elastic foam with ISI Marking of IS 7933 e) Re-bonded foam having minimum density 50kg/m3 and conforming to IS 7933.
3	5.3	We should only include this if there is adequate infrastructure available in India for this test. As on date I understand that only one testing company has the facility to conduct this test, and their charges are exorbitant. They quoted us Rs 40000 per sample. This is not at	We should only include this if there is adequate infrastructure available in India for this test. As on date I understand that only one testing company has the facility to conduct this test, and their charges are exorbitant. They quoted us Rs 40000 per sample. This is not at all viable for mattress industry working in small scale.

		all viable for mattress industry working in small scale.	
4	7.2 and 7.2.1	If the bed mattress is being prepared with the specifications mentioned in the Standard, then in all understanding it should be marked with the BIS Marking. Thus, the language in the Clause should be "The bed mattress must be marked with Standard Mark" instead of "... may also be ..."	7.2 BIS Certification Marking The bed mattresses must be marked with Standard Mark. 7.2.1 The Mattresses conforming to the requirements of this standard must 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 mattresses may be marked with the Standard Mark.
5	Annex A, Row 13	Please include BIS Standard IS 8391 (Part 3) : 2019 in addition to IS 8391 (Part 1) : 2019	Please include BIS Standard IS 8391 (Part 3) : 2019 in addition to IS 8391 (Part 1) : 2019

ANNEX 6

(*Item* 4.1)

COMMENTS RECEIVED ON WIDE CIRCULATION DRAFT

a) Comment received from Shri Joseph Cheriyan, on 'Textiles — Bed Mattress — Specification'

<table>
<tr><th>Sl No.</th><th>Clause No.</th><th>Comment</th><th>Propose change</th></tr>
<tr><td>1</td><td>4.1</td><td><table><tr><th>Dimension, mm</th><th>Requirement</th></tr><tr><td>Length</td><td>2000±15</td></tr><tr><td>Width</td><td>910±15</td></tr><tr><td>Thickness, Min</td><td>75</td></tr></table></td><td><table><tr><th>Dimension, mm</th><th>Requirement</th></tr><tr><td>Length</td><td>±15</td></tr><tr><td>Width</td><td>±15</td></tr><tr><td>Thickness, Min</td><td>not less than 75±5</td></tr></table></td></tr>
<tr><td>2</td><td>3</td><td>Rebounded Foam</td><td>Rebonded Foam</td></tr>
<tr><td>3</td><td>5</td><td>Technically this standard is not enough; as there is no specifications to check the durability of Type 2 Mattress.</td><td>Has to propose some test methods to determine the durability and endurance of combination mattresses or mattresses with layers of varying materials, including spring.</td></tr>
<tr><td>4</td><td>5.2</td><td><table><tr><th>Sl No</th><th>Components</th><th>Material Requirement</th></tr><tr><td>(1)</td><td>(2)</td><td>(3)</td></tr><tr><td>i)</td><td>Cushioning / Core Layers</td><td>a) Rubberixzed coir sheet conforming to IS 8391 (Part 1)

b) Latex foam sheet conforming to IS 1741

c) Flexible polyurethane foam sheet conforming to IS 7933

d) Polyurethane Visco-elastic foam conforming to IS 7933

e) Rebonded foam having minimum density 50Kg/m3 and conforming to IS 7933</td></tr></table></td><td><table><tr><th>Sl No</th><th>Components</th><th>Material Requirement</th></tr><tr><td>(1)</td><td>(2)</td><td>(3)</td></tr><tr><td>i)</td><td>Cushioning / Core Layers</td><td>a) Rubberixzed coir sheet conforming to IS 8391 (Part 1)

b) Latex foam sheet conforming to IS 1741

c) Flexible polyurethane foam sheet conforming to IS 7933

d) Polyurethane Visco-elastic foam conforming to IS 7933

e) Rebonded foam having minimum density 50Kg/m3 (There is no specific standard available for Rebounded Polyureathane Foam, even IS 7933 does not specific the same).</td></tr></table></td></tr>
</table>

ANNEX 7
(*Item* 4.1)

COMMENT RECEIVED ON WIDE CIRCULATION DRAFT

a) Comment received from M/s ISPF (Shri S. Sundaresan), on 'Textiles — Bed Mattress — Specification'

TYPES

Bed mattress shall be of the following types:

Type 1 — Bed mattress made from rubberized coir sheet having the medium grade as cushioning/core material, mainly usedby defence services, paramilitary organizations, police, railways, public works departments, etc.

Grade	*Indentation Hardness Index*	*Density, Min* g/dm^3
Medium	6.00-8.99	60.0

Type 2 — Bed mattress made from rubberized coir, flexible polyurethane or latex foam sheet, Rebounded foam, bonnel/pocket spring either singly or in combination as core/cushioning materials.

NOTE — Single Rubberized coir sheets shall be covered under Type I and Rubberized coir sheets when used in combination with other core/cushioning materials shall be covered in Type 2.

1 DIMENSIONS

1.1 Type 1 Mattress

The principal dimensions of the finished mattress when measured to nearest 5 mm shall be asfollows (*see* Fig. l)

Dimension, mm	*Requirement*
Length	2000 ± 15
Width	910 ± 15
Thickness, *Min*	50 ± 05

1.2 Type 2 Mattress

The principal dimensions of the finished mattress shall be as specified in the contract or

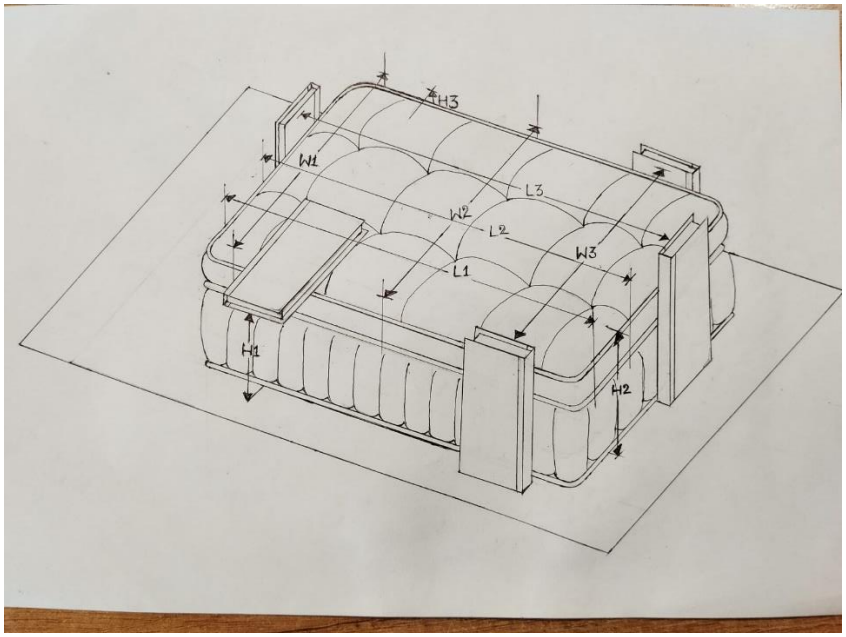
order,subject to the following tolerance when measured to nearest 5 mm.

Dimension, mm	*Tolerance*
Length	± 15 mm
Width	± 15 mm
Thickness, Min 75mm	+20/-05mm

NOTE — In case more than one material is used for cushioning, thickness of the finished mattress shall conform to the requirements given above and the order of layering of cushion materials shall also be indicated.

Mattress Measurement Technique:

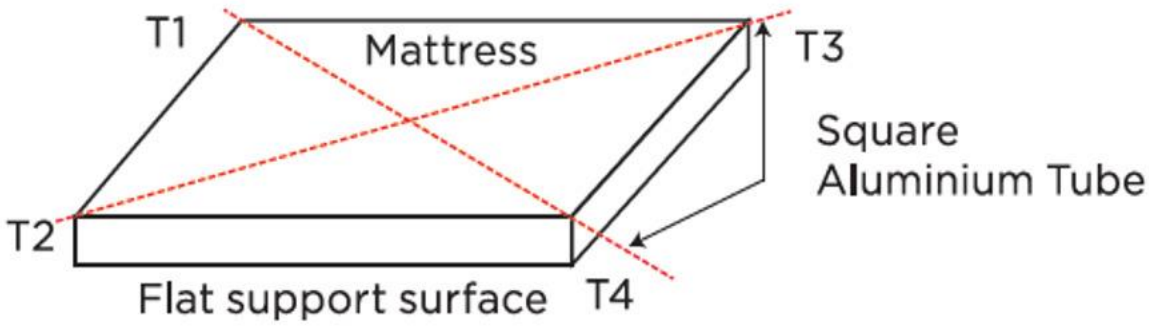
Place the mattress on a rigid, horizontal and flat support surface. Measure the length of at three places along the width of the mattress using a measuring tape and take an average of three to arrive at the length of the mattress. Similarly measure the width of the mattress at three places along the length of the mattress and take its average to arrive at the width of the mattress. To ascertain the end point a flat hard material like a book / plywood can be used at both end touching the mattress sides without applying undue pressure.



Mattress Measurement Technique (Thickness) -

1. Place the mattress on a rigid, horizontal and flat support surface
2. Use a square or flat pipe/tube (preferably more than 2 meters in length)

3. Place a tube diagonally joining opposite corners of the mattress and repeat on the other diagonal so that thickness can be
measured at all four corners
4. Measure the distance between bottom edge of the tube and the flat support surface on which the mattress has been placed
5. The thickness will be the average of all four readings:
T=(T1+T2+T3+T4)/4



Precautions:
Do not press down on the mattress while measuring to ensure that you get the correct depth.
Measure the thickness after keeping Mattress on a horizontal flat surface (as shown in figure below) and not vertically.

2 REQUIREMENTS

2.1 The fabric used for top quilting shall confirm to the requirements specified in Table 1.

Table 1 Physical requirement of Top Quilt fabric used in Mattresses
(*Clause* 5.1)

SI No	Fabric type	Requirement	Method of Test, Ref to
		GSM, *Min*	
(1)	(2)	(3)	(4)
i)	Knitted polyester	180	IS 1964
ii)	Woven Polyester Cotton blended	130	
iii)	Woven Polyester	90	

iv)	Woven Cotton	150	IS 1964
v)	Jacquard Weave Fabric	130	

NOTE — Any other suitable fabric with different weave, fibre composition, fabric type , and GSM shall be as agreed tobetween buyer and seller.

2.2 Materials used for cushioning/core layers of bed mattress shall conform to the requirement asspecified in Table 2, Table 3 and Table 4.

Table 2 Physical requirement of Cushioning/Core layers used in Mattress
(*Clause* 5.2)

Sl No	**Components**	**Material Requirement**
(1)	(2)	(3)
i)	oning/Corelayers	a) Rubberized coir sheet conforming to IS 8391 (Part 1) b) Latex foam sheet conforming to IS 1741 c) Flexible polyurethane foam sheet conforming to IS 7933 d) Polyurethane Visco-elastic foam conforming to IS 7933 e) Re-bonded foam having minimum density 70kg/m^3

Table 3 Physical Requirements of Bonnel spring used in mattress
(*Clause* 5.2)

Sl No	**Characteristic**	**Requirements**	**Tolerance**	**Method of Test, Ref to**
(1)	(2)	(3)	(4)	(5)
i)	Wire diameter, *Min*	1.6 mm	± 0.02 mm	Annex B
ii)	Outer diameter, *Min*	80 mm	—	Annex B
iii)	OD of spring in centre, *Min*	45 mm	—	Annex B
iv)	Height of spring, *Min*	100 mm	± 10 mm	Annex B
v)	No of turns, *Min*	4		Visual

Table 4 Physical requirements of Pocket-spring used in mattresses

(*Clause* 5.2)

Sl No	Characteristic	Requirements	Tolerance	Method of Test, Ref to
(1)	(2)	(3)	(4)	(5)
i)	Wire diameter, *Min*	1.6 mm	± 0.02 mm	Annex B
ii)	End ring diameter, *Min*	40 mm	—	Annex B
iii)	Outer diameter, *Min*	50 mm	—	Annex B
iv)	Height of spring, *Min*	100 mm	± 10 mm	Annex B
v)	No of turns, *Min*	5	—	Visual

2.3 The mattress when tested as per ISO 23769:2021 shall have maximum height loss of 10% and firmness loss of 30%. A cycle of 6000 in a Rollator is considered as one year of usage. And 30,000 cycle give 5 years of warranty and for every additional year we should test further for 6000 cycles.

3 MANUFACTURE

3.1 The top and bottom pieces of the mattress case may be made from a single piece of fabric. One joint parallel to the length may, however, be permitted both in the top and bottom of the case but no piece less than 18 cm in width shall be used. The sides shall have a maximum of four joints. However, no lateral joint of any cushioning material shall be allowed parallel to length/width. The mattress case shall be plain or quilted withsingle or multilayers of foam.

3.2 For Type 1 Mattress, the piping shall be made by encasing a 4 mm hemp line (*see* IS 1920) or shroud-laid cotton line (*see* IS 3252) in a 50 mm wide strip of fabric used for case. The top portion of the piping andthe side border shall be stitched together by one row of machine stitching. The stitching shall be at least 5 mm away from the raw edges. Similarly, the bottom portion of the piping and the border(sides) shall also be machine stitched.

NOTE — Piping and hemp line is only applicable to hand stitched mattresses.

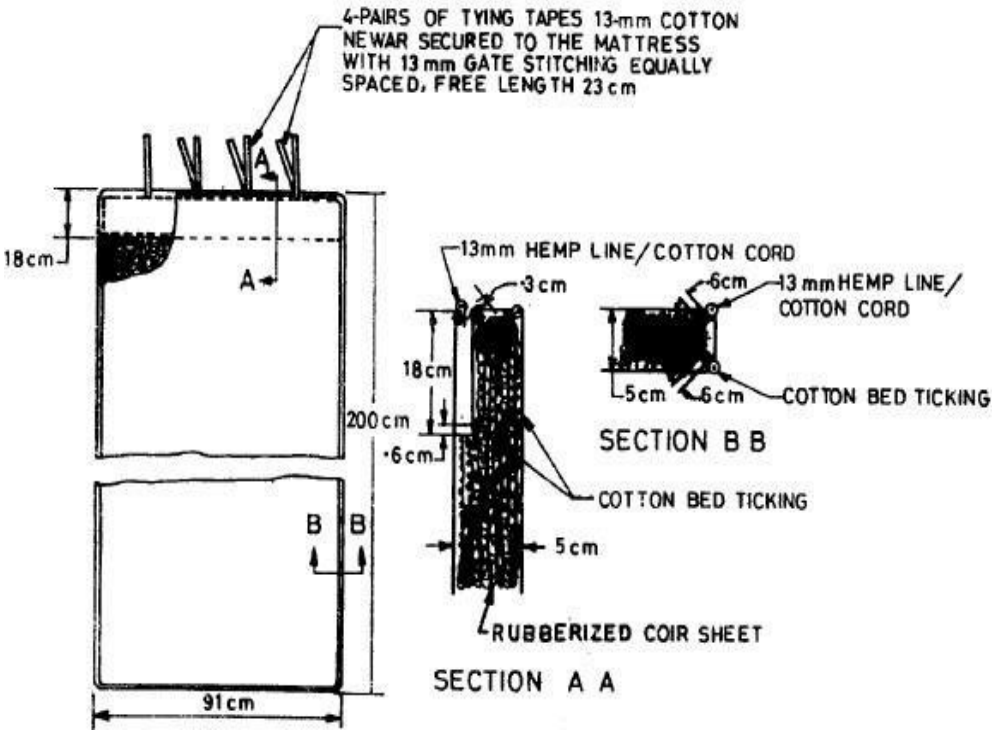


FIG 1 BED MATTRESS (HAND STITCHED)

3.3 For Type 1 Mattress, the mattress shall be assembled throughout with lock stitch or chain stitch regulated at 37 to 43 stitches per decimetre for cotton sewing thread (*see* IS 1720) and minimum 25 stiches per decimeter for polyester or nylon sewing thread. All loose ends shall be securely fastened.

3.4 For the hand stitched mattresses, one of the ends shall however be unstitched and kept open for insertion of cushioning material. For Type 1, the free edge of the bottom and the piping shall be stitched with the lower edge of the border to which a flap of 18 cm width has been stitched. Four pairs of 13 mm tying tapes (*see* IS 1895) shall be stitched, as indicated in Fig. 1, one tape each to the free edge of the bottom and the other to the lower edge of the border. The other side ofthe flap shall be hemmed 10 mm wide with one row of stitching. The sheet of cushioning materialshall be inserted into the case through the open end. The open end shall be closed by the flap and secured by tying tapes.

For Type 2 mattress, after inserting the cushioning material, the free edge of the bottom and the piping shall be stitched with the lower edge of the border after hemming it to 10 mm with single row of stitching.

NOTE — For the mattresses stitched using tape edge machine requirements listed in clause **6.4** shall not be applicable.

3.5 If a sealed sample is stipulated in the contract/order, the mattress shall conform to the samein respect of workmanship, finish, etc.

4 MARKING

4.1 Each mattress shall be marked with the following:

a) Name of manufacturer;
b) Type;
c) Dimensions;
d) Type of cushioning/core material used; and

NOTE — In case more than one material is used for cushioning, thickness and grade of each shall be available in the public domain

e) Other information stipulated in the contract/order.

4.2 BIS Certification Marking

The bed mattresses may also be marked with Standard Mark.

7.2.1 The Mattresses 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 mattresses may be marked with the Standard Mark.

5 PACKING

5.1 Type 1 mattress shall be packed as detailed in **8.1.1** to **8.1.3** when so specified in the contract or order:

8.1.1 *Materials*

a) Polythene film, minimum 0.05 mm thick
b) Cloth heavy cee (*see* IS 3751) or Cloth hessian (Medium), 305g/m^2 (*see* IS 2818);and
c) Twine jute, 3-ply (*see* IS 1912) or String cord as specified in contract/order

8.1.2 *Method*

One mattress shall be wrapped with an inner layer of polythene film 0.04 mm thick (*Min*) and an outer layer of cloth heavy cee or equivalent hessian cloth to form a compact bale of rectangular shape as far as possible. The overlap of the inner wrapping shall be at least 10 cm so as to ensure full protection to the contents of the bale. The overlap of the outer layer of the hessian cloth shallbe such that it can he properly and securely sewn around the bale. The hale shall be stitched withdouble 3-ply-jute twine, with not less than 12 stitches per decimetre taking care not to pierce theinner wrapping while stitching. Sufficient hessian cloth shall be provided at each corner to form `ears' of about 15 cm in length to facilitate easy handling during transit.

8.1.3 Each bale shall be legibly marked by stencil with indelible marking ink/paint showing the following details:

a) Manufacturer's name and address;
b) Name and type;
c) Quantity packed in the bale;
d) Lot number and serial number of the bale;
e) Month and year of packing;
f) Gross mass of the bale in kg;
g) Name and address of consignee; and
h) Any other information required by the buyer.

5.2 Type 2 mattresses may be supplied loose or packed in a manner as specified in the contract ororder.

ANNEX 8
(*Item* 4.2)

भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS

Draft for comments only Doc No.: TXD 20 (26631)
2024

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भारतीय मानक मसौदा

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(आई एस 14354 का पहला पुनरीक्षण)

Draft Indian Standard

TEXTILES — WATERPROOF COVERS — SPECIFICATION

(*First Revision of* IS 14354)

ICS: 59.080.40

Made-up Textiles (Including Ready-Made Garments) Sectional Committee, TXD 20

last date for receipt of comments is 23 November 2024

FOREWORD
(*Formal clauses will be added later*)

The Water proof covers described in this specification are made from Cloth Duck Rip Stop, Cotton, OG 610 g waterproof and intended to cover Stores/Vehicles lying in the open to protect them from sun and rain. This standard was first published in 1996. This standard has been revised again to incorporate the following:

a) Tolerance to ends and picks per dm has been specified;
b) Tolerance to mass, g/m^2 has been incorporated;
c) References to Indian Standards have been updated; and
d) Marking clause has been updated.

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, shall be rounded of 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.

1 SCOPE

This standard specifies constructional and performance requirement for waterproof covers made from cotton fabric.

2 REFERENCES

The standard listed in Annex A contain provisions which through references in the text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subjected 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 indicated in Annex A.

3 MATERIALS

3.1 The waterproof covers shall be manufactured from following materials conforming to standards indicated against them:

Sl No.	Material	Specification
(1)	(2)	(3)
i)	Cloth duck rip stop, cotton, OG, 610g	Annex B
ii)	Polypropylene rope	IS 5175
iii)	Cotton sewing thread	IS 1720
iv)	Chemically passivated aluminium eyelets, Size No. 28 and 30	IS 4084

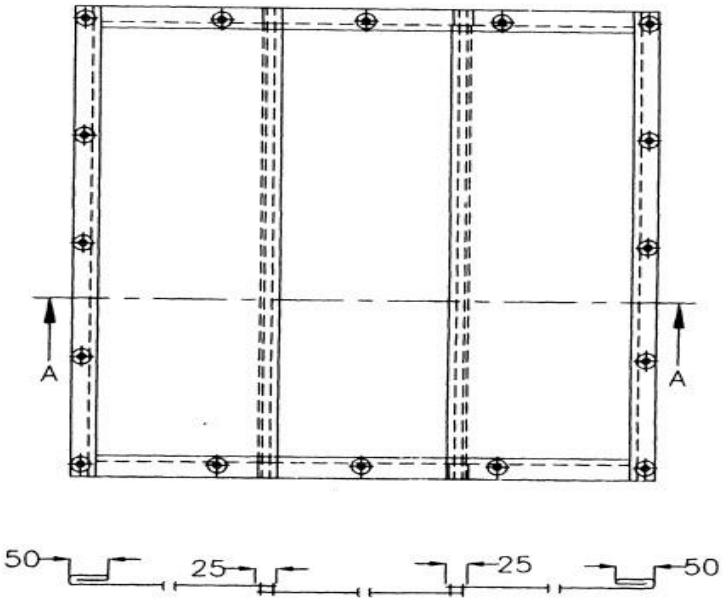
4 MANUFACTURE

4.1 The covers shall be fabricated from olive green waterproof and rot proof cotton duck, rip stop.

4.2 The covers shall be machine sewn with cotton sewing thread conforming to variety number 42 of IS 1720. The stitching shall be of even tension throughout with all loose ends securely fastened. The number of stitches shall not be less than 2 per cm and the needle used for stitching shall not be too large to leave holes through which water may leak.

4.3 Joints, if any, shall be in the direction of the length of the cover and shall be made by laying two edges of the fabric one over the other with an overlap so that two rows of stitching, not less than 2.5 cm apart, pass through both layers of the fabric as shown in Fig. 1. All seams shall be lapped from the centre of each cover to the left and right that is the centre panel shall be laid on top to enable

correct drainage of the cover when finished. However, cross seams at the rate of one in every third panel and one narrow width panel per cover may be allowed. In all cases, the end panels shall be of full width. In forming seams, the fell end seam method of joining shall be employed and allowing for 1.5 cm turn-in of the edge of the material and no piece less than 92 cm finished length shall be used for the purpose.



SECTION ON A–A SHOWING SEAMS & HEMS

All dimensions in millimetres.

FIG. 1 WATERPROOF COVERS

4.4 The ends and sides of the covers shall be hemmed with a single row of stitching. The hem shall be 5 cm wide and turn-in shall be the full width of the hem. The hem is thus formed of three folds of the material at the sides and both ends and nine folds at the corners. These nine folds shall be reduced to five by cutting from each corner a piece of 10 cm square thus permitting the shanks of the eyelets to be securely set over the washers.

4.5 Chemically passivated aluminium eyelets of size 28 and 30 as per IS 4084 shall be fitted in a line in the centre of the hem. The holes for the eyelets shall be made by punching with a small punch, the holes being brought to the required size by using a marline spike.

4.6 The lashings shall be made from 8 mm polypropylene rope and shall be spliced to each corner eyelet. The free ends of the lashings shall be suitably heat sealed.

5 REQUIREMENTS

5.1 The dimensions of covers and lashings shall conform to requirements specified in Table 1.

5.1.1 However, a tolerance of ± 1 percent on length and width of a cover shall be permissible provided the average dimensions of all covers under test are not less than the specified values.

Table 1 Requirements of covers and lashings

(*Clause* 5.1)

Sl No.	**Size of Covers**	**Dimensions**		**Lashings**			**Eyelets**		**Number of Eyelets and Placement**
		Length m	Width m	No.	Length m	Diameter mm	Size	Quantity	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
i)	10.0 × 7.6	10.0	7.6	4	1.25	8	30	38	One at each corner with 10 along long side and 7 along short side in between the corner eyelets at equal distances.
ii)	9.1 × 9.1	9.1	9.1	4	1.25	8	30	40	One at each corner with 9 along each side in between the corner eyelets at equal distances.
iii)	7.3 × 5.5	7.3	5.5	4	1.25	8	30	28	One at each corner with 7 along long side and 5 along short side in between the corner eyelets at equal distances
iv)	5.5 × 4.5	5.5	4.5	4	1.25	8	30	20	One at each corner with 5 along long side and 3 along short side in between the corner eyelets at equal distances
v)	3.7 × 3.0	3.7	3.0	4	1.25	8	30	14	One at each corner with 3 along long side and 2 along short side in between the corner eyelets at equal distances

vi)	3.0 × 1.8	3.0	1.8	6	1.25	8	30	6	One at each corner and one in centre of each long side
vii)	2.4 × 1.8	2.4	1.8	6	1.25	8	30	6	One at each corner and one in centre of each long side
viii)	2.0 × 2.0	2.0	2.0	4	0.91	8	28	4	One at each corner
ix)	1.7 × 1.2	1.7	1.2	4	1.25	8	28	4	One at each corner

6 MARKING

6.1 Each cover shall be legibly and indelibly marked with the following information:

a) Name of material;
b) Dimensions of cover;
c) Indication of source of manufacture; and
d) Month and year of manufacture.

6.2 Each bale containing waterproof covers shall be legibly marked by stencil using indelible marking ink/paint showing the following details:

a) Quantity packed in the bale;
b) Month and year of packing;
c) Indication of source of manufacture;
d) Lot number; and
e) Gross mass of bale in kg.

6.3 BIS Certification Marking

The product 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 may be marked with the Standard Mark.

7 PACKING

7.1 Each cover shall be delivered in a new, clean and dry condition.

7.2 All covers shall be packed in accordance with the details given in Table 2.

Table 2 Packing of Waterproof Covers
(*Clause* 7.2)

Sl No.	Size of Waterproof Covers (m)	Unit Pack	Multiple Pack	Details of Wrapping

(1)	(2)	(3)	(4)	(5)
i)	10.0 × 7.6	1	1	The covers suitably folded shall be tied at two places with jute twine (*see* IS 1912) to form a bundle. The required number of bundles shall then be wrapped with single layer of heavy cee jute cloth (*see* IS 3751) or double layer of hessian (*see* IS 2818)
ii)	9.1×9.1	1	1	
iii)	7.3 × 5.5	1	1	
iv)	5.5 × 4.5	1	2	
v)	3.7 × 3.0	1	4	
vi)	3.0 × 1.8	1	8	
vii)	2.4 × 1.8	1	10	
viii)	2.0 × 2.0	1	12	
ix)	1.7 × 1.2	1	20	

7.2.1 The bales shall be made up in such a way that its cross section is approximately rectangular in shape.

7.3 The seams of the bale shall be securely sewn with double jute twine with not less than 9 stitches per 10.0 cm. While stitching the jute cloth, care should be taken to avoid piercing the covers during the stitching process. Sufficient jute cloth shall be pulled out at each corner to form 'ears' about 15.0 cm in length. The outside seams of the bale shall not be demurred unless specified by purchaser.

8 SAMPLING AND CRITERIA FOR CONFORMITY

8.1 Lot

The quantity of waterproof covers delivered to a buyer against a despatch note shall constitute a lot.

8.2 The conformity of the lot to the requirements of the standard shall be determined on the basis of tests carried out on the sample selected from it. Unless otherwise agreed to between the buyer and the seller, the number of waterproof covers to be selected at random from a lot shall be according to Table 3. To ensure the randomness of selection, methods given in IS 4905 shall be followed.

Table 3 Sampling and Criteria for Conformity
(*Clause* 8.2)

Sl No.	Number of Waterproof Covers in the Lot	Sample Size	Number of Non-conforming Waterproof Covers	Sub-sample Size
(1)	(2)	(3)	(4)	(5)
i)	Up to 300	10	1	2
ii)	301 to 600	20	1	3
iii)	601 to 1 000	30	2	5
iv)	1 001 and above	50	3	8

8.3 The sample size and criteria for conformity for various characteristics shall be as follows:

Sl No.	Characteristics	Sample Size	Criteria for Conformity
(1)	(2)	(3)	(4)
i)	Dimensions of cover, number of lashings, length and diameter of lashing, number of eyelets and their placement	According to col (3) of Table 3	Non-conforming waterproof covers not to exceed corresponding number given in col (4) of Table 3
ii)	Cloth characteristics	According to col (5) of Table 3	All water-proof covers to satisfy the requirements specified in Annex B.

ANNEX A
(*Clause* 2)

LIST OF REFERRED STANDARDS

IS No.	*Title*
IS/ISO 105-B02 : 2014	Textiles — Tests for colour fastness — Part B02 Colour fastness to artificial light: Xenon arc fading lamp test
IS/ISO 105-C10 : 2006	Textiles — Tests for colour fastness Part C10 Colour fastness to washing with soap or soap and soda
IS 1422 : 1983	Specification for Cotton duck (*third revision*)
IS 1720 : 1978	Specification for Cotton sewing threads *(second revision*)
IS 1912 : 2023	Textiles — Country Jute Twine — Specification (*third revision*)
IS 1963 : 1981	Methods of determination of thread 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	Textiles — Tensile Properties of Fabrics Part 1 Determination of Maximum force and Elongation at Maximum Force Using the Strip Method *(fourth revision)*
IS 2818 : 2015	Textiles — Hessian — Specification (*third revision)*
IS 3751 : 1993	Textiles — Heavy cee jute cloth (*first revision*)
IS 4084 : 1978	Specification for Eyelets and washers (sail) (*first revision*)
IS 4905 : 2015	Random Sampling and Randomization Procedures (*first revision*)
IS 5175 : 2022	Fibre Ropes — Polypropylene Split Film, Monofilament and Multifilament (PP2) and Polypropylene High-Tenacity Multifilament (PP3) — 3-, 4-, 8- and 12- Strand Ropes (*fourth revision*)

IS 7016 (Part3/Sec 1) : 1981	Methods of Test for Rubber or Plastics Coated Fabrics Part 3 Determination of Tear Resistance Section 1 Constant rate of tear methods (*third revision*)
IS 7016 (Part7) : 2023	Methods of Test for Rubber or Plastics Coated Fabrics Part 7 Determination of Resistance to Penetration by Water (*third revision)*
IS 13510 : 1992	Textiles — Duck, polyester/cotton blended, rip-stop — Specification (*first revision*)

ANNEX B
(Clause 3.1**)**

REQUIREMENTS OF CLOTH DUCK RIP STOP, COTTON

B-1 GENERAL

a) The fabric shall be woven from evenly spun 59 tex × 3 tex cotton thread in warp and 59 tex × 4 tex cotton thread in weft. It shall be uniformly woven in plain weave with firm selvedges using two threads working as one after every 14 threads in warp and after every 7 threads in weft. It shall be free from spinning, weaving and processing defects.

NOTE — The count of the yarn is for guidance only.

b) The fabric shall be uniformly dyed olive green with any suitable dyestuff and shall be water and rot proofed.

B-2 CONSTRUCTION AND OTHER PARTICULARS

B-2.1 The scoured or dyed fabric shall comply the requirements specified in Table 4.

Table 4 Requirements of scoured or dyed fabric for waterproof covers
(*Clause* B-2.1)

Sl No.	**Width**	**Mass**	**Ends/ dm**	**Picks/ dm**	**Breaking Strength on 5 cm × 20 cm Strip,** *Min*		**Tear Strength (Tongue Tear Method),** *Min*	
					Warp	Weft	Warp	Weft
	cm	g/ m^2			N	N	N	N
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
i)	91or as desired	610	165	102	1700	1700	200	250

ii)	Tolerance, percent	+5 −2.5	+5 −2.5	+5 −2.5	

B-3 The finished waterproof and rot proof fabric shall conform to requirements specified in Table 5.

Table 5 Requirements of finished waterproof covers
(*Clause* B-3)

Sl No.	**Characteristics**	**Requirements**	**Tolerance, percent**	**Method of Test, Ref to**
(1)	(2)	(4)	(3)	(5)
i)	Threads/dm Ends Picks	 165 102	 +5 −2.5	IS 1963
ii)	Mass, g/m^2	700	+5 −2.5	IS 1964
iii)	Breaking strength, on 5 cm × 20 cm strip, N, *Min* Warp Weft	 1 550 1 550	—	IS 1969 (Part 1)
iv)	Tear strength, N, *Min* Warp Weft	 250 250	—	IS 7016 (Part 3/Sec 1)
v)	Colour fastness rating to Light Washing (C 3)	 4 or better 4 or better	—	 IS/ISO 105-B02 IS/ISO 105-C10
vi)	Pressure head test (at 15 cm water head dia test area) a) Leakage b) Amount of wetting or outer surface	 NIL No wetting	—	 IS 7016 (Part 7)
vii)	Copper content, *percent*	0.5 to 0.8	—	
viii)	Proofing content, percent, *Max*	15	—	
ix)	The fabric shall confirm to IS 13510 in respect of following requirements: Relaxation shrinkage or elongation, *p*H value of aqueous extract, Cone test, and Bundesmann test.		—	