For BIS Use Only

BUREAU OF INDIAN STANDARDS

AGENDA

Made-up Textiles (Including Ready-Made Garments) Sectional Committee, TXD 20 **25th Meeting**

Date	Time	Venue
19 April 2024 (Friday)	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 24th meeting of the Committee held on 05 April 2023, through video conferencing (Cisco Webex) were circulated vide BISDG letter no. TXD 20/A2.24 email dated 24 April 2023. 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 4-5).**

2.1.1 The Committee may **REVIEW**.

2.2 Shri Madhan R, Manjushree Spntex Private Limited, has requested membership in TXD 20. He has a B.Tech in Textile Technology and an MBA in International business management and have 18+ years of experience in maintaining the quality management system, present domain related to the medical and hygiene industries.

2.2.1 The committee may **DECIDE.**

2.3 Shri Venkatesh A, Viridian Testing Laboratories LLP, has requested membership in TXD 20. He has a B.A. in Chemistry and has 18+ years of experience in laboratory testing, quality management systems, factory technical audit, certification audit, calibration.

2.3.1 The Committee may **DECIDE**.

2.4 Shri Xavier Pinto, Siyaram Silk Mills Limited has requested membership in TXD 20. He has a B.COM in Financial and Accounting and has 15+ years of experience in marketing, sales manager and store operations.

2.4.1 The Committee may **DECIDE**.

Item 3 ISSUES ARISING OUT OF PREVIOUS MEETING OF TXD 20

3.1 Summary of actions taken on the various decisions of the 24th meeting is given in **Annex 2 (Page 6-7).**

3.1.1 The Committee may **NOTE**.

Item 4 NEW WORK ITEM PROPOSAL

4.1 A proposal has been received from Northern Railways (Principal Chief Material Manager) to formulate a new standard for pillow specifications. Based on the proposed requirements and test reports provided by railways, a preliminary draft has been prepared as given in **Annex 3 (Pages 8-18).**

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

Item 5 COMMENTS ON PUBLISHED INDIAN STANDARD

5.1 IS 13489:2000, Textiles – Bed mattress – Specification

The Comments were received from Shri Kuldip Gupta, Aerocom P Limited, which are given at **Annex 4 (Page 19).**

5.1.1 The committee may **DECIDE.**

Item 6 RESEARCH AND DEVELOPMENT PROJECT

6.1 BIS competent authority has decided that research & development projects must be seamlessly integrated into standardization, to ensure that standards remain adaptable and relevant by incorporating in depth field-level studies alongside traditional research methods, addressing the complexities and innovations in the field. A detailed guideline for research & development projects for formulation and review of standards is given in **Annex 5 (Pages 20-29).**

In view of the above, project on the subject 'School Bag' for revision of IS 10228 has been identified for the R&D project, draft ToR for R&D project is given in **Annex 6 (Pages 30-33).**

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

Item 7 DUE FOR REVIEW/REVIEW OF PRE-2000 STANDARDS

7.1 Standards that were published/reaffirmed five years ago are required to be to reviewed keeping in view the changes in technology, current industrial practices, and the needs/expectations of the consumers/users so as to decide regarding further reaffirmation, revision, withdrawal, or amendment of the standards under review.

The list of standards due for review under the domain of TXD 20 is as follows.

Sl No.	IS No.	IS Title
1	IS 13489 : 2000	Textiles – Bed mattress – Specification (first revision)
2	IS 14351 : 1996	Textiles – Ground sheets (light weight) – Specification
3	IS 14354 : 1996	Textiles – Waterproof covers – Specification
4	IS 8928 : 1988	Specification for CHAGUL
5	IS 11161 : 2000 ISO 4916:1991	Textiles – Seam types – Classification and terminology (first revision)

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

Item 8 DATE AND PLACE OF NEXT MEETING

Item 9 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.

Sl No.	ORGANIZATION REPRESENTED	NAME OF THE REPRESENTATIVE PRINCIPAL/(ALTERNATE)
1.	Northern India Textile Research Association, Ghaziabad	Dr. Arindam Basu (*Chairperson*)
2.	Ahmedabad Textile Industries Research Association, Ahmedabad	Smt. Deepali Plawat (Shri Jigar Dave)
3.	Apparel Export Promotion Council, Gurugram	Dr. Saurabh Kumar (Shri Praveen Kukreja)
4.	Birla VXL Limited, Faridabad	Shri Ajit Kumar (Shri P K Das)
5.	Clothing Manufacturers' Association of India Mumbai	Nomination awaited
6.	CSIR - Central Leather Research Institute, Chennai	Dr. K Krishnaraj (Dr. R. Mohan)
7.	Department of Posts, Ministry of Communications and IT, New Delhi	Shri R C Meena (Shri S Buchchan)
8.	Directorate General of Quality Assurance, New Delhi	Shri Jeevendra Singh (Shri Anuj Shukla)
9.	Garment Exporters Association, New Delhi	Shri H K L Magu
10.	Indian Institute of Technology, New Delhi	Dr. Deepti Gupta
11.	Intertek Testing Services (I) Pvt Ltd, New Delhi	Shri. Milind Marathe (Shri Narayan Borade)
12.	Ministry of Defense (R & D) Kanpur	Shri Hirday Ram (Shri K K Gupta)
13.	National Institute of Fashion Technology, New Delhi	Prof Vandana Narag (Prof Monika Gupta)
14.	National Textile Corporation Limited, New Delhi	Shri H S Sachdev
15.	Northern India Textile Research Association, Ghaziabad	Shri. Vivek Agarwal (Dr. Neha Kapil)

16.	Office of the Textile Commissioner, Mumbai	Shri N K Gupta (Shri D S rane)
17.	Orient Craft Ltd., Gurgaon	Nomination Awaited
18.	Reliance Industries Limited, Mumbai	Mr. M S Verma (Shri Ajay Gupta)
19.	Sarla Fabric Pvt Ltd, Mumbai	Shri Somes Bhaumick (Shri Rajneesh Rai)
20.	SGS, Chennai	Dr. Karthikeyan (Shri Michel Francis)
21.	Sheela Foams (P) Ltd, Ghaziabad	Shri Rahul Gautam (Shri Arvind Kumar)
22.	Shahi Exports Private Limited, Faridabad	Shri. J D Giri (Mr. Rajneesh Rai)
23.	Shriram Institute for Industrial Research, Delhi	Shri Vinay Kumar Samania (Dr. Bhuvneshwar Rai)
24.	SITRA, Coimbatore	Shri Sounder raj
25.	Textiles Committee, Mumbai	Shri J.D.Barman (Shri R Chandran)

Annex 2
(*Item* 3.1)

SUMMARY OF ACTIONS TAKEN ON THE MINUTES OF THE LAST MEETING

Item No.	Decision	Action Taken
2.1	**Updated representation in committee**	Updated scope and composition are given in Annex 1.
4	**DRAFT STANDARDS FOR FINALIZATION** ISO 20947-1:2021 and ISO 20947-2:2020 the committee decided that above drafts are FINALIZED for publication as Indian Standards under dual numbering system. ISO 3758 : 2012' the committee finalized the above draft for publication as Indian Standard under dual numbering system. IS 11054 : 2023 Textiles — Nylon Blue Airmail Bags the committee further decided that above draft is Finalized for publication.	Published as Indian Standards IS 18305 (Part 1) : 2023 and IS 18305 (Part 2) : 2023 Published as Indian Standard IS 14452 : 2023 Published
6	**FORMULATION OF INDIAN STANDARDS ON NEW SUBJECTS** The committee considered the following subjects as identified from the list received from Trade Advisor, Ministry of Textiles and Department for Promotion of Industry and Internal Trade (DPIIT) on Apparel and Fabrics for formulation of Indian Standards in a time bound manner: **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	Consultant recruitment underway

	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	
7	**REVIEW OF INDIAN STANDARDS**	Coming for discussion under Agenda item **7**

Annex 3

(*Item* 4.1)

Preliminary
Draft Standard

TEXTILES — POLYESTER FIBRE FILLED PILLOWS — SPECIFICATION

FOREWORD

A pillow functions primarily as a means of support for the head, typically utilized during sleep, or for the body when placed on a couch or chair. Pillow composed of filler materials such as polyester, cotton, foam, feathers, down etc. which is encased within a sealed stitched casing fabric. Pillows or cushions often have a conventional shape that is either rectangular or square.

This standard covers specifications for filling material, casing fabric and outer protective cover. Attempts have been made to synchronize the requirements of the standard with the needs of organized consumers, including railways, the Ministry of Defence, and the hotel business.

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.

1 SCOPE

1.1 This standard specifies the requirements for polyester fibre filled pillows and outer protective cover.

1.2 This standard does not specify the general appearance, feel, shade, etc, of the pillow and outer protective cover.

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 ATMOSPHERIC CONDITIONS FOR TESTING

Test specimens may be conditioned and tested in the prevailing atmosphere for determining the conformity of the pillow to this standard. However, in all cases of disputes, specimen shall be conditioned and tested in the standard atmosphere as specified in the referred Indian Standards on test methods.

4 TERMS AND DEFINITIONS

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

4.1 Casing/Inner Primary Cover

A textile fabric covering that encloses the filled fibre material.

4.2 Filler

The fibres used to be uniformly packed in the casing.

4.3 Pillow

An assembly composed of filler material enclosed within a casing.

4.3 Outer Protective Cover

A sewn fabric cover that contains a pillow and is easily removable for washing purposes.

4.4 Piping

A cord sewn on all four sides of the casing pillow as a decorative trim and also helps the pillow to maintain its desired shape.

5 MANUFACTURES

5.1 A pillow shall consist of a casing made of either one piece of fabric or two equally sized pieces of fabric to encase a synthetic-fibre filler material. The casing fabric shall be stitched on two sides for the one piece of fabric and on three sides for two pieces of fabric.

5.2 The filler material used shall be hollow conjugate polyester fibre. The filler polyester fibre used for filling shall be a carded web opened on a roller-type card or blow-filled into the casing after opening on suitable opening machines. After filling, the open side of the casing shall be stitched in the same manner as for the other sides of the casing. All the sides may be secured with piping as agreed to between the buyer and the seller.

5.3 The outer protective cover shall be laminated from the inside using TPU film with a minimum thickness of 25 microns. The lamination shall be applied uniformly to the base fabric. The dimensions of the outer protective cover shall be as agreed to between the buyer and the seller.

6 WORKMANSHIP AND FINISH

6.1 The pillow and the outer protective cover shall be:

Made of uniform shape, finish, and workmanship throughout;

1. Free from defects that could affect their appearance and/or their serviceability;
2. Made such that all seams are smooth and sewing is free from pleats and puckers, sufficiently extensible to prevent seam-cracking;
3. Made such that all ends of sewing have been trimmed and loose threads removed;
4. Capable of being cleaned in accordance with the care instructions without giving rise to any defect, such as puckering, lumpiness, tears, etc.; and
5. Delivered in a clean and commercially dry condition.

7 REQUIREMENTS

7.1 Casing

The casing shall conform to the general and performance requirements and as specified in Table 1 and Table 2.

Table 1 Casing Fabric General Requirements
(*Clause* 7.1)

Sl No.	**Type**	**Fiber Type**	**Nominal Count of yarn**		**Ends/cm**	**Picks/cm**	**Mass g/m^2, *Min*** (*see* Note 2)
			Warp	**weft**			
(1)	(2)	(3)	(4)	(5)	(7)	(8)	(9)
i)	1	100% micro polyester	80 D	150 D	49	27	95
ii)	2	100% polyester	80 D	40s	51	26	90
iii)	3	100% cotton	40s	40s	55	34	135
iv)	4	65% polyester and 35% cotton	40s	40s	55	34	135
v)	Tolerance	± 3 %	± 5 %	± 5 %	± 4	± 3	
vi)	Method of Test	IS 667 and IS 3416	IS 3442 and IS 7703 (part 1)	IS 3442 and IS 7703 (part 1)	IS 1963	IS 1963	IS 1964

Table 2 Casing fabric performance requirement
(*Clause* 7.1)

Sl No.	**Characteristics**	**Requirements**				**Method of Test, Ref to**
		Type 1	**Type 2**	**Type 3**	**Type 4**	

(1)	(2)	(3)	(4)	(5)	(6)	(7)
i)	Breaking Load on , *Min* a)Warp b)Weft	 40 40	 35 25	 15 15	 20 15	IS 1969 (Part 1)
ii)	Tear Strength, *Min* a)Warp b)Weft	 1.8 1.8	 1.8 1.0	 0.8 0.8	 0.8 0.8	IS 6489 (Part 1)
iii)	Dimensional Change (after 3 washes), *percent* a)Warp b)Weft	 + 3 to -3	 + 3 to -3	 + 3 to -5	 + 3 to -5	IS 15370/ISO 6330
iv)	pH value of aqueous extract	6.0 - 8.0	6.0 - 8.0	6.0 - 8.0	6.0 - 8.0	IS 1390
v)	Colour fastness to: (only for dyed fabric)					
vi)	a) Light			4 or better		IS/ISO 105-B02
vii)	b) Washing 1) Colour change 2) Staining			4 or better		IS/ISO 105-C06
viii)	c) Rubbing 1) Dry 2) Wet			4 or better		IS/ISO 105-C06
ix)	d) Perspiration (acidic and alkaline) 1) Color change 2) Staining			4 or better		IS/ISO 105-E04
x)	Seam strength, N, *Min*	60	60	60	60	IS/ISO 13935-1
xi)	Pilling resistance (1000 revolution)	3 or better	3 or better	3 or better	3 or better	IS 10971 (Part 2)

7.2 The outer protective cover shall conform to the requirements as specified in Table 3.

Table 3 Outer Protective cover requirements
(*Clause* 7.2)

Sl No.	Characteristic	Requirement	Method of Test, Ref to
(1)	(2)	(3)	(4)
i)	Areal Density (base fabric + lamination), Min,g/m^2	135	IS 1964
ii)	Hydrostatic pressure head test, Rate 60cm/min,Min	300 cm H_2O	IS 391
iii)	Pilling resistance (1000 revolution)	4 or better	IS 10971 (Part 2)
iv)	pH of aqueous extract	6.0 - 8.0	IS 1390
v)	Coating adhesion strength, Min, 50mm	0.8 kgf	IS 7016 (Part 5)

vi)	Colour fastness to saliva and Perspiration (for dyed fabric only)	Resistant to saliva and perspiration	IS 15626
vii)	Dimensional Change (after 3 washes), *percent* a)Warp b)Weft	+ 3 to -3	IS 15370/ISO 6330
viii)	General appearance after washing	No seam opening or broken stitches, no delamination pr breakage of TPU layer	Visual

7.3 Filler

The filling fibre shall be siliconised hollow conjugate polyester fibre. The nominal fibre denier of filler fibre may be either 15, 7, 5, 4, or 3 as specified in Table 4.The filler fibre shall be identified by the methods specified in IS 667 and for the hollowness determination as prescribed in Annex C.

Note — The pillow manufacturer shall obtain a certificate from the fibre manufacturer along with a test report indicating that the fill fibre is siliconised hollow conjugate polyester fibre for every lot of fibre purchased.

Table 4 Requirements of Hollow Conjugate Siliconised Polyester Fill Fibre
(*Clause* 7.3)

Sl No.	Properties	Specifications & Limits					Method of Test, Ref to
		3 Denier	4 Denier	5 Denier	7 Denier	15 Denier	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
i)	Fibre linear density (Denier)	3 ± 0.5	4.0 ± 0.5	5.0 ± 0.50	7.0 ± 0.1	15.0 ± 1.0	IS 10014 (Part 2)
ii)	Nominal Hollowness (%)	12 – 18		14 – 20			Annex C

7.4 Dimensions and Fill Mass of Pillow

Unless otherwise specified, the nominal dimensions of the pillow casing and the mass of the filled fibres shall be as specified in Table 5. The actual dimensions of the pillow casing when tested by method prescribed in Annex B shall not be less than nominal dimensions. The mass of filled fibres shall be calculated by opening the casing and weighing the entire filled fibres on an electronic balance to an accuracy of 0.1 g.

Table 5 Unfilled Casing Dimensions and Mass of Fill Fibres
(*Clause* 7.4)

Sl No.	Pillow Size	Nominal Dimensions, cm		Nominal mass of Fill Fibers in g	
		Length	Width	3 – 7 D	≥ 15 D
(1)	(2)	(3)	(4)	(5)	(6)

i)	1	60	40	500	450
ii)	2	55	40	450	400
iii)	3	66	51	670	620
iv)	4	76	51	760	710
v)	5	92	51	930	870
vi)	Tolerance	+ 2 cm - 0 cm	+ 1 cm - 0 cm	+ 5 % - 2 %	+ 5 % - 2 %
vii)	Method of Test, Ref to	Annex B			

NOTE — The others dimensions and filled mass shall be as agreed to between buyer and seller. The tolerance specified in table 5 shall be applicable on the declared dimensions and mass of fill fibres.

7.5 Requirements for Hemming

7.5.1 An opening across the complete width of the outer pillow protective cover shall be provided to facilitate the insertion of the pillow. The location of the opening and overlap shall be as agreed to between the buyer and the seller. Unless otherwise specified , minimum length of flap shall be 140 mm.

7.5.2 To prevent the unraveling of the threads across the opening side, raw edges shall be turned in to provide a hem of minimum 1 cm.

7.5.3 *Sewing thread*

Unless otherwise specified, a nominal 30 tex polyester 3 ply sewing thread with a minimum tensile strength of 10 N shall be used for both the casing and pillow protective cover. In the case of dyed fabric, the thread shall be of a similar shade.

7.5.4 *Sewing and stitches*

The sewing shall be of even tension and the loose ends shall be finished securely and neatly. The number of stitches shall not be less than 4 per cm for casing and pillow protective cover, when tested by a needle and counting glass.

7.5.5 *Piping (Optional)*

100 percent polyester or polyester/cotton (65:35 percent) or 100 percent cotton cord may be used as piping on all four sides of the pillow/cushion.

8 MARKING

8.1 The casing shall be suitably marked on a suitable printed cloth label in legible and indelible marking, which shall be securely attached to an edge of, or on top (near one of the comers) of each pillow:

a) Type of fill fibre;
b) Dimensions of the pillow;
c) Mass of filled fibre;

d) Type of casing fabric (blend composition);
e) Manufacturer's name, initials, or trademark;
f) Indication of the source of manufacture; and
g) Any other information as required by the law in force.

8.1.1 The outer protective cover shall be suitably marked with the following information:

a) Blend composition of outer protective cover;
b) Manufacturer's name, initials, or trademark;
c) Indication of the source of manufacture; and
d) Any other information as required by the law in force.

Another suitable cloth label indicating symbols for proper care of pillow during washing, dry-cleaning, drying and ironing shall also be attached with each piece of pillow casing and outer protector as per IS 14452 at a conspicuous place, for example, at corner.

8.2 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.

9 PACKING

Unless otherwise agreed upon by the buyer and the seller the pillow shall preferably be packed individually in a LLDPE, LDPE bag of thickness not less than 40 microns. A suitable number of such pillows shall then be packed in a suitable bulk container. Pillows of the same nominal dimension and that contain the same type of filling shall be packed together in a bulk container.

10 SAMPLING

10.1 Lot

The number of pieces of the pillow of the same size, filling fibre and same quality of casing fabric delivered to a buyer against one dispatch note shall constitute a lot.

10.2 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.

10.3 Unless otherwise agreed, the number of pieces selected at random for inspection shall be in accordance with Table 6.

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

10.4 Number of Samples and Criteria for Conformity

It shall be as follows:

Table 6 Sample Size
(*Clauses* 10.3, 10.4.1 and 10.4.2)

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

10.4.1 The number of pieces to be selected for ends/dm, picks/dm, freedom from defect, number of stitches, visual colour of fabric and sewing threads shall be in accordance with col (3) of Table 6.

For all other tests such as Blend composition, Breaking load, tear strength, colour fastness, mass per square meter of fabric, pH value, fiber fineness, pilling resistance, dimensional stability, count and strength of sewing thread, thickness of the lamination, seam strength, filling mass of fibre, the number of pieces selected shall be as given in col (4) of Table 6.

10.4.2 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 6 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 6 for sub sample size.

ANNEX A
(*Clause* 2)

LIST OF REFERRED STANDARDS

IS No.	*Title*
IS 391 : 2020	Textile fabrics — Determination of resistance to water penetration — Hydrostatic pressure test (*second revision*)
IS 667 : 1981	Methods for identification of textile fibres (*first revision*)
IS 1390 : 2022	Textiles Determination of pH of aqueous extract (*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	Textiles — Tensile properties of fabrics — Part 1 Determination of maximum force and elongation at maximum force using the strip method (*fourth revision*)
IS 3416 : 2024	Textiles — Quantitative Chemical Analysis — Mixtures of Certain Cellulose Fibres with Certain Other Fibres (Method Using Sulphuric Acid) (*third revision*)
IS 3442 : 2023	Textiles method for determination of crimp and linear density of yarn removed from fabric
IS 4905 : 2015	Random sampling and randomization procedures (*first revision*)
IS 6489 (Part 1): 2011	Textiles — Tear properties of fabrics Part 1 Determination of tear force using ballistic pendulum method (Elmendorf) (*second revision*)
IS 7016 (Part 5) : 2019	Methods of test for coated and treated fabrics: Part 5 rubber — Or plastics — Coated fabrics — Determination of coating adhesion (*third revision*)
IS 7703 (part 1) : 1990	Methods of test for man-made fibres continuous filament flat yarn — Part 1 Linear density (*first revision*)
IS 10014 (Part 2) : 1981	Methods of tests for man-made staple fibres Part 2 Determination of linear density
IS 10971 (Part 2) : 2022	Textiles — Determination of fabric propensity to surface pilling fuzzing or matting Part 2: Modified martindale method (*second revision*)
IS/ISO 13935-1 : 2014	Textiles — Seam tensile properties of fabrics and made-up textile articles Part 1 Determination of maximum force to seam rupture using the strip method (*first revision*)
IS 14452 : 2023	Textiles — Care Labelling Code Using Symbols
IS 15370 : 2023	Textiles — Domestic Washing and Drying Procedures for Textile Testing (*second revision*)
IS 15626 : 2006	Textiles — Method for determination of colour fastness of textiles to saliva and perspiration
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-C06 : 2010	Textiles — Tests for colour fastness Part C06 Colour fastness to domestic and commercial laundering (*first revision*)
IS/ISO 105-E04 : 2013	Textiles — Tests for colour fastness — Part E04: Colour fastness to perspiration

ANNEX B

(*Clause* 7.4 and *Table* 5)

METHODS OF TEST FOR UNFILLED CASING DIMENSIONS AND MASS OF FILL FIBRES IN THE PILLOW/CUSHION

B-1 UNFILLED CASING DIMENSIONS

B-1.1 Open the pillow/cushion and take out the fill fibres from it completely. Lay the pillow/cushion casing flat on a plain surface. Gently smoothen the casing with the hands until it is free from all storage folds, creases and wrinkles.

B-1.2 Use an accurately graduated steel tape of length greater than the length of the pillow/cushion casing to determine, to the nearest cm, at approximately three equal intervals in each direction, the width and the length of the pillow/cushion.

B-1.3 Calculate the arithmetic mean of each set of measurements and record the results as the width and the length, respectively, of the pillow.

B-2 MASS OF FILL FIBRE IN THE PILLOW/CUSHION

B-2.1 Weigh all the fill fibre mass obtained in **B-1.1** in an electronic balance capable of measuring to the nearest mg.

B-2.2 Repeat similarly for all other samples selected as per **7.5.1** and calculate the arithmetic mean of all measurements

ANNEX C
(*Clause* 7.3 and *Table* 4)

METHODS OF TEST FOR FILL FIBRE PROPERTIES

C-1 TEST FOR HOLLOWNESS

C-1.1 Definition

C-1.1.1 Hollowness

Ratio of the area of the inner hole of the hollow fibre to the total cross - sectional area of the fibre.

C-1.2 Apparatus

C-1.2.1 Microscope (with software program for cross sectional area measurement)

C-1.3 Procedure

C-1.3.1 Prepare a microscopic cross-section slide of a bunch of fibre.

C-1.3.2 Put the slide under microscope and focus the specimen with proper magnification.

C-1.3.3 Select a single fibre cross section and select the inner hole area.

C-1.3.4 Run the special software program for determining the area.

C-1.3.5 Similarly select the total area and determine its value.

C-1.3.6 Calculate the percentage ratio of hollow fibre area to the total fibre area to find the hollowness percentage.

C-1.3.7 Calculate percentage hollowness for 20 such fibres at random and then calculate their average value and report this value as hollowness percentage.

Annex 4

(*Item* 5.1)

COMMENTS ON PUBLISHED STANDARDS

IS 13489:2000, Textiles – Bed mattress – Specification (first revision)

Clause No.	Paragraph No./Figure No./Table No.	Existing	Comment/Proposed change
4, 6.2	Table 1 SI no iii)	Piping (hemp line 04mm, Shroud-laid, cotton line 04mm)	Use of hemp line may be discarded. when covers of most of the mattresses are stitched on tape edge closing machine
4	Table 1 SI no iv)	Typing tapes	No tying tapes are needed in mattresses covers when stitched on tape edge closing m/c.
4	Table 1 SI no v)	Cotton sewing thread	Polyester or Nylon may be used
6.3	1st Line	The mattress shall be assembled throughout with lock stitch regulated at 37 to 43 stitches per decimetre.	This 37 to 43 stitch/decimeter is superfluous and unnecessary. The time taken to generate this fine stitch reduces the productivity by 75%. One needs to stitch anywhere in between 28 to 33 stitches to give an adequate strength.
6.4	1st Line	One of the ends shall however be unstitched and kept open for insertion of cushioning material	Today on Tape Edge m/c concept of inserting mattress keeping one side open is redundant and hence may be dropped
7.2	1stparagraph	Bed mattresses may also be marked with standard mark	The Licensees of IS 13489 must necessarily have the BIS License of 8391. Unless a bidder has a license to manufacture Rubberised Coir Mattresses, he must not be treated as a manufacturer of mattresses
8.1.1	Materials		Instead of Hessian using HDPP fabric will make the packing rain/waterproof. The necessity of specifying a string cord is inessential. This may be dropped.
8.1.2	Method		

Annex 5
(*Item* 6.1)

GUIDELINES FOR RESEARCH & DEVELOPMENT PROJECTS FOR FORMULATION AND REVIEW OF STANDARDS

1 INTRODUCTION

Bureau of Indian Standards (BIS), as the National Standards Body of India is responsible for formulating Indian Standards for products, processes and services. In the pursuit of this endeavour, it has so far developed more than 22000 Indian Standards. Action Research and Research & Development Projects have always been part of the standardization process. However, there has been a growing realisation in the context of the increasing diversification, innovation and complexities in the manufacturing sector and evolution of services and also due to the fast pace of changes in the manufacturing and services landscapes, research & development projects have to be made an integral part of the standardization process. The idea is that in principle no standard should be developed without intensive and insightful research work, which is not confined only to the review of the existing literature and focus group discussions on the subject chosen for standardization, but also covers the detailed field level study of the existing processes and practices in product manufacturing and service delivery. This requires a large network of domain area experts to carry out the research & development work. The existing network encompasses only a small segment of experts, who are either associated with technical committees as members or belong to some R&D organizations. The Memorandum of Understanding with the premier educational institutions imparting technical and professional education opens the window to the opportunities to expand this network substantially by utilizing the intellectual capital that resides with the faculty and the research scholars in these institutions. This association is conceived not only as a way to promote research & development work necessary for standards formulation but also to enrich the research ecosystem in these educational institutions.

2 OBJECTIVES

Objectives of this Scheme are to:

2.1 support and commission research & development projects to generate knowledge, empirical data and insights that would help in formulating new standards and updating & upgrading the existing Indian standards;

2.2 expand the network of domain area experts to carryout research & development projects in the areas related to standardization and conformity assessment; and

2.3 enrich the research ecosystem in the educational institutions imparting technical and professional education.

3 RESEARCH & DEVELOPMENT PROJECTS

3.1 Research & development projects under these guidelines are described as follows:

A project aimed at comprehensive, in depth and incisive study of a product, process or service or all taken together in respect of a subject under standardization, encompassing literature review, analysis of the data from secondary sources, collection and analysis of data from primary sources and stakeholder consultations.

3.2 The duration of a project shall not exceed six months counted from the date of the award of the project to acceptance of the final report by the Sectional Committee concerned, provided that the Sectional Committee must not take more than one month to give its decision on the final report. Further provided that the time taken by the Sectional Committee for giving its decision shall not be counted. The Sectional Committee may extend the duration but for not more than 2 months in special circumstances, the reasons for which shall be recorded in the minutes of meeting of the Sectional Committee.

3.3 The upper limit for expenditure for a project shall be Rs 10 lakhs (including taxes) only.

3.4 BIS will publish a list of research & development projects along with Terms of Reference (ToR) on Standardization portal or any other suitable digital platform.

3.5 If any organization or an expert on behalf of an institute wants to propose a research & development project on any new and emerging area in which they have expertise, they can do so through the same platform for the consideration of the Sectional Committee.

4 TERMS OF REFERENCE (ToR)

4.1 The ToR of Research& development project shall be prepared by the Sectional Committee concerned, and shall contain:

a) Title, background and objectives of the study;
b) Expected research methodology (brief information, for example, survey, testing, industry visits, etc.);
c) Scope of study;
d) Outline of the tasks and final deliverables expected from the Proposers;
e) Methods of review, schedule for submitting the 1st draft report and project completion report;
f) Any support or inputs to be provided to the Proposer; and
g) Maximum duration of project and timelines for submission of proposal.

4.2 While preparing the Terms of Reference (ToR) the sectional committee may consider the following points as a research & development project may include one or mix of the following:

a) Secondary research based on internet or published information including authentic data sources;
b) Survey based research (including industry visits) to ascertain prevailing market conditions and practices, standards in use, industry and consumer preferences, availability of infrastructure, technical capabilities, comparative trends, economic trends;
c) Ascertaining compliance to existing and proposed standards through testing, review of past test reports, other validation and verification checks; and
d) Basic and innovative research to establish normative criteria. Criteria may include performance, health, safety, environmental impact.

5 APPROVAL OF COMISSIONING OF THE RESEARCH AND DEVELOPMENT PROJECTS

5.1 There shall be a Review Committee for approving the projects recommended by the Sectional Committee. The composition of Review Committee shall be as follows:

DDG (SCMD)	: Chairperson
DDG (Standardization) concerned	: Member
DDG (Certification)	: Member
DDG (Labs)	: Member
Officer in-charge for research works in SCMD	: Member Secretary

5.2 The Head of Technical Department concerned and Member Secretary of the Sectional Committee shall apprise the review committee about the project and explain the rationale behind the proposed research & development project.

6 ELIGIBILITY CRITERIA

6.1 The following shall be eligible for carrying out research & development projects under the Scheme:

a) Academic institutions & universities having MoU with BIS and faculties and research scholars thereof;
b) Member(s) of Technical Committees of BIS.

6.2 Faculties and research scholars shall submit proposals through their institute. Members of technical committees belonging to any association/organization shall submit the proposals through their association/organization. Members of technical committees in personal capacity can submit their proposals directly to BIS, however if carrying out a research & development project requires collaboration with any institution/organization, concurrence of the same shall also be submitted.

7 PROCEDURE FOR APPLICATION

7.1 Submission of Proposal

7.1.1 Applications for undertaking research & development projects shall be submitted in the manner prescribed by the Bureau and within the prescribed timelines,

7.1.2 Proposer(s) shall submit their proposal in a "single stage - two envelope bid system" consisting of separately sealed "Technical and Financial proposals". The Technical Proposal shall be submitted as per format prescribed in Annex A and the Financial Proposal shall be submitted in the format prescribed as per Annex B, clearly specifying expected expenditure against each element such as manpower, equipment (shall not include computer hardware and software), travelling, testing, consumables, stationery, overheads, etc.

7.1.3 There shall be maximum one proposal from one institute on a given subject.

7.1.4 No contractual obligation whatsoever shall arise until a formal agreement is signed and executed between the Bureau and the Proposer.

7.2 The proposals shall inter-alia consist of the following:

7.2.1 In respect of the research & development projects put up by the Bureau:

a) Details of the Project team along with the organization/institution associated with;
b) The CV of the Project leader and expert/expert(s) to be associated with the project and a letter from organization authorizing Project Leader and expert/expert(s) to undertake the research as proposed.
c) A write up on the understanding of the scope and objectives of the project.
d) Methodology (sampling size, if applicable) to be adopted for the proposed study with a clear road map and time plan for completion of the project;
e) Stage wise timelines for completion of the project.

7.2.2 In respect of research & development projects proposed by any expert/organization:

a) Details of the Project team along with the organization/institution associated with;
b) The CV of the Project leader and expert/expert(s) to be associated with the projects and a letter from organization authorizing Project Leader and expert/expert(s) to undertake the study as proposed.
c) Objective that will be achieved and scope of the project clearly highlighting the need of such study and what would be the final deliverable;
d) Methodology (sampling size if applicable) to be adopted for the proposed study with a clear road map and time plan for completion of the project;
e) Details of infrastructure facilities available for the project, in the institution and additional facilities required (if any) for carrying out research.
f) Stage wise timelines for the completion of the project

7.3 The Head of the concerned institution while forwarding the application and nominating the project leader shall certify that:

a) the core facilities (land, buildings, laboratory, manpower and other infrastructure etc.) are available and will be provided to the Project Leader to work on the proposed project,
b) the organization will discharge all its obligations, particularly in respect of management of the financial assistance given, and
c) no other funding is being received/sought for the project proposed to be sanctioned by BIS.

8 PROCEDURE FOR APPROVAL WITHIN BIS

8.1 There shall be a Research Evaluation Committee (REC) to evaluate the proposals received, the composition of which shall be as follows:

DDG (PRT)	: Chairperson
Head (CMD) concerned	: Member
Head (LPPD)	: Member
Head of the Technical Department concerned	: Member
Director Finance	: Member
Two Experts from the Sectional Committee concerned	: Members
Head (SCMD)	: Member Secretary

*The experts shall be nominated by the Sectional Committee and the nominated members shall give a declaration to the effect that there is no conflict of interest with respect to the project.

8.2 The evaluation and selection will be as per Quality and Cost Based Selection (QCBS) method (Rule 192, GFR 2017) which is explained in Annex C.

8.3 The criteria for evaluation of technical proposal shall be as under:

Sl No.	**Criteria**	**Max. Marks**	**Score by REC**
1	Profile of key individual/individuals to be associated with the research project	**10**	
2	Experience of the individual/organisation in conducting research projects in the relevant discipline	**20**	
3	Understanding of Scope, Objectives and deliverables	**15**	
4	Methodology	**30**	

5	Work plan/Execution strategy	**15**	
6	Chapterisation, contents and lay out of the proposed report	**10**	
	TOTAL	**100**	

Note: REC may call for a presentation by the proposers if deemed necessary.

8.4 The minimum qualifying marks shall be 70. All the proposals with marks below 70 shall be considered rejected.

8.5 REC may refer back, advise changes for reconsideration or reject any proposal.

8.6 REC shall open the financial proposals (bids) within 7 days from completion of technical evaluation.

8.7 A final score sheet of all the proposers shall be made as detailed in Annex C and the proposer getting the highest combined score shall be selected for awarding the project.

8.8 The member secretary (REC) shall send the selected proposals to DG/DDG Standardization concerned, as per their delegated powers, for consideration and approval for sanction of the project.

8.9 After the approval of project, the member secretary (REC) shall inform the concerned technical department and the proposer regarding the decision.

8.10 After the sanction of fund is approved, the draft agreement (prepared in line with model agreement given at Annex D, to be modified on case-to-case basis) shall also be prepared by the Member Secretary (Sectional Committee), clearly highlighting the payment term. The Head (Technical Department) shall sign the agreement on behalf of BIS in all cases.

8.11 In case the proposer to whom the project is awarded declines to take up the project, the Research project shall be awarded to the proposer getting the next highest combined score among the qualified proposers.

9 SIGNING OF AGREEMENT AND ISSUING OF SANCTION LETTER

9.1 After receipt of duly signed agreement from the proposer and after the receipt of the approval of competent authority, a sanction letter shall be issued by the concerned Head (Technical Department) to the organization/individual member. The project would be considered to have commenced from the date the sanction letter is issued.

10 FUNDING

10.1 The mode of payment for Research & development projects shall be as follows:

a) First instalment up to a maximum of 30 percent of the total approved project cost would be released after approval of the project.
b) Second instalment to the extent of 50 percent of the approved estimated cost would be released on the submission of progress report along with the report on utilization of the 75 percent of the fund and acceptance of the same by the Sectional Committee.
c) The balance amount shall be released after submission of the final project report along with utilization certificate for the fund released and its acceptance by the Sectional Committee.

10.2 Release of each instalment is subject to satisfactory progress, required stage - wise deliverables and submission of the Utilization Certificate (UC) as per Form GFR12-A of GFR 2017 along with the statement of expenditure (SoE) issued by the Competent Authority.

11 PROGRESS REPORT AND MONITORING OF PROJECT

11.1 The relevant Sectional Committees of BIS will monitor the progress of project to ensure that the project is progressing as per the planned arrangement. However, member secretary of the concerned Sectional Committee under overall coordination of HoD would be the controlling/link officer for Research & Development projects and would constantly monitor the progress of the project every 30-45 days. Any delay in implementation of project should be duly justified by the Project leader and shall be put up to Research Evaluation Committee (REC) for approval.

11.2 The Sectional Committee shall review and give its acceptance of the progress reports submitted, within 3 weeks.

12 SUBMISSION OF FINAL PROJECT REPORT (FPR)

12.1 The FPR must be detailed and should include information about:

a) the original objective(s) of the project,
b) how far these objective(s) have been achieved, and
c) how the results will benefit the development of the national standard(s) and
d) a copy of final working draft of the concerned standard(s) (wherever applicable)
e) include clear inferences, recommendations regarding their use in the proposed standards,
f) all references used, raw data of surveys, sampling, testing and experiments,
g) undertaking that all the information presented is authentic.

12.2 FPR received in BIS would be put up to the concerned Sectional Committee, which will take necessary action for preparation/revision of standard appropriately. The Project leader shall assist in the disposal of comments received on the research project, draft standard and for the preparation of the finalized draft, as may be desired by the Sectional Committee.

12.3 The proposer shall submit the Project Completion Report (PCR), within one month of completion of project along with the Utilization Certificate of the fund released as per Form GFR 12-A of GFR 2017 and the statement of expenditure (issued by the Competent Authority -in case of Govt. organization / Charted Accountant in case of private organization).

13 RESULTS OF RESEARCH & DEVELOPMENT

13.1 Project Leader(s) would be encouraged to publish the results of research & development. While doing so, acknowledgement to the effect that financial assistance was received from BIS should be made in the research paper(s) published. BIS should be acknowledged in similar type of other published work/press reports.

13.2 One re-print of each research paper(s) published as a result of the work done under the BIS funds shall be sent to BIS as and when published.

14 INTELLECTUAL PROPERTY RIGHTS

14.1 Ownership of any intellectual property, including but not limited to confidential information, know-how, patents, copyrights, design rights, rights relating to computer software, and any other industrial or intellectual property rights, developed solely by Proposer shall be vested with that Party.

14.2 Ownership of any intellectual property, including but not limited to confidential information, know-how, patents, copyrights, design rights, rights relating to computer software, and any other industrial or intellectual property rights, developed solely by the Bureau shall be vested with that Party.

14.3 The Intellectual Property arising out as an outcome of research project undertaken under these guidelines shall be vested with Bureau.

15 OPERATION OF FUNDS

15.1 The utilization certificate of the funds received in previous instalment (if any) to BIS should be annexed with the Statement of all equipment, books, etc purchased out of the funds certified by the Head of the organization. The name, description of the equipment, cost in rupees, date of purchase, and the name of the supplier to be given in the list. The main purpose/function of the equipment may also be mentioned against each item.

15.2 Any unspent balance lying with the organization should be refunded to BIS after the finalization of the draft immediately, by means of demand draft or online transfer.

15.3 The Head of the concerned standardization department of BIS shall ensure that the project leader submits the utilization certificate in the manner prescribed in Form GFR 12-A of GFR 2017.

15.4 Head of the Standardization department shall also ensure that the operation of funds is monitored strictly as specified in Annex E. Further the Project Leader is also fully aware and shall adhere to the obligations of his/her as given in this procedure.

16 OTHER REQUIREMENTS

16.1 Organizations receiving financial assistance for research & development projects from BIS would have to maintain separate accounts for each research project.

16.2 In the event of a Project Leader's absence from his normal place of duty for two months at a stretch, the Head of the organization would need to immediately nominate an Alternate Project Leader(s) to supervise the implementation of the project and such a name has to be approved in advance by BIS. In any event, a Project Leader shall give prior notice to BIS of his intention to stay away from the project.

16.3 Items of equipment, etc should be purchased on the basis of the established rules and procedures of the entity/organization.

16.4 Stock register of all equipment, books, etc purchased out of the funds shall be maintained.

16.5 Any capital-intensive equipment/devices purchased using financial assistance from BIS for research & development projects shall be allowed to be retained by the proposer for their research activity etc.

16.6 The organization shall have to ensure that expenditure with respect to TA/DA are made only as per their own norms but under no circumstances the executive/business class air travel or stay in a five-star hotel is made. The overhead expenses should not be more than 20 percent of the cost of the project.

16.7 The Project Leader must ensure that the concerned organization's newsletter would carry information on the activities and accomplishments of the various projects funded by the BIS.

17 TERMINATION OF PROJECT:

The research & development project can be terminated in case of any of the following:

a) the approval of research & development project may be treated as withdrawn, if the sanctioned research & development project does not commence within one month from the date of receipt of the sanction letter, unless otherwise authorized by BIS;

b) A Proposer may request for the withdrawal of a research & development project even after commencement of the project. In such case the entire fund given till that date shall be refunded to the Bureau; and

c) if the Proposer fails to submit Progress report/Completed Project report within the prescribed timelines.

The REC shall take decision on all cases of termination.

18 RESOLUTION OF DISPUTES

Dispute Resolution: In case of any dispute that cannot be resolved amicably, it shall be referred to Sole Arbitrator appointed by the Director General of the Bureau of Indian standards, whose decision shall be final and binding upon both the parties. The provisions of the Arbitration and Conciliation Act, 1996, as amended from time to time, shall be applicable.

Annex 6
(*Item* 6.1)

TERMS OF REFERENCE FOR THE R&D PROJECTS

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

1. Title of the Project: Study of constructional, performance and safety requirements for School Bags.

2. Background

2.1 A school bag is a type of bag used by students to carry books, notebooks, stationery, and other school supplies. School bags come in various sizes, styles, and designs to accommodate different needs and preferences. They typically feature multiple compartments and pockets for organizing items. When choosing a school bag, factors such as durability, comfort, and capacity are important considerations.

2.2 Backpack-type school bags are considered to be more comfortable and convenient to handle. A variety of materials are used in school bags for outer fabric, padding, mesh fabric for the bottle compartment, and piping materials. Considering all these requirements, it becomes essential to revise the existing Indian standard, IS 10228:1982, 'Guidelines for School Bags', for inclusion of all the major varieties of school bags along with their performance requirements in the current market scenario. This comprehensive revision aims to enhance the standard's relevance in today's context.

2.3 The outcome of this R&D project will serve as the basis for revision of IS 10228:1982, 'Guidelines for School Bags' to incorporate additional varieties with more comprehensive constructional and performance requirements.

3. Objective

The objective of the project is to collect technical data for constructional parameters, performance, and safety requirements for school bags based on a literature review/desktop study, industry visit, testing results of the samples, and feedback from the users.

4. Scope

a) **Literature survey**
Undertake study and analyse the existing literature, which includes but is not restricted to the following:

i) International standards and regulations,
ii) Journals and research papers,
iii) Standard operating procedures (SOPs)/guidelines of the Ministry/regulator/users,

iv) Studies/research conducted by any organization,
v) Any other relevant published information.

b) **Manufacturing Facility and Testing Infrastructure**: - Collection of the database for manufacturers (small, medium, and large), testing infrastructure and users in the country.

c) **Study of Import – Export data-** Analysis of data for the types of standards and regulations being followed by domestic and foreign manufacturers, comparative analysis of these standards and regulations.

d) **Visits to Manufacturing Facilities:** Visit at least two manufacturing facilities for each category (small, medium, and large) and collect information on the following aspect:

i) Types of raw materials being used
ii) Manufacturing process
iii) In-process controls being exercised during manufacturing
iv) Varieties being manufactured
v) Standards being followed
vi) Testing methods being used
vii) Testing infrastructure available
viii) Post manufacturing quality/in-house data for safety, performance and constructional parameter for all the varieties being manufactured
ix) Sampling plan being followed
x) Marking and labelling of the product
xi) Packaging practices being followed
xii) Sustainability practices [sustainable raw material, energy efficient processes and methodologies, renewable energy sources, 3Rs (Reduce, Reuse and Recycle), waste management and disposal mechanisms]
xiii) Focused group discussions with teams involved in production, testing, and R&D to address quality issues, discuss challenges faced, and gather suggestions for improvement

The feedback from other manufacturers (where a visit is not carried out) shall be collected by circulating a suitable questionnaire covering the above information through email or any other digital means.

e) Undertake 2 visits to users and 2 visits to testing labs (one govt and one private NABL accredited lab) to collect information including but not restricted to the following: -

User

i) Standards and regulations being followed
ii) Compliance mechanism being followed (test certificate from supplier, third party testing)

iii) Installation methods/guidelines followed
iv) Focused group discussion on quality issues, challenges being faced and suggestions if any.

Lab

i) Standards and regulation being followed
ii) Testing methods being followed
iii) Testing infrastructure
iv) Focused group discussion on testing related issues, challenges being faced and suggestion

The feedback from users and labs (govt and private NABL accredited) where visit is not carried out shall be obtained through suitable questionnaire covering above information.

f) **Collection of samples and independent testing:** Collection of 2 samples from each from large, medium, and small-scale industries of each variety of school bags and carry out testing from 2 NABL accredited lab (1 Govt Lab and 1 Private Lab) for parameters like but not restricted to

- Areal density (GSM), breaking and tear strength of fabric, Dimensions of compartments, shoulder strap, top handle, adjustable belt, water bottle pocket along with material specifications and thickness of padded foam.
- Attachment strength of top handle, back strap, adjustable belt, seam strength, sewing thread types, sewing thread breaking strength, fatigue resistance of zip minimum cycles, lateral strength of slide fastner (zip), security of puller attachment of zip.
- Chemical limit requirements like formaldehyde, pH, aromatic amines from azo dyes, phthalates, etc.

g) Prepare a comprehensive project report incorporating all the above information.

5. Expected Deliverables

a) Final Analytical report, in hard copy format, covering all aspects mentioned in scope

b) Questionnaires, discussion and visit reports, test reports, to be appended with the final analytical report

6. Research Methodology: -

a) Collect and analyze the data/information as specified in the scope [4 (a), (b), and (c)].
b) Visit manufacturers, users, and labs and collect data/information as specified in the scope [4 (d) and (e)].
c) Collect and test the samples as specified in the scope 4 (f).
d) Analysis of the data/information and preparation of a comprehensive project report.

7. Expected Deliverables: -

a) A comprehensive report in soft/hard form covering all the aspects detailed in the scope of the R&D project.
b) Questionnaire feedback, testing report, focused group discussion report, other relevant documents and information shall be appended to the project report.

8. Requirement for the CVs: -

Graduate in textile technology or textile engineering or textiles chemistry or fibre science and technology or manmade fibre technology and textile technology.

9. Timeline and Method of progress Review: -

The duration of the project is **120 days** from the date of its award. The stagewise indicative timelines are as follows:

Indicative Time line	Method of progress
0 to 20 days	Literature review, desktop study, collection of data and information Note — The sampling plan for visit and collection of samples shall be discussed and finalized with nodal officer after literature survey and desktop research.
21 to 60 days	Visit to manufacturer, user, testing lab and collection of samples
60 to 100 days	Testing of samples (except long duration test with testing time more than 30 days) Preparation and submission of first draft report
100 to 120 days	Submission of the final project report

10. Support BIS will provide: -

a) All the relevant Indian Standards/ISO Standards or any other standards required during the project will be provided by BIS.
b) Facilitate/introduction of the project leader/organization to relevant Industry and industry association, testing lab, institute, academia, user, regulator/ministries.
c) Facilitate testing of samples in BIS Lab/BIS Recognized Lab.

11. Nodal Point

In case any queries/clarification, Shri Gourav Mishra, Sc-B & Member Secretary, TXD 20 may be contacted on txd@bis.gov.in.