भारतीय मानक

Indian Standard

IS 18930 : 2024

वस्त्रादि — पॉलिएस्टर रेशे से भरे तकिए — विशिष्टि

Textiles — Polyester Fibre Filled Pillow — Specification

ICS 59.060.20, 97.160

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October 2024 **Price Group 7**

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

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Made-up Textiles (Including Ready-Made Garments) Sectional Committee had been approved by the Textiles Division Council.

A pillow functions primarily as a means of support for the head, typically utilized during sleep, or for the body support 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 often have a conventional shape that is either rectangular or square.

This standard covers specifications for filling fibres and casing fabric of the pillow along with specifications for outer protective cover. Attempts have been made to synchronize the requirements of the standard with the needs of organized consumers, including railways and the hospitality industry. In preparation of this standard considerable assistance has been derived from Northern Railway's requirements for pillow specifications.

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

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

TEXTILES — POLYESTER FIBRE FILLED PILLOW — SPECIFICATION

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 edition of these standards.

3 TERMINOLOGY

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

3.1 Casing/Inner Primary Cover — A textile fabric covering that encloses the filled fibre material.

3.2 Filler — The fibres used to be uniformly packed in the casing.

3.3 Pillow — An assembly composed of filler material enclosed within a casing.

3.4 Outer Protective Cover — A sewn fabric cover that contains a pillow and is easily removable for washing purposes.

3.5 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.

4 MANUFACTURE

4.1 A pillow shall consist of a casing made of either one piece of fabric or two equally sized pieces of fabric to encase a 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.

4.2 The filler material used shall be virgin 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 done for the other sides of the casing. All the sides may be secured with piping as agreed to between the buyer and the seller.

4.3 OUTER PROTECTIVE COVER

The outer protective cover shall be laminated from the inside using polyurethane film (TPU) having a minimum thickness of 20 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. The base fabric of outer protective cover shall be of 100 percent polyester fibre and nominal GSM of base fabric may be 90 g/m^2.

5 WORKMANSHIP AND FINISH

The pillow and the outer protective cover shall be made of uniform shape, finish, and workmanship throughout;

a) Free from defects that could affect their appearance and/or their serviceability;

b) Made such that all seams are smooth and sewing is free from pleats and puckers, sufficiently extensible to prevent seam-cracking;

c) Made such that all ends of sewing have been trimmed and loose threads removed;

d) Capable of being cleaned in accordance with the care instructions without giving rise to any defect, such as puckering, lumpiness, tears etc; and

e) Delivered in a clean and commercially dry condition.

6 REQUIREMENTS

6.1 Casing

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

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

Table 1 Casing Fabric General Requirements

(*Clause* 6.1)

Sl No.	Type	Fiber Type	Count of Yarn (for Guidance only)		Ends/cm	Picks/cm	Mass g/m^2, *Min*
			Warp	Weft			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
i)	1	100 percent micro polyester	80 D	150 D	49	27	95
ii)	2	100 percent polyester	80 D	40s	51	26	90
iii)	3	100 percent cotton	40s	40s	55	34	135
iv)	4	65 percent polyester and 35 percent cotton	40s	40s	55	34	135
v)	Tolerance (*see* NOTE)	± 3 percent	± 5 percent	± 5 percent	± 4	± 3	
vi)	Method of Test, Ref to	IS 667	IS 3442	IS 3442	IS 1963	IS 1963	IS 1964

NOTE — Tolerance is specified for Type 4 casing fabric.

Table 2 Casing Fabric Performance Requirement

(*Clause* 6.1)

Sl No.	Characteristic		Requirements			Method of Test, Ref to
		Type 1	Type 2	Type 3	Type 4	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
i)	Breaking load, kgf, *Min* (5 cm x 20 cm): a) Warp b) Weft	 40 40	 35 25	 15 15	 20 15	IS 1969 (Part 1)
ii)	Tear Strength, kgf, *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 Type A (6N)
iv)	*p*H value of aqueous extract	6.0 to 8.0				IS 1390
v)	Colour fastness to: (only for dyed fabric)					
	a) Light			4 or better		IS/ISO 105-B02
	b) Washing: 1) Colour change 2) Staining			4 or better		IS/ISO 105-C06

Table 2 *Concluded*

Sl No.	Characteristic		Requirements			Method of Test, Ref to
		Type 1	Type 2	Type 3	Type 4	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
	c) Rubbing: 1) Dry 2) Wet			4 or better		IS/ISO 105-C06
	d) Perspiration (acidic and alkaline): 1) Color change 2) Staining			4 or better		IS/ISO 105-E04
vi)	Seam strength, N, *Min*	60	60	60	60	IS/ISO 13935-1
vii)	Pilling resistance (1 000 revolution)	3 or better	3 or better	3 or better	3 or better	IS 10971 (Part 2)

Table 3 Outer Protective Cover Requirements

(*Clause* 6.2)

Sl No.	Characteristic	Requirement	Method of Test, Ref to
(1)	(2)	(3)	(4)
i)	Areal Density (base fabric + lamination), g/m^2, *Min*	135	IS 1964
ii)	Hydrostatic pressure head test, rate 60cm/min	No penetration upto 300 cm H_2O	IS 391
iii)	Pilling resistance (1 000 revolution)	4 or better	IS 10971 (Part 2)
iv)	*p*H of aqueous extract	6.0 to 8.0	IS 1390
v)	Colour fastness to saliva and perspiration (*see* Note 1)	Resistant to saliva and perspiration	IS 15626
vi)	Dimensional change (after 3 washes), percent: a) Warp b) Weft	+ 3 to - 3	IS 15370/ISO 6330 Type A (6N)
vii)	General appearance after washing (*see* Note 2)	No seam opening or broken stitches, no delamination and breakage of TPU lamination	Visual

NOTES

1 Colour fastness to saliva and perspiration is applicable for dyed fabric only.

2 For appearance after washing sample used in dimensional change after 3 washes to be evaluated visually.

6.3 Filler

The filling fibre shall be virgin hollow conjugate polyester fibre. The nominal fibre denier of filler fibre may be either 15, 7, 4 or 3 as specified in Table 4. The filler fibre shall be identified by the methods specified in IS 667.

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

6.4 Casing 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.

6.4.1 The compressive set of the pillow when tested as per Annex C shall be maximum 10 percent.

6.5 Requirements for Hemming

6.5.1 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 overlap flap shall be 140 mm (*see* Fig. 1).

6.5.2 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.

6.5.3 *Sewing Thread*

Unless otherwise specified, a nominal 30 tex polyester 3 ply sewing thread with a minimum tensile strength of 10 N (*see* IS 4910 Part 3) 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.

6.5.4 *Sewing and Stitches*

The sewing shall be of even tension and the loose ends shall be finished securely and neatly. The minimum number of stitches shall be 4 per cm for casing and pillow protective cover, when tested using a needle and counting glass.

6.5.5 *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.

6.6 The Pillow after washing and drying as per the Annex D shall not have accumulation of fibres at one place, no seam opening, broken stitches and significant migration of filler fibres to the outer surface of casing fabric when visually evaluated from outside.

NOTE — Any other washing and drying procedure shall be as agreed to between buyer and the seller.

7 SEALED SAMPLE

7.1 If, in order to illustrate indeterminable characteristics such as general appearance, lustre, feel and shade, a sample has been agreed upon and sealed, the supply shall be it conformity with the sample in such respects.

7.1.1 The custody of the sealed sample shall be a matter of prior agreement between the buyer and the seller.

Table 4 Requirements of Polyester Filler Fibre

(*Clause* 6.3)

Sl No.	Characteristics	Requirements				Method of Test, Ref to
		3 Denier	4 Denier	7 Denier	15 Denier	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
i)	Fiber linear density (Denier)	3 ± 0.5	4.0 ± 0.5	7.0 ± 1.0	15.0 ± 1.0	IS 10014 (Part 2)
ii)	CPCM, cm	1.7 ± 0.3	1.6 ± 0.3	1.6 ± 0.3	0.9 ± 1.5	IS 17263 Annex C
iii)	Hollowness, percent *Min*	14	14	14	14	IS 17263 Annex B
iv)	L Colour value, *Min*, (Optional)	88	88	88	88	IS 17263 Annex J
v)	Whiteness index (WI), *Min* (optional)	75	75	75	75	IS 17263 Annex J
vi)	Finish type	Siliconized	Siliconized	Siliconized	Siliconized	IS 17263 Annex G

Table 5 Unfilled Casing Dimensions and Mass of Fill Fibres

(*Clause* 6.4)

Sl No.	Pillow Size	Pillow Dimensions, cm		Mass of Fill Fibers in g	
		Length	Width	3 to 7 D	15 D
(1)	(2)	(3)	(4)	(5)	(6)
i)	1	60	40	500	450
ii)	2	55	40	450	420
iii)	3	66	51	720	640
iv)	4	76	51	830	730
v)	5	92	51	1 000	910
vi)	6	50	36	400	350
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 subjected to conforming in the compression set testing. The tolerance specified in Table 5 shall be applicable on the declared dimensions and mass of fill fibres.

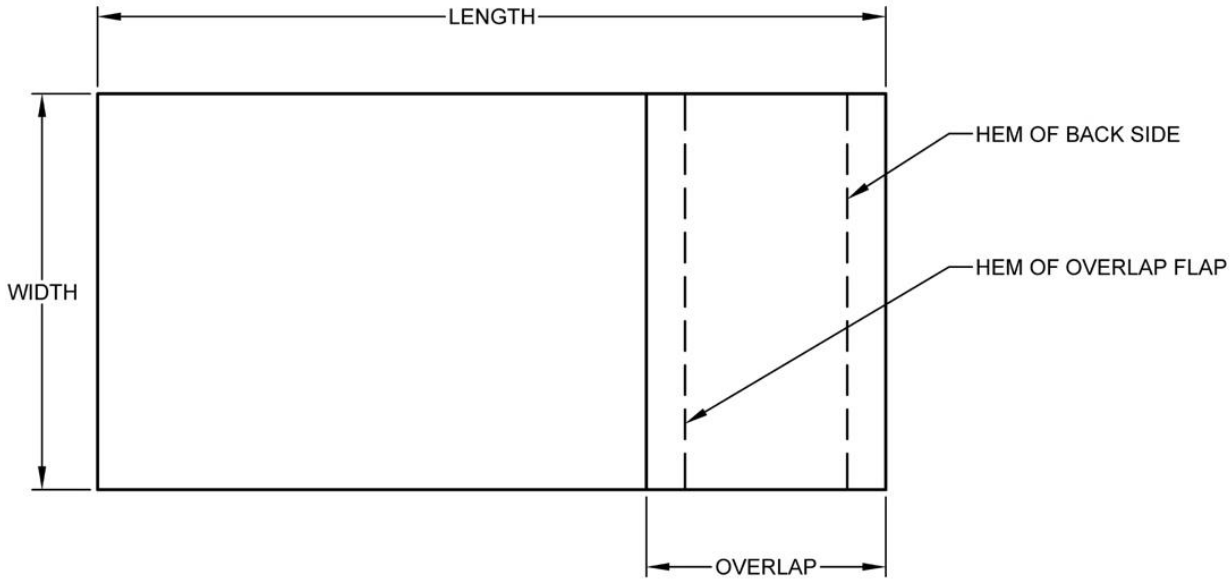

FIG. 1 SCHEMATIC DIAGRAM OF OUTER PROTECTIVE COVER

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 corners) 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, drycleaning, 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 minimum thickness of 40 microns. A suitable number of such pillows shall then be packed in a suitable bulk container.

10 SAMPLING

10.1 Lot

The quantity of the pillows of the same size, filling fibre and same type of casing fabric delivered to a buyer against one dispatch note shall constitute a lot. Also, quantity of the outer protective cover of the same size 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 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:

10.4.1 The number of pieces to be selected for number of stitches shall be in accordance with col (3) of Table 6.

For all other tests such as blend composition, breaking load, tear strength, colour fastness, GSM, *p*H value, pilling resistance, dimensional stability, count and strength of sewing thread, seam strength, filling mass of fibre, compressive set, 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 non-conforming pieces is less than or equal to the acceptance number given in col (5) of Table 6 for sub sample size.

Table 6 Sample Size for Pillow and Outer Protective Cover

(*Clauses* 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

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-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 (*first revision*)
IS 391 : 2020/ ISO 811 : 2018	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/ ISO 3071 : 2020	Textiles — Determination of *p*H 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/ISO 13934-1 : 2013	Textiles — Tensile properties of fabrics: Part 1 Determination of maximum force and elongation at maximum force using the strip method (*fourth revision*)
IS 3442 : 2023	Textiles — Method for determination of crimp and linear density of yarn removed from fabric (*second revision*)
IS 4905 : 2015/ ISO 24153 : 2009	Random sampling and randomization procedures (*first revision*)
IS 4910 (Part 3) : 2023	Tyre yarns cords and tyre cord fabrics made from man-made fibres — Methods of test: Part 3 Load and elongation characteristics (*second revision*)
IS 6489 (Part 1) : 2011/ISO 13937- 1 : 2000	Textiles — Tear properties of fabrics: Part 1 Determination of tear force using ballistic pendulum method (Elmendorf) (*second 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/ISO 12945- 2 : 2020	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/ ISO 3758 : 2012	Textiles — Care labelling code using symbols (*second revision*)
IS 15370 : 2023/ ISO 6330 : 2021	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 17263 : 2022	Textiles — Polyester staples fibres — Specification (*first revision*)

ANNEX B

(*Table 5*)

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

B-1 UNFILLED CASING DIMENSIONS

B-1.1 Open the pillow and take out the fill fibres from it completely. Lay the pillow 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 Measure the length and width of the pillow cover correct to the nearest 1 mm with a steel measuring scale, placed at right angles to the edges at two different places in each direction. Calculate average values of length and width from the two readings in each direction.

NOTE — Length and width shall be measured from stitch line to stitch line only.

B-2 MASS OF FILL FIBRE IN THE PILLOW

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 Calculate average value of two pillow fill fibre mass readings.

ANNEX C

(*Clause* 6.4.1)

METHOD FOR DETEMINATION OF COMPRESSION SET

C-1 TEST SPECIMEN

The test piece shall consist of the entire pillow sample, excluding the outside protective cover.

C-2 APPARATUS

The compression testing apparatus shall be capable of applying a constant load and have a load measuring device of suitable capacity for measuring the load required to be applied. The essential parts of the testing apparatus are an adjustable/moveable top jaw with flat plate surface that can be moved vertically up or down and a fixed smooth flat plate surface, between the parallel faces of the top and bottom flat plates, the test piece is compressed.

C-3 PROCEDURE

C-3.1 Raise the upper plate to a height greater than the thickness of the specimen (pillow). Place the pillow sample horizontally on the lower platform/ plate, so the test sample is placed between the parallel plates. The dimensions of the plates shall be larger than the test piece. Sufficient care shall be taken to avoid displacement of the test piece.

C-3.2 To determine the initial thickness of the test sample, gradually lower the upper plate and apply 100 grams force load on the specimen to measure the initial thickness. that is, T_o. The readings will be displayed on the monitor of the UTM. Initial thickness is the distance between top and bottom plates at 100 grams force.

C-3.3 After recording the initial thickness of the sample (T_o) gradually lower the upper plate until the loading on the sample reaches 5 kgf, as determined by a suitable load measuring sensor. When the load reaches 5 kgf, maintain a steady load of 5 kgf on the test sample for a duration of 8 h.

C-3.4 After 8 h of applying a compressive force of 5 kgf, release the load from the test piece by lifting the top plate above the height of the test specimen, ensuring that it does not make contact with the pillow surface. Allow the test sample to recover for 30 min at ambient temperature. After a 30 min recovery period, measure the final thickness after recovery of the test sample (T_r) by lowering the top plate and applying 100 grams force load on the sample and measure the distance between top plate and lower plate same as **D-3.2**. Test two test specimens and take the average of the test results.

C-4 CALCULATION

Calculate the compression set using the following formula:

$$C_s = (T_o - T_r)/T_o \times 100$$

where

C_s = compression set expressed as percentage;

T_o = initial thickness of the test specimen; and

T_r = final thickness after recovery of the test specimen.

ANNEX D

(*Clause* 6.6)

METHOD OF TEST FOR EVALUATION OF PILLOW AFTER WASHING

D-1 APPARATUS

Wash tub of suitable capacity to keep pillow sample horizontally without folding.

D-2 TEST SPECIMEN

Pillow without outer protective cover constitutes as a test specimen.

D-3 PROCEDURE

D-3.1 If otherwise not specified in care instructions for pillow washing choose a washing temperature of 40 °C ± 3 °C. Add sufficient amount of water to completely dip the pillow at this temperature to the wash tub. Add suitable standard reference detergent 1 as specified in IS 15370 to wash tub. Agitate by hand to dissolve detergent. Add pillow specimen to water and gently squeeze to distribute detergent solution. Do not twist the pillow. Allow the pillow specimen to soak for 2 min. Gently squeeze pillow specimen in detergent solution for 1 min. Then repeat 2 min soak and 1 min squeeze in detergent solution. After that remove pillow from wash tub and gently squeeze to remove excess detergent solution. Do not twist or wring.

D-3.2 Empty and rinse wash tub. Add sufficient clean water for rinse to wash tub, if otherwise not specified in care instruction for pillow select rinse temperature of less than 30 °C to the wash tub Place pillow in rinse water and gently squeeze to distribute. Do not twist or wring. Allow the pillow specimen to soak for 2 min. Gently squeeze specimen in rinse water for 1 min. Do not twist or wring. Then repeat 2 min soak and 1 min squeeze in rinse water. Remove pillow from wash tub and gently squeeze to remove excess water. Do not twist or wring. Drying shall be done as per procedure C as specified in IS 15370.

D-4 EVALUATION

Place the test specimen flat on a clean surface and visually observe the surface for any broken stiches, holes, accumulation of fibres at one place and migration to outer surface of filler fibers. Turn the test specimen to the other side and observe the same as specified above.

ANNEX E

(*Foreword*)

COMMITTEE COMPOSITION

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

Organization	*Representative(s)*
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Apparel Export Promotion Council, Gurugram	DR SAURABH KUMAR SHRI SANJAY DUDEJA (*Alternate*)
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