IS 15853 (2009): Textiles - Woven suitings made of cotton man-made fibres/filaments and their blends [TXD 31: Man-Made Fibres, Cotton and their Products]

BLANK PAGE

IS 15853 : 2009
(Superseding IS 2150 : 1989,
IS 9517 : 1986 and IS 11248 : 1995)

भारतीय मानक

वस्त्रादि — सूती, मानव निर्मित रेशों व तन्तुओं एवं उनके मिश्रण से बने सूट के कपड़े — विशिष्टि

Indian Standard

TEXTILES — WOVEN SUITINGS MADE OF COTTON, MAN-MADE FIBRES/FILAMENTS AND THEIR BLENDS — SPECIFICATION

ICS 59.060.10; 59.080.30

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

January 2009

Price Group 3

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Man-Made Fibres, Cotton and Their Products Sectional Committee had been approved by the Textile Division Council.

Textiles, in recent years, have become fashion oriented and their constructional details vary with the taste of customer, appeal, serviceability, aesthetics, durability and end use requirements. It is, therefore, not possible to standardize textile products purely on the basis of their constructional details in order to meet the requirements of all customers. Instead, these need to be standardized on the basis of their performance characteristics in actual use with tolerances on the declared constructional parameters, such as count of yarn, threads per decimetre, blend composition, length, width, mass per square metre, etc, so as to cover all possible types of constructions of a product for a particular end use. This standard has been prepared keeping these facts in view and supersedes standards published earlier on the subject, that is, IS 2150 : 1989 "Fabrics for men's and boys' woven dress suit, sportswear, jacket, slack and trouser — Specification (*first revision*)", IS 9517 : 1986 'Specification for polyester blend suitings — Market varieties (*first revision*)' and IS 11248 : 1995 'Textiles — Polyester blend suitings for uniforms having minimum 67 percent polyester — Specification (*first revision*)'. Opportunity has also been taken to update various performance requirements of suitings made of man-made fibres/filaments and their blends and new performance requirements of Limited Flame Spread Index and Soil Release Efficiency have been incorporated.

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

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

AMENDMENT NO. 1 NOVEMBER 2012
TO
IS 15853 : 2009 TEXTILES — WOVEN SUITINGS MADE OF COTTON, MAN-MADE FIBRES/FILAMENTS AND THEIR BLENDS — SPECIFICATION

(*First cover page, Title*) — Substitute the following for the existing title:

'TEXTILES — POLYESTER BLENDED WOVEN SUITING FOR UNIFORMS'

(*Second cover page*, *FOREWORD, para* 2 *and* 3) — Substitute the following for the existing:

'Uniform fabrics are used to a large extent by military, navy, air force, paramilitary, security, police, postal, Indian railways, industrial and corporate personnel, etc, and must have certain minimum constructional parameters to meet the durability and functional requirements in addition to aesthetics and comfort properties. Polyester and viscose/cotton blended fabrics provide all such required properties. This standard has been formulated keeping these facts in view and supersedes IS 2150 : 1989 'Fabrics for men's and boys' woven dress suit, sportswear, jacket, slack and trouser – Specification (*first revision)',* IS 9517 : 1986 'Specification for polyester blend suitings — Market varieties (*first revision*)' and IS 11248 : 1995 'Textiles — Polyester blend suitings for uniforms having minimum 67 percent polyester – Specification (*first revision*)'. Opportunity has also been taken to update various performance requirements of woven suiting for uniforms and new performance requirements of limited flame spread index, soil release efficiency and anti-bacterial activity value have been incorporated.

The standard makes reference to Stain Release Replica which is available from AATCC, USA.

The Committee has reviewed the provisions of the following International Standard referred in this standard and has decided that it is acceptable for use in conjunction with this standard:

International Standard	*Title*
ISO 20743 : 2007	Textiles — Determination of antibacterial activity of antibacterial finished products

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

(*Page* 1*, Title*) — Substitute the following for the existing title:

'TEXTILES — POLYESTER BLENDED WOVEN SUITING FOR UNIFORMS'

(*Page* 1, *clause* 1) — Substitute the following for the existing:

'**1 SCOPE**

1.1 This standard specifies the requirements for woven polyester and viscose/cotton blended suiting for uniforms generally used by military, paramilitary, navy, air force, security, police, postal, industrial and corporate personnel, etc.

1.2 This standard does not specify general appearance, feel, shade etc, of the fabric.'

(*Page* 1, *clause* **3.1**, *sentence* 2) — Delete.

(*Page* 2, *clause* **3.2.1**, *sentence* 3) — Substitute the following for the existing:

'It shall also be heat set and fully shrunk.'

(*Page* 1, *Table* 1) — Substitute the following table for existing Table 1:

Price Group 4

Table 1 Requirements for Polyester Blended Woven Suiting
(*Clause* 4.1)

Sl No. (1)	Characteristic (2)	Requirement (3)	Method of Test, Ref to IS/Annex of this standard (4)
i)	Nominal count of warp and weft yarns(For guidance only)	20 tex × 2 (30 s/2)	IS 3442
ii)	Length, m	As agreed (No minus tolerance)	IS 1954
iii)	Overall width, cm	138 cm or as agreed ± 1 cm	IS 1954
iv)	Threads/dm:		IS 1963
	a) Warp	$260^{+5\%}_{-2.5\%}$	
	b) Weft	$190^{+5\%}_{-2.5\%}$	
v)	Mass, g/m^2	$190^{+5\%}_{-2.5\%}$	IS 1964
vi)	Fibres composition, percent:		IS 3416 (Part 1)
	a) Polyester	67 ± 3 units	
	b) Viscose/cotton	Remainder	
vii)	Breaking strength on 5 cm × 20 cm strip, N (kgf), *Min*:		IS 1969 (Part 1)
	a) Warpway	880 (89.7)	
	b) Weftway	640 (65.2)	
viii)	Tear strength, N (kgf), *Min*	25 (2.55)	IS 6489
ix)	Dimensional stability to dry heat at 150 ± 2° C, percent, *Max*:		IS 12170
	a) Warp way	1.0	
	b) Weft way	1.0	
x)	Soil release efficiency, *Min*:		Annex C
	a) Initial (Finished)	Stain release Grade 5	
	b) After 50 washes	Stain release Grade 5	
xi)	Crease recovery angle in dry state, degrees, *Min* (Initially and after three repeated washes)	240°	IS 4681
xii)	Pilling resistance, *Min* (After 5 h of test)	4	IS 10971 (Part 1)
xiii)	Dimensional change on washing, percent, *Max:*		Annex D
	a) Warpway	2	
	b) Weftway	2	
xiv)	*p*H Value of aqueous extract (Hot method)	6.0 - 8.0	IS 1390

Sl No. (1)	Characteristic (2)	Requirement (3)	Method of Test, Ref to IS/Annex of this standard (4)
xv)	Minimum colour fastness ratings to:		
	a) Light (change in colour)	5	IS 686 or IS 2454
	b) Washing: Test C (3):		IS/ISO 105-C10
	1) Change in colour	4	
	2) Staining of adjacent fabrics	3-4	
	c) Dry cleaning:		IS 4802
	1) Change in colour	4	
	2) Staining of solvent	4	
	d) Dry-heat at 150 ± 2° C (Change in colour)	4	IS 4636
	e) Perspiration (acidic and alkaline):		IS 971
	1) Change in colour	4	
	2) Staining of adjacent fabric	4	
	f) Rubbing :		IS 766
	1) Dry	4	
	2) Wet	3	
	g) Hot pressing at 150 ± 2° C for 15 s in dry state:		IS 689
	1) Change in colour	4	
	2) Staining of adjacent fabrics	4	

(*Page* 2, *clause* **4.2**) — Substitute the following for the existing:

'**4.2 Limited Flame Spread Requirement**

If agreed to between the buyer and the seller, the suiting shall meet the requirements of limited flame spread Index 2 as specified in IS 15742 and when tested in accordance with IS 15758 (Part 4) with the flame applied to the bottom edge of the specimen.'

(*Page* 2, *clause* **4.2**) — Insert the following new clauses after **4.2**:

'**4.3 Anti-Bacterial Activity Value**

If agreed to between the buyer and the seller, the suiting shall have anti-bacterial activity value (initially and after 30 washes) greater than 1 when tested by the absorption method prescribed in ISO 20743. The fabric shall be washed as per the procedure specified in **C-5.1**.

4.4 Sealed Sample

If in order to illustrate or specify the indeterminable characteristics, such as general appearance, luster, feel and shade of the suiting, a sample has been agreed upon and sealed, the supply shall be in conformity with the sample in such respect.

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

(*Page* 3, *Annex* A) — Substitute the following for the existing Annex A:

ANNEX A

(*Clause* 2)

LIST OF REFERRED INDIAN STANDARDS

IS No.	*Title*
105-C10 : 2006	Textiles — Tests for colour fastness: Part C10 colour fastness to washing with soap or soap and soda
686 : 1985	Methods for determination of colour fastness of textile materials to daylight (*first revision*)
689 : 1988	Methods for determination of colour fastness of textile materials to hot pressing (*first revision*)
766 : 1988	Method for determination of colour fastness of textile materials to rubbing (*first revision*)
971 : 1983	Method for determination of colour fastnes of textile materials to perspiration (*first revision*)
1390 : 1983	Methods for determination of *p*H value of aqueous extracts of textile materials (*first revision*)
1954 : 1990	Determination of length and width of woven fabrics — Methods (*second revision*)
1963 : 1981	Methods for determination of threads per unit length in woven fabrics (*second revision*)
1964 : 2001	Textiles — Methods for determination of mass per unit length and mass per area of fabrics (*second revision*)
1969 (Part 1) : 2009	Textiles —Tensile properties of fabrics -Determination of maximum force and elongation at maximum force: Part 1 Strip method (*third revision*)
2194 : 1963	Code for seaworthy packaging of man-made fibre fabrics
2195 : 1964	Code for inland packaging of man-made fibre fabrics and man-made fibre yarns
2454 : 1985	Methods for determination of colour fastness of textile materials to artificial light (Xenon lamp) (*first revision*)
3416 (Part 1) : 1988	Method for quantitative chemical analysis of binary mixture of polyester fibres with cotton or regenerated cellulose: Part 1 Sulphuric acid method (*second revision*)
3442 : 1980	Method for determination of crimp and count of yarn removed from fabrics (*first revision*)
4055 : 1966	Specification for maize (corn) oil
4636 : 1988	Method for determination of colour fastness of textile materials to dry-heat treatments (excluding pressing) (*first revision*)
4681 : 1981	Method for determination of recovery from creasing of textile fabrics by measuring the angle of recovery (*first revision*)
4802 : 1988	Method for determination of colour fastness of textile materials to dry-cleaning (*first revision*)
4905 : 1968	Methods for random sampling
6359 : 1971	Method for conditioning of textiles
6489 (Part 1) : 2011	Textiles — Tear properties of fabrics: Part 1 Determination of tear force using ballistic pendulum method (elmendorf) (*second revision*)
10099 : 1982	Methods for preparation, marking and measuring of fabric specimens and garments in tests for determination of dimensional change
10971 (Part 1) : 2011	Textiles — Determination of fabric propensity to surface fuzzing and to pilling: Part 1 Pilling box method (*first revision*)
12170 : 1987	Method for determination of dimensional stability of textile materials to dry heat treatments
14452 : 1997	Textiles — Care labelling code using symbols
15370 : 2005	Textiles — Domestic washing and drying procedures for textile testing
15742 : 2007	Textiles — Requirements for clothing made of limited flame spread materials and material assemblies affording protection against heat and flame — Specification
15758 (Part 4) : 2007	Textiles — Protective clothing: Part 4 Test method for limited flame spread

(*Page* 5, *Annex* B) — Insert Annex C and Annex D and renumber the existing 'ANNEX C' as 'ANNEX E':

ANNEX C

[*Table* 1, *Sl No.* (x)]

METHOD OF TEST FOR SOIL RELEASE: OILY STAIN RELEASE METHOD

C-1 PRINCIPLE

A stain is applied to a test specimen. An amount of the staining substance is forced into the fabric by using a specified weight. The stained fabric is then laundered in a prescribed manner and the residual stain rated on a scale from 5 to 1 by comparison with a stain release replica showing a graduated series of stains.

C-2 APPARATUS AND MATERIALS

C-2.1 White Blotting Paper

C-2.2 Corn oil (*See* IS 4055)

C-2.3 Glassine Paper or Equivalent

C-2.4 Timer

C-2.5 Weight, cylinder 6.4 cm diameter, 2.268 ± 0.045 kg (stainless is preferable).

C-2.6 Amber bottle, with medicine dropper.

C-2.7 Washer, automatic as specified in IS 15370.

C-2.8 Dryer, automatic as specified in IS 15370.

C-2.9 Granular commercial detergent, home wash as specified in IS 15370.

C-2.10 Ballast of (92 × 92) ± 3 cm hemmed pieces of bleached cotton sheeting (Ballast wash load Type 1) or 50 / 50 polyester / cotton bleached mercerized plain weave (Ballast wash load Type 3).

C-2.11 Lighting and Evaluation Area

C-2.12 Table with non-glare black top 61 × 92 cm and 89 ± 3 cm high

C-2.13 Stain Release Replica

C-2.14 Thermometer, 0 to 100°C, Least count - 1°C.

C-2.15 Balance or scale appropriate for the weights required having a least count of 0.01 g.

C-3 TEST SPECIMENS

Use two test specimens (38 x 38) ± 1 cm for each determination. Condition the test specimens for a minimum of 4 h at 27 ± 2°C and 65 ± 5 percent RH prior to application of stains.

C-4 STAINING PROCEDURE

C-4.1 Place the unstained specimen flat on a single thickness of white textile blotting paper on a smooth, horizontal surface.

C-4.2 Using the medicine dropper, place 5 drops (approximately 0.2 ml) of corn oil in the approximate centre of the test specimen.

C-4.3 Place a 7.6 × 7.6 cm of glassine paper over the stained area.

C-4.4 Place the weight (*see* **C-2.5**) on the glassine paper over the stained area.

C-4.5 Allow weight to sit undisturbed for 60 ± 5 s. Then removed the weight and discard the glassine sheet.

C-4.6 Do not allow stained test specimens to contact each other in a manner which would transfer stains. Wash within 20 ± 5 min after staining.

C-5 WASHING PROCEDURE

C-5.1 Subject the specimens to washing as per procedure 5A and reference detergent specified in **4.1.2** of IS 15370 and followed by drying as per **8.5** of IS 15370.

C-5.2 Remove specimens from dryer immediately on completion of the cycle and lay flat to prevent formation of wrinkles or creases which can affect the stain release rating. Rate residual stains within 4 h after drying.

C-6 EVALUATION

C-6.1 Mount the stain release replica on the mounting board, with the centre of the standard 114 ± 3 cm from the floor.

C-6.2 Place the test specimen flat with face up in the center of the non-glare black topped table with one edge of the table touching the mounting board. The fabric shall be rotated to be viewed from the direction which produces the lowest rating.

C-6.3 Viewing distance shall be 76 ± 3cm from the back mounting board, with the eye at 157 ± 15 cm from the floor. The rater should stand directly in front of the specimen. Varying the viewing angle either horizontally or vertically can affect grades obtained on the same fabrics.

C-6.4 Each rater shall independently compare the residual stain on the test specimen with the stains on the stain release replica and rate each test specimen to the nearest 0.5 grade as follows:

Grade 5 — Stain equivalent to Standard Stain 5
Grade 4 — Stain equivalent to Standard Stain 4
Grade 3 — Stain equivalent to Standard Stain 3
Grade 2 — Stain equivalent to Standard Stain 2
Grade 1 — Stain equivalent to Standard Stain 1

NOTE — Grade 5 represents the best stain removal and Grade 1 the poorest stain removal.

C-7 Report

C-7.1 Calculate the average of 4 grades for each fabric (2 judgments on each of 2 specimens), to nearest 0.1. This is the unit of measure for this test method.

C-7.2 Report whether the stain release replica or the 3 M stain release rating scale was used.

C-7.3 Report water hardness of the washing procedure in terms of parts per million (ppm).

C-7.4 Report the type ballast material used.

ANNEX D

[*Table* 1, *Sl No.* (xiii)]

METHOD OF TEST FOR DETERMINATION OF DIMENSIONAL CHANGE IN WASHING AND DRYING

D-1 PRINCIPLE

The specimen of known dimensions is conditioned in the standard atmosphere and subjected to the appropriate washing and drying procedures. After drying and conditioning, the specimen is re-measured and the changes in dimensions are calculated.

D-2 APPARATUS AND REAGENTS

Use apparatus and reagents as specified in IS 10099 and IS 15370.

D-3 ATMOSPHERIC CONDITIONS

The atmospheric conditions required for conditioning and testing are specified in IS 6359.

D-4 TEST SPECIMENS

D-4.1 The selection, dimensions, marking and measuring of test specimens are specified in IS 10099.

D-4.2 Two specimens from each sample should be taken.

D-5 PROCEDURE

D-5.1 Take two specimen and condition these as per IS 6359. Determine the original length and width dimensions in accordance with IS 10099.

D-5.2 Subject the specimens to washing using the reference detergent specified in **4.1.2** of IS 15370 and as per procedure **5A** specified in **7.1** of IS 15370 and then dry the specimens as per **8.5** of IS 15370.

D-5.3 After washing and drying, condition and measure the specimens and calculate the dimensional change of the specimens according to the procedure specified in IS 10099.

D-6 EXPRESSION OF RESULTS

D-6.1 Calculate the average change in dimensions in both the length and width directions in accordance with IS 10099 as follows:

$$= \frac{X_t - X_o}{X_o} \times 100$$

where

X_o = original dimension; and
X_t = dimension measured after treatment.

Record the changes in measurement separately as a percentage of the corresponding original value.

D-6.2 Express the average dimensional changes to the nearest 0.5 percent.

D-6.3 State whether the dimension has decreased (shrinkage) by means of a minus sign (-) or increased (extension) by means of a plus sign (+).

(TXD 31)

Reprography Unit, BIS, New Delhi, India

Indian Standard

TEXTILES — WOVEN SUITINGS MADE OF COTTON, MAN-MADE FIBRES/FILAMENTS AND THEIR BLENDS — SPECIFICATION

1 SCOPE

This standard specifies the requirements for woven suitings made of cotton, man-made fibres/filaments and their blends.

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 MANUFACTURE

3.1 Yarn

The yarn used in the manufacture of woven suitings shall be satisfactory in evenness and reasonably free from spinning defects. The fibre composition of the yarn shall be declared by the manufacturer and it shall conform to the tolerances specified in Table 1.

Table 1 Requirements for Woven Suiting

(*Clauses* 3.1, 4.1, 4.2 *and* 7.3.2)

Sl No. (1)	Characteristic (2)	Requirement (3)	Method of Test, Ref to IS (4)
i)	Nominal count of warp and weft yarns	As agreed ±5 %	IS 3442
ii)	[1] Length, m	As agreed	IS 1954
iii)	[1] Overall width, cm	As agreed	IS 1954
iv)	Threads/dm (warp & weft)	As agreed + 5 % − 2.5 %	IS 1963
v)	Mass, g/m^2	As agreed + 5 % − 2.5 %	IS 1964
vi)	Fibres composition, percent	As declared ±3 units	IS 1564 IS 1889 (Part 4) IS 2005 IS 2176 IS 2177 IS 3416 (Part 1) IS 3421
vii)	Breaking strength on 5 cm × 20 cm strip, N (kgf), *Min*:		IS 1969
	a) Warpway	600 (61.2)	—
	b) Weftway	400 (40.8)	—
viii)	Tear strength, N (kgf), *Min*	25 (2.55)	IS 6489
ix)	Dimensional stability to dry heat at 105 ± 2°C, percent, *Max*:		IS 12170
	a) Warpway	1.0	—
	b) Weftway	1.0	—
x)	Soil release efficiency, percent, *Min*	80	IS 11813
xi)	Limited flame spread index, *Min*	2	IS 15758 (Part 4)
xii)	Crease recovery angle, degrees, *Min*:		IS 4681
	a) Dry	240°	—
	b) Wet	240°	—
xiii)	Drape, percent	60 to 75	IS 8357
xiv)	Pilling resistance, *Min* (After 5 h of test)	4	IS 10971

Table 1 (*Concluded*)

Sl No. (1)	Characteristic (2)	Requirement (3)	Method of Test, Ref to IS (4)
xv)	Dimensional change on washing, percent, *Max*:		IS 1299
	a) Warpway	2	—
	b) Weftway	2	—
xvi)	*p*H value of aqueous extract (Hot method)	6.0 to 8.0	IS 1390
xvii)	Minimum colour fastness ratings to:		
	a) Light (change in colour)	5 IS 2454	IS 686 or
	b) Washing: Test 2:		IS 3361
	1) Change in colour	4	—
	2) Staining of adjacent fabrics	3-4	—
	c) Dry-cleaning:		IS 4802
	1) Change in colour	4	—
	2) Staining of the adjcent fabric	4	—
	d) Dry-heat (change in colour)	4	IS 4636
	e) Perspiration (acidic and alkaline):		IS 971
	1) Change in colour	4	—
	2) Staining of adjacent fabric	4	—
	f) Rubbing:		IS 766
	1) Dry	4	—
	2) Wet	3	—
	g) Hot pressing:		IS 689
	1) Change in colour	4	—
	2) Staining of adjacent fabrics	4	—

[1]Tolerances on length and width shall be as per Trade and Mercantile Marks Act.

3.2 Woven Suitings Fabric

3.2.1 The woven suitings fabric shall be uniformly woven and the selvedges shall be firm and straight. It shall be well singed and shall be delivered dry and clean. It shall also be heat set (in case it is made of synthetic fibres and their blends) and fully shrunk.

3.2.2 Each piece of woven suiting fabric shall also be examined for major flaws (defects) as given in Annex B and shall meet the requirements specified in **7.3.2**.

4 REQUIREMENTS

4.1 The woven suiting shall conform to the requirements specified in Table 1.

4.2 Constructional Particulars

The constructional particulars, namely, linear density of warp and weft yarns in tex, number of ends and picks per decimetre, mass in g/m^2 and the blend composition in case of woven suitings made of blends/mixtures of fibres shall be as declared by the manufacturer and the finished woven suiting shall meet the relevant tolerances specified in Table 1.

5 MARKING

5.1 Each piece of woven suiting shall be marked with the following information:

a) Name of the material, for example, nylon suiting or in case of blended/mixed/union suiting, the full name of fibres in the mixture and their composition;

b) Nominal length and width;

c) Mass in g/m^2;

d) Manufacturer's name, initials or trade-mark;

e) Month and year of manufacture; and

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

5.2 A suitable cloth label indicating symbols for proper care of suiting during washing, dry-cleaning, drying and ironing shall also be attached with each piece of woven suiting according to IS 14452 at a conspicuous place, for example, at corner. The manufacturer may also arrange for leaflets giving instructions for care and maintenance of suiting.

5.3 BIS Certification Marking

The woven suiting may also be marked with the Standard Mark.

5.3.1 The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act*, 1986 and the Rules and Regulations made thereunder. The details of conditions under which

the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

6 PACKING

The woven suiting shall be packed in bales or cases in accordance with the procedure laid down either in IS 2194 or in IS 2195 or as agreed upon between the buyer and the seller.

7 SAMPLING AND CRITERIA FOR CONFORMITY

7.1 Lot

The number of woven suiting pieces of the same type and composition and constructional particulars delivered to a buyer against one dispatch note shall constitute a lot.

7.2 The number of woven suiting pieces to be selected at random shall be according to col 2 and 3 of Table 2. To ensure the randomness of selection, IS 4905 may be followed.

7.3 Number of Tests and Criteria for Conformity

7.3.1 The number of pieces to be selected for major flaws shall be in accordance with col 3 of Table 2. For constructional details, such as count of yarn, threads per decimetre, mass in g/m^2, length, width and manufacture, the number of pieces selected shall be in accordance with col 5 of Table 2. For all other tests, the number of pieces selected shall be as given in col 6 of Table 2.

7.3.2 All the pieces selected from the lot shall be visually examined for major flaws and tested for all other requirements as specified in **3.1**, **3.2** and Table 1. A piece shall be declared defective if it contains one or more major flaws or it does not meet any of the requirements specified in Table 1. The lot shall be declared conforming to the requirements of this standard if the total number of defective pieces does not exceed the value given in col 4 of Table 2.

Table 2 Sample Size
(*Clauses* 7.2, 7.3.1 *and* 7.3.2)

Sl No.	Lot Size	Sample Size	Permissible Number of Non-conforming Pieces	Sub-sample Size	Sub-sub-sample Size
(1)	(2)	(3)	(4)	(5)	(6)
i)	Up to 50	5	0	3	2
ii)	51 to 150	8	0	5	3
iii)	151 to 300	13	1	5	3
iv)	301 to 500	20	1	8	5
v)	501 to 1 000	48	3	10	7
vi)	1 001 and above	50	3	10	7

ANNEX A
(*Clause* 2)

LIST OF REFERRED INDIAN STANDARDS

IS No.	*Title*	*IS No.*	*Title*
686 : 1985	Methods for determination of colour fastness of textile materials to daylight (*first revision*)	971 : 1983	Method for determination of colour fastnes of textile materials to perspiration (*first revision*)
689 : 1988	Methods for determination of colour fastness of textile materials to hot pressing (*first revision*)	1299 : 1984	Methods for determination of dimensional changes on washing of fabrics woven from rayon and synthetic fibres (*second revision*)
766 : 1988	Method for determination of colour fastness of textile materials to rubbing (*first revision*)	1390 : 1983	Methods for determination of *p*H value of aqueous extracts of textile materials (*first revision*)

IS No.	*Title*
1564 : 1988	Method for quantitative chemical analysis of binary mixtures of cellulose triacetate and certain other fibres (*first revision*)
1889 (Part 4) : 1979	Method for quantitative chemical analysis of binary mixtures of regenerated cellulose fibre and cotton: Part 4 Sulphuric acid method (*first revision*)
1954 : 1990	Determination of length and width of woven fabrics — Methods (*second revision*)
1963 : 1981	Methods for determination of threads per unit length in woven fabrics (*second revision*)
1964 : 2001	Textiles – Methods for determination of mass per unit length and mass per area of fabrics (*second revision*)
1969 : 1985	Methods for determination of breaking strength and elongation of woven textile fabrics (*second revision*)
2005 : 1988	Methods for quantitative chemical analysis of binary mixtures of nylon 6 or nylon 6.6 fibres and certain other fibres (*first revision*)
2176 : 1988	Textiles – Binary mixtures of cellulose acetate and certain other fibres – Methods for quantitative chemical analysis (*first revision*)
2177 : 1988	Textiles – Binary mixtures of cellulose triacetate and secondary cellulose acetate fibres – Methods for quantitative chemical analysis (*first revision*)
2194 : 1963	Code for seaworthy packaging of man-made fibre fabrics
2195 : 1964	Code for inland packaging of man-made fibre fabrics and man-made fibre yarns
2454 : 1985	Methods for determination of colour fastness of textile materials to artificial light (Xenon lamp) (*first revision*)
3361 : 1979	Method for determination of colour fastness of textile materials to washing : Test 2 (*first revision*)
3416 (Part 1) : 1988	Method for quantitative chemical analysis of binary mixture of polyester fibres with cotton or regenerated cellulose: Part 1 Sulphuric acid method (*second revision*)
3421 : 1988	Textiles – Binary mixtures of acrylic, certain modacrylics and certain other fibres – Methods for quantitative chemical analysis (*first revision*)
3442 : 1980	Method for determination of crimp and count of yarn removed from fabrics (*first revision*)
4636 : 1988	Method for determination of colour fastness of textile materials to dry-heat treatments (excluding pressing) (*first revision*)
4681 : 1981	Method for determination of recovery from creasing of textile fabrics by measuring the angle of recovery (*first revision*)
4802 : 1988	Method for determination of colour fastness of textile materials to dry-cleaning (*first revision*)
4905 : 1968	Methods for random sampling
6489 : 1993	Textiles – Woven fabrics – Determination of tear resistance by falling pendulum method (*first revision*)
8357 : 1977	Method for assessment of fabric drape
10971 : 1984	Method for determination of pilling resistance of fabrics
11813 : 1986	Method for determination of soil resistance and soil release efficiency of finished textile fabrics
12170 : 1987	Method for determination of dimensional stability of textile materials to dry heat treatments
14452 : 1997	Textiles – Care labelling code using symbols
15758 (Part 4) : 2007	Textiles – Protective clothing: Part 4 Test method for limited flame spread

ANNEX B
(*Clause* 3.2.2)

CATEGORIZATION OF FLAWS

B-1 MAJOR FLAWS

B-1.1 One or more ends missing in the body of the material throughout its length, more than three ends missing at a place and running over 50 cm, or prominently noticeable double end running throughout the piece.

B-1.2 Undressed suitings noticeable over a length exceeding 5 percent of the length of the piece.

B-1.3 Smash definitely rupturing the texture of the fabric.

B-1.4 Hole cut or tear.

B-1.5 Reed marks prominently noticeable over a length exceeding 5 percent of the piece.

B-1.6 Defective or damaged selvedge noticeable over a length exceeding 5 percent of the length of the piece.

B-1.7 Skewing of more than 3 percent on weft.

B-1.8 Weft crack or two or more missing picks across the width of the fabric.

B-1.9 Warp or weft bar due to the difference in raw material, count, twist, luster, colour, shade or spacing of adjacent groups of yarns (starting mark).

B-1.10 More than two adjacent ends running parallel, broken or missing and extending beyond 10 cm.

B-1.11 Noticeable warp or weft float in the body of the fabric.

B-1.12 Noticeable oil or other stain in the fabric.

B-1.13 Oily weft in the fabric.

B-1.14 Prominently noticeable slub.

B-1.15 Conspicuous broken pattern.

B-1.16 Gout due to foreign matter, usually lint or waste woven into the fabric.

B-1.17 Prominent selvedge defect.

B-1.18 Significant shading or listing in fabrics having a gradual change in tone or depth of shade of fabric (excluding selvedge or border running parallel to the selvedge).

B-1.19 Coloured flecks.

B-1.20 Blurred or dark patch.

B-1.21 Patchy, streaky or uneven dyeing.

B-1.22 Dye bar.

B-1.23 Fuzzy appearance.

ANNEX C
(*Foreword*)

COMMITTEE COMPOSITION

Man-Made Fibres, Cotton and Their Products Sectional Committee, TXD 31

Organization	*Representative(s)*
Textile Committee, Mumbai	SHRI P. K. MONDAL (***Chairman***) SHRI S. SHANKKARIAH (*Alternate*)
Ahmedabad Textile Industry's Research Association, Ahmedabad	SHRI C. R. PRAYAG DR S. REHMAN (*Alternate*)
Ashima Ltd, Ahmedabad	SHRI R.H. DESAI
Central Institute for Research in Cotton Technology, Mumbai	DR G. F. S. HUSSAIN DR R. P. NACHANE (*Alternate*)
Century Textiles & Industries Ltd, Mumbai	SHRI B. N. GOVIND RAO

Organization	*Representative(s)*
Confederation of Indian Textile Industries (CITI), New Delhi	SHRI D. K. NAIR SHRI U. K. JOSHI (*Alternate*)
Consumer Education and Research Centre, Ahmedabad	DR MALAY R. DAVE
Consumer Guidance Society of India, Mumbai	SHRI B. V. DESAI DR S. G. BHAT (*Alternate*)
Directorate General of Supplies & Disposals (Inspection Wing), New Delhi	SHRI D. S. MARTOLIYA SHRI B. R. GOEL (*Alternate*)
Indian Institute of Technology, Delhi	PROF B. L. DEOPURA PROF R. CHATTOPADHYAY (*Alternate*)
Indo Rama Textiles Ltd, Mumbai	SHRI RAKESH GOEL
M/s G.T.N. Textiles Ltd, Kerala	SHRI V. N. BALAKRISHNAN SHRI K. P. UMANATHAN (*Alternate*)
Ministry of Defence (R&D), New Delhi	SHRI ASHOK YADAV SMT D. BHATTACHARYA (*Alternate*)
Office of the Textile Commissioner, Mumbai	SHRI B. A. PATEL SHRI K. RAVINDAN (*Alternate*)
Rajapalayam Mills Ltd, Rajapalayam	SHRI K. NADHAN SHRI MADHAWAN (*Alternate*)
Reliance Industries Ltd, Ahmedabad	SHRI S. P. GOMBER SHRI VINAY CHATURVEDI (*Alternate*)
Super Spinning Mills Ltd, Coimbatore	SHRI S. RAMASUBBU SHRI KARTHIKEYAN (*Alternate*)
Synthetic & Art Silk Mills Association, Mumbai	SHRI V. S. CHALKE
The Bombay Textile Research Association, Mumbai	SHRI R. N. BHARATI
The Rajasthan Spinning and Weaving Mills Ltd, Kharigram (Bhilwara)	SHRI N. K. SHRIVASTVA
The Southern India Mills' Association, Coimbatore	DR K. SELVARAJU
The Synthetic and Art Silk Mills Research Association, Mumbai	DR ARUP K. RAKSHIT SMT MANISHA HIRA (*Alternate*)
Vardhaman Spinning and General Mills Ltd, Ludhiana	SHRI V. K. GOYAL
Veermata Jijabai Technological Institute, Mumbai	DR A. R. KHARE SHRI S. P. BORKAR (*Alternate*)
BIS Directorate General	SHRI M. S. VERMA, Scientist F & Head (TXD) [Representing Director General (*Ex-officio*)]

Member Secretary
SHRI J. K. GUPTA
Scientist C (TXD), BIS

MGIPF—864 Deptt of BIS/2008—30 1 2009—300 Books

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act*, 1986 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Copyright

Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards: Monthly Additions'.

This Indian Standard has been developed from Doc: No. TXD 31 (0883).

Amendments Issued Since Publication

Amendment No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones: 2323 0131, 2323 3375, 2323 9402 *Website*: www.bis.org.in
Telegrams: Manaksanstha (Common to all offices)

Regional Offices: Telephones

Central :	Manak Bhavan, 9 Bahadur Shah Zafar Marg NEW DELHI 110002	2323 7617, 2323 3841
Eastern :	1/14, C.I.T. Scheme VII M, V.I.P. Road, Kankurgachi KOLKATA 700054	2337 8499, 2337 8561, 2337 8626, 2337 9120
Northern :	SCO 335-336, Sector 34-A, CHANDIGARH 160022	260 3843, 260 9285
Southern :	C.I.T. Campus, IV Cross Road, CHENNAI 600113	2254 1216, 2254 1442, 2254 2519, 2254 2315
Western :	Manakalaya, E9 MIDC, Marol, Andheri (East) MUMBAI 400093	2832 9295, 2832 7858, 2832 7891, 2832 7892

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

Printed by the Manager, Govt. of India Press, Faridabad