
वस्त्रादि — सूती सिलाई के धागे — विशिष्टि
(तीसरा पुनरीक्षण)

**Textiles — Cotton Sewing Threads —
Specification**
(*Third Revision*)

ICS 59.080.20

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भारतीय मानक ब्यूरो
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Price Group 6

FOREWORD

This Indian Standard (Third Revision) 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 Textiles Division Council.

The varieties of sewing threads generally required by the official agencies, such as Defence and the Directorate General of Supplies and Disposals, are incorporated in this standard. The other varieties used in the garment, hosiery and footwear industries have also been covered in this standard. [Annex B](#) gives the general end uses of each variety of sewing thread to assist the users of this standard in the proper choice of sewing threads.

This standard was first published in 1960 and was subsequently revised in 1969 and 1978. This revision has been brought out to update the standard to incorporate the following changes:

- a) [Table 1](#) for requirements of cotton sewing threads have been modified;
- b) BIS certification marking clause has been modified; and
- c) References to Indian Standards have been updated.

The composition of the Committee responsible for the formulation of this standard is given in [Annex D](#).

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

*Indian Standard***TEXTILES — COTTON SEWING THREADS — SPECIFICATION***(Third Revision)***1 SCOPE**

1.1 This standard prescribes constructional details and other particulars of 43 varieties of cotton sewing threads, unbleached, bleached or dyed.

1.2 This standard does not specify the type of finish and feel of the sewing thread, nor does it specify the degree of whiteness of the bleached thread or the colour of the dyed threads.

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 MANUFACTURE**3.1 Yarn**

Cotton yarn used in the manufacture of the sewing thread shall be evenly spun with suitable number of turns per metre so that a balanced thread is produced. It shall be reasonably free from spinning defects.

3.2 Sewing Thread

The sewing thread shall be reasonably free from knots, snarls and doubling defects.

3.3 Direction of Twist

Unless agreed otherwise, the direction of twist in the singles and the finished sewing thread shall be at the discretion of the manufacturer.

3.4 Finish

White sewing thread shall have a uniform bleached finish. The dyed sewing threads shall have the required shade and free from all dyeing defects.

NOTE — Sulphur dyes shall not be used when specifically required by the buyer. In case of supplies to the Ministry of Defence establishments, the black shade shall not be obtained by using sulphur dyes.

The threads shall be finished soft, mercerized or polished as required. The finishing and dressing materials liable to cause subsequent tendering shall not be used.

3.5 Working

The sewing threads shall work satisfactorily on all appropriate types of hand and power driven sewing machines.

4 REQUIREMENTS**4.1 Length (m/kg) and Breaking Load**

The sewing threads shall comply with the requirements given in [Table 1](#).

4.2 Colour Fastness

The dyed threads with colour declared as fast shall conform to the requirements given in [Table 2](#).

4.3 Cuprammonium Fluidity

The cuprammonium fluidity of sewing thread shall not be more than 8 rhes when determined by the method given in IS 244.

4.4 Length/Mass of Sewing Thread

The average length and mass of sewing thread in a tube, reel or cone shall not be less than that marked on the label. However, a tolerance of minus two percent shall be permitted on an individual package.

4.4.1 The length/mass of sewing thread shall be determined by the method given in [C-4](#).

4.5 Special Proofed Threads

In case the sewing threads are required to be used in the manufacture of ammunition, armaments, etc, these shall be specially proofed and shall comply with the additional requirements given in [Table 3](#).

Table 1 Requirements of Cotton Sewing Threads*(Foreword and Clause 4.1)*

Variety No.	Nominal Count Breaking Cotton Count (Dtex)	Constuction	Length, Min	Single Thread Breaking Load, Min
(1)	(2)	(3)	(4)	(5)
i)	12 s/2 (500 dtex × 2)	2 ply (2 strands, each single)	9 530	16.2 (1.65)
ii)	28 s/2 (210 dtex × 2)	2 ply (2 strands, each single)	22 020	6.9 (0.70)
iii)	30 s/2 (200 dtex × 2)	2 ply (2 strands, each single)	24 560	6.4 (0.65)
iv)	38 s/2 (155 dtex × 2)	2 ply (2 strands, each single)	31 340	6.7 (0.68)
v)	40 s/2 (145 dtex × 2)	2 ply (2 strands, each single)	33 030	6.4 (0.65)
vi)	6 s/3 (1 000 dtex × 3)	3 ply (3 strands, each single)	3 100	68.6 (7.00)
vii)	10 s/3 (590 dtex × 3)	3 ply (3 strands, each single)	5 220	40.2 (4.10)
viii)	12 s/3 (500 dtex × 3)	3 ply (3 strands, each single)	6 340	27.0 (2.75)
ix)	16 s/3 (370 dtex × 3)	3 ply (3 strands, each single)	8 200	20.1 (2.05)
x)	24 s/3 (250 dtex × 3)	3 ply (3 strands, each single)	12 900	15.7 (1.60)
xi)	32 s/3 (185 dtex × 3)	3 ply (3 strands, each single)	16 940	13.7 (1.40)
xii)	40 s/3 (145 dtex × 3)	3 ply (3 strands, each single)	21 510	9.8 (1.00)
xiii)	50 s/3 (120 dtex × 3)	3 ply (3 strands, each single)	27 100	7.6 (0.78)
xiv)	50 s/3 (120 dtex × 3) mercerised	3 ply (3 strands, each single)	27 100	8.8 (0.90)
xv)	60 s/3 (100 dtex × 3)	3 ply (3 strands, each single)	32 690	6.6 (0.67)
xvi)	80 s/3 (74 dtex × 3)	3 ply (3 strands, each single)	43 520	5.1 (0.52)
xvii)	100 s/3 (59 dtex × 3)	3 ply (3 strands, each single)	53 680	4.0 (0.41)
xviii)	6 s/4 (1 000 dtex × 4)	4 ply (4 strands, each single)	2 330	98.0 (10.00)
xix)	12 s/4 (500 dtex × 4)	4 ply (4 strands, each single)	4 725	19.6 (2.00)
xx)	24 s/4 (250 dtex × 4)	4 cord (2 strands, each 2 fold)	9 310	20.6 (2.10)
xxi)	32 s/4 (185 dtex × 4)	4 cord (2 strands, each 2 fold)	12 100	17.2 (1.75)
xxii)	40 s/4 (150 dtex × 4)	4 cord (2 strands, each 2 fold)	15 120	12.7 (1.30)
xxiii)	50 s/4 (120 dtex × 4)	4 cord (2 strands, each 2 fold)	19 050	9.8 (1.00)
xxiv)	60 s/4 (100 dtex × 4)	4 ply (4 strands, each single)	24 200	8.8 (0.90)
xxv)	80 s/4 (74 dtex × 4)	4 ply (4 strands, each single)	32 180	6.9 (0.70)
xxvi)	6 s/5 (1 000 dtex × 5)	5 ply (5 strands, each single)	1 850	113 (11.5)
xxvii)	32 s/6 (185 dtex × 6)	6 cord (3 strands, each 2 fold)	8 150	25.5 (2.60)
xxviii)	36 s/6 (165 dtex × 6)	6 cord (3 strands, each 2 fold)	9 070	22.1 (2.25)
xxix)	40 s/6 (145 dtex × 6)	6 cord (3 strands, each 2 fold)	10 720	21.1 (2.15)
xxx)	50 s/6 (120 dtex × 6)	6 cord (3 strands, each 2 fold)	13 550	16.7 (1.70)
xxxi)	60 s/6 (100 dtex × 6)	6 cord (3 strands, each 2 fold)	15 120	32.2 (1.35)
xxxii)	80 s/6 (74 dtex × 6)	6 cord (3 strands, each 2 fold)	21 170	10.8 (1.10)
xxxiii)	100 s/6 (59 dtex × 6)	6 cord (3 strands, each 2 fold)	26 250	8.8 (0.90)
xxxiv)	6 s/8 (1 000 dtex × 8)	8 ply (8 strands, each single)	1 150	165 (16.8)
xxxv)	22 s/9 (270 dtex × 9)	9 cord (3 strands, each 3 fold)	3 700	54.9 (5.60)
xxxvi)	24 s/9 (250 dtex × 9)	9 cord (3 strands, each 3 fold)	4 050	49.0 (5.00)
xxxvii)	32 s/9 (185 dtex × 9)	9 cord (3 strands, each 3 fold)	5 500	40.2 (4.10)
xxxviii)	40 s/9 (145 dtex × 9)	9 cord (3 strands, each 3 fold)	6 800	31.4 (3.20)
xxxix)	50 s/9 (120 dtex × 9)	9 cord (3 strands, each 3 fold)	8 400	26.0 (2.65)

Table 1 (Concluded)

Variety No.	Nominal Count Breaking Cotton Count (Dtex)	Constuction	Length, Min	Single Thread Breaking Load, Min
(1)	(2)	(3)	(4)	(5)
xl)	6 s/10 (1 000 dtex × 10)	10 Ply (10 strands, each single)	900	191 (19.5)
xli)	20 s/27 (300 dtex × 27)	27 cord (3 strands, each 9 fold)	1 130	169 (17.25)
xlii)	36 s/27 (165 dtex × 27)	27 cord (3 strands, each 9 fold)	2 020	98.0 (10.0)
xliii)	24 s/45 (250 dtex × 45)	45 cord (3 strands, each 15 fold)	805	255 (26.0)
Method of Test	—	—	<u>C-3</u>	IS 1670

NOTE — The minimum breaking strength values and minimum length in metres per kilogram specified in this table shall apply to sewing threads irrespective of the type of finish.

Table 2 Requirements for Colour Fastness

(Clause 4.2)

Sl No.	Characteristics	Requirements	Method od Test
(1)	(2)	(3)	(4)
i)	Colour fastness to light (<i>see</i> Notes)	5 or better	IS/ISO 105-B01 or IS/ISO 105-B02
ii)	Colour fastness to washing	4 or better	IS/ISO 105-C10 [Test Number D (4)]
iii)	Colour fastness to perspiration	4 or better	IS/ISO 105-E04

NOTES

1 In case of dispute, the colour fastness to light shall be determined by the method prescribed in IS/ISO 105-B01.

2 In case of supplies to the Ministry of Defence establishments, the colour fastness to light shall be 6 or better.

Table 3 Requirements of Special Proofed Cotton Sewing Threads

(Clause 4.5)

Sl No.	Characteristics	Requirements	Method of Test
(1)	(2)	(3)	(4)
A) Chemical Requirements			
i)	pH value of water extract	5.5 to 7.5	IS 1390
ii)	Water soluble matter:		IS 3456
	a) Unproofed	0.5 percent, <i>Max</i>	
	b) Proofed	1.0 percent, <i>Max</i>	
iii)	Water soluble chlorides calculated as NaCl	0.05 percent, <i>Max</i>	IS 4202
iv)	Water soluble sulphates calculated as Na ₂ SO ₄	0.25 percent, <i>Max</i>	IS 4203
v)	Ash on incineration (in excess of ash due to proofing agents)	0.20 percent, <i>Max</i>	IS 199
B) Requirements Related to Proofing			
vi)	Salicylanide content (for salicylamide processed)	0.1 percent, <i>Min</i>	IS 3522 (Part 1) and (Part 2)
vii)	Copper content (for copper cutch processed)	0.7 percent, <i>Min</i>	
viii)	a) Chromium content for chrome copper processed	0.5 to 1.5 percent	
	b) Copper content for chrome copper processed	0.2 percent, <i>Min</i>	
ix)	Chromium content (for chrome processed)	0.7 to 1.0 percent	
x)	Chromium and iron	1.5 percent, <i>Min</i>	

5 PACKAGING

5.1 The sewing thread shall be made up in the form of tubes, reels, cones or in any other form as required. The free end of the thread shall be securely fastened to prevent unravelling.

5.2 Unless otherwise specified, sewing thread shall be packed in accordance with the provisions of IS 1066.

6 MARKING

6.1 Each unit package of sewing thread shall be marked preferably on a label with the following information:

- a) Name of the material;
- b) Nominal count or ticket number;
- c) The length or weight of thread in a unit package;
- d) Year of manufacture; and
- e) Manufacturer's name, initials or trade-mark, if any.

6.1.1 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act, 2016* and the Rules and Regulations framed thereunder, and the product(s) may be marked with the Standard Mark.

7 SAMPLING

7.1 Lot

The quantity of cotton embroidery thread of the same variety delivered to a buyer against a despatch note shall constitute the lot.

7.2 The conformity of the lot to the requirements of this standard shall be determined on the basis of the tests carried out on the samples selected from the lot. To ensure the randomness of selection, IS 4905 may be followed.

7.3 Unless otherwise agreed to between the buyer and the seller, the number of packs to be selected at random from a lot shall be as follows:

<i>Sl No.</i>	<i>Number of Packs in the Lot</i>	<i>Number of Packs to be Selected</i>
(1)	(2)	(3)
i)	Up to 15	5
ii)	16 to 30	7
iii)	31 to 50	10
iv)	51 to 100	15
v)	101 to 300	25
vi)	300 and above	30

7.4 One tube or reel shall be selected at random from each of the pack selected according to [7.3](#). The tube, reel or ball thus selected shall constitute the test sample for determining:

- a) length in m/kg;
- b) breaking load;
- c) balance of twist; and
- d) length per tube or reel (subject to a minimum of 20 samples).

7.4.1 For testing colour fastness, cuprammonium fluidity and requirements for special proofed threads, two specimens of the required size for a lot size of 30 packs or less, and 3 specimens for a lot size of more than 30 packs shall be taken from the tubes, reels or balls drawn in accordance with [7.4](#) and tested individually.

7.5 Criteria for Conformity

The lot shall be declared as conforming to the requirements of this standard if the following conditions are satisfied:

- a) From the test results for lengths or breaking load, the average X and the range R or average range R shall be calculated and the value of the expression $(X - 0.4 R)$ is greater than or equal to the relevant value specified;

NOTE — When the number of test results is 10 or more, they shall be grouped in groups of five. The mean range R is the value obtained by taking the average of the ranges of the groups.

- b) All the test specimens tested for colour fastness, cuprammonium fluidity and requirements for special proofed threads satisfy the relevant requirements; and
- c) The average of the length/mass measurements is not less than the marked length.

ANNEX A

(Clause 2)

LIST OF REFERRED STANDARDS

<i>IS No.</i>	<i>Title</i>	<i>IS No.</i>	<i>Title</i>
IS/ISO 105-B01 : 2014	Textiles — Tests for colour fastness: Part B01 Colour fastness to light: Daylight	IS 1390 : 2022/ ISO 3071 : 2020	Textiles — Determination of pH of aqueous extract (<i>third revision</i>)
IS/ISO 105-B02 : 2014	Textiles — Tests for colour fastness: Part B02 Colour fastness to artificial light : Xenon arc fading lamp test	IS 1670 : 1991	Textiles — Yarn — Determination of breaking load and elongation at break of single strand (<i>second revision</i>)
IS/ISO 105-C10 : 2006	Textiles — Tests for colour fastness: Part C10 Colour fastness to washing with soap or soap and soda	IS 3456 : 2022	Method for determination of water-soluble matter of textile materials (<i>first revision</i>)
IS/ISO 105-E04 : 2013	Textiles — Tests for colour fastness: Part E04 Colour fastness to perspiration (<i>first revision</i>)	IS 3522 (Part 1) : 1989	Methods for estimation of common preservatives on textiles: Part 1 (<i>first revision</i>)
IS 199 : 1989	Textiles — Estimation of moisture, total size or finish, ash and fatty matter in grey and finished cotton textile materials (<i>third revision</i>)	IS 3522 (Part 2) : 1989	Textiles — Estimation of common preservatives: Part 2 (<i>first revision</i>)
IS 244 : 1984	Method for determination of viscosity or fluidity of solutions of cotton and regenerated cellulosic man-made fibres in cuprammonium hydroxide (<i>second revision</i>)	IS 4202 : 2022	Method for determination of chloride content of textile materials (<i>first revision</i>)
IS 1066 : 1980	Code for packing of sewing threads (<i>first revision</i>)	IS 4203 : 2022	Method for determination of sulphate content in textile materials (<i>first revision</i>)
		IS 4905 : 2015/ ISO 24153 : 2009	Random sampling and randomization procedures (<i>first revision</i>)
		IS 6359 : 2023	Method for conditioning of textiles (<i>first revision</i>)

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ANNEX B

(Foreword)

GENERAL END USES

<i>Variety No.</i>	<i>General End Uses</i>
1	Embroidery of emblems, insignia, etc
2	Basting, hemming and stitching of light clothing and cables
3	– do –
4	Clothing and hosiery
5	Clothing, hosiery and cables
6	Heavy leather and canvas material, such as tarpaulins, canopies, ankle boot uppers, harness and saddlery, bag closing, harness for jacquard looms and page-cord
7	Gloves, tents, harness and saddlery
8	Light leather materials and for repair work
9	Light leather materials, selvedge yarn in jute cloth
10	Woollen jerseys, woollen pullovers, caps, wool-cotton short-drawers and wool-cotton vests
11	Chappal uppers, shoes and book-binding
12	Clothing, towels, household linen and hosiery
13	– do –
14	Synthetic and blended fabrics
15	Clothing, handkerchiefs, towels and hosiery
16	– do –
17	Handkerchiefs, hosiery and clothing
18	Heavy leather, canvas, tarpaulin, canopies, boot uppers, harness and saddlery, bag closing and harness for jacquard looms
19	Hand stitching of tentage and repair of door curtains
20	Umbrellas, healds, fishnets, book-binding, carpets, and woven and knitted heavy fabrics
21	Umbrellas, book-binding, healds and bags
22	Umbrella, chappal uppers, bags, book-binding, clothing and healds
23	Clothing, umbrellas, chappal uppers and healds
24	Clothing
25	Clothing and jari trade
26	Boot uppers, sole and welt
27	Book-binding, bags, tents, carpets, fishnets, healds and selvedging
28	Book-binding, bags, tents, carpets, fishnets, healds, selvedging, canvas and footwear uppers
29	Leather footwear uppers
30	– do –
31	Leather footwear uppers, piece-end joining and clothing
32	Footwear and clothing
33	Clothing
34	Sole, welt and shoes uppers
35	Boots and shoe uppers, sole and welt, sports and travel goods, upholstery, spindle tape, book-binding, jari-making, harness for jacquards and light tarpaulins
36	– do –
37	Leather and canvas material, spindle tape, upholstery, sports goods and jari
38	Shoe uppers, upholstery, light leather and canvas materials and book-binding
39	Book sewing, upholstery, spindle tape and light leather materials
40	Sole stitching of heavy boots
41	Healds, tarpaulins and canopies
42	– do –
43	Healds and meteorological radiosonde/Rawin balloons

ANNEX C

(Clause 4.4 and Table 1)

METHODS OF TEST

C-1 CONDITIONING OF TEST SPECIMENS AND ATMOSPHERIC CONDITIONS FOR TESTING

The test specimens shall be conditioned and tested in the standard atmosphere of 65 percent \pm 2 percent relative humidity and 27 °C \pm 2 °C temperature (see IS 6359).

C-2 APPARATUS

C-2.1 Wrap Reel — having a perimeter of 1 m \pm 0.4 percent. Determine the actual perimeter of the reel with a strip of gummed paper passed tightly around the reel and secured by adhesion at the overlap. Cut the paper strip and measure its length to an accuracy of 0.1 percent.

C-2.2 Adjustable Yard Tensioning Device — capable of giving a reeling tension that will result in skeins of the specified length when measured under a load of 0.5 gf /tex.

C-2.3 Weighing Balance — capable of weighing skeins in grams and with a sensitivity of 1 part in 500.

C-3 DETERMINATION OF LENGTH (m/kg)

C-3.1 Place the package constituting the test specimen on the wrap reel (see C-2.1) and wind 100 m of thread under a suitable reeling tension (see C-2.2). Remove the thread so wound from the wrap reel and determine the mass on the weighing balance (see C-2.3).

C-3.2 Calculation

Calculate the length, m/kg, by the following

formula:

$$\text{Length, m/kg} = \frac{100 \times 1\,000}{W_1}$$

where

W_1 = mass, in g, of 100 m of sewing thread.

C-3.3 Similarly determine the length (m/kg) of other test specimens.

C-4 DETERMINATION OF LENGTH/MASS OF SEWING THREAD ON REEL/TUBE/ CONE OR ANY PACKAGE

C-4.1 Place the package constituting the test specimen on the wrap reel and wind it into skein till the whole test specimen is exhausted. Remove the skein and determine the mass on the weighing balance.

C-4.2 Similarly determine the mass of other test specimens.

C-4.3 Determine the length of sewing thread of reel/tube/cone or any package by the following formula:

$$\text{Length, m} = \frac{a \times W_2}{1\,000}$$

where

a = length, in m/kg (see C-3.2); and

W_2 = mass, in grams, of sewing thread on the package (see C-4.1).

ANNEX D

(Foreword)

COMMITTEE COMPOSITION

Man-made Fibres, Cotton and their Products Sectional Committee, TXD 31

<i>Organization</i>	<i>Representative(s)</i>
Director Textiles Committee, Mumbai	SHRI KARTIKAY DHANDA (Chairperson)
Association of Synthetic Fibre Industries, New Delhi	SHRI M. S. VERMA
AYM Syntex, Dadra & Nagar Haveli	SHRI ARNAB SAMANTHA
Confederation of Indian Textile Industry, New Delhi	SHRIMATI CHANDRIMA CHATTERJEE SHRI ANMOL GUPTA (<i>Alternate</i>)
Consumer Guidance Society of India, Mumbai	DR SITARAM DIXIT DR M. S. KAMATH
Cotton Association of India, Mumbai	SHRI ATUL S. GANATRA SHRI VINAY N. KOTAK (<i>Alternate</i>)
Defence Material and Stores Research & Development Establishment, Kanpur	SHRI ASHOK KUMAR YADAV SHRI BISWA RANJAN DAS (<i>Alternate</i>)
Federation of Gujarat Weaver Welfare Association, Surat	SHRI ASHOK JIRAWALA SHRI SANJAY DESAI (<i>Alternate</i>)
GBTL Limited, Bhiwani	SHRI VIKAS AGGARWAL SHRI AMREEK SINGH (<i>Alternate</i>)
Gimatex Industries Pvt Ltd, Nagpur	SHRI ATUL KUMAR JAIN
Grasim Industries Limited, Vadodara	SHRIMATI SHAILLEY GARG SHRIMATI ASHMITA PANCHAL (<i>Alternate</i>)
ICAR – Central Institute for Research on Cotton Technology, Mumbai	DR SENTHIL KUMAR DR A. ARPUTHARAJ (<i>Alternate</i>)
JCT Limited, Phagwara	SHRI KHUSHWINDER SINGH DHILLON SHRI ARWINDER SINGH (<i>Alternate</i>)
Northern India Textile Mills' Association, Chandigarh	SHRI SANJAY GARG SHRI SIDHARTHA KHANNA (<i>Alternate</i>)
Northern India Textile Research Association, Ghaziabad	SHRI SANJEEV SHUKLA
Office of the Textile Commissioner, Mumbai	SHRI SOURABH KULKARNI SHRI PRANAV PARASHAR (<i>Alternate</i>)
Reliance Industries Limited, Mumbai	SHRI AJAY GUPTA SHRI KESHAV PAREEK (<i>Alternate</i>)
South Gujarat Chambers of Commerce and Industry, Surat	SHRI HIMANSHU BODAWALA SHRI ASHISH GUJARATI (<i>Alternate</i>)
South Gujarat Texturisers Welfare Association, Surat	SHRI MURARI SHARAF SHRI SUMIT AGRAWAL (<i>Alternate</i>)
South Gujarat Warp Knitters Association, Surat	SHRI BRIJESH GONDALIYA SHRI RAMAN MEGOTIA (<i>Alternate</i>)

<i>Organization</i>	<i>Representative(s)</i>
South India Textile Research Association, Coimbatore	SHRI V. THANABAL SHRI S. SIVAKUMAR
Textiles Committee, Mumbai	SHRI J. D. BARMAN SHRI P. N. S. SIVAKUMAR (<i>Alternate</i>)
The Bombay Textile Research Association, Mumbai	SHRI R. A. SHAIKH SHRIMATI PRAGATI KULKARNI (<i>Alternate</i>)
The Cotton Corporation of India Ltd., Navi Mumbai	SHRI S. K. PANIGRAHI SHRI PRANJAL P. JOSHI (<i>Alternate</i>)
The Cotton Textile Export Promotion Council, Mumbai	SHRI SIDDARTHA RAJGOPAL
The Southern India Mills' Association, Coimbatore	DR K. SELVARAJU SHRI NAGARAJAN ESAKKIMUTHU (<i>Alternate</i>)
The Synthetic and Art Silk Mills Research Association, Mumbai	DR MANISHA MATHUR SHRIMATI ASHWINI A. SUDAM (<i>Alternate</i>)
The Synthetic & Rayon Textile Export Promotion Council, Mumbai	SHRI S. K. KHANDELIA SHRI PRAVEEN KUMAR S. SADH (<i>Alternate</i>)
Veermata Jijabai Technological Institute, Mumbai	DR SURANJANA GANGOPAHYAY SHRI S. P. BORKAR (<i>Alternate</i>)
BIS Directorate General	SHRI J. K. GUPTA, SCIENTIST 'E'/DIRECTOR AND HEAD (TEXTILES) [REPRESENTING DIRECTOR GENERAL (<i>Ex-officio</i>)]

Member Secretary
SHRI MAYUR KATIYAR
SCIENTIST 'B'/ASSISTANT DIRECTOR
(TEXTILES), BIS

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This Indian Standard has been developed from Doc No.: TXD 31 (21912).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

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