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भारतीय मानक
सूती ड्रिल — विशिष्टि
(चौथा पुनरीक्षण)

Indian Standard
COTTON DRILLS — SPECIFICATION
(*Fourth Revision*)

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(Including Amendments No. 1 and 2)

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Descriptors: TEXTILES. FABRIC. COTTON DRILLS.

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Price Group 2

Cotton and Cotton Products Sectional Committee, TDC 2

FOREWORD

This Indian Standard (Fourth Revision) was adopted by the Bureau of Indian Standards on 10 October 1989, after the draft finalized by the Cotton and Cotton Products Sectional Committee had been approved by the Textile Division Council.

The standard was originally published in 1957 and revised in 1965, 1970 and 1977. The fourth revision has been taken up to modify scouring loss and shrinkage values. Based on the present manufacturing practice in the industry and also consumer preference, the amendments to third revision have also been incorporated in the present revision.

This standard is based on the following Defence and DGS&D specifications issued by the Government of India:

<i>Variety No.</i>	<i>Defence Specification</i>	<i>DGS&D Specification</i>
1. IND/TC/0077	(a) Drill, cotton, light	—
2.	—	G/Tex/C-83 (B) Drill cotton, grey
3. IND/TC/0092	Drill, cotton,	Quality No. 2 of G/Tex/C-53 H Drill, cotton, dyed
4. IND/NAVY/TC/0400	Drill, cotton, white (bleached), mercerized and preshrunk	—

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded 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.

Indian Standard

COTTON DRILLS — SPECIFICATION

(Fourth Revision)

1 SCOPE

This standard prescribes constructional details and other particulars of four varieties of cotton drills, grey, scoured, bleached or dyed.

The standard does not specify general appearance, feel, shade, etc, of the cloth (*see also 4.3*).

2 REFERENCES

The Indian Standards given in Annex A are necessary adjuncts to this standard.

3 MANUFACTURE

3.1 Yarn

The cotton yarn used in the manufacture of the cloth shall be satisfactory in evenness and reasonably free from neps and spinning defect (*see IS 171 : 1985*).

3.2 Cloth

The cloth shall be free from dressing and filling materials and from substances liable to cause subsequent tendering.

3.2.1 The cloth shall be dyed with suitable dyes to shade as agreed to between the buyer and the seller.

NOTE — If required by the buyer, the cloth of khaki and greenish khaki shall be dyed with iron and chromium salts [mineral khaki (MK) base] in suitable proportions to achieve the required shade and for olive green shade the cloth shall be dyed with vat dyes in conjunction with iron and chromium salts.

3.2.2 The bleached cloth should have a full bleach finish and shall be free from blueing/whitening agents, if desired by the buyer.

3.2.3 Variety No. 4 shall be mercerized and pre-shrunk and variety No. 2 shall be supplied in grey state. The finish of other varieties shall be as agreed to between the buyer and the seller.

4 REQUIREMENTS

4.1 The physical requirements of the cloth shall conform to those given in Table 1 excepting the count of warp and weft yarn which has been given only for guidance.

4.2 The colour fastness ratings and other requirements of the cloth shall conform to those given in Table 2.

4.3 Sealed Sample

If, in order to illustrate or specify the indeterminate characteristics, such as general appearance, lustre, feel and shade of the cloth, a sample has been agreed upon and sealed, the supply shall be in conformity with the sample in such respects.

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

5. MARKING

5.1 The cloth shall be marked with the following:

- a) Name of the material,
- b) Variety number,
- c) Length and width of the piece,
- d) Indication of the source of manufacture, and
- e) Year of manufacture.

5.1.1 The cloth may also be marked with the Standard Mark.

5.2 At the other end of the piece, the cloth shall be marked with an identification mark.

6 PACKING

6.1 The cloth shall be packed in bales or cases in conformity with the procedures laid down in IS 1347 : 1972 or in IS 293 : 1980 as required.

7 SAMPLING

7.1 The scale of sampling and criteria for conformity as given in IS 3919:1966 shall be followed in respect of the physical characteristic, namely, ends and picks, mass, breaking load, length and width.

7.2 The scale of sampling and criteria for conformity as given in IS 5463:1969 shall be followed in respect of colour fastness, scouring loss, pH value, shrinkage or elongation, chromium and iron content, water solubles, ash content and barium activity number.

Table 1 Physical Requirements of Cotton Drills
(Clause 4.1)

Variety No.	Approximate Count of Yarn [Cotton Count (tex)]		Ends/ cm	Picks/ cm	Mass				Breaking Load* on 5.0 × 20 cm Strips (Ravelled Strip Method), Min		Length	Width	Weave	
	Warp	Weft			Grey	Bleached	Dyed (with MK base)	Dyed (with other than MK base)	Warp	Weft				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(10)	(12)	(13)	(14)	
					g/m ²	g/m ²	g/m ²	g/m ²	N	N	m	cm		
1.	16s (36 tex)	14s (42 tex)	31	19	—	195	210	200	775	450	↑	↑	2/1 warp faced twill	
2.	14s (42 tex)	12s (50 tex)	27	19	240	—	—	—	650	450	36 or above as agreed	71 as or agreed	2.1 warp faced twill	
3.	14s (42 tex)	12s (50 tex)	38	19	—	245	270	255	1 075	625	↓	↓	3/1 warp faced twill	
4.	14s (42 tex)	10s (59 tex)	43	19	—	300	325	308	1 275	775	↓	↓	3/1 warp faced twill	
Tolerance Percent	—	—	± 5	± 5	←-----+ 5 ----->				—	—	—	± 2	—	
Method of Test	—	—	IS 1963 : 1981	←----- IS 1964 : 1970 ----->					IS 1969 : 1985	IS 1954 : 1969	Visual			

***NOTES**

- 1 1 Newton (N) is approximately equal to 0.102 kgf.
- 2 In case of bleached and dyed fabrics (other than mineral khaki base) the breaking load values may be less by 10 percent than the specified values.

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Table 2 Chemical Requirements of Cotton Drills
(Clause 4.2)

SI No.	Characteristics	Requirement		Method of Test
(1)	(2)	(3)		(4)
i)	Minimum colour fastness rating to:			
	a) Light (see Note 1):			IS 686 : 1985 or IS 2454 : 1985
	Shades dyed with MK base	5		
	Other shades	4		
	b) Washing: Test 5 (see Note 2)			IS 3417 : 1979
	Change in colour	4		
	Staining of adjacent fabrics	4		
	c) Bleaching (see Note 3)	4		IS 762 : 1988
	d) Perspiration, acidic and alkaline			IS 971 : 1983
	Change in colour	4		
	Staining of adjacent fabrics	4		
ii)	Scouring loss, percent, <i>Max</i> :			IS 1383 : 1977 (Mild method)
	a) Grey	7.5		
	b) Dyed with MK base	3.0		
	c) Scoured, bleached or dyed (Other than MK base)	2.0		
iii)	pH value:			IS 1390 : 1983 (Cold method)
	a) Shades dyed with MK base	6.0 to 10.0		
	b) Other shades	6.0 to 8.5		
iv)	Shrinkage or elongation, percent, <i>Max</i> :	Warpway	Weftway	IS 2977 : 1977
	a) Grey (for variety 2 only)	8.0	8.0	
	b) Bleached or dyed	4.0	4.0	
	c) Bleached/dyed and preshrunk	3.0	3.0	
	d) Mercerized and preshrunk (for variety 4 only)	1.0	1.0	
v)	Water solubles percent, <i>Max</i> (for bleached cloth only):			IS 3456 : 1966
	a) Unmercerized	1.0		
	b) Mercerized	1.4		
vi)	Ash content, percent, <i>Max</i> (for bleached, mer- cerized and preshrunk cloth only)	0.5		IS 199 : 1989
vii)	Barium activity number, <i>Min</i> (for mercerized cloth only)	120		IS 1689 : 1973

NOTES

- 1 In case of dispute, colour fastness to light shall be determined by the method prescribed in IS 686 : 1985.
- 2 In case of cloth dyed with mineral khaki base it shall be subjected to wash fastness according to IS 3417 : 1979 repeated four times.
- 3 This test shall not be carried out in case the cloth is dyed with iron and chromium salts (mineral khaki base).

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ANNEX A
(*Clause 2.1*)

LIST OF REFERRED INDIAN STANDARDS

<i>IS No.</i>	<i>Title</i>	<i>IS No.</i>	<i>Title</i>
171 : 1985	Cotton and cotton regenerated cellulosic fibre blended grey yarn (<i>third revision</i>)	1954 : 1969	Length and width of fabrics (<i>first revision</i>).
199 : 1989	Estimation of moisture, total size or finish, ash and fatty matter in grey and finished cotton textile materials (<i>third revision</i>)	1963 : 1981	Threads per unit length in woven fabrics (<i>second revision</i>)
293 : 1980	Code for seaworthy packaging of cotton yarn and cloth (<i>third revision</i>)	1964 : 1970	Weight per square metre and weight per linear metre of fabrics (<i>first revision</i>)
686 : 1985	Colour fastness of textile materials to daylight (<i>first revision</i>)	1969 : 1985	Breaking load and elongation of woven textile fabrics (<i>second revision</i>)
762 : 1988	Colour fastness of textile materials to hypochlorite bleaching (<i>first revision</i>)	2454 : 1985	Colour fastness of textile materials to artificial light (xenon lamp) (<i>first revision</i>)
971 : 1983	Colour fastness of textile materials to perspiration (<i>first revision</i>)	2977 : 1964	Dimensional changes in woven fabrics (other than wool) on soaking in water
1347 : 1972	Inland packaging of cotton cloth and yarn (<i>first revision</i>)	3417 : 1979	Colour fastness of textile materials to washing: Test 5 (<i>first revision</i>)
1383 : 1977	Scouring loss in grey and finished cotton textile materials (<i>first revision</i>)	3456 : 1966	Water soluble matter of textile materials
1390 : 1983	pH value of aqueous extract of textile materials (<i>first revision</i>)	3919 : 1966	Methods for sampling cotton fabrics for determination of physical characteristics fabrics (<i>first revision</i>)
1689 : 1973	Barium activity number of cotton textile materials (<i>first revision</i>)	5463 : 1969	Method for sampling cotton fabric for chemical tests

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Amendments Issued Since Publication

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AMENDMENT NO. 1 FEBRUARY 1993
TO
IS 177 : 1989 COTTON DRILLS — SPECIFICATION
(Fourth Revision)

(Page 2, Table 1):

- a) [*Under col (6) to (9), against 'tolerance percent'*] — Substitute '*see Note 3*' for the existing matter.
- b) (*Under 'Notes'*) — Insert the following new Note at the end:

'3 The average mass shall meet the requirement specified as indicated in the table. However, tolerance of — 2.5 percent shall be permitted on individual values of mass.'

(TX 02)

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AMENDMENT NO. 2 OCTOBER 1997
TO
IS 177 : 1989 COTTON DRILLS — SPECIFICATION
(Fourth Revision)

[Page 3, Table 2, Sl No. i(b), col 2] — Delete the words '(see Note 2)'.

(Page 3, Table 2, Note 2) — Delete Note 2 and renumber the subsequent Note and its reference in col 2 against Sl No. i(c).

[Page 3, Table 2, Sl No.(vii), col 2] — Insert the words '(see Note 3)' in the end and incorporate Note 3 as under at the end of the table:

'3 In case of fabric dyed with mineral *Khaki* shade, the barium activity number shall be determined after stripping the dye. The specimens shall be extracted with chloroform for one hour in a Soxhlet apparatus. The samples shall be treated with 5% hydrochloric acid at boil maintaining material to liquid ratio as 1 : 50 till the entire dye is stripped off. The samples shall then be washed with water and then boiled in soap-soda (5 g/j - g/j) solution for 30 minutes. Test specimen shall then be dried and conditioned in standard atmosphere.'

(TX 02)

**AMENDMENT NO. 3 FEBRUARY 2013
TO
IS 177 : 1989 COTTON DRILLS — SPECIFICATION**

(Page 1, clause 2) — Substitute the following for the existing:

2 REFERENCES

The standards listed in Annex A contain provisions which through reference in this text constitute provision 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.’

(Page 1, clause 3.2.1, sentence 1) — Insert the following at the end:

‘The dyed fabric shall be free from banned dyes, banned chemicals and heavy metals’.

(Page 1, clause 3.2.2) — Insert the following at the end:

‘Chlorine bleach shall not be used for the purpose’

[Page 3, Table 2 (see also Amendment No. 2)] — Insert the following table for the existing:

**Table 2 Chemical Requirements of Cotton Drills
(Clause 4.2)**

SI No.	Characteristics	Requirement	Method of Test, Ref to IS
(1)	(2)	(3)	(4)
i)	Minimum colour fastness rating to:		
	a) Light (see Note):	4	IS 686 or IS 2454

Amend No. 3 to IS 177 : 1989

SI No.	Characteristics	Requirement		Method of Test, Ref to IS
(1)	(2)	(3)		(4)
	b) Washing: Test 5:			IS/ISO 105-C10
	1) Change in colour	4		
	2) Staining of adjacent fabrics	4		
	c) Bleaching	4		IS 762
	d) Perspiration, acidic and alkaline:			IS 971
	1) Change in colour	4		
	2) Staining of adjacent fabrics	4		
ii)	Scouring loss, percent, <i>Max</i> :			IS 1383 (Mild method)
	a) Grey	7.5		
	b) scoured, bleached or dyed	2.0		
iii)	pH value:	6.0 - 8.5		IS 1390 (Cold method)
iv)	Shrinkage or elongation, present, <i>Max</i> :	Warpway	Weftway	IS 2977
	a) Grey (for variety 2 only)	8.0	8.0	
	b) Bleached or dyed	4.0	4.0	
	c) Bleached/dyed and preshrunk	3.0	3.0	
	d) Mercerized and preshrunk (for variety 4 only)	1.0	1.0	
v)	Water solubles percent, <i>Max</i> (for bleached cloth only):			IS 3456
	a) Unmercerized	1.0		
	b) Mercerized	1.4		
vi)	Ash content, percent, <i>Max</i> (for bleached, mercerized and preshrunk cloth only)	0.5		IS 199
vii)	Barium activity number, <i>Min</i> (for mercerized cloth only)	120		IS 1689

NOTE — In case of dispute, colour fastness to light shall be determined by the method prescribed in IS 686.

(Page 4, Annex A) — Delete ‘IS 3417 : 1979 colour fastness of textile materials to washing: Test 5 (*first revision*).’

Amend No. 3 to IS 177 : 1989

(Page 4, Annex A) — Substitute the following or the end of Annex A:

‘IS/ISO 105 C-10:2006 Textiles — Tests for colour fastness Part C10 Colour fastness to washing with soap or soda and soda’