# भारतीय मानक ब्यूरो BUREAU OF INDIAN STANDRADS

Draft For Comments Only

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भारतीय मानक मसौदा

# वस्त्रादि – विद्युत केबलों के लिए कॉटन सेल्वेज टेप – विशिष्टि

(आई एस 2847 का पहला पुनरीक्षण )

Draft Indian Standard

# TEXTILES — COTTON SELVEDGE TAPE FOR ELECTRIC CABLES — SPECIFICATION

(First Revision of IS 2847)

ICS 59.060.10

Technical Textile for ClothTech Application Including Narrow Fabric and Braid Sectional Committee, TXD 39 Last date for receipt of comments August 2023

#### FOREWORD

(Formal clauses will be added later)

This standard was first published in 1975 and subsequently revised in 1990. This revision has been made in the light of experience gained since its publication and to incorporate the following major changes:

- a) Title of the standard has been modified.
- b) BIS certification marking clause has been modified; and
- c) References to Indian Standard given in Annex A has been updated.

Tapes conforming to this specification are intended to be used as bedding for electric cable meant for laying underground or to be drawn into ducts.

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

accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

## **1 SCOPE**

**1.1** This standard prescribes constructional details and other particulars of six varieties of unsized cotton selvedge tapes for electric cables.

**1.2** This standard does not specify the general appearance and feel of tape (*see* also 3.4).

#### 2 REFERENCES

The standards listed below 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 below:

IS No.	Title
10.1000 0000	
IS 1390 : 2022	Textiles Determination of $pH$ of aqueous extract third revision of IS 1390
IS 1954 : 1990	Determination of length and width of woven fabrics – Methods (Second
	Revision)
IS 1963 : 1981	Methods for determination of threads per unit length in woven fabrics
	(Second Revision)
IS 1969 (Part 2) :	Textiles – Tensile properties of fabrics – Part 2 Determination of
2018	maximum force using the grab method (Fourth Revision)
IS 196 : 1966	Atmospheric conditions for testing

#### LIST OF REFERRED INDIAN STANDARDS

#### **2 GENERAL REQUIREMENTS**

#### 2.1 Yarn

The yarn used in the manufacture of tape shall be cotton yarn and shall be satisfactory in evenness of thread, and reasonably free from defects such as neps, slubs, knots, kinks, etc. The yarn shall be free from size or filling materials. The approximate count of warp and weft yarn is given in Table 1.

#### **2.2 Tape**

The tape shall be woven firmly and uniformly. The selvedges shall be uniform throughout. Tapes of varieties 1 and 3 to 6 shall be woven in plain weave and of variety 2 in herringbone twill weave.

#### **3 SPECIFIC REQUIREMENTS**

**3.1** The tape shall comply with the requirements of Table 1. Permissible tolerances and the methods of test for the various requirements have also been prescribed in the table.

# 3.2 pH Value

The pH value of the aqueous extract of tape shall be not less than 6.0 nor more than 8.0.

**3.2.1** The pH value of the aqueous extract of tape shall be determined by the hot method prescribed in IS 1390.

# 3.3 Length

The length of tape in a roll shall be 50 m or 100 m or any other length as agreed to between the buyer and the seller.

**3.3.1** The length of tape of each roll constituting the sample under test shall be determined by the method prescribed in IS 1954.

# 3.4 Sealed Sample

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

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

# 4 PACKAGING

**4.1** Unless otherwise agreed between the buyer and seller, The tape shall be wound on a hard core of sufficient strength to withstand the pressure of the tape when wound tightly on it. The dimensions of the core shall be as agreed to between the buyer and the seller. The core shall not be loosened when the roll is dropped on floor from a height of one metre. Short length pieces, if any, in the roll shall not be shorter than 20 m. A roll of 50 m length shall not contain more than 2 pieces. The number of short length pieces in rolls containing more than 50 m length of tape shall be as agreed to between the buyer and the seller. A maximum of 10 percent of short length pieces shall be permitted in a lot. The ends of the short length pieces shall be overlapped and sewn neatly across the whole width of the tape. Pins or staples shall not be used for joining the ends.

# **5 MARKING**

**5.1** Each roll shall be legibly marked at both ends with the following information:

a) Variety number and the legend 'Ref ISS';

- b) Width;
- c) Thickness;
- d) Length of roll and short length piece, if any;

- e) Manufacturer's name, initials, or trade-mark, if any;
- f) Month and year of manufacture; and
- g) Any other information as required by the law in force.

#### **5.2 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 thereunder, and the product(s) may be marked with the Standard Mark.

Table 1 Particulars of Unsized Cot	ton Selvedge	Tape for	Electric	Cables
(Clauses	2.1 and 3.1)			

SI No.	Variety No.	Width in	French of Yar	Count n (or	Ends in Full	Picks Per	Thickness In mm	Weight In g Per	Breaking Load in kg
		mm	Unive	ersal	Width	dm		100 m	on Full
			Count	) (See		(or			Width $\times$ 20
			Not	e)		In.)			cm Test
			warp	weft					Length, Min
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
i)	1	50	Nf 34/2	Nf 34	140	180	0.28	550	50
			(or 15	(or 15		(or 46)			
			tex $\times$ 2)	tex)					
ii)	2	50	Nf 68/2	Nf	300	200	0.30	600	80
			(or 7.4	68/2		(or 50)			
			tex $\times$ 2)	(or					
				$7.4 \times$					
				2 tex)					
iii)	3	70	Nf 34/2	Nf 25	168	180	0.28	750	60
			(or 15	(or 20		(or 46)			
			tex $\times$ 2)	tex)					
iv)	4	80	Nf 34/2	Nf 25	192	180	0.28	850	70
			(or 15	(or 20		(or 46)			
			tex $\times$ 2)	tex)					
v)	5	90	Nf 34/2	Nf 25	216	180	0.28	960	80
			(or 15	(or 20		(or 46)			
			tex $\times$ 2)	tex)					
vi)	6	110	Nf 34/2	Nf 25	264	180	0.28	1180	95
			(or 15	(or 20		(or 46)			
			tex $\times$ 2)	tex)					
	Folerance	± 2			± 5	± 5	± 10	± 5	
Me	thod of Test	IS			IS	IS	IS 1954	Appendix	IS 1959
		1954			1963	1963		А	

NOTES

- 1) French count = the number of 1000 m hanks in 0.5 kg.
- 2) Universal count, in tex = the number of grams per kilometre.
- 3) To convert French count to universal count in tex, divide 500 by French count.
- 4) To determine number of picks per inch, multiply the value for number of picks per diameter obtained on test by 0.254.
- 5) The measurement for width shall be made to an accuracy of 1 mm.
- 6) Thickness shall be determined at a pressure of 070 kg/cm<sup>3</sup>. The area of the presser foot of the micrometre gauge shall be 1 cm<sup>2</sup>. Separate readings shell be taken over the selvedges and between the Selvedges.

7) Corresponding requirement in cotton count (British) of the French count specified for various					
8) varieties are given below:					
French Count	British(English) Count				
Nf 68	80 s				
Nf 34	40 s				
Nf 25	30 s				

#### 6 PACKING

**6.1** A set of 10 rolls shall be wrapped in polythene film and the sets packed in bundles or cases as agreed to between the buyer and the seller.

#### 7 SAMPLING

## 7.1 Lot

The quantity of tape of one definite variety delivered to one buyer against one despatch note shall constitute a lot.

**7.2** The conformity of a lot to the requirements of this standard shall be determined on the basis of tests carried out on the rolls of tape selected from the lot.

**7.3** Unless otherwise agreed to between the buyer and the seller the number of rolls of tape to be selected at random from the lot shall be in accordance with col 3 of Table 2.

**7.4** For evaluating (a) width, (b) ends in full width, (c) picks per decimetre (or in.), (d) thickness, (e) weight, and (f) length of tape in the lot, the rolls selected as in col 3 of Table 2 shall constitute the test specimens.

Sl No.	Lot Size (No. of Rolls)	Sample Size	Permissible No. of Defective Rolls	Sub-Sample Size
(1)	(2)	(3)	(4)	(5)
i)	Up to 100	5	0	5
ii)	101 to 300	10	1	6
iii)	301 to 500	15	1	7
iv)	501 to 800	25	2	8
v)	801 to 1300	35	3	9
vi)	1301 and above	50	4	10

# Table 2 Sample Size and Criteria for Conformity

(Clauses 7.3, 7.4, 7.4.1 and 7.5)

**7.4.1** For evaluating (a) breaking load, and (b) pH value, the number of rolls specified in co1 5 of Table 2 shall constitute the test sample. The rolls shall be selected at random from those selected as in col 3. The required test specimens shall be drawn from each of the rolls and subjected to corresponding tests.

#### 7.5 Criteria for Conformity

The lot shall be considered to be in conformity with the requirements of the standard, if the following conditions are satisfied:

a) the number of rolls found defective in respect of any characteristic mentioned in **7.4** (except length), do not exceed the corresponding number given in col 4 of Table 2.

#### NOTE

- 1) In the case of length, the value obtained for the length of each roll shall be compared with its specified, declared or marked length. The mean percentage of deficiency in length, if any, shall be determined and made applicable to the lot.
- 2) From the observed values of breaking load, average  $(\bar{x})$  and the range (R) are calculated and the value of the expression  $\bar{x}$  0.4*R* is greater than or equal to the specified value.
- 3) From the observed *p*H values, the average x and the range *R* are calculated and the expression  $\bar{x} + 0.4R$  and  $\bar{x} 0.4R$  lie within the specified limit.
- 4) Average  $(\bar{x})$  is the value obtained by dividing the sum of observed values by the number of tests.
- 5) Range (R) is the difference between the maximum and the minimum in a set of observed values.

# ANNEX A (Table 1)

#### METHOD FOR DETERMINATION OF WEIGHT

### A-1. TEST SPECIMENS

A-1.1 For the purpose of this test, all rolls in the sample under test (*see* 7.4) shall constitute the test specimens.

# A-2. ATMOSPHERIC CONDITIONS FOR TESTING

**A-2.1** Unless otherwise provided for in an agreement between the buyer and the seller, the test shall be carried out in a standard atmosphere at  $(65 \pm 2)$  percent relative humidity and  $(27 \pm 2 \text{ °C})$  temperature (*see* also IS 196, or within a period of five minutes of the removal of a test specimen from the standard atmosphere.

# A-3. CONDITIONING OF TEST SPECIMENS

**A-3.1** Prior to evaluation, the test specimens shall be conditioned to moisture equilibrium in the standard atmosphere (*see* A-**2.1**), unless otherwise provided for in an agreement between the buyer and the seller.

**A-3.2** When the test specimens have been left in the standard atmosphere for 24 h in such a way as to expose, as far as possible, all portions of the test specimens to the atmosphere, they shall be deemed to have reached moisture equilibrium.

# A-4. PROCEDURE

A-4.1 Serially mark each test specimen.

**A-4.2** Take the test specimens in the serial order and determine their weight correct to the nearest 5 g. From the observed weight value of each test specimen and its observed length value (*see* **3.3.1**), calculate its weight per 100 m.

# A-5. REPORT

**A-5.1** Report the lot to be in conformity with the requirements of Table 1 if the number of rolls whose weight vary from the applicable value specified in Table 1 by more than the tolerance prescribed in the table, is not more than the corresponding number given in col 4 of Table 2.