IS : 3255 - 1979
(Reaffirmed 2013)
**(Reaffirmed 2019)**

*Indian Standard*

# SPECIFICATION FOR SCOURED OR DYED COTTON TAPES FOR AEROSPACE PURPOSES

*( First Revision )*

UDC 677.754 : 677.21 : 629.136.1



**INDIAN STANDARDS INSTITUTION**
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**Gr 3**

***June* 1980**

# AMENDMENT NO. 1 DECEMBER 1998
# TO
# IS 3255 : 1979 SPECIFICATION FOR SCOURED OR DYED COTTON TAPES FOR AEROSPACE PURPOSES
***( First Revision )***

[ *Page* 4, *Table* 1, *col 2* ] — For tolerance on width mentioned as '+ 1.5' and '+ 2.0' substitute '± 1.5' and ' ±2.0' respectively. ' 0 -0

( *Page* 5, *clause* 3.2 ) — Insert the following Note after the clause:

'NOTE - Sulphur dyes shall not bo used in production of dyed tapes.'

( T X 10 )

Reprography Unit, BIS, New Delhi, India

# AMENDMENT NO. 2 JULY 2014
# TO
# IS 3255 : 1979 SPECIFICATION FOR SCOURED OR DYED COTTON TAPES FOR AEROSPACE PURPOSES

***(First Revision)***

(*Page* 4, *clause* **1.1**) — Substitute the following for the existing clause:

'**1.1** This standard covers scoured and/or dyed cotton tapes used mainly in supply dropping parachutes.'

(TXD 13)

Publication Unit, BIS, New Delhi, India

IS : 3255 - 1979

# *Indian Standard*

# SPECIFICATION FOR SCOURED OR DYED COTTON TAPES FOR AEROSPACE PURPOSES

## *( First Revision )*

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# *Indian Standard*

# SPECIFICATION FOR SCOURED OR DYED COTTON TAPES FOR AEROSPACE PURPOSES

## *( First Revision )*

## 0. FOREWORD

**0.1** This Indian Standard ( First Revision ) was adopted by the Indian Standards Institution on 15 June 1979, after the draft finalized by the Textile Materials for Aerospace Purposes Sectional Committee had been approved by the Textile Division Council.

**0.2** The cotton tapes covered in this standard are used in supply dropping parachutes and for reinforcement of the canopies.

**0.3** In the present revision of the standard ( formulated in 1965 ) tapes covered in IND/ADE/0069 issued by the Ministry of Defence have also been included at the instance of Chief Inspectorate of Textiles & Clothing, Kanpur.

**0.3.1** Considerable assistance has been drawn from BS 3F 49 'Specification for cotton webbing', issued by the British Standards Institution, in formulation of this standard.

**0.4** To familiarize the industry with International System of Units ( SI units ), the basic as well as the recommended SI units for use in the textile industry are given in Appendix A.

**0.4.1** Standards of Weights and Measures Act, 1976 also stipulates use of SI units.

**0.5** 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*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Rules for rounding off numerical values ( *revised* ).

## 1. SCOPE

**1.1** This standard covers scoured and/or dyed cotton tapes of width 12.7, 19.0, 25.0, 28.5, 31.7, 38.0, 44.4, 50.0, 57.0, 63.5, 75.0, 89 and 102 mm, used mainly in supply dropping parachutes.

## 2. MATERIAL

**2.1** Unsized 3-ply cotton yarn free from spinning defects given in IS : 171-1973* may be found suitable.

## 3. REQUIREMENTS

**3.1** The tape shall meet the physical requirements given in Table 1.

**TABLE 1 PHYSICAL REQUIREMENTS**

| LENGTH PER ROLL | WIDTH mm | | MASS, *Max* | | ENDS IN FULL WIDTH | | PICKS/cm | WARPWAY BREAKING LOAD (20cm × FULL WIDTH), *Min* (*see* NOTE) | |
|---|---|---|---|---|---|---|---|---|---|
| | | | g/m | kg/100-m Roll, Net | | | | kN | kgf |
| (1) | (2) | | (3) | (4) | (5) | | (6) | (7) | (8) |
| 100 m unless otherwise specified | 12.7 | +1.5 −0 | 8 | 0.8 | 38 | +4 −0 | 12 +1 −0 | 0.54 | 55 |
| | 19.0 | | 12 | 1.2 | 56 | | | 0.84 | 86 |
| | 25.0 | | 16 | 1.6 | 74 | | | 1.22 | 125 |
| | 28.5 | | 18 | 1.8 | 84 | | | 1.24 | 127 |
| | 31.7 | | 20 | 2.0 | 94 | | | 1.38 | 141 |
| | 38.0 | | 24 | 2.4 | 112 | | | 1.81 | 185 |
| | 44.4 | | 28 | 2.8 | 130 | | | 1.96 | 200 |
| | 50.0 | | 31 | 3.1 | 148 | | | 2.45 | 250 |
| | 57.0 | | 36 | 3.6 | 168 | | | 2.50 | 255 |
| | 63.5 | | 40 | 4.0 | 186 | | | 2.78 | 284 |
| | 75.0 | | 47 | 4.7 | 222 | | | 3.68 | 375 |
| | 89 | +2.0 −0 | 55 | 5.5 | 258 | +6 −0 | | 3.90 | 398 |
| | 102 | | 63 | 6.3 | 294 | | | 4.46 | 455 |

(*Continued*)

*Specification for grey cotton yarn (*second revision*).

**TABLE 1 PHYSICAL REQUIREMENTS** – *Contd*

| LENGTH PER ROLL | WIDTH mm | MASS, *Max* g/m kg/100-m Roll, Net | END IN FULL WIDTH | PICKs/cm | WARPWAY BREAKING LOAD ( 20cm × FULL WIDTH ), *Min* ( *see* NOTE ) kN | kgf |
|---|---|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) | **(6)** | (7) | (8) |
| METHOD OF TEST | IS : 1954-1969* | IS : | 1961-1970† | IS : | 1963-1969‡ | IS : 1969-1968§ | |

NOTE — The test specimens shall be conditioned for 48 hours at 27 ± 2°C and 65 ± 2 percent RH before testing for breaking strength.

*Methods for determination of length and width of fabrics ( *first revision* ).

†Methods for determination of weight per square metre and weight per linear metre of fabrics ( *first revision* ).

‡Methods for determination of threads per decimetre in woven fabrics ( *first revision* ).

§Method for determination of breaking load and elongation at break of woven textile fabrics ( *first revision* ).

**3.2** The tape shall also meet the chemical requirements given as under:

| *Characteristic* | *Requirement* | *Method of Test* |
|---|---|---|
| *p*H value | 6.0 to 8.5 | IS : 1390-1961* |
| Colour fastness: | | |
| Light | 5 or better | IS : 686-1967† or IS : 2454-1967‡ |
| Washing | No colour bleeding ( 5 or better ) | IS : 764-1979§ |
| Scouring loss, percent, *Max* | 3 | IS : 1383-1977 \| ( Severe Method ) |
| Water solubles, percent, *Max* | 1 | IS : 3456-1966¶ |

*Methods for determination of *p*H value of aqueous extracts of textile materials.

†Method for determination of colour fastness of textile materials to daylight.

‡Method for determination of colour fastness of textile materials to artificial light ( xenon lamp ).

§Method for determination of colour fastness of textile materials to washing: Test 3 ( *second revision* ).

||Methods for determination of scouring loss in grey and finished cotton textile materials ( *first revision* ).

¶Method for determination of water soluble matter of textile materials.

**3.3** The tapes shall be uniformly woven with firm selvedges in 2 × 2 twill weave and be free from weaving defects and also from sizing and finishing materials.

**3.4** In respect of the requirements not covered in this standard the tapes shall not be inferior to the sealed sample agreed to in the contract or order.

## 4. PACKING

**4.1** Each roll shall be wrapped in kraft paper; further packing of rolls in the case or carton shall be as detailed in the contract or order.

## 5. MARKING

**5.1** Each roll shall carry the following information:

a) Name and variety of material,
b) Length/roll ( m ) and mass of roll ( g ),
c) Width of tape ( mm ),
d) Month and year of manufacture in suitable code, and
e) Name of the manufacturer/trade-mark.

**5.1.1** Each roll may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution ( Certification Marks ) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

**5.2** Each case/carton shall be marked with the details of the consignment as provided in the contract or order in addition to marking given in **5.1.**

## 6. SAMPLING

**6.1** The sampling, inspection and testing scheme shall be as detailed in the contract or order. For selecting suitable single, double or multiple sampling plans, IS : 2500 ( Part I )-1973* may be referred to.

NOTE — An Indian Standard on sampling, inspection and testing sckeme for aerospace textile stores is under preparation.

*Sampling inspection tables: Part I Inspection by attributes and by count of defects *(first revision)*.

# APPENDIX A

( *Clause* 0.4 )

## SI UNITS

TABLE 2 INTERNATIONAL SYSTEM UNITS

### Base Units

| QUANTITY | UNIT | SYMBOL |
|---|---|---|
| Length | metre | m |
| Mass | kilogram | kg |
| Time | second | s |
| Electric current | ampere | A |
| Thermodynamic temperature | kelvin | K |
| Luminous intensity | candela | cd |
| Amount of substance | mole | mol |

### Supplementary Units

| QUANTITY | UNIT | SYMBOL |
|---|---|---|
| Plane angle | radian | rad |
| Solid angle | steradian | sr |

### Derived Units

| QUANTITY | UNIT | SYMBOL | DEFINITION |
|---|---|---|---|
| Force | newton | N | 1 N = 1 kg.m/$s^2$ |
| Energy | joule | J | 1 J = 1 N.m |
| Power | watt | W | 1 W = 1 J/s |
| Flux | weber | Wb | 1 Wb = 1 V.s |
| Flux density | tesla | T | 1 T = 1 Wb/$m^2$ |
| Frequency | hertz | Hz | 1 Hz = 1 c/s ($s^{-1}$) |
| Electric conductance | siemens | S | 1 S = 1 A/V |
| Electromotive force | volt | V | 1 V = 1 W/A |
| Pressure, stress | pascal | Pa | 1 Pa = 1 N/$m^2$ |

**TABLE 3 RECOMMENDED SI UNITS FOR TEXTILES**

| SL No | CHARACTERISTIC | SI UNIT | | APPLICATION |
|---|---|---|---|---|
| | | Unit | Abbreviation | |
| (1) | (2) | (3) | (4) | (5) |
| 1) | Length | Millimetre | mm | Fibres |
| | | Millimetre, centimetre | mm, cm | Samples, test specimens ( as appropriate ) |
| | | Metre | m | Yarns, ropes, cordages, fabrics |
| 2) | Width | Millimetre | mm | Narrow fabrics |
| | | Centimetre | cm | Other fabrics |
| | | Millimetre, centimetre | mm, cm | Samples, test specimens ( as appropriate ) |
| | | Centimetre, metre | cm, m | Carpets, druggets, durries ( as appropriate ) |
| 3) | Thickness | Micrometre ( micron ) | µm | Delicate fabrics |
| | | Millimetre | mm | Other fabrics, carpets, felts |
| 4) | Linear density | Tex | tex | Yarns |
| | | Millitex | mtex | Fibres |
| | | Decitex | dtex | Filaments, filament yarns |
| | | Kilotex | ktex | Slivers, ropes, cordages |
| 5) | Diameter | Micrometre ( micron ) | µm | Fibres |
| | | Millimetre | mm | Yarns, ropes, cordages |
| 6) | Circumference | Millimetre | mm | Ropes, cordages |
| 7) | Threads in fabric: | | | Woven fabrics ( as appropriate ) |
| | a) Lengthwise | Number per centimetre | ends/cm | |
| | | Number per decimetre | ends/dm | |
| | b) Widthwise | Number per centimetre | picks/cm | |
| | | Number per decimetre | picks/dm | |
| 8) | Warp threads in loom | Number per centimetre | ends/cm | Reeds |

( *Continued* )

**TABLE 3 RECOMMENDED SI UNITS FOR TEXTILES** — *Contd*

| SL No. | CHARACTERISTIC | SI UNIT | | APPLICATION |
|---|---|---|---|---|
| | | Unit | Abbreviation | |
| (1) | (2) | (3) | (4) | (5) |
| 9) | Stitches in knitted fabric: | | | Knitted fabrics ( as appropriate ) |
| | a) Lengthwise | Courses per centimetre | courses/cm | |
| | | Courses per decimetre | courses/dm | |
| | b) Widthwise | Wales per centimetre | wales/cm | |
| | | Wales per decimetre | wales/dm | |
| 10) | Stitch length | Millimetre | mm | Knitted fabrics, made-up items |
| 11) | Mass per unit area | Grams per square metre | $g/m^2$ | Fabrics |
| 12) | Mass per unit length | Grams per metre | k/m | Fabrics |
| 13) | Twist | Turns per centimetre | turns/cm | Yarns, ropes ( as appropriate ) |
| | | Turns per metre | turns/m | |
| 14) | Test or gauge length | Millimetre, centimetre | mm, cm | Fibre, yarn and fabric specimens ( as appropriate ) |
| 15) | Breaking load | Millinewton | mN | Fibres, delicate yarns ( individual or skeins ) |
| | | Newton | N | Strong yarns ( individual or skeins ), ropes, cordages, fabrics |
| 16) | Breaking length | Kilometre | km | Yarns |
| 17) | Tenacity | Millinewton per tex | mN/tex | Fibres, yarns ( individual or skeins ) |
| 18) | Twist factor or twist multiplier | Turns per centimetre × square root of tex | turns/cm × $\sqrt{\text{tex}}$ | Yarns ( as appropriate ) |
| | | Turns per metre × square root of tex | turns/m × $\sqrt{\text{tex}}$ | |
| 19) | Bursting strength | Newton per square centimetre | $N/cm^2$ | Fabrics |

( *Continued* )

**TABLE 3 RECOMMENDED SI UNITS FOR TEXTILES — *Contd***

| SL No. | CHARACTERISTIC | SI UNIT | | APPLICATION |
|---|---|---|---|---|
| | | Unit | Abbreviation | |
| (1) | (2) | (3) | (4) | (5) |
| 20) | Tear strength | Millinewton | mN | Fabrics ( as appropriate ) |
| | | Newton | N | |
| 21) | Pile height | Millimetre | mm | Carpets |
| 22) | Pile density | Mass of pile yarn in grams per square metre per millimetre pile height | $g/m^2/mm$ pile height | Pile carpets |
| 23) | Elastic modulus | Millinewton per tex per unit deformation | mN/tex/ unit deformation | Fibres, yarns, strands |

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