BS 7141 : Part 6 : 1989

British Standard

Narrow fabrics

Part 6. Specification for laces for footwear and other purposes

Tissus étroits
Partie 6. Lacets pour chaussures et autres usages

Feste Gewebe
Teil 6. Bänder für Schuhwerk und andere Zwecke

British Standards Institution

Foreword

This Part of BS 7141 has been prepared under the direction of the Textiles and Clothing Standards Policy Committee and supersedes BS 1801 : 1956 and BS 4004 : 1966 which are withdrawn. This Part includes only those products from BS 1801 and BS 4004 that are known to be still in use, although the fibre types permissible are less restrictive.

Cross-references are given in appendix A and information specifically requested by the Ministry of Defence (MoD) and which was previously contained in defence standards is given in appendix B.

This Part of BS 7141 is based more on performance criteria than BS 1801 and BS 4004 although some elements of construction are included.

Other Parts of this British Standard are:

Part 1 *Specification for polyamide and polyolefin woven tapes and webbings

Part 2 *Specification for cotton webbings for personal load carrying purposes

Part 3 *Specification for wool tapes

Part 4 *Specification for woven elastic webbings containing natural rubber

Part 5 *Specification for elastic flat braids containing natural rubber

Product certification. Users of this British Standard are advised to consider the desirability of third party certification of product conformity with this British Standard based on testing and continuing surveillance, which may be coupled with assessment of a supplier's quality systems against the appropriate Part of BS 5750.

Enquiries as to the availability of third party certification schemes will be forwarded by BSI to the Association of Certification Bodies. If a third party certification scheme does not already exist, users should consider approaching an appropriate body from the list of Association members.

Compliance with a British Standard does not of itself confer immunity from legal obligations. In particular, attention is drawn to The Textile Products (Indications of Fibre Content) Regulations S.I. 1986 No. 26.

*In preparation.

Contents

Specification

1 Scope

This Part of BS 7141 specifies requirements for laces for use in footwear and other purposes.

NOTE. The titles of the publications referred to in this standard are listed on the inside back cover.

2 Construction and performance

Laces for footwear for general purpose applications shall comply with table 1. Laces for military use shall comply with table 2.

NOTE 1. The main constructions of braided laces are given in table 1. Other constructions are permissible provided the resultant laces meets the performance requirements of tables 1 and/or 2.

NOTE 2. It is possible to check compliance with all requirements by testing material taken from rolls or packages of uncut lace.

Table 1. General purpose laces

Description	Minimum breaking strength tested in accordance with BS 5131 : Section 3.7	Minimum abrasion tested in accordance with BS 5131 : Section 3.6
Normal duty	N 190	5000 cycles to break
Heavy duty	240	15000 cycles to break

NOTE 1. Knot security (resistance to knot slippage) is an important property of boot and shoe laces but no suitable test method is currently available to assess this. It is therefore recommended that where synthetic fibres are used alone for the production of laces, they be crimped, texturized or bulked to assist in knot security.

NOTE 2. Performance requirements for safety footwear are given in BS 1870 : Part 1.

Tags shall be either of thermoplastics material or metal and of length not less than 12.5 mm.

Thermoplastics tags shall be so fitted that the loop over is heat sealed and the plastics fused into the lace so as to be an integral part of the lace.

NOTE 3. Cellulose acetate tags have been found to be suitable.

Metal tags shall be made from metal strip not less than 0.10 mm in thickness and shall be lacquered for coloured tags and tinned, galvanized or lacquered for white tags. Metal tags shall be so fitted that the end of the lace is flush with or protrudes from the end of the tag. Each tag shall overlap and shall have prickers giving a rough inner surface to grip the lace.

3 Sampling and conditioning

3.1 General

If requested by the purchaser, sampling shall be as given in 3.2 or 3.3.

3.2 Sampling of rolls

Inspection lots shall not exceed 100 rolls.

The rolls to be sampled shall be selected at random from each lot.

One sample of not less than 2 m in length shall be taken from each roll selected. The number of samples taken shall be as follows:

(a) one sample for a lot not exceeding 5 rolls,

(b) two samples for a lot not exceeding 10 rolls;

(c) three samples for a lot not exceeding 50 rolls;

(d) four samples for a lot not exceeding 100 rolls.

3.3 Sampling of pairs of laces

Inspection lots shall not exceed 1000 pairs of laces.
The pairs of laces to be sampled shall be selected at random from each lot.

One sample pair of laces shall be taken in the following ratio:

(a) one sample from a lot not exceeding 50 pairs of laces;

(b) two samples from a lot not exceeding 100 pairs of laces;

(c) three samples from a lot not exceeding 500 pairs of laces;

(d) four samples from a lot not exceeding 1000 pairs of laces.

3.4 Conditioning

In the event of dispute samples shall be pre-conditioned for 4 h at a relative humidity not exceeding 10 %, at a temperature not greater than 50 °C and subsequently exposed to the standard temperate atmosphere for testing textiles as defined in BS 1051 for not less than 24 h and tested without removal from that atmosphere.

Table 2. Laces for military use

Reference number	Description	Min. mass per unit length (appendix C)	Min. breaking force (BS 5131 : Section 3.7)	Construction			Min. colour fastness to various agencies (grade)				Tag
				Min. number of threads in braid (appendix D)	Number of threads in core (appendix D)	Min. plaits per 10 millimetres (appendix E)	Light (BS 1006 section B02)	Water (BS 1006 section E01)	Perspiration (BS 1006 section E04)	Washing (BS 1006 section C06 test C2S)	
		g/m	N								
1	Cotton, round with core	2.4	200	32	5	10	4	4	–	–	Yes
2	Cotton, tubular pressed flat	3.8	420	80	–	9	4	4	–	–	Yes
3	Polyamide, tubular pressed flat	2.1	667	48	–	9	4	4	–	–	Yes
4	Polyamide, tubular pressed flat	2.9	890	64	–	9	4	4	–	–	Yes
5	50/50 cotton*/ polyamide tubular pressed flat	2.6	550	80	–	11	–	–	Change 4 – 5 Staining 4 – 5	Change 4 – 5 Staining 4 – 5	Yes
6	Polyamide, tubular pressed flat†	3.9	500	94	–	9	5	–	Change 4 Staining 4	–	No

*Produced by using cotton thread and polyamide thread alternately, e.g. one each per carrier.

†The braid being uniformly constructed in tubular form without gut, using 48 braiding spindles, and pressed flat, with the edges being neat and straight.

4 Marking

A ticket or other suitable label shall be attached to each container carrying the following information:

(a) the number and date of this Part of BS 7141*, i.e. BS 7141 : Part 6 : 1989*;

(b) the description and/or reference number of the product in accordance with tables 1 and 2 and, if appropriate, the fibre type and tag type;

(c) the name, trade mark or other means of identification of the manufacturer;

(d) the length, if appropriate;

(e) the date/year and month of manufacture, if appropriate;

(f) any other information requested by the purchaser.

NOTE. Other information may also be requested by the customer and/or be considered by the manufacturer as essential/helpful, e.g. colour. For MoD contracts such additional information may include the contract number, the NATO stock number (see table 4), the pattern number and the item name and description. See appendix B for MoD contracts.

Appendices

Appendix A. Cross-references

Cross-references between the reference numbers specified in this Part of BS 7141 and reference numbers in previous standards are given in table 3.

Table 3. Cross-references

Reference number (see table 2)	Previous number reference
1	BS 1801 : 1956/8
2	BS 1801 : 1956/21
3	BS 4004 : 1966/1
4	BS 4004 : 1966/2
5	–
6	UK/SC 4782 (Ministry of Defence)

Appendix B. Supplementary information for MoD contracts

B.1 Construction

Details of construction for laces for MoD contracts are given in table 2. NATO stock numbers are given in table 4.

Table 4. NATO stock numbers

Reference number (see table 2)	Pattern number	Colour	NATO stock number
1	9483A	White	4020-99-130-3129
2	9483B	Black	4020-99-130-3130
3	9483C	Green	4020-99-130-3131

B.2 Standard patterns

A standard pattern obtainable from the authority named in the tender or contract provides criteria for any properties not specified in this Part of BS 7141.

B.3 Non-compliance

In the event of non-compliance with the specified requirements, any resampling is at the discretion of the Quality Assurance Directorate of the MoD.

Appendix C. Method for the determination of mass per unit length

Subject the specimen in a loose unrolled state to the standard temperate atmosphere for testing textiles specified in BS 1051 for 24 h.

Determine the mass (in g to the nearest 0.1 g) of length of braid approximately 1 m long. Determine the length of braid (in m to the nearest mm) under a load of 30 g (to keep the braid straight). Calculate the mass per unit length in g/m to the nearest 0.1 g/m by determining the mean of three determinations. For tagged laces carry out the same procedure using sufficient laces to give a total length of at least 3 m (i.e. if the laces are 600 mm long, weigh and measure accurately five such laces).

In the case of tagged laces, determine the mass of an equivalent number of loose tags and subtract from the gross mass to give the mass of braid. Alternatively cut off the tags before testing.

*Marking BS 7141 : Part 6 on or in relation to a product represents a manufacturer's declaration of conformity, i.e. a claim by or on behalf of the manufacturer that the product meets the requirements of the standard. The accuracy of the claim is therefore solely the responsibility of the person making the claim. Such a declaration is not to be confused with third party certification of conformity, which may also be desirable.

Appendix D. Method for counting the total number of threads in the braid or core

Determine the number of ends in the braid by dissecting a short length of the braid and counting the threads. Record separately the number of braiding ends or core threads.

Appendix E. Method for the determination of plaits per 10 mm

Lay the braid on a smooth flat plate without tension. Count the plaits (interlacings) to the nearest half plait, over a distance of 25 mm and calculate the number of plaits per 10 mm. Make five determinations at random on the sample.

Publications referred to

BS 1006	Methods of test for colour fastness of textiles and leather
BS 1051	Glossary of terms relating to the conditioning, testing and mass determination of textiles
BS 1801*†	Specification for tagged boot and shoe laces (cotton)
BS 1870	Safety footwear
	Part 1 Specification for safety footwear other than all-rubber and all-plastics moulded types
BS 4004*†	Specification for nylon boot and shoe laces
BS 5131	Methods of test for footwear and footwear materials
	Section 3.6 Abrasion resistance of shoe laces
	Section 3.7 Breaking strength of shoe laces
BS 5750*	Quality systems
BS 6663	Methods for determination of crimp rigidity of textured nylon yarns
BS 7141*	Narrow fabrics
	Part 1 Specification for polyamide and polyolefin woven tapes and webbings
	Part 2 Specification for cotton webbings for personal load carrying purposes
	Part 3 Specification for wool tapes
	Part 4 Specification for woven elastic webbings containing natural rubber
	Part 5 Specification for elastic flat braids containing natural rubber
UK/SC 4782†	Ministry of Defence. Cord, braided, nylon, white, black, green

* Referred to in the foreword only.

† Withdrawn on publication of this British Standard.