BS 7141:

Part 1: 1991

(1993A)

# **Narrow fabrics**

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

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Feste Gewebe Teil 1. Webbänder und Gurtbänder aus Polyamid und Polyolefin

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Textiles and Clothing Standards Policy Committee (TCM/-) to Technical Committee TCM/7, upon which the following bodies were represented:

**British Narrow Fabrics Association** British Polyolefin Textiles Association Consumer Policy Committee of BSI Home Laundering Consultative Council Man-made Fibres Producers' Committee Ministry of Defence SATRA Footwear Technology Centre Society of Dyers and Colourists Textile Institute

Train British Standard, having prepared under the direction of the Textiles and Charling Standards Policy Committee, was published under the withority of the Board of BSI and mes into effect on 31 muary 1991

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### **Specification**

### 1 Scope

This Part of BS 7141 specifies requirements for polyamide and polyolefin woven narrow fabrics (tapes and webbings) for use in the public sector and for general use.

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

### 2 Definitions

For the purposes of this Part of BS 7141 the following definitions apply.

### 2.1 batch

A definite quantity of some commodity produced under presumed uniform conditions.

### 2.2 beading

A feature of narrow fabrics in which one or both of the selvedges stand proud of the fabric, usually due to the edge lock threads being unduly thick.

NOTE. It is usually classed as a defect, but sometimes, in special cases, is required as a feature of the fabric.

#### 2.3 bias

Curvature exhibited by a narrow fabric in the horizontal plane when laid flat on a horizontal surface.

### 2.4 narrow fabric

Any fabric made by interlacing fibres or yarns which (in the UK) does not exceed 450 mm in width. In the USA and for the purposes of the Combined Nomenclature of the European Community for tariff purposes the upper limit of width is 300 mm. A characteristic of a narrow fabric is that its edges are an essential feature.

### 2.5 needleloom

A shuttleless loom in which the weft is drawn from a stationary supply and introduced into the shed in the form of a double-pick by a weft insertion needle. The weft is retained at the opposite selvedge by the action of knitting, or by introduction of a locking thread from a separate supply.

### 2.6 needleloom selvedge

The selvedge opposite to that from which the weft is inserted in a narrow fabric needleloom.

NOTE 1. Usually this selvedge is formed by knitting together successive double-pick weft loops, sometimes in combination with, or exclusively by means of a locking thread from a stationary supply. Alternatively, the locking thread may be supplied from a small spool arranged to be passed through the extremities of the weft loops.

NOTE 2. A needleloom selvedge system is illustrated in figure 1.

### 2.7 pick

A single operation of the weft insertion mechanism in weaving. Thus the 'double-pick' inserted by a needleloom is defined as one pick.



When used without qualification, a longitudinal edge of a fabric formed during weaving, with the weft not only turning at the edges but also passing continuously across the width of the fabric from edge to edge.

### 2.9 shuttleloom

A weaving machine that uses a shuttle to insert the weft.

#### 2.10 stuffer thread

A thread incorporated in a woven, knitted or braided structure, sometimes for the purpose of limiting its extension, sometimes to provide bulk and strength.

### 2.11 spirality

Twisting of a narrow fabric around the vertical axis when held at one end in the vertical position.

### 2.12 tape

A woven fabric, generally plain-weave, used in non-loadbearing applications and for the reinforcing of fabrics to resist wear and deformation.

### 2.13 V draft

In twill fabrics having alternate right and left twills forming a series of Vs, the number of V formations across the fabric width.

### **2.14** weave

The pattern of interlacing of warp yarns and weft yarns in a woven fabric.

### 2.15 webbing

A woven narrow fabric, the prime function of which is loadbearing.

NOTE. Webbing is generally of a coarse weave and often has multiple plies.  $\,$ 

### 3 Sampling

Samples shall not be taken from the first 3 m of textile manufactured. Sampling shall be as follows.

- (a) Woven fabrics, loomstate.
  - (1) For fabrics woven from beams, take one sample from one piece per beam.

NOTE. The quantity of fabric produced from one weaver's beam or from a creel contains the same warp yarns throughout and is woven in one particular form. As such, it constitutes a unique batch or unit of production, provided that weft yarn of substantially consistent quality has been used. If a fresh delivery of weft yarn of unproved quality is introduced during weaving the warp, a fresh batch has been created and further samples for complete fabric tests become necessary. Manufacturers should maintain continuous quality control of weft yarn in respect of the relevant properties, e.g. type of fibre, linear density, strength.

(2) For fabrics woven from creels, take one sample from one piece from each continuously woven length not exceeding 5000 m.

### Foreword

ACHORDS TRANSPORT



This Part of BS 7141 has been prepared under the direction of the Textiles and Clothing Standards Policy Committee. It includes the woven tapes and webbings falling within the scope of this standard that were previously specified by the Ministry of Defence. The standard is intended for use by the public sector when purchasing woven tapes and webbings.

Cross-references are given in appendix A, and information specifically required by the Ministry of Defence and which was previously contained in Defence Standards is given in appendix B. Appendix C gives yarn constructions used to manufacture to the standard patterns. Appendix D gives recommendations for product properties which are desirable but which, with present technology, cannot be specified objectively.

Other Parts of BS 7141 are as follows:

- 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
- Part 6 Specification for laces for footwear and other purposes.

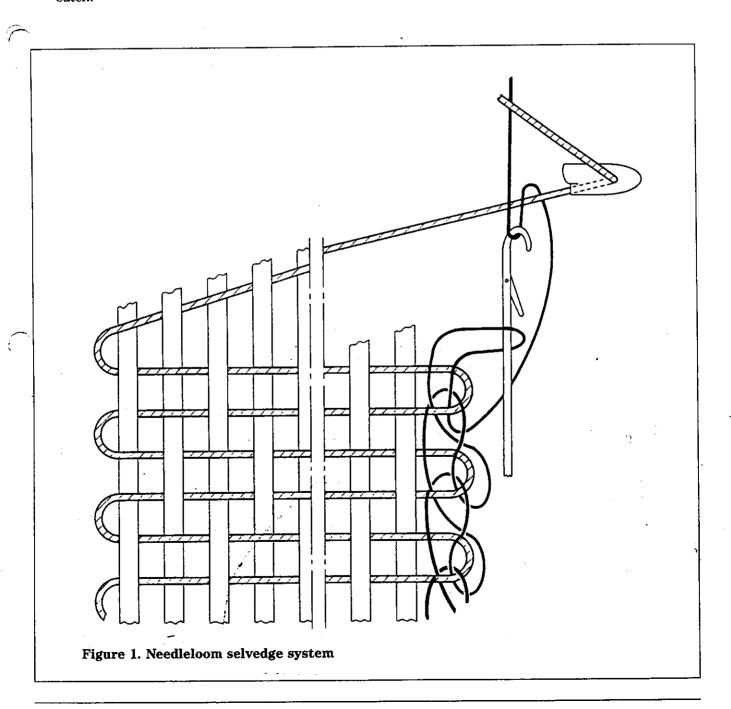
Compliance with a British Standard does not of itself confer immunity from legal obligations. In particular attention is drawn to The Textile Products (Indications of Fibre Content) Regulations S.I 1986 No. 26.

- (3) If several narrow fabrics are woven simultaneously in the same loom, take one sample from each continuously woven length not exceeding 5000 m.
- (b) Woven fabrics, piece treated.
  - (1) For woven fabrics already proved by test in loomstate, take one sample from one piece per finisher's batch per fabric type and manufacturer.
  - (2) For woven fabrics not subject to test in loomstate, take one sample from one piece per weaver's beam or each continuously woven length not exceeding 5000 m per finisher's batch.

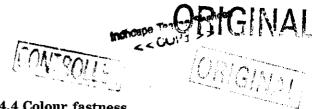


(3) If a finisher's batch consists of further pieces from a weaver's beam, or from continuously woven lengths previously proved by test in the finished condition, take one sample from one piece from the finisher's batch.

In the event of dispute, samples shall be pre-conditioned for 4 h at a relative humidity not exceeding 10 % and 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.



4



### 4 Polyamide (nylon) webbings

### 4.1 Yarn

The webbings shall be manufactured from bright continuous filament polyamide 6.6 yarn. The varn shall not be sized.

NOTE. Yarn construction details are given in appendix C.

### 4.2 Construction and properties

The fabrics shall be woven either in a shuttleloom, or in a needleloom manner. In the latter case the weaving used shall be one of the following:

- (a) with spool type interlocking in the body of the webbing as shown in figure 2;
- (b) the weft knitted with a locking thread as shown in figure 3;
- (c) the weft secured by two knitted locking threads as shown in figure 4.

NOTE. The knitted edge of a needleloom construction should be uniform and even.

The weave description and fabric properties shall be as given in table 1.

### 4.3 Dyeing

Sulphur black dyes shall not be used.

### 4.4 Colour fastness

The colour fastness of the yarn or finished fabric shall be as given in table 2.

NOTE. If the colour fastness of the yarn has been tested prior to manufacture, there is no need to carry out further tests after manufacture.

### 4.5 Dimensional stability

The dimensional stability of the fabric as supplied shall be such that, when tested in accordance with appendix E, the shrinkage of the length shall not exceed 2 %.

### 4.6 pH of aqueous extract

The pH of the aqueous extract, when determined in accordance with the hot water method described in BS 3266, shall be not less than 5 and not more than 8.

### 4.7 Extension

The minimum extension of pattern number 5447 fabric, when tested in accordance with appendix F, shall be not less than 10 %.

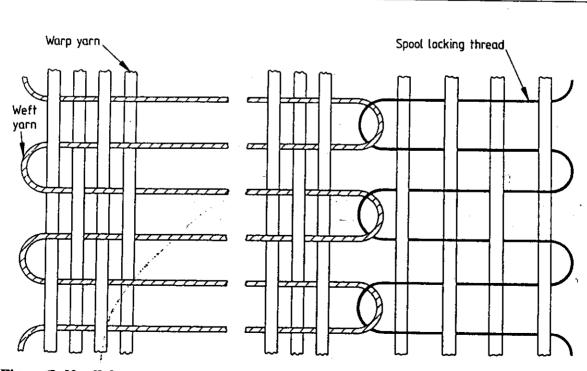


Figure 2. Needleloom construction with spool type interlocking



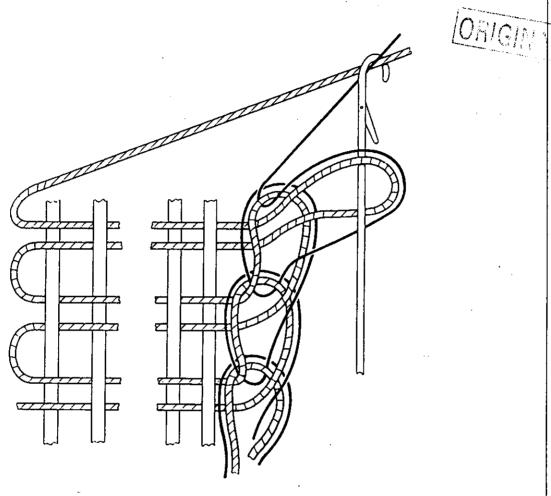


Figure 3. Needleloom construction with the weft knitted with a locking thread

### 5 Polyethylene (polyolefin) webbings

The webbing shall be woven from manufactured yarn of round cross section of 0.375 mm diameter spun from high density polyethylene (specific gravity 0.94 to 0.96) and shall be woven as given in table 3 and shown in figure 5. The webbing shall be as given in table 3.

NOTE. If a white web is required the pigmentation should be such that there is no yellowing in use or in storage.

### 6 Marking

Tapes and webbings shall be provided with a ticket or other means of marking carrying the following information:

- (a) the number and date of this Part of BS 7141, i.e. BS 7141 : Part 1 : 1991<sup>1</sup>);
- (b) the reference number of the product in accordance with table 1;
- (c) the name, trademark or other means of identification of the manufacturer.

NOTE. For MoD contracts, additional information will include the contract number, the NATO stock number where appropriate (see table 4), and the pattern number (see table 1).

<sup>1)</sup> Marking BS 7141: Part 1: 1991 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.

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| Pattern<br>number | Width (determined in accordance with | width     |            |        | Picks<br>per     | Weave details   | Nominal<br>mass per | Nominal<br>thickness <sup>1)</sup>        | Minimum<br>breaking   |
|-------------------|--------------------------------------|-----------|------------|--------|------------------|---|---------------------|---|-----------------------|
|                   | BS 1930)                             | Main warp | Selvedge   | Binder | 100 mm<br>(± 10) |   | unit length         |   | strength <sup>2</sup> |
|                   | mm                                   |           |            | -      |                  |   | g/m                 |   | NT.                   |
| 9350              | 12 ± 1                               | 59        | <u> </u>   | 14     | 170              | Two ply plain with binders weaving 2 × 2 alternately  | 10.0                | mm<br>1.20                                | N<br>3 500            |
| 9350              | 19 ± 1                               | 95        |            | 22     | 170              | Two ply plain with binders weaving 2 × 2 alternately  | 17.0                | 1.20                                      | 4 500                 |
| 9350              | 25 ± 1                               | 123       | _          | 29     | 170              | Two ply plain with binders weaving 2 × 2 alternately  | 22.0                | 1.20                                      | 7 000                 |
| 9351              | 25 ± 1                               | 167       | <b> </b> _ | 20     | 120              | Two ply plain with binders weaving $1 \times 1$   | 27.0                | 1.55                                      | 0.000                 |
| 9352              | 50 ± 2                               | 264       | <b>-</b> ' | _      | 80               | $2 \times 2$ V twill $2 \times 2$ twill double V $\frac{A_{110}}{7130}$                       | 62.5                | 1.50                                      | 9 000<br>26 500       |
| 9353              | 100 ± 3                              | 350       | _          | _      | 170              | 2 × 2 V twille 2 × 2 twill double V 7170  | 49.0                | 0.76                                      |                       |
| 9354              | 32 ± 2                               | 184       | 11         | 46     | 130              | Two ply plain with binders weaving $1 \times 1$ :   | 48.0                | 2.03                                      | 18 000                |
|                   |                                      |           |            |        | 100              | 54 mm solid, 22 mm buttonhole, 57 mm solid.   | 46.0                | 2.03                                      | 4 500                 |
| 9355              | 64 ± 2                               | 351       |            |        | 140              | Buttonhole offset 6 mm from the centre  |                     |   |                       |
| 9438              | 25 ± 1                               | 80        | _          | _      | 140              | Two ply plain tubular   | 56.0                | 1.50                                      | 18 000                |
| 9439              | 19 ± 1                               | 94        | _          |        | 210              | $2 \times 2$ twill  | 3.5                 | 0.45                                      | 1 070                 |
| 9440              | 25 ± 1                               | 130       | _          | _      | 210              | 2 × 2 V twill   | 3.9                 | 0.45                                      | 1 400                 |
| 9442              | 12 ± 1                               | 50        | _          | _      | 210              | 2 × 2 V twill   | 5.0                 | 0.45                                      | 1 870                 |
| 9442              | 19 ± 1                               | 74        |            | _      | 140              | 2 × 2 V twill   | 7.0                 | 1.00                                      | 2 250                 |
| 9442              | 25 ± 1                               | 100       | _          | _      | 140<br>140       | $2 \times 2 \text{ V twill}$  | 12.0                | 1.00                                      | 3 350                 |
| 9442              | 38 ± 2                               | 150       | _          |        | 140              | $2 \times 2 \text{ V twill}$  | 15.0                | 1.00                                      | 4 500                 |
| 442               | 44 ± 2                               | 176       | _          | -      | 140              | $2 \times 2 \text{ V twill}$  | 22.0                | 1.00                                      | 6 675                 |
| 9442              | 50 ± 2                               | 200       | _          | -      | 140              | $2 \times 2 \text{ V twill}$<br>$2 \times 2 \text{ V twill}$                                  | 26.0                | 1.00                                      | 7 790                 |
| 442               | 55 ± 2                               | 224       | _          | _      | 140              | $2 \times 2 \text{ V twill}$ $2 \times 2 \text{ V twill}$                                     | 30.0                | 1.00                                      | 9 000                 |
| 9442              | 64 ± 2                               | 250       | _          | _      | 140              | $2 \times 2 \text{ V twill}$<br>2 × 2 V twill   | 33.0                | 1.00                                      | 10 000                |
| 9442              | 75 ± 2                               | 300       | _          |        | 140              | $2 \times 2 \text{ V twill}$  | 39.0                | 1.00                                      | 11 125                |
| 9442              | 100 ± 3                              | 400       |            | _      | 140              | $2 \times 2 \text{ V twill}$<br>$2 \times 2 \text{ V twill}$                                  | 45.0                | 1.00                                      | 13 350                |
| 9443              | 10 ± 1                               | 30        | _ 1        | _      | 170              | $2 \times 2$ twill $2 \times 2$ twill   | 60.0                | 1.00                                      | 18 000                |
| 9446              | 38 ± 2                               | 200       | 15         | 26     | 100              |   | 5.0                 | 0.90                                      | 1 350                 |
|                   |                                      | 200       | 10         | 20     | 100              | Two ply plain with binders weaving $2 \times 2$ alternately. Face and back warp yarns weaving | 90.0                | <b>3</b> 90<br><b>3</b> 00<br><b>9</b> 00 | 26 500                |
| )447              | 95 1                                 | 100       | }          |        |                  | 2 as 1. Edge warp yarns single  | Id                  | <b>)</b>                                  |                       |
|                   | 25 ± 1                               | 180       | -          | _      | 170              | See figure 5, weave A   | 8.0                 | <b>:</b> -                                | 800                   |
| 454               | 38 ± 2                               | 279       |            | 34     | 100              | Two ply plain with binders weaving $1 \times 1$   | 40.0 / 🗲            | -1/40                                     | 13 500                |
| <b>1472</b>       | 32 + 1, - 2                          |           |            | 11     | 110              | Two ply plain with beaded edges with binders  | 76.0                | · <del>/</del>                            | _ `                   |
|                   | ,                                    | Ì         | stuffers   |        |                  | weaving $2 \times 2$ . Warp ends weaving 2 as 1.  |                     | J .                                       |                       |
|                   | d in accordance with                 |           | - 1        | 1      | ]                | 6 mm beads with selvedge  |                     |   |                       |

<sup>1)</sup> Measured in accordance with BS 2544 under a pressure of 20 kPa.
2) Measured in accordance with BS 2576 using full width of sample.

NOTE. When produced on a shuttleless loom (two picks per shed), the weft yarn should be half the linear density stated and may be single or folded.



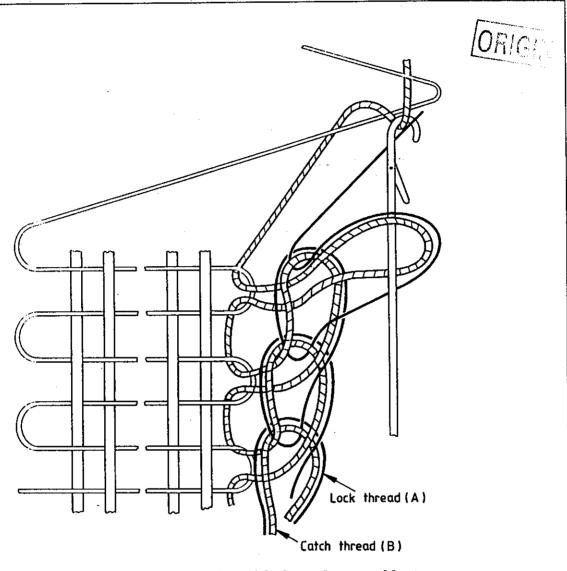
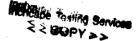


Figure 4. Needleloom construction with the weft secured by two knitted locking threads

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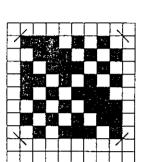
| Method of tes               | t in accordance         | with BS 10             | 06          |                              |          |  |
|-----------------------------|-------------------------|------------------------|-------------|------------------------------|----------|--|
| Xenon light,<br>section B02 | Rubbing,<br>section X12 | Washing,<br>section CO | 6, test B2S | Perspiration,<br>section EO4 |          |  |
|                             | Dry and wet             | Colour<br>change       | Staining    | Colour<br>change             | Staining |  |
| 6                           | 4 - 5                   | 4 - 5                  | 3 - 4       | 4 - 5                        | 4        |  |



| Table 3.            | Table 3. Fabric construction for polyethylene webbings |   |                      |                |                         |   |  |  |
|---------------------|--|---|----------------------|----------------|-------------------------|---|--|--|
| Reference<br>number | Construction (weave description)                       | Width determined in<br>accordance with<br>BS 1930<br>(tolerance +0, -2) | Main<br>warp<br>ends | Binder<br>ends | Extra<br>fabric<br>ends | Minimum picks per<br>100 mm (determined<br>in accordance with<br>BS 2862) |  |  |
|                     |  | mm  |                      |                |                         |   |  |  |
| PW1                 | 4 ply  | 57  | 382                  | 46             | _                       | 236   |  |  |
| PW2                 | (see figure 5, weave B)                                | 27  | 174                  | 20             |                         | 236   |  |  |
| PW3                 |  | 19  | 134                  | 15             | -                       | 236   |  |  |
| PW4                 |  | 44  | 294                  | 35             | -                       | 236   |  |  |
| PW5                 | 2 ply  | 32  | 107                  | 24             | 1_                      | 141   |  |  |
| PW6                 | (see figure 5, weave C)                                | 13  | 47                   | 9              | _                       | 141   |  |  |
| PW7                 | Pocketed<br>(see figure 5, weave D)                    | 32  | 63                   | 24             | 42                      | 260   |  |  |

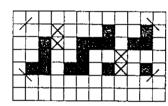
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Warp up

Weave A

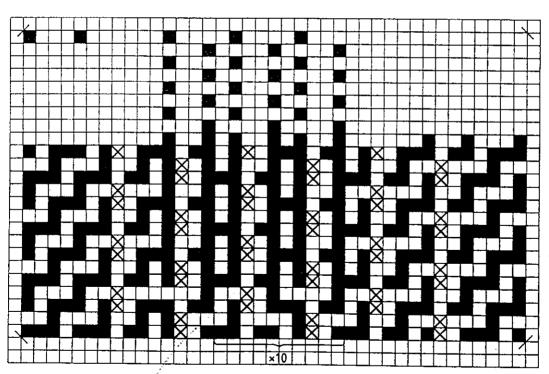


■ Binder

Weave B

🔀 Binder

Weave C



Weave D

Figure 5. Weave descriptions

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### **Appendices**

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Appendix A. Cross-references

Cross-references between the reference numbers specified in this Part of BS 71417, the reference numbers in previous standards and NATO stock numbers are listed in table 4.

| Reference pattern<br>number | Previous reference or nearest equivalent | Width | NATO stock number                   |
|-----------------------------|--|-------|-------------------------------------|
|                             |  | mm    |                                     |
| 9350                        | UK/SC 3632E-9350                         |       |                                     |
| 9351                        | UK/SC 3632E-9351                         | 25    | 8305-99-135-2583                    |
| 9352                        | UK/SC 3632E-9352                         | 50    | 8305-99-135-2584                    |
| 9353                        | UK/SC 3632E-9353                         | 100   | 8305-99-135-2585                    |
| 9354                        | UK/SC 3632E-9354                         | 32    | 8305-99-135-2586                    |
| 9355                        | UK/SC 3632E-9355                         | 64    | 8305-99-135-2587                    |
| 9438                        | UK/SC 3632E-9438                         | 25    |                                     |
| 9439                        | UK/SC 3632E-9439                         |       | 8305-99-136-8184                    |
| 9440                        | UK/SC 3632E-9440                         |       | ļ <del>-</del>                      |
| 9442                        | UK/SC 3632E-9442                         |       |                                     |
| 9443                        | UK/SC 3632E-9443                         |       | -                                   |
| 9446                        | UK/SC 3632E-9446                         | 38    | 9205 00 100 0005                    |
| 9447                        | UK/SC 3632E-9447                         | J 20  | 8305-99-136-9965                    |
| 9454                        | UK/SC 3632E-9454                         | 38    | 8305-99-137-8541 <del>51-</del> 4HD |
| 9472                        | UK/SC 3993                               | 32 .  | 8305-99-137-854151- AHD             |
| PW1                         | UK/SC 3373A (9039)                       |       | 9205 00 079 0000                    |
| PW2                         | UK/SC 3373A (9040)                       |       | 8305-99-973-6060                    |
| PW3                         | UK/SC 3373A (9046)                       |       | <del></del>                         |
| PW4                         | UK/SC 3373A (9046)                       | 1 =   | 1-                                  |
| PW5                         | UK/SC 3373A (9041)                       |       | -                                   |
| PW6                         | UK/SC 3373A (9042)                       |       | -                                   |
| PW7                         | UK/SC 3373A (9043)                       | _     | [ -                                 |

# Appendix B. Supplementary information for MoD contracts

### B.1 Standard pattern

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

### **B.2** Non-compliance

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

### **B.3** Inspection

The scale of inspection and testing is at the discretion of the Quality Assurance Directorate named in the contract.

### **B.4 Packaging**

The tape or webbing is to be delivered rolled. Packaging (preservation, identification and packing) is to be in accordance with the contract.

## B.5 Delivered lengths, joins and marking of joins

The roll length will vary according to the mass per unit length of the tape or webbing but no roll is to be less than 50 m or of such a size as to be inconvenient for the user. Rolls of not more than two lengths will be accepted provided that the shorter length is not less than 10 m. The position of the cut or join is to be indicated by a marker in the selvedge and a note on the piece ticket. The number of pieces containing joins is to be indicated on the consignment documents.

NOTE. Pattern numbers 9350, 9351, 9352, 9353, 9354, 9355, 9438, 9439, 9440, 9442, 9443, 9447, and 9454 may carry a suffix letter A, B, C, D, or E, indicating that the fabric should be dyed to the colour of the standard pattern as follows:

no suffix - natural (scoured):

A - olive drab;

B - khaki;

C = navy blue:

D = blue grey;

E = fawn.

### Appendix C. Yarn constructions

1.5

To assist manufacturers, yarns recommended for use in the products are given in table 5.

| Pattern<br>number | Warp yarn              |                 | Weft yarn           |                     |  |                      |                     |                    | · <del>_</del> · <del>_</del> · |
|-------------------|------------------------|-----------------|---------------------|---------------------|--|----------------------|---------------------|--------------------|---------------------------------|
|                   | Main                   | Main Binder Con | Conventional        | Shuttleless         | Lock thread system  As shown in As shown in As shown in fi |                      |                     | As shown in fi     | gure 4                          |
|                   |                        |                 |                     |                     | As shown in figure 1                                       | As shown in figure 2 | figure 3            | Lock (A)           | Catch (B)                       |
| 0050              | R940/1<br>Z100         | R940/1<br>Z100  | R940/1<br>Z100      | R470/1<br>Z150      |  | R470/1<br>Z150       | R235/1<br>Z150      | R110/1<br>Z200     | R235/1<br>Z150                  |
| 9350              | R940/1<br>Z100         | R940/1<br>Z100  | R1880/2<br>Z100     | R940/1<br>Z100      |  | R940/1<br>Z100       | R470/1<br>Z150      | R235/1<br>Z150     | R470/1<br>Z150                  |
| 9351<br>9352      | R1880/2<br>Z100        | 2100            | R940/1<br>Z100      | R470/1<br>Z150      |  | R470/1<br>Z150       | R235/1<br>Z150      | R110/1<br>Z200     | R235/1<br>Z150                  |
| 9353              | R940/1<br>Z100         |                 | R470/1<br>Z150      | R235/1<br>Z150      |  | R235/1<br>Z150       | R110/1<br>Z200      | R78/1<br>Z200      | R110/1<br>Z200                  |
| 9354              | R1880/2<br>Z100        | R1880/2<br>Z100 | R640/2<br>Z400 spun | R330/2<br>Z450 spun |  | R330/2<br>Z450 spun  | R156/2<br>Z450 spun | R78/2<br>Z450 spun | R156/2<br>Z450 spur             |
| 9355              | R940/1<br>Z100         |                 | R1880/2<br>Z100     | R940/1<br>Z100      |  | R940/1<br>Z100       | R470/1<br>Z150      | R235/1<br>Z150     | R470/1<br>Z150                  |
| 9438              | R235/1<br>Z150         |                 | R235/1<br>Z150      | R110/1<br>Z150      |  | R110/1<br>Z200       |                     |                    |                                 |
| 9439              | R235/1<br>Z150         |                 | R235/1<br>Z150      | R110/1<br>Z150      |  | R110/1<br>Z200       |                     |                    |                                 |
| 9440              | R235/1<br>Z150         |                 | R235/1<br>Z150      | R110/1<br>Z150      |  | R110/1<br>Z200       |                     | 7110/1             | R235/1                          |
| 9442              | R940/1<br>Z100         |                 | R940/1<br>Z100      | R470/1<br>Z150      |  | R470/1<br>Z150       | R235/1<br>Z150      | R110/1<br>Z200     | R235/1<br>Z150<br>R235/1        |
| 9443              | R940/1<br>Z100         |                 | R940/1<br>Z100      | R470/1<br>Z150      |  | R470/1<br>Z150       | R235/1<br>Z150      | R110/1<br>Z200     | Z150                            |
| 9447              | R156/2<br>Z100 crimped |                 | R660/2<br>Z400 spun | R330/1<br>Z450 spun | R156/2<br>Z100 crimped                                     |                      |                     |                    |                                 |
| 9454              |                        |                 |                     | R940/1<br>Z100      |  | R940/1<br>Z100       | R470/1<br>Z100      | R235/1<br>Z150     | R470/1<br>Z150                  |
| 9472              | R2820/3                | -               | R2820/3             | R1410/3<br>Z100     |  | R1410/3<br>Z100      | R1410/3<br>Z100     |                    |                                 |

NOTE 1. Values for twist are given in turns per metre. NOTE 2. The tolerances on twist are ± 20 %



# Appendix D. Additional recommendations

### **D.1** Spirality

If the yarn twists in the narrow fabric structure are unbalanced the fabric can exhibit spirality. Narrow fabrics should not exhibit this defect to any significant degree.

### D.2 Bias

In some specialized end uses, bias is a required feature but in most general purpose uses it is not. In the latter case, the maximum deviation from a straight line when the fabric is laid on a horizontal surface should not exceed 10 mm in 1 m.

### D.3 Visible faults

The fabric should be free from all visible defects such as stains, holes, slubs and unevenness of colour or texture.

### **D.4** Beading

Unless required as a special effect in particular end uses, narrow fabrics should not exhibit beading.

# Appendix E. Method of test for determination of dimensional stability on heating in boiling water

### E.1 Preparation of specimen

Cut a specimen not less than 450 mm long, and make a mark approximately 50 mm from each end.

### E.2 Procedure

With the specimen laid on a flat surface and covered with a sheet of plate glass, measure the distance between the marks to the nearest millimetre. Lay the specimen flat, in water at the boil, and keep it approximately 25 mm below the water surface, using small weights as necessary. After immersion for 15 min in the boiling water, remove the specimen and allow it to dry on a flat surface at room temperature.

Condition the specimen in the standard temperate atmosphere for testing textiles specified in BS 1051.

Repeat the measurements through the plate glass.

### E.3 Expression of results

Report the change in length, as a percentage of the original length of the portion of the specimen between the marks.

# Appendix F. Method of test for extension

### F.1 Apparatus

**F.1.1** Tensile testing machine, complying with BS 2576.

### F.2 Preparation of test specimen

Condition the specimen in the standard temperate atmosphere for testing textiles specified in BS 1051.

### F.3 Procedure

With the specimen laid flat without tension, mark two gauge lines across the central portion, 100 mm apart. Clamp the specimen in the tensile testing machine and put the moving clamp in motion at a rate of 10 mm/min. Extend the specimen until a force of 5 N is being applied. Measure the length between the gauge lines before releasing the force.

### F.4 Expression of results

Report the increase in length as a percentage of the original gauge length.



### Publication(s) 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 1930     | Methods for determination of width of woven or knitted fabrics when relaxed at zero tension  |
| BS 2544     | Methods for determination of thickness of textile materials  |
| BS 2576     | Method for determination of breaking strength and elongation (strip method) of woven fabrics   |
| BS 2862     | Methods for determination of number of threads per unit length   |
| BS 3266     | Methods of test for determination of conductivity, pH, water-soluble matter, chloride and sulphate in aqueous extracts of textile materials  |
|             | Narrow fabrics  1)Part 2 Specification for cotton webbings for personal load carrying purposes  1)Part 3 Specification for wool tapes  1)Part 4 Specification for woven elastic webbings containing natural rubber  1)Part 5 Specification for elastic flat braids containing natural rubber  1)Part 6 Specification for laces for footwear and other purposes |
| UK/SC 3632E | Webbing and tapes, textile, nylon  |
| UK/SC 3373  | Webbing, textile, polyethylene, white  |
| UK/SC 3993  | Sling, small arms for 7.62 mm L1A1   |

<sup>1)</sup> Referred to in the foreword only.

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