

Specification for

**Nylon fabrics suitable  
for coating with natural  
or synthetic elastomers  
for aerospace purposes**

ICS 49.025.60

## Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Aerospace Standards Policy Committee (ACE/-) to Technical Committee ACE/54, upon which the following bodies were represented:

British Fabric Association  
British Rubber Manufacturers' Association  
British Textile Employers' Association  
Man-made Fibres Producers' Committee  
Ministry of Defence  
Society of British Aerospace Companies Ltd.  
Society of Dyers and Colourists

This British Standard, having been prepared under the direction of the Aerospace Standards Policy Committee, was published under the authority of the Standards Board and comes into effect on 29 March 1991

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The following BSI references relate to the work on this standard:  
Committee reference ACE/54  
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### Amendments issued since publication

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7967	October 1993	
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## Foreword

This British Standard, prepared under the direction of the Aerospace Standards Policy Committee, is one of a series for textiles of a quality suitable for aerospace purposes, and is a revision of BS F 127 which is withdrawn. Quality requirements as defined in the latest edition of BS F 100 have been included, together with details of information to be supplied by the purchaser. The fabric variations based on different twist levels for the yarns have been reduced and the requirements for yarn properties adjusted to reflect the improved properties of modern yarns. References to previous specifications on which BS F 127 was based have been deleted.

**NOTE** This British Standard includes requirements for the copper content of the woven fabric as supplied. Attention is drawn to the use of copper compounds during fibre production to impart resistance to degradation by heat and ultra violet light.

Copper added in this way has not been shown to be detrimental to coating elastomers. Its presence is however detectable when carrying out copper content determination in accordance with BS F 100.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

**Compliance with a British Standard does not of itself confer immunity from legal obligations.**

### Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 4, an inside back cover and a back cover.

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Sidelining in this document indicates the most recent changes by amendment.

## 1 Scope

This British Standard specifies the requirements for a series of nylon fabrics suitable for coating with natural or synthetic elastomers, for subsequent use primarily in the manufacture of safety and survival equipment for aerospace purposes.

NOTE 1 The information to be supplied by the purchaser in the contract or order is listed in Appendix A.

NOTE 2 The titles of the publications referred to in this standard are listed on the inside back cover.

NOTE 3 The latest revision of an Aerospace Series Standard is indicated by a prefix number.

## 2 General requirements

**2.1** In addition to the requirements specified in clauses **3** to **10** the sections of the latest edition of BS F 100, as given in Table 1, shall apply.

**2.2** The yarn breaking strength and extension at break shall be determined in accordance with BS 1932-1 except that the number of tests required to produce a package mean shall be five.

**2.3** The yarn tenacity shall be determined when the yarn has been tested in accordance with method A of BS 1932-1 except that the number of tests required to produce a package mean shall be five.

**2.4** When required, the yarn twist shall be determined in accordance with BS 2085 except that the number of tests required to produce a package mean shall be five.

NOTE Design and specifying authorities should consider the need to establish, by test, the suitability of any textile for its intended end-use.

## 3 Yarn

### 3.1 Type

The yarn shall be continuous filament yarn manufactured from nylon **6.6**, with spinning twist.

NOTE 1 If added twist is required this should be stated in the contract or order (see Appendix A).

NOTE 2 The yarn may be with or without intermingled filaments.

### 3.2 Properties

The yarn shall comply with Table 2.

## 4 Manufacture of fabric

**4.1** The fabric shall be manufactured from yarn complying with Table 2.

**4.2** The weave shall be plain.

**4.3** Where fabric is to be supplied for coating, any sizes or dressings used in preparation or weaving processes shall be compatible with the coating process.

NOTE Certain types of size, e.g. those based on polyacrylic acid, are known to be incompatible with some elastomers.

## 5 Finish

### 5.1 General

The fabric shall be supplied in one of the following conditions:

- a) loomstate; or
- b) scoured and heatset; or
- c) scoured, dyed (see **5.2**) and heatset.

NOTE 1 It is very important that the scouring process is thorough in order to remove surfactants and processing aids.

NOTE 2 The type of finish required should be stated in the contract or order (see Appendix A).

**Table 1 — General requirements (as given in BS F 100)**

Section	Title	Requirements and tests
1	General	All requirements
2	Quality requirements	Requirements for the manufacture of wide fabrics Requirements for dyed textiles Requirements for dimensions and tolerances: general and wide fabrics Requirements for freedom from corrosive impurities Requirements for freedom from defects
3	Physical tests	Test for the determination of the number of threads, wales or courses per unit length in fabrics Test for the determination of mass of wide fabrics Test for breaking strength and extension under load of wide fabrics Test for dimensional stability on heating
4	Chemical tests	Test for water extractable matter Tests for traces of iron and copper

**Table 2 — Yarn properties**

Fabric designation	Nominal linear density of yarn and number of filaments		Mean tenacity (min.)	Mean extension at break (max.)
	dtex	fls	cN/tex	%
1	33	f10	56	30
2	50	f15	56	30
4	67	f20	40	50
3	78	f20 to f34	40	50
5	110	f17 or f34	69	25
7	228	f34	40	50
6, 8	235	f34 to f36	69	25
9, 11	470	f68 to f72	69	25
10	950	f136 to f140	69	25

## 5.2 Dyeing

Where dyeing is required, the colour of the fabric shall be specified either by reference to a British Standard, e.g. BS 381C, or otherwise by pattern.

NOTE If the fabric is required dyed, the colour should be specified in the contract or order (see Appendix A).

## 6 Construction and properties of the fabric as supplied for coating

6.1 The width measurement of the fabric as supplied shall not include selvages.

NOTE 1 Fabric may be woven in multiple widths with leno weave edges and slit to the required width.

NOTE 2 The width required should be stated in the contract or order (see Appendix A).

6.2 When tested in accordance with clause 2, the fabric as supplied shall comply with the requirements of Table 3 and clauses 7, 8 and 9.

## 7 Water extractable matter

The amount of water extractable matter shall not exceed:

- a) 2.0 % by mass for fabrics supplied loomstate;
- b) 1.0 % by mass for fabrics supplied scoured.

## 8 Copper content

The maximum copper content of the finished fabric shall be 30 mg/kg for fabric designations 1, 2, 3, 4 and 7, and 70 mg/kg for fabric designations 5, 6, 8, 9, 10 and 11.

NOTE 1 Particular attention should be paid to the copper content of the finished fabric when using this British Standard to draw up specifications for coated fabrics, in order that due precautions may be taken to ensure that the resulting coated fabrics are satisfactory for their designed end-use.

NOTE 2 Manufacturers should be able to demonstrate that there has been no increase in copper content arising from subsequent fibre, yarn and fabric processing.

## 9 Dimensional stability on heating

The dimensional stability, determined using dry heat, shall be such that the dimensional change on heating shall not exceed:

- a) 3.5 % in both warp and weft directions for fabrics supplied loomstate;
- b) 2 % in the warp direction and 3.5 % in the weft direction for fabrics supplied heatset.

## 10 Identification

The fabric shall be identified for ordering purposes by the number and date of this British Standard, i.e. BS 2F 127:1991<sup>1)</sup>, together with the relevant designation as given in Table 2, the finish and, if required dyed, the colour.

NOTE This identification may be codified, e.g. fabric designation No. 11 required scoured, heatset and dyed bold yellow may be identified as BS 2F 127/11/scoured and heatset/BS 381C No. 363.

**Table 3 — Construction and properties of the fabric as supplied for coating**

Designation	Nominal linear density of yarn. Warp and weft	Minimum number of threads per centimetre		Mass per unit area	Minimum average breaking strength	
		Warp	Weft		Warp	Weft
	dtex			$g/m^2$	N/50 mm	N/50 mm
1	33	45.5	40.0	$30 \pm 5$	335	280
2	50	39.5	39.5	$45 \pm 5$	550	550
3	78	37.0	37.0	$60 \pm 5$	480	480
4	67	41.5	39.5	$65 \pm 5$	530	500
5	110	27.0	27.0	$65 \pm 5$	830	830
6	235	16.5	16.5	$85 \pm 5$	1 155	1 155
7	228	26.0	22.0	$120 \pm 10$	1 135	965
8	235	24.5	24.5	$125 \pm 10$	1 750	1 750
9	470	13.0	13.0	$140 \pm 10$	1 850	1 850
10	950	8.0	8.0	$175 \pm 10$	2 445	2 445
11	470	24.5	16.5	$225 \pm 10$	2 890	2 225

<sup>1)</sup> Marking BS 2F 127:1991 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.

## Appendix A

### Information to be supplied by the purchaser

The following information should be stated by the purchaser in the contract or order:

- a) the number of this British Standard, i.e. BS 2F 127;
- b) the twist level, if added twist is required (see **3.1**);
- c) the fabric designation (see **3.2**);
- d) the finish required (see **5.1**);
- e) the colour, if required dyed (see **5.2**);
- f) the minimum usable width required (see **6.1**).



## Publications referred to

BS F 100, *Procedure for inspection and testing of textiles.*

BS 381C, *Specification for colours for identification, coding and special purposes.*

BS 1932, *Testing the strength of yarns and threads from packages.*

BS 1932-1, *Methods for determination of breaking strength and breaking extension.*

BS 2085, *Method of test for determination of twist in yarns, direct counting method.*

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