

Specification for

# Mercerized cotton fabric

# Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee ACE/54, Wide woven and coated fabrics for aerospace purposes, upon which the following bodies were represented:

British Fabric Association  
British Rubber Manufacturers' Association Ltd.  
British Textile Confederation  
Ministry of Defence  
Society of British Aerospace Companies Ltd.  
Society of Dyers and Colourists  
Textile Finishers' Association

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# Foreword

This British Standard is one of a series for textiles of a quality suitable for aerospace purposes and constitutes a revision of BS 2F 116:1975, which is withdrawn.

It differs from the previous edition in that the quality requirements specified in the latest edition of BS F 100 have been identified.

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

This standard specifies pentachlorophenyl laurate (PCPL) as a rot-proofing treatment. Alternative treatments are under development, and this standard will be updated to delete PCPL as soon as a suitable alternative treatment for aerospace materials is available.

**WARNING.** This standard calls for the use of substances and/or test procedures that may be injurious to health if adequate precautions are not taken. It refers only to technical suitability and in no way absolves either the supplier or the user from statutory obligations relating to health and safety at any stage of manufacture or use.

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## Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 and 2, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

## 1 Scope

This British Standard specifies requirements for a range of mercerized cotton fabrics for aerospace purposes, primarily for parachute canopies.

## 2 References

This standard incorporates, by dated or undated reference, provisions from other publications. These normative references are made at the appropriate places in the text and the cited publications are listed on the inside back cover. For dated references, only the edition cited applies; any subsequent amendments to or revisions of the cited publication apply to this standard only when incorporated in the reference by amendment or revision. For undated references, the latest edition of the cited publication applies, together with any amendments.

## 3 General

In addition to the requirements specified in clauses 4 to 10 of this standard, the requirements and tests of BS F 100, as listed in Table 1, shall apply.

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

Section of 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 faults
3	Physical tests	Test for the determination of mass of wide fabrics Tests for breaking strength and extension under force of wide fabrics Test for air permeability of parachute fabrics
4	Chemical tests	If required by section 2, further tests for freedom from corrosive impurities

Table 2 — Construction and properties

Designation	Nominal number of threads per centimetre <sup>a</sup>		Maximum mass/area g/m <sup>2</sup>	Minimum average breaking strength per 50 mm width N	
	Warp	Weft		Warp	Weft
No. 583	22.1	22.1	102	480	480
No. 633	25.6	25.6	127	575	575
No. 813	21.3	21.3	102	480	480

<sup>a</sup> Calculated from the number in a measured length of not less than 2 cm.

## 4 Yarn

4.1 The fabric shall be manufactured from unsized cotton yarn.

4.2 The yarn shall be two-fold and shall be mercerized.

NOTE Yarn plied from singles of 104 dtex has been found suitable for both warp and weft.

## 5 Weave

The weave shall be plain.

## 6 Finish

The fabric, or the yarns from which it is to be woven, shall be rendered rot-resistant by treatment with pentachlorophenyl laurate (PCPL) in accordance with BS 2087-1:1992, normal process.

## 7 Construction and properties

The finished fabric shall conform to Table 2.

## 8 Permeability

8.1 When tested in accordance with clause 29 of BS F 100, each piece of finished fabric shall either have an average air permeability as shown in Table 3, or shall conform to 8.2.

NOTE It is most desirable that the average permeability of the fabric be as near as possible to the relevant mean figure shown in Table 3, and that the variation between the individual readings be low.

**Table 3 — Air permeability test requirements**

Fabric	Average permeability <sup>a</sup>	
	ft <sup>3</sup> /(ft <sup>2</sup> s)	l/(m <sup>2</sup> s)
No. 583	30 ± 3	9 000 ± 900
No. 633	18 ± 2	5 400 ± 600
No. 813	35 ± 4	10 500 ± 1 200

<sup>a</sup> Volume of air in cubic feet passing through 1 ft<sup>2</sup> of fabric in 1 s at 10 in (25.4 cm) water gauge; or volume of air in litres passing through 1 m<sup>2</sup> of fabric in 1 s at 25.4 cm (10 in) water gauge.

8.2 If the average permeability does not conform to Table 3 but is equal to the relevant lower value or the relevant higher value given in Table 4, then two further series of ten readings each shall be taken in different locations on the same piece. The average of each series shall be not less than the relevant lower value, nor more than the relevant higher value, given in Table 4. All individual readings included in any of the averages shown in Table 4 shall be within the respective limits given in Table 4.

**Table 4 — Air permeability retest requirements**

Fabric	Average permeability <sup>a</sup>		Individual readings included in average			
			Minimum		Maximum	
	ft <sup>3</sup> /(ft <sup>2</sup> s)	l/(m <sup>2</sup> s)	ft <sup>3</sup> /(ft <sup>2</sup> s)	l/(m <sup>2</sup> s)	ft <sup>3</sup> /(ft <sup>2</sup> s)	l/(m <sup>2</sup> s)
No. 583	26	7 800	23	6 900	29	8 700
	34	10 200	31	9 300	37	11 100
No. 633	15	4 500	13.5	4 050	16.5	4 950
	21	6 300	19	5 700	23	6 900
No. 813	30	9 000	27	8 100	33	9 900
	40	12 000	37	11 100	43	12 900

<sup>a</sup> Volume of air in cubic feet passing through 1 ft<sup>2</sup> of fabric in 1 s at 10 in (25.4 cm) water gauge; or volume of air in litres passing through 1 m<sup>2</sup> of fabric in 1 s at 25.4 cm (10 in) water gauge.

8.3 The proportion of fabric which does not conform to Table 3 shall not exceed 5 % of any batch tested.

8.4 The manufacturer shall maintain quality-control sheets to provide evidence that the average level and the variability of air permeability meet the requirements of 8.1 to 8.3.

## 9 Packaging

The fabric shall be made up at full width, on poles longer than the width of the fabric or on suitable tubes having a length equal to the width of the fabric. It shall be made up in continuous pieces without joins, rolled tightly and free from creases.

## 10 Identification

The following information, supplied by the purchaser to identify the fabric for ordering purposes, shall be fully documented:

- the number of this British Standard, i.e. BS 3F 116;
- the relevant designation given in Table 2.

NOTE This identification may be codified; e.g. fabric no. 633 may be identified as BS 3F 116 633.

## List of references (see clause 2)

### Normative references

#### BSI publications

BRITISH STANDARDS INSTITUTION, London

BS 5F 100:1991, *Procedure for inspection and testing of textiles for aerospace purposes.*

BS 2087, *Preservative textile treatments.*

BS 2087-1:1992, *Specification for treatments.*

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