

**BRITISH STANDARDS INSTITUTION**

BRITISH STANDARDS HOUSE, 2 PARK STREET, LONDON, W.1

INCORPORATED BY ROYAL CHARTER

Telephone: MAYFAIR 9000

Telegrams: STANDARDS, LONDON, W.1.

**BRITISH STANDARD SPECIFICATION FOR  
MERCERISED COTTON FABRICS  
FOR AERONAUTICAL PURPOSES**

**FOREWORD**

This British Standard, one of a series for textiles of a quality suitable for aeronautical purposes, replaces Ministry of Aviation Specifications D.T.D. 583A, D.T.D. 633A and D.T.D. 813A. During the transfer minor changes only have been made to the technical requirements but the standard now provides for the fabric to be rot-proofed. Provision has also been made for the fabric to be identified by a code reference.

Metric equivalents of British units are given in the Appendix; the figures in British units are to be regarded as the standard.

This standard makes reference to the following British Standards:

- British Standard F. 100 Inspection and testing procedures for textiles for aeronautical purposes.
- B.S. 350 Conversion factors and tables.
- B.S. 947 Yarn count systems and their conversions.
- B.S. 2087 Chemical requirements for textiles treated by certain preservative processes.

NOTE. In place of the customary, but incorrect, use of the pound as a unit of force, the unit called a pound-force (abbreviation lbf) has been used in this standard. It is that force which, when acting on a body of mass one pound, gives it an acceleration equal to that of standard gravity.

**SPECIFICATION**

**SCOPE**

1. This British Standard specifies the requirements for three constructions of cotton fabric for aeronautical purposes.

**YARN**

- 2. a. Cotton yarn shall be used in the manufacture of the fabric.
- b. The yarn shall be two-fold 57s count and shall be mercerised.

**MANUFACTURE**

- 3. a. The weave shall be plain.
- b. The fabric shall be uniformly woven from unsized yarns.

c. The width of any part of the treated fabric shall be not less than that specified and shall not exceed that width by more than 1/2 inch.

d. The selvages shall be straight, even and well-made, and shall have the same tension as the remainder of the fabric.

**FINISH**

- 4. The fabric shall be supplied as ordered:
  - a. In loomstate.
  - b. Rot-proofed.

If rot-proofing is required this shall be stated in the contract or order and the fabric shall be treated with pentachlorophenyl laurate in accordance with B.S. 2087.

**CONSTRUCTION OF PROPERTIES**

- 5. The fabric shall comply with the requirements of Table 1.

**TABLE 1**

Designation	Nominal number of threads per inch		Maximum weight oz/sq yd	Minimum average breaking strength lbf per inch width	
	Warp	Weft		Warp	Weft
No. 583	56	56	3	55	55
No. 633	65	65	3 3/4	66	66
No. 813	54	54	3	55	55

Price 2/6 net.

AIR POROSITY

6. *a.* Each finished piece of fabric shall be tested and shall have an average porosity as shown in Table 2.

TABLE 2

Fabric	Cu ft of air per sq ft per second
No. 583	30±3
No. 633	18±2
No. 813	35±4

It is, however, very desirable that the average porosity of the fabric shall be as near as possible to the relevant mean figure shown in Table 2 and that the variation between the individual readings should be as low as possible.

*b.* If the average porosity of the fabric is as indicated in Table 3, two further series of readings of ten tests each shall be taken on the same piece, and the average of each series shall be not less than the relevant lower value, and not more than the relevant higher value, shown in Table 3.

TABLE 3

Fabric	Cu ft of air per sq ft per second
No. 583	26 or 34
No. 633	15 or 21
No. 813	30 or 40

Any individual readings included in the averages shown in Table 3 shall be within the limits set out in Table 4.

TABLE 4

Fabric	Average porosity	Individual readings included in average	
		min.	max.
No. 583	26	23	29
	34	31	37
No. 633	15	13½	16½
	21	19	23
No. 813	30	27	33
	40	37	43

The proportion of such fabric shall not exceed 5 per cent of any delivery.

*c.* Results of tests recorded on control sheets shall provide adequate evidence that the production is stable and that the average level and variability comply with the requirements of this British Standard.

FREEDOM FROM IMPURITIES

7. *a.* The amount of water extractable matter in the fabric shall not exceed 0.5 per cent.

*b.* The fabric shall contain not more than 0.1 per cent of water soluble chloride calculated as NaCl and not more than 0.25 per cent water soluble sulphate calculated as Na<sub>2</sub>SO<sub>4</sub>; alternatively, the conductivity of an aqueous extract shall not exceed 150 micromhos.

*c.* Each piece of fabric shall be spotted with aqueous solutions of the indicators bromo-cresol green and thymol blue and shall show a blue or greenish blue colour with the former and a distinct yellow colour with the latter. The indicators shall be absorbed immediately on application.

FREEDOM FROM DEFECTS

8. The fabric shall be as free as possible from defects, to the satisfaction of the Inspector.

MAKE UP

9. The fabric shall be made up at full width on poles longer than the width of the fabric in continuous pieces without joins, rolled tightly and free from creases.

SAMPLING AND TESTING

10. *a.* Unless otherwise agreed with the Inspecting Authority, the selection of test samples and the tests for weight, breaking strength, air porosity, water extractable matter, water soluble sulphates, water soluble chlorides and conductivity of aqueous extract shall be in accordance with British Standard F.100.

*b.* For loomstate fabric the requirements of Clause 7*b.* above shall be applied at Type test frequency. For rot-proofed fabric these tests are already required by B.S.2087.

IDENTIFICATION

11. The fabric shall be identified for ordering purposes by the number of this British Standard, together with the relevant designation given in Table 1 and a reference to the finish required as set out in Clause 4.

For example, fabric No. 633 required in rot-proofed condition shall be identified as 'B.S.F.116/633/4b'.

## APPENDIX

## METRIC EQUIVALENTS OF BRITISH UNITS

British unit	Metric equivalent
1 inch	25.4 millimetres
1 yard	0.91 metres
1 ounce	28.35 grammes
1 pound	0.45 kilogrammes
1 thread per inch	3.94 threads per 10 centimetres
Yard count (cotton)	590.5
	Yarn count = Tex

The metric conversions are approximate. More accurate conversions should be based on the tables in B.S. 350 'Conversion factors and Tables', or B.S. 947 'Yarn count systems and their conversions'.

This British Standard, having been approved by the Aircraft Industry Standards Committee and endorsed by the Chairman of the Engineering Divisional Council, was published under the authority of the General Council of the Institution on 28th June, 1963.

The Institution desires to call attention to the fact that this British Standard does not purport to include all the necessary provisions of a contract.

*British Standards are revised, when necessary, by the issue either of amendment slips or of revised editions. It is important that users of British Standards should ascertain that they are in possession of the latest amendments or editions.*

The following B.S.I. references relate to the work on this standard:  
Committee reference ACE/26. Draft for comment CT(ACE) 6792.