



AEROSPACE MATERIAL SPECIFICATION

AMS3802™

REV. F

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Stabilized 2016-06

Superseding AMS3802E

Cloth, Airplane, Cotton, Mercerized
50 Pounds (220 N) Breaking Strength

RATIONALE

This document has been determined to contain basic and stable technology which is not dynamic in nature.

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Documents

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1. SCOPE:

1.1 Form: This specification covers one strength and one weave of mercerized cotton known as "airplane cloth."

1.2 Application: Primarily for covering aircraft surfaces, such as wings, fuselage, ailerons, elevators, and other airfoil surfaces.

2. APPLICABLE DOCUMENTS: The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications (AMS) shall apply. The applicable issue of other documents shall be as specified in AMS 2350.

2.1 SAE Publications: Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

AMS 2350 - Standards and Test Methods

2.2 ASTM Publications: Available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

ASTM D629 - Quantitative Analysis of Textiles

ASTM D1682 - Breaking Load and Elongation of Textile Fabrics

ASTM D1910 - Construction Characteristics of Woven Fabrics

2.3 U.S. Government Publications: Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

2.3.1 Military Standards:

MIL-STD-794 - Parts and Equipment, Procedures for Packaging and Packing of

3. TECHNICAL REQUIREMENTS:

3.1 Material:

- 3.1.1 Mercerization: The cloth shall be piece mercerized or the yarn may be mercerized under tension.
- 3.1.2 Yarn: The cloth shall be woven from 1- or 2-ply, combed cotton yarn.
- 3.1.3 Weave: The weave shall be plain (one up and one down).
- 3.1.4 Finishing: The cloth shall be uniformly finished in accordance with the best practice for high-grade airplane cloth. Finishing shall consist of washing, framing, and calendering. The calendering shall be sufficient to lay any nap present and shall provide a smooth, even surface. Nap may be removed by singeing.

- 3.2 Properties: The cloth shall conform to the following requirements; tests shall be performed on the cloth supplied and in accordance with specified test methods:

- | | | | |
|---------|--|--------------|---|
| 3.2.1 | <u>Weight:</u> | | ASTM D1910 |
| | oz per sq yd, max | 3.5 | |
| | (g/m ² , max) | (120) | |
| 3.2.2 | <u>Thread Count, ends per in. (25.4 mm):</u> | | ASTM D1910 |
| | Warp and Fill, each max | 110 | |
| 3.2.3 | <u>Breaking Strength, each direction:</u> | | ASTM D1862,
Ravelled strip
method |
| | lbf per in. width, min | 50 | |
| | (N/25 mm width, min) | (220) | |
| 3.2.4 | <u>Elongation:</u> | Warp Fill | ASTM D1862,
(See 4.5.1) |
| | At 44 lb (195 N) load, max | 13% 11% | |
| 3.2.5 | <u>Sizing, Finishing, and Other
Non-Fibrous Materials, max:</u> | 2.5% | ASTM D629,
Equation 3 |
| 3.2.5.1 | A desizing operation may be performed to reduce the sizing content to the maximum specified. | | |

- 3.3 Quality: The cotton fibers shall be evenly spun into yarns of proper and uniform yarn count, twist, and diameter to produce the texture and weight required. The yarn shall be reasonably free from nap breaks, broken ends, uneven threads, and knots. Yarns shall be closely woven into fabric uniform in body and appearance, and which shall be reasonably free from striations due to variable weaving operations.