

# AEROSPACE MATERIAL SPECIFICATION

Submitted for recognition as an American National Standard

SAE AMS 3805

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CLOTH, DUCK, AROMATIC POLYAMIDE, NON-MELTING

## 1. SCOPE:

1.1 Form: This specification covers a non-melting, aromatic nylon fabric in the form of cloth.

1.2 Application: Primarily for use in the manufacture of seat cushion covers, armor vest covers, and accessories.

2. APPLICABLE DOCUMENTS: The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications 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 U.S. Government Publications: Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120 except as specified in 2.2.4.

### 2.2.1 Federal Specifications:

PPP-P-1133 - Packaging and Packing of Synthetic Fiber Fabrics

### 2.2.2 Federal Standards:

FED-STD-4 - Glossary of Fabric Imperfections

FED-STD-191 - Textile Test Methods

**REAFFIRMED**

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### 2.2.3 Military Standards:

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes

### 2.2.4 Other Publications: Available from Federal Trade Commission, Washington, DC 20580.

Textile Fiber Products Identification Act, Rules and Regulations

## 3. TECHNICAL REQUIREMENTS:

3.1 Material: The cloth shall be woven from 1.5 to 2.0 denier yarn by 1.5 to 2.0 in. (38 to 50 mm) fiber length non-melting, aromatic polyamide fibers.

3.1.1 Yarn: Shall be a two-ply polyamide yarn, smooth and free from spinning defects.

3.1.2 Weave: Shall be plain, 1 up and 1 down.

3.1.3 Finish: Shall be scoured, heat set, and given an antistatic finish (See 8.1).

3.1.4 Color: Shall match Sage Green 1565 and shall be produced through the use of solution dyed fibers.

3.1.4.1 Sage Green 1565 is a manufacturer's identification number for that color.

3.2 Properties: The finished cloth shall conform to the following requirements; tests shall be performed on the cloth supplied and in accordance with specified FED-STD-191 test methods, insofar as practicable.

Weight, min	6.5 oz per sq yd (220 g/m <sup>2</sup> )	5040 & 5041
Thread Count, min		5050
Warp	47 per in. (25.4 mm)	
Filling	47 per in. (25.4 mm)	
Breaking Strength, min		5104
Warp	150 lb per in. (665 N/m)	
Filling	150 lb per in. (665 N/m)	
Tearing Strength, min		5134
Warp	20 lb per in. (90 N/m)	
Filling	20 lb per in. (90 N/m)	
Blocking, min	There shall be no sticking of cloth to cloth.	5872 (See 3.2.1)

3.2.1 Blocking Test: Time of exposure shall be 24 hr  $\pm$  0.5 at 60°C  $\pm$  1 (140°F  $\pm$  2), using a 6 lb (2.7 kg) weight.

3.2.2 Dimensions:

3.2.2.1 Width: Shall be as specified by purchaser.

3.2.2.2 Length of Cut: Continuous pieces shall be not less than 80 yd (75 m) in length. Pieces less than 80 yd (75 m) in length will be acceptable up to 10% of the quantity ordered, provided that no piece is less than 25 yd (20 m) in length.

3.3 Quality: Cloth, as received by purchaser, shall be clean, evenly woven, and free from foreign materials and from imperfections detrimental to usage of the cloth.

3.3.1 Imperfections: Acceptability of each lot of cloth shall be based on defects as defined in FED-STD-4.

3.3.2 Yard-by-Yard (Metre-by-Metre) Examination: Each roll in the sample shall be examined on the face side only. When the total length in the roll does not exceed 100 yd (90 m), the entire length of the roll shall be examined. When the total length of the roll exceeds 100 yd (90 m), only 100 yd (90 m) shall be examined. All defects, as described in FED-STD-4, which are visible at normal inspection distance of 1 yd (1 m), shall be scored and assigned demerit points as listed in 4.3.1.1. No linear yard (metre) increments of 1 yd (1 m) on the measuring machine from any one roll within the sample shall be penalized more than 4 points. The lot shall be unacceptable if the points per 100 sq yd (84 m<sup>2</sup>) of the total length examined exceeds 60 points. If one roll exceeds 60 points per 100 sq yd (84 m<sup>2</sup>), a second sample shall be examined for individual roll quality only. The lot shall be unacceptable if one or more rolls in the second sample exceeds 60 points per 100 sq yd (84 m<sup>2</sup>). Points shall be computed as follows:

3.3.2.1 Using Inch/Pound Units:

$$\frac{\text{Total points scored in sample} \times 3,600}{\text{Width of cloth, in.,} \times \text{total length, yd, inspected}} = \text{Points per 100 sq yd}$$

3.3.2.2 Using SI Units:

$$\frac{\text{Total points scored in sample} \times 100,000}{\text{Width of cloth, mm} \times \text{total length, m, inspected}} = \text{Points per 100 m}^2$$

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of cloth shall supply all samples for vendor's tests and shall be responsible for performing all required tests. Results of such tests shall be reported to the purchaser as required by 4.5. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the cloth conforms to the requirements of this specification.

4.2 Classification of Tests: Tests to determine conformance to all technical requirements of this specification are classified as acceptance tests and as preproduction tests and shall be performed prior to or on the initial shipment of cloth to a purchaser, on each lot, when a change in material, processing, or both requires reapproval as in 4.4.2, and when purchaser deems confirmatory testing to be required.

4.3 Sampling: Shall be as follows:

4.3.1 Yard-by-Yard (Metre-by-Metre) Examination: The sample size shall be 20 rolls selected from 20 containers.

4.3.1.1 Individual Rolls: During the yard-by-yard (metre-by-metre) examination, each roll in the sample shall be examined for length. Any length found to be less than the minimum specified or more than 2 yd (2 m) less than the length marked on the ticket shall be considered a defect with respect to length. The lot shall be unacceptable if two or more rolls in the sample are defective in respect to length.

4.3.1.2 Total Yards (Metres) in Sample: The lot shall be unacceptable if the total of the actual lengths of rolls in the sample is less than the total of the lengths marked on the ticket.

4.3.1.3 Examination for Shade: During the examination, each roll in the sample shall be examined for shade. Any roll in the sample off shade, shaded side to side, side to center, or end to end, shall be cause for rejection of the entire lot represented by the sample.

4.3.1.4 Examination for Compliance with Textile Fiber Products Identification Act: During the examination, each roll in the sample shall be examined for conformance to the Textile Fiber Products Identification Act. Each roll not labeled in accordance with this act shall be a defect. The lot shall be unacceptable if two or more of these defects occur.

4.3.1.5 Demerit Points: Demerit points shall be assigned to the examination as follows:

Defects	Points
For defects 3 in. (75 mm) and under in any dimension	1
For defects over 3 to 6 in. (75 to 150 mm), incl, in any dimension	2
For defects over 6 to 9 in. (150 to 225 mm), incl, in any dimension	3
For defects over 9 in. (225 mm) in any dimension	4
Baggy, ridgy, or wavy cloth	4
Width less than specified	4
Uneven weaving	4

- 4.3.1.5.1 Only coarse yarns that exceed twice the normal yarn diameter shall be scored.
- 4.3.1.5.2 Mixed filling (shade bar) shall be scored only when resulting from wrong ply, wrong twist in the yarn, or off shade yarn.
- 4.3.1.5.3 Only knots and slubs, which exceed the limits shown in Fig. 1 of FED-STD-4, shall be scored.

4.3.2 The unit of cloth for property determination shall be not less than 5 yd (4.5 m), continuous piece, full width. Sample size shall be as follows:

Lot Size		Sample Size
Yards	Metres	
Up to 800, incl	Up to 730, incl	2
800 to 22,000, incl	730 to 20,000, incl	3
Over 22,000	Over 20,000	5

- 4.3.3 A lot shall be all cloth produced in a single production run under the same fixed conditions and presented for vendor's inspection at one time. A lot may be packaged in small quantities under the basic lot approval, provided lot identification is maintained.
- 4.3.4 When a statistical sampling plan and acceptance quality level (AQL) have been agreed upon by purchaser and vendor, sampling shall be in accordance with such plan in lieu of sampling as in 4.3.1 and the report of 4.5.1 shall state that such plan was used.

#### 4.4 Approval:

- 4.4.1 Sample cloth shall be approved by purchaser before cloth for production use is supplied, unless such approval be waived by purchaser. Results of tests on production cloth shall be essentially equivalent to those on the approved sample cloth.
- 4.4.2 Vendor shall use ingredients, manufacturing procedures, processes, and methods of inspection on production cloth which are essentially the same as those used on the approved sample cloth. If necessary to make any change in ingredients, in type of equipment for processing, or in manufacturing procedures, vendor shall submit for reapproval a statement of the proposed changes in material, processing, or both and, when requested, sample cloth. Production cloth made by the revised procedure shall not be shipped prior to receipt of reapproval.

#### 4.5 Reports:

- 4.5.1 The vendor of cloth shall furnish with each shipment a report showing the results of tests to determine conformance to the acceptance test requirements and stating that the cloth conforms to the other technical requirements of this specification. This report shall include the purchase order number, AMS 3805, vendor's material designation, lot number, and quantity.

4.5.2 The vendor of finished or semi-finished cloth shall furnish with each shipment a report showing the purchase order number, AMS 3805, contractor or other direct supplier of material, supplier's material identification, and quantity. When material for making cloth is produced or purchased by the parts vendor, that vendor shall inspect each lot of cloth to determine conformance to the requirements of this specification, and shall include in the report either a statement that the cloth conforms or copies of laboratory reports showing the results of tests to determine conformance.

4.6 Resampling and Retesting: If any specimen used in the above tests fails to meet the specified requirements, disposition of the cloth may be based on the results of testing three additional specimens for each original nonconforming specimen. Failure of any retest specimen to meet the specified requirements shall be cause for rejection of the cloth represented and no additional testing shall be permitted. Results of all tests shall be reported.

## 5. PREPARATION FOR DELIVERY:

### 5.1 Packaging and Identification:

5.1.1 Finished cloth shall be furnished in rolls of not less than 80 yd (75 m) nor more than 400 yd (365 m) in length. Not more than two pieces less than 80 yd (75 m) in length shall be included in any one roll. Short pieces shall be rolled separately and sewn together with a butted type of seam, using 10/3 cord cotton thread, with approximately 9 stitches per in. (25 mm). The number of pieces in the roll shall be marked on the outer surface of the last 6 in. (150 mm) of the roll.

5.1.2 Each roll shall have a label or tag legibly marked with not less than the following information and attached in such a manner as to remain in place until all cloth has been removed from the roll:

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WIDTH \_\_\_\_\_

WEIGHT PER YARD (METRE) \_\_\_\_\_

MANUFACTURER'S IDENTIFICATION \_\_\_\_\_

PRODUCT DESIGNATION \_\_\_\_\_

QUANTITY \_\_\_\_\_

LOT NUMBER \_\_\_\_\_

ROLL NUMBER (If used) \_\_\_\_\_

DATE OF MANUFACTURE \_\_\_\_\_

5.1.3 Each roll shall also be labeled, ticketed, or invoiced for fiber content in accordance with the Textile Fiber Products Identification Act.

5.1.4 Individual rolls shall be wrapped in a suitable protective film and be packaged in an exterior shipping container in such a manner that the rolls, during shipment and storage, will be protected from exposure to moisture, weather, or any other normal hazard.