

AEROSPACE MATERIAL SPECIFICATION

Submitted for recognition as an American National Standard

SAE AMS 3848

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CLOTH, NYLON, METALLIZED

1. SCOPE:

- 1.1 Form: This specification and its supplementary detail specifications cover two types of metallized nylon cloth.
- 1.2 Application: Primarily for use in aerial tow targets and microwave radiation protective clothing.
- 1.3 Classification: The cloth is classified by application and finish treatment as specified in the detail specifications.

2. APPLICABLE DOCUMENTS: The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications 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 B117 - Salt Spray (Fog) Testing

- 2.3 U.S. Government Publications: Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120 except as specified in 2.3.4.

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2.3.1 Federal Specifications:

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

2.3.2 Federal Standards:

FED-STD-191 - Textile Test Methods

2.3.3 Military Standards: MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes

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

Textile Fiber Products Identification Act, Rules and Regulations

3. TECHNICAL REQUIREMENTS:

3.1 Detail Specifications: The requirements for a specific cloth shall consist of all requirements specified herein in addition to requirements specified in the applicable detail specification. In case of conflict between requirements of this basic specification, and an applicable detail specification, requirements of the detail specification shall govern.

3.2 Materials:

3.2.1 Base Cloth: Shall be a marquisette woven from 260 denier $\pm 5\%$, 17 filament, high tenacity nylon yarn.

3.2.1.1 Yarn: Nylon yarn used in the manufacture of the base cloth shall be a polyamide prepared from hexamethylene diamine and adipic acid or its derivatives. It shall have a melting point of $250^{\circ}\text{C} + 6$ ($482^{\circ}\text{F} \pm 10$), determined in accordance with FED-STD-191, Method 1534.

3.2.1.2 Vendor's certificate of compliance will be acceptable for determining conformance to requirements for identification of material and melting point.

3.2.2 Coating Material: Shall be metallic silver.

3.2.3 Metallized Cloth: The base cloth shall be equally and uniformly metallized on each side to provide radar reflectivity. The metallizing shall conform to requirements for the finished cloth as specified herein and in the applicable detail specification.

3.3 Properties: Shall be as shown herein and as specified in the applicable detail specification, determined in accordance with 4.5.

3.3.1 Base Cloth: Shall be as follows, determined in accordance with Table I.

3.3.1.1 Weave: Shall be a 4-end leno as shown in Fig. 1, repeating on 2 picks, determined visually.

3.3.1.2 Selvage: Shall be double density. The cloth shall have a selvage of not less than 1 in. (25 mm) woven on each side. In addition, cloth which is 72 in. (1.8 m) wide shall have a false selvage of not less than 1.5 in. (38 mm) woven into the center.

3.3.1.3 Color: Shall be natural.

3.3.1.4 Nonfibrous Materials: The water soluble and chloroform soluble material of the finished base cloth shall not exceed 2.0%.

3.3.1.5 Finish: Shall be permanent.

3.3.2 Metallized Cloth: Shall be as follows, determined in accordance with Table II and the following:

3.3.2.1 Low Temperature Flexibility: The metallized cloth shall not crack nor flake, determined in accordance with 4.5.3.

3.3.2.2 Electrical Conductivity: Shall be determined in accordance with 4.5.4.

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

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 4.6. 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 and the applicable detail specification.

4.2 Classification of Tests:

4.2.1 Acceptance Tests: Tests to determine conformance to the following requirements are classified as acceptance tests and shall be performed on each lot:

Requirement	Paragraph
Weight	See Detail Specification
Breaking Strength	See Detail Specification
Electrical Conductivity	See Detail Specification
Quality	3.4

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

4.2.2.1 For direct U.S. Military procurement, substantiating test data, and, when requested, preproduction test material shall be submitted to the cognizant agency as directed by the procuring activity, the contracting officer, or the request for procurement.

4.3 Sampling: Shall be as follows:

4.3.1 For Acceptance Tests: Each lot of cloth shall be visually examined as required below for quality (3.4) and sampled at random for all other tests. The number of determinations for each requirement shall be as specified in the applicable test procedure or, if not specified therein, not less than three.

4.3.1.1 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. An inspection lot shall not exceed 1,000 lb (450 kg). A lot may be packaged and delivered in smaller quantities under the basic lot approval provided lot identification is maintained.

4.3.1.2 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 4.6.1 shall state that such plan was used.

4.3.1.3 Yard-by-Yard (Metre-by-Metre) Examination of Base Cloth: The sample unit shall be 3 continuous yd (3 continuous m) full width of the cloth. The lot size shall be expressed in units of 1 yd (1 m). The lot shall be unacceptable if one or more units fail to meet any test requirement specified. The sample size (number of sample units) shall be as shown below:

Lot Size				Sample
Yards		Metres		
Up to	800, incl	Up to	730, incl	2
Over 800	to 22,000, incl	Over 730	to 20,100, incl	3
Over 22,000		Over 20,100		5

- 4.3.1.4 Yard-by-Yard (Metre-by-Metre) Examination of Metallized Cloth: Shall be in accordance with MIL-STD-105, Level II. The unit of product shall be 1 linear yd (1 linear m). The AQL shall be 2.5 major defects and 10 total defects per 100 units (yd or m). The number of rolls from which the samples are to be selected shall be as shown below. An approximately equal length of cloth shall be examined in each roll sampled.

Lot Size				Sample Size in Rolls	Number of Defects Accept- able max (4.3.1.4.2)
Yards		Metres			
Up to	1,200, incl	Up to	1,100, incl	3	0
Over 1,200	to 3,200, incl	Over 1,100	to 2,925, incl	5	0
Over 3,200	to 10,000, incl	Over 2,925	to 9,150, incl	8	0
Over 10,000	to 35,000, incl	Over 9,150	to 32,000, incl	13	0
Over 35,000	to 150,000, incl	Over 32,000	to 137,160, incl	20	1
Over 150,000		Over 137,160		32	2

- 4.3.1.4.1 If a lot contains fewer than 3 rolls, each roll in the lot shall be examined.

- 4.3.1.4.2 Applicable to length only. (See 4.3.1.5)

4.3.1.5 Examination for Length:

- 4.3.1.5.1 Examination for Length in Individual Roll: Each individual roll in the sample shall be examined for number of pieces, length of pieces, and for gross length. The sample unit for this examination shall be one roll. The sample size (number of rolls to be selected as the sample) and the maximum acceptable number of defects shall be as shown in 4.3.1.4. Any of the following shall be considered a defect with respect to length:

Any roll containing more than 2 or 3 pieces as specified.

Any roll with a gross length less than specified.

Any roll with a gross length more than specified.

Any piece with a gross length less than specified.

Any roll with a gross length over 2 yd (2 m) under length marked on the ticket.

Any piece joined by a seam.

- 4.3.1.5.2 Examination for Total Yards (Metres) in Sample: The rolls examined shall be those selected for examination of individual rolls as specified in 4.3.1.5.1. The lot shall be unacceptable if the total of the actual gross lengths of the rolls in the sample is less than the total of the gross lengths marked on the roll tickets.

4.3.2 For Preproduction Tests: As agreed upon by purchaser and vendor.

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.

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 material or processing, 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 Test Methods: Shall be in accordance with Table I or II, as applicable, and the following:

TABLE I

TEST METHODS FOR BASE CLOTH

Requirement	FED-STD-191 Method
Material Identification	1530
	1534
Chloroform Soluble Material	2611
Permanence of Finish:	
Air Permeability	5450
Thickness	5030
Thread count	5050
Ply <u>1</u> /	4054
Twist, plied yarns	4052
Thickness, initial	5030
Weight	5041
Breaking Strength	5104
Tearing Strength	5134
Air Permeability, initial	5450
Width	5020

1/ The twist shall be removed and the number of plies shall be counted.