AEROSPACE MATERIAL SPECIFICATION

AMS1775™	REV. C

Issued	1979-10
Revised	1987-07
Noncurrent	1995-01
Reaf. Nonc.	2015-04
Stabilized	2022-02

Superseding AMS1775B

Fabric, Nylon Upholstery
Fire Resistant

RATIONALE

Transition to stabilized in accordance with the 1995 revision A transition to non-current. This standard should not be used for new designs.

STABILIZED NOTICE

AMS1775C has been declared “STABILIZED” by SAE AMS Committee J Aircraft Maintenance Chemicals and Materials Committee and will no longer be subjected to periodic reviews for currency. Users are responsible for verifying references and continued suitability of technical requirements. Newer technology may exist.

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1. SCOPE:

1.1 Form: This specification covers upholstery fabrics woven from nylon and treated for fire retardation.

1.2 Application: Primarily for aircraft seat upholstery.

1.3 Safety - Hazardous Materials: While the materials, methods, applications, and processes described or referenced in this specification may involve the use of hazardous materials, this specification does not address the hazards which may be involved in such use. It is the sole responsibility of the user to ensure familiarity with the safe and proper use of any hazardous materials and to take necessary precautionary measures to ensure the health and safety of all personnel.

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 Comonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

AMS 2350 - Standards and Test Methods
AMS 4041 - Aluminum Alloy Sheet and Plate, Alclad, 4.4Cu - 1.5Mg - 0.60Mn (Alclad 2024 and 1-1/2% Alclad 2024-T3 Flat Sheet; 1-1/2% Alclad 2024-T351 Plate)

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

ASTM D1193 - Reagent Water
ASTM D1682 - Breaking Load and Elongation of Textile Fabrics
ASTM D1683 - Failure in Sewn Seams bf Woven Fabrics
ASTM D3512 - Pilling Resistance and Other Related Surface Changes of Textile Fabrics; Random Tumble Pilling Tester Method
ASTM D3776 - Mass per Unit Area (Weight) of Woven Fabric
ASTM D4157 - Abrasion Resistance of Textile Fabrics (Oscillatory Cyclinder) Method)
ASTM F501 - Aerospace Materials Response to Flame, with Vertical Test Specimens (for Aerospace Vehicles Standard Conditions

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 2.3.3.

2.3.1 Federal Standards:

FED-STD-191 - Textile Test Methods

2.3.2 Military Standards:

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

2.3.3 Federal Aviation Administration Regulations: Available from Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

FAR Part 25 - Aiworthiness Standards: Transport Category Airplanes

2.4 AATCC Methods: Available from American Association of Textile Chemists and Colorists, P.0. Box 1-215, Research Triangle Park, NC 27709.

Method 8 - Colorfastness to Cracking, Wet and Dry

3. TECHNICAL REQUIREMENTS:

3.1 Material: Shall be woven from 100% nylon yarns and shall be treated to be fire retardant. It shall be non-toxic and shall not cause skin rash or dermatitis when in contact with human skin. Emission of toxic gases and smoke shall be no greater than permitted by Federal Aviation Regulations.

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

3.2.1 Fabric Weight: Shall be as specified by purchaser according to the style and construction of the fabric, determined in accordance with ASTM D3776.

3.2.2 Breaking Strength: Shall be not lower than 370 1b (3650 N) in both the warp and fill directions, determined in accordance with ASTM D1682, Grab Test G.

3.2.3 Tearing Strength: Shall be not lower than 95 lb (420 N) in both the warp and fill directions, determined in accordance with FED-STD-191, Method 5136.

3.2.4 Pilling Resistance: Fabric shall show no pilling (0 - 2 pills) after a 60 min. ± 1 run under 9.0 psi (62 kPa) pressure, determined in accordance with ASTM D3512.

3.2.5 Colorfastness to Crocking: Fabric shall show no color transfer after 50 strokes, determined both wet and dry in accordance with AATCC Method 8.

3.2.6 Colorfastness to Light: Fabric shall show no color change after 50 hr ± 0 . 5 in fadeometer, determined in accordance with FED-STD-191, Method 5660.

3.2.7 Seam Strength: Shall be not lower than 90 lb (400 N) in the warp direction and not lower than 100 lb (445 N) in the fill direction, determined in accordance with ASTM D1683 on seams made with a No. 24 needle using a No. 10 or higher thread and having at least 10 chain stitches per in. (25 mm).

3.2.8 Abrasion Resistance: Fabric shall show no appreciable wear after 500 cycles, determined in accordance with ASTM D4157, Rotary Platform, Double Head Method, using CS #10 wheels and 1000 g load.

3.2.9 Flammability: Fabric, both as received and after 10 dry cleanings in accordance with 4.5.1, shall meet the requirements of FAA Regulations, Part 25, Paragraph 25,853(b), when tested in accordance with ASTM F501, vertical flame test.

3.2.10 Stain Resistance: Fabric, stained as in 4.5.2 and dry cleaned as in 4.5.1 shall appear free from stain when viewed at a distance of 30 in. (750 mm) using artificial light of 7500°K.

3.2.11 Corrosion Resistance: Panels of AMS 4041 aluminum alloy shall show no more than slight discoloration after exposure as in 4.5.3.

3.2.12 Permanent Stretch: Shall be not greater than 2% after 24 and 72 hr, determined in accordance with 4.5.4.

3.2.13 Shrinkage: Shall be not greater than 2% after ten dry cleanings, determined in both warp and fill directions in accordance with 4.5.5.

3.3 Quality: Fabric, as received by purchaser, shall be uniform in quality and condition, true to color and pattern, and free from foreign materials and from imperfections detrimental to usage of the fabric, determined by visual inspection.

3.4 Tolerances: Width of fabric shall vary not more than ± 1/2 in. (± 12 mm) from the width ordered.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of fabric 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 fabric conforms to the requirements of this specification.

4.2 Classification of Tests:

4.2.1 Acceptance Tests: Tests to determine conformance to requirements for weight (3.2.1), pilling resistance (3.2.4), colorfastness to crocking (3.2.5), colorfastness to light (3.2.6), abrasion resistance (3.2.8), flammability (vertical burn only) (3.2,9), shrinkage (3.2.13), and tolerances (3.4) are classified as acceptance test; and shall be performed on each lot.

4.2.2 Periodic Tests: Tests to determine conformance to requirements for breakinq strength (3.2.2), tearing strength (3.2.3), seam strength (3.2.7), stain resistance (3.3.10), corrosion resistance (3.2.11), and permanent stretch (3.2.12) are classified as periodic tests and shall be performed at a frequency selected by the vendor unless frequency of testing is specified by purchaser.

4.2.3 Preproduction Tests: Tests to determine conformance to all technical requirements of this specification are classified as preproduction tests and shall he performed prior to or on the initial shipment of a fabric 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.

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

4.3 Sampling: Vendor shall select at random a sufficient number of samples from pieces comprising the lot to meet the following requirements; a lot shall be all fabric produced from one finishing lot in a single production run under the same fixed conditions and presented for vendor's inspection at one time:

4.3.1 For Acceptance Tests:

4.3.1.1 Tests Other Than Flamability and Quality: One sample from each lot.

4.3.1.2 Flammability: Not less than three adequate size samples from the first, middle, and-last piece in the lot or from 20% of the pieces in the lot, randomly selected from beginning to end of the lot, if that be a larger number of samples.

4.3.1.3 Quality: 100% of each lot.

4.3.1.4 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 4.6.1 shall state that such plan was used.

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

4.4 Approval:

4.4.1 Sample fabric shall be approved by purchaser before fabric for production use in supplied, unless such approval be waived by purchaser. Results of tests on production fabric shall be essentially equivalent to those on the approved sample.

4.4.2 Vendor shall use materials, manufacturing procedures and processes, and methods of inspection on production fabric which are essentially the same as those used on the approved sample. If necessary to make any change in material or processing, vendor shall submit for reapproval a statement of the proposed changes in material, processing, or both and, when requested, sample fabric. Production fabric made by the revised procedure shall not be shipped prior to receipt of reapproval.

4.5 Test Methods:

4.5.1 Dry Cleaning:

4.5.1.1 Equipment: Shall be a cylinder, preferably of metal, approximately 13 in. (325 mm) high by 8-3/4 in. (220 mm) in diameter with a capacity of approximately 3.5 gal (13 L) (See 8.2). The cylinder shall be mounted in a vertical-position on an axis which is inclined at an angle of approximately 50 deg to the axis of the cylinder and shall be rotated at a speed of 45 - 50 rpm.

4.5.1.2 Procedure: Specimens for flammability, shrinkage, and stain resistance tests shall be placed in the cylinder with a fabric-liquor ratio of 200 g of fabric to 3 L of perchloroethylene to which is added 15 mL of Street's Detergent 886 and 1 mL of water per litre of perchloroethylene. Each specimen shall be dry cleaned for 25 min. ± 0.5 per cycle for a total of 10 cycles and shall be dried after each cycle at not higher than 60°C (140°F). The dry cleaning liquor shall be replenished to its original volume after each cycle and shall be discarded after 20 cycles.

4.5.2 Stain Resistance: Specimens, approximately 12 in. (300 mm) square, of each type and color of fabric shall be stained by pouring 1 oz (28 g) of each of the products listed in 4.5.2.1 onto a separate specimen for each product and allowing the stained specimens to dry for not less than 24 hours. The specimens shall be dry cleaned as in 4.5.1 and examined for residual staining.

4.5.2.1 Each specimen shall be stained with one of the following:

Black coffee (brewed from ground)	Mixture of 1.5 oz (45 mL) of ethyl alcohol and 5 oz (150 mL) of Cola beverage
Coffee with sugar and cream	Red wine
Cola beverage	White wine
Tea	Ketchup
Homogenized milk	Salad dressing containing vinegar
Orange juice	Unsaturated corn oil
Tomato juice	Ethyl alcohol
Mustard	
Newsprint ink	
Lipstick	

4.5.3 Corrosion Resistance:

4.5.3.1 Test Specimens: Shall be three pieces of each color and type of fabric, approximately 2 x 4 in. (50 x 100 mm), and two panels of AMS 4041 aluminum alloy of the same size, nominally 0.040 in. (1 mm) thick, for each piece of fabric.

4.5.3.2 Procedure: Wet each piece of fabric with 20 mL of ASTM D1193, Type IV, water. Clamp each piece of wetted fabric between two aluminum plates to ensure contact between fabric and metal. Place the sandwich specimens in a humidity cabinet maintained at 38°C ± 3 (100°F ± 5) with an atmosphere of 95 - 100% relative humidity-for 168 hr ± 0.5. Remove the sandwich specimens, separate the metal plates, rinse the plates in warm distilled water, and examine under 10X magnification for evidence of staining and corrosion. When specified by purchaser, compare to panels of AMS 4041 aluminum alloy exposed to ASTM D1193, Type IV, water.

4.5.4 Permanent Stretch:

4.5.4.1 Apparatus: A tensometer (draw bench) suitable for the application of a permanent load.

4.5.4.2 Specimens: Shall be 4 strips approximately 2 in. (50 mm) wide by 12 in, (300 mm) long (warp direction) and 4 strips approximately 2 in. (50 mm) wide by 12 in. (300 mm) long (filling direction).

4.5.4.3 Procedure: The strip shall be placed in the apparatus so that a strip-length of 8 in. (200 mm) is present between jaws,

4.5.4.3.1 A permanent load of 100 lb (445 N) shall be applied for 60 min. ± 1. The length of fabric between jaws shall he measured at the completion of the 60 min. test while still under load, immediately after release of load, 24 hr after release of load, and 72 hr after release of load.

4.5.4.4 The permanent stretch shall be considered the average elongation of the 4 strips in, respectively, the warp and filling directions.

4.5.4.5 The test strips used in 4.5.4.3 shall be remeasured, reloaded in the apparatus, and a permanent load of 100 lb (445 N) applied for 24 hr ± 0.25. The length of the fabric shall be remeasured at the completion of the 24 hr test while still under load, immediately after release of load, 24 hr after release of load, and 72 hr after release of the load.

4.5.4.5.1 Detemine permanent elongation as in 4.5.4.4

4.5.5 Shrinkage: Condition the sample at 20°C ± 1 (70° ± 2) and 65% ± 2 relative humidity for not less than 24 hr to allow for moisture equilibrium. Prepare a test specimen approximately 24 in. (600 mm) square. Serge the edges of the specimen to prevent reveling during dry cleaning. Flake three measurements approximately 20 in, (500 mm) apart in the warp and filling directions. Sew fine threads to mark the measurements. Send specimen to an approved commercial cleaner to be dry cleaned ten times as in 4.5.1, condition the specimen at 20° ± 1 (70°F ± 2) and 65% + 2 relative humidity for 24 hours. Measure the marked warp and fi11inq lengths. Calculate the change in length using the following formula:

$$\% \text{ Change} = \frac{\text{Original Warp (Fill)} - \text{Final Warp (Fill)} \times 100}{\text{Original Warp (Fill)}}$$

4.5.5.1 Report the average of the three calculations as the percentage change.

4.6 Reports:

4.6.1 The vendor of fabric shall furnish with each shipment a report showing the results of tests to determine conformance to the acceptance test requirements and, when performed, to the periodic test requirements and stating that the fabric conforms to the other technical requirements of this specification. This report shall include the purchase order number, AMS 1775C, fabric style number, vendor's material and finish designation, date of finishing, lot number(s), and quantity from each lot and of the total shipment.

4.6.2 The vendor of finished or semi-finished parts shall furnish with each shipment a report showing the purchase order number, AMS 1775C, fabric style number, contractor or other direct supplier of fabric, supplier's material and finish designation, production lot number, and quantity. When fabric for making parts is produced or purchased by the parts vendor, that vendor shall inspect each lot of fabric to determine conformance to the requirements of this specification and shall include in the report either a statement that the fabric conforms or copies of laboratory reports showing the results of tests to determine conformance.

4.7 Resampling and Retesting: If any specimen used in the above tests fails to meet the specified requirements, disposition of the fabric 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 fabric represented and no additional testing shall be permitted, Results of all tests shall be reported.