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AEROSPACE MATERIAL SPECIFICATION

SAE AMS 3817D

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Submitted for recognition as an American National Standard

Superseding AMS 3817C

Nylon Braid, Flat Electrical Tying Resin Coated

1. SCOPE:

1.1 Form:

This specification covers a resin-coated, high-tenacity, continuous-filament nylon in the form of flat braid.

1.2 Application:

This braid has been used typically for tying and lacing electrical wire hardness assemblies for service in the temperature range -55 to +75 °C (-67 to +167 °F) where fungus resistance is required, but usage is not limited to such applications.

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 involved.

1.4 Classification:

This specification covers three classes, by size, as follows:

a. Size 25 -- 25 pounds force (111 N) minimum breaking strength
b. Size 50 -- 50 pounds force (222 N) minimum breaking strength
c. Size 80 -- 80 pounds force (356 N) minimum breaking strength

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2. APPLICABLE DOCUMENTS:

The following publications form a part of this specification to the extent specified herein. The applicable issue of referenced publications shall be the issue in effect on the date of the purchase order.

2.1 ASTM Publications:

Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM D 259 Woven Tapes

2.2 U.S. Government Publications:

Available from DODSSP, Subscription Services Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

FED-STD-191 Textile Test Methods
MIL-STD-2073-1 DOD Materiel, Procedures for Development and Application of Packaging Requirements

3. TECHNICAL REQUIREMENTS:

3.1 Material and Fabrication:

3.1.1 Yarn: Braid shall be made from high-tenacity, continuous-filament nylon yarn.

3.1.2 Impregnation: Finished braid shall contain 15 to 30% by weight of a non-toxic, fungistatic resin dispersion. Fungicide containing mercury or copper, or compounds of mercury or copper, shall not be used.

3.1.3 Construction: Shall be as specified in Table 1, determined in accordance with ASTM D 259.

TABLE 1A - Construction, Inch/Pound Units

Characteristic	Size 25	Size 50	Size 80
Nominal Width, inch	0.062	0.090	0.125
Nominal Thickness, inch	0.012	0.012	0.012
Yards per pound, minimum	1650	850	550
Total Ends, minimum	12	17	27
Picks per inch, minimum	20	18	18

TABLE 1B - Construction, SI Units

Characteristic	Size 25	Size 50	Size 80
Nominal Width, mm	1.57	2.29	3.18
Nominal Thickness, mm	0.30	0.30	0.30
Meters per kg, minimum	3326	1714	1109
Total Ends, minimum	12	17	27
Picks per mm, minimum	0.79	0.71	0.71

3.1.4 Color: Shall be natural (off-white).

3.2 Properties:

Braid shall conform to the following requirements:

3.2.1 Mechanical Properties: Shall be as specified in Table 2, determined in accordance with ASTM D 259.

TABLE 2A - Mechanical Properties, Inch/Pound Units

Property	Size 25	Size 50	Size 80
Breaking Strength, minimum average	25 lbf	50 lbf	80 lbf
Elongation, maximum average	40%	40%	40%

TABLE 2B - Mechanical Properties, SI Units

Property	Size 25	Size 50	Size 80
Breaking Strength, minimum average	111 N	222 N	356 N
Elongation, maximum average	40%	40%	40%

3.2.2 Slip Resistance: Breaking strength test applied to a square knot made in two lengths of braid firmly tied together shall result in no slippage of the knot when loaded up to two-thirds the specified breaking strength of the braid.

3.2.3 Fray Resistance: A freshly cut end of the braid shall not fray open when held approximately 1/4 inch (6.4 mm) from the end and firmly tamped several times on a hard surface.

3.2.4 Fungus Resistance: The braid shall exhibit no fungus growth, determined in accordance with FED-STD-191, Method 5760.

3.3 Quality:

Braid, as received by purchaser, shall be uniform in quality and condition, smooth, and free from foreign materials and from imperfections detrimental to usage of the braid.

3.4 Standard Sizes and Tolerances:

Standard sizes shall be 25, 50, and 80. Width tolerance shall be ±15% and thickness tolerance shall be ±0.003 inch (±0.08 mm) of specified values.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection:

The manufacturer of braid shall supply all samples for required tests and shall be responsible for performing all required tests. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the braid conforms to the requirements of this specification.

4.2 Classification of Tests:

4.2.1 Acceptance Tests: Tests for nominal width and thickness (Table 1), breaking strength and elongation (Table 2), slip resistance (3.2.2), and fray resistance (3.2.3) are acceptance tests and shall be performed on each lot.

4.2.2 Preproduction Tests: Tests for all technical requirements are preproduction tests and shall be performed prior to or on the initial shipment of braid by a manufacturer, when a change in ingredients and/or processing 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, contracting officer, or request for procurement.

4.3 Sampling and Testing:

Shall be as follows:

4.3.1 For Acceptance Tests: Sufficient braid shall be taken at random from each lot to perform all required 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 braid of the same size, produced in a single production run from the same lot of nylon filaments and the same batch of fungistatic resin, and presented for vendor's inspection at one time. A lot shall not exceed 450,000 feet (137,160 m) of braid.

4.3.1.2 When a statistical sampling plan has been agreed upon by purchaser and supplier, sampling shall be in accordance with such plan in lieu of sampling as in 4.3.1 and the report of 4.5 shall state that such plan was used.

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

4.4 Approval:

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

4.4.2 Manufacturer shall use ingredients, manufacturing procedures, and methods of inspection on production braid which are essentially the same as those used on the approved sample. If necessary to make any change in ingredients, in type of equipment for processing, or in manufacturing procedures, manufacturer shall submit for reapproval a statement of the proposed changes in ingredients and/or processing and, when requested, sample braid. Production braid made by the revised procedure shall not be shipped prior to receipt of reapproval.

4.5 Reports:

The supplier of braid shall furnish with each shipment a report showing the results of tests to determine conformance to the acceptance test requirements and stating that the braid conforms to the other technical requirements. This report shall include the purchase order number, lot number, AMS 3817D, manufacturer's product designation, size, and quantity.

4.6 Resampling and Retesting:

If any specimen used in the above tests fails to meet the specified requirements, disposition of the braid 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 braid represented. Results of all tests shall be reported.

5. PREPARATION FOR DELIVERY:

5.1 Packaging and Identification:

5.1.1 A lot of braid may be packaged in small quantities and delivered under the basic lot approval provided lot identification is maintained.