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400 COMMONWEALTH DRIVE, WARRENDALE, PA 15096

AEROSPACE MATERIAL SPECIFICATION

Submitted for recognition as an American National Standard

AMS 3817C

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Superseding AMS 3817B

BRAID, FLAT, NYLON, 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: Primarily for tying and lacing electrical wire harness assemblies for use at -55° to +75°C (-67° to + 167°F) where fungus resistance is required.

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

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

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 D259 - Woven Tapes

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

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

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 - 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 I, determined in accordance with ASTM D259.

TABLE I

	Size Designation		
	25	50	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 I (SI)

	Size Designation		
	25	50	80
Nominal Width, mm	1.57	2.29	3.18
Nominal Thickness, mm	0.30	0.30	0.30
Metres 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 II, determined in accordance with ASTM D259.

TABLE II

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

TABLE II (SI)

	Size Designation		
	25	50	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 vendor of braid 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 braid conforms to the requirements of this specification.

4.2 Classification of Tests:

4.2.1 Acceptance Tests: Tests to determine conformance to requirements for nominal width and thickness (Table I), breaking strength and elongation (Table II), slip resistance (3.2.2), and fray resistance (3.2.3) are classified as acceptance tests and shall be performed on each lot.

4.2.2 Preproduction Tests: Tests to determine conformance to all technical requirements of this specification are classified as preproduction tests and shall be performed prior to or on the initial shipment of braid to a purchaser, when a change in material 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 Ø 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: 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 and may be packaged in smaller quantities and delivered 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 4.5.1 shall state that such plan was used.

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

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 Vendor shall use ingredients, manufacturing procedures, and methods of inspection on production braid which are essentially the same as those used on the approved sample braid. 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 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:

4.5.1 The vendor 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 of this specification. This report shall include the purchase order number, lot number, AMS 3817C, vendor's product designation, size, and quantity.

4.5.2 The vendor of finished or semi-finished parts shall furnish with each shipment a report showing the purchase order number, AMS 3817C, size designation, contractor or other direct supplier of braid, supplier's material and finish designations, and quantity. When braid for making parts is produced or purchased by the parts vendor, that vendor shall inspect each lot of braid to determine conformance to the requirements of this specification and shall include in the report either a statement that the braid 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 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 and no additional testing shall be permitted. Results of all tests shall be reported.