

**INCH-POUND**

MIL-R-24677A

1 August 1991

SUPERSEDING

MIL-R-24677

6 November 1986

(See 6.7)

## MILITARY SPECIFICATION

### ROPE, FIBROUS, DOUBLE-BRAIDED (POLYESTER)

This specification is approved for use by all Departments and Agencies of the Department of Defense.

#### 1. SCOPE

1.1 Scope. This specification covers one type of double-braided polyester rope for general purpose use.

#### 2. APPLICABLE DOCUMENTS

##### 2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

## SPECIFICATIONS

### FEDERAL

- UU-T-81 - Tags, Shipping and Stock.
- PPP-F-320 - Fiberboard: Corrugated and Solid, Sheet Stock (Container Grade), and Cut Shapes.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, Naval Sea Systems Command, SEA 5523, Department of the Navy, Washington, DC 20362-5101 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

FSC 4020

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

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## MILITARY

- MIL-C-3131 - Cordage, Packaging of.
- MIL-L-17331 - Lubricating Oil, Steam Turbine and Gear, Moderate Service.
- MIL-L-19140 - Lumber and Plywood, Fire-Retardant Treated.

## STANDARDS

## FEDERAL

- FED-STD-191 - Textile Test Methods.

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Standardization Documents Order Desk, BLDG. 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.2 Non-Government publications. The following document(s) form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DOD adopted are those listed in the issue of the DODISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS are the issues of the documents cited in the solicitation (see 6.2).

## AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- D 885 - Standard Methods of Testing Tire Cords, Tire Cord Fabrics, and Industrial Filament Yarns Made From Man-Made Organic-Base Fibers.
- D 1141 - Standard Specification for Substitute Ocean Water.  
(DoD adopted)
- D 1577 - Standard Test Methods for Linear Density of Textile Fibers.
- D 2257 - Standard Test Method for Extractable Matter in Textiles.  
(DoD adopted)
- D 2258 - Standard Practice for Sampling Yarn for Testing.

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

(Non-Government standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

## 3. REQUIREMENTS

3.1 First article. When specified (see 6.2), a sample shall be subjected to first article inspection (see 6.4) in accordance with 4.3.

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3.2 Other identification and put-up. Unless otherwise specified (see 6.2), the requirements specified in 3.9 and 3.10 apply only to double braided polyester ropes purchased directly by the Government. Other requirements apply to double braided polyester ropes purchased as a component for an end item by a contractor and to double braided polyester ropes purchased directly by the Government.

3.3 Materials. The inner and outer braids shall be fabricated from bright white, virgin, continuous filament, heat and light resistant polyester fiber. Polyester fiber is a long chain synthetic polymer composed, at least 85 percent by weight, of an ester of a substituted aromatic carboxylic acid, including but not restricted to substituted terephthalate units and parasubstituted hydroxybenzoate units. The average fiber linear density per filament shall be not less than 5.0 denier per filament nor greater than 20 denier per filament. The fiber tenacity shall be not less than 8.0 grams per denier (see 4.4.1).

3.3.1 Fiber finish. The rope manufacturer shall use polyester fibers with an overlay finish that will ensure, in the marine environment, that the rope will give improved performance, that is, better than that of a rope made of fibers without an overlay finish. Among other things the overlay finish must provide abrasion resistance and fiber protection for a minimum of 3 years. The overlay finish provided shall not violate any other requirements of this specification.

3.4 Construction. The rope shall be a double braided construction wherein an inner braid of hollow structure manufactured in a separate operation shall serve as the core, while a cover (outer braid) is braided over it in a second operation. The weight of either constituent, the inner braid or the outer braid, shall not be greater than 55 percent of the total weight of the rope. Heat setting by the rope manufacturer of the yarns or finished rope shall not be acceptable. Polyester fibers of different types or grades, or fibers of different manufacturers shall not be mixed within the core or within the cover. Polyester fibers used in the core may, however, differ in type, grade, or manufacturing sources from those used in the cover, provided fiber components meet the requirements of 3.3. If the breaking elongation of the fibers used in the core and in the cover are different, the higher elongation fiber shall be used in the core.

3.4.1 Yarns. Core yarns shall be one size and all cover yarns shall be one size. In the manufacture of each braid, one-half of the yarns shall have an "S" twist, while the remaining yarns shall have a "Z" twist. Yarns shall have sufficient twist so that the filaments on the outer surface of the inner and outer braids are essentially parallel to the axis of the rope. The type of braid, number of strands, yarns per strand, and multipliers for the respective inner and outer braids shall be as specified in tables I and II.

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TABLE I. Structural requirements for inner braid or core.

Rope size nominal circumference (inches)	Type of braid	Number of strands	Yarns per strand		Multiplier for determination of pick count	
			Min	Max	Min	Max
3/4 to 2-1/4	Plain	8	2	6	1.3	1.9
3/4 to 2-1/4	Twill	12	1	4	2.0	3.2
2-1/2 to 7-1/2	Plain	8	2	6	1.3	1.9
2-1/2 to 7-1/2	Twill	12	1	4	2.0	3.2
2-1/2 to 7-1/2	Twill	16	1	3	3.0	3.8
8 to 16	Twill	12	1	4	2.0	3.2
8 to 16	Twill	16	1	3	3.0	3.8

TABLE II. Structural requirements for outer braid or cover.

Rope size nominal circumference (inches)	Type of braid	Number of strands	Yarns per strand		Multiplier for determination of pick count	
			Min	Max	Min	Max
3/4 to 1-1/2	Twill	16	2	3	6.0	7.0
1-1/2 to 2-1/4	Twill	20	2	2	6.8	7.8
2-1/4 to 5-1/2	Twill	24	2	2	7.6	8.6
5 to 16	Twill	32	1	2	9.0	11.0

3.4.2 Multipliers. Multipliers shown in tables I and II overcome the complexity of listing a range of pick counts for every size. Pick count and circumference for either the inner or outer braid shall be measured at the appropriate load P (table III) for the nominal rope size and shall be used in all calculations for the inner and outer braids as appropriate. The calculation is as follows:

Multiplier = pick count times circumference.

3.4.3 Texture. The texture of the finished rope shall be firm without sleaziness, and the cover (outer braid) shall fit closely around the core (inner braid) when inspected with the rope in a relaxed state.

3.5 Physical requirements. The finished rope shall conform to the physical properties specified in table III when tested as specified in 4.5 and 4.6. The circumference in accordance with table III shall be as specified (see 6.2).

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TABLE III. Physical properties.

Circumference at load P (nominal inches)	Diameter (nominal inches)	Load P (pounds)	Linear density plus or minus 5 percent (pounds/100 feet)	Breaking strength (minimum pounds)
3/4	1/4	13	2	1900
1	5/16	20	3.1	2935
1-1/8	3/8	28	4.5	4245
1-5/16	7/16	38	6.1	5730
1-1/2	1/2	50	8	7500
1-3/4	9/16	63	10.1	9450
2	5/8	78	12.5	11660
2-1/4	3/4	113	17.9	16610
2-1/2	13/16	132	21.1	19580
2-3/4	7/8	153	24.4	22660
3	1	200	31.9	29480
3-1/2	1-1/8	253	40.4	37290
3-3/4	1-1/4	313	49.8	45870
4	1-5/16	345	55	50600
4-1/2	1-1/2	450	71.8	61000
5	1-5/8	528	84	74000
5-1/2	1-3/4	613	97.7	84000
6	2	800	128	105000
6-1/2	2-1/8	903	144	118000
7	2-1/4	1013	161	133600
7-1/2	2-1/2	1250	199	162000
8	2-5/8	1378	220	180000
9	3	1800	287	232000
10	3-1/4	2113	337	277000
11	3-1/2	2450	419	335000
12	4	3200	510	396150
13	4-1/4	3613	576	446500
14	4-1/2	4050	646	500650
15	5	5000	798	616550
16	5-1/4	5513	879	679250

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3.5.1 Elongation. The elongation of the rope shall not be greater than 30 percent at the minimum breaking strength when determined as specified in 4.6.5. The load elongation curve, drawn autographically, shall not exhibit evidence of sudden changes in load applications greater than 5 percent of the load weighed at the instant of change. Changes due to splice slippage shall not be considered in this determination.

3.6 Extraneous material. No extraneous material shall be added for the purpose of weighting the rope. The extractable matter of the finished rope shall not be greater than 5 percent when tested as specified in 4.6.6.

3.7 Moisture content. The moisture content of the rope shall not be greater than 4 percent when tested as specified in 4.6.8.

3.8 Identification marker. The manufacturer shall identify his product by inserting a Kraft paper or water-resistant marker between the braids in all ropes larger than 1-1/8 inches circumference. Unless otherwise specified (see 6.2), the manufacturer's name, the year of manufacture, and type of fiber (POLYESTER) shall be printed on the marker in bold, easy-to-read type. Italic or script type shall not be used. The printing shall not be affected by exposure to salt water or mineral oil when tested as specified in 4.6.7.

3.9 Identification tag. In addition to the requirements specified in 3.8, each package unit shall have a ticket (identification tag) attached for identification purposes. The ticket shall conform to type B, class 1, size 4 or 5, 15 CSU grade of UU-T-81. The ticket shall be legibly printed, stamped, or typed with water insoluble ink. The ticket shall contain the following information:

- (a) Stock number.
- (b) Nomenclature.
- (c) Specification number.
- (d) Length.
- (e) Contract number and date.
- (f) Date of manufacture and year.
- (g) Contractor's name.

3.10 Put-up. Unless otherwise specified (see 6.2), the rope shall be furnished without knots or splices on nonreturnable reels not larger than 7 feet in diameter. Unless otherwise specified (see 6.2), multiple lengths shall be permitted in the same put-up. When specified (see 6.2), continuous lengths, other than a standard length, may be used. The rope shall be ordered by weight. Delivered weight per reel shall be within plus 10 percent, minus 0 percent of the weight specified in table IV. The weight for lengths other than standard shall be determined in accordance with table IV with the proper length ratio applied. However, the actual length shall be not less than the standard length when measured in the relaxed condition.

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TABLE IV. Put-up.

Circumference (inches)	Diameter (inches)	Standard length (feet)	Net weight per standard length (pounds)
3/4	1/4	600	12.6
1	5/16	600	19.5
1-1/8	3/8	600	28.4
1-5/16	7/16	600	38.4
1-1/2	1/2	600	50.4
1-3/4	9/16	600	63.6
2	5/8	600	78.8
2-1/4	3/4	600	112.8
2-1/2	13/16	600	133
2-3/4	7/8	600	154
3	1	600	201
3-1/2	1-1/8	600	255
3-3/4	1-1/4	600	314
4	1-5/16	600	347
4-1/2	1-1/2	600	452
5	1-5/8	600	529
5-1/2	1-3/4	600	616
6	2	600	806
6-1/2	2-1/8	600	907
7	2-1/4	600	1014
7-1/2	2-1/2	600	1254
8	2-5/8	600	1386
9	3	600	1808
10	3-1/4	600	2123
11	3-1/2	600	2640
12	4	600	3213
13	4-1/4	600	3629
14	4-1/2	600	4070
15	5	600	5027
16	5-1/4	600	5538

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3.10.1 Braider splices. Braider splices shall be the overlapping continuation of a single interrupted strand (or multiple strand) with another identical strand which follows the identical path in the braid. Although it is desirable that no braider splices be present in the core or the cover of any size and length of rope, some methods of manufacture impose limitations. To compensate for these limitations, the following shall be acceptable:

3.10.1.1 Standard length. To allow for a braider malfunction, one braider splice shall be permitted in the core and in the cover for orders specifying standard length or less as listed in table IV.

3.10.1.2 Continuous lengths. To compensate for random strand failures when continuous lengths are greater than standard lengths and up to 1200 feet maximum, an additional braider splice shall be permitted in the core and in the cover. In producing the splices the distance of the overlapping shall be equivalent to 8 times the circumference in inches but not less than 24 inches for ropes whose sizes are 3 inches in circumference and less. If more than one of these splices are in the same strand they shall be at least 20 feet apart measured from splice center to splice center.

3.10.1.3 Splice acceptance. Because splices within the core are difficult to detect after application of the cover, the number of braider splices within the core shall be identified (see 6.3).

3.11 Workmanship. The ends of all rope shall be cut off squarely and securely whipped, taped, or heat sealed. The reels shall be wound so that each turn and layer is free from entanglement. The component braid and the finished braided rope shall conform to the quality and grade of product established by this specification.

#### 4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements (examinations and tests) as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to ensure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items shall meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of the manufacturing operations, is an acceptable practice to ascertain conformance to requirements, however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to accept defective material.

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4.2 Classification of inspections. The inspection requirements specified herein are classified as follows:

- (a) First article inspection (see 4.3).
- (b) Quality conformance inspection (see 4.4).

4.3 First article inspection. First article inspection shall consist of the examinations specified in 4.5.1 and 4.5.2 and tests specified in 4.6.

4.3.1 First article sample. The first article sample for ropes shall be a continuous finished length of 70 feet.

4.4 Quality conformance inspection. Quality conformance inspection shall consist of the examinations specified in 4.5.1 and 4.5.2 and the tests specified in 4.4.1 and 4.6 (see 6.3). Unless otherwise specified herein, sampling for inspection shall be performed in accordance with tables V and VI.

TABLE V. Sampling for visual examination and testing of the end item.

Lot size	Sample size
2 - 15	2
16 - 25	3
26 - 90	5
91 - 150	8
151 - 280	13
281 - 500	20
501 - 1200	32
1201 - 3200	50
3201 - 10000	80

TABLE VI. Sampling for examination for length and winding.

Lot size	Sample size
1 - 10	All
11 - 500	10
501 - 3200	13
3201 - 10000	20

4.4.1 Material and component inspection. Determination shall be made for all characteristics specified in table VII, except material (see 6.3 and appendix). The linear density per filament and the tenacity of the fiber shall be determined in accordance with ASTM D 885, D 1577 and D 2258. Results shall be as fail or pass.

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TABLE VII. Component testing.

Characteristic	Requirement	Test method	Number of determinations per individual sample unit
Fiber:			
Type	3.3	<u>1</u> /	1
Linear density	3.3	4.4.1	1
Tenacity	3.3	4.4.1	1
Outer braid:			
Yarn size	3.4.1	Visual	1
Yarns per strand	Table II	Visual	1
Number of strands	Table II	Visual	1
Braid type	Table II	Visual	1
Multiplier	Table II	4.6.2.2	3
Heat setting	3.4	<u>1</u> /	1
Braider splices	3.10.1	<u>1</u> /	1
Inner braid:			
Yarn size	3.4.1	Visual	1
Yarns per strand	Table I	Visual	1
Number of strands	Table I	Visual	1
Braid type	Table I	Visual	1
Multiplier	Table I	4.6.2.2	3
Heat setting	3.4	<u>1</u> /	1
Braider splices	3.10.1	<u>1</u> /	1

1/ See 4.4.1.4.5 Examinations.

4.5.1 End item for visual defects. The unit of product for this examination shall be one reel. Ten percent of the gross length contained on each sample unit, but not less than 100 feet, shall be subjected to the visual examination. The lot size for this examination shall be expressed in units of reels each. The sample units will be randomly selected, and the sample size shall be as specified in table V. Any sample unit having one or more defects specified in table VIII shall be rejected. If any defects are noted in the original sample units, additional units shall be randomly selected and if any defects specified in table VIII are noted the entire lot shall be rejected.

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TABLE VIII. Classification of defects.

Defects
<u>Appearance and workmanship</u> Loose fit of cover on the core. Cut, any. Chafed or damaged. Kinks or uneven braiding resulting in open places, breaks in continuity of braid, or soft spots. Broken, loose, or projecting ends in the core or cover.  Excessive loose fiber ends on surface, gaps between strands. Ends not cut off squarely. Ends not securely whipped, taped, or heat sealed.
<u>Identification marker 1/</u> Omitted, incorrect, illegible. Italic or script type used, not as specified. Not completely covered by the outer braid.
<u>Identification ticket</u> Omitted, incorrect, illegible. Insecurely attached. Handwritten entries.
<u>Cleanliness</u> Spot or stain clearly visible. 2/

1/ Identification marker for braids larger than 1-1/8 inch circumference.

2/ At normal inspection distance (approximately 3 feet).

4.5.1.1 Defects in cover material. If a fold of cover material can be formed when grasping the rope by hand along the axis, the rope shall be considered to be sleazy or lack firmness.

4.5.2 Length and winding. The sample unit for this examination shall be one reel. The sample size shall be in accordance with table VI and the presence of any defect shall be cause for rejection of the entire lot. The lot size shall be the number of units in the inspected lot. Defects shall be as specified in 4.5.2.1 and 4.5.2.2.

4.5.2.1 Defects in length. Defects with regard to length exist if any of the following are determined during inspection:

- (a) Length of unit less than or more than length specified (including permitted tolerances).
- (b) Length of unit less than marked on ticket.
- (c) Reels not in continuous length.
- (d) Any piece on reels less than 600 feet in length for ropes with a circumference of 3/4 inch up to 16 inches.

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4.5.2.2 Defects in winding. Defects with regard to winding exist if the following are determined during inspection:

- (a) Improperly or not firmly wound resulting in slippage during unwinding or otherwise affecting free unhampered unwinding of rope.
- (b) Knot or splice joining ends to make a continuous length.

4.6 Testing of the end item. Testing of the end item shall be as specified in table IX and 4.6.2 through 4.6.9. The physical and chemical values specified herein apply to the average of the determinations made on a sample unit for test purposes as specified in the applicable test methods. The sample size, shall be in accordance with table VI, and the presence of any defect shall be cause for rejection of the entire lot. The lot size shall be expressed in units of reels. The sample unit for test purposes shall be 70 feet.

TABLE IX. End item testing.

Characteristic	Requirement	Test method	Number of determinations per individual sample unit
Circumference	3.5	4.6.2.1	3
Linear density	3.5	4.6.3	1
Breaking strength	3.5	4.6.4	2 (up to 9-inch circumference) 1 (10-inch circumference and above)
Elongation	3.5.1	4.6.5	2 (up to 9-inch circumference) 1 (10-inch circumference and above)
Extractable matter	3.6	4.6.6	2
Identification marker	3.8	4.6.7	1
Moisture content	3.7	4.6.8	2
Cover to core ratio	3.4	4.6.9	2

4.6.1 Specimen preparation. The designated length and number of test specimens shall be removed from the selected test reels in accordance with the specified test method.

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4.6.2 Circumference and picks per inch.

4.6.2.1 Circumference. The circumference shall be measured in accordance with method 6003 of FED-STD-191. Results to be reported shall be the average of three determinations to the nearest 1/16 inch.

4.6.2.2 Pick count. While under load P, ten complete picks shall be counted and marked off. The distance between marks shall be measured to the nearest 1/16 inch. This procedure shall be repeated at least three times in different positions (not less than 1 foot of rope apart). The multiplier value specified in table II shall be calculated for the respective sizes by dividing 10 by the observed dimension and multiplying the result by the circumference.

4.6.3 Linear density. The linear density shall be determined in accordance with method 6004 of FED-STD-191. Tests to determine compliance with the requirements (including quantity of delivery) specified herein, may be conducted under prevailing atmospheric conditions. In case of dispute, the tests shall be conducted on material which has reached equilibrium under standard conditions specified in method 6015 of FED-STD-191.

4.6.3.1 Accuracy. Linear density results determined shall be as follows:

<u>Circumference</u> <u>(inches)</u>	<u>Degree of</u> <u>accuracy</u> <u>(pound per 100 feet)</u>
Less than 1-3/4	Nearest 0.01
2 to 6	Nearest 0.1
6-1/2 to 12	Nearest 1.0
More than 12	Nearest 10.0

4.6.3.2 Load. The load applied need not cause a rope failure provided all individual test values exceed the specified minimum breaking strength.

4.6.4 Breaking strength. Breaking strength determinations shall be conducted in accordance with method 6015 of FED-STD-191. Results shall be the average of determination to an accuracy of 1 percent, but no single breaking strength test below the minimum values listed in table III shall be considered acceptable.

4.6.5 Elongation. The elongation at the minimum breaking strength shall be determined in accordance with the initial single loading procedure of method 6015 of FED-STD-191. The results shall be the average of determination to the nearest 0.1 percent.

4.6.6 Extractable matter. The extractable content shall be determined in accordance with ASTM D 2257, using a Soxhlet apparatus in the procedure. Results shall be the average of two determinations to the nearest 0.1 percent.

4.6.7 Identification marker. Three lengths of the identification marker shall be used to determine the fastness of printed matter of the identification marker to saltwater and mineral oil. Each length shall be approximately 1-1/2 feet. One length shall be retained as a control, one length shall be immersed for

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2 hours in synthetic seawater conforming to ASTM D 1141, stock solution number 1, 2, or 3, and one length shall be soaked for 2 hours in mineral oil conforming to symbol 2190-TEP of MIL-L-17331. Following removal from the respective environments, the two exposed specimens shall be visually compared with the control specimen. The fastness of the printed matter shall be considered satisfactory when no perceptible change in color or legibility is observed.

4.6.8 Moisture content. The moisture content shall be determined in accordance with method 2600 of FED-STD-191. Results shall be the average of two determinations to the nearest 0.1 percent.

4.6.9 Determination of cover to core ratio. A 2-foot specimen shall be cut off, after which the cover shall be separated from the core. The cover and core shall be weighed separately and the percentage of each by weights shall be determined for compliance with 3.4. Results shall be the average of the two determinations to the nearest 0.1 percent.

4.7 Inspection of packaging. Sample packages, and the inspection of the preservation, packing and marking for shipment, stowage, and storage shall be in accordance with the requirements of section 5 and the documents specified therein.

## 5. PACKAGING

(The packaging requirements specified herein apply only for direct Government acquisition.)

### 5.1 General.

#### 5.1.1 Navy fire-retardant requirements.

- (a) Treated lumber and plywood. Unless otherwise specified (see 6.2), all lumber and plywood including laminated veneer material used in shipping container, reel (spools), and pallet construction, members, blocking, bracing, and reinforcing shall be fire-retardant treated material conforming to MIL-L-19140 as follows:

Levels A and B - Type II - weather resistant.

Category 1 - general use.

Level C - Type I - non-weather resistant.

Category 1 - general use.

- (b) Fiberboard. Unless otherwise specified (see 6.2), fiberboard used in the construction of class-domestic, non-weather resistant fiberboard and cleated fiberboard boxes including interior packing forms shall conform to the class-domestic/fire-retardant or class-weather resistant/fire retardant material requirements of PPP-F-320 and amendments thereto.

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5.2 Packaging requirements. The packaging (preservation, packing and marking) requirements shall be in accordance with MIL-C-3131 for the level (A, C, or commercial) of preservation except as specified herein for 13-inch through 16-inch circumference rope, level (A, B, C, or commercial) of packing, and marking including packaging acquisitioning options therein as specified (see 6.2). For level A preservation of 13-inch through 16-inch circumference, rope, reels shall be constructed in accordance with the wood and plywood requirements specified in MIL-C-3131 and the following:

(a) Wood.

- (1) The thickness of the reel head boards shall be minimum 1-inch, 2- or 3-ply.
- (2) The barrel shall consist of minimum 1-1/2 inch thick wood staves mortised into the reel heads.
- (3) The reel shall be assembled with a minimum of five 1/2- or 3/4-inch diameter steel bolts having cup washers on each end.

(b) Plywood.

- (1) 1-1/4 inch, two sheets of 3/4-inch thick for net weights 700 through 1675 pounds; in addition, minimum of five 1/2-inch nuts and bolts shall be used for the flange and barrel assembly.

## 6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. The rope covered by this specification is intended for general purpose use where high strength, low stretch, and good abrasion resistance are required.

6.2 Acquisition requirements. Acquisition documents must specify the following:

- (a) Title, number, and date of this specification.
- (b) Issue of DoDISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1.1 and 2.2).
- (c) Circumference size required (see 1.1 and 3.5).
- (d) When first article inspection is required (see 3.1).
- (e) When splicing tools are required.
- (f) When information on identification marker is other than specified (see 3.8).
- (g) Put-up and length when other than specified (see 3.10).
- (h) When rope is furnished with knots or splices (see 3.10).
- (i) When multiple lengths per unit are not allowed (see 3.10).
- (j) Nominal continuous length of each unit.
- (k) When fire-retardant requirements are not required (see 5.1.1, (a) and (b)).

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- (l) Levels of preservation, packing, and marking required (see 5.2).
- (m) That purchaser will accept at original weight, any unit which has been shortened or cut for test specimens, if in complete compliance with this specification. Reel should be marked as to actual length.
- (n) That polyester rope will be purchased on a price-per-pound basis - net.

6.3 Consideration of data requirements. The following data requirements should be considered when this specification is applied on a contract. The applicable Data Item Descriptions (DID's) should be reviewed in conjunction with the specific acquisition to ensure that only essential data are requested/provided and that the DID's are tailored to reflect the requirements of the specific acquisition. To ensure correct contractual application of the data requirements, a Contract Data Requirements List (DD Form 1423) must be prepared to obtain the data, except where DoD FAR Supplement 27.475-1 exempts the requirement for a DD Form 1423.

<u>Reference Paragraph</u>	<u>DID Number</u>	<u>DID Title</u>	<u>Suggested Tailoring</u>
3.10.1.3, 4.4.1 and appendix 4.4	DI-MISC-80678	Certification/data report	10.3.1 applies
	DI-T-2072	Reports, test	-----

The above DID's were those cleared as of the date of this specification. The current issue of DoD 5010.12-L, Acquisition Management Systems and Data Requirements Control List (AMSDL), must be researched to ensure that only current, cleared DID's are cited on the DD Form 1423.

6.4 First article. When first article inspection is required, the items should be a first article sample. The first article should consist of one unit. The contracting officer should include specific instructions in acquisition documents regarding arrangements for examinations, approval of first article test results and disposition of first articles. Invitations for bids should provide that the Government reserves the right to waive the requirement for samples for first article inspection to those bidders offering a product which has been previously acquired or tested by the Government, and that bidders offering such products, who wish to rely on such production or test, must furnish evidence with the bid that prior Government approval is presently appropriate for the pending contract.

6.5 Adjustment for high moisture content. Material furnished containing an excess of moisture will be accepted by an adjustment in weight to the 5-percent moisture basis.

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6.6 Subject term (key word) listing.

Braid  
Fiber  
Pick count  
Put-up  
Splices  
Yarns

6.7 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

Custodians:

Army - GL  
Navy - SH  
Air Force - 99

Preparing activity:

Navy - SH  
(Project 4020-0317)

Review activities:

Navy - AS  
Air Force - 82

User activities:

Navy - CG, MC, YD

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## APPENDIX

## CERTIFICATION/DATA REPORT TECHNICAL CONTENT REQUIREMENTS

## 10. SCOPE

10.1 Scope. This appendix covers information that shall be included in the certification/data report when specified in the contract or order. This appendix is mandatory only when data item description DI-MISC-80678 is cited on the DD Form 1423.

## 20. APPLICABLE DOCUMENTS

This section is not applicable to this appendix.

## 30. CERTIFICATION

30.1 Certification content. The certification shall include the following information:

- (a) Conformance of material characteristics to the requirements specified herein (see 3.3).
- (b) Conformance to the requirement for heat setting of yarns or finished rope (see 3.4).
- (c) Conformance to the requirement for the mixing of fiber types, fiber grades, or fibers of different manufacturers within the core or within the cover (see 3.4).
- (d) Number of braider splices used (see 3.10.1.3).
- (e) Certification prepared by the fiber contractor, for material and by the rope contractor attesting to the number of braider splices (see 4.4.1).
- (f) Certification attesting to the number of braider splices within the core after application of the cover.

# STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

## INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

<b>I RECOMMEND A CHANGE:</b>		1. DOCUMENT NUMBER MIL-R-24677A	2. DOCUMENT DATE (YYMMDD)
3. DOCUMENT TITLE ROPE, FIBROUS, DOUBLE-BRAIDED (POLYESTER)			
4. NATURE OF CHANGE (Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)			
5. REASON FOR RECOMMENDATION			
6. SUBMITTER			
a. NAME (Last, First, Middle Initial)		b. ORGANIZATION	
c. ADDRESS (Include Zip Code)		d. TELEPHONE (Include Area Code) (1) Commercial (2) AUTOVON (if applicable)	7. DATE SUBMITTED (YYMMDD)
8. PREPARING ACTIVITY			
a. NAME Technical Point of Contact (TPOC): Mr. Jack Hall (SEA 56W23)		b. TELEPHONE (Include Area Code) (1) Commercial (2) AUTOVON	
PLEASE ADDRESS ALL CORRESPONDENCE AS FOLLOWS:		TPOC: 703-602-1844	
c. ADDRESS (Include Zip Code) Commander, Naval Sea Systems Command Department of the Navy (SEA 5523) Washington, DC 20362-5101		IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT: Defense Quality and Standardization Office 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466 Telephone (703) 756-2340 AUTOVON 289-2340	