Parachute Industry Association
COMMERCIAL SPECIFICATION®

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The following commercial specification is adopted from the military document. Initial and Revision A includes all known accepted revisions, amendments, notices, and Department of Defense (DoD) engineering changes previously developed for this item. Revisions B and forward include changes adopted by DoD and Industry to reflect technology and design evolution.

CORD, NYLON, CORELESS

The Parachute Industry Association makes this document available for use by Industry and Government organizations that wish to apply this specification to their products.

1. SCOPE

1.1 Scope. This document covers braided nylon coreless cord.

1.2 Classification. The cord shall be of the type specified (see TABLE I and 6.3). A part or identifying number for the cord shall be as specified in 6.3 and be applicable to TABLE I. After treated cordage shall be of the following class as specified (see 6.3): Class F-Fluorocarbon Impregnated (see 3.8 and 6.6).

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in Sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of the documents cited in Sections 3 and 4 of this specification, whether or not they are listed.

2.2 Government publications. The following Government publication forms a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

FEDERAL TRADE COMMISSION (FTC)

16 CFR 303 - Rules And Regulations Under the Textile Fiber Products Identification Act

(Copies are available online at: www.ftc.gov or from the Federal Trade Commission, 600 Pennsylvania Avenue, N.W. Washington, DC 20580-0001. Electronic copies may be obtained from http://www.access.gpo.gov/.)

2.3 Non-government publications. The following publications form a part of this document (see 2.4).

AMERICAN SOCIETY FOR QUALITY (ASQ)

ANSI/ASQ Z1.4	- Sampling Procedures and Tables for Inspection by Attributes

(Copies are available online at: www.asq.org or from the American Society for Quality, 600 North Plankinton Avenue, Milwaukee, WI 53203.)

ASTM INTERNATIONAL (ASTM)

ASTM D 276	- Identification of Fibers in Textiles
ASTM D 1423	- Standard Test Method for Twist in Yarns by Direct Counting
ASTM D 1776	- Standard Practice for Conditioning and Testing Textiles
ASTM D 1907	- Standard Test Methods for Linear Density of Yarn (Yarn Number) by the Skein Method
ASTM G 151	- Standard Practice for Exposing Nonmetallic Materials in Accelerated Test Devices That Use Laboratory Light Sources
ASTM G 155	- Standard Practice for Operating Xenon ARC Light Apparatus for Exposure of Non-Metallic Materials

(Copies should be obtained from ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959. Electronic copies may be obtained from www.astm.org.)

AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS (AATCC)

AATCC 16	- Colorfastness to Light
AATCC 20	- Fiber Analysis: Qualitative
AATCC 20A	- Fiber Analysis: Quantitative
AATCC 61	- Colorfastness to Laundering: Accelerated
AATCC 81	- pH of the Water-Extract from Wet Processed Textiles
AATCC 192	- Weather Resistance of Textiles
AATCC Evaluation Procedures:	

- 1 Gray Scale for Color Change
- 2 Gray Scale for Staining
- 8 AATCC 9-Step Chromatic Transference Scale
- 9 Visual Assessment of Color Difference of Textiles

(Applications for copies of referenced documents should be addressed to AATCC National Headquarters, PO Box 12215, Research Triangle Park, NJ 27709-2215. Electronic copies may be obtained from www.aatc.org.)

PARACHUTE INDUSTRY ASSOCIATION (PIA)

PIA-TEST METHOD-3000 - PERCENT SOLIDS ADD-ON FOR CORD, NYLON, CLASS F, DETERMINATION OF
PIA-TEST METHOD-6004 - LENGTH PER UNIT WEIGHT; CORDAGE
PIA-TEST METHOD-6010 - SHRINKAGE OF CORDAGE, BOILING WATER METHOD; DETERMINATION OF
PIA-TEST METHOD-6016 - STRENGTH AND ELONGATION BREAKING OF CORDAGE; NON-SPLICED

(Electronic copies may be obtained from www.pia.com.)

2.4 Revision levels of subsidiary documents. The documents listed in Section 2 shall be defined as subsidiary documents which are Government and non-government publications. The revision level of the subsidiary documents, except for PIA documents, shall be the latest revision level as listed in the Acquisition Streamlining and Standardization Information System (ASSIST) database located at : https://assist.daps.dla.mil/quicksearch/ (PIA-C-7515 is being used as a contractual specification). For PIA documents, the latest revision level to be used shall be obtained from the PIA website.

2.5 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 Standard. Where applicable, the dyed cord shall match the standard for shade and appearance and shall, unless otherwise indicated, be equal to or better than the standard with respect to all characteristics for which the standard is referenced (see 6.2).

3.2 First article. When specified (see 6.3), a sample shall be subjected to first article inspection (see 6.5) in accordance with 4.2.

3.3 Government and supply purchases. The requirements specified in 3.12 and 3.13 apply to cord purchased directly by the Government. All other requirements apply to cord purchased by a contractor as a component for an end item and to cord purchased directly by the Government.

3.4 Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible, provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs.

3.5 Material. The nylon yarn used in the manufacture of this cord shall be bright, high tenacity, heat and light resistant nylon 6,6 and shall have a melting point of 250 ±6°C when tested as specified in 4.3.2. The yarn or cord shall not be bleached. Testing shall be as specified in 4.3.4.

3.6 Construction and physical requirements. The finished braided cord shall conform to the requirements specified herein and in TABLE I, when tested as specified in 4.3.2 and 4.3.4. The cord shall be braided on braiding machines having the number of carriers specified in TABLE I for the applicable type and the machines shall be regulated to give a two over and two under conventional stitch, i.e. each carrier alternating with the next carrier in the same direction and each strand passing alternately over and under two of the opposite strands. The cord after braiding shall be heat set in continuous lengths and shall not show more than a 3 percent residual shrinkage when tested as specified in 4.3.4.

3.6.1 Twist. The nylon yarns shall have the following twist:

Types Ia, IIIa, XI - ½ to 1 turn per inch
Types I, II, III, IV, V, VII, VIII, X - Minimum of 2 ½ turns of "Z" twist per inch.

TABLE I **Physical requirements.**

Dash number	Type	Breaking strength, pounds (min.)	Number of carriers	Ends per carrier	Total ends	Basic yarn denier	Yarn ply	Picks per inch			Length per pound, feet (min.) [2/]	Elongation, percent (min.)
-1	I	400	16	3	48	210	3 [1/]	11	-	13	330	20
-2	Ia	400	16	2	32	840	1	13	-	14	330	20
-3	II	550	16	3	48	840	1	10	-	12	255	20
-4	III	750	16	6	96	210	3 [1/]	8.5	-	10	150	20
-5	IIIa	800	24	3	72	840	1	10	-	12	175	10
-6	IV	1000	16	6	96	840	1	7	-	9	120	20
-7	V	1500	16	9	144	840	1	6.5	-	8	90	20
-8	VI	2000	16	12	192	840	1	4.5	-	6.5	60	20
-9	VII	2500	16	14	224	840	1	4.5	-	6	45	20
-10	VIII	3000	24	12	288	840	1	5.5	-	7.5	36	20
-11	XI	300	16	7	112	210	1	14	-	15.5	480	20
-12	IV [3/]	1000	16	6	96	840	1	7	-	9	129	20
-13	X [3/]	650	24	2	48	840	1	14		15.5	230	20

Notes:
[1/] Ten or less linear yards of ply yarns shall not contain any knots. Knots shall not be closer than 10 yards apart.
[2/] A minus tolerance of 10 percent in length will be allowed for dyed cord.
[3/] Class F- Fluorocarbon impregnated (see 1.2).

3.6.2 Carrier run-off. In the manufacture of the cord, no more than one carrier shall be allowed to be run off per length of cord specified in TABLE II for the applicable type. When carrier ends run off, they shall be spliced a minimum distance of 5 inches to a maximum of 10 inches in length. When spliced, the outgoing carrier ends shall be joined with the new ends and hand braided for four to five picks and the tail of the splice shall be run into the center of the braided cord.

TABLE II **Carrier run-off.**

Types	Distance between carrier run-offs feet (min.) 1/
I, Ia, XI, X	100
II, III	50
IIIa, IV	40
V	25
VI	20
VII, VIII	10

Note:
1/ A minus tolerance of 10 percent in length will be allowed on dyed cord.

3.7 Color. Unless otherwise specified (see 6.3), the color of the cord shall be natural. When colored cord is specified, the color shall be attained by piece dying. The cord shall be piece dyed under uniform tension at all times during the dyeing process. The dyeing of cord in skeins is prohibited.

3.7.1 Visual shade matching. When applicable, the dyed cord shall match the standard when viewed using the AATCC Evaluation Procedure 9, Option A, with sources simulating artificial daylight D75 illuminate with color temperature of 7500 ±200K, with illumination of 100 ±20 foot candles and shall be a good match to the standard under incandescent lamplight at 2856 ±200K.

3.7.2 Colorfastness. The dyed cord shall show fastness to light and laundering as follows:

Characteristic	Rating (minimum)
Light (fade) 1/	3-4
Laundering: Color Change 1/ Staining 2/	 3-4 3-4
Testing shall be specified in 4.3.4	

Notes:
1/ Rated using the AATCC Evaluation Procedure 1, Gray Scale for Color Change
2/ Rated using the AATCC Evaluation Procedure 2, Gray Scale for Staining.

3.8 Fluorocarbon finish. The Fluorocarbon is to be evenly distributed throughout the treated cordage (Class F). The solid content for Type IV Class F, Cord, Nylon, Coreless shall be no less than 2.0 percent nor more than 5.0 percent by weight when tested as specified in 4.3.4. The solid content for Type X shall be 5 ±2 percent by weight when tested as specified in 4.3.4. The Fluorocarbon finish shall be applied from a water dispersion and when dried shall form a coating that is evenly deposited and adhered to on the yarns of the braided cord. The process of applying the Fluorocarbon finish to the cord shall cause no detrimental effect to the physical or chemical properties of the cord. Only approved Fluorocarbon shall be used (see 6.6).

3.9 pH. The pH of the water extract of the finished cord shall be no less than 5.5 nor more than 9.0 when tested as specified in 4.3.4.

3.10 Extractable matter. No material shall be added for the purpose of weighing the cord. The water soluble material of the finished cord shall not exceed 2.0 percent when tested as specified in 4.3.4.

3.11 Resistance to light and heat. The cord shall not lose more than 15.0 percent of its original breaking strength after individual exposures to both light and heat when tested as specified in 4.3.4.

3.12 Put-up. Shall be as specified by the procuring activity (see 6.3), and wound so that each turn and layer is free from entanglement. A plus tolerance of 10 percent shall be allowed on the length specified. The ends of the cord shall be heat sealed, securely joined, and taped to the cord to prevent fraying.

3.13 Identification. Each unit pack (spool/reel) of cord, interior and exterior container shall be marked per contract requirements. An additional label as noted shall be attached to the spool if the cord is more than one (1) piece to identify the number and length of pieces of cord per spool.

3.14 Workmanship. The end item shall conform to the quality of product established by this document and the occurrence of defects shall not exceed the applicable acceptable quality levels.

3.15 Date of Manufacture (see 6.3). When required by the procuring document the textile manufacturer shall properly identify the age of the textile material by placing a tag on the finished goods, or a label on the container, identifying the specification to which the material is manufactured, the lot number and date of manufacture. The date of manufacture is defined as the date (month and year) of the last manufacturing process that affects the physical characteristics of the material.

4. VERIFICATION

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

1) First article inspection (see 4.2)
2) Conformance inspection (see 4.3).

4.2 First article inspection. The first article submitted in accordance with 3.2 shall be inspected as specified in 4.3.2 through 4.3.4 for compliance with design, construction, workmanship and dimensional requirements.

4.3 Conformance inspection. Conformance inspection shall include the examination of 4.3.1 and the tests of 4.3.2 through 4.5 as applicable. Sampling for inspection shall be performed in accordance with ANSI/ASQ Z1.4 and with the Quality Acceptance Limit (AQL) as specified in this document, unless otherwise specified in the procurement documents.

4.3.1. Component and material inspection. In accordance with 4.1 above, components and materials shall be inspected in accordance with all the requirements of referenced documents unless otherwise excluded, amended, modified or qualified in this specification or applicable procurement documents.

4.3.2 Component testing. In addition to the quality assurance provisions of the subsidiary specifications, component materials listed in TABLE III shall be tested for the specified characteristics in accordance with the referenced test methods. The lot shall be unacceptable if one or more units fail to meet any requirement specified. All test reports shall contain the individual values utilized in expressing the final result. The sample size shall follow TABLE VI.

TABLE III **Component tests.**

Characteristic	Requirement paragraph	Test method
Material identification	3.5 [1/]	AATCC 20 or ASTM 276
Tenacity	3.5 [1/]	
Heat and light resistance	3.5 [1/]	
Melting point	3.5 [1/]	AATCC 20 or ASTM 276
Prohibition of bleaching	3.5 [1/]	
Twist	3.6.1 [1/]	ASTM D 1423
Denier	TABLE I [1/]	ASTM D 1907
Ply	TABLE I [1/]	
Plied yarn knots	TABLE I [1/]	
Carrier run-off splicing	3.6.2 [1/]	

Note:
[1/] A Certificate of Compliance shall be submitted and shall be acceptable for the stated requirements.

4.3.3 End item inspection.

4.3.3.1 End item visual examination. The end item shall be examined for the defects listed in TABLE IV. All defects shall be counted, regardless of their proximity to each other, except where two or more defects represent a single local condition, in which case only the more serious defect shall be counted. The lot size shall be expressed in units of spools or reels. The sample unit shall be one spool or reel. Ten percent of the length contained on each sample unit, but not less than 100 feet, shall be subjected to the visual examination. The inspection level shall be III and the Acceptable Quality Limit (AQL), expressed in terms of defects per hundred units, shall be 1.5 for major defects and 6.5 total (major and minor combined) defects. Any critical defect found during sampling inspection shall be cause for rejection of the lot represented by the sample.

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TABLE IV **End item visual defects.**

Examine	Defect	Classification		
		Critical	Major	Minor
Appearance and workmanship	Any cut Abrasion, chafed area, or distortion in the orientation of yarns	01 02		
	Kinks, knots, or unevenly braided resulting in open places, breaks in continuity of braid, or soft spots	03		
	Floats; broken, projecting, or missing ends or picks	04		
Type	Other than specified	05		
Color	Other than specified Off shade i.e., not within established tolerances		101	 201
Cleanness	Spot or stain clearly visible [1/]			202
	Objectionable odor			203
Identification	Omitted information, incorrect or illegible Insecurely attached		102	 204
	Label not as specified			205
	Handwritten entries			206

Note:
[1/] At normal inspection distance (approximately 3 feet).

4.3.3.2 Length and winding examination. The cord shall be examined for the length and winding defects listed below. The lot size shall be expressed in units of spools or reels. The sample unit shall be one spool or reel. The inspection level shall be S-3 and AQL, expressed in terms of defects per hundred units, shall be 4.0.

Length and winding defects:

- Length less than specified or more than 10 percent in excess of length specified
- Length of cord on a spool (reel) is more than 2 yards less than length on label
- Improperly or not firmly wound resulting in kinking, knotting, entangling, or slippage during unwinding, or otherwise affecting free unhampered unwinding of cord
- Put-up not as specified
- Any end not heat sealed, securely joined, and taped to the cord to prevent fraying.

4.3.4 End item testing. The methods of testing specified, wherever applicable, and as listed in TABLE V shall be followed. When the data in the "Number of determinations" and “Results reported as" columns are not specified in TABLE V, they shall be one per sample unit as required by the referenced test method. Except for breaking strength and elongation, the physical and chemical values specified in Section 3 apply to the average of the determinations made on sample unit for test purposes, as specified in the applicable test methods. For breaking strength and elongation, all individual determinations made on each sample unit must meet or exceed the minimum requirements for each lot to be acceptable. Sample units shall be randomly selected from the lot. Supplier shall certify that the selected sample units are representative of the properties for the lot. The lot size shall be expressed in units of spools (reels) of cord. The

sample unit shall be one spool (reel) of cord. The sample size shall be in accordance with TABLE VI. The lot shall be unacceptable if one or more sample units fail to meet any requirement. All test reports shall contain the individual values utilized in expressing the final results. Tests to determine compliance with document requirements shall be made upon material that has reached equilibrium under standard conditions as defined in ASTM D 1776.

TABLE V **End item tests** [6/].

Characteristic	Requirement reference	Test method	Number of determinations per sample unit	Results reported as
Number of carriers	TABLE I	Visual	3	Pass or fail
Ends per carrier	TABLE I	Visual	3	Pass or fail
Total ends	TABLE I	Visual	3	Pass or fail
Picks per inch	TABLE I	[5/]	3	To nearest whole number
Length per pound	TABLE I	PIA-TEST METHOD-6004	1	[8/]
Breaking strength and elongation	TABLE I	PIA-TEST METHOD-6016 [2/, 9/]	5	[8/]
Shrinkage	3.6	PIA-TEST METHOD-6010	3	All individual values to the nearest tenth
Colorfastness to:				
Light	3.7.2	AATCC 16, Opt 1 [1/]	1	Numerical rating
Laundering	3.7.2	AATCC 61, Test 1A [3/, 4/]	1	Numerical rating
Extractable matter	3.10	AATCC 20A	1	To the nearest whole number
pH	3.9	AATCC 81	3	All individual values to the nearest tenth
Resistance to light	3.11	AATCC 192 Opt. A and 4.3.5	5	[8/]
Resistance to heat	3.11	AATCC 192 and 4.3.6	5	[8/]
Approved Fluorocarbon	3.8	-	-	[7/]
Fluorocarbon add-on	3.8	PIA-TEST METHOD-3000	2	Average of 2 determinations to the nearest hundredth %

Notes:
[1/] The specimen shall be 2 feet or more of the cord wrapped around a 6 inch square of cardboard which, after the required exposure period, shall be removed from the machines and placed in the dark a minimum of 1 hour before evaluation.
[2/] The use of a video Extensiometer in place of dividers, while conducting the elongation on the product, will be allowed as long as all the other requirements of this test method are met.
[3/] On the Color Transfer Cloth Evaluation, only the stain on the nylon fibers of the color transfer cloth shall be evaluated.

[4/] Except laundering cycle shall be 30 minutes and the temperature of the container and its contents shall be maintained at 100 ±4°F (38 ±2°C).
[5/] Determination of Picks per inch. Picks per inch shall be counted visually with the cord so positioned that the repeat of the stitch pattern creates a straight line parallel to the axis of the cord.
[6/] For Class F cords all end item tests shall be conducted after Fluorocarbon treatment per 3.8.
[7/] A Certificate of Compliance shall be submitted and will be acceptable for the stated requirements.
[8/] All individual values shall be reported to the nearest whole number.
[9/] All individaul values must be above the minimum requirement.

4.3.5 Determination of resistance to light. Following are optional test procedures, either of which may be used to expose samples to light: Sunshine Carbon Arc and Xenon Arc. Identification of which light source was used must be stated on the Test Report.

4.3.5.1 Sunshine Carbon Arc Test Procedure. Test specimens shall be the appropriate specimen size and tested in accordance with AATCC 192, Option A, with the following exceptions:

a. The specimens shall be attached to an “open rack” by weaving in the specimens and letting the excess material hang below the rack. Thicker samples can be attached directly to the rotating rack by attaching the corners with wooden or non rusting clamps. Thinner tapes and webbings can be folded and laid flat or wrapped around panels and attached with appropriate clamps. Care must be taken to assure that the middle 6 to 8 inches of the tape or webbing is exposed.
b. Corex D filters and sunshine carbons shall be used.
c. The exposure time shall be 50 hours.
d. The spray heads shall be shut off during the entire exposure period.
e. The drain pan shall contain from ½ to 1 inch of water during the entire exposure period.
f .The relative humidity shall be 55 ±5 percent and the black panel temperature shall be 68 ±5.6°C (155 ±10°F) during the entire exposure period.
g. The black panel shall be removed and polished every 500 hours of use. When the black panel surface begins to fade, it shall be replaced.
h. The filter ages shall be a maximum 2,000 hours. To be accomplished in the following manner:

(1) Number the filter frames 1 through 8
(2) Replace all filters with new filters
(3) Change one filter every 250 hours until all filters are changed, then repeat the cycle with filter No. 1.

i. At the end of the exposure period the specimens shall be brought to equilibrium at least four hours under standard conditions as per ASTM D 1776.
j. The specimens shall then be tested for breaking strength in accordance with PIA-TEST METHOD-6016 and the percent of breaking strength loss shall be calculated as follows:

$$\frac{\text{(Initial Average B.S. - After Exposure Average B.S.)}}{\text{Initial Average B.S.}} \times 100 = \text{Percent of B.S. Loss}$$

4.3.5.2 Xenon Arc Test Procedure. Test specimens shall be the appropriate specimen size and shall be tested in accordance with ASTM G 151 and ASTM G 155, with the following exceptions:

a. The specimens shall be attached to an "open rack" by weaving in the specimens and letting the excess material hang below the rack. Thicker samples can be attached directly to the rotating rack by attaching the corners with wooden or non rusting clamps. Thinner tapes and webbings can be folded and laid flat or wrapped around panels and attached with appropriate clamps. Care must be taken to assure that the middle 6 to 8 inches of the tape or webbing is exposed.
b. Use a Xenon Arc apparatus that conforms to the requirements of ASTM G 151and ASTM G 155.
c. The Spectral Power Distribution (SPD) of the Xenon lamp shall conform to the requirements of Table 1 in ASTM G 155 for a Xenon lamp with Daylight Filter. Note: Though several filters or filter combinations have been shown to be acceptable, it is recommended that the equipment manufacturers' recommendation of the best match to the natural daylight spectrum is used.
d. The exposure time shall be 48 continuous hours.
e. Control the total radiant energy to accumulate 95 kJs / (m^2 nm) @ 340 nm, or
f. Control the irradiance to produce 0.55 ±0.03 W/m^2 at 340 nm.
g. If the irradiance at any position within the exposure area is less than 90 percent of the peak irradiance, follow one of the procedures in ASTM G 155 to ensure either equal radiant exposure or compensation for differences in radiant exposure.
h. Program the Xenon Arc apparatus to provide 100 percent light only. There is no water spray requirement. If the apparatus has a spray option, be sure it is turned off.
i. If present, calibrate and maintain the Black Panel in accordance to manufacturers' directions.
j. If present, maintain Black Panel temperature at 70 ±2ºC.
k. Control chamber temperature to 47 ±2ºC.
l. Control the Relative Humidity inside the chamber to 30 ±5 percent.
m. At the end of the exposure period, the specimens shall be brought to equilibrium at least four hours under standard conditions as per ASTM D 1776.
n. The specimens shall then be tested for breaking strength in accordance with PIA-TEST METHOD-6016 and the percent of breaking strength loss shall be calculated as follows:

$$\frac{\text{(Initial Average B.S. - After Exposure Average B.S.)}}{\text{Initial Average B.S.}} \times 100 = \text{Percent of B.S. Loss}$$

4.3.6 Determination of resistance to heat. Five test specimens shall be taken from each sample unit. The test specimens shall be suspended in a circulating air oven at a temperature of 180 ±3ºC (356 ±5°F) for one hour. After removal from the oven, the specimens shall be conditioned at 21 ±1ºC (70 ±2°F) and 65 ±2 percent relative humidity for 24 hours. The

specimens shall then be tested for breaking strength in accordance with PIA-TEST METHOD-6016 and the percent breaking strength lost shall be calculated as specified in 4.3.5.

TABLE VI **Sampling plan for end item tests.**

Lot size		Number of samples
500 Yards Spools	Yards	
2 to 15	1,000 to 7,500	2
16 to 40	8,000 to 20,000	3
41 to 110	20,500 to 55,000	5
111 to 300	55,500 to 150,000	7
301 to 500	150,500 to 250,000	10
501 and over	250,500 and over	15

4.4 Packaging inspection. Inspection shall be made in accordance with commercial standards or as referenced by the procuring activity or purchase order.

4.5 Certificate of Compliance. Where Certificates of Compliance are submitted, the procuring activity reserves the right to inspect such items to determine the validity of the certifications.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.3). When actual packaging of material is to be performed by DoD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the inventory control point's packaging activity within the military department or defense agency, or with the military department's system command. Packaging data retrieval is available from the managing military department's or defense agency's automated packaging files, CD-ROM products, or by the contacting the responsible packaging activity.

6. NOTES

6.1 Intended use. The cord is intended for use in cargo type parachutes, except Types X and XI. Type X cord is intended for use in personnel parachutes and Type XI cord is intended for use as tow cables.

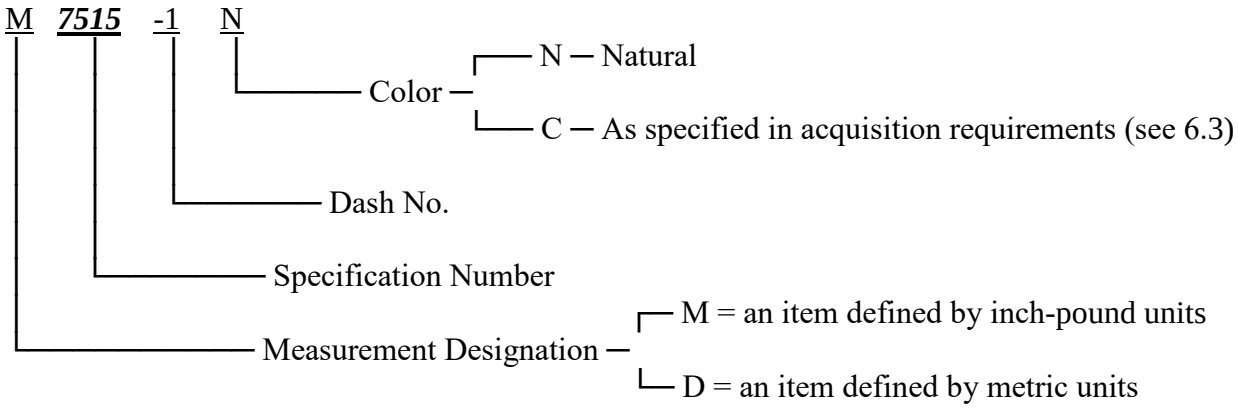
6.2 Standard. For access to standards, address the contracting activity issuing the invitation for bids or request for proposal.

6.3 Ordering data. Acquisition documents should specify the following:

a. Title, number, and date of this document
b. Class required (see 1.2 and 3.8)
c. Part number and type required (see 1.2, 6.4 and TABLE I)
d. When dyed color is required (see 3.7)
e. When a first article is required (see 3.2, 4.2, and 6.5)
f. Put-up if other than specified (see 3.12)
g. Date of manufacture (see 3.15)

h. Packaging requirements (see 5.1).

6.4 Part number. The part number shall be a combination of numbers and letters in accordance with the following:



6.5 First article. When a first article is required, it shall be inspected and approved under the appropriate provisions of FAR 52.209-4. The first article should be a pre-production sample. The contracting officer should specify the appropriate type of first article and the number of units to be furnished. The contracting officer should also include specific instructions in acquisition documents regarding arrangement for selection, inspection, and approval of the first article.

6.6 Approved Fluorocarbon treatment. Approval of Fluorocarbon treatments are the responsibility of the US Army Research Development and Engineering Command, Natick Soldier Research Development and Engineering Center (NSRDEC) Natick, MA 01760-5056. The following are approved for Fluorocarbon treatment and substitutes shall not be used without prior approval by NSRDEC:

Approved PTFE finish list.

Product	Supplier
PTFE Fluoropolymer Resin Dispersion Grade TE-3859	DuPont Fluoroproducts Customer Service Center P.O. Box 80702 Wilmington, DE 19880-0702

Property	ASTM Standard	Unit	Value
Percent PTFE resin solid	D4441	%	58 - 61.5
Dispersion particle size	-	um	0.215 - 0.240
pH	E70	-	9.5 - 11.0
Wetting agent	D4441	%	5.5 - 6.5
Standard specific gravity (SSG)	D4441	-	2.2075 - 2.2425

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