

T-C-571F
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SUPERSEDING
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FEDERAL SPECIFICATION

CORDS, COTTON; GENERAL AND SPECIAL PURPOSE, SASH AND VENETIAN BLIND

This specification was approved by the Commissioner, Federal Supply Service, General Services Administration, for the use of all Federal agencies.

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers braided cotton cord (see 6.1) used by Government agencies.

1.2 Classification.

1.2.1 Types and classes. The cords shall be of the following types, classes, and sizes (see 3.6), as specified (see 6.2):

Type I - General purpose and sash cord (dyed and unbleached (natural)).
Class 1 - Natural finish.
Class 2 - Polished finish.
Class 3 - Water and mildew-resistant finish.

Type III - Venetian blind cord (dyed, unbleached (natural), or bleached).
Class 6 - Glazed polished finish.

Type IV - Special purpose cord (unbleached (natural) or bleached).
Class 4 - Polished and water-resistant finish.

Type V - Mail bag lacing cord.
Class 5 - Special polished finish (see 6.5).

Type VI - Aircraft applications (see 6.4).
Class 6 - Glazed polished finish.

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2. APPLICABLE DOCUMENTS

2.1 The following documents, of the issues in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein.

Federal Specifications:

- T-T-616 - Treatment: Mildew Resistant, for Rope and Cord.
- UU-T-81 - Tags, Shipping and Stock.
- PPP-B-636 - Boxes, Shipping, Fiberboard
- PPP-B-1055 - Barrier Material, Waterproofed, Flexible.

Federal Standards:

- Fed. Std. No. 123 - Marking for Domestic Shipment (Civil Agencies).
- Fed. Std. No. 191 - Textile, Test Methods.
- Fed. Std. No. 595 - Colors.

(Activities outside the Federal Government may obtain copies of Federal Specifications, Standards, and Handbooks as outlined under General Information in the Index of Federal Specifications and Standards and at the prices indicated in the Index. The Index, which includes cumulative monthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

(Single copies of this specifications and other Federal Specifications required by activities outside the Federal Government for bidding purposes are available without charge from Business Service Centers at the General Services Administration Regional Offices in Boston, New York, Washington, D.C., Atlanta, Chicago, Kansas City, Mo., Fort Worth, Denver, San Francisco, Los Angeles, and Seattle, Washington.

(Federal Government activities may obtain copies of Federal Specifications, Standards, and Handbooks and the Index of Federal Specifications and Standards from established distribution points in their agencies.)

Military Specification:

- MIL-C-3131 - Cordage; Preparation for Delivery of.

Military Standard:

- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.

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(Copies of Military Specifications and Standards required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

3. REQUIREMENTS

3.1 The requirements specified in 3.11 and 3.12 shall apply only to cord purchased directly by the Government. All other requirements apply to cord purchased by a supplier as a component for an end item and to cord purchased directly by the Government.

3.2 Standard sample. When a standard sample is established, the cord shall match the standard for shade and be equal to, or better than, the standard sample with respect to all characteristics for which the standard is referenced (see 6.3).

3.3 Materials.

3.3.1 Cotton. The cord shall be fabricated from cotton of suitable staple length and grade to meet the requirements of this specification.

3.3.2 Prohibited materials. The use of casein, glue, gum starch, dextrin, water-soluble materials, paint dryers, resin or vegetable oils, oxidizing oils, or resins modified with such oils is prohibited with the exception of materials necessary for polishing class 2 cord.

3.4 Finish.

3.4.1 Class 1 (natural finish). Natural finish shall denote a cord for which no consistency or lustre other than that inherent in the cotton material is required.

3.4.2 Class 2 (polished finish). Polished finished cord shall have a lustrous, smooth-dressed surface with no protruding fibers. All finishing or glazing material shall be added to class 2 cord after braiding.

3.4.3 Class 3 (water and mildew-resistant finish). Water and mildew-resistant finished cord shall meet the following requirements.

3.4.3.1 Mildew-resistant phase. The mildew-resistant treatment shall be copper-8-quinolinolate in conformance with the requirements of T-T-616.

3.4.3.2 Water-resistant phase. The water-resistant treatment shall consist of a solution of amorphous wax or paraffin wax, mineral oil, asphalt, pigments (when required), and a volatile solvent formulated to meet the requirements of this specification. The use of gilsonite, petrolatum, or equivalent products will be permitted.

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3.4.4 Class 4 (polished and water-resistant finish). The type IV, class 4 cord shall be water-resistant treated to conform to the requirements specified herein. The water-resistant treatment shall produce a cord having a smooth, lustrous surface with no protruding fibers.

3.4.5 Class 5 (special polished finish). The type V, class 5 cord shall be given a class 2 polished finish and, in addition, the core yarns shall be impregnated with a 20 percent aqueous polyvinyl-acetate solution (see 6.5).

3.4.6 Class 6 (glazed polished finish). Class 6 finished cord shall have a smooth-dressed surface with no protruding fibers.

3.5 Construction. The cord shall consist of a uniform number of cotton yarns per strand, with the strands firmly and evenly braided around a cotton core, except type VI shall not have a core. Types I and V cords shall be a solid braid construction.

3.6 Physical requirements.

3.6.1 The finished cords, types I and III, dyed and unbleached (natural), shall conform to the requirements specified in tables I and II for the respective classes and sizes, when tested as specified in 4.2.5.

3.6.2 The finished cord, type IV, class 4, bleached or unbleached (natural) shall conform to the requirements specified in table III, when tested as specified in 4.2.5.

3.6.3 The finished type V, class 5 cord shall conform to the requirements specified in table IV, when tested as specified in 4.2.5.

3.6.4 The finished type VI, class 6 cord shall conform to the requirements specified in table V, when tested as specified in 4.2.5.

TABLE I. Type I, general purpose and sash cord, classes 1, 2, and 3

Size	Diameter ^{1/}	Breaking strength (minimum)	Number of strands (minimum)	Yarns per strand (minimum)	Length per pound (minimum)	
					Class 1	Classes 2 and 3
	<u>Inch</u>	<u>Pounds</u>			<u>Feet</u>	<u>Feet</u>
4	1/8	100	9	3	201	171
5	5/32	160	9	4	100	85
6	3/16	240	12	4	66	55
7	7/32	300	12	5	54	45
8	1/4	370	12	6	44	37
10	5/16	560	18	10	27	23
12	3/8	720	18	12	20	17
16	1/2	1250	18	14	11.7	10

^{1/} A tolerance of plus or minus 1/64 inch is permitted.

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TABLE II. Type III, venetian blind cord, class 6

Diameter	Breaking strength (minimum)	Number of strands	Yarns per strand	Number of core yarns
<u>Inch</u>	<u>Pounds</u>			
9/64 + 1/64	175	8	6	2

TABLE III. Type IV, special purpose cord, class 4

Diameter	Breaking strength (minimum)	Number of strands	Yarns per strand	Number of core yarns	Length per pound (minimum)
<u>Inch</u>	<u>Pounds</u>				<u>Feet</u>
5/32 + 1/64	180	12	5, 3 ply	5, 3 ply	80

TABLE IV. Type V, mail-bag lacing cord, class 5

Diameter	Breaking strength (minimum)	Number of strands	Yarns per strand	Number of core yarns	Length per pound (minimum)
<u>Inch</u>	<u>Pounds</u>				<u>Feet</u>
0.167 to 0.180	240	12	5	5	90

TABLE V. Type VI, aircraft application, class 6

Diameter	Number of strands (minimum)	Breaking strength (minimum)	Length per pound (minimum)	Elongation percent (maximum)	Yarns per strand
<u>Inch</u>		<u>Pounds</u>	<u>Feet</u>		
3/32 + 1/64	9	80	480	20.0	Plied

3.7 Color.3.7.1 Types I, III, V, and VI.

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3.7.1.1 Classes 1, 2, and 5. Unless otherwise specified (see 6.2), classes 1, 2, and 5 cord shall be furnished in the unbleached (natural) state. When a specific shade is specified, the color shall be obtained by yarn dyeing and shall conform to an approved standard (see 6.3).

3.7.1.2 Class 3. Unless otherwise specified (see 6.2), the shade of the class 3 cord shall be the natural shade imparted by the treatment. When a shade is specified, the shade shall be obtained by yarn dyeing and shall conform to an approved standard as specified (see 6.3).

3.7.1.3 Class 6. Unless otherwise specified, the color of class 6 cord shall be unbleached (natural). When a bleached (white) cord is required by civil agencies of the Government, it shall approximately match color No. 17875 of Fed. Std. No. 595 (see 6.2).

3.7.2 Type IV, class 4. The color of the type IV cord shall be unbleached (natural); (bleached yarn is acceptable).

3.7.3 Colorfastness. When a specific shade and colorfastness is required, the colorfastness properties shall be as specified in the applicable end item specification or as set forth in the contract or order (see 6.2). When a standard sample has been established, the test specimen shall be compared with the standard for the colorfastness properties specified, when tested as specified in 4.2.5. When no standard sample has been established, the cord shall be rated in accordance with the adjective ratings shown in the applicable test methods, when tested as specified in 4.2.5.

3.7.3.1 When requirements for any of the following characteristics are specified, conformance shall be determined as specified in 4.2.5:

Colorfastness to: Laundering.

Colorfastness to: Light.

Colorfastness to: Weathering.

3.8 Elongation.

3.8.1 Type I. The type I, class 1 cord shall not elongate more than 10.0 percent and the type I, classes 2 and 3 cords shall not elongate more than 8.0 percent, when tested as specified in 4.2.5.

3.8.2 Type IV. The type IV, class 4 cord shall not elongate more than 7.0 percent initially and after immersion in water, when tested as specified in 4.2.5.

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3.8.3 Type V. The type V, class 5 cord shall not elongate more than 13.5 percent when subjected to a static load of 140 pounds for 10 minutes, when tested as specified in 4.2.5.

3.9 Nonfibrous material and chloroform-soluble material.

3.9.1 Class 1. The total nonfibrous material shall not exceed 5.0 percent of the dry weight of the cord, when tested as specified in 4.2.5.

3.9.2 Class 2. Class 2 cord shall contain not less than 7.0 percent of carbon tetrachloride-soluble material and not more than 7.0 percent total nonfibrous material not soluble in carbon tetrachloride based on the dry weight of the cord, when tested as specified in 4.2.5.

3.9.3 Classes 3 and 4. The classes 3 and 4 finished cords shall contain not more than 30.0 percent total chloroform-soluble material, when tested as specified in 4.2.5.

3.9.4 Class 5. The class 5 cord shall contain not less than 6.0 nor more than 15.0 percent total nonfibrous materials, when tested as specified in 4.2.5.

3.9.5 Class 6 (type VI only). The total chloroform-soluble material of type VI, class 6 cord shall not exceed 3.5 percent, when tested as specified in 4.2.5.

3.10 Water absorption.

3.10.1 Class 3. The class 3 cord shall absorb not more than 45.0 percent water by weight, when tested as specified in 4.2.5.

3.10.2 Class 4. The class 4 cord shall absorb not more than 8.0 percent water by weight, when tested as specified in 4.2.5.

3.11 Put-up.

3.11.1 Type I. Unless otherwise specified (see 6.2), all sizes and classes of type I, except class 2, size 6 as noted hereif, shall be put up in coils measuring a minimum of 1,200 feet and a maximum of 1,320 feet in length. The coils shall contain not more than two pieces and no piece shall be less than 100 feet in length. The ends of cord shall not be knotted or otherwise joined to make a continuous length. The cord shall be so wound that each turn and layer is free from entanglement.

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3.11.2 Type III. Unless otherwise specified (see 6.2), 3,000 feet (+ 10.0 percent) of type III cord shall be wound on wood or metal spools (reels). The spools (reels) shall be so wound that each turn and layer is free from entanglement and the end shall not be knotted or otherwise joined to make a continuous length. No piece shall be less than 750 feet in length.

3.11.3 Type IV, class 4; and type I, class 2, size 6. Unless otherwise specified, type IV, class 4 and type I, class 2, size 6 shall be put up in commercial hanks in continuous lengths of 100 (+ 10 feet).

3.11.4 Type V. Type V cord shall be put up in coils or cut lengths as specified (see 6.2).

3.11.4.1 Coils. When specified, type V cord shall be put up in minimum 50-pound universal wound coreless tubes or coils. A plus or minus tolerance of 10 percent will be allowed on each coil or tube provided the average net weight does not fall below the specified minimum when examined as specified in 4.2.3.3. The coils shall contain not more than two pieces and no piece shall be less than 100 feet in length. The ends of cord shall not be knotted or otherwise joined to make a continuous length. Ends of coils shall be flat and they shall be tied with a minimum of four equally spaced ties of cord passing through the center hole of the coil to the outside and knotted on the circumference of the coil. The coils shall be wound such that when standing on end, they may be unwound from the inside to the two outer layers without tangling or without the coil collapsing.

3.11.4.2 Cut lengths. When specified, type V cord shall be put up in 70- or 84-inch (+ 1/4 inch) cut lengths. Ends of each piece shall be cut square across the cord. Pieces the same length shall be put up in bundles of 150 and securely tied at each end.

3.11.5 Type VI. Unless otherwise specified (see 6.2), type VI cord shall be furnished, without knots, on tubes or spools (reels) in lengths of 3000 feet. A plus or minus tolerance of 10.0 percent will be allowed on the length of any tube or spool (reel) specified. The tubes or spools (reels) shall contain not more than two pieces of cord and no piece shall be less than 100 feet in length. The cord shall be wound on the tubes or spools (reels) so that each turn and layer is free from entanglement.

3.12 Identification.

3.12.1 Each coil, tube, or spool (reel) of cord shall have a ticket (identification tag) attached to it for identification purposes. The ticket shall conform to the requirements for type B, class 1, size 4 or 5 of UU-T-81. The ticket shall be made of not less than 15-point paper stock and shall have a minimum tearing resistance in both directions (total) of 850 grams when tested as specified in UU-T-81. The use of identification labels on tubes, or spools

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(reels) will be allowed provided that the labels are attached in such a manner as to remain in place and be clearly legible until all cord has been removed. All ticket or label entries shall be legibly printed, stamped, or typed with water insoluble ink. The ticket or label shall contain the following information:

STOCK NUMBER
NOMENCLATURE
SPECIFICATION NUMBER
LENGTH
CONTRACT NUMBER AND DATE
SUPPLIER'S NAME

3.12.2 Hanks. Individual hanks shall be ticketed as specified in 3.12.1 or the information specified in 3.12.1 may be stamped or printed on the individual paper wrapper.

3.12.3 Type V, coils. In addition to the identification requirements specified in 3.12.1, the identification ticket shall contain the "net weight: for type V, class 5 cord.

3.13 Workmanship. The finished cord shall conform to the quality and grade of product established by this specification. The occurrence of defects shall not exceed the applicable acceptable quality levels.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or order, the supplier 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 assure that supplies and services conform to prescribed requirements.

4.1.1 Certificate of compliance (DOD procurements only). Where certificates of compliance are submitted, the Government reserves the right to check test such items to determine the validity of the certification.

4.2 Inspection. Sampling for inspection shall be performed in accordance with MIL-STD-105, except where otherwise indicated hereinafter.

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4.2.1 Component and material inspection. In accordance with 4.1, components and materials shall be tested in accordance with all the requirements of referenced specifications, drawings, and standards unless otherwise excluded, amended, modified or qualified in this specification or applicable purchase documents.

4.2.2 Examination of the end item for visual defects. The defects listed in table VI shall be counted regardless of their proximity to each other. The sample unit for this examination shall be one coil, hank, tube, spool (reel), or bundle (containing cut lengths of lacing cord), as applicable. Ten percent of the 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 coils, hanks, tubes, spools (reels), or bundles. The acceptable quality level (AQL) shall be 1.5 major defects and 4.0 total defects (major and minor combined) per 100 units. The inspection level shall be level I. When cord is put up in hanks, the lot size for these examinations and testing shall be expressed in units of "hanks each" and shall be divided by twelve and the quotient calculated to the nearest whole number. This number shall then be used as the basic lot size in determining sample size, rejection, and acceptance numbers for hanks only.

TABLE VI. Visual examination defects

Examine	Defects	Classification	
		Major	Minor
Appearance and workmanship	Cut, any	X	
	Chafed or damaged	X	
	Braided without core (except type VI)	X	
	Kinks, broken, or loose ends	X	
	Unevenly braided, resulting in open places, breaks in continuity of braid or soft spots	X	
	Finish gummy or tacky	X	
	Finish causes cord to check or crack		X
Color	Other than specified	X	
	Not yarn dyed when required	X	
	Dyed cord off shade, i.e., not within established tolerance		X
Cleanness	Spot or stain, clearly visible <u>1/</u>		X
Type or class	Other than specified	X	
Identification	Omitted, incorrect, illegible, insecurely attached		X
	Ticket or label not as specified		X

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

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4.2.3 Examination for length, winding, and weight. The sample unit for this examination shall be one coil, hank, tube, spool (reel), or bundle (containing cut lengths of lacing cord). (Note: See 4.2.2 for determining the lot size when put-up is in hanks.) The inspection level shall be level S-3 and the AQL shall be 4.0 percent defective. The lot size shall be the number of coils, hanks, tubes, spools (reels), or bundles (containing cut lengths of lacing cord) in the inspection lot. Defects shall be as listed in 4.2.3.1 through 4.2.3.3.

4.2.3.1 Defects with regard to length. Defects shall be considered to exist if any of the following are determined during inspection:

- (a) Length of unit less or more than length specified.
- (b) Length of unit less than length marked on ticket.
- (c) Any coil found to contain more than two pieces.
- (d) Any piece in coil less than 100 feet in length.
- (e) Any piece in spool or reel less than 750 feet.
- (f) Any hank not in continuous length.
- (g) Any type VI cord on tubes or spools (reels) containing more than two pieces.
- (h) Any piece of type VI cord on tubes or spools (reels) less than 100 feet in length.

4.2.3.2 Defects with regard to winding. Defects shall be considered to exist if any of the following are determined during inspection:

- (a) Improperly or not firmly wound resulting in kinks, knots, entangling, or slippage during unwinding, or otherwise affecting free unhampered unwinding of cord.
- (b) Knotting or otherwise joining of ends to make a continuous length.

4.2.3.3 Examination for weight of type V coils.

4.2.3.3.1 Net weight per coil. A defect with regard to weight shall be considered to exist if the net weight of any one coil is less than the minimum or more than the maximum specified in 3.12.4.1.

4.2.3.3.2 Average weight. No AQL is applicable to the examination for average weight. A lot shall be unacceptable if the average weight is less than the minimum 50-pound weight specified in 3.12.4.1.

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4.2.4 Examination of preparation for delivery requirements. An examination shall be made to determine whether packaging, packing, and marking comply with section 5 requirements. The examination shall be in accordance with the provisions of MIL-C-3131, except that the inspection level shall be S-2 and the AQL shall be 2.5 defects per hundred units.

4.2.5 Testing of the end item. The methods of testing specified in Fed. Std. No. 191, wherever applicable and as listed in table VIII, shall be followed. The physical and chemical values specified in section 3 apply to the average of the determinations made on a sample unit for test purposes as specified in the applicable test methods. When the data in the "number of determinations" and "results reported as" columns are not specified in the table, they shall be as required by the referenced test method. The sample size shall be in accordance with table VII. All test reports shall contain the individual values utilized in expressing the final result. The sample unit for testing shall be 100 feet of cord. The lot size shall be expressed in units of coils, hanks, tubes, spools (reels), or bundles (containing cut lengths of lacing cord) each. The lot shall be unacceptable if one or more units fail to meet any requirement. Tests to determine compliance with specification requirements including quantity of delivery may be made under prevailing atmospheric conditions, except as specified herein. In cases of dispute, the test shall be made upon material which has reached equilibrium under standard conditions as defined in Fed. Std. No. 191.

NOTE: See 4.2.2 for determining the lot size (number of units in lot) when put-up is in hanks.

TABLE VII. Sampling for tests

Lot size (holders)	Sample size
800 or less	2
801 up to and including 22,000	3
22,001 and over	5

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TABLE VIII. Test methods

Characteristic	Requirement reference	Test method	Number determinations per sample unit	Results reported as
Material (strands and core)	3.3.1	1200 <u>1</u> /	-	-
Prohibited materials	3.3.2	<u>1</u> /	-	-
Finish	3.4	Visual <u>1</u> /	1	Pass or fail.
Diameter	3.6	6002	-	-
Breaking strength	3.6	6016	-	-
Number of strands	3.6	Visual	1	Whole number.
Yarns per strand	3.6	Visual <u>2</u> /	9	Average of 9 determinations to nearest whole number.
Length per pound	3.6	6004	-	-
Yarns per core	3.6	Visual	1	Whole number.
Yarn dyeing	3.7	<u>1</u> /	-	-
Shade matching	3.7	4.2.5.1	1	Pass or fail.
Colorfastness to:				
-Laundering	3.7.5	5610	1	Pass or fail.
-Light	3.7.5	5660	1	Pass or fail.
-Weathering	3.7.5	5671 <u>3</u> /	1	Pass or fail.
Elongation:				
Type I	3.8.1	4.2.5.2.1	5	Average of 5 determinations to nearest 0.1 percent.
Type IV				
Initially	3.8.2	4.2.5.2.1	5	Average of 5 determinations to nearest 0.1 percent.
After immersion	3.8.2	4.2.5.2.2	5	Average of 5 determinations to nearest 0.1 percent.

TABLE VIII. Test methods (cont'd)

Characteristic	Requirement reference	Test method	Number determinations per sample unit	Results reported as
Elongation: (cont'd) Type V	3.8.3	4.2.5.2.3	5	Average of 5 determinations to nearest 0.1 percent.
Type VI, class 6	Table V	6016	-	-
Nonfibrous materials (classes 1 and 5)	3.9.1 and 3.9.4	2611	-	-
Carbon tetrachloride soluble material (class 2)	3.9.2	4/	2	Average of 2 determinations to nearest 0.1 percent.
Chloroform-soluble material:				
Classes 3 and 4	3.9.3	2611	-	-
Type VI, class 6	3.9.5	2611	-	-
Water absorption (classes 3 and 4)	3.10	6011 5/	-	-

- 1/ Unless otherwise specified a supplier's certificate of compliance shall be furnished and will be accepted for the requirement.
- 2/ Nine individual strands shall be examined for all types except type III in which 8 determinations shall be made per sample unit and eight individual strands examined. Type VI cord shall be reported as "pass" or "fail", and one determination shall be made per sample unit.
- 3/ The time of exposure shall be 40 standard hours.

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- 4/ Method 2611 shall be followed except that carbon tetrachloride shall be utilized in lieu of chloroform. Two test values shall be reported; one, the amount of material in the cord soluble in carbon tetrachloride; and two, the total nonfibrous material not soluble in carbon tetrachloride. Evidence of failure to meet either requirement shall be cause for rejection.
- 5/ Class 3 cord shall be steeped for a period of 24 hours. Class 4 cord shall be steeped for a period of 2 hours.

4.2.5.1 Determination of shade matching. When a specific shade is required (see 6.2) the dyed shade (color) shall match the approved standard shade under natural (north sky) daylight or artificial daylight having a color temperature of 7500° Kelvin and shall be a good approximation to the standard sample under incandescent lamplight at 2800° Kelvin.

4.2.5.2 Determination of elongation.

4.2.5.2.1 Initial (types I and IV). Initial elongation may be determined on the specimens to be used for determination of strength. The specimen shall be placed under a tension load equal to 1 percent of the minimum specified breaking strength. With the specimen under this load, two gage marks, a minimum of ten inches apart, shall be placed on the specimen and the distance between them recorded as "L". The specimens shall then be placed under the load specified in table IX for the applicable size for a minimum of 10 minutes. While under this load, the distance between the gage marks shall be measured and recorded as "D". The specimens of the type IV cord shall be placed under the load specified for a minimum of 15 minutes prior to measurement. All lengths shall be determined to the nearest 1/16 inch. The elongation shall be determined by the following formula:

$$\frac{D-L}{L} \times 100 = \text{Percent elongation.}$$

TABLE IX. Loads for determination of elongation

Size	Load (pounds)
<u>Type I:</u>	
4	14
5	22
6	34

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TABLE IX. Loads for determination of elongation (cont'd)

Size	Load (pounds)
<u>Type I:</u> (cont'd)	
7	40
8	60
10	80
12	100
16	160
<u>Type IV:</u> 5/32 inch	50

4.2.5.2.2 After immersion (type IV only). Elongation of type IV cord shall be determined, as specified in 4.2.5.2.1, on specimens of cord which have been steeped in water at a temperature of approximately 70°F, for two hours.

4.2.5.2.3 Type V. The specimens shall be placed under a tension with a static load "P" equal to 2.4 pounds. Load shall be obtained by using a dead weight method of application. With the specimen under this load, two gage marks a minimum of ten inches apart, shall be placed on the specimens and the distance between them recorded as "L". The specimens shall then be placed under a static load of 140 pounds for a minimum of ten minutes. While under this load, the distance between the gage marks shall be measured and recorded as "D". Elongation shall be determined by the following formula:

$$\frac{D-L}{L} \times 100 = \text{Percent elongation of type V cord.}$$

5. PREPARATION FOR DELIVERY

5.1 Packaging. Packaging shall be level A, B, or C, as specified (see 6.2).

5.1.1 Levels A and C (military requirements). The cord shall be packaged in accordance with the applicable requirements of MIL-C-3131.

5.1.2 Level B (civil requirements).

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5.1.2.1 Type I. When specified in the invitation to bid, type I cord of each class and size shall be formed into commercial hanks of 100 feet except class 2, size No. 8 cord which shall be put up spools (reels) of 1,000 feet and class 2, size No. 12 which shall be put up on spools (reels) of 1,200 feet. Hanks shall be banded with not less than 3-inch paper bands having a suitable adhesive. The spools (reels) shall be of wood or metal having a hole not less than 1-inch diameter centered on each end of the reel for insertion of a length of pipe for unwinding purposes. The spools (reels) shall be wrapped in kraft paper of 40-pound basis weight.

5.1.2.1.1 Intermediate packaging (hanks). Ten hanks of the same class and size shall be intermediate packaged in a close-fitting box conforming to PPP-B-636, class domestic. The box shall be closed in accordance with the appendix to the box specification.

5.1.2.2 Type III. Type III cord shall be put-up as specified in 3.11.2.

5.1.2.2.1 Intermediate packaging. Each spool (reel) of 3,000 feet of cord shall be completely wrapped in 40-pound basis weight kraft paper to protect the cord from soiling or other damage. The paper wrapping shall be secured by use of glued headers or tape to prevent accidental opening.

5.1.2.3 Type V.

5.1.2.3.1 Coils. Each type V coil, put-up as specified in 3.11.4.1, shall be wrapped in material conforming to PPP-B-1055 and securely banded with 2 metal bands.

5.1.2.3.2 Cut lengths. Cut lengths of type V cord, put-up as specified in 3.11.4.2, shall be bundled in quantities of 150 for the 70-inch lengths and 150 for the 84-inch lengths. The bundles shall be tied with cord at each end.

5.2 Packing. Packing shall be level A, B, or C, as specified (see 6.2).

5.2.1 Levels A, B, and C (military requirements). The cord shall be packed in accordance with the applicable requirements of MIL-C-3131. When level B is specified by civil agencies for types I and III, the cord shall be packed as specified in 5.2.2.

5.2.2 Level B (civil requirements).

5.2.2.1 Type I. Unless otherwise specified in the invitation to bid, four intermediate packages, of type I cord of each applicable class and size, and two intermediate packages of class 1, size No. 12, except class 2 sizes No. 8 and 12 in spools (reels) packaged as specified in 5.1.2.1.

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and 5.1.2.1.1 shall be packed in a shipping container conforming to type CF or SF, class domestic, style RSC of PPP-B-636. The bursting strength of the fiberboard shall be not less than 275 pounds per square inch. Closure shall be in accordance with appendix to PPP-B-636. Four spools (reels) of class 2, size No. 8 cord and one spool (reel) of class 2, size No. 12 cord, packaged as specified in 5.1.2.1, shall be packed in a shipping container as described above. It is to be noted that one spool (reel) of size No. 8 cord weighs approximately 22 pounds and one spool (reel) of size No. 12 cord weighs approximately 57 pounds.

5.2.2.2 Type III. Four spools (reels) of cord containing 3,000 feet each, packaged as specified in 5.1.2.3 and 5.1.2.3.1, shall be packed on end (2 by 2) in a fiberboard shipping container conforming to requirements of PPP-B-636, type CF or SF, class domestic, style CSSC or style RSC, with bursting strength of fiberboard to be not less than 275 p.s.i. Style RSC boxes shall have top and bottom pads having a bursting strength not less than 175 p.s.i. Closure and sealing of the container shall be in accordance with the appendix of the box specification.

5.2.2.3 Type V.

5.2.2.3.1 Coils. Unit packages of coils of cord shall not require additional packing.

5.2.2.3.2 Cut lengths. Bundles of type V cord shall be packed in quantities of 8 in the 70-inch lengths and 7 in the 84-inch lengths in a close-fitting box conforming to PPP-B-636, class domestic. The box shall be closed in accordance with the appendix to the box specification.

5.3 Marking.

5.3.1 Civil requirements. In addition to any special marking required by the contract or order, interior packages and shipping containers shall be marked in accordance with Fed. Std. No. 123.

5.3.2 Military requirements. In addition to any special marking required by the contract or order, interior packages and shipping containers shall be marked in accordance with MIL-C-3131.

6. NOTES

6.1 Intended use. Type I cord, sizes 6, 7, 8, and 10, are intended for use, respectively, with the sizes of pulley and maximum loads given in table X.

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TABLE X. Maximum loads

Size	Diameter of pulley Inches	Maximum load Pounds
6	1-1/2	10
7	1-3/4	15
8	2	25
10	2-1/2	45

6.1.1 Size 6 cord of type I, class 1, is intended for clotheslines. Type I, class 3 cord is recommended for outdoor use. Type I cord may also be used for tent ropes, awning line, truck rope, lashing rope, elevator-gate cord, and for overhead doors.

6.1.2 Type IV, class 4 (special purpose cord) is used for medical applications for applying traction in fracture frames.

6.1.3 Type VI, class 6 is used in the manufacture of flare chutes.

6.2 Ordering data. Purchasers should select the preferred options permitted herein and include the following information in procurement documents:

- (a) Title, number, and date of this specification.
- (b) Type, class, and size required (see 1.2).
- (c) Color, if other than unbleached for types I, III, V, and VI (see 3.7.1).
- (d) Degree of colorfastness, if required (see 3.7.3).
- (e) Put-up if other than specified for types I, III, IV, and VI (see 3.11).
- (f) Put-up required for type V (see 3.11.4).
- (g) Selection of applicable levels of packaging and packing (see 5.1 and 5.2).

6.3 Standard sample. For access to standard sample, address the procuring office issuing the invitation for bids.

6.4 Type VI, class 6 cord is the replacement item for cord previously covered by MIL-C-5648 Cord, Braided, Cotton, Air Craft Applications.

6.5 Type V, class 5 cord for use by the Post Office Department shall have a polished finish suitable to inhibit the fraying of cut rope ends in order to accommodate the passing of the rope through the canvas header and locking hasp.

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