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MIL-T-8363B
7 January 1974

SUPERSEDING
MIL-T-8363A(USAF)
14 April 1958

MILITARY SPECIFICATION

TAPE AND WEBBING, TEXTILE, WOVEN, NYLON

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

1. SCOPE

1.1 Scope. This specification covers two types of nylon tape and three types of nylon webbing.

1.2 Classification. The nylon tape and webbing shall be of the following types, as specified (see 6.2):

Type I tape	- 350 pounds breaking strength
Type II tape	- 290 pounds breaking strength
Type III webbing	- 400 pounds breaking strength
Type IV webbing	- 2600 pounds breaking strength
Type V webbing	- 1000 pounds breaking strength

2. APPLICABLE DOCUMENTS

2.1 The following documents, of the issue in effect on date of invitation for bids, form a part of this specification:

SPECIFICATIONS

Military

MIL-W-43334	Webbing and Tape, Textile, Packing and Packing of

STANDARDS

Federal

Federal Test Method Std. No. 191	Textile Test Methods

FSC 8305

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Military

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

(Copies of specifications, standards, drawings and publications required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

3. REQUIREMENTS

3.1 Material

3.1.1 Nylon yarn. The nylon yarn used in the manufacture of all types of webbing shall be a bright, high tenacity, light- and heat-resistant, polyamide prepared from hexamethylene diamine and adipic acid, or its derivatives. It shall have a minimum melting point of 471°F. The supplier shall certify that the yarn has not been subjected to any type bleaching process. Testing shall be as specified in 4.4.2.

3.1.2 Denier and filament. For types I and II tape and type III webbing the nylon yarn used shall be 210 denier, 34 filament. For type IV webbing the yarn used shall be 840 denier, 140 filament. Type V webbing shall be woven of 260 denier, 17 filament nylon yarn.

3.1.3 Twist

3.1.3.1 Twist for types I and II tape Unless otherwise specified, the yarn for types I and II tape shall have a minimum twist of 2.5 turns per inch.

3.1.3 2 Twist for type III webbing

3.1.3.2.1 Warp. The single yarn shall have a minimum of 10 turns of S-twist per inch. The final ply twist shall have a minimum of 7.5 turns of Z-twist per inch.

3.1.3.2.2 Filling. The single yarn shall have a minimum of 8.5 turns of S-twist per inch; the 3-ply semifinal twist shall have a minimum of 6 turns of Z-twist per inch; the 3-ply final twist shall have a minimum of 2.5 turns of S-twist per inch.

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3.1.3.3 Twist for type IV webbing. The final ply of the warp and filling yarns shall have a minimum twist of 2.5 turns per inch.

3.1.3.4 Twist for type V webbing. The final ply of the warp yarn shall have a minimum twist of 2.5 turns per inch and the final ply of the filling yarn shall have a minimum twist of 1.0 turn per inch.

3.2 Weave. The weave for types I and II tape and type III webbing shall be as shown in figures 1, 2, and 3 respectively. The weave for type IV webbing shall be as shown in figure 4 except the edge warp ends shall weave 8 single ends on one edge and 9 single ends on the other edge. The weave for type V webbing shall be as shown on figure 3.

3.3 Construction and physical properties. The finished tape and webbing shall conform to the requirements in table I and the following subparagraphs when tested in accordance with 4.4.2.

3.4 Color. Unless otherwise specified by the procuring activity, the color of the tape and webbing shall be Air Force Sage Green No. 1520 (see 6.3).

3.4.1 Colorfastness. When Air Force Sage Green No. 1520 is furnished, the tape and webbing shall have a colorfastness rating of "good" to light (at 20 standard fading hours), crocking, and perspiration when tested as specified in 4.4.2. When a standard sample is designated as standard for certain colorfastness properties, the dyed and finished tape and webbing shall be equal to or better than the standard in those respects when tested in accordance with 4.4.2. If duplication of a designated colorfastness property exists by reference to an adjective rating and a standard sample, the standard sample shall rule

3.4.2 Color matching. The dyed tape and webbing shall be matched to the approved standard shade under natural (north sky) daylight or artificial daylight, having a color temperature of 7500°K.

3.5 Length

3.5.1 Spools. Unless otherwise specified, types I and II tape shall be furnished on spools, each containing not less than 90 or more than 110 yards. No spool shall contain more than 3 pieces and no piece shall be less than 10 yards in length.

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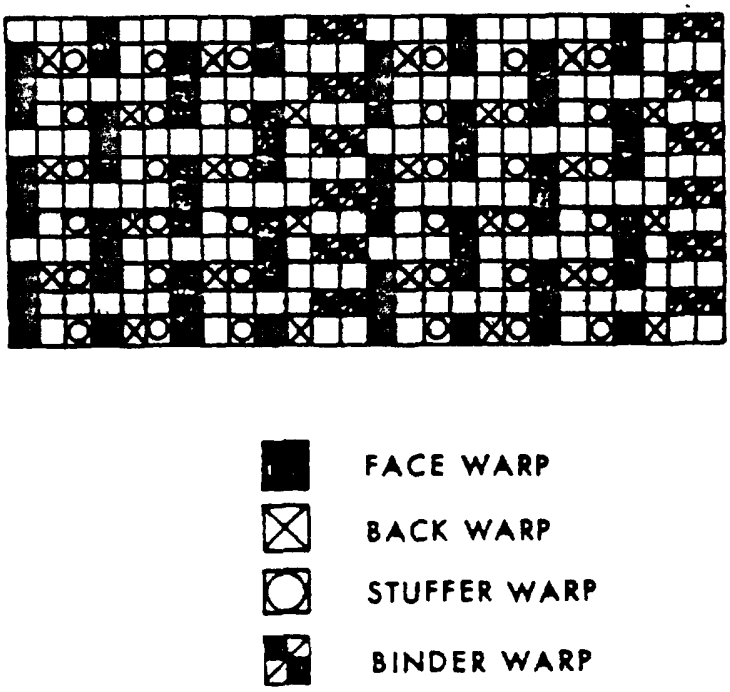

FIGURE 1 WEAVE DIAGRAM—TYPE I

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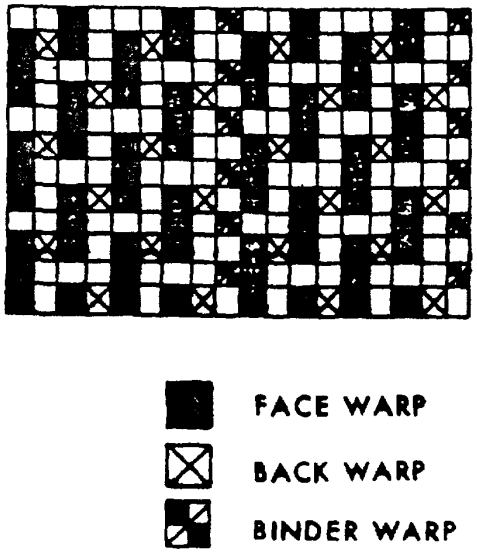

FIGURE 2 WEAVE DIAGRAM—TYPE II

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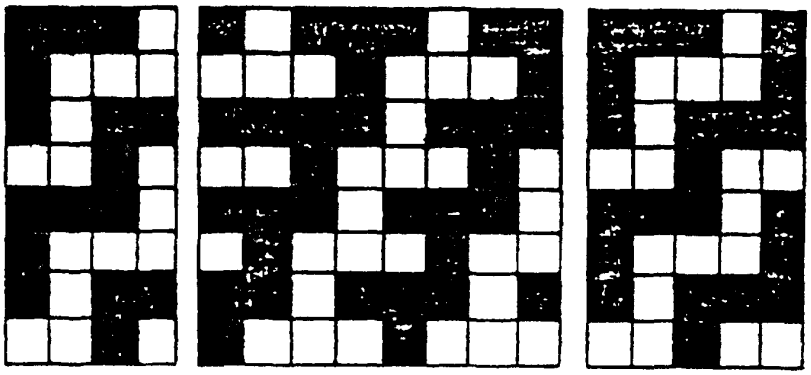

2 REPEATS OF WARP

1 REPEAT OF FILLING

FIGURE 3 WEAVE DIAGRAM—TYPE III AND TYPE V

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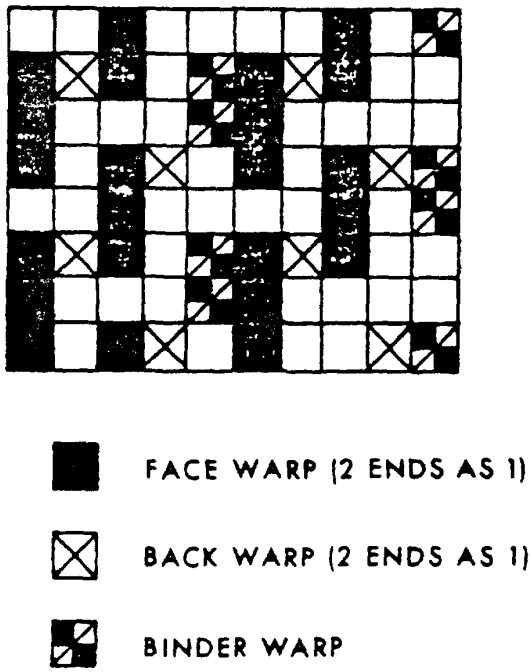

FIGURE 4. WEAVE DIAGRAM—TYPE IV

Table I. Construction and physical properties

	Tape		Webbing		
	Type I	Type II	Type III	Type IV	Type V
Thickness (inch)	0.030 to 0.040	0.020 to 0.030	0.050 to 0.060	0.070 to 0.085	0.050 to 0.060
Width (inch)	5/16 ± 1/32	7/16 ± 1/32	3/4 ± 1/16	3/4 ± 1/16	25/32 ± 1/16
Weight (oz/yd)	0.08 (min)	0.09 (min)	0.50 (max)	1.05 (max)	0.70 (max)
Breaking strength (lbs) (min)	350	290	400	2600	1000
Strength retention after abrasion (%) (minimum)	-	-	-	-	94
End in warp (min)					
total count	121	98	88	135	87
face and back	84	88	88	121	
binder	16 (2 ends as 1)	10	--	14	
stuffer	21	--	--	--	
Picks per inch (min)	60	72	48	24	32
Ply of yarns					
warp	1	1	2 (min)	2	4
binder	1	1	--	1	
stuffer	1	--	--	--	
filling	1	1	3/3	1	10

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3.5.2 Rolls. Unless otherwise specified, types III, IV, and V webbing shall be furnished in rolls, each containing not less than 45 or more than 55 yards. No roll shall contain more than 3 pieces and no piece shall be less than 10 yards in length.

3.6 Finish

3.6.1 Residual size, finishing oils, or other nonfibrous materials shall not exceed 3 percent of the dry weight of the tape or webbing when tested as specified in 4.4.2.

3 6.2 Acidity The finished tape and webbing shall have a pH value of 5.0 to 9.0 when tested as specified in 4.4.2

3.7 Identification Tickets. Each roll shall have a ticket attached with not finer than 5-ply cotton string doubled to not less than 6 inches long. The tickets shall be made of paperboard not less than 0 020 inches in thickness and the color shall be manila or light in intensity to permit easy reading of printed, stamped or typed markings The use of handwritten entries is prohibited The ticket shall have clipped corners at the end where a reinforcing patch (with or without a metal eyelet) is firmly affixed for attaching the tying string. The ticket shall be legibly printed with water insoluble ink with the following information:

Stock Number
Nomenclature
Specification Number
Yardage
Contract Number and Date
Contractor's Name
Name of Contracting Agency

3.8 Workmanship. The finished tape and webbing shall be clean, evenly woven and shall conform to the quality and grade of product established by this specification. The occurrence of defects shall not exceed the levels set by the applicable acceptance 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

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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 supplies and services conform to prescribed requirements.

4.2 Classification of tests. The inspection and testing of the tape and webbing shall be classified as acceptance tests.

4.3 Acceptance tests. Acceptance tests shall consist of:

a. Sampling plan A and tests
b. Sampling plan B and tests

4.3.1 Sampling plan A For the inspection of the product tests, sampling shall be conducted in accordance with MIL-STD-105. Samples selected shall be subjected to the tests specified in 4.3.1 and subparagraphs thereto.

4.3.1.1 MIL-STD-105 Except where otherwise indicated, inspections shall be in accordance with the provisions set forth in MIL-STD-105. When MIL-STD-105 specifies an action by the Government, it shall, at the option of the Government, be performed either by the Government or by the contractor under the supervision of the Government inspector.

4.3.1.2 Acceptance quality levels. Acceptance quality levels shall be as follows:

a. For yard-by-yard examination (4.3.1.1) - 0.4 major defects and 6 5 total defects per 100 units (yards)

b. For overall examination (4.3.1.2) - 1 defect per 100 units (pieces).

c. For examination for length of spool or roll (4.3.1.3) - 1 defect per 100 units (spools or rolls).

4.3.1.3 Inspection levels. The inspection levels shall be as follows:

a. Yard-by-Yard examination (4.3.1 1) - Level III of MIL-STD-105 shall be used. The lot size shall be expressed in units of 1 yard each. An approximately equal number of yards shall be examined from each piece in the sample. The number of pieces to be drawn shall be computed as follows:

$$\text{Number drawn} = \frac{\text{Yards in sample}}{35}$$

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b. Overall examination (4.3.1.2). The pieces examined shall be those selected for yard-by-yard examination.

c. Examination for length of spools or rolls (4.3.1.3). The spools or rolls examined shall be those from which the pieces for the yard-by-yard examination were taken.

4.3.2 Sampling plan B. For the physical acceptance tests, a sample, or samples, each at least 7-1/2 yards long, for types I, II, III and IV and 15 yards long for type V to be furnished at no cost to the Government, shall be taken from each 10,000 yards, or fraction thereof, of finished tape or webbing of one type submitted for acceptance at one time on any contract or order except that on lots containing 20,000 yards or fraction thereof, a minimum of three (3) samples shall be submitted. Each sample shall be suitably marked for identification and shall be subjected to all the tests specified in 4.4.2 and subparagraphs thereto.

4.4 Test methods

4.4.1 Examination of the product. Defects found during the examination shall be classified in accordance with 4.3.1.1, 4.3.1.2, and 4.3.1.3. The Government reserves the right to require examination for any defect not included herein to determine compliance with the requirements of this specification and to classify such defects in accordance with the definitions contained in MIL-STD-105 (see 4.2.1.1).

4.4.1.1 Yard-by-yard examination. The required yardage of each piece shall be inspected and visual defects classified as listed in table II. The defects found shall be counted regardless of their proximity to each other, except where two or more defects represent a single local condition of the tape or webbing in which case only the more serious defect shall be counted. A continuous defect shall be counted as one defect for each warpwise yard or fraction thereof in which it occurs. The unit of product for this examination shall be 1 linear yard.

TABLE II

Classification of Defects

Defect	Description	Major	Minor
Abrasion marks	Resulting in rupture of yarns, or in nap sufficient to obscure the identity of any yarn exceeding 10 percent of width or 1 inch in length.	X	

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Table II (Cont'd)

Defect	Description	Major	Minor
Broken or missing end	2 or more regardless of length or a single end exceeding 6 inches in length.	X	
	Single end under 6 inches but exceeding 1/4 inch.		X
Broken or missing Pick	2 or more regardless of extent.	X	
Coarse or light filling bar	Resulting in noticeable 1/ difference in stiffness or thickness of tape or webbing and extending for more than 1/4 inch in the length direction.	X	
	Resulting in noticeable 1/ difference in stiffness or thickness of tape or less in the length direction.		X
Crease or wrinkle	Twisted or distorted. Will not lay flat upon application of manual pressure.		X
Cut, hole, or tear	Any cut, hole, or tear.	X	
Drop-ply	Clearly noticeable 1/, on more than 2 ends within same length and extending over 9 linear inches or more.	X	
	Clearly noticeable 1/ , on 1 or 2 ends within same length and extending over 9 linear inches or more.		X
Edge beaded or corded	Noticeable 1/ increase in edge thickness or misformed edge.		X
Edge folded or rolled	(See "Crease or Wrinkle".)		
Edge loopy	Forming clearly noticeable 1/ filling loops, or edge tied loosely to body of tape or webbing for 2 linear inches or more.	X	

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TABLE II (CONT'D)

Defect	Description	Major	Minor
Edge loose (Slack)	Resulting in waviness, distortion in orientation of filling, or looseness along edge.		X
Edge-nicks or bumps	Any nick or bump falling outside the width tolerance as specified or exceeding 1/4 inch in length.	X	
Edge cut, torn, or frayed	Any cut, torn, or frayed edge, clearly noticeable 1/ rupture of yarn along edge.	X	
Edge tight	Resulting in noticeable 1/ tension along edge, or pucker, waviness, bagginess, or slackness that cannot be flattened by manual pressure.	X	
Edge scalloped	Any noticeable 1/ indentation of edge longer than 1/4 inch.	X	
Fine or light filling bar, light place	Clearly noticeable 1/	X	
Floats or skips	Multiple, 1/2 inch or more in combined warp and filling directions or single float or skip over more than 1 inch.	X	
	Multiple, less than 1/2 inch in combined warp and filling directions or single float or skip over more than 1/2 inch but not exceeding 1 inch if in warp or more than 1/4 inch of the width but not exceeding 1 inch if in filling.		X
Hitchback crack	Clearly noticeable 1/ opening between adjoining picks, or warpwise tension area over part of the width resulting in noticeable 1/ light and heavy places.		X

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TABLE II (CONT'D)

Defect	Description	Major	Minor
Jerked-in filling, slough-off, slug	More than twice the thickness of normal yarn.		X
Kinks	More than 3 in any 9 linear inches.	X	
Knots	More than 2 knots in any 9 linear inches.	X	
	Single knot with untrimmed ends extending more than 1/16 inch from surface.		X
Mispick, double pick	2 or more across the full width.	X	
	Single across the full width.		X
Slack end	2 or more in the same length, jerked in between picks, or forming clearly noticeable 1/ loops on the surface.	X	
	Single jerked in between picks, or forming clearly noticeable 1/ loops on surface.		X
Slub, or slug gout	More than twice the thickness of the yarn (or ply, if plied)		X
Smash	Any smash.	X	
Spot, stain or streak	Any clearly noticeable 1/ dirt, rust grease, oil spot, stain, or streak		X
Tight end	Clearly noticeable. 1/	X	
Tight pick or tight filling	Resulting in rolling of tape or webbing longer than 1/4 inch.	X	
Weak, soft, or tender spot	Any weak, soft, or tender spot	X	
Wrong draw	Extending for more than 9 inches.		X

1/ The terms "noticeable" and "clearly noticeable" when used in the foregoing list shall be interpreted as meaning clearly visible at normal inspection distance (approximately 3 feet).

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4.4.1.2 Overall examination. The unit of product for this examination shall be one piece. The tape and webbing shall be defective if it has an objectionable odor, is unclean throughout, has uneven weaving throughout, or has width beyond tolerance.

4.4.1.3 Examination for length

4.4.1.3.1 Individual spool (types I and II tape). The spool shall be examined for gross length, and the number and length of pieces in the spool. Any gross length (spool) found to be less than 90 yards or more than 110 yards long, any gross length found to be more than 2 yards below the gross length marked on the piece ticket, or any spool found to contain more than 3 pieces or any 1 piece less than 10 yards in length shall be considered as a defect with respect to length. The unit of product for this examination shall be 1 spool.

4.4.1.3.2 Individual roll (types III, IV, and V webbing). The roll shall be examined for gross length, and the number and length of pieces in the roll. Any gross length (roll) found to be less than 45 yards or more than 55 yards long, any gross length found to be more than 2 yards below the gross length marked on the piece ticket, or any roll found to contain more than 3 pieces or any 1 piece less than 10 yards in length shall be considered as a defect with respect to length. The unit of product for this examination shall be 1 roll.

4.4.1.3.3 Total yardage in sample. The lot shall be unacceptable if the total of the actual gross length of spools or rolls in the sample is less than the total of the gross lengths marked on the ticket.

4.4.2 Physical acceptance tests. The methods of testing specified in Fed. Test Method Std. No. 191 wherever applicable, and as listed in table III shall be followed. The physical and chemical values specified in section 3 apply to the average of the determinations made on a unit of product for test purposes as specified in the applicable test methods except for breaking strength which shall be in accordance with 4.4.2.1. Failure of any sample of tape or webbing to conform to the requirements specified in section 3 shall be cause for rejection of the lot represented. Atmospheric conditions for physical acceptance tests shall be in accordance with Fed. Test Method Std. No. 191.

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Table III.

Characteristic	Requirement Reference	Test Method
Components		
Warp, binder, stuffer, and filling yarn		
Nylon identification	3.1.1	3/
Denier	3.1.2	4021
Tenacity	3.1.1	3/
Luster	3.1.1	3/
Melting point	3.1.1	1534 3/
Light resistance	3.1.1	3/
Heat resistance	3.1.1	3/
Unbleached	3.1.1	4/
Nonfibrous materials	3.6.1	2611
Acidity	3.6.2	2811
Twist	3.1.2	4054
Width	Table I	5020
Thickness	Table I	5030 1/
Weight	Table I	5040
Yarns per inch	Table I	5050
Yarn ply	Table I	Visual
Weave	3.2	Visual
Breaking strength		
Original	Table I	4108
After abrasion (type V only)		4421/4108
Colorfastness to		
Crocking	3.4.1	5650
Light 2/	3.4.1	5660
Perspiration	3.4.1	5680

1/ Except that a 6-ounce total lead shall be applied, and the pressure foot diameter shall be 3/8 inch.

2/ Time of exposure shall be 20 standard fading hours.

3/ A certificate of compliance shall be submitted for these requirements and it shall include A certified statement that the yarn used is the specified type and supported by a certified copy of the yarn producer's certification to the tape and webbing manufacturer.

4/ A certified statement shall be submitted stating that the yarn or webbing has not been submitted to any type of bleaching process.

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4.4.2.1 Resistance to abrasion (type V webbing only). Resistance to abrasion of type V webbing shall be tested on a device conforming to figure 5 as follows: Attached weight (B) to one end of webbing (A). Pass webbing over the hexagon rod (C) and attach to the oscillating drum (D). Oscillate drum so that the webbing is given a 12 ± 1 inch traverse over the rod at the rate of 60 ± 2 strokes per minute for 5,000 strokes. Remove webbing from device and determine breaking strength as specified in 4.4.2.1 The edges of each new hexagon rod shall be identified as 1 through 6. Only alternate edges (e.g. 1, 3, and 5) shall be used for abraiding the webbing and no abraiding edge shall be used more than once.

5. PREPARATION FOR DELIVERY

5.1 Preservation and packaging

5.1.1 Levels A and C. The tape shall be preserved and packaged on spools, the webbing in rolls, in accordance with the applicable requirements of MIL-W-43334.

5.2 Packing

5.2.1 Levels A, B, and C. The tape and webbing shall be packed in accordance with the applicable requirements of MIL-W-43334.

5.3 Marking. Shipments shall be marked in accordance with the applicable requirements of MIL-W-43334. The shipment marking nomenclature shall be "Tape, Textile, Woven, Nylon, Type ____, Color ____", or "Webbing, Textile, Woven, Nylon, Type ____, Color ____" (as applicable).

6. NOTES

6.1 Intended use. The tape and webbing covered by this specification are intended for use in the manufacture of flight clothing. Types I and II tape are intended for use as lacing tapes, type III webbing as the helmet front tiedown strap for partial pressure suit assemblies, type IV webbing for oxygen mask retention kits, and type V webbing for oxygen mask adjustment straps

6.2 Ordering data. Procurement documents should specify the following

a. Title, number, and date of this specification.

b. Type (see table I).

c. Quantity desired

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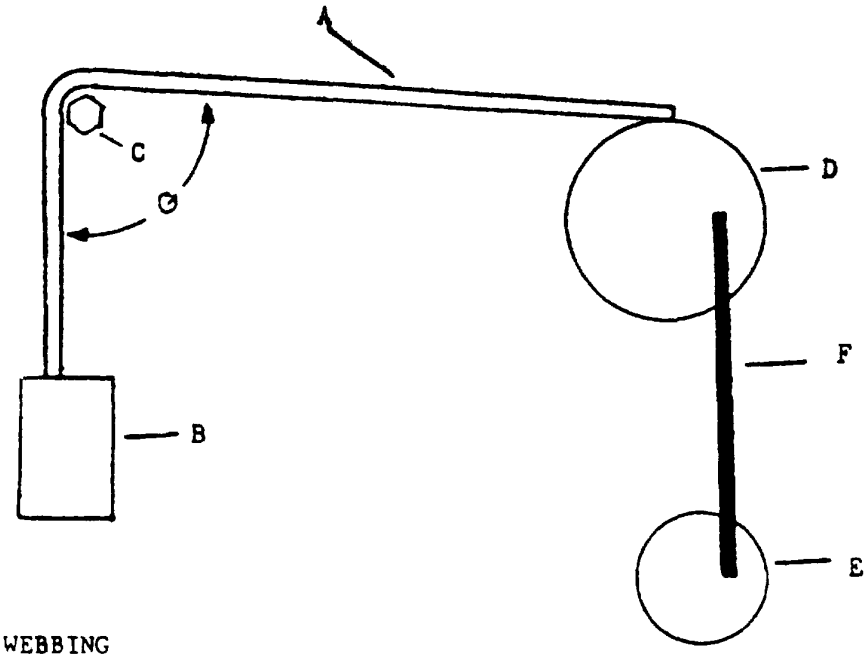

A - WEBBING
B - WEIGHT SHALL BE 2 POUNDS ± 2 OUNCES - FOR TYPES I, II, & III.
4 POUNDS ± 2 OUNCES FOR TYPES IV & V.
C - HEXAGONAL ROD, STEEL - SAE 51416
ROCKWELL HARDNESS - B97 to B101
SURFACE - COLD DRAWN FINISH
SIZE - 0.250 ± 0.001 INCH OR 6.35 ± 0.03 MILLIMETERS
RADIUS ON EDGES - 0.020 ± 0.004 INCHES or 0.5 ± 0.1 MILLIMETERS
D - DRUM, 16-INCH DIAMETER
E - CRANK
F - CRANK ARM
G - ANGLE FORMED BY WEBBING 85 ± 2 DEGREES

Figure 5. Device for Testing Abrasion Resistance.

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d. Length of spool or roll required (if other than specified in 3.5).

e. Color and colorfastness rating (when required) (see 3.4 and 3.4.1).

f. Selection of applicable levels of preservation and packaging, and packing.

6.3 Standard color sample. For access to the standard sample, address the procuring activity issuing the invitation for bids (see 3.4.1 and 3.4.2).

Custodians:
Army - GL
Navy - SA
Air Force - 11

Reviewers:
Army -
Navy -
Air Force - 45

Preparing activity
Air Force - 11

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(See Instructions – Reverse Side)

1. DOCUMENT NUMBER

2. DOCUMENT TITLE

3a. NAME OF SUBMITTING ORGANIZATION

4. TYPE OF ORGANIZATION *(Mark one)*

- ☐ VENDOR
- ☐ USER
- ☐ MANUFACTURER
- ☐ OTHER *(Specify)*: _____

b. ADDRESS *(Street, City, State, ZIP Code)*

5. PROBLEM AREAS

a. Paragraph Number and Wording

b. Recommended Wording

c. Reason/Rationale for Recommendation

6. REMARKS

7a. NAME OF SUBMITTER *(Last, First, MI)* – Optional

b. WORK TELEPHONE NUMBER *(Include Area Code)* – Optional

c. MAILING ADDRESS *(Street, City, State, ZIP Code)* – Optional

8. DATE OF SUBMISSION *(YYMMDD)*

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