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The following commercial specification is adopted from the military document. 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 to reflect technology and design evolution.

WEBBING, TEXTILE, ARAMID

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

1. SCOPE

1.1 Scope. This specification covers 14 types of aromatic polyamide webbing as specified in TABLE I.

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.

2.2.1 Government publications. The following Government publication forms a part of this document.

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 also be obtained from www.access.gpo.gov/.)

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2.3 Non-government publications. The following documents form a part of this document.

AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS (AATCC)

AATCC 20 - Fiber Analysis: Qualitative

(Application for copies should be addressed to the AATCC National Headquarters, P.O. Box 12215, Research Triangle Park, NC 27709-2215. Electronic copies may be obtained from www.aatcc.org.)

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 D1423 - Standard Test Method for Twist in Yarns by Direct-Counting
ASTM D1776 - Standard Practice for Conditioning and Testing Textiles
ASTM D1777 - Standard Test Method for Thickness of Textile Materials
ASTM D1907 - Standard Test Method for Linear Density of Yarn (Yarn Number) by Skein Method
ASTM D3774 - Standard Test Method for Width of Textile Fabric
ASTM D3775 - Standard Test Method for Warp (End) and Filling (Pick) Count of Woven Fabric

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

PARACHUTE INDUSTRY ASSOCIATION (PIA)

PIA-TEST METHOD-4108 - STRENGTH AND ELONGATION, BREAKING; TEXTILE WEBBING, TAPE AND BRAIDED ITEMS

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

2.4 Order of precedence. Unless otherwise noted herein or in the contract, 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 6.1), a sample representative of the production quality shall be submitted for first article inspection in accordance with 4.2.

3.2 Materials.

3.2.1 Yarn. The yarn shall be a nonmelting, aromatic polyamide. The yarn shall not char at a temperature less than 675°F, when tested as specified in 4.3.1.1.

3.2.2 Twist. The final ply of the warp and filling yarns shall have a minimum of 2.5 tpi. The denier and number of single yarns specified in TABLE I shall be twisted together (plied) in one operation.

3.3 Construction and physical properties. The finished webbing shall conform to TABLE I and 3.3.1 through 3.6.

3.3.1 Weave.

3.3.1.1 Types I, II, IIa, IV, VII, XIII and XIV. The weave for Types I, II, IIa, IV, VII, XIII and XIV shall be a two up two down herringbone twill with one reversal at the center of the webbing.

3.3.1.2 Types III, V and VI. The weave for Types III, V and VI shall be a double plain weave with a single filling. Separate binder warp ends shall weave two up and two down, one end as one. All other warp yarns shall weave two ends as one except that the edge warp yarns shall weave one end as one not exceeding eight ends on one selvage and nine on the other selvage.

3.3.1.3 Types VIII, IX and X. The weave for Types VIII, IX, and X shall be a five up, one down, one up, five down herringbone twill with one reversal at the center of the webbing. The weave is shown in FIGURE 1.

3.3.1.4 Type XI. The weave for Type XI shall be as shown in FIGURE 2.

3.3.1.5 Type XII. The weave for Type XII shall be as shown in FIGURE 3.

3.3.1.6 Type XV. The weave for Type XV shall be as shown in FIGURE 4.

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TABLE I Construction and physical properties.

Type	Width (inches)	Thickness (inches)	Weight (maximum) (oz./linear yard)	Breaking strength (lb.)(minimum)	Ends in warp (minimum) face and back	Binder	Total
I	9/16 ±1/32	.025-.040	0.28	500	70	-	70
II	1 ±1/32	.015-.030	0.40	600	80	-	80
Ila	3/4 ±1/32	.035-.045	.045	600	180	-	180
III	1 23/32 ±1/16	.080-.110	2.0	5,500	223	27	250
IV	1 23/32 ±1/16	.055-.075	1.75	3,600	154	-	154
V	3 1/32 +1/8	.070-.110	4.50	9,000	359	44	403
VI	1 23/32 +1/16	.015-.030	0.70	1,200	146	-	146
VII	1 23/32 +1/16	.145-.175	4.35	8,700	241	29	259
VIII	1 23/32 +1/16	.090-.120	3.0	6,500	272	-	272
IX	1 +1/16	.140-.175	2.70	6,000	252	-	252
X	1 3/4 +1/16	.140-.175	4.30	10,000	282	-	282
XI	1 +1/16	.220-.260	4. 10	9,000	184	15	199
XII	1 23/32 +1/16	.09-.12	3.4	7,300	305	-	305
XIII	1 1/4 +1/32	.015-.030	0.50	800	106	-	106
XIV	1 +1/32	.060-.080	1.20	2,500	104	-	192
XV	1 1/2 +1/16	.045-.065	1.35	1,700	143	34	177

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TABLE I Construction and physical properties (cont'd.).

Type	Picks per inch (minimum)	Number of yarns for final plied yarns (minimum)			Yarn denier		
		Warp	Binder	Filling	Warp	Binder	Filling
I	34	4	-	2	200	-	200
II	34	4	-	2	200	-	200
Ila	34	4	-	2	200	-	200
III	20	2	1	2	1,200	1,200	1,200
IV	16	2	-	1	1,200	-	1,200
V	22	2	1	2	1,200	1,200	1,200
VI	18	3	1	2	1,200	1,200	1,200
VII	34	4	-	2	200	-	200
VIII	17	2	-	2	1,200	-	1,200
IX	17	2	-	2	1,200	-	1,200
X	17	3	-	2	1,200	-	1,200
XI	18	4	1	2	1,200	1,200	1,200
XII	7	2	-	2	1,200	-	1,200
XIII	34	4	-	2	200	-	200
XIV	14	2	-	1	1,200	-	1,200
XV	47	1	1	1	1,200	1,200	1,200

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3.3.2 Aging. All types of webbing shall be oven aged and shall not lose more than 15 percent of the original breaking strength, when tested in accordance with TABLE V.

3.3.3 Resin treatment. Types I, III, IV and VIII webbings shall be polyvinyl butyral plasticized with butyl ricinoleate suitably applied by water dispersion, dried and cured to form a firmly adherent and evenly distributed deposit or coating on the yarns of the webbing. The curing of the resin shall be conducted within the temperature range of 240-360°F as specified in TABLE V.

3.3.3.1 Extractable matter. All types of resin treated webbing shall contain a maximum of 8.5 percent by weight of matter extractable in methyl ethyl-ketone, when tested as specified in 4.6.2.1.

3.3.4 Resistance to abrasion (Types I, IV, VIII and XII). After resin treated and when abraded, Types I and IV webbing shall retain not less than 75 percent of the original breaking strength and Types VIII and XII shall retain not less than 85 percent of the original breaking strength, when tested in accordance with 4.6.3.

3.4 Color. Unless otherwise specified, the color of the webbing shall be Olive Green 106.

3.4.1 Visual shade matching. When evaluated in accordance with 4.6.4, the color of the dyed webbing shall match the standard with sources simulating artificial daylight and shall be a good match to the standard under incandescent lamplight.

3.5 Length. Unless otherwise specified by the procuring activity, each roll of webbing shall contain 90 to 110 yards. No roll shall contain more than 3 pieces, and no piece shall be less than 10 yards in length.

3.6 Identification of product. Each roll shall have an identification 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 0.015 inch 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:

- WEBBING, TEXTILE, ARAMID, TUBULAR
- Type, Class and specification number
- Width
- Gross yardage
- Number of pieces
- Date of manufacturer (month and year)
- Name of contractor.

3.7 Fiber identification. Each roll of webbing shall be labeled, ticketed or invoiced for fiber content in accordance with the Textile Fiber Products Identification Act per 16 CFR 303.