



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 to reflect technology and design evolution.

WEBBING AND TAPE, TEXTILE, ARAMID FIBER

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 specification covers webbing and tape made from aramid fiber.

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

Type I - Double woven webbing

Type II - Single woven webbing

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 publications form 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 8 | - Colorfastness to Crocking: AATCC Crockmeter Method |
| AATCC 16 | - Colorfastness to Light |
| AATCC 61 | - Colorfastness to Laundering: Accelerated |
| AATCC 81 | - pH of Water-Extract from Wet Processed Textiles |
| AATCC 96 | - Dimensional Changes in Commercial Laundering of Woven and Knitted Fabrics Except Wool |
| AATCC 173 | - CMC: Calculation of Small Color Differences for Acceptability |
- AATCC Evaluation Procedures:

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

(Applications for copies should be addressed to 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 |
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(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 1423 | - Standard Test Method for Twist in Yarns by Direct-Counting |
| ASTM D 1776 | - Standard Practice for Conditioning and Testing Textiles |
| ASTM D 1777 | - Standard Test Method for Thickness of Textile Materials |
| ASTM D 1907 | - Standard Test Method for Linear Density of Yarn (Yarn Number) by the Skein Method |
| ASTM D 3774 | - Standard Test Method for Width of Textile Fabric |
| ASTM D 3775 | - Standard Test Method for Warp (End) and Filling (Pick) Count of Woven Fabrics |
| ASTM D 3776 | - Standard Test Methods for Mass Per Unit Area (Weight) of Fabric |

(Application for 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.)

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 stated 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 6.2) a sample shall be subjected to first article inspection in accordance with 4.3.

3.2 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.

3.3 Standard. The solution-dyed webbing and tape shall match the standard for shade and shall be equal to or better than the standard with respect to all characteristics for which the standard is referenced (see 6.1).

3.4 Materials.

3.4.1 Yarn. The yarn for the warp and the filling shall be made from a bright continuous filament aramid fiber (see 6.4). The yarn may be heat set (see 6.3) to meet the shrinkage requirement specified in 3.8. The yarn denier and yarn ply shall be as specified in TABLE I. When ply yarns are specified, the final ply of the yarn shall have a minimum of 2.5 tpi. The number of single yarns specified in TABLE I shall be twisted together (plied) in one operation. Testing shall be as specified in 4.4.1.2.

3.4.2 Color. The color of the webbing and tape shall be Olive Green 106 to match the standard sample when tested as specified in 4.4.3. The color shall be obtained by the use of melt spun solution-dyed fibers.

3.4.3 Visual shade matching. When evaluated in accordance with 4.5, the color of the dyed fabric shall match the standard when viewed with sources simulating artificial daylight, and shall be a good match to the standard under incandescent lamplight.

3.4.4 Colorfastness. When tested as specified in 4.5, the webbing and tape shall show fastness to light, laundering and crocking as follows:

Characteristic	Rating, minimum
Light (fade) ^{1/}	3-4
Laundering: ^{2/}	
Color change	2-3
Staining	2-3
Crocking ^{3/} :	
Dry	3.5
Wet	3.5
Testing shall be as specified in 4.4.3	

Notes:

^{1/} Rated using the AATCC Evaluation Procedure 1, Gray Scale for Color Change.

^{2/} Rated using the AATCC Evaluation Procedure 1, Gray Scale for Color Change and AATCC Evaluation Procedure 2, Gray Scale for Staining.

^{3/} Rated using the AATCC Evaluation Procedure 8, AATCC9-Step Chromatic Transference Scale.

3.5 Physical requirements. The construction and physical requirements of the finished webbing and tape shall be as specified in TABLE I.

TABLE I **Construction and physical requirements.**

Characteristic	Type I	Type II
Width (inch)	5/8 -1/32 +1/16	1 ±1/32
Thickness (inch)	0.040 min. - 0.055 max.	0.015 min. - 0.025 max.
Weight oz./linear yd. (max.)	0.45	0.30
Breaking strength, pound (min.)	650	525
Ends in warp (min.):		
Face and back	158	276
Binder	9	-
Stuffer	40	-
Filling yarns per inch (min.)	48	30
Yarn denier (nominal):		
Face and back	2 ply 200 denier	200 denier
Binder	2 ply 200 denier	-
Stuffer	2 ply 200 denier	-
Filling	4 ply 200 denier	2 ply 200 denier

3.6 Weave. The weave for the webbing and tape shall be as specified in 3.6.1 and 3.6.2. The filling for both types shall traverse the full width of the webbing or tape with one filling yarn per shed.

3.6.1 Type I. The Type I webbing shall be a double fabric consisting of face and back warps with two ends weaving as one and a stuffer warp, all bound together by a binder warp with the ends weaving singly. The stuffer ends shall weave between the face and the back warps and shall not show on either the face or the back. The face warp shall weave plain weave with picks that show on the face. The back warp shall weave plain weave with picks that show on the back. The binder warp shall weave plain weave throughout.

3.6.2 Type II. The Type II tape shall be plain weave, except that the warp ends shall weave two ends as one.