



PIA-T-43618C

14 November 2012

Superseding

PIA-T-43618B

24 November 2008

The following commercial specification is originally 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.

TAPE, PRESSURE SENSITIVE, FOR MENDING NYLON PARACHUTE CANOPIES

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 one type of mending tape for repairing small tears in nylon cargo parachute canopies. The tape is rip-stop nylon cloth, coated on one side with pressure sensitive adhesive which is protected with a removable liner.

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

AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS (AATCC)

AATCC 16, Option A - Colorfastness to Lightfastness

AATCC 107 - Colorfastness to Water

AATCC Evaluation Procedures:

- 1 Gray Scale for Color Change
- 2 Gray Scale for Staining
- 9 Visual Assessment of Color Difference of Textiles.

(Application for copies should be addressed to the AATCC National Headquarters, P.O. Box 12215, Research Triangle Park, NC 27719-2215. Electronic copies may be obtained from www.aatcc.org.)

DISTRIBUTION STATEMENT: All Rights Reserved. No Part of this publication may be reproduced without prior written permission from Parachute Industry Association. Additional copies may be purchased on-line from PIA Specifications and Products at: www.pia.com.

ASTM INTERNATIONAL (ASTM)

- ASTM D 276 - Standard Test Methods for Identification of Fibers in Textiles
- ASTM D 1776 - Standard Practice for Conditioning and Testing Textiles
- ASTM D 1974 - Standard Practice for Methods of Closing, Sealing and Reinforcing Fiberboard Boxes
- ASTM D 3611 - Standard Practice for Accelerated Aging of Pressure Sensitive Tapes
- 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
- ASTM D 3951 - Standard Practice for Commercial Packaging
- ASTM D 5035 - Standard Test Methods for Breaking Force and Elongation of Textile Fabrics (Strip Method)
- ASTM D 5118 - Standard Practice for Fabrication of Fiberboard Shipping Boxes
- ASTM D 6251 - Standard Specification for Wood Cleated Panelboard Shipping Boxes

(Application for copies should be addressed to the ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959. Electronic copies may be obtained from www.astm.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, Milwaukee, WI 53203.)

PARACHUTE INDUSTRY ASSOCIATION (PIA)

- PIA-C-7020 - CLOTH, PARACHUTE, NYLON-RIP STOP AND TWILL WEAVE

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

2.3 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 shall take 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, in the contract or purchase order, a sample shall be subjected to first article inspection (see 4.2, and 6.1).

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 Material.

3.3.1 Cloth. The base cloth for the tape backing shall be made of polyamide multi-filament yarns prepared from hexamethylene diamine and adipic acid or its derivatives. The yarns shall have a melting point of not less than 472°F and shall not be bleached in any manner or process. The cloth shall be of a color suitable for assuring conformance to the color requirement for the tape (see 3.4.1). The cloth shall show good fastness as follows:

Characteristic	Rating, minimum
Cold Water ^{1/} :	
Color Change	3-4
Staining	3-4
Light (Fade) ^{2/}	3-4
Testing shall be specified in 4.3.1	

Notes:

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

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

3.3.1.1 Weave. The rip-stop cloth shall be plain weave, except that it shall have reinforcing ribs in both directions, made by pairing two warp yarns and two filling yarns to weave as one at uniform intervals. There shall be not less than 4.5 repeats of the pattern per inch in both directions.

3.3.2 Adhesive. The adhesive for the tape shall be a water insoluble, pressure sensitive adhesive which requires no heat, solvent, or other preparation, prior to, or after application of the tape to clean, dry nylon cloth.

3.3.3 Liner. The liner for protecting the adhesive shall be of such material as to permit easy removal for fast, distortion free application of the tape. During removal, the liner shall not break and shall not remove the adhesive from the cloth backing when tested as specified in 4.4.4.

3.4 Tape construction. The finished tape shall consist of the nylon rip-stop cloth backing specified in 3.3.1, completely and evenly coated on one side with the adhesive specified in 3.3.2. There shall be no adhesive strike-through to the face of the tape as evidenced by stickiness of the surface, discoloration or boardiness. The adhesive shall be protected with the liner specified in 3.3.3. The tape shall conform to the requirements specified in TABLE I when tested as specified in 4.4.4.

(THIS SPACE LEFT INTENTIONALLY BLANK)

TABLE I Physical requirements.

Characteristic	Requirement	
	Minimum	Maximum
Weight (exclusive of liner), ounces per square yard	2.7	3.5
Yarns per inch:		
- Warp	100	--
- Filling	95	--
Breaking strength, pounds:		
- Warp	75	--
- Filling	60	--
Elongation, percent:		
- Warp	18	--
- Filling	20	--
Holding power, inches of slippage:		
- Initial	--	1/8
- After water immersion	--	1/8
- After accelerated aging	--	1/8
- At 150°F	--	1/8
Impact resistance, at 24 inch-pounds:		
- At standard conditions	Pass or fail	
- At minus 40° F	Pass or fail	
Blocking, scale rating	--	No. 1

3.4.1 Color. Unless otherwise specified, the color of the tape shall be foliage green 504 (see 6.1).

3.4.1.1 Visual shade matching. When evaluated in accordance with 4.5.11, the color of the dyed tape shall match the standard with sources simulating artificial daylight and shall be a good match to the standard under incandescent lamplight

3.5 Base cloth age. The date of delivery of the tape shall be not more than 3 years from the date of manufacture of the base cloth (see 4.3.1).

3.6 Marking. Each roll shall have a tag attached to the inner end of the cloth, with the date of coating (month and year) clearly marked. Each outer wrapper or tag and shipping container shall also be marked with the date of coating (see 5.1). In addition the date of coating (month and year) shall be legibly printed on the liner throughout its full length, at least once in every 12 inches, using a suitable ink which will not rub off, degrade, or affect cloth tape in any manner.

3.7 Put-up. The tape shall be furnished in rolls and shall be wound with the liner side in, on a core of sufficient rigidity to prevent distortion of the roll. The inside diameter of the core shall be 3 inches $-0 +1/16$ inch. The roll of tape shall be restrained from unwinding by a piece of pressure sensitive adhesive tape.

3.8 Width. Unless otherwise specified (see 6.1), the width of the tape shall be 42