

INCH-POUND

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SUPERSEDING
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COMMERCIAL ITEM DESCRIPTION

FASTENER TAPES, HOOK AND LOOP, SYNTHETIC

The General Services Administration has authorized the use of this commercial item description as a replacement for MIL-F-21840 for all Federal agencies.

1. **SCOPE.** This commercial item description covers the requirements for different types, classes, colors, and widths of hook and loop synthetic fastener tapes. The woven and extruded fastener tapes are intended to be used as closures for equipment and clothing. Users should determine which type and class of hook and loop fastener tape meets their requirements (see 7.3).

2. **CLASSIFICATION.** The following types of hook fastener tapes and the following classes of hook and loop fastener tapes are specified in this document:

2.1 Types (Hook only):

- Type I - 6.5 mil woven hook fastener tape
- Type II - 8.0 mil woven hook fastener tape
- Type III - Extruded plastic hook fastener tape, Non-Autoclave
- Type IV - Extruded plastic hook fastener tape, Autoclave Resistant

2.2. Classes (Hook and Loop):

Hook fastener tape:

- Class 1 - 100% nylon with selvage
- Class 2 - 75% aramid 25% nylon
- Class 3 - 100% polyester with selvage
- Class 4 - 100% nylon without selvage
- Class 5 - 100% polyester without selvage

Loop fastener tape:

- Class 1 - 100% nylon with selvage
- Class 2 - 100% aramid
- Class 3 - 100% polyester with selvage
- Class 4 - 100% nylon without selvage
- Class 5 - 100% polyester without selvage

Comments, suggestions, or questions on this document should be addressed to: Defense Supply Center Philadelphia, Clothing and Textiles Directorate, Attn: DSCP Standardization Team, 700 Robbins Avenue, Philadelphia, PA 19111-5096. Since contact information can change, you may want to verify the currency of this address information using Acquisition Streamlining and Standardization Information System (ASSIST) online database at <http://assist.daps.dla.mil>.

3. SALIENT CHARACTERISTICS

3.1 Tape material. The woven hook and loop fastener tapes shall be fabricated of synthetic fibers and yarns. The Type III and IV, Class 4 hook fasteners shall be made using extruded nylon resin. The Class 1 and 4 hook fastener tape shall be 100% nylon. The Class 2 hook fastener tape shall be a blend of aramid and nylon fibers and yarns consisting of a nylon hook with an aramid ground. The Class 1 loop fastener tape shall be 100% nylon and the Class 2 loop fastener tape shall be 100% aramid. The Class 3 and Class 5 hook and loop fastener tapes shall be all 100% polyester. All Class 4 and 5 tapes may be slit in widths ranging from 5/8 inches to 4 inches with non-fraying edges. All selvages (including the 4 inch wide tape) shall not exceed 1/8 inch. The tolerance for each width of woven tape (selvage or non selvage) shall be $\pm 1/16$ inch (including selvage when applicable), except the 4 inch tape which shall be $\pm 1/8$ inch. Width tolerances for the extruded tape shall be $\pm 1/32$ inch. Unless otherwise specified in the end item, tapes shall exhibit the same edge finish on both sides of the tape, (both sides either have a selvage or both sides do not have a selvage).

3.2 Construction.

3.2.1 Hook Fastener Tapes.

3.2.1.1 Construction of woven hook fastener tape (Type I and II, all Classes). The hook fastener tape shall be a woven, warp loop, narrow fabric construction, with multifilament ground ends (including selvages) and picks. Monofilament auxiliary warp ends shall be woven in the form of raised loops which can be heat set to retain their shape and cut near the top of the loop in order to form a free hook engaging section. The hook shall be a leno weave, woven in a staggered order. The Type I hook fastener tape shall be made using a 6.5 mil, 200 denier hook, and the Type II hook fastener tape shall be made using a 8.0 mil, 300 denier hook. The hook fastener tape shall be visually examined for construction conformance and it shall conform to the requirements in Table I and II when tested in accordance with the test methods in Table VII. One determination per sample unit shall be made and the results reported as "pass" or "fail".

3.2.1.2 Construction of extruded hook fastener tape (Type III). The extruded hook fastener tape shall be a continuous extrusion of plastic nylon resin. The Class 4 hook fastener tape shall have fully formed hooks that are a minimum height of 0.025 inch with alternating rows and containing a minimum of 375 hooks per square inch. The Class 4 hook fastener tape shall have an average stiffness of no more than 0.07 inch pounds when tested as specified in Table VII. The hook fastener tape shall be visually examined for construction conformance and it shall conform to the requirements in Table I and II when tested in accordance with the test methods in Table VII.

3.2.1.3 Construction of extruded hook fastener tape (Type IV). The extruded hook fastener tape shall be a continuous extrusion of plastic nylon resin. The Class 4 hook fastener tape shall have fully formed hooks that are a minimum height of 0.035 inch with alternating rows and containing a minimum of 375 hooks per square inch. The Class 4 hook fastener tape shall be autoclave resistant. The hook fastener tape shall be visually examined for construction conformance and it shall conform to the requirements in Table I and II when tested in accordance with the test methods in Table VII.

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3.2.2 Loop fastener tape (all Classes). The loop fastener tape shall be a woven, warp loop, narrow fabric construction, with multifilament ground ends (including selvages) and picks, with leno woven loop warp ends. The loops shall be suitably napped to form a uniformly disoriented surface of uncut loops capable of being engaged by the hooks of the hook fastener tape component. As an alternate, the loop shall be woven of specially treated yarns that provide a uniformly disoriented surface without being napped. The loops of the Class 2 tape shall remain unnapped. The loop fastener tape shall be visually examined for construction conformance and it shall conform to the requirements in Table I and II when tested in accordance with the test methods cited in Table VII. One determination per sample unit shall be made and the results reported as “pass” or “fail”.

3.3 Physical requirements. The hook and loop fastener tape shall conform to the requirements stated in Table I and Table II when tested as specified in Table VII.

TABLE I - Physical requirements

Width, Hook/Loop Fastener Tape (inch)	4	2	1-1/2	1	3/4	5/8
Characteristic						
Weight, grams/linear yard (min.)						
Hook Type I						
Class 1 and 4	14.4	9.0	6.9	4.5	3.4	2.8
Class 2	-	13.2	9.7	6.6	4.8	4.4
Type II						
Class 1 and 4	15.2	9.4	6.9	4.7	3.5	2.8
Class 3 and 5	-	10.6	-	5.6	-	-
Type III and IV						
Class 4	32.0	16.0	12.0	8.0	6.0	5.0
Loop						
Class 1 and 4	22.4	12.6	9.4	5.9	4.1	3.4
Class 2	-	15.8	12.0	8.1	6.0	5.0
Class 3 and 5	-	10.4	-	5.3	-	-
Breaking strength, lbs. (min.)						
Hook Type I						
Class 1 and 4	320	170	115	90	70	65
Class 2	-	230	155	125	90	85
Type II						
Class 1 and 4	320	170	135	100	80	65
Class 3 and 5	-	230	-	130	-	-
Type III and IV						
Class 4	-	-	-	-	-	-
Loop						
Class 1 and 4	280	165	120	75	50	43
Class 2	-	230	160	115	70	50
Class 3 and 5	-	175	-	95	-	-

TABLE I - Physical requirements (Continued)

Width Hook/Loop Fastener Tape (inch)	4	2	1-1/2	1	3/4	5/8
Characteristic						
Shear strength, lbs./sq. inch (min.) After 3 Launderings After 1 drycleaning <u>1/</u>						
Hook						
Type I						
Class 1 and 4	5.0	5.0	5.0	5.0	4.7	4.3
Class 2	-	10.0	10.0	10.0	6.7	5.0
Type II						
Class 1 and 4	10.0	10.0	10.0	10.0	6.7	4.7
Class 3 and 5	-	16.0	-	16.0	-	-
Type III						
Class 4	30.0	30.0	30.0	30.0	22.5	18.7
Type IV -After Autoclaving						
Class 4	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>
Peel strength, lbs./inch (min.) After 3 launderings After 1 drycleaning <u>1/</u>						
Hook						
Type I						
Class 1 and 4	0.5	0.5	0.5	0.5	0.5	0.5
Class 2	-	0.5	0.5	0.5	0.5	0.5
Type II						
Class 1	1.0	1.0	1.0	1.0	1.0	1.0
Class 3 and 5	-	0.5	-	0.5	-	-
Type III and IV						
Class 4	0.8	0.8	0.8	0.8	0.8	0.8
Stitch Tear Strength, lbs. (min.)						
Hook						
Type I						
Class 1 and 4	3.5	3.5	3.5	3.5	3.5	3.5
Class 2	7.0	7.0	7.0	7.0	7.0	7.0
Type II						
Class 1 and 4	3.5	3.5	3.5	3.5	3.5	3.5
Class 3 and 5	2.0	2.0	2.0	2.0	2.0	2.0
Type III and IV						
Class 4	2.5	2.5	2.5	2.5	2.5	2.5
Loop						
Class 1 and 4	6.0	6.0	6.0	6.0	6.0	6.0
Class 2	7.0	7.0	7.0	7.0	7.0	7.0
Class 3 and 5	3.5	3.5	3.5	3.5	3.5	3.5

1/ Dry cleaning only required if specified in the contract.

2/ 90% of original shear strength.

TABLE II - Physical requirements

Characteristic	Hook				Loop
	Type I	Type II	Type III	Type IV (Class 4 only)	All Classes
Thickness, inch (min.)	0.050	0.050	0.04	0.04	0.095
Length Dimensional Stability, % (max.)	3.0	3.0	3.0	-	.0
Autoclave (Thermal) Length Shrinkage, % (max.) <u>1/</u>	-	-	-	3.0	-

1/ The fastener tape shall not exhibit any curling after autoclaving.

3.4 Thermal Stability. The class 2, hook and loop fastener tapes shall not melt, drip, separate or ignite when tested in accordance with the Thermal Stability Test cited under NFPA 1975 (see 7.1).

3.5 Colors. The color of the hook and loop fastener tape shall as be specified in the contract or purchase order and shall meet the requirements listed below.

3.5.1 Visual shade matching. The color and appearance of the cloth shall match the standard sample when viewed using the AATCC Evaluation Procedure 9, Option A, with sources simulating artificial daylight D75 Illuminant with a color temperature of 7500 K \pm 200 with illumination of 100 \pm 20 foot candles, and shall be a good match to the standard sample under incandescent lamplight at 2856 K \pm 200.

3.5.2 Colorfastness. The finished hook and loop fastener tapes shall conform to the colorfastness requirements listed in Table III when tested as specified in Table VII. Colorfastness requirements shall not apply to the Type III and IV hook fastener tapes.

TABLE III - Colorfastness requirements

Colors Evaluation	Laundering <u>1/</u> <u>2/</u> <u>3/</u> (min.)	Light (40 hrs or 170 KJ) <u>1/</u> <u>3/</u> (min.)	Dry Cleaning <u>2/</u> <u>4/</u> (min.)	Crocking <u>5/</u> (min.)
Universal Camouflage shades: Desert Sand 503 Urban Gray 505 Foliage Green 504 Type I and Type II Class 1 and 4	2-3 (5 cycles)	4-5	4-5	4.0
All other colors: All Types and Classes	4 (3 cycles)	-	3.5	3.5

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

2/ Rated using the AATCC Evaluation Procedure 2, Gray Scale for Staining.

- 3/ The colorfastness after laundering and light exposure shall remain the same hue as the original sample. Hue/cast is defined as the attribute or color that classifies a color as red, blue, and green etc.
- 4/ If specified in the contract or purchase order.
- 5/ Rated using the AATCC Evaluation Procedure 8, AATCC 9-Step Chromatic Transference Scale.

3.6 Spectral Reflectance. The reflectance values for the loop side of the Foliage Green 504 finished tape shall conform to the requirements specified in Table IV, when tested as specified in 3.6.1.

3.6.1 Spectral reflectance test. Spectral reflectance data shall be determined on the face side and shall be obtained from 600 to 860 nanometers (nm) at 20 nm intervals on a spectrophotometer relative to the barium sulfate standard, the preferred white standard. Other white reference materials may be used provided they are calibrated to absolute white, e.g. magnesium oxide or vitrolite tiles. The spectral bandwidth shall be less than 26 nm at 860 nm. Reflectance measurements shall be made by either the monochromatic or polychromatic mode of operation. When the polychromatic mode is used, the spectrophotometer shall operate with the specimen diffusely illuminated with the full emission of a source that simulates either CIE source A or CIE source D65. The specimen shall be measured as a single layer only on the loop fastener tape. Measurements shall be taken on a minimum of two different areas and the data averaged. Specimens shall be oriented in different directions during testing. The specimen shall be viewed at an angle no greater than 10 degrees from the normal, with the specular component included. Photometric accuracy of the spectrophotometer shall be within 1 percent and the wavelength accuracy within 2 nm. The standard aperture size used in the color measurement device shall be 0.3725 inches or larger in diameter to measure the loop fastener tape. Any color having spectral reflectance values outside the limits at four or more of the wavelengths specified shall be considered a test failure.

TABLE IV - Spectral reflectance requirements, Reflectance Values, %

Wavelength, Nanometers (nm)	Foliage Green 504 (Loop (pile)fastener tape only)	
	Min.	Max.
640	8	20
660	10	26
680	12	32
700	20	40
720	22	46
740	24	46
760	26	48
780	30	48
800	34	50
820	34	54
840	36	54
860	38	56

3.7 Finish. All hook and loop fastener tapes shall be stabilized as necessary to allow for maximum flatness and dimensional stability. In addition, the back of each Class 1, 3, 4 and 5 hook fastener tapes shall be coated with a polymeric or elastomeric undercoating. The Class 2 hook and Class 2 loop fastener tape shall be coated with a flame retardant coating. The coatings shall be cured. This requirement does not apply to Type III and IV hook tapes.

3.8 Special adhesive backings. When a special adhesive backing is specified, the fastener tapes shall be coated with an adhesive backing (except for selvages). Adhesive backed products shall not be evaluated for fray, stitch tear, and colorfastness (see 7.4).

3.9 Splicing. When spliced tape is furnished, care shall be taken to assure that splices are smooth and properly aligned with edges to allow free passage through automatic sewing equipment. The spliced area shall not affect the functional characteristics of the hook and loop tapes. The sealed splices shall have no loose edges. The breaking strength of the splice shall be not less than 30 percent of the minimum specified for the unspliced tape when tested in accordance with Table VII except that the jaws shall be 1 inch by 3 inches. The length of the overlap of the splices shall be 5/16 to 5/8 inch. When splices are tested for breaking strength, the splice shall be centered between the jaws. When spliced tape is furnished as a component in an end item, the limits of its applications shall be outlined in the end item document.

3.10 Fray resistance. Unless otherwise specified by the contract or purchase order or end item document, all hook and loop fastener tapes (except the Type IV, Class 4 hook fastener tape) shall exhibit resistance to fraying when tested as specified below.

3.10.1 Fray resistance for general purpose. Five specimens each of the hook and loop fastener tapes shall be tested in accordance with AATCC 135 Option 3, V, Aiii for fray resistance after 3 launderings, and in accordance with AATCC 132 for fray resistance after one dry cleaning or commercial dry cleaning using perchloroethylene (if required by contract). Specimens shall be 10 inches long and full width and shall be prepared for testing by slitting lengthwise up the middle for a distance of 8 inches. After laundering or dry cleaning, or when tapes with slit selvages are furnished, the slit edges shall also be examined for fraying. The hook and loop fastener tapes shall show no more than 1/32 inch fraying after laundering or dry cleaning (when applicable). In addition, ultrasonically slit fastener tapes shall be tested for fraying.

3.10.2 Fray resistance for Universal Camouflage Shades. No hook or loop fastener tape shall exhibit any fraying edges, peeling yarns, or damaged appearance that detracts from the appearance and durability of tape when tested as specified below unless otherwise specified in the contract or purchase order (see 7.3.4).

3.10.2.1 Fray test procedure. This procedure shall be used to fabricate one set of fray pad test samples to evaluate the fray resistance of a hook and loop fastener tape.

3.10.2.1.1 Assembly of Fray Test Pad. A fray pad set consists of two pad samples: one pad sample consists of hook fastener tape pieces on both sides of the fabric outer surfaces and the other pad sample consists of loop fastener tape pieces on both sides of the fabric outer surfaces. Use Table V, Fray Test Pad Assembly Procedures and Table VI, Hook and Loop Tape Test Pieces for pad preparation (see Figures 1, 2, and 3).

TABLE V - Fray test pad assembly

Step	Procedure
1. Cut Fabric Panels	Cut 4 fabric panels approximately 21-inches by 21-inches from MIL-DTL-44436, Class 8 or equivalent fabric.
2. Cut hook and loop tape pieces	See Table VI for measurements and number of hook and loop pieces.
3. Position hook and loop tape on fabric panels	a. <u>Hook</u> : Evenly space piece(s) of each width of 5/8", 1", and 1-1/2" (Figure 2) on one fabric panel and mark locations. Repeat procedure with remaining hook pieces on second fabric panel.
	b. <u>Loop</u> : Evenly space piece(s) of each width of 5/8", 1", 1-1/2" and 2" (Figure 3) on one fabric panel and mark locations. Repeat procedure with remaining loop pieces on second fabric panel, except replace the 2 inch width piece with a 4 inch width piece.
4. Stitch hook and loop tape to fabric panels	Position and stitch hook or loop tape on previously marked locations by using the following requirements: <u>Thread Type</u> : Cotton (Type I) or polyester-covered, polyester core (Type II) per A-A-50199. <u>Thread Size</u> : Ticket No. 50 (Tex size 36 to 45) with a minimum breaking strength of 3.2 pounds (Type I) and 3.7 pounds (Type II) per A-A-50199. <u>Stitch Type</u> : 301, ATM D6193. <u>Seam Type</u> : OSf-1, ASTM D 6193. <u>Gauge</u> : 1/8-inch to 3/16-inch from selvage using box stitch at 9-11 stitches per inch (see Figure 1). For the 4 inch loop fastener tape vertically center stitch using 301 stitch type (see Figure 1.)
5. Initial Pad Assembly	a. Take the 21 inch fabric panels and face to each other, stitch inside out on three panel edges using the following requirements. When finished the assembly should look like a bag measuring 20 inches by 20 inches (one bag with just hook and one bag with just loop).
	b. See Step 4 for thread type size and stitch type.
	c. Seam Type: SSa-1, ASTM D 6193.
	d. Seam allowance approximately 1/2 inch
	e. Turn bag right side out.

TABLE V - Fray test pad assembly (Continued)

6. Fill Pad	Insert sufficient number of fabric squares into partially assembled pad to achieve <u>1.0 pound</u> minimum weight per fray test pad. Fabric squares should be cut to fit inside the bag (approximately 19.75" X 19.75") and lay flat. Filling material may be of any textile fabric without a water repellent treatment.
7. Complete Pad Assembly	a. Fold-in seam allowance along open edge; top stitch with 301 Stitch Type.
	b. Secure fabric squares to pad. Top stitch two sides of the pad, approximately 2 inches into the pad. Careful not to catch hook or loop tapes on either side. Finished pad should remain flat without any lumps throughout laundering.

Table VI - Hook and loop Fastener test pieces

	Tape Width				
	5/8 in	1.0 in	1-1/2 in	2.0 in	4.0 in
Hook Fastener tape length	9-3/4 in	6-1/2 in	4-1/4 in	Not applicable	Not Applicable
# of samples	Cut 4	Cut 4	Cut 2	---	---
Loop Fastener tape length	9-3/4 in	6-1/2 in	7-1/2 in	5.0 in	6.0 in
# of samples	Cut 4	Cut 4	Cut 4	Cut 2	Cut 2

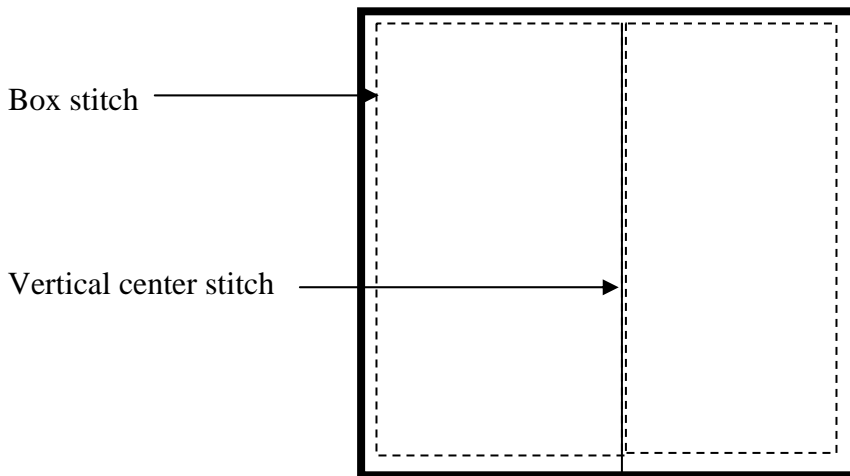


Figure 1. Hook and loop stitching

FRAY TEST PAD ASSEMBLY

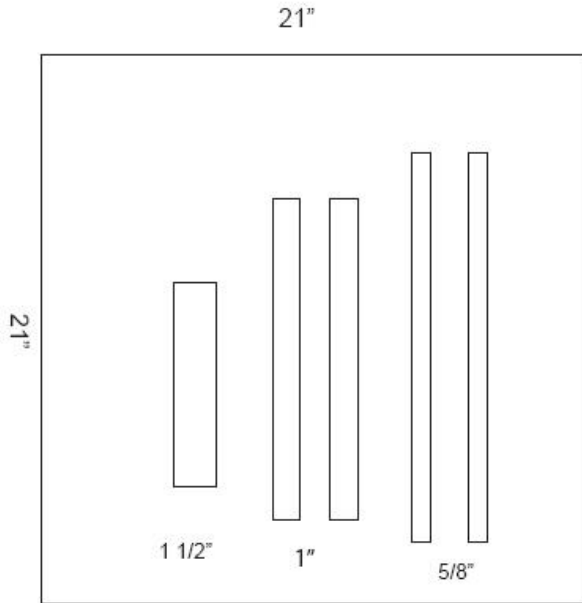


Figure 2.

Hook layout Fray Test Pad Panel

Make 2 of the above

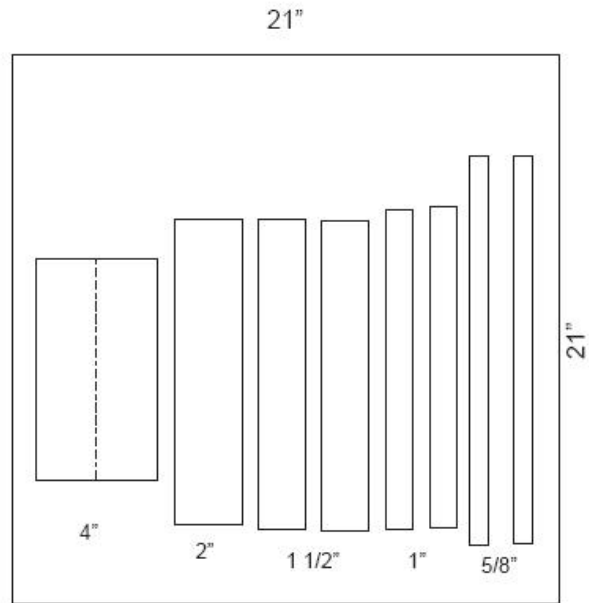


Figure 3.

Loop layout Fray Test Pad Panel

Make 2 of the above

Note: One panel made with 2- 2” pieces, the other with 2- 4” pieces

3.10.2.1.2 Laundering of Fray Test Pad. The fray test pads shall be laundered 25 cycles in accordance with test method AATCC 150, Option 3, (V), Aiii. Any fraying of the hook and loop fastener tape shall be noted.

TABLE VII - Test methods

Characteristic	Requirement	Test method
Fiber Identification	Paragraph 3.1	ASTM D 276 /D 629or AATCC 20A/20
Weight	Table I	ASTM D 3776, Option D <u>1/</u>
Breaking strength	Table I	ASTM D 5034 (G-E or G-T) <u>2/</u>
Stiffness (Type III class 4 Hook only)	3.2.1.2	ASTM D 747 <u>3/ 4/</u>
Shear strength <u>5/ 6/ 7/</u>		
After 3 launderings	Table I	AATCC 61, Test 3A , ASTM D 5169
After 1 dry cleaning <u>8/</u>	Table I	AATCC 132 , ASTM D 5169

TABLE VII – Test methods (Continued)

After Autoclaving (Type IV only)	Table I	9/ 10/ ASTM D 5169
Peel strength 5/ 7/		
After 3 launderings	Table I	AATCC 61, Test 3A, ASTM D 5170
After 1 dry cleaning 8/	Table I	AATCC 132, ASTM D 5170
Stitch tear strength	Table I	ASTM D 2261, Option 1 11/
Thickness	Table II	ASTM D 1777, Option 5 12/
Length Dimensional Stability	Table II	AATCC 135 Option 3, V, Aiii
Autoclave(Thermal) Length Shrinkage(Type IV only) 9/	Table II	9/ 10/
Colorfastness		
Light (40 hrs or 170 KJ)	Table III	AATCC 16, Option 1or 3
Laundering 13/	Table III	
Universal Camouflage Shades (5 Cycles)	Table III	AATCC 61, Option 3A
All Other Colors (3 cycles)	Table III	AATCC 61, Option 2A
Dry Cleaning (1 cycle) 8/	Table III	AATCC 132
Crocking	Table III	AATCC 8
Thermal Stability (Class 2 only)	3.4	NFPA 1975
Spectral Reflectance	3.6	3.6.1
Fray Resistance	3.10	3.10.1 – 3.10.2.1.2

1/ Test specimen shall be full width and 3 feet in length.

2/ When splices are tested for breaking strength, the splice shall be centered between the jaws.

3/ Test with hook side up.

4/ Stiffness (bending moment) shall be conducted in accordance with ASTM D 747 except as follows:

- a. Unless otherwise specified, the testing conditions shall be in accordance with ASTM D 1776.
- b. The test specimen shall be a rectangle of cloth of dimensions two (2) by one (1) inches with the long dimension parallel to the fabric direction under test, warp or filling, as applicable.
- c. The load scale reading shall be recorded only at the specimen angular deflection of 60 degrees.
- d. The stiffness is the bending moment of specimen at a deflection angle of 60 degrees and shall be calculated to three significant figures as follows:

$$\text{Bending moment, inch -lb.} = \frac{\text{Load scale reading} \times \text{moment weight}^*}{100}$$

* Testing machine of Tinius Olsen Testing Machine Co.

- 5/ Samples containing splices shall not be used for the shear or peel test.
- 6/ For a two inch linear overlap. Tapes over 1 inch are slit to 1 inch prior to testing. Tapes under one inch are tested as is.
- 7/ Test shear strength and peel strength with corresponding loop class tape.
- 8/ If specified in the contract or purchase order.
- 9/ The steam autoclave aging shall be conducted in any autoclave apparatus that can maintain a steam temperature of $252 \pm 2^\circ \text{F}$ @ 15 psi for 30 minutes. Premark the back of the tape with indelible ink for shrinkage. Tape shall not touch any metal in the autoclave unit and shall be air dried before testing.
- 10/ No curling shall be present after autoclaving.
- 11/ Five preconditioned 8 inch long hook and loop fastener tapes shall be tested. Holding the sample lengthwise, starting 3 inches in, make a center stitch line (12 stitches per inch using a 0.044 inch medium ball needle without thread), down the length of the sample. The sample shall then be cut from the start edge to the first hole making a 3 inch tab for testing.
- 12/ Testing shall be done at 0.1 psi.
- 13/ Option 3A shall be used on all Universal Camouflage Shades (Foliage Green 504, Desert Sand 503, Urban Gray 505). All other colors shall be tested using Option 2A.

3.11 Length and put-up. Unless otherwise specified in the contract or purchase order, the hook and loop fastener tapes shall be put up on flanged spools. The height of the flanges shall be sufficient to accommodate the height of the wound tape. An overlap of not more than 1/4 inch of the wound tape beyond the flange edge is permitted. The minimum length of any given piece shall be not less than three feet. There shall be no more than one, three-foot length in any spool. For every 25 yards length on a spool, there shall be no more than three splices or four pieces. The end of the spool shall be secured with a strip of its opposite component which shall be marked to indicate the number of pieces contained on the spool.

3.12 Toxicity. The finished fastener tape shall not present a health hazard when tested as specified in 3.12.1. Chemicals recognized by the Environmental Protection Agency (EPA) as human carcinogens shall not be used.

3.12.1 Toxicity test. Unless otherwise specified, an acute dermal irritation study and a skin sensitization study shall be conducted on laboratory animals. When the results of the studies indicate the fastener tape is not a sensitizer or irritant, a Repeat Insult Patch Test shall be performed in accordance with the Modified Draize Procedure (see 7.2).

4. **REGULATORY REQUIREMENTS**. The offeror/contractor is encouraged to use recovered materials to the maximum extent practicable, in accordance with paragraph 23.403 of the Federal Acquisition Regulation (FAR).

5. PRODUCT CONFORMANCE PROVISIONS

5.1 Product conformance. The products provided shall meet the salient characteristics of this Commercial Item Description, conform to the producer's own drawings, specifications, standards, and quality assurance practices, and be the same product offered for sale in the commercial marketplace. The government reserves the right to require proof of such conformance.

5.2 Visual examination. Any hole, cut, or tear; color not as specified; any part shaded; any streaks; any spot or stain (topside); raw edges; width of tape or selvages not as specified; any missing or broken yarn; hooks or loop flattened; uneven pile; splices not sealed; splices not color matching; splicing not even; slit edges not as specified; not packaged in accordance with contract or purchase order shall be considered a defect.

5.3 Acceptance criteria. Acceptance criteria shall be as specified in the contract or purchase order.

6. PACKAGING

6.1 Packaging. Preservation, packing, and marking shall be as specified in the contract or purchase order.

7. NOTES

7.1 Source of Government documents.

(Copies of government documents are available online at <http://assist.daps.dla.mil> or from the Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094)

FEDERAL ACQUISITION REGULATIONS (FAR)

(Copies are available online at <http://acquisition.gov/far/index.html> or by contacting the Superintendent of Documents at 202-512-1800)

NATIONAL FIRE PROTECTION ASSOCIATION

(Copies are available from National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471 or online at <http://www.nfpa.org>)

7.2 Source of Non-Government documents.

AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS (AATCC)

(Copies are available from the American Association of Textile Chemists and Colorists, P.O. Box 12215, Research Triangle Park, NC 27709-2215 or online at www.aatcc.org.)

ASTM International

(Copies are available from ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959 or online at www.astm.org)

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7.2 Standard samples.

7.2.1 For standard samples address the contracting activity issuing the invitation for bids or request for proposal. Standard samples are also available at DSCP through <http://warfighter.dla.mil> under tab “Vendor Info” then “Specifications/Pattern Request” under “Special Instructions” provide color shade, roll number and solicitation/contract number.

7.3 Uses for hook and loop fastener tapes. Type II hook fastener tapes generally have slightly higher shear strength than Type I hook fastener tape when tested with Class 1 loop fastener tapes. Type III and IV hook fastener tapes are intended to eliminate field fraying, minimize contamination (lint) of hook area, and is generally thinner and more flexible. Type IV offers resistance to autoclaving. Class 1 and 4 hook and Class 1 and 4 loop fastener tapes are intended for general purpose applications. Class 2 hook and Class 2 loop fastener tapes are intended for those applications where flame retardancy is desired. Class 3 and 5 hook and Class 3 and 5 loop fastener tapes are intended for applications where resistance to wetting, high humidity or to UV radiation is required.

7.3.1 Compatibility. The user should determine whether or not the hook or loop fastener tape of one manufacturer should be mated with the hook or loop fastener tape of another manufacturer. In addition the sewing operation should determine if a selvage tape fastener is compatible with a non-selvage mating tape fastener in a specific application. Due to required color matching of Universal Shade Camouflage based end-items, manufacturers of hook and loop tape cannot be mixed within the same delivery order or lot of a contract.

7.3.2 Special center selvage tape for applications that require extra sewing down the center of the tape. To prevent center stitching problems on the 2-inch tape, the user needs to specify “center selvage tape”. This tape is manufactured with a 1/8 inch to 3/16 inch selvage on each edge and down the center of the tape. This selvage is free of hook and loop.

7.3.3 Sewability. For Type III extruded hook, the stitch line should not be run off any edges. For all other products to minimize fraying, recommend the stitch line be a minimum of 3/16” from any edge.

7.3.4 Fray Resistance for Universal Camouflage Shades. This requirement provides assurance that any combination of hook and loop tapes, i.e. selvage hook with non selvage loop, non selvage hook with non selvage loop, extruded hook with selvage loop or non selvage loop or options as specified in the contract or purchase order, will not fray up to 25 launderings.

7.4 Special adhesive backing. Special adhesive backings are available which are designed to secure tapes to many diverse materials such as wood, glass, metal, textiles, etc. Other adhesive backings facilitate application techniques (i.e., they may be water activated; heat activated, solvent activated, or pressure sensitive).

7.5 Special marking. A colorless, identification marking of sufficient permanence to withstand a minimum of 3 washings or 3 dry cleanings may be used on the backs of fastener tapes. Infra-red reflective markings are not permissible.

7.6 Slitting. When multiple widths are woven as a single unit, the tapes may be ultrasonically slit to widths leaving selvages as specified, on the edges of each tape.

7.7 Suggested sources and products. Sources that could be used, but not limited to are as follows:

Woven Tapes:

Aplix Corp 12300 Steele Creek Rd. Charlotte, NC 28241

Velcro USA Inc 406 Brown Ave, Manchester NH 03103.

YKK USA, INC. 109 Forrest Ave, Narberth, Pa. 19072

Extruded Tapes:

Velcro USA Inc 406 Brown Ave, Manchester NH 03103.

YKK USA, INC. 109 Forrest Ave, Narberth, PA 19072.

7.8 Contract order. The contract or purchase order should specify the following:

- a. CID document number, title and revision
- b. Type, and class of hook and loop fasteners required (See 2)
- c. Width of fastener tapes required (See 3.3)
- d. Color required (See 3.5)
- e. Colorfastness to dry cleaning if required must be specified. (See 3.5.2)
- f. Use of spliced tape (See 3.9)
- g. Fray resistance requirement (See 3.10)
- h. Length and put-up required (See 3.11)
- i. Product conformance provisions (See 5)
- j. Toxicity Requirements (See 3.12)
- k. Acceptance criteria (See 5.3)
- l. Packaging requirements (See 6.1)
- m. Standard samples (see 7.2)

7.9 Key words.

Camouflage, Universal
Combat Clothing, Army
Desert Sand
Foliage Green
Plastic, extruded
Urban Gray

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MILITARY INTERESTS:

Custodians:

Army – GL

Navy – NU

Air Force – 11

Review Activities:

Army – MD

Navy – AS, OS, MC

CIVIL AGENCY COORDINATING
ACTIVITY:

GSA - FSS

PREPARING ACTIVITY:

DLA - CT

PROJECT: 8315-2006-003

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using ASSIST Online database at <http://assist.daps.dla.mil/> .