Downloaded from http://www.everyspec.com

DDD-T-86H
December 23, 1985
SUPERSEDING
DDD-T-86G
October 26, 1977

FEDERAL SPECIFICATION

TAPE, TEXTILE; COTTON, GENERAL PURPOSE

(UNBLEACHED, BLEACHED, OR DYED)

This specification is approved by the Assistant Administrator, Office of Federal Supply Services, General Services Administration, for the use of all Federal agencies.

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers cotton tape for general use.

1.2 Classification.

1.2.1 Types and classes. The tape shall be of the following types and classes as specified (see 6.2).

Type I	- Stay bindings, herringbone twill weave
Type II	- Other bindings, herringbone twill weave
Type III	- Bindings, plain weave
Type IV	- Binding, herringbone twill weave - special use
Class 1	- Unbleached
Class 2	- Bleached
Class 3	- Dyed

2. APPLICABLE DOCUMENTS

2.1 Government publications. The following documents, of the issue in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein:

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be used in improving this document should be addressed to: US Army Natick Research and Development Center, Natick, MA 01760-5014, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document of by letter.

FSC 8315

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

Downloaded from http://www.everyspec.com

Federal Standards:

FED-STD-4 - Glossary of Fabric Imperfections
FED-STD-123 - Marking for Shipment (Civil agencies)
FED-STD-191 - Textile Test Methods

(Activities outside the Federal Government may obtain copies of Federal specifications, standards, and commercial item descriptions as outlined under General Information in the Index of Federal Specifications and Standards and Commercial Item Descriptions. The Index, which includes cumulative monthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

(Single copies of this specification and other Federal Specifications and commercial item descriptions, required by activities outside the Federal Government for bidding purposes are available without charge from General Services Administration Business Service Centers in Boston, MA; New York, NY; Philadelphia, PA; Washington, DC; Atlanta, GA; Chicago, IL; Kansas City, MO; Fort Worth, TX; Denver, CO; San Francisco, CA; Los Angeles, CA; and Seattle, WA.

(Federal Government activities may obtain copies of Federal Standardization documents and the Index of Federal Specifications and Standards and Commercial Item Descriptions from established distribution points in their agencies.)

Military Specification:

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

Military Standard:

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

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

Federal Regulations:

Rules and Regulations Under the Textile Fiber Products Identification Act

(The Code of Federal Regulations (CFR) and the Federal Register (FR) are for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. When indicated, reprints of certain regulations may be obtained from the Federal agency responsible for issuance thereof.)

Downloaded from http://www.everyspec.com

2.2 Other publications. The following document forms a part of this specification to the extent specified herein. Unless a specific issue is identified, the issue in effect on date of invitation for bids or request for proposal shall apply:

American Association of Textile Chemists and Colorists (AATCC)

Chromatic Transference Scale

(Copies may be obtained from the American Association of Textile Chemists and Colorists, P.O. Box 12215, Research Triangle Park, NC 27709-2215)

American Society for Testing and Materials (ASTM)

D 3951 - Standard Practice for Commercial Packaging

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

(Industry association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.)

3. REQUIREMENTS

3.1 Government and supply purchases. The requirements specified in 3.9 and 3.11 apply only to tape purchase directly by the Government. All other requirements apply to tape purchased as a component for an end item by a contractor and to tape purchased directly by the Government.

3.2 Standard sample. When a standard sample is established, the tape shall match the standard sample for shade and appearance and shall be equal to or better than the standard sample with respect to all characteristics for which the standard sample is referenced (see 6.4).

3.3 Material (see 6.5).

3.3.1 Yarns. The cotton yarn counts for tape shall be as specified in 3.5. A tolerance of plus or minus 5 percent shall be allowed for the specified yarn count.

3.4 Color. The tape shall be unbleached, bleached, or dyed as specified (see 6.2).

3.4.1 Labile sulfur. The use of dyes and compounds containing elementary sulfur capable of oxidation to sulfuric acid is prohibited. The dyestuff shall be chosen and applied so that the dyed and finished tape shall contain no more labile sulfur than shown by the standard sample when tested as specified in 4.2.3. When a standard sample is not available the dyed and finished tape shall

Downloaded from http://www.everyspec.com

show no more than a slight trace of labile sulfur as defined in the test method specified in 4.2.3.

3.4.2 Dyeing. The colored tape shall be stock, yarn, or piece dyed.

3.4.3 Matching. The color of the tape shall match the standard sample when viewed under filtered tungsten lamps which approximate artificial daylight having a correlated color temperature of 7000 ± 500 K, with illumination of 100 ± 20 foot candles, and shall be a good match to the standard sample under incandescent lamplight at 2300 ± 100 K.

3.4.4 Colorfastness. Colorfastness shall be as specified in the applicable end item document or as set forth in the contract or purchase order (see 6.2). When a standard sample has been established, the test specimen shall be compared with the standard and shall be equal to or better than the standard for the colorfastness properties specified when tested as specified in 4.2.3. When no standard sample has been established, the colored tape shall be rated in accordance with the adjective ratings shown in the applicable test methods.

3.4.4.1 Standard colorfastness. In the absence of colorfastness requirements elsewhere, colored tape shall show colorfastness to laundering (after 3 cycles), light after 40 standard fading hours, and crocking equal to or better than the standard sample (see 6.4) when tested as specified in 4.2.3. When no standard sample has been established, the colored tape shall show "good" fastness to laundering (after 3 cycles) and light after 40 standard fading hours, and no more crocking than an AATCC Chromatic Transference Scale rating of 3.5 when tested as specified in 4.2.3. When black is specified, the tape shall show no more crocking than an AATCC Chromatic Transference Scale rating of 1.5 when tested for wet crocking as specified in 4.2.3.

3.5 Physical requirements. The physical requirements of the tape shall conform to the requirements as specified in table I and table II when tested as specified in 4.2.3.

3.5.1 Weave.

3.5.1.1 Type I (shuttle loom). The weave shall be a two up and two down single or multiple herringbone twill with one or more reversals of the twill across the width of the tape. The tape shall have a woven edge on both sides.

3.5.1.1.1 Type I (shuttleless loom). The weave shall be a two up and two down single or multiple herringbone twill with one or more reversals of the twill across the width of the tape. The filling shall traverse the full width of the tape and shall be held at the edge by an extra catch-cord end interlacing with the filling yarn in a method depicted in figure 1 or 2.

3.5.1.2 Type II (shuttle loom). The weave shall be a two up and two down herringbone twill as specified in 3.5.1.1. The tape shall have a woven edge on both sides.

TABLE I. Physical requirements (shuttle loom)

Type	Width, in	Tolerance, in	Warp total yarns	Warp Yarn counts & ply cotton count ± 5.0 percent	Filling yarns per inch min.	Filling yarn counts & ply cotton count ± 5.0 percent	Warp strength pounds min.
I	1/4	± 1/32	28	40/2 or 20/1	38	60/2 or 30/1	25
I	3/8	± 1/32	36	40/2 or 20/1	38	60/2 or 30/1	30
I	7/16	± 1/32	44	40/2 or 20/1	38	60/2 or 30/1	35
I	1/2	± 1/32	52	40/2 or 20/1	38	60/2 or 30/1	42
I	17/32	± 1/32	52	40/2 or 20/1	40	20/2	42
I	5/8	± 1/32	60	40/2 or 20/1	38	60/2 or 30/1	50
I	11/16	± 1/32	68	40/2 or 20/1	38	60/2 or 30/1	58
I	3/4	± 1/32	76	40/2 or 20/1	38	60/2 or 30/1	65
I	13/16	± 1/32	84	40/2 or 20/1	38	60/2 or 30/1	72
I	7/8	± 1/32	92	40/2 or 20/1	38	60/2 or 30/1	80
I	1	± 1/32	100	40/2 or 20/1	38	60/2 or 30/1	85
I	1-1/16	+ 1/16-1/32	108	40/2 or 20/1	38	60/2 or 30/1	90
I	1-1/8	+ 1/16-1/32	116	40/2 or 20/1	38	60/2 or 30/1	95
I	1-1/4	+ 1/16-1/32	132	40/2 or 20/1	38	60/2 or 30/1	115
I	1-1/2	+ 1/16-1/32	164	40/2 or 20/1	38	60/2 or 30/1	130
II	3/16	± 1/32	32 1/	60/2	58	60/2	22
II	1/2	± 1/32	74 2/	60/2	54	30/1 or 60/2	34
II	5/8	± 1/32	94 3/	60/2	54	30/1 or 60/2	44
III	3/16	± 1/32	13	24/2	28	30/1 or 60/2	14
III	1/4	± 1/32	17	24/2	28	30/1 or 60/2	18
III	3/8	± 1/32	25	24/2	28	30/1 or 60/2	24
III	1/2	± 1/32	34	24/2	28	30/1 or 60/2	35
III	9/16	± 1/32	35	24/2	28	30/1 or 60/2	36
III	1	± 1/32	65	24/2	28	30/1 or 60/2	65
IV	1-1/4	± 1/32	132	20/2	46	40/2	185

1/ 8 ends left - 16 ends right - 8 ends left.

2/ 20 ends left - 34 ends right - 20 ends left.

3/ 22 ends left - 50 ends right - 22 ends left.

Downloaded from http://www.everyspec.com

TABLE II. Physical requirements (shuttleless loom) 1/

Type	Width, in	Tolerance, in	Warp total yarns	Warp Yarn counts & ply cotton count ± 5.0 percent	Filling yarns 2/ per inch min.	Filling yarn counts & ply cotton count ± 5.0 percent	Warp strength pounds min.
I	1/4	± 1/32	28	40/2 or 20/1	76	60/1	25
I	3/8	± 1/32	36	40/2 or 20/1	76	60/1	30
I	7/16	± 1/32	44	40/2 or 20/1	76	60/1	35
I	1/2	± 1/32	52	40/2 or 20/1	76	60/1	42
I	17/32	± 1/32	52	40/2 or 20/1	80	20/1	42
I	5/8	± 1/32	60	40/2 or 20/1	76	60/1	50
I	11/16	± 1/32	68	40/2 or 20/1	76	60/1	58
I	3/4	± 1/32	76	40/2 or 20/1	76	60/1	65
I	13/16	± 1/32	84	40/2 or 20/1	76	60/1	71
I	7/8	± 1/32	92	40/2 or 20/1	76	60/1	80
I	1	± 1/32	100	40/2 or 20/1	76	60/1	85
I	1-1/16	+1/16-1/32	108	40/2 or 20/1	76	60/1	90
I	1-1/8	+1/16-1/32	116	40/2 or 20/1	76	60/1	95
I	1-1/4	+1/16-1/32	132	40/2 or 20/1	76	60/1	115
I	1-1/2	+1/16-1/32	164	40/2 or 20/1	76	60/1	130
III	3/16	± 1/32	13	24/2	56	60/1	14
III	1/4	± 1/32	17	24/2	56	60/1	18
III	3/8	± 1/32	25	24/2	56	60/1	24
III	1/2	± 1/32	34	24/2	56	60/1	35
III	9/16	± 1/32	35	24/2	56	60/1	36
III	1	± 1/32	65	24/2	56	60/1	65

1/ The catch-cord yarn size count count and ply shall be 60/1.

2/ 2 picks per shed.

Downloaded from http://www.everyspec.com

Downloaded from http://www.everyspec.com

3.5.1.3 Type III (shuttle loom). The weave shall be plain. The tape shall have a woven edge on both sides.

3.5.1.3.1 Type III (shuttleless loom). The weave shall be plain. The filling shall traverse the full width of the tape and shall be held at the edge by an extra catch-cord end interlacing with the filling yarn in a method depicted in figure 1 or 2.

3.5.1.4 Type IV (shuttle loom). The weave shall be a two up and two down single or multiple herringbone twill with one or more reversals of the twill across the width of the tape. The tape shall have a woven edge on both sides.

3.6 Nonfibrous material. The starch and protein content including chloroform-soluble and water-soluble material shall not exceed 10.0 percent for class 1 tape; 2.5 percent for class 2 tape; and 4.0 percent for class 3 tape, when tested as specified in 4.2.3.

3.7 Dimensional stability. When specified (see 6.2), the classes 1,2 and 3 tape shall be preshrunk and shall not shrink more than 4.0 percent in the direction of the warp, when tested as specified in 4.2.3. The preshrinking process used shall not be identified by name or trademark on the tape, ticket, label, or package.

3.8 Curvature. The finished types I and III, shuttleless loom tape, shall show no more lateral curvature than 1/4 inch within a yard when tested as specified in 4.2.3.

3.9 Put-up. The tape shall be wound on standard commercial spools containing the yardage and allowable number of pieces as specified in table III. No pieces shall be less than 36 yards in length. When specified (see 6.2), small requirements for tape may be put up on 36-yard rolls in packages of twenty rolls. The number of splices in any package of twenty 36-yard rolls shall not exceed three. No piece shall be less than 10 yards.

TABLE III. Put-up

Width inch	Spool length. yds. ± 2 percent	Number of pieces (max.) Type I	Type II	Type III	Type IV
3/16	720		6		
1/4	720	4			
3/8	720	4			
7/16	720	4			
1/2	720	5	5		
17/32	720	5			
5/8	720	5	5		

Downloaded from http://www.everyspec.com

TABLE III. Put-up (cont'd)

Width inch	Spool length yds. ± 2 percent	Number of pieces (max.) Type I	Type II	Type III	Type IV
11/16	720	6			
3/4	720	6			
13/16	720	7			
7/8	720	7			
1	720	8			
1-1/16	504	5			
1-1/8	504	5			
1-1/4	504	5			
1-1/2	504	6			
3/16	1000			6	
1/4	1000			6	
3/8	1000			6	
1/2	1000			7	
9/16	1000			7	
1	720			9	
1-1/4	504				5

3.10 Fiber identification. Each spool or package shall be labeled or ticketed for fiber content in accordance with the Textile Fiber Products Identification Act.

3.11 Identification label. Each spool or package of tape shall have an identification gummed label attached to the head end of the spool or to the outside end of the package as applicable. The color of the label shall be light in intensity to permit easy reading of printed, stamped or typed markings. The use of handwritten entries is prohibited. The label shall be legibly printed with water insoluble ink with the following information:

Stock number
Nomenclature
Yardage
Contract number and date of manufacture (month and year)
Specification number
Contractor's name

3.12 Workmanship. The tape shall conform to the quality of product established by this specification. Occurance of defects shall not exceed the applicable acceptable quality levels (AQLs).

Downloaded from http://www.everyspec.com

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements, as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection 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.

4.1.1 Certificate of compliance. Where certificates of compliance are submitted, the Government reserves the right to check test such items to determine the validity of the certification.

4.2 Quality conformance inspection. Unless otherwise specified, sampling for inspection shall be performed in accordance with MIL-STD-105.

4.2.1 Component and material inspection. In accordance with 4.1, components and materials shall be inspected in accordance with all the requirements of referenced specifications, drawings, and standards unless otherwise excluded, amended, modified, or qualified in this specification or applicable purchase documents.

4.2.2 End item examination.

4.2.2.1 Yard-by-yard examination. The tape shall be examined on both sides for the defects listed in table IV as defined in section I of FED-STD-4. All defects found shall be counted regardless of their proximity to each other, except where two or more defects represent a single local condition, 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 lot size shall be expressed in yards. The sample unit shall be 1 yard of tape. The inspection level shall be II and the acceptable quality level (AQL), expressed in terms of defects per hundred units, shall be 0.4 major and 1.5 total defects. The number of rolls from which the sample is to be selected shall be in accordance with table V. The sample yardage shall be apportioned equally among the selected rolls.

Downloaded from http://www.everyspec.com

TABLE IV. Tape visual defects

Defects	Classification Major	Minor
Abrasion mark resulting in a weak place	X	
Broken or missing ends or picks:		
-Two or more contiguous	X	
-Single		X
Cut, hole, or tear, any	X	
Fine or light filling bar 1/	X	
Fine yarn or drop ply less than 1/2 the thickness of the normal yarn		X
Float:		
-Multiple, more than 1/4 inch in combined warp and filling directions	X	
-Multiple, 1/4 inch or less in combined warp and filling directions		X
-Single, more than 1 inch in length		X
Heavy filling bar or heavy place 1/		X
Knot on surfaces or edges 1/		X
Slack or tight end or ends 1/		X
Slub, slug, jerked-in filling, or slough-off, more than three times the thickness of the normal yarn		X
Smash	X	
Weak or soft spot	X	
Wrong draw more than 9 inches in length		X
Spot, stain, or streak 1/		X
Edges:		
-Cut, frayed or torn	X	
Slack or poorly constructed	X	
Shade (when colors are specified):		
-Shade bar 1/		X
-Dye streak 1/		X
Untrimmed filling yarn ends 1/		X
Width beyond specified tolerances		X
Dropped knitted stitch on edge (applicable to shuttleless looms only)	X	
Catch-cord missing (applicable to shuttleless looms only)	X	
Twisted or wavy, will not lay flat upon application of manual pressure 2/	X	
Catch-cord not interlacing with filling (bobbin looms only)	X	

1/ Clearly visible at normal inspection distance (approximately 3 feet)

2/ A 3-yard length of tape shall be laid on a flat and smooth surface without tension. If the tape does not lie flat or if the tape is wavy or ridgy, it shall be counted as a defect.

Downloaded from http://www.everyspec.com

4.2.2.2 Overall examination. The tape shall be examined for the defects listed below. Each defect listed shall be counted not more than once in each roll examined. The sample shall consist of the applicable number of spools or rolls indicated in table V. The lot shall be rejected if the total number of defects in the sample exceeds the applicable acceptance number specified in table V.

Defects

Off shade, not within established tolerances (class 3)
Cloudy, mottled, or streaky throughout
Poorly constructed, not firmly and tightly woven
Poor color penetration
Objectionable odor
Overall uncleanness
Not labeled in accordance with Textile Fiber Products Identification Act

TABLE V. Sample size

Lot size in yards	Sample size in spools or rolls	Acceptance number 2/
Up to 1,200 1/	3	0
1201 up to and including 3200	5	0
3201 up to and including 10,000	8	0
10,001 up to an including 35,000	13	0
35,001 up to and including 150,000	20	1
150,001 and over	32	2

1/ If a lot contains fewer than three spools or rolls, each spool or roll in the lot shall be examined.

2/ Except that the acceptance number shall be zero for the color and uniformity of shade defects in the overall examination in 4.2.2.2.

4.2.2.3 Length and width examination.

4.2.2.3.1 Individual spools or rolls. The tape shall be examined for the defects listed below. The sample shall consist of the applicable number of rolls indicated in table V. The lot shall be rejected if the total number of defects in the sample exceeds the applicable acceptance number specified in table V.

Downloaded from http://www.everyspec.com

Defects

Total yardage on spool or roll less than the applicable minimum or more than the applicable maximum length:

Type	Width, in	Length, yds Minimum	Length, yds Maximum
I and II	1 or less	706	734
I	More than 1	494	514
III	3/16 thru 9/16	980	1020
III	1	706	734
I, II, III (36 yd. rolls x 20)	Any	720	
IV	1-1/4	494	514

Width not within specified tolerance.
Any piece less than specified minimum length.
More than the number of pieces of splices specified.
Gross length less than specified minimum length or more than specified maximum length.
Gross length more than 2 yards less than gross length marked on piece ticket.

4.2.2.3.2 Total yardage in sample. The lot shall be unacceptable if the total of the actual gross lengths of spools or rolls in the sample is more than 5 yards less than the total of the gross lengths marked on spool or package tickets.

4.2.3 End item testing. The end item shall be tested for the characteristics indicated in table VI. The method of testing specified in FED-STD-191 wherever applicable and as listed in table VI shall be followed. The physical and chemical values specified in section 3 apply to the results of the determination made on a sample unit for test purposes as specified in the applicable test methods. All test reports shall contain the individual values utilized in expressing the final results. The sample size shall be as follows:

Lot size (yards)	Sample size
800 or less	2
801 up to and including 22,000	3
22,001 and over	5

The lot shall be unacceptable if one or more sample units fail to meet any requirement specified. The lot size shall be expressed in units of 1 linear yard. The sample unit for testing shall be as follows:

Downloaded from http://www.everyspec.com

Width	Linear yards
1/4 inch thru 3/8 inch	25
7/16 inch thru 5/8	20
11/16 inch thru 7/8 inch	15
1 inch and wider	10

TABLE VI. End item tests

Characteristic	Requirement paragraph	Test method
Cotton yarn:		
Material	3.3.1	1/
Count	3.5	4021 1/
Single	3.5	Visual 2/
Ply	3.5	Visual 2/
Labile sulfur	3.4.1	2020
Colorfastness to:		
Laundering (after 3 cycles)	3.4.4	5610 3/ 4/
Light	3.4.4	5660 5/
Crocking	3.4.4	5651
Wet drycleaning	3.4.4	5622
Accelerated weathering	3.4.4	5671 5/
Perspiration	3.4.4	5680
Yarns:		
Total warp yarns	3.5	5050
Filling yarns per inch	3.5	5050
Breaking strength (warp)	3.5	4108 6/
Catch-cord (types I and III shuttleless tape):		
Yarn size	3.5.1.1.1 and 3.5.1.3.1	1/
Construction	3.5.1.1.1 and 3.5.1.3.1	
Nonfibrous material	3.6	2611

Downloaded from http://www.everyspec.com

TABLE VI. End item tests

Characteristic	Requirement paragraph	Test method
Dimensional stability	3.7	4.3.1
Curvature (types I and III shuttleless tape)	3.8	4.3.2

1/ Unless otherwise specified, a certificate of compliance shall be submitted and will be acceptable for the stated requirement.

2/ One determination per sample unit and results reported as "pass" or "fail".

3/ The specimens must be dried after each of the 3 laundering cycles.

4/ Only the stain on the cotton fibers of the transfer cloth shall be evaluated.

5/ Time of exposure shall be 40 standard fading hours.

6/ Either split drum or flat surface clamps may be used. When flat surface clamps are used, the pulling clamp shall have a uniform speed of 12 ± 0.5 inches per minute, the distance between jaws shall be 3 inches and the test specimen shall be a minimum of 6 inches.

4.2.4 Packaging inspection. The inspection of packaging, packing, marking, and palletization shall be in accordance with the quality assurance provisions of MIL-W-43334.

4.3 Methods of inspection.

4.3.1 Dimensional stability test.

4.3.1.1 Preparation. Five specimens of tape, each 20 inches in length, shall be used for this determination, and bench marks for measurement placed 18 inches apart.

4.3.1.2 Procedure. Four liters of water at 100° ± 5°F not over 50 parts per million (ppm) hardness shall be entered into a suitable glass or metal container. The water shall contain 0.2 percent (based on the weight of the tape) of an anionic wetting agent. The tape specimens shall be placed into the container and kept beneath the surface of the water for a period of one-half hour without agitation. At the end of this period the specimen shall be centrifugally extracted for 5 minutes in a 17-inch diameter extractor at a speed

Downloaded from http://www.everyspec.com

of 1575 revolutions per minute (rpm) or in any other extractor for a time that will produce an equivalent extraction, and dried in a circulating air oven at a temperature of 200°F. After drying, the specimens shall be pressed using a conventional heated hand iron, care being taken to prevent stretching of tape.

4.3.1.3 Shrinkage measurement. After reaching equilibrium in the standard atmosphere, the length of the specimen shall be measured and the shrinkage computed according to the following formula:

$$\text{Shrinkage, percent} = \frac{\text{Original measurement} - \text{measurement after shrinkage}}{\text{Original measurement}} \times 100$$

Measurement shall be taken to the nearest 0.1 inch and shrinkage shall be reported to the nearest 0.1 percent.

4.3.2 Measurement of lateral curvature.

4.3.2.1 Test specimen. The test specimen shall be a length of tape, full width, measuring a minimum of 40 inches. The specimen shall not be stretched, smoothed or otherwise changed from its original condition prior to testing.

4.3.2.2 Number of determinations. Five specimens shall be tested from each sample unit and averaged.

4.3.2.3 Apparatus. Plexiglass or equal - plexiglass weighing approximately 35 ounces with dimensions of 45 inches by 5 inches by 1/4 inch.

Straight edge - a rigid straight edge measuring 36 inches in length.
Roller - a roller 1 inch in diameter and weighing 1-1/2 pounds.

4.3.2.4 Procedure. The specimens shall be placed flat on a smooth, horizontal flat surface without tension and allowed to reach moisture equilibrium as defined in section 4 of FED-STD-191. After equilibrium is reached a weight shall be placed at one end of the tape. The roller shall be placed on the specimen at the end of the tape where the weight is located. The specimen should be approximately in the center of the roller. The roller shall be rolled along the length of the specimen, care being taken to keep the specimen in the center of the roller and not to exert any pressure on the roller. When the roller has passed the length of the tape, the plexiglass shall then be placed on the specimen for a period of 1 hour. Without moving the plexiglass on the specimen, the straight edge shall be placed on the plexiglass so that both ends of the straight edge are aligned perpendicularly with the outermost edge of the specimen. Determine the highest degree of curvature of the specimen from the straight-edge by measuring to the nearest 1/32 of an inch

Downloaded from http://www.everyspec.com

perpendicularly from the straight edge. Record the highest measurement (see figure 3).

4.3.2.5 Report. One or more of the five specimens having a lateral curvature greater than 1/4 inch shall be reported as a test failure.

5. PREPARATION FOR DELIVERY

5.1 Packaging. Packaging shall be level A, B or Commercial as specified (see 6.2).

5.1.1 Levels A and B. Tape, put up as specified shall be packaged in accordance with the applicable requirements of MIL-W-43334. When tape is put up on 36-yard rolls and in 20 rolls per package, the quantity of the rolls and length of package limitation specified in MIL-W-43334 shall be waived.

5.1.2 Commercial. Tape, put up as specified, shall be packed in accordance with ASTM D 3951.

5.2 Packing. Packing shall be level A, B or Commercial as specified (see 6.2).

5.2.1 Levels A and B. Tape shall be packed in accordance with the applicable requirements of MIL-W-43334.

5.2.2 Commercial packing. The tape packaged as specified in 5.1, shall be packed in accordance with ASTM 3951.

5.3 Marking. In addition to any special marking required by the contract or purchase order, shipments shall be marked in accordance with MIL-W-43334.

5.3.1 Civil agencies. In addition to any special marking required by the contract or purchase order, interior packages and shipping containers shall be marked in accordance with FED-STD-123.

5.3.2 Military requirements. In addition to any special marking required by the contract or purchase order, interior packages and shipping containers shall be in accordance with MIL-W-43334.

5.4 Palletization. When required, palletization shall be in accordance with the applicable requirements of MIL-W-43334.

6. NOTES

6.1 Intended use. The tape is for utilized as bindings in the fabrication of clothing and other textile items. Type I, 1/2 inch and 17/32 inch tapes are utilized as backseam tapes in footwear items.

Downloaded from http://www.everyspec.com

6.2 Ordering data. Purchasers should select the preferred options permitted herein, and include the following information in procurement documents:

(a) Title, number and date of this specification
(b) Type and class required (see 1.2.1)
(c) Color required (see 3.4)
(d) Colorfastness requirements (see 3.4.4)
(e) When class 1, 2, or 3 preshrunk tape is required (see 3.7)
(f) Put-up, when small rolls are specified (see 3.8)
(g) Selection of applicable levels of packaging and packing (see 5.1 and 5.2)
(h) When palletization is required (see 5.4).

6.3 Dye formulation. The tape has been successfully dyed using the following dyes. (see 3.3):

Vat Olive T
Vat Olive Green B, Pr. No. 293 or Vat Olive GGL
Vat Khaki 2G, Pr. No. 122

Shaded with either or both of the following:

Vat Brown R.C.I. No. 1151 or Vat Brown BR, Pr. No. 118
Vat Yellow of suitable fastness

6.4 Standard sample. For access to standard samples, address the procuring office issuing the invitation for bids.

Custodians:

Army - GL
Navy - NU
Air Force - 99

Review activities:

Army - MD
Navy - MC
Air Force - 82
DLA - CT

User activities:

Army - ME, AR
DLA - DM

Civil Agency Coordinating Activities:

GSA - FSS
HHS - HSM
NASA - JFK

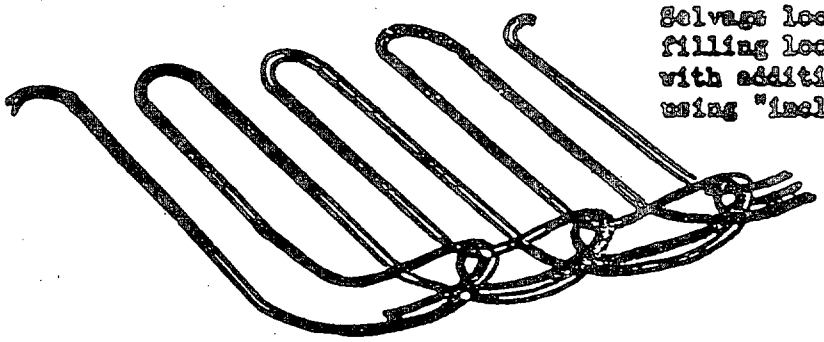
Preparing activity:

Army - GL

Project No. 8315-0318

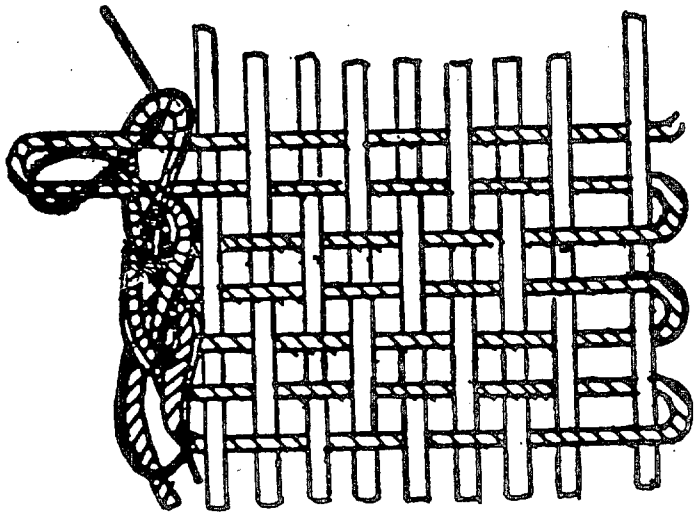
Downloaded from http://www.everyspec.com

Figure 1
Catch-Cord Diagram



Selvage locked by knitting filling loops simultaneously with additional catch thread using "inclined" latch needle.

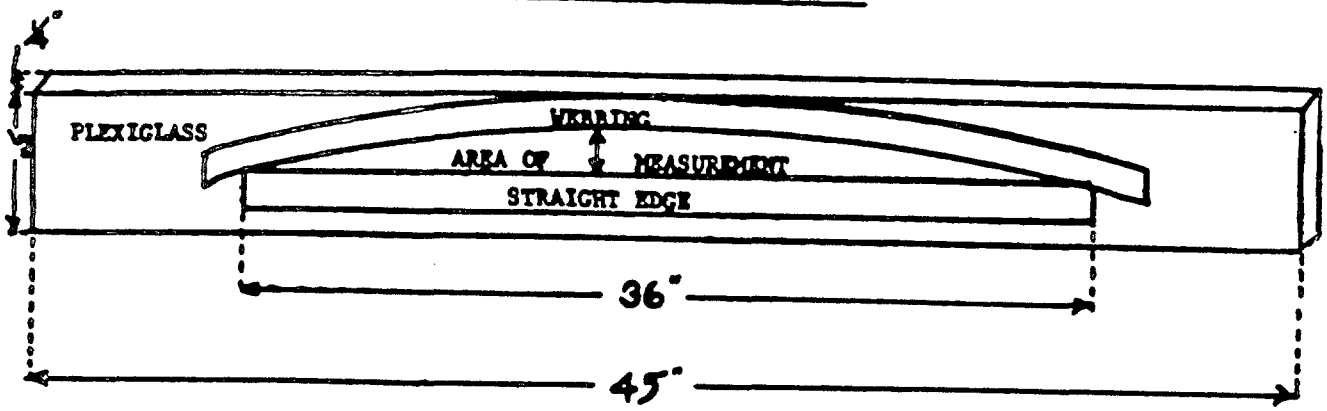
Figure 2
Catch-Cord Diagram



Downloaded from http://www.everyspec.com

Figure 3

Diagram Curvature Measurement



Downloaded from http://www.everyspec.com

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions – Reverse Side)

1. DOCUMENT NUMBER	2. DOCUMENT TITLE
DDD-T-86H	Tape, Textile; Cotton, General Purpose (Unbleached, Bleached, or Dyed)

3a. NAME OF SUBMITTING ORGANIZATION

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

4. TYPE OF ORGANIZATION *(Mark one)*

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

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)*

DD FORM 82 MAR 1426 PREVIOUS EDITION IS OBSOLETE.

NATICK OP, 20 Nov 84