INCH-POUND
A-A-55301A
19 May 2016
SUPERSEDING
A-A-55301
15 November 1996

COMMERCIAL ITEM DESCRIPTION

WEBBING, TEXTILE, TEXTURED OR MULTIFILAMENT NYLON

The General Services Administration has authorized the use of this commercial item description as a replacement for all federal agencies.

1. SCOPE. This document covers textured or multifilament nylon webbing used for individual equipment belts, rifle slings, and load carrying equipment.

2. CLASSIFICATION. (Types I and III may be supplied in alternate construction.

2.1 Types.

Type I - 2-1/4-inches
Type II - 1 1/4-inches
Type III - 1-inch
Type IV - 3/4-inch
Type V - 5/8-inch
Type VI - 1 1/2-inches

3. SALIENT CHARACTERISTICS.

3.1 Description. The yarn for the warp and filling for Types I through VI shall be heat and light resistant, continuous filament textured nylon. The yarn for warp and filling for Type I alternate shall be heat and light resistant multifilament nylon. Type III alternate yarn shall be heat and light resistant with a multifilament warp and filament textured nylon filling.
The face, back, and binder warps of Type I alternate construction shall have a minimum of 2 1/2 turns per inch in the final twist. The textured and multifilament nylon yarns shall not be subjected to any type of bleaching process.

Comments, suggestions, or questions on this document should be addressed to: DLA Troop Support Standardization Team, 700 Robbins Avenue, Philadelphia, PA 19111-5096.
Since contact information can change, you may want to verify the currency of the address information using Acquisition Streamlining and Standardization Information System (ASSIST) online database https://assist.dla.mil.

AMSC N/A FSC 8305

3.2 Physical requirements. The finished webbing shall conform to the physical characteristics as specified and tested in Tables I, Table I-1 and Table II.

TABLE I. Physical requirements and test methods - Types I and III

Characteristic	Requirement				Test method
	Type I	Type I Alternate	Type III	Type III Alternate	
Width, inches	2 1/4 (±1/16)	2 1/4 (±1/16)	1 (±1/16)	1 (±1/16)	ASTM F2203
Thickness, inches	0.125 - 0.150	0.125 - 0.150	0.046 (±0.007)	0.046 (±0.007)	ASTM D1777, Option 2
Weight, oz./lin.yd. (min.)	3.8	3.8	0.50	0.60	ASTM D3776/D3776M, Option D
Stiffness, lbs. per sq. in. (widthwise only) 1/	0.7 – 2.3	0.7 – 2.3	---	---	ASTM D747
Warp ends, full width: - Face, back, and middle warps (min.) - Face and back (min.) - Binder warp (min.) - Stuffer warp (min.)	 202 --- 50 ---	 --- 83 38 304	 --- 101 15 ---	 --- 100 18 ---	Visual
Picks/inch (min.) Picks/inch (shuttleless loom) (min.) 2/	33 64	--- 58	36 72	--- 75	Visual
Breaking strength, lbs. (min.)	---	---	1000	1000	PIA-TM-4108

1/ Use 2-inch by 1-inch specimen, long dimension in filling direction. The specimen shall be bent to a 20 degree angular deflection.
2/ Two (2) picks per shed

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TABLE I-1. Physical requirements and test methods - Types II, IV, V, and VI.

Characteristic	Requirement				Test method
	Type II	Type IV	Type V	Type VI	
Width, inches	1 1/4 (±1/16)	3/4 (±1/16)	5/8 (±1/16)	1 1/2 (±1/16)	ASTM F2203
Thickness, inches	0.075 ±0.007	0.055 - 0.070	0.038 - 0.050	0.046 (± 0.007)	ASTM D1777, Option 2
Weight, oz./lin.yd. (min.)	1.1	0.48	0.32	1.1	ASTM D3776/D3776M, Option D
Warp ends, full width: - Face and back (min.) - Binder warp (min.) - Stuffer warp (min.)	 89 10 ---	 69 8 14	 65 9 ---	 137 30 ---	Visual
Picks/inch (min.) Picks/inch (shuttleless loom) (min.) 1/	23 46	33 66	36 72	--- 80	Visual
Breaking strength, lbs. (min.)	2000	875	625	1500	PIA-TM-4108

1/ Two (2) picks per shed

3.3 Color. The color shall be as specified in the applicable end item specification or in the contract (see 7.4).

3.3.1 Visual color matching. The color and appearance of the finished webbings shall match the standard sample when viewed using AATCC Evaluation Procedure 9, Option A, with sources simulating artificial daylight D75 illuminant with a color temperature of 7500 (± 200) K illumination of 100 (± 20) foot candles, and shall be a good match to the standard sample under a incandescent lamplight at 2856 (± 200) K.

3.3.2 Colorfastness. The finished webbing shall conform to the colorfastness properties as specified and tested in Table II.

TABLE II. Colorfastness requirements and test methods (all types).

Color Evaluation	Laundering (4 cycles) 1/, 2/	Light (after 40 hrs or 170kJ/(m^2nm) @ 420nm) 3/, 4/	Crocking Dry/Wet (min.) 5/, 6/
Tan 499, Dk. Cream 559, Dk. Green 528, Bark Brown 561, and Brown 529	3-4	3-4	3.5
Olive 527	3-4	3	3.5
All other colors	3-4	3-4	3.5

1/ Using AATCC Test Method 61, 1A
2/ Rated using the AATCC Evaluation Procedure 1, Gray Scale for Color Change and AATCC Evaluation Procedure 2, Gray Scale for Staining.
3/ Using AATCC Test Method 16.2, Option 1 or 16.3, Option 3.
4/ Rated using the AATCC Evaluation Procedure 1, Gray Scale for Color Change.
5/ Using AATCC Test Method 8.
6/ Rated using the AATCC Evaluation Procedure 8, AATCC 9-Step Chromatic Transference Scale.

3.4 Dyeing/printing of 4-color webbing. The webbing shall be dyed to a ground shade to match Tan 499 and then it shall be overprinted with the remaining three (3) camouflage colors (Olive 527, Brown 529 and Dark Green 528).

3.5 Dyeing/printing of 5-color webbing. The webbing shall be dyed to a ground shade to match Dark Cream 559 and then it shall be overprinted with the remaining four (4) camouflage colors (Olive 527, Brown 529, Dark Green 528, and Bark Brown 561).

3.6 Pattern execution. The pattern on the printed webbings with widths of 1 1/4-inches or greater (when applicable) shall reproduce the standard sample in respect to design and colors of the respective area/colors. When the standard sample is not referenced for pattern execution, a pattern drawing shall be provided and the pattern shall match that of Drawing 2-1-2592 for respective colors in Operational Camouflage Pattern (OCP) (see 7.4).

3.7 Spectral reflectance (solid colors). The reflectance values for Types with widths of 1 1/4-inches or greater in solid colors shall conform to the requirements listed below in Table III, when tested as specified in 3.7.3.

TABLE III. Spectral reflectance requirements (all types in solid color).

Reflectance Values (percent)				
Wavelength, Nanometers (nm)	Tan 499		Foliage Green 504	
	Min.	Max.	Min.	Max.
600	8	26	8	26
620	8	26	8	26
640	8	30	8	28
660	8	34	10	30
680	12	38	10	34
700	12	40	12	38
720	16	46	16	42
740	22	50	16	46
760	30	50	18	48
780	34	54	18	48
800	36	56	20	50
820	38	58	22	54
840	38	58	24	54
860	40	60	26	56

3.7.1 Spectral reflectance (4 color webbing). The reflectance values for Types with widths of 1 1/4-inches or greater shall conform to the requirements listed below in Table III-1, when tested as specified in 3.7.3.

TABLE III-1. Spectral reflectance requirements (all types with widths of 1 1/4-inches or greater) for four (4) color webbing.

Wavelength, Nanometers (nm)	Tan 499		Olive 527 Brown 529		Dark Green 528	
	Min.	Max.	Min.	Max.	Min.	Max.
600	8	26	10	30	3	12
620	8	26	11	30	3	12
640	8	30	11	32	4	12
660	8	34	12	32	4	13
680	12	38	14	35	4	18
700	12	40	19	40	6	25
720	16	46	22	43	6	27
740	22	50	25	46	10	29
760	30	50	27	48	14	33
780	34	54	28	50	18	36
800	36	56	29	50	20	37
820	38	58	30	51	20	38
840	38	58	32	51	21	39
860	40	60	33	52	21	40

3.7.2 Spectral reflectance (5 color webbing). The reflectance values for Types with widths of 1 1/4-inches or greater shall conform to the requirements listed below in Table III-2, when tested as specified in 3.7.3.

TABLE III-2. Spectral reflectance requirements (all types with widths of 1 1/4-inches or greater) for five (5) color webbing.

Wavelength, Nanometers (nm)	Dark Cream 559		Olive 527 Brown 529		Dark Green 528 Bark Brown 561	
	Min.	Max.	Min.	Max.	Min.	Max.
600	22	44	10	30	3	12
620	24	45	11	30	3	12
640	24	45	11	32	4	12
660	25	45	12	32	4	13
680	28	45	14	35	4	18
700	28	48	19	40	6	25
720	30	52	22	43	6	27
740	32	55	25	46	10	29
760	36	56	27	48	14	33
780	38	57	28	50	18	36
800	40	57	29	50	20	37
820	44	58	30	51	20	38
840	46	59	32	51	21	39
860	48	60	33	52	21	40

3.7.3 Spectral reflectance test. Spectral reflectance data shall be obtained from 600 to 860 nanometers (nm) for all types and classes with widths of 1 1/4-inch or greater in Operational Camouflage Pattern (OCP) and most solids at 20 nm intervals on a spectrophotometer relative to the polytetrafluoroethylene (PTFE) family of compounds, the preferred white standard. Other white reference materials may be used provided they are calibrated to absolute white or vitrolite tiles. The spectral band width shall be less than 20 nm at 860 nm. Reflectance measurements shall be made by either the monochromatic or polychromatic mode of operation. When the polychromatic mode of operation is used, the spectrophotometer shall operate with the specimen diffusely illuminated with the full emission of a continuous source that simulates either CIE Source A or CIE Source D65. Measurements shall be taken on a minimum of two (2) different areas and the data averaged. The specimen shall be measured as a single layer backed with two (2) layers of the same webbing and shade. The specimen shall be viewed at an angle no greater than 10° from normal, with the specular component included. Specimens shall be oriented in different directions during testing. Camouflage materials should be measured with the appropriate aperture size to ensure that only one color is measured at a time. The diameter for standard aperture size used in the color measurement device shall be 1.0 to 1.25-inches for most solid colors and 0.3725-inches for the OCP (always use the largest aperture possible). Photometric accuracy of the spectrophotometer shall be within one percent and wavelength accuracy within 2 nm. Any color having spectral reflectance values falling outside the limits at four (4) or more of the wavelengths specified shall be considered a test failure.

3.8 Weaves.

3.8.1 Type I. The webbing shall be three (3), bound by a binder which weaves three (3) up (face, middle, face) three (3) down (back, middle, back) to form a filling rib effect on both face and back. The middle layer shall weave two (2) ends as one (1) equivalent. (see Figure 1).

3.8.2 Type I - Alternate. The weave shall be as specified in Figure 4.

3.8.3 Type II. The webbing shall be a tubular plain weave bound together by a plain weave binder. (See Figure 5).

3.8.4 Type III and Type V. The webbing shall be a tubular weave bound together by a plain weave binder. See Figure 6.

3.8.5 Type III – Alternate and Type VI. The webbing shall be a tubular plain weave, weaving two (2) ends as one (1) or equivalent bound together by a binder weaving two (2) up and two (2) down, the adjacent binder weaving two (2) down and two (2) up. (see Figure 7).

3.8.6 Type IV. The webbing shall be a tubular plain weave with stuffer bound by a plain weave binder. (see Figure 8).

NOTE: When shuttleless loom construction is used, a nylon catchcord will be incorporated in all types depicted in Figures 2.

3.9 pH. The pH value of the water extract of the dyed webbing shall be no less than 5.0 or more than 8.5 when tested as specified in AATCC Test Method 81.

3.10 Curvature. The finished webbing shall show no more lateral curvature than 1/4- inch within a yard as shown in Figure 3. The test specimen shall be a length of webbing, 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. The curvature shall be tested as follows: The specimens shall be placed flat, on a smooth, horizontal flat surface without tension and allowed to reach moisture equilibrium as specified in ASTM D1776/D1776M. After equilibrium is reached, a weight shall be placed at one end of the webbing. A roller measuring 1-inch in diameter and weighing 1 1/2-pounds shall be placed on the specimen at the end of the webbing 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 webbing, the plexiglass weighting approximately 35-ounces with dimensions of 45-inches by 5-inches by 1/4-inch, shall then be placed on the specimen, the straight edge shall be placed on the specimen for a period of 1 hour. Without moving the plexiglass on the specimen, the straight edge measuring 36-inches in length, 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-inch perpendicularly from the straight edge. Record the highest measure (see Figure 3). Report the average of five determinations from each sample unit.

3.11 Labels. Each roll of finished webbing shall be labeled or ticked for fiber content in accordance with the Rules and Regulations under the Textile Fiber Products Identification Act.

3.12 Workmanship. The finished webbing shall conform to the quality of product established by this document and shall be thoroughly cleaned and all loose thread and foreign matter removed.

4. REGULATORY REQUIREMENTS. Unless otherwise specified 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. Each yard shall be examined for the defects listed in Table IV.

TABLE IV. Visual examination defects.

Material defects: Any hole, cut, or tear; broken or missing yarn; smash; float, mispick, harness skip, or other misweave; hitchback, stripback; open or thin place, crack (warp or filling); knot or slub; loose, slack, or tight yarns; reed mark, wrong draw; abrasion mark, bruise, tender or weak spot; embedded crease or wrinkle; selvage cut, torn, folded, rolled, slack, or tight; filling bar, coarse filling, or mixed filling; spot, stain, streak, or dirty yarn; foreign matter; mottled, cloudy, streaky, or barre; overall uncleanness or soiled; baggy, ridgy, wavy, or unevenly woven; width not within established tolerances. Each defect shall be marked with a 1 1/2-inch long string; the string shall be inserted into the selvage opposite the defect.
Color: Not as specified. Off-shade or uneven shading throughout piece.
Labels: Label missing, incorrect, or illegible. Required information missing from the label. Net length less than indicated on the ticket.
Packaging: Not packaged in accordance with the contract or purchase order.

5.3 Toxicity test. When required (see 7.4), an acute dermal irritation study and a skin sensitization study shall be conducted on laboratory animals. When the results of the studies indicate the thread is not a sensitizer or irritant, a Repeat Insult Patch Test shall be performed in accordance with the Modified Draize Procedure (see 7.2.3). If the toxicity requirement can be demonstrated with historical use data, toxicity testing may not be required (see 7.4).

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

6. PACKAGING

6.1 Packaging. Preservation, packing, and marking are as specified in the contract or order (see 7.4).

7. NOTES

7.1 Sources of Government documents.

7.1.1 Copies of Government documents are available online at http://quicksearch.dla.mil or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.

7.1.1.2 Copies of drawings are available from the U.S. Army Natick Soldier Research Development and Engineering Center, ATTN: RDNS-SEW-EWC, 10 General Greene Avenue Natick, MA 01760-5019.

7.2 Sources for Non-Government Documents.

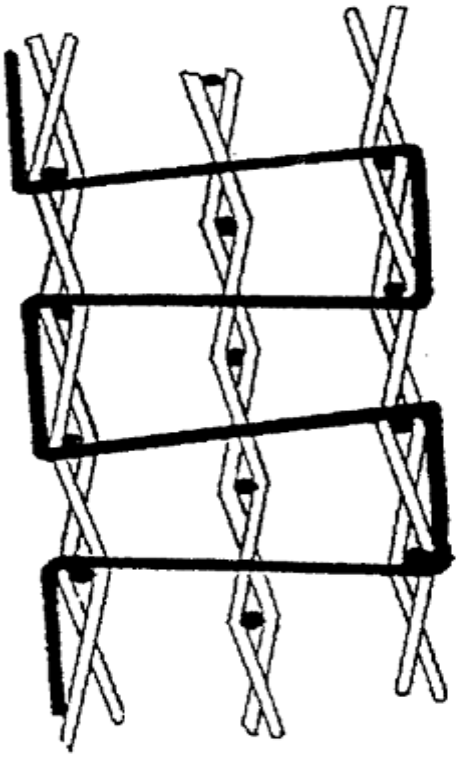
7.2.1 AATCC test methods are available online at http://www.aatcc.org or from the American Association of Textile Chemists and Colorists, P.O. Box 12215, Research Triangle Park, NC 27709-2215.

7.2.2 ASTM Standards are available online at http://www.astm.org or from ASTM INTERNATIONAL, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959.

7.2.3 Modified Draize Procedure: Principles and Methods of Toxicology (fourth edition), A Wallace Hayes (editor), pp 1057 – 1060, 2001 are available online from http://www.taylorandfrancis.com or from Taylor and Francis, 270 Madison Ave, New York, NY 10016.

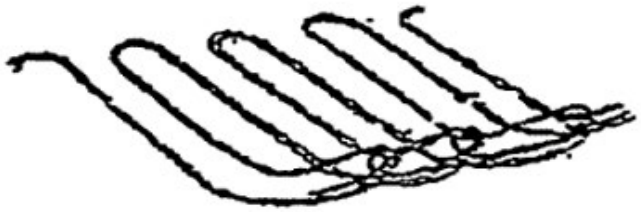
7.2.4 Parachute Industry Association (PIA) test methods are available online at http://www.pia.com or from the Parachute Industry Association, 3833 West Oakton St, Skokie, Il 60076.

7.3 Standard sample. For access to patterns, drawings, standard shade sample of the webbing, address the contracting activity issuing the invitation for bids or request for proposal.



Face and back warp yarns weaving one end as one
Middle warp yarns weaving two ends as one
Binder warp yarns weaving two ends as one

FIGURE 1. Cross section filling.



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

CATCH CORD DIAGRAM

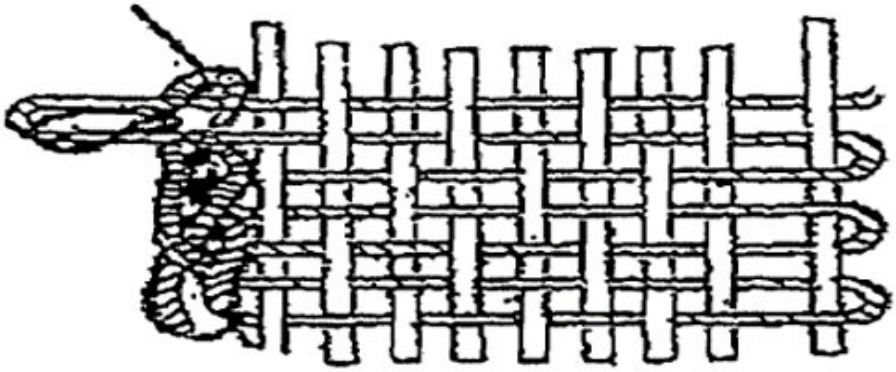


FIGURE 2. Catch cord diagram.

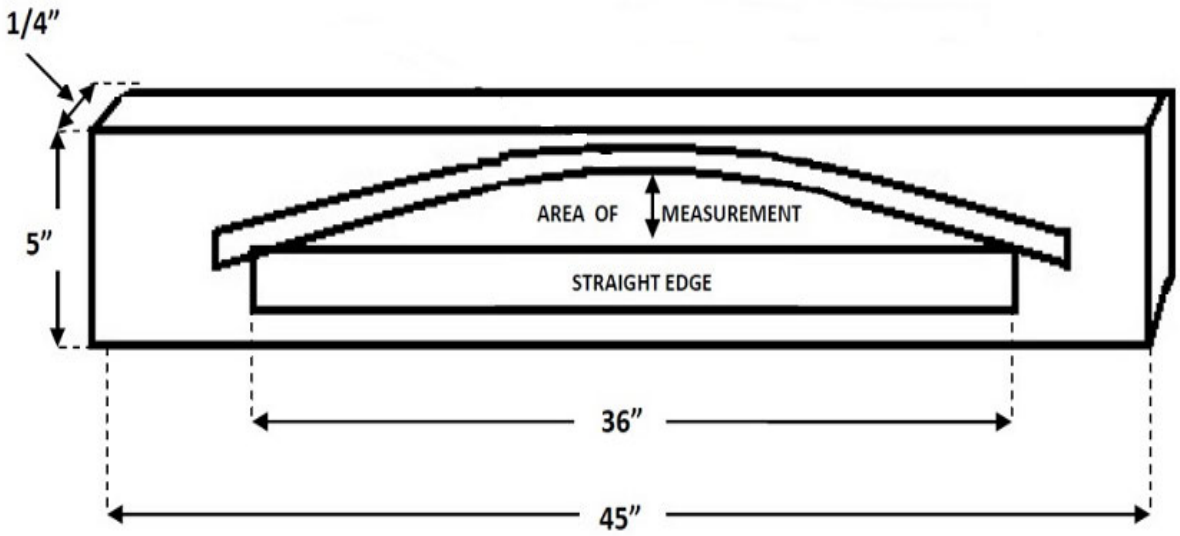
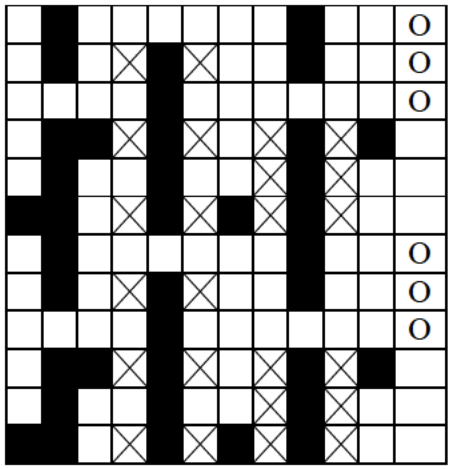
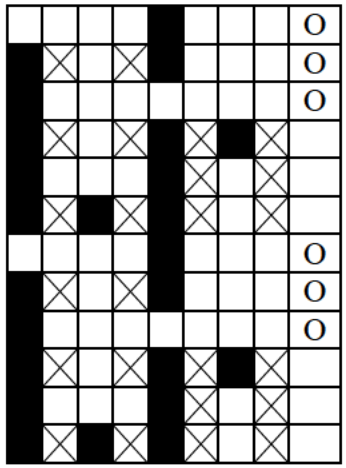


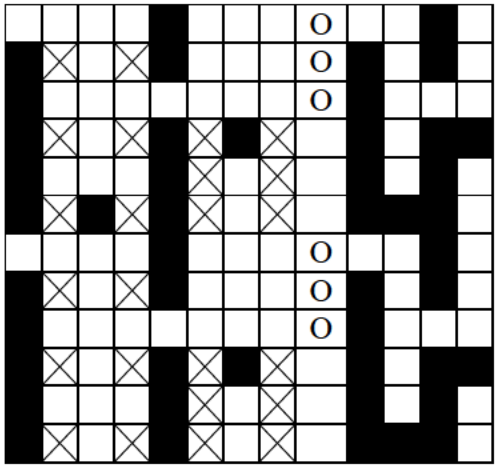
FIGURE 3. Curvature measurement.



EDGE



BODY (One Repeat)



EDGE

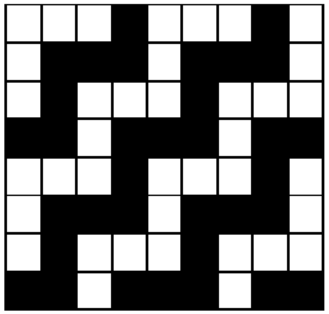
Face warp – weave 1 end as 1

Stuffer warp – weave 4 ends as 1

Binder warp – weave 2 ends as 1

TYPE I – Alternate, 2 1/4-inches

FIGURE 4. Weave diagram.



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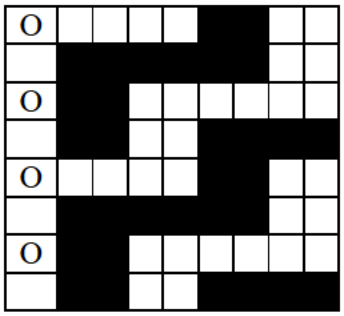
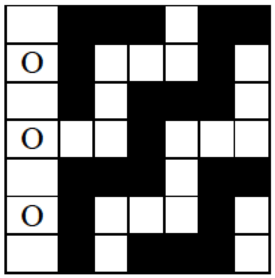


BODY (One Repeat)



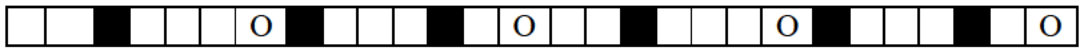
EDGE

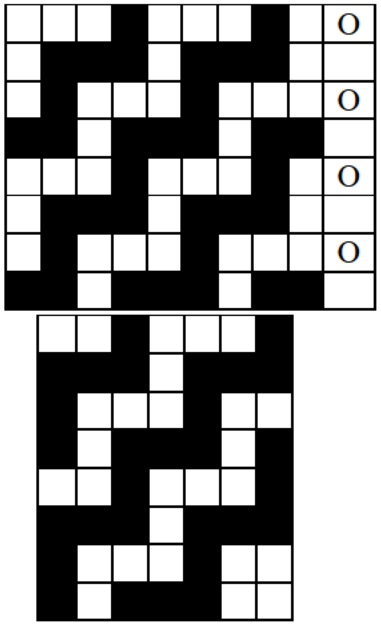
Face warp – weave 1 end as 1

O Binder warp – weave 1 ends as 1

TYPE II – 1 1/4-inches

FIGURE 5. Weave diagram





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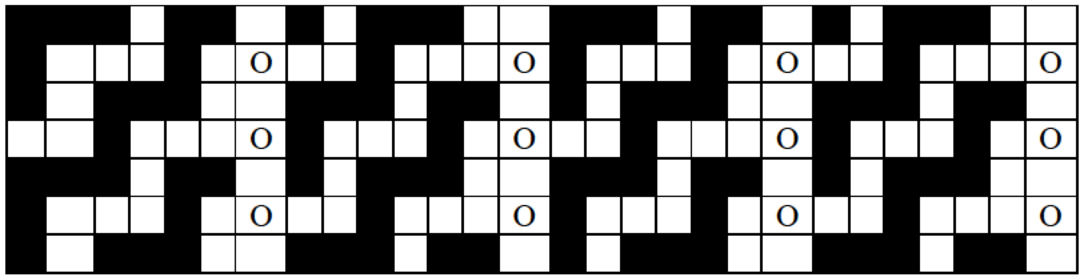


EDGE BODY (One Repeat)

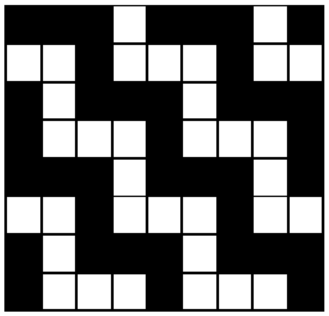
Face Warp – Weave 1 end as 1

O Binder Warp – Weave 1 end as 1

TYPE III – 1-inch

TYPE V – 5/8-inch

FIGURE 6. Weave diagram



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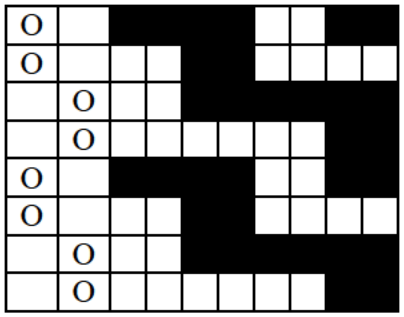

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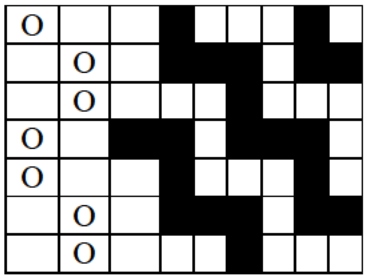


BODY (One Repeat)

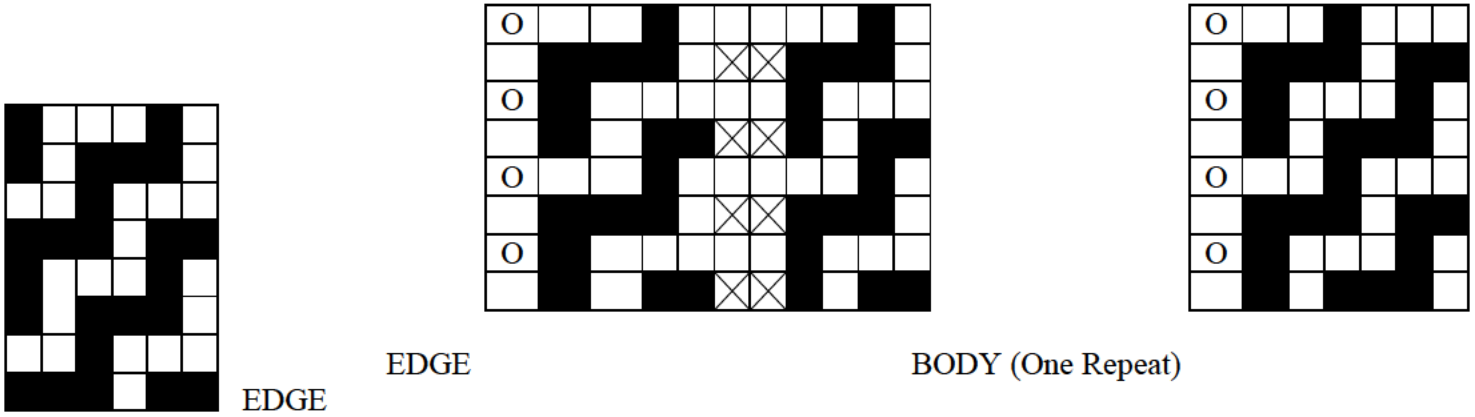
Face warp – weave 1 end as 1

O Binder warp – weave 1 ends as 1

TYPE III – Alternate, 1-inch

TYPE VI – 1 1/2-inches

FIGURE 7. Weave diagram.



Face Warp – weave 1 end as 1

Stuffer warp – weave 3 ends as 1

Binder warp – weave 1 end as 1

TYPE IV – 3/4-inch

FIGURE 8. Weave diagram.

7.4 Ordering data. The contract or order should specify the following:

a. Title, number, and date of this Commercial Item Description (CID)
b. Types required (see 2.1)
c. Color/print required (see 3.3, 3.4 and 3.5)
d. When toxicity testing is required (see 5.3)
e. Product conformance provisions (see 5.1)
f. Packaging requirement (see 6.1)

7. 5 Key words.

Cover, helmet
Equipage
Flag, Parachute
Footwear
Parka
Streamers
Trousers

MILITARY INTERESTS:

Custodian:
Army- GL
Navy- NU
Air Force- 11

Review Activities:
Army- MD
Navy- MC

CIVIL AGENCY COORDINATING ACTIVITY:

GSA-FSS

PREPARING ACTIVITY:
DLA –CT
Agent – Army-GL

Project Number: 8305-2016-004

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 https://assist.dla.mil.