

INCH-POUND

**MIL-DTL-32117
05 February 2003**

DETAILED SPECIFICATION

HELMET COVER, REVERSIBLE, MARPAT™ WOODLAND AND DESERT PATTERN CAMOUFLAGE, MARINE CORPS

This specification is approved for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This document covers the requirements for the helmet cover that is worn over the Marine Corps combat helmet, and the Personnel Armor Systems, Ground Troop (PASGT) helmet.

1.2 Classification. The helmet cover assembly will be of one type and in the following sizes as specified (see 6.2).

1.3 Schedule of sizes. The helmet cover will be constructed in the following sizes (see 6.2).

SCHEDULE OF SIZES

X-Small/Small
Medium/Large
X-Large

Beneficial comments (recommendations, additions, deletions, clarifications) and any pertinent data which may be of use in improving this document should be addressed to: Defense Supply Center Philadelphia, Clothing and Textiles Directorate, Attn: DSCP-COET, 700 Robbins Ave., Philadelphia, PA 19111-5096 by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

FSC 8415

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 documents cited in sections 3 and 4 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

FEDERAL

- A-A-55126 - Fastener Tapes, Hook and Loop, Synthetic
- A-A-50199 - Thread, Poly Core: Cotton-or Polyester-Covered

MILITARY

- MIL-PRF-5038 - Tape, Textile and Webbing, Textile, Reinforcing, Nylon
- MIL-DTL-32075 - Label: For Clothing, Equipage, and Tentage, (General Use)

STANDARDS

FEDERAL

- FED-STD-4 - Glossary of Fabric Imperfections
- FED-STD-595 - Colors Used In Government Procurement.

MILITARY

- MIL-STD-129 - Marking for Shipment and Storage

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Defense Automated Printing Service, Bldg. 4D (DPM-DODSSP), 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.2.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

DRAWINGS

U.S. ARMY SOLDIER AND BIOLOGICAL CHEMICAL COMMAND, NATICK
SOLDIER CENTER

MARPAT Woodland Pattern Green 474
MARPAT Woodland Pattern Khaki 475
MARPAT Woodland Pattern Coyote 476
MARPAT Woodland Pattern Black 477

MARPAT Desert Pattern Urban Tan 478
MARPAT Desert Pattern Light Tan 479
MARPAT Desert Pattern Highland 480
MARPAT Desert Pattern Light Coyote 481

(Copies of drawings are available from the U.S. Army Soldier and Biological Chemical Command, Natick Soldier Center, ATTN: AMSSB-RIP-TS(N), Natick, MA 01760.)

DEPARTMENT OF DEFENSE

DoD Standard Color Card for Sewing Thread

CODE OF FEDERAL REGULATIONS

Title 40, Part 798.4470 (Primary Dermal Irritation)

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Defense Automated Printing Service, Bldg. 4D (DPM-DODSSP), 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.3 Non-Government publications. The following document(s) form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents, which are DoD adopted, are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS are the issues of the documents cited in the solicitation (see 6.2).

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- | | |
|-------------|--|
| ASTM-D-737 | - Air Permeability of Textile Fabrics |
| ASTM-D-1424 | - Strength of Cloth, Tearing: Falling Pendulum Method |
| ASTM-D-2256 | - Tensile Properties of Yarns by the Single-Strand Method |
| ASTM-D-3775 | - Fabric Count of Woven Fabrics |
| ASTM-D-3776 | - Mass Per Unit Area (Weight) of Fabric, Option C |
| ASTM-D-3951 | - Standard Practice for Commercial Packaging |
| ASTM-D-5034 | - Breaking Force and Elongation of Textile Fabrics (Grab Test) |
| ASTM-D-6193 | - Stitches and Seams |
| ASTM-D-6199 | - Quality of Wood Members of Containers and Pallets |

MIL-DTL-32117

(Application for copies of referenced documents should be addressed to the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19426-2959.)

AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS (AATCC)

AATCC-8	- Colorfastness to Crocking: AATCC Crockmeter Method
AATCC-15	- Colorfastness to Perspiration
AATCC-16	- Colorfastness to Light
AATCC-20A	- Fiber Analysis: Quantitative
AATCC-81	- pH of the Water-Extract from Wet Processed Textiles
AATCC-61	- Colorfastness to laundering, Home and Commercial: Accelerated
AATCC-96	- Dimensional Changes in Commercial Laundering of Woven and Knitted Fabrics Except Wool
AATCC Evaluation Procedure 6	- Instrumental Color Measurement
AATCC Evaluation Procedure 9	- Visual Assessment of Color Differences of Textiles

(Copies should 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

ASQC Z1.4	- Sampling Procedures and tables For Inspection by Attributes
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(Applications for copies should be addressed to American Society for Quality Control, 611 East Wisconsin Avenue, Milwaukee, WI 53202.)

(Non-Government standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.)

MISCELLANEOUS

Principle and Methods of Toxicology, A Wallace Hayes (editor), 1989, pages 394-396

(Applications for copies of referenced documents should be addressed to Raven Press, 1185 Avenue of the Americans, New York, NY 10036.)

Marzulli, F. and H. Maibach, "Contact Allergy: Predictive Testing in Humans," Advances in Modern Toxicology, Volume 4, pages 353-372, 1977

(Applications for copies should be addressed to U.S. Army Center for Health Promotion and Preventive Medicine, ATTN: MCHB-DC-TTE, Bldg., E-2100, Aberdeen Proving Grounds, MD 21010-5422.)

2.4 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 First article. When specified (see 6.2), a sample shall be subjected to first article inspection (see 4.2 and 6.3).

3.2 Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs.

3.3. Design. The helmet cover is reversible, and can be worn in both desert and woodland environments. The cover is designed to fit over the Marine Corps combat helmet, and the Personnel Armor System, Ground Troops (PASGT) helmet. See Figures 1 and 2.

3.4 Basic material. The basic material for the reversible helmet cover shall be midweight nylon/cotton twill cloth printed with a desert pattern print on the face side and the woodland pattern print on the back side, and conforming to the requirements specified below. The cloth shall show no toxicity when used as intended and when tested as specified in 4.4 (see 6.2e). The suggested sole source shall be in accordance with 6.5.

3.4.1 Nylon. The nylon tape shall be first quality, high tenacity, semi-dull staple having a nominal cut length of 1-1/2 inches and a round cross-section, with a nominal denier of 2.25 to 2.5. The use of any form of nylon waste is prohibited, such as undrawn fiber, mixtures of deniers, lusters or cross sections, and waste from any stage of fiber production: whether drawn, undrawn, or mixed or garneted fiber. The contractor shall submit the fiber producer's certification that each lot nylon staple used conforms to the requirements specified herein. Testing shall be as specified in paragraph 4.4.2.

3.4.2 Cotton. The cotton shall be carded. Testing shall be as specified in paragraph 4.4.2.

3.4.3 Yarn. The warp and filling yarn shall be singles made from a blend of 50 (\pm 5) percent nylon with the remaining percentage cotton, based on the dry weight of the desized cloth when tested as specified in paragraph 4.4.2.

3.4.4 Weave. The weave shall be a 2/1 left-hand twill.

3.4.5 Fiber and fabric identification. Each roll of finished cloth shall be labeled or ticketed for fiber content in accordance with the Rules and Regulations under the Textile Fiber Products Identification Act. Each roll shall indicate cloth type. Testing shall be as specified in paragraph 4.4.2.

3.4.6 Physical requirements. The cloth shall conform to the requirements in Table I when tested as specified in paragraph 4.4.2.

TABLE I – Physical requirements.

Wt. Per sq. yd. ounces	Yarns per inch minimum		Breaking strength minimum		Tearing strength minimum		Air permeability maximum Cu. ft./min./sq. ft.
	Warp	Filling	Warp Pounds	Filling Pounds	Warp Pounds	Filling Pounds	
7.0 (min.)	86	54	200	125	11	8	25.0

3.4.7 Color. The cloth shall be dyed and printed on the backside of the fabric with the woodland colors. The use of pigments may be allowed. The cloth shall be dyed to a ground shade approximating Khaki 475. The Woodland camouflage pattern shall be obtained by roller or screen-printing using either three or four rollers or screens, as appropriate for the Green 474, Khaki 475, Coyote 476 and Black 477 areas of the pattern.

The cloth shall be dyed and printed on the face side with the desert colors. The cloth shall be dyed and printed with the warp effect side as the face. The cloth shall be dyed to a ground shade approximating Light Tan 479. The desert camouflage pattern shall be obtained by roller or screen-printing using either three or four rollers or screens, as appropriate for the Urban Tan 478, Light Tan 479, Highland 480 and Light Coyote 481 areas of the pattern. Resin bonded pigments are not permitted.

3.4.8 Labile sulfur. The use of dyes and compounds containing sulfur capable of oxidation to sulfuric acid shall be chosen and applied such that the dyed cloth shall contain no more labile sulfur than shown by the standard sample when tested as specified in 4.4.6. When no standard sample is available, the dyed cloth shall show no more than a slight trace of labile sulfur when tested as specified in 4.4.2.

3.4.9 Color matching

3.4.9.1 Visual matching. The color and appearance of the camouflage printed cloth shall match the standard sample when viewed using AATCC Evaluation Procedure 9, Option A, under filtered tungsten lamps that approximate artificial daylight D75 illuminant with a color temperature of 7500 (\pm 200) K with illumination of 100 (\pm 20) foot candles, and shall be a good match to the standard sample under horizon lamplight at 2300 (\pm 200) K.

3.4.9.2 Instrumental color matching. Each color of the camouflage printed cloth shall match the standard sample using AATCC Evaluation Procedure 6. A color difference greater than a $\Delta E_{CMC} = 1.0$ when using a $\Delta E_{CMC} (2:1)$ ratio ($D_{65} / 10^0$) units as compared to the standard sample, shall be basis for rejection.

3.4.10 Colorfastness. The finished camouflage printed cloth shall show fastness to: light (after 40 AATCC standard fading hours or 170 Kilojoules); laundering (after 4 cycles); and

perspiration (acid and alkaline) and crocking. The colorfastness of the cloth shall be equal to or better than the standard sample, or equal to or better than a rating of “4” using the AATCC Gray Scale for Color Change and a rating of “3-4” using the AATCC Gray Scale for Staining for each of the colors, except the Black 477 shall have an equal to or better than a rating of 2-3. The woodland pattern print shall have a colorfastness to crocking rating when using the AATCC Chromatic Transference Scale Rating equal to or better than 3.0 for all colors except Black 477, which shall have a rating not lower than, 1.0 when tested as specified in 4.4.2.

3.4.11 Pattern execution. The pattern shall reproduce the standard sample in respect to design, colors, and registration of the respective areas. The pattern repeat of the camouflage printed finished cloth shall be 36 (± 1.5) inches. Each pattern shall show solid coverage; skitteriness exceeding that shown on the standard sample in any of the printed areas will not be acceptable. When the standard sample is not referenced for pattern execution, a pattern drawing will be provided, and the pattern of the finished cloth shall match that of the drawing.

3.4.12 Spectral reflectance. The desert pattern print finished cloth shall meet the spectral reflectance values (in percent) for the visible/near infrared wavelength range, 700 to 860 nanometers (nm) for the colors specified in Table II, when tested as specified in 4.4.2.1.

TABLE II – Spectral reflectance requirements.

Wavelengths Nanometers	Reflectance values (percent)					
	Light Tan 479		Light Coyote 481 & Highland 480		Urban Tan 478	
	Min.	Max.	Min.	Max.	Min.	Max.
700	38	53	19	41	25	44
720	38	54	20	41	25	45
740	39	55	20	42	25	46
760	40	56	21	42	26	47
780	41	57	21	42	27	48
800	43	58	22	43	28	50
820	45	59	23	45	30	52
840	48	62	24	46	33	55
860	50	65	25	48	36	58

3.4.13 Dimensional stability. The shrinkage or elongation both in warp and filling direction of the finished cloth shall be not greater than 3.5 for individual sample unit and not greater than 3.0 percent for the lot average when tested as specified in 4.4.2.

3.4.14 pH. The pH value of the water extract of the finished cloth shall be no lower than 5.0 or higher than 8.5 when tested as specified in 4.4.2.

3.4.15 Toxicity. The finished cloth shall not present a dermal health hazard when used as intended when tested as specified in 4.4.1.

3.4.16 Ground shade/printed seconds/mill seconds. Ground shade cloth shall be dyed in conformance with the specified basic material and shall meet the physical, mechanical, and

MIL-DTL-32117

dimensional requirements of the respective finished fabric. Printed seconds shall be defined as cloth that has been rejected only for defects pertaining to color, infrared reflectance, or camouflage print patterns, which are cited in the specified basic material requirements. Mill seconds finished firsts may contain slubs, knots (see 4.4.4) and FED-STD-4 for all other fabric defects, which constitute seconds.

3.4.16.1 Disposal of ground shade/printed seconds/mill seconds/rejected helmet covers. Non-usable seconds shall be disposed in one of the following manners:

- 1) Seconds in lengths of 1 yard or less may be disposed by using the contractor's practice.
- 2) Contact the USMC to determine if there is an alternate use for rejected fabric or finished helmet covers.
- 3) If the USMC does not identify any alternate use, the contractor may sell the fabric or helmet covers on the secondary market.

Rejected helmet covers shall be labeled or indelibly marked as "seconds/rejected by USMC".

3.5 Design. The helmet cover is reversible, and can be worn in both desert and woodland environments. The cover is designed to fit over the Marine Corps combat helmet, and the PASGT helmet. See figures 1 and 2.

3.5.1 Tape, nylon. The nylon tape shall conform to Type III, 3/4-inch wide of MIL-PRF-5038. The color of the tape shall be camouflage green 483.

3.5.2 Fastener tape, hook and pile. The hook and pile fastener tape for the attachment straps shall be 3/4-inch wide and conform to Type II, Class 1 of A-A-55126. The color of the tape shall be camouflage green 483.

3.5.3 Thread. The thread for the needle and bobbin (looper) shall be commercial size Ticket No. 50 (Tex size 36 to 50) with a minimum breaking strength of 3.2 lbs. when tested as specified. As an alternate, Ticket No. 70 (Tex size 31 to 35) with a minimum breaking strength of 2.6 pounds may be used as the bobbin (looper) thread. The thread shall conform to A-A-50199. All thread shall be non-staining and show good colorfastness to laundering when tested according to AATCC-61, Test 3A (4 cycles). The thread color shall be Camouflage Green 483 (approximating color chip 34094 of FED-STD-595) and Khaki P-1 (C.A. 66019 or approximating color chip 30277 of FED-STD-595).

3.5 Labels. Each helmet cover shall have the following label, which shall be printed or sewn onto the facing band of the helmet cover:

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HELMET COVER, REVERSIBLE, MARINE CORPS
MARPAT™ WOODLAND/DESERT CAMOUFLAGE PATTERN
CONTRACT#                               SIZE:           NSN:
CONTRACTOR:

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3.6 Label/tag. Each item shall be individually bar-coded with the type VII, class 17 label/tag of MIL-DTL-32075. This label/tag shall be located so that it is completely visible on each item and causes no damage to the item.

3.7 Patterns. Patterns, which provide a 1/2-inch allowance for seaming side lining to crown, 3/8-inch allowance for seaming brim to sides, and 1/4-inch seam allowance for all other seams, will be furnished to the contractor. The pattern list in Table III is provided to insure that the pattern set is complete.

TABLE III – Pattern parts.

Material	Nomenclature	Pattern Abbreviation	Cut Parts
Basic Material	Side Crown	CROWN_SIDE	2
	Center Crown	CROWN_CENTER	1
	Front Facing	FACING_FRONT	2
	Back Facing	FACING_BACK	2

3.8 Configuration. The following specifics are needed in the reversible helmet cover to provide uniform appearance, comfort and durability in combat and operations other than war. End item construction and appearance shall conform to the requirements of this document and the finished dimensions as specified in Table VIII, and Figures 1 and 2 to maintain item configuration and compliance to end item and component performance tests (See 4.4).

3.8.1 Seaming. Seaming shall be consistent, exhibit a uniform appearance and shall conform to ASTM D-6193 stitch types listed below. All seams shall be flat with no protruding seam allowance or raw edges to create irritation or discomfort. To maintain durability and functionality the seams shall be sewn with 10-14 stitches per inch for all outside visible stitching. Overedge or pre-hemming shall be 6-10 stitches per inch. Material edges must not ravel. Raw edges may be turned-in, or turned-under to prevent raveling. The buttonholes in the cover crown shall be straight-cut, tacked at each end with a minimum of four crossover stitches, with a finished cut length of 3/4-inch. The buttonholes in the cover facing shall be straight cut or eyelet-end tapered bar type buttonholes, with a finished length of 1-1/4 to 1-3/8 inches. Seaming shall be as specified in Table IV.

TABLE IV – Seaming.

Seam placement	Seam type	Gage	Stitch type
Join side crown to center crown	LSc-2	1/2-inch	301
Join facing to crown	SSc-2	3/8-inch	301
Join front facing to back facing	Ssa-1	3/8-inch	301
Attach loop fastener tape to nylon tape on both sides	Box-X		301
Attach nylon tape to facing	Box-X		301

3.9 Figures. Figures are furnished for information purposes only. When inconsistencies exist between the written specification and the figures, the written specification shall control.

3.10 Workmanship. The finished cover shall conform to the quality of product established by this document, and the occurrence of defects shall not exceed the specified quality levels.

4. VERIFICATION

4.1 Classification of inspections. The inspection requirements specified herein are classified as follows:

- a. First article inspection (see 4.2).
- b. Conformance inspection (see 4.3).

4.2 First article inspection. When specified (see 6.2), a sample shall be subjected to first article inspection in accordance with 4.4.

4.3 Conformance inspection. Sampling for inspection shall be performed in accordance with ANZI/ASQC Z1.4, as defined by contract, except where otherwise indicated.

4.4 Component and end item inspections. In accordance with 4.1, components and end item shall be tested in accordance with all the requirements of referenced documents unless otherwise excluded, amended, modified, or qualified in this document or applicable procurement documents. The government reserves the right to inspect all components and end items to determine conformance to requirements.

4.4.1 Toxicity assessment. The contractor must furnish information, which certifies that the finished product is composed of materials, which have been safely used commercially or provide sufficient toxicity data to show compatibility with prolonged, direct skin contact. A certificate of conformance is required. The Government reserves the right to inspect such items to determine the validity of the certification.

4.4.2 Material and end item testing. Material and end item testing shall be performed in accordance with the test methods specified in Table V. The cloth shall be tested for the characteristics listed in Table V. All tests reports shall contain the individual values utilized in expressing the final results. For material testing the sample unit shall be five continuous yards full width of the finished cloth, for all physical and chemical tests. The lot shall be considered unacceptable if one or more sample units fail to meet any requirements specified.

TABLE V – Material Testing.

Characteristics	Requirement Paragraph	Test Method
Material Nylon Identification Luster Denier Absence of nylon waste	3.4.1	<u>1/</u> <u>1/</u> <u>1/</u> <u>1/</u> <u>1/</u>

TABLE V – Material Testing. (con't)

Characteristics	Requirement Paragraph	Test Method
Cotton Identification	3.4.2	<u>1/</u>
Fiber Content Cotton content Nylon content	3.4.3	AATCC 20A <u>1/</u> , <u>2/</u> AATCC 20A <u>1/</u>
Weave	3.4.4	Visual <u>1/</u>
Weight	3.4.6	ASTM D-3776
Break Strength	3.4.6	ASTM D-5034
Tear Strength	3.4.6	ASTM D-3775
Yarns per Inch	3.4.6	<u>1/</u>
Air Permeability	3.4.6	ASTM D-737
Presence of Labile Sulfur	3.4.8	<u>1/</u>
Visual Color Matching	3.4.9.1	AATCC Evaluation Procedure 6
Instrumental Color Matching	3.4.9.2	AATCC Evaluation Procedure 9
Colorfastness Light (after 40 hrs or 170 kilojoules)	3.4.10	AATCC 16 A or E
Laundering (after 4 cycles)	3.4.10	AATCC 61 test 1A
Crocking	3.4.10	AATCC 8
Perspiration (acid and alkaline)	3.4.10	AATCC 15
Spectral Reflectance	3.4.12	4.4.2.1
Dimensional Stability	3.4.13	AATCC 96 Test Vic. A <u>3/</u>
pH	3.4.14	AATCC 81
Toxicity	3.4.15	4.4.2.3

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

2/ The cotton content shall be calculated as follows:

$$\text{Cotton content, percent} = R/S \times 100$$

R = Weight of residual fibers

S = Weight of dry desized specimen

3/ Except that 1993 AATCC Standard Reference Detergent (non-phosphate) without optical brightener shall be used.

4.4.2.1 Spectral reflectance. Spectral reflectance data shall be determined on the face side and shall be obtained from 700 to 860 nanometers (nm) at 20 nm intervals on a spectrophotometer relative to the barium sulfate, 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 may 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, backed with six layers of the same fabric and shade. Measurements shall be taken on a minimum of two different areas and the data averaged. The

MIL-DTL-32117

measured areas should be taken at least 6 inches away from the selvage. 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 in diameter. Any color having spectral reflectance values outside the limits at four or more of the wavelengths specified shall be considered a test failure.

4.4.2.2 Color matching.

4.4.2.2.1 Visual color matching. The color and appearance of the cloth shall match the standard sample when viewed using AATCC Evaluation Procedure 9, Option A, under filtered tungsten lamps that approximate artificial daylight D75 illuminant with a color temperature of 7500 (± 200) K with illumination of 100 (± 20) foot candles, and shall be a good match to the standard sample under horizon lamplight at 2300 (± 200) K.

4.4.2.2.2 Instrumental color matching. Each color of the camouflage printed and finished cloth shall match the standard sample using AATCC Evaluation Procedure 6. A color difference greater than a $\Delta E_{CMC} = 1.0$ when using a $\Delta E_{CMC} (2:1)$ ratio ($D_{65} / 10^0$) units as compared to the standard sample, shall be basis for rejection.

4.4.3 Finished dimensions. The helmet cover shall conform to the dimensions listed in Table VI.

TABLE VI – Finished Dimensions.

Size	½ Circumference 1/	Height 2/	Tolerance
X-Small/Small	16-3/4 inches	9-1/4 inches	+ 1/2, -0
Medium/Large	17-1/2 inches	9-1/2 inches	+ 1/2, -0
X-Large	18-1/4 inches	10-1/2 inches	+ 1/2, - 0

1/ The circumference measurements shall be taken from the back center of the center crown panel along the contour of the helmet to the front center of the center crown.

(See Figures 1 and 2.)

2/ The height measurement shall be taken from the top mid point of the center crown to the midpoint of the side crown bottom edge. (See Figures 1 and 2.)

4.4.4 End item material examination. The reversible helmet covers shall be examined for the defects listed below. All fabric defects shall be scored in accordance with Table VII, which are clearly noticeable at normal viewing distance (3 feet), or known to and effect serviceability and appearance of the garment. Fabric defects are defined in Section I of FED-STD-4.

TABLE VII – Material Visual Examination.

Examination	Defect
Material	Hole, cut, tear, smash, burn, exposed drill hole, run, thin place, dye streak, color not as specified, misweave 1/. Knots greater than Sears Scale Level D.

TABLE VII – Material Visual Examination (con't)

Examination	Defect
Material (con't)	Slubs greater than Sears Scale Level E. Fabric used not as specified.
Latent Material Defect	Any latent material defect found in the garment; such as; slub, hole or shade variation within parts or between parts, color/dye, streaks, spot and stains.
Shade	Shade does not meet approved shade samples, which fall within the shade band of the standard sample. Shade variation within a part or between parts <u>2</u> /.

1/ As defined in FED-STD-4 Glossary of Fabric Imperfections.

2/ Parts suspected of being off shade shall be examined at a distance of 3 feet against a background of the other parts and colors of the garment. When the shade difference is discernable under these examination conditions, it shall be scored as a shade part.

4.4.5 End item visual examination. The reversible helmet cover shall be examined for the defects listed in Table VIII.

TABLE VIII – End Item Visual Examination

Examination	Defect
Material and workmanship	Component part of helmet cover omitted, distorted, full, tight, or twisted; any part of helmet cover caught in any unrelated stitching. Seam: puckered, distorted, pleated, wavy, twisted, irregular or open, loose or tight stitch tension, broken or missing thread or stitch, needle chew, visible mend, edge or raised stitching sewn too close to edge resulting in damage to cloth, seam allowance not as specified, visible raw edge-affecting appearance or serviceability. Hook and loop tape not attached to helmet cover as specified. Buttonholes missing, or not length specified. Helmet cover distorted; or helmet cover not symmetrical affecting fit. Unwanted permanent fold, pleat, or crease in fabric affecting appearance or serviceability. Crown or sides twisted, stretched or distorted, puckered, or pleated.
Cleanness	Spot, strain, excessive thread ends not trimmed or removed, shade stamp marking on outside; odor, affecting appearance or serviceability.

TABLE VIII – End Item Visual Examination (con’t)

Examination	Defect
Labels	Omitted, incorrect, illegible, not printed or sewn where specified; bar-codes omitted, not readable by scanner; human-readable interpretation (HRI) omitted or illegible; bar code not visible on folded, packaged item; bar code attachment causes damage to the item.
Packaging	Any helmet cover not packaged in accordance with the contract or purchase order.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be a specified in the contract or order (see 6.2). When actual packaging of materiel is to be performed by DoD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Point’s packaging activity within the Military Department or Defense Agency, or within the Military Department’s System Command. Packaging data retrieval is available from the managing Military Department or Defense Agency’s automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. The reversible helmet cover is for wear by military personnel of the United States Marine Corps for use in garrison and combat missions.

6.2 Acquisition requirements. Acquisition documents must specify the following:

- a. Title, number, and date of this specification.
- b. Types, classes and sizes required (see 1.2).
- c. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.2.1 and 2.3).
- d. When first article is required (see 3.1, 4.2 and 6.3).
- e. Approval is required prior to purchase of this fabric (3.4).
- f. Packaging requirements (see 5.1).

6.3 First article. When a first article is required, it will be inspected and approved under the appropriate provisions of FAR 52.209. The first article should be a preproduction sample. The contracting officer should specify the appropriate type of first article and the number of units to be furnished. The contracting officer should include specific instructions in all acquisition instruments regarding arrangements for selection, inspection, and approval of the first article.

MIL-DTL-32117

6.4 Recycled material. It is encouraged that recycled material be used when practical as long as it meets the requirements of this document (see 3.2).

6.5 Fabric defect scales. Fabric defect replica kits are available from:

Sears Roebuck and Company
Department 817 (ATTN: BSC 23-29)
Sears Tower Chicago IL 60684

6.6 Approved cloth source. The only Marine Corp approved source for the cloth is:

Bradford Dyeing Association
P.O. Box 539
Westerly, RI 02891

6.7 Subject term (key word) listing.

Uniform
Clothing
Desert
Utility

Custodians:
Navy - MC

Preparing activity:
DLA - CT

Project Number
8415-0242

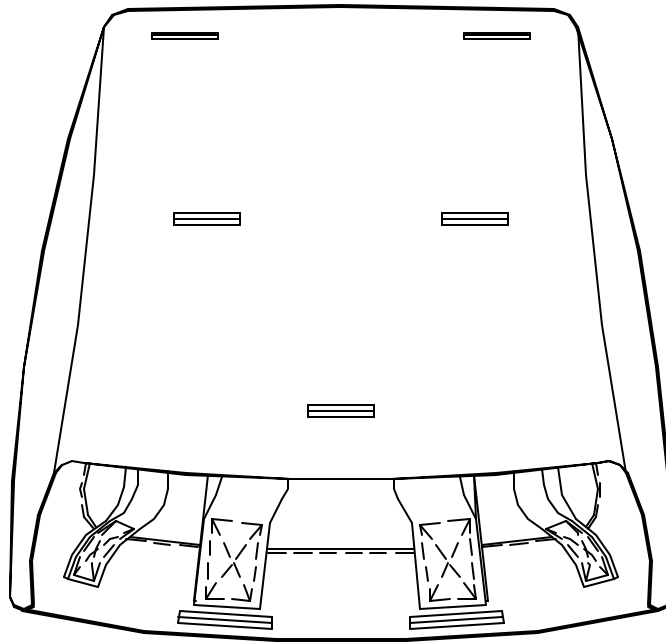
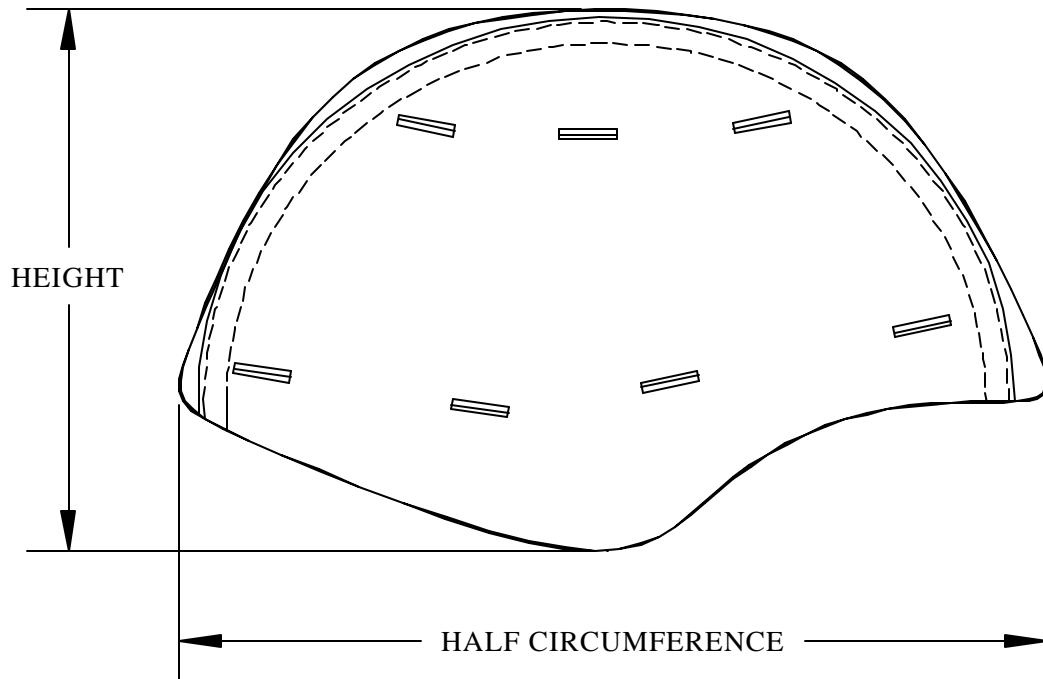


Figure 1. Cover, Ground Troop-Parachutists Helmet, Outside View

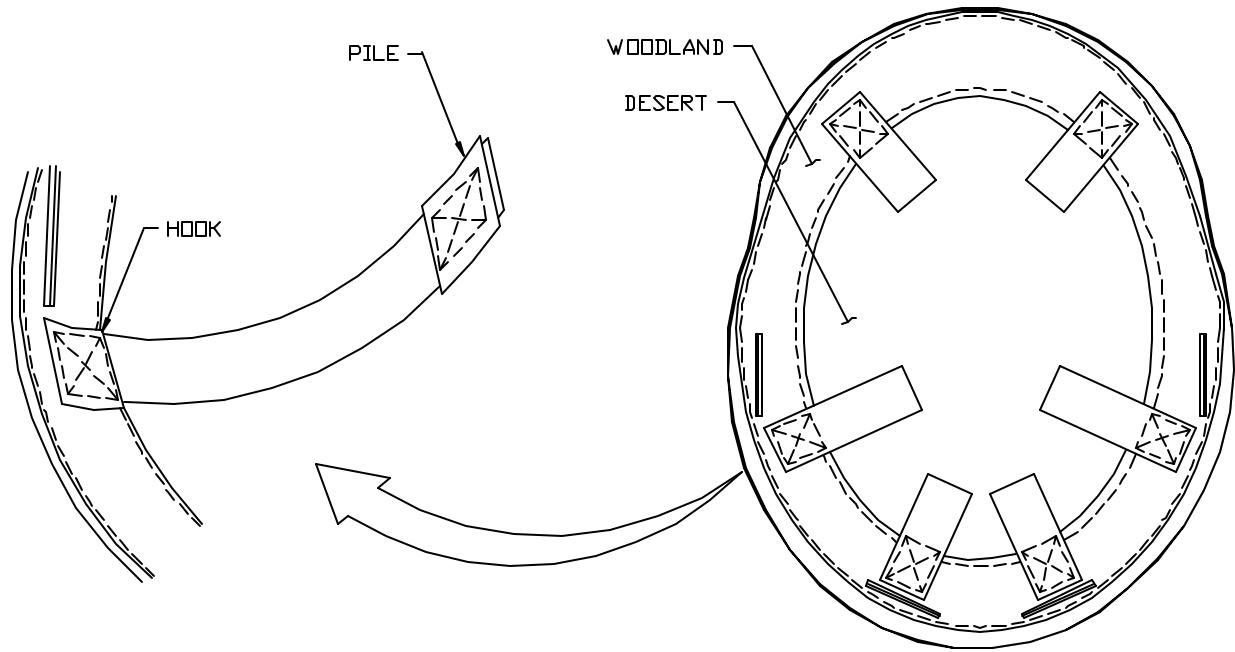


Figure 2. Cover, Ground Troop-Parachutists Helmet, Inside View

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7, and send to preparing activity.
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I RECOMMEND A CHANGE:

1. DOCUMENT NUMBER

MIL-DTL-32117

2. DOCUMENT DATE (YYYYMMDD)

2003 February 05

3. DOCUMENT TITLE **Helmet Cover, Reversible, Marpat™ Woodland and Desert Pattern Camouflage, Marine Corps**

4. NATURE OF CHANGE *(Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)*

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME *(Last, First, Middle Initial)*

b. ORGANIZATION

c. ADDRESS *(Include Zip Code)*

d. TELEPHONE *(Include Area Code)*
(1) Commercial
(2) AUTOVON
(if applicable)

7. DATE SUBMITTED
(YYYYMMDD)

8. PREPARING ACTIVITY

a. NAME Defense Supply Center Philadelphia
DSCP-COET

b. TELEPHONE *Include Area Code)*
(1) Commercial 215-737-2444
(2) AUTOVON 444-2444

c. ADDRESS *(Include Zip Code)*
700 Robbins Ave.
Philadelphia, PA 19111

IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:
Defense Standardization Program Office (DLSC-LM)
8725 John J. Kingman road, Suite 2533 Ft. Belvoir, VA 22060-2533
Telephone (703) 767-6888 AUTOVON 427-6888