INCH-POUND
MIL-DTL-32160
05 May 2004

DETAIL SPECIFICATION

COVER, REVERSIBLE, ADVANCED COMBAT HELMET

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 reversible helmet cover that is worn over the Advanced Combat Helmet (ACH).

1.2 Classification. The reversible helmet cover will be one type in the following classes as specified in 6.2.

Class 1 – Without Communications Flap
Class 2 – With Communications Flap

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

SCHEDULE OF SIZES
Small/Medium
Large/Extra-Large

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 solicitation or contract (see 6.2).

Comments, suggestions, or questions on this document should be address to: Defense Supply Center Philadelphia, Clothing and Textiles Directorate, Attn: DSCP-COET (Bldg 6), 700 Robbins Ave., Philadelphia, PA 19111-5092 or emailed to james.heiman@dla.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST online database at www.dodssp.daps.mil .

FEDERAL SPECIFICATIONS

V-T-295 - Thread, Nylon

COMMERCIAL ITEM DESCRIPTIONS

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

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-C-44031 - Cloth, Camouflage Pattern: Woodland, Cotton and Nylon
MIL-C-44034 - Cloth, Twill, Camouflage Pattern, Cotton and Nylon for Desert Uniform
MIL-DTL-32072 - Thread, Polyester
MIL-DTL-32075 - Label: For Clothing, Equipage, and Tentage, (General Use)

(Copies of documents are available online at http://assist.daps.dla.mil/quicksearch/ or www.dodssp.daps.mil or from the Standardization Documents Order Desk, 700 Robbins Avenue, Building 4D, 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 or contract.

DRAWINGS

U.S. ARMY RESEARCH, DEVELOPMENT AND ENGINEERING COMMAND, NATICK SOLDIER CENTER

2-1-1516 - 4 Color Woodland Pattern
2-1-2240 - 3 Color Desert Pattern

(Copies of drawings, publications, and other Government documents required by contractors in connection with specific acquisition functions should be obtained from the contracting activity.)

2.3 Non-Government standards and other publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents are those cited in the solicitation or contract (see 6.2).

AMERICAN SOCIETY FOR QUALITY

ASQC Z1.4 - Sampling Procedures and Tables for Inspection by Attributes

(Copies of documents are available online at www.asq.org or from the American Society for Quality Control, 611 East Wisconsin Avenue, Milwaukee, WI 53202.)

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D-6193 - Test Method for the Standard Practice for Stitches and Seams

(Copies of documents are available on line at www.astm.org or from 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 - Technical Manual

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

(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.)

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 requirements of this document 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 Advanced Combat Helmet (ACH). The cover provides the helmet with signature reduction in the visible and near infrared spectral ranges, which provides against detection by visual observation or through passive night vision devices. The cover also provides noise reduction (softening noise if the helmet strikes an object). The cover contains buttonholes that allow for the attachment of indigenous plant material and other camouflage enhancing aids. The Class 2 cover has a communications flap in the rear. The communications flap is used to store cables from the headset-microphone that is sometimes used with the helmet. Figure 1 is an illustration of the communications flap to supplement the information in the patterns.

3.3.1 Basic material. The basic cloth for the reversible camouflage cover shall be 50%/50% nylon/cotton blend twill as specified in MIL-C-44031, Class 1 for the woodland side and MIL-C-44034, Class 3 for the desert side, unless otherwise specified in this document. The cloth shall be desert pattern on the face side and woodland pattern on the reverse or back (see 6.5).

3.3.1.1 Pattern execution. The four color woodland camouflage shall be in accordance with drawing number 2-1-1516 and accurately match the Light Green 354, Dark Green 355, Brown 356 and Black 357 shades on one fabric side. The three-color desert pattern shall be in accordance with drawing number 2-1-2240 and accurately match Light Tan 492, Light Brown 493 and Light Khaki 494 on the opposite fabric side.

3.3.1.2 Spectral reflectance. The woodland pattern print finished cloth shall meet the spectral reflectance values (in percent) for the visible/near infrared wavelength range, 600 to 860 nanometers (nm) for the colors specified in Table I, when tested as specified in 4.4.6. 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 I, when tested as specified in 4.4.6 (see 6.5).

TABLE I - Spectral reflectance.

Infrared Reflectance Requirements (Woodland)								
Wavelength (nanometers)	Black 357		Light Green 354		Dark Green 355		Brown 356	
	Min	Max	Min	Max	Min	Max	Min	Max
600	--	10	8	20	3	10	3	9
620	--	10	8	20	3	10	3	9
640	--	10	8	20	3	10	3	9
660	--	10	8	20	3	12	3	12
680	--	10	10	22	3	14	3	14
700	--	10	12	33	5	18	4	18
720	--	10	16	45	7	18	4	20
740	--	10	20	50	10	20	4	24
760	--	10	24	55	14	30	6	24
780	--	10	32	60	20	38	6	30
800	--	10	36	60	24	42	8	30
820	--	10	38	66	28	48	8	36
840	--	10	38	68	34	54	8	40
860	--	10	40	70	40	60	8	48

Infrared Reflectance Requirements (Desert)						
Wavelength (nanometers)	Light Tan 492		Light Brown 493		Light Khaki 494	
	Min	Max	Min	Max	Min	Max
700	34	53	19	41	25	44
720	34	54	20	41	25	45
740	36	55	20	42	25	46
760	38	56	21	42	26	47
780	40	57	21	42	27	48
800	40	58	22	43	28	50
820	43	59	23	45	30	52
840	44	62	24	46	33	55
860	46	65	25	48	36	58

3.3.1.3 Colorfastness. The finished camouflage printed cloth shall show fastness to light (after 40 AATCC standard fading hours or 170 Kilojoules); laundering (after 3 cycles); and perspiration (acid and alkaline) and crocking. For lightfastness and perspiration, the colorfastness of the cloth shall be equal to or better than the standard sample, or equal to or better than a rating of “3-4” 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 357 which shall have an equal to or better than a rating of “2-3”. For laundering, the colorfastness of the cloth shall be equal to or better than the standard sample or equal to or better than a rating of “3-4” on the AATCC Gray scale for color change and equal to or better than the standard sample or equal to or better than a rating of “2-3” using the AATCC Gray scale for staining. Only the stain on the nylon and cotton fibers of the color transfer shall be evaluated for stain. The woodland pattern print shall have a colorfastness to crocking rating when using the AATCC Chromatic Transference Scale Rating equal to or better than 2.0 for all colors except Black 357, which shall have a rating not lower than 1.0. The desert pattern print shall have a colorfastness to crocking rating when using the AATCC Chromatic Transference Scale Rating equal to or better than 3.5 for all colors. Colorfastness shall be tested in accordance with 4.4.5.

3.3.2 Fastener tape, hook and loop. The hook and loop fastener tape for the retaining tabs and communications flap shall be 5/8-inch wide and conform to Type II, Class 1 of A-A-55126. The color of the tape shall be Camouflage Green 483 and Light Tan 492.

3.3.3 Thread. The thread shall conform to either A-A-50199, Type I or Type II size 50/2 for the needle and looper (bobbin) or size B of V-T-295, Type I or II, Class A, Thread Nylon or MIL-DTL-32072, Type I or II, Class 1, Thread Polyester. As an alternative for looper (bobbin) thread size 70/2 or size AA may be used. The buttonhole thread shall be size 50/2 of A-A-50199, Type I or II or Size B of V-T-295, Type I or II, Class A or size B for both camouflage (woodland and desert) sides. 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 and Light Tan 492 and white.

3.4 Construction

3.4.1 Stitches and seams. All the stitching and seam types shall conform to ASTM D-6193 and the stitch and seam types listed in Table II. Each row of stitching shall be straight and parallel to the seam. The thread tension shall be maintained so that there shall not be any loose or tight stitching and the lock shall be embedded in the materials sewn together. No seam or component shall be twisted, puckered, or pleated and no part of the helmet cover shall be caught in an unrelated operation or seam. All material shall be clean finished. The edges shall be turned in, turned under, or surged. Seams shall be sewn such that there are no raw edges, run-offs, or open seams. All seams shall start and finish evenly. To maintain durability and functionality the seams shall be sewn with 10-14 stitches per inch for all outside visible stitching. Overedging shall be 16-18 stitches per inch. The edge and topstitching shall be uniformly gauged. Stitch gauge (the distance from stitch to edge of fabric) shall be a minimum of 1/16-inch for the hook and loop fastener tape and the label. The stitch gauge for all other edge stitching shall be a minimum of 1/8-inch.

3.4.2 Manufacturing requirements. Unless otherwise specified, the helmet cover shall be manufactured by and with the use of the requirements specified in Table II.

TABLE II – Construction.

Operation	Seam Type	Stitch Type
Overall general stitching, edge stitching 1/	SSa-1	301
Side Crowns (2) to center crown 1/	LSc-2	301 or 401
Front facing to back facing 1/	LSc-2	301 or 401
Outside edge facing (serging) 1/	EFd-1	502, 504, 505
Facing to cover unit, stitched with overedging on desert side 1/ a. facing seam edge (serging) b. topstitching on seam	LSq-2: SSa-1 topstitch	 502, 504, 505, 301
For tabs, join hook/loop side by side, and then fold in half lengthwise 2/ Stitch tabs to facing so that each side of the tab straddles the facing. 4/	SSa-1 with topstitching 3/ or LSa-1 with topstitching 3/ Bartack full width of tab	301 301 301

TABLE II – Construction. - Continued

Operation	Seam Type	Stitch Type
Buttonhole 1/		
a. Facing	5/	301
b. Crown/side crown	5/	301
Label if sewn 6/	LSbj-1 (Box)	301
Communications Flap Facing to Center Crown 1/		
a. 1-7/8 inch x 2-7/8 inch finished main opening	SSc	301
Communications Flap to Center Crown 1/		
a. 4 inch flap	EFb	301
b. Tuck top portion of flap to 2-1/2 inch width	--	--
c. Attach flap 7/	LSbj-1	301
Communications Flap loop to communications flap 1/	LSbj-1	301
Communications Flap hook to Crown/Communications Flap Facing 1/	LSbj-1	301

1/ Using tan thread on desert camouflage side and green thread on woodland camouflage side.
2/ Use green thread.
3/ Topstitch sides of hook and loop rectangle.
4/ Using coordinating thread, i.e. light tan if light tan hook and loop is used and camouflage green thread is camouflage green hook and loop is used.
5/ Buttonhole shall be stitched with no empty gaps kept to a minimum and no fraying. Stitches shall be lockstitched.
6/ Using white thread on the label side and green thread on the woodland side. Stitch close to label edge on all four sides.
7/ Topstitch flap at 2-1/4-inch finished width 2-1/4 inch down from top. Place small bartack or backstitch reinforcement at end of topstitch. Finish with boxstitch (2-3/8 inch x 1/2-inch) on top portion of facing using 301 stitch.

3.4.3 Figure. Figure 1 is furnished for information purposes only. When inconsistencies exist between the written specification and the figure, the written specification shall govern.

3.4.4 Buttonholes. The buttonholes in the cover shall be straight-cut, tacked at each end with a minimum of four crossover stitches. There shall be three lengths of buttonholes on the cover. There shall be a 1-inch buttonhole with a finished cut length of 3/4-inch (± 1/16-inch), a 1-1/4 inch buttonhole with a finished cut length of 1 inch (± 1/16-inch) and a 1-1/2 inch buttonhole with a finished cut length of 1-1/4 inch (+ 1/16-inch). The patterns show the finished cut length of the buttonholes. The buttonholes shall be clean-cut and correctly positioned with the stitching securely caught in the fabric. The ends of the buttonholes shall be tacked on each end with a minimum of four crossover stitches. Buttonholes shall have a bite of no less than 1/16 inch and shall have a minimum of 52 stitches for the 1-inch buttonhole, 68 stitches for the 1-1/4 inch buttonhole, and 78 stitches for the 1-1/2 inch buttonhole.

3.4.5 Use of automated apparel equipment. Automated apparel equipment may be used to perform any operation, providing that the seam and stitch type are as specified and the finished

component conforms to the required configuration. When a government furnished shaper pattern is forwarded, the component shall conform to that pattern.

3.4.5.1 Thread ends. Unless otherwise specified all thread ends shall be trimmed to a length of not more than 1/4-inch.

3.4.5.2 Fusing of ends of tape. All ends of tape shall be fused. The apparatus used to fuse the tape ends shall capable of providing sufficient heat to provide a smooth edge. The cut ends of the tape yarns shall be fused together.

3.4.6 Hook and Loop Tape Placement.

3.4.6.1 Communications Flap Hook and Loop Tape Placement. Hook and loop tape is required on the communications flap, crown, and communications flap facing for Class 2 helmet covers. The patterns show placement of the tape. Two pieces of loop, each 1-3/4-inch long, are required on the communications flap. A light tan piece is placed on desert side and a camouflage green piece is placed on the woodland side. One piece of hook, 1-3/4-inch long, camouflage green in color, is placed on the crown on the woodland side. Another piece of hook, 1-3/4-inch long, light tan in color, is required on the communications facing on the desert side.

3.4.6.2 Retaining Tab Hook and Loop Tape Placement. Hook and loop tape is required for the seven retaining tabs located on the facing. The color shall be either camouflage green 483 or light tan 492. The facing pattern indicates placement for the retaining tabs. Three tabs are located along each of the two facings. The seventh tab is located at the center back where the two facings join.

3.4.7 Labels. Each helmet cover shall have a label sewn or printed to the back of the facing on the desert side. The sewn label shall be white with black printing in accordance with MIL-DTL-32075, Type VI, Class 4. As an alternate a stamped label can be used in accordance with MIL-DTL-32075, Type IV, Class 4. The printed label shall be legible. The label shall provide the item nomenclature, contract number, national stock number (NSN), size, and contractor's name.

3.4.7.1 Barcode label. Each helmet cover shall be individually bar-coded with a hanging tag label in accordance with MIL-DTL-32075, Type VIII, Class 17. The bar coding element shall be the 13 digit national stock number (NSN). There shall be a 12 digit Universal Product Code (UPC) number assigned for the NSNs by the Government. The initials "UPC" must appear beneath the Universal Product Code (UPC) code. The label shall be located so that it is completely visible on the item when it is folded and/or packaged as specified and shall cause no damage to the item.

3.4.8 Repairs. Repairs such as mends, darns, or patches are not allowed to be made to the cover.

3.4.9 Patterns. The government will furnish a complete set of patterns. The government pattern shall not be altered in any way and shall be used to create the contractor's working pattern. Minor modifications are permitted to the contractor's working pattern where necessary when using automatic equipment or production processes. These modifications shall not alter the appearance, serviceability or dimensional requirements cited in this document. The patterns provide for a 3/8-inch seam allowance for all joining seams, except double lapped seams which have 5/8-inch seam allowance.

3.4.9.1 List of pattern parts. The pattern lists in Tables IIIa and IIIb are provided to ensure that the pattern set is complete.

TABLE IIIa. List of pattern parts for Class 1 Cover (Without Communications Flap).

Pattern Abbreviation (Small/Medium) (ACHRV_WOCF)	Pattern Abbreviation (Large/Extra-Large) (ACHRV_WOCF)	Nomenclature	Cut Number
CRNWOCF_SM	CRNWOCF_LX	Crown without internal cutout for Communication Flap	1
SIDE_SM	SIDE_LX	Side crown	2
FACING_SM	FACING_LX	Facing	2
TABRVHK_AS	TABRVHK_AS	Reversible Retaining Tab (Hook)	7
TABRVLP_AS	TABRVLP_AS	Reversible Retaining Tab (Loop)	7
TAB_TMP_AS	TAB_TMP_AS	Tab Template	-

Table IIIb. List of pattern parts for Class 2 Cover (With Communications Flap).

Pattern Abbreviation (Small/Medium) (ACHRV_WCF)	Pattern Abbreviation (Large/Extra-Large) (ACHRV_WCF)	Nomenclature	Cut Number
CRNWCF_SM	CRNWCF_LX	Crown with internal cutout for Communication Flap	1
SIDE_SM	SIDE_LX	Side Crown	2
FACING_SM	FACING_LX	Facing	2
TABRVHK_AS	TABRVHK_AS	Reversible Retaining Tab (Hook)	7
TABRVLP_AS	TABRVLP_AS	Reversible Retaining Tab (Loop)	7
CMFLP_SM	CMFLP_LX	Communications Flap	1
CMFLPFC_SM	CMFLPFC_LX	Communications Flap Facing	1
CMFLPHK_AS	CMFLPHK_AS	Communications Flap Hook	2
CMFLPLP_AS	CMFLPLP_AS	Communications Flap Loop	2
TAB_TMP_AS	TAB_TMP_AS	Tab Template	-

3.5 Finished measurements. The finished measurements shall conform to Table IV when measured in accordance with 4.4.4.

TABLE IV - Finished measurements for helmet cover (inches).

Cover Size	Circumference (Tolerance)	Height (Tolerance)
Small/Medium	17 (± 1/4)	9-1/2 (± 1/4)
Large/Extra Large	18-1/8 (± 1/4)	10-1/8 (± 1/4)

3.6 Workmanship. The finished cover shall conform to the quality of product established by this specification and the occurrence of defects shall not exceed the applicable acceptable quality levels.

4. VERIFICATION

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

1. First article inspection (see 4.2)
2. Conformance inspection (see 4.3)

4.2 First article inspection. When a first article is required (see 6.3), it shall be examined for the defects specified in 4.4.3 and 4.4.4. Failure of any test or inspection shall be cause for rejection of the first article.

4.3 Conformance inspection. Unless otherwise specified, sampling for inspection shall be performed in accordance with ANZI/ASQC Z1.4. The lot size shall be expressed in units of helmet covers. The sample unit shall be one helmet cover.

4.3.1 Component and material inspection. Components and materials shall be inspected in accordance will all the requirements of referenced documents unless otherwise excluded, amended, modified, or qualified in this specification or applicable contract.

4.4 Component and end item inspection. In accordance with 4.1, components and end items 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 In-process inspection. Inspection of the sub-assemblies shall be made to ascertain that construction details, which cannot be examined in the finished product, are in accordance with specified requirements. The government reserves the right to exclude from consideration for acceptance any material or service for which in-process inspection has indicated non-conformance.

4.4.2 Examination of the end item. Examination of the end item shall be in accordance with 4.4.3 and 4.4.4.

4.4.3 End item visual examination. The end item shall be examined for the defects listed in Table V.

TABLE V - End item visual defects.

Examination	Defect	Classification	
		Major	Minor
Cloth	Any hole, cut, or tear	101	
	Any broken or missing yarns or multiple floats	102	
	Any mend, darn, or patch	103	
	Any needle chew	104	
	Any run, thin place, dye streak, misweave, knot or slub affecting appearance or serviceability.		201
	Any permanent fold, pleat, or crease affecting appearance or serviceability.		202
	Not as specified	105	
Components and assembly	Any component caught in any unrelated operation of stitching (not otherwise classified herein)	106	
	Any component part omitted or not attached as specified (not otherwise classified herein)	107	
	Any exposed drill hole	108	

TABLE V - End item visual defects. - Continued

Examination	Defect	Classification	
		Major	Minor
Fastener tape	Omitted, not specified type or color	109	
	Any hole, cut or tear	110	
	Hooks crushed affecting closure	111	
	Not as specified	112	
Seams and stitching:			
Open seams	Up to and including 1/2-inch		203
	More than 1/2-inch	113	
	NOTE: A seam shall be classified as an open seam when one or more stitches joining a seam are broken, or when two or more consecutive skipped or runoff stitches occur.		
Raw edges (except where required or otherwise classified herein)	More than1/4-inch when securely caught in stitching		204
	NOTE: Raw edges not securely caught in stitching shall be classified as open seams.		
Seam and stitch type	Wrong seam or stitch type	114	
	Seam pleated or excessively puckered, distorted, pleated, wavy, or twisted, clearly noticeable		205
Stitch tension	Tension loose, resulting in loose bobbin or top thread		206
	Tension excessively tight, resulting in puckering of material		207
Stitches per inch (all types of stitching)	One stitch less than minimum specified		208
	Two or more stitches less than minimum specified	115	
	One or more stitches in excess of maximum specified		209
	NOTE: Variation in the number of stitches per inch caused by operator speeding up the machine and pulling the material in order to sew over heavy places, or in turning corners shall be classified as follows: - Within the minor defect classification – no defect - Within the major defect classification – minor defect		
Rows of stitching	Any row omitted	116	
	Topstitching sewn too close to edge resulting in damage to cloth.	117	
Thread breaks, skipped stitches or run-offs	Overstitched less than 3/4-inch in each direction beyond the defective stitching area. NOTE: On all types of stitching, thread breaks or two or more consecutive skipped or run-off stitches not overstitched shall be classified as open seams.		210

TABLE V - End item visual defects. - Continued

Examination	Defect	Classification	
		Major	Minor
Stitching ends (on type 301 stitching)	Ends of stitching not secured as specified (except when caught in other stitching or turned under in a hem)		211
Buttonholes	On cover crown		
	- Up to two omitted		212
	- Three or more omitted	118	
	On cover facing		
	- One or more omitted	119	
	Stitches not securely caught in fabric, causing stitches to pull away from fabric	120	
	One or more broken stitches or two or more skipped stitches		213
	Tack on one or both ends omitted		214
	Uncut		215
	Not specified type		216
Shade	Shade variation within a part or between parts.	121	
	Thread/cloth color not as specified.	122	
Cleanness	Spot, stain, excessive thread ends not trimmed or removed, odor, affecting appearance or serviceability.	123	
Label	Omitted, incorrect, illegible, not as specified, or not attached where specified;		217
	Attachment causes damage to the item.	124	
	Ends of material not seared	125	
	Searing forms sharp edges.		218
	Color not as specified.		219
Barcode	Omitted or not readable by scanner		220
	Human readable interpretation (HRI) omitted		221
	Not visible on folded, packaged item.		222
	Causes damage to the end item	126	

4.4.4 End item dimensional examination. The end items shall be examined for conformance to all dimensions specified in Table IV. The measurements of the helmet cover shall be taken with the cover folded in half and laid flat with the bottom edges even. The circumferential measurements shall be taken from the center back facing seam along the contour of the helmet to the center front facing seam. The height measurement shall be taken from the top mid point of the center crown to the midpoint of the side-facing seam. Any dimension not within the specified tolerance shall be classified as a defect. The lot size shall be expressed in units of helmet covers.

4.4.5 Colorfastness. The finished camouflage printed cloth shall meet the requirements of 3.3.1.3 when tested in accordance with Table VI.

Table VI. Colorfastness.

Characteristics	Test Method
Light (after 40 hours or 170 kilojoules)	AATCC 16 A or E
Laundering (after 3 cycles)	AATCC 61 test 3A
Crocking	AATCC 8
Perspiration (acid and alkaline)	AATCC 15

4.4.6 Spectral reflectance. When measuring the spectral reflectance of reversible printed Desert/Woodland fabrics the following procedure shall be followed. Spectral reflectance data for the Desert Camouflage colors shall be determined on the face side and shall be obtained from 700 to 860 nanometers (nm) at 20 nm intervals, and on the reverse side from 600 to 860 nanometers (nm) at 20 nm intervals for the Woodland Camouflage colors, on a spectro-photometer relative to a barium sulfate standard, the preferred white standard. Other white reference materials may be used provided they are calibrated to absolute white, e.g. halon, 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 continuous source that simulates either CIE source A or CIE source D65. When measuring the Desert colors, a spot should be selected that has Light Green 354 on the reverse, backed with 3 layers of the same Desert color each having the Light Green 354 color on it's reverse side. When measuring the Woodland colors, a spot should be selected that has Light Tan 492 on the reverse, backed with 3 layers of the same Woodland color each having the Light Tan 492 on it's reverse side. Measurements shall be taken on a minimum of two different areas and the data averaged. The 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 1.0 to 1.25 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.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as 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 covers are intended for camouflaging the Advanced Combat Helmet in both the woodland and desert environments.

6.2 Acquisition requirements. Acquisition documents should specify the following:

a. Title, number and date of this specification.
b. Issue of the ASSIST to be cited in the solicitation and, if required, the specific issue of individual documents referenced (see 2.2.1 and 2.3).
c. Classes and sizes required (see 1.2 and 1.3).
d. When first article inspection is required, (see 3.1), the item will be tested and should be a first article sample. The contracting officer should include specific instructions in acquisition documents regarding arrangement for examinations, quantity, and testing and approval.

e. Packaging requirements (see 5.1).

6.3 First article. When a first article is required, it should be inspected and approved under the appropriate provisions of FAR 52.209-4. The first article should be a pre-production 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 acquisitions documents regarding arrangements for selection, inspection, and approval of the first article.

6.4 Acceptance criteria. Acceptance criteria should be as specified in the contract or purchase order.

6.5 Suggested sources of supply. A suggested source or equal for the reversible material is:

Bradford Dyeing Association, Inc. (Bradford Fabrics, Inc.)
P.O. Box 539
Westerly, RI 02891
(401)377-2231

Article number CTG19241 50%/50% NyCo Twill Reversible Vat 3-Color Day Desert/Pigment Woodland.

6.6 National Stock Numbers:

8415-01-515-4671 – Small/Medium (Without Communications Flap)
8415-01-515-4674 - Large/Extra-Large (Without Communications Flap)
8415-01-515-4662 - Small/Medium (With Communications Flap)
8415-01-515-4663 - Large/Extra-Large (With Communications Flap)

6.7 Subject term (key word) listing.

Helmet
Cover
Camouflage

MILITARY INTERESTS:

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

Preparing activity:
DLA-CT

(Project 8415-0255)

Review activities:
Army – MD

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 www.dodssp.daps.mil.

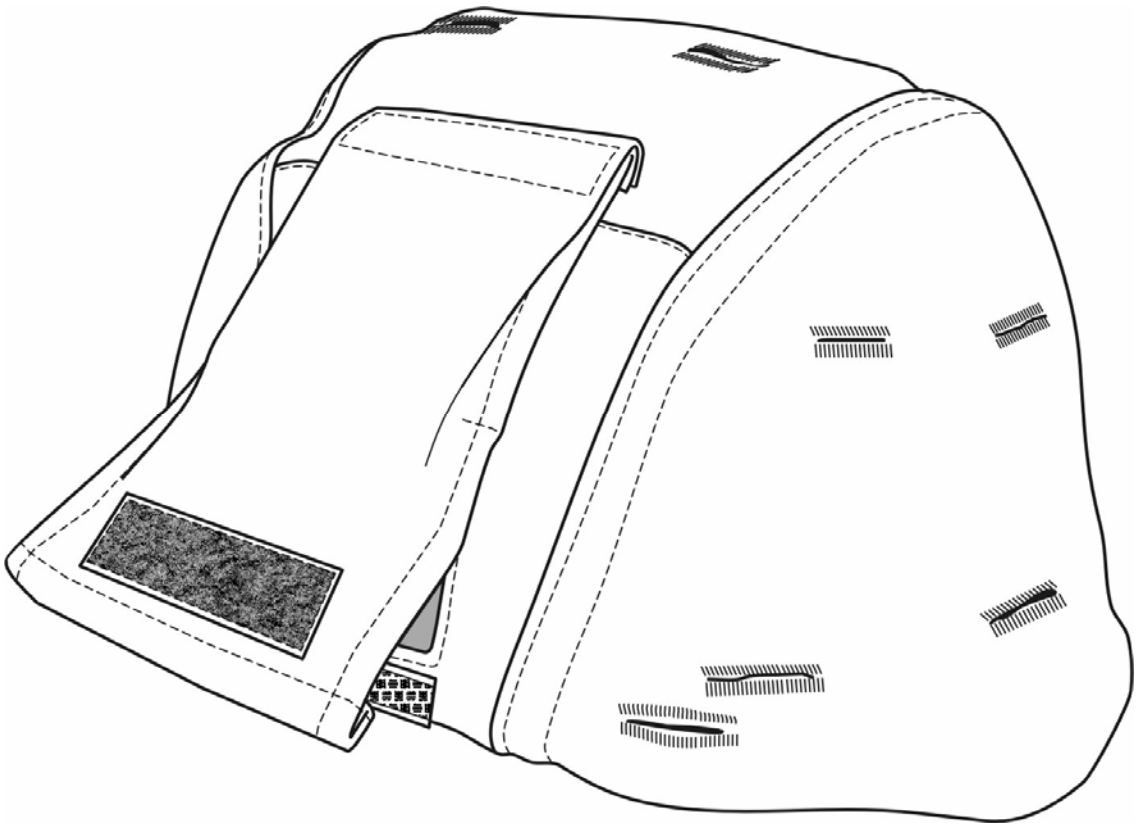

Figure 1
Cover, Reversible, Advanced Combat Helmet