INCH-POUND
GL/PD-08-81-B
26 APRIL 2011
SUPERSEDING
GL/PD-08-81-A
5 October 2010

PURCHASE DESCRIPTION

GLOVES, COMBAT, ARMY

This purchase description is approved for use by the all Departments and Agencies of the Department of Defense (DoD).

1. SCOPE

1.1 SCOPE. This purchase description covers the requirements for a combat glove that provides maximum dexterity, tactility, flexibility, and flame and cut protection. The combat glove is intended to be worn by Army personnel.

1.2. CLASSIFICATION. The glove will be available in one type in six sizes:

1.2.1 Sizing. The glove sizing will be in accordance with the patterns.

Sizes

Extra-Small Small Medium Large Extra-Large Extra Extra-Large

NOTE: The above sizes may be abbreviated as XS, S, M, L, XL, and XXL.

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3, 4, or 5 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 of documents cited in sections 3, 4, or 5 of this specification, whether or not they are listed.

Comments, suggestions, or questions on this document should be addressed to: Department of the Army, Natick Soldier Research, Development and Engineering Center, Kansas St., Natick MA 01760. ATTN: RDNS-WPW-C.

FSC 8415

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 cited in the solicitation or contract.

COMMERCIAL ITEM DESCRIPTIONS

A-A-55119 Glove Inserts, Cold Weather
A-A-55195 Thread, Para-aramid, Spun, Intermediate Modulus
A-A-55126 Fastener Tapes, Hook and Loop, Synthetic

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-DTL-32075 - Label: For Clothing, Equipage, and Tentage, (General Use)
MIL-W-5664 - Webbing, Textile, Elastic

(Copies of these documents are available online at https://assist.daps.dla.mil/quicksearch/ or from the Standardization Document 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 of these documents are those cited in the solicitation or contract.

ENVIRONMENTAL PROTECTION AGENCY

Regulations for the Enforcement of the Federal Insecticide, Fungicide and Rodenticide Act (40 CFR Part 162)

(Copies are available online @ http://www.epa.gov/pesticides or from the Environmental Protection Agency, 1200 Pennsylvania Avenue, N.W., Washington, DC 20460.)

FEDERAL ACQUISITION REGULATIONS (FAR)

52.209-4 – First Article Approval – Government Testing

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

2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS (AATCC)

AATCC Test Method 20 - Fiber Analysis: Qualitative
AATCC Evaluation Procedure 9, Visual Assessment of Color Difference in Textiles, Option A

(Copies 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 22709-2215.)

AMERICAN SOCIETY FOR QUALITY (ASQ)

ANSI/ASQ Z1.4 - Sampling Procedures and Tables for Inspection of Attributes

(Copies are available online at http://www.asq.org or from the American Society for Quality, 600 North Plankinton Avenue, Milwaukee, WI 53203.)

ASTM INTERNATIONAL

ASTM D 1814 - Standard Test Method for Measuring Thickness of Leather Units
ASTM D 2096 - Standard Test Method for Colorfastness and Transfer of Color in the Washing of Leather
ASTM D 2209 - Standard Test Method for Tensile Strength of Leather
ASTM D 2322 - Standard Test Method for Resistance of Shoe Upper Leather to Artificial Perspiration
ASTM D 2821 - Standard Test Method for Measuring the Relative Stiffness of Leather by Means of a Torsional Wire Apparatus
ASTM D 3575 - Standard Test Method for Flexible Cellular Materials made from Olefin Polymers
ASTM D 3776 - Standard Test Method for Mass Per Unit Area (Weight) of Fabric
ASTM D 3787 - Standard Test Method for Bursting Strength of Textiles - Constant-Rate-of-Transverse (CRT) Ball burst test
ASTM D 4075 - Standard Test Method for Stitch Tear Strength of Leather, Double Hole
ASTM D 6076 - Standard Test Method for Shrinkage Temperature of Leather
ASTM D 6413 - Standard Test Method for Flame Resistance of Textiles (Vertical Test)
ASTM F 1790 - Standard Test Method for Measuring Cut Resistance of Materials used in Protective Clothing

(Copies of documents are available online at http://www.astm.org or from the ASTM INTERNATIONAL, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959.)

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 1971-07 Standard on Protective Ensemble for Structural Fire Fighting and Proximity Fire Fighting

NFPA 1971 Section 8.38 - Glove Hand Function Tests.
NFPA 1971 Section 8.6 - Test Method for Heat and Thermal Shrinkage Resistance

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

PARACHUTE INDUSTRY ASSOCIATION (PIA)

PIA Test Method 4108 - Strength and Elongation, Breaking; Textile Webbing, Tape and Braided Items
PIA Test Method 6016 - Strength and Elongation Breakage of Cordage; Non-Spliced Specimen Method

(Copies of documents are available online at http://www.pia.com or the Parachute Industry Association, 3833 West Oakton St., Skokie, IL 60076

OTHER PUBLICATIONS

Repeat Insult Patch Test - Modified Draize Procedure Principles and Methods of Toxicology, (fourth edition), 2001, A Wallace Hayes (editor), pp 1057 – 1060, 2001.

(Copies are available online at http://www.taylorandfrancis.com/uk or from the Taylor and Francis, 325 Chestnut St., Suite 800, Philadelphia, PA 19106.)

2.4 Order of precedence. Unless otherwise noted herein or in the contract, 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 in accordance with 4.2.

3.2 Standard sample. The finished gloves shall match the standard sample for shade and appearance, and shall, unless otherwise indicated, 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 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.

3.4 Materials.

3.4.1 Basic shell material. The basic shell material shall be simplex or interlock knitted cloth consisting of a yarn blend of 96 percent para-aramid and 4 percent conductive anti-stat fiber. The color for the knit cloths shall be Foliage Green 504 unless otherwise specified in the contract or solicitation and shall meet the requirements in Table I when tested as specified in 4.3.5.

3.4.1.1 Palm patch inner and welt material. The palm patch inner and welt material shall be simplex or interlock knitted cloth consisting of 100 percent meta-aramid fiber and it shall be Foliage Green 504 unless otherwise specified in the contract or solicitation and shall meet the requirements in Table I when tested as specified in 4.3.5.

TABLE I. Material requirements

CHARACTERISTIC	**REQUIREMENT**	
	Basic shell material	Palm patch inner and welt material
Fiber identification	Para-aramid/conductive fiber	Meta-aramid
Weight, oz/sq yd	10.0 - 11.0	6.5-7.5
Flame resistance, maximum After flame, seconds Char length, inches	 2.5 2.0	 2.5 2.0
Fabric cut resistance, grams minimum	400	---
Burst strength, pounds minimum	198	---
Color (Visible materials)	Foliage Green 504 1/	Foliage Green 504 1/

1/ Or color as specified in the contract or solicitation.

3.4.2 Leather. The leather shall be drum-dyed, struck through from grain to flesh. The leather shall be soft and pliable. Application of a finish to the grain surface shall be prohibited. If necessary, the flesh side of the leather shall be dry buffed and shaved to obtain a smooth, clean surface and uniform thickness in all areas. The color of the finished leather shall be a good match to Foliage Green 504 or color as specified in the contract or solicitation. Variations in color on the flesh side resulting from buffing or shaving are permissible. The leather shall be treated with fire resistant and water resistant compounds and shall meet the requirements in Table II when tested as specified in 4.3.5.

TABLE II. Leather requirements

CHARACTERISTIC	**REQUIREMENT**
Material identification	Hair sheepskin or goat/kidskin
Thickness, ounces	1.3 - 2.5
Stitch tear strength, pounds, minimum At least 80% of the specimens tested	 12
Elongation, percent, minimum At least 80% of the specimens tested	 25

TABLE II. Leather requirements - Continued

CHARACTERISTIC	REQUIREMENT
Shrinkage, percent, maximum Temperatures up to 92°C	None
Stiffness, Stiffness value: degrees, maximum At least 80% of the specimens tested	60
Perspiration, percent, maximum	15
Area stability to laundering, percent, maximum	20
Color	Foliage Green 504 (3.4.2)

3.4.3 Foam. The foam shall be closed cell conforming to 2 pound Volara® and shall meet the requirements of Table IIA when tested in accordance with 4.3.5 (see 6.5.1).

TABLE IIA. Foam requirements

CHARACTERISTIC	REQUIREMENT
Density, lbs/ft^3, minimum	2
Tensile strength, psi Machine direction Cross-machine direction, minimum	 60 39
Compression Set, % of Org. Thickness, minimum	28
Thickness, inches, minimum	0.25

3.4.4 Trimming materials (pull tab, webbing, and cord). Materials used shall meet the requirements of Table III and 3.4.6 when tested in accordance with 4.3.5. All visible materials shall meet the color requirement of Foliage Green 504 or color as specified in the contract or solicitation.

TABLE III. Trimming requirements

CHARACTERISTIC	REQUIREMENT
(All Trims)	
Heat and thermal shrinkage resistance, minimum	No ignition, melting, or dripping
Cord	
Tensile strength, pounds, minimum	85
Webbing	
Tensile strength pounds, minimum	85

3.4.5 Thread. Para-aramid thread, Tex Size 35/40, shall comply with A-A-55195, Type II, high performance, and having a minimum break strength of 9 pounds, shall be used for all seaming and stitching. All seams and stitching shall be in accordance with standard commercial practice. The color of the thread shall be a good match to the basic knit material as specified

(see 3.4.1). The finished thread shall have no chemical finishes or treatments, other than those commonly used on commercial threads.

3.4.6 Storage loop/cord. Each glove shall have a storage loop/cord which shall extend 1/2 inch (± 1/8) inch beyond the proximal end of the glove. The storage loop can be made from a cord or webbing. The color for the storage loop shall be Foliage Green 504 or color as specified in the contract or solicitation and shall meet the requirements in Table III when tested in accordance with 4.3.5. The storage loop shall interface with the Molded Locking Carabiner (Part # 110-4100-5674) (see 6.5) used on the Modular Lightweight Load Carrying Equipment (MOLLE). The storage loop shall easily slide over the 0.536 inch by 0.4 inch curved shaft of the carabiner as specified.

3.4.6.1 Hook and loop. Hook and loop shall be 1-inch in width and shall conform to A-A-55126, Type II, Class 1 (or Class 4 as an alternate).

3.4.6.2 Elastic webbing. The elastic webbing for the wrist shall be cotton or nylon, 3/8-inch in width and shall conform to MIL-W-5664, Class 1. Cut lengths shall be as follows: XS; 3-inches, S; 3-1/4 inches, M; 3-1/2 inches, L; 3-3/4 inches, XL; 4-inches, and XXL; 4-1/4 inches. All elastic cut lengths shall have a tolerance of ±1/8-inch. The elastic webbing shall be stitched to the inside of the leather 1/8 (± 1/16) inch from the raw edge and shall extend from the side seam to the welt. The elastic shall be completely covered on the inside by the hem.

3.4.7 Labels. Each glove shall have identification label (Class 1) a size label (Class 2) and and instruction label (Class 3) or a combination size, identification and instruction label (Class 14) conforming to Type VI of MIL-DTL-32075. The color of the labels shall be white. The following instruction information shall be included in the printing for the labels for the gloves.

GLOVES, COMBAT, ARMY

Laundering Instructions
1. Hand wash cool water
2. Air dry away from heat

CAUTION

DO NOT IRON
DO NOT USE BLEACH

DO NOT REMOVE THIS LABEL

3.4.7.1 Bar code label. When specified (see 6.2), the bar code label for each item shall be individually bar-coded with a paper tag for personal clothing items. The paper used for the tags shall be a standard bleached sulfate having a basis weight of 100 pounds with a smooth finish to accept thermal transfer and direct printing. The tags shall have a hole and be attached to each item by a fastener, clearly legible and readable by scanner. The bar code element shall be a 13 digit national stock number (NSN). There shall be a twelve digit Universal Product Code (UPC)

assigned for all NSNs by the Government. The initials "UPC" shall appear beneath code. The bar codes for NSN and UPC shall be a medium to high density and shall be located so that they are completely visible on the item when it is folded and or packaged as specified. The label's location shall cause no damage to the item.

3.5 Design. The matched pair of gloves shall be made from a combination of leather and inherently flame resistant textile materials according to the patterns as specified in 3.6. The gloves shall be slip-on style with adjustable tabs (hook and loop) at the wrist containing a combination of knit cloth, leather palm and knuckle reinforcements on the back of the hand and storage loop/cord. Closed cell foam shall be used for the knuckle guard and palm patch as specified in 3.4.3. The combat glove knit material for the basic shell shall be Foliage Green 504 or color as specified in the contract or solicitation (see 3.4.1), and the leather shall be a good match to Foliage Green 504 or color as specified in the contract or solicitation (see 3.4.2).

3.6 Patterns. The Government will provide a complete set of patterns as specified in 3.6.1 which show size, directional lines, placement marks, and notches for assembly. The patterns generally provide for a 1/8 -inch seam allowance except for topstitching on patches. The Government pattern shall be used to create a working pattern. The Government pattern shall not be altered. Minor modifications are permitted to the working pattern where necessary when using automatic equipment or to accommodate a manufacturing process. These modifications shall not alter the dimensional, serviceability, or appearance requirements cited in this specification.

3.6.1 Pattern parts. The component parts of the Army combat glove shall be cut from materials as specified and in accordance with the number of parts required as specified in Table IV.

TABLE IV. Pattern parts list

Material 1/	Pattern Nomenclature 1/	Cut Parts 1/
Basic shell material		
Para-aramid or equal	Forchette 1	2
Para-aramid or equal	Forchette 2	2
Para-aramid or equal	Forchette 3	2
Para-aramid or equal	Palm Outer	2
Palm patch inner and welt material		
Meta-aramid or equal	Palm Patch Inner	2
Meta-aramid or equal	Welt	2
Leather		
Leather	Binding	2
Leather	Flanger 1	2
Leather	Flanger 2	2
Leather	Flanger 3	2
Leather	Flanger 4	2
Leather	Flanger 5	2

TABLE IV. Pattern parts list - Continued

Material 1/	Pattern Nomenclature 1/	Cut Parts 1/
Leather	Flanger 6	2
Leather	Knuckle Pad	2
Leather	Palm Inner	2
Leather	Thumb Crotch	2
Leather	Thumb Inner	2
Leather	Thumb Outer	2
Leather	Tip 1	2
Leather	Tip 2	2
Leather	Tip 3	2
Leather	Tab Outer	2
Foam		
Foam	Knuckle	2
Foam	Palm Patch	2
Hook and Loop		
Hook	Tab Inner	2
Loop	Tab Outer	2

1/ Pattern may be used for production of this glove in conjunction with Army combat glove solicitations only.

3.7 Construction.

3.7.1 Stitches, seams, and stitching. Stitches, seams, and stitching types shall conform to ASTM D 6193. Seam allowances shall be maintained with seams sewn so that twists, pleats, or puckers will not result. All seams shall start and finish evenly. Ends of a continuous line of stitching shall be overlapped not less than 1/2 -inch unless otherwise specified. Seam allowance on all inseam stitching shall be 1/8 (± 1/16) - inch unless otherwise specified. The leather pattern pieces as specified in Table IV for the knuckle pad, palm inner, thumb crotch, tips 1, 2 and 3 and the secondary shell fabric (meta-aramid) for the palm patch inner shall be double top stitched no less than 1/32 -inch and no more than 3/16 -inch from the raw edge at trigger finger joint to the basic shell material (para-aramid).

3.7.1.1 Stitching. Stitching shall be no less than 9 stitches per inch and no more than 12 stitches per inch and the ends of all seams and stitching, when not caught in other seams or stitching, shall be backstitched not less than 1/4 -inch unless otherwise specified. Thread tension shall be maintained so that there shall be no loose stitching resulting in loose bobbin or top thread, or excessively tight stitching resulting in puckering of the materials sewn.

3.7.1.2 Repairs of stitching. Repairs of stitching shall be as follows:

a. When thread breaks or bobbin run-outs occur during sewing, the stitching shall be repaired by restarting the stitching a minimum of 1/2 - inch back of the end of the stitching. When making these repairs, the ends of the stitching are not required to be backstitched.

b. Thread breaks of two or more consecutive skipped or run-off stitches noted during inspection of the item shall be repaired by overstitching. The stitching shall start a minimum of 1/4 - inch back of the defective area, continue over the defective area, and continue a minimum of 1/2 - inch beyond the defective area onto the existing stitching. Loose or excessively tight stitching shall be repaired by removing the defective stitching without damaging the material and re-stitching in the required manner.

c. Regardless of the type of stitching, repairs shall ensure that the seam integrity shall be comparable to a non-repaired seam.

3.7.2 Pressing. Each glove shall be heat set on a heated hand form of the correct size in relation to the size of the glove. The glove should first be steamed or a steaming heated hand form should be used.

3.7.3 Use of automated apparel equipment. Automated apparel equipment may be used to perform any of the operations provided that the seam and stitch type are as specified and the finished item meets the Government requirements, except that trimmer attachments, other than thread undertrimmer, are not allowed.

3.7.4 Manufacturing operations requirements. The gloves shall be manufactured in accordance with good commercial practices. Contractor shall conform to the Government furnished patterns.

3.8 Toxicity (basic shell knit material and the palm patch inner and welt material only). The basic shell knit material and the palm patch inner and welt material shall not present a health hazard and shall show compatibility with prolonged, direct skin contact when tested as specified in 4.3.5. Chemicals recognized by the Environmental Protection Agency (EPA) as human carcinogens shall not be used.

3.9 Dexterity. The glove shall be designed in such a way to provide maximum dexterity and tactility when tested in accordance with 4.3.5.

3.10 Service life. The combat glove shall provide a minimum service life of 90 days (see 4.3.5.3) and meet all of the requirements of Tables I, II, IIA, and III in accordance with 4.3.5.

3.11 Heat and thermal shrinkage resistance. The entire glove and all components shall be heat and thermal shrinkage resistant when tested in accordance with 4.3.5.

3.12 Figures. Figures 1 and 2 are furnished for information purposes only. If there are any inconsistencies between the specification and the figures, the specification shall govern.

3.13 Workmanship. After completion of the final assembly, the glove shall be thoroughly cleaned and all thread scraps, lint and foreign matter shall be removed. The gloves shall not contain any fabric defects. The gloves shall be uniform in quality and shall be free from irregularities or defects which could adversely affect performance, reliability or durability. The gloves shall conform to the quality established by this specification.

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. A first article inspection in accordance with 3.1 shall be inspected, examined for appearance, color and for the defects listed in Table V, glove dimensions in Table VI and tested for the characteristics in Table VII.

4.3 Conformance inspection. Conformance inspection shall include examination for shade and appearance, inspection of components in 4.3.3 that cannot be inspected in the component testing specified in 4.3.5. Sampling for inspection shall be performed in accordance with ANSI/ASQ Z1.4, except where otherwise indicated (see 6.2).

4.3.1 Inspection conditions. Unless otherwise specified, all inspections shall be performed in accordance with all the requirements of referenced documents, unless otherwise excluded, amended, modified or qualified in the specification or applicable procurement documents (see 6.2).

4.3.2 End item examination. The finished examination sample size, acceptance quality limit (AQL) and acceptance criteria shall be as specified in the solicitation or contract (see 6.2).

4.3.2.1 In-process inspection. Inspection shall be made at any point or during any phase of manufacturing to determine whether the components are as specified or operations and/or assemblies are accomplished as specified. The Government reserves the right to exclude from consideration for acceptance any material or service for which in-process inspection has indicated non-conformance.

4.3.3 End item visual examination. The finished gloves shall be examined for the defects listed in Table V and for the dimensional measurements listed in Table VI. The lot size shall be expressed in units of gloves. The sample unit shall be one pair of gloves and selection shall be by pairs. Defects for pairing shall be classified as a single defect. The end item shall be visually examined for compliance to 3.4, 3.5, 3.6, 3.7 and 3.9. The gloves shall be examined for defects in shade, design, material, construction, and workmanship, with defects classified in accordance with Table V.

TABLE V. Material and end item visual examination

Examine	Defect Description	Major	Minor
Glove pairing	Not matched and paired, right and left glove not good matches in color, texture, and sizing. Not tacked or joined together as specified	101	201
Knuckle guard	Not properly double top stitched Overlaps palm patch leather Not smooth; distorted Knuckle guard misplaced (does not cover knuckles as intended) Stitching not uniform and is less than 1/32 inch from edge or greater than 3/32 inch from edge	102	202 203 204 205
Shell design	Not as specified (incorrect material, pattern, etc.). Not specified size, stitches loose or broken	103 104	
Cleanness	Spots or stains clearly noticeable affecting appearance		206
Leather			
Color	Not specified color. Color not uniform on grain side. Color not completely penetrating the leather from grain side through flesh side.		207 208 209
Finish	Not full grain. Flesh side not smooth or containing coarse areas. Printed design on leather.	105 106 107	
Quality	Not clean; stain or foreign matter Hard, boney, loose, spongy leather, hard scar, cut, hole (including a pinhole or needle hole outside of the normal stitching line), brittle, thin spot, brand, scratch, deep fat wrinkle, or grain damage.	108	210
Fabric			
	Not as specified Not specified color, streaky, or shaded from side to side. Any run, dropped stitch, snag, pull, slubby yarn. Lacking elasticity, too tight or loose	109 110 111	 211
Construction			
(applicable to all components unless otherwise indicated herein)	Component misplaced, operation omitted, or general operation and /or workmanship improperly performed. Component missing or not securely affixed. Mend in leather or fabric (i.e., patch- not applicable to restitched seam repair). Needle chews likely to develop into a hole	112 113 114 115	

TABLE V. Material and end item examination- Continued

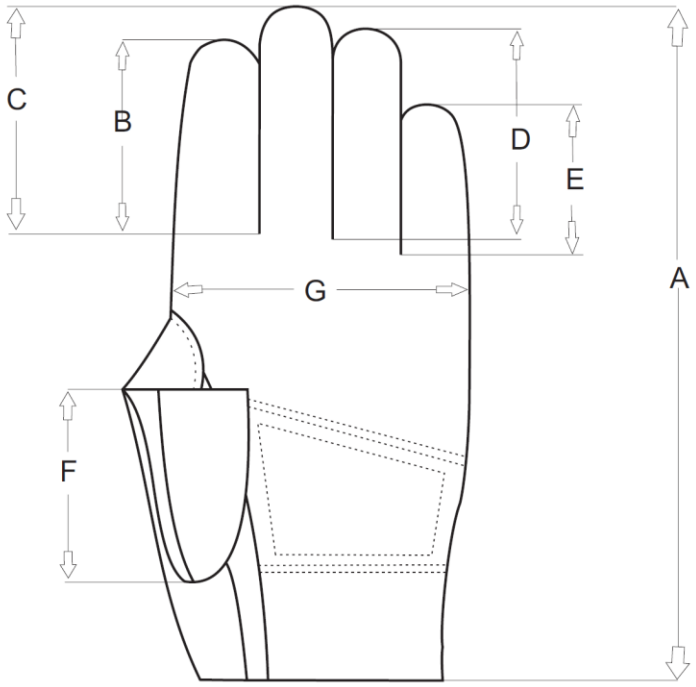
Examine	Defect Description	Major	Minor
Construction- Continued			
Seams and stitching	An open seam in single stitched seam or in either stitching row of a double stitched seam.	116	
	Not repaired as specified (when applicable)	117	
	Stitching not within tolerance of 9-12 stitches per inch.		212
	Loose stitch tension resulting in a loosely secured seam or tight stitch tension resulting in cutting of leather or breaking of stitches when donning or doffing.	118	
	Unsecured stitching ends.	119	
	Gage of stitching irregular affecting appearance.		
	Part caught in unrelated row of stitching.	120	213
	Not backstitched where required.	121	
	Row of stitching omitted	122	
Assembly detail	Glove not neatly laid off (wrinkles or folds in shell or puckering in the cradle reinforcement).	123	
	Poorly assembled and affecting serviceability (finger distorted, twisted, or not properly rounded at tip affecting comfort of wearer).	124	
	Three or more untrimmed thread ends exceeding 3/8 in.		214
	Not constructed with the specified materials.	125	
	Difference in overall length between front and back of glove is more than 1/2 in.	126	
Labels and instruction slip	Omitted, incorrect, illegible, or misplaced; size and identification label not securely sewn in wrist hem	127	
Hook and Loop	Hook not properly oriented (not parallel to cuff hem)		215
	Hook and Loop not properly aligned (loop tab is not aligned to hook tab)		216
	Not specified color		217
Closure tab	Not properly edged stitched (inconsistent edge stitching, loose stitch tension resulting in stitches being caught by hook)		218
	Not properly secured/attached to glove	128	

4.3.4 Dimensional examination. The finished glove shall conform to the dimensional measurements specified in Table VI. The measurements shall be taken on the palm side of the glove in accordance with the locations specified in Figure 1. The finished measurements of paired gloves shall vary no more than 1/4-inch from each other.

TABLE VI. Finished garment dimensions (inches)

Location	X-Small	Small	Medium	Large	X-Large	XX-Large	Tolerance
A	8-1/2	8-3/4	8-7/8	9-1/8	9-1/4	9-1/2	-0, + 1/16
B	2-3/4	2-7/8	3	3-1/8	3-1/4	3-3/8	-0, + 1/16
C	3-1/8	3-1/4	3-3/8	3-1/2	3-5/8	3-7/8	-0, + 1/16
D	2-3/4	2-7/8	3	3-1/4	3-1/2	3-5/8	-0, + 1/16
E	2	2-1/8	2-1/4	2-3/8	2-1/2	2-3/4	-0, + 1/16
F	2-1/4	2-1/2	2-5/8	2-3/4	2-7/8	3	-0, + 1/16
G	3-3/4	3-7/8	4	4-1/8	4-1/4	4-1/2	-0, + 1/16

FIGURE 1. Dimensional measurement locations



NOTE: Measuring method: All measurements are taken with glove palm-side up, smooth and flat, but not stretched.

(A) Measure in a straight line from bottom of wrist to top of middle finger
(B) Measure from lowest point of crotch to top of first finger
(C) Measure from lowest point of crotch between first and second finger to top of second finger
(D) Measure from lowest point of crotch between second and third finger to top of third finger
(E) Measure from the lowest point of crotch between third and fourth finger to top of fourth finger
(F) Measure from the lowest point of crotch between thumb and first finger to top of thumb
(G) Measure from folded edge to folded edge just above thumb crotch piece

4.3.5 End item and component testing. The gloves shall conform to the requirements as specified in 3.4 when tested as specified in Table VII, and 4.3.5.1 through 4.3.5.5. Acceptance criteria shall be as specified in the contract or purchase order (see 6.2).

TABLE VII. End item and component testing

CHARACTERISTIC	Requirement Paragraph	TEST METHOD
Component Testing		
Basic shell material and palm patch inner and welt material 3.4.1, 3.4.1.1		
Fiber identification	Table I	AATCC 20
Weight, oz/sq yd	Table I	ASTM D 3776, Option C
Flame resistance, maximum After flame, seconds Char length, inches	Table I	ASTM D 6413
Fabric cut resistance, grams minimum	Table I	ASTM F 1790
Burst strength, pounds minimum	Table I	ASTM D 3787
Color (Visible materials)	Table I	AATCC Evaluation Procedure 9, Option A 1/
Leather	3.4.2	
Material identification	Table II	Visual
Thickness, ounces	Table II	ASTM D 1814
Stitch tear strength, pounds minimum At least 80% of the specimens tested	Table II	ASTM D 4705
Elongation, percent, minimum At least 80% of the specimens tested	Table II	ASTM D 2209
Shrinkage, percent, minimum Temperatures up to 92°C	Table II	ASTM D 6076
Stiffness, Stiffness value: degrees, maximum At least 80% of the specimens tested	Table II	ASTM D 2821
Perspiration, percent, maximum	Table II	ASTM D 2322
Area stability to laundering, percent, maximum	Table II	ASTM D 2096
Color	Table II	Visual 1/
Foam	3.4.3	
Density, lbs/ft^3	Table IIA	ASTM D 3575
Tensile strength, psi	Table IIA	ASTM D 3575
Compression Set, % of Org. Thickness	Table IIA	ASTM D 3575
Thickness	Table IIA	Visual 2/

TABLE VII. End item and component testing – Continued

CHARACTERISTIC	Requirement Paragraph	TEST METHOD
Component Testing - Continued		
Trimming materials: 3.4.4 and Table III		
Cord Tensile Strength, pounds Minimum	Table III	PIA Test Method 6016
Webbing Tensile Strength pounds Minimum	Table III	PIA Test Method 4018
End Item Testing		
Heat and thermal shrinkage resistance, minimum	Table III & 3.11	NFPA 1971-07 Sec. 8.6

1/ The color shall be obtained using solution dyed fibers and shall be as specified in the contract or order. The color of the test specimen shall match the standard sample viewed using AATCC Evaluation Procedure 9, Option A, with sources stimulating 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 incandescent lamplight at 2856 (+ 200)°K.
2/ Using a scientific calibrated ruler

4.3.5.1 Toxicity test. When required, (see 6.2), an acute dermal irritation study and a skin sensitization study shall be conducted on laboratory animals. When the results of these studies indicate the gloves are not a sensitizer or irritant, a Repeat Insult Patch Test shall be performed in accordance with the Modified Draize Procedure (see 2.3). If the toxicity requirement (see 3.8) can be demonstrated with historical use data, toxicity testing may not be required (see 6.2).

4.3.5.2 Dexterity test. Dexterity shall be in accordance with NFPA 1971-07, Glove Hand Function Tests (sec.8.38: "Peg board test"). The dexterity test score for the gloved hand shall be compared to the test score for the bare hand and recorded as the percentage of bare hand control. Test results shall be used for comparative purposes.

4.3.5.3 Service life. The combat glove Service life shall be verified through technical evalution of calculations, computations, models, or analytical solutions to determine if the gloves conform to the specified requirements in 3.10.

4.3.5.4 Heat and thermal shrinkage resistance test. The entire glove and all components shall conform to National Fire Protection Association (NFPA) 1971, Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting (Heat and Thermal Shrinkage Resistance Test). The test report shall state any melting characteristics on all components of the glove including findings and closures, and whether the glove is still donable and flexible after heat exposure.

4.3.5.5 Tensile strength test for storage loop/cord. The storage loop/cord shall be tested in accordance with PIA 4108 with the exception of using a six inch sample and flat surface clamps.

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 material is to be performed by DoD or in-house contractor 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 activities within the Military Department or Defense Agency, or within the military service's system commands. Packaging data retrieval is available from the managing Military Department's 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. These gloves are intended for light work duty with flame and cut protection.

6.2 Acquisition requirements. Acquisition documents should specify the following:

a. Title, number, and date of this purchase description.
b. Size required (see 1.2).
c. The specific issue of individual documents referenced (see 2.2 and 2.3).
d. When a first article is required (see 3.1, 4.2 and 6.3).
e. Bar coding requirements if applicable (see 3.4.7.1).
f.. Conformance inspection acceptance quality limits (see 4.3).
g. Inspection conditions if applicable (see 4.3.1)
h. When toxicity testing is required (see 4.3.5.1)
i. Packaging (see 5.1).

6.3 First article. When a first article is required, it shall be inspected and approved under the appropriate provision of Federal Acquisition Regulation (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 number of units to be furnished. The contracting officer should include specific instructions in acquisition documents regarding arrangements for selection, inspection, and approval of the first article.

6.4 Samples. For access to samples and patterns address the contracting activity issuing the invitation for bids or request for proposal.

6.5 Known sources

6.5.1 Trademarks Volara® is a trade mark of Sekisui Voltek LLC
http://www.sekisuivoltek.com

6.5.2 Supplier for molded locking carabiner. (Cage Code – 02768 / Part # 110-4100-5674)

ITW Nexus
195 E. Algonquin Road
Des Plaines, IL 60016
Phone: 847-299-2222
Fax: 847-390-6183
www.itwnexus.com

6.6 Subject term (key word) listing.

Handwear
Light work duty
Cut protection
Flame protection

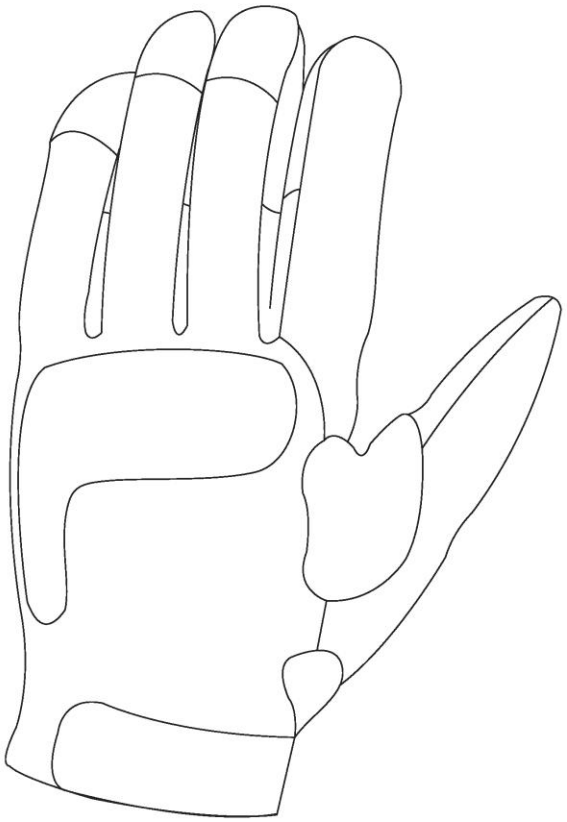


FIGURE 2. Glove, Army Combat , back view

Custodian:
GL

PREPARING ACTIVITY:
GL-Army