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SUPERSEDING
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MILITARY SPECIFICATION

MITTEN SET, EXTREME COLD WEATHER

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

1. SCOPE

1.1 Scope. This specification covers the requirements for impermeable extreme cold weather mittens, consisting of a supported chloroprene dipped outer shell and a removable insulating liner fabricated of a bonded polyurethane film laminate nylon knit fabric and polyurethane foam ensemble.

1.2 Classification. The mitten set ensemble shall be procured in the following sizes as specified (see 6.2):

Schedule of sizes: Small, Medium, Large, X-Large

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of these documents shall be those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Officer in Charge, Navy Clothing and Textile Research Facility, 21 Strathmore Road, Natick, MA 01760-2490 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A FSC 8415

SPECIFICATIONS

FEDERAL

V-T-276	- Thread, Cotton
NN-P-71	- Pallets, Material Handling, Wood, Stringer Construction, 2-Way and 4 Way (Partial)
DDD-L-20	- Label, For Clothing, Equipage, and Tentage (General Use)

MILITARY

MIL-B-543	- Buckles, Tongueless and Web Strap
MIL-P-15011	- Pallet, Material Handling, Wood Post Construction, 4-Way Entry
MIL-B-17757	- Box, Shipping, Fiberglass (Modular Sizes)
MIL-T-43566	- Tape, Textile Cotton, General Purpose, Natural or in Colors

STANDARDS

FEDERAL

FED-STD-191	- Textile Test Methods
FED-STD-751	- Stitches, Seams, and Stitchings

MILITARY

MIL-STD-105	- Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-129	- Marking for Shipment
MIL-STD-147	- Palletized Unit Loads

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

2.1.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this specification to the extent specified herein. Unless otherwise specified, the issues shall be those in effect on the date of the solicitation.

LAWS AND REGULATIONS

US POSTAL SERVICE MANUAL

(Copies of the manual may be obtained from the Superintendent of Documents, US Government Printing Office, Washington, DC 20402.)

2.2 Other publications. The following document(s) form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of the documents which are DOD adopted shall be those listed in the issue of the DODISS specified in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS shall be the issue of the nongovernment documents which is current on the date of the solicitation.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

D-3574-81 - Testing Flexible Cellular Materials - Slab, Bonded, and Molded Urethane Foams

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

NATIONAL MOTOR FREIGHT TRAFFIC ASSOCIATION, INC., AGENT

National Motor Freight Classification

(Applications for copies should be addressed to the American Trucking Association, ATTN: Traffic Department, 1616 P Street, N.W., Washington, DC 20036).

UNIFORM CLASSIFICATION COMMITTEE, AGENT

Uniform Freight Classification

(Applications for copies should be addressed to the Uniform Classification Committee, Room 1106, 222 South Riverside Plaza, Chicago, Illinois 60606).

2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence. Nothing in this specification, however, shall supersede applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Guide sample. Samples, when furnished, are solely for guidance and information to the contractor (see 6.3). Variations from this specification may appear in the sample in which case this specification shall govern.

3.2 First article. When specified, the contractor shall furnish sample unit(s) for first article inspection and approval (see 4.3 and 6.2).

3.3 Material.

3.3.1 Basic materials.

* 3.3.1.1 Outer shell. The basic material for the component parts of the outer shell (see 3.9.1), shall be of an unbleached and unnapped interlock knit cotton cloth constructed with singles carded yarns. The finished knit material shall conform to the physical requirements shown in Table I when tested as specified in 4.4.1.

Table I - Physical requirements of cotton knit cloth

Characteristic	Minimum Requirement
Weight, ounces per square yard	4.8
Wales per inch	30
Courses per inch	42
Bursting strength, pounds	80

*3.3.1.2 Insulating liner. The basic material for the insulating liner shall consist of a polyurethane film laminate nylon tricot knit fabric flame bonded to each side of the applicable thickness of polyurethane foam for the palm and back side component parts (see 3.9.1). The polyurethane film laminate nylon knit fabric and the polyurethane foam shall conform to the requirements specified in 3.3.1.2.1, 3.3.1.2.2 and 3.3.1.2.3.

* 3.3.1.2.1 Cloth, nylon, tricot knit. The nylon tricot knit fabric cover shall be constructed from multifilament yarn, dyed a suitable black shade, and shall conform to the physical requirements shown in Table II when tested as specified in 4.4.1.

Table II - Physical Requirements of Nylon Tricot Knit Fabric

	Requirement	
Characteristic	Minimum	Maximum
Weight, ounces per square yard	1.5	--
Wales per inch	35	--
Courses per inch	26	--
Bursting strength, pounds	70	--
pH	5.0	8.5

3.3.1.2.1.1 Colorfastness. The dyed finished tricot material shall show fastness to perspiration and crocking equal to or better than the standard sample. When a standard sample is not available, the finished tricot material shall show a minimum of "good" fastness to perspiration and a Munsell Value for crocking not lower than 8.5. Testing shall be performed as specified in 4.4.1.

3.3.1.2.2 Polyurethane foam. The polyurethane foam shall be furnished in two separate thicknesses for the applicable palm and back side component parts of the insulating liner, and shall conform to the physical requirements shown in Table III when tested as specified in 4.4.1.

Table III - Physical requirements of polyurethane foam

Characteristic	Requirement Minimum	Maximum
Density, lbs/ft^3	1.5	2.1
Thickness, inches		
Palm	0.075	0.175
Back	0.325	0.425
Load Deflection, ILD Value		
- At 25% Indentation, lbs per 50 square inches	22	28
- At 65% Indentation, lbs per 50 square inches	41	51
Cells per linear inch	40	60

* 3.3.1.2.3 Polyurethane film. The polyurethane film shall be one mil thick and be impermeable to water penetration. A certificate of compliance for this requirement shall be acceptable (see 4.4.1).

3.3.2 Coating compounds.

3.3.2.1 Base dipping compound. The base dipping compound used for the outer shell shall be of a low temperature (-40°F or -40°C) formulated chloroprene compound, properly plasticized and pigmented black in color. No other elastomer other than the specified neoprene shall be used (see 4.4.1).

* 3.3.2.2 Final dip compound. The final dip compound should be composed of a formulation of chloroprene which is fully integrated with a filler designed to provide the desired rough finish (equivalent to the standard sample) to the outershell. Ingredients and processing techniques should be selected to ensure that the outershell meets all applicable specification requirements.

3.3.3 Tape. The tape used for the adjustment (take-up) strap and reinforcement lift tabs on the outer shell shall be made of cotton, 5/8 inch in width, conforming to type I, class 3, of MIL-T-43566. The tape shall be dyed black, approximating the shade of the dipped chloroprene outer shell.

3.3.4 Buckle, tongueless. The buckle used with the adjustment (take-up) strap shall be made of steel, conforming to type II, style 3, class 3 (with lip), of MIL-B-543.

* 3.3.5 Thread. The thread for seaming and stitching the outer shell, insulating liner, and securing the ends of the adjustment (take-up) strap to the reinforcement tabs on the finished chloroprene dipped outer shell shall be cotton, conforming to types IA1 or IA3 as applicable, ticket no. 24/4, 30/3 and 70/2 of V-T-276. The thread for the adjustment (take-up) strap and insulating liner shall be dyed a suitable black shade, approximating the shade of the basic nylon cover material (see 3.3.1.2.1).

* 3.4 Flame bonded ensemble. The finished polyurethane film laminate knit and polyurethane foam ensemble as specified in 3.3.1.2, shall conform to the physical requirements specified below when tested as specified in 4.4.1.1, 4.4.1.2, 4.4.1.3 and 4.4.1.4.

Characteristic	Requirement Minimum	Maximum
Adhesion polyurethane film laminate nylon knit fabric to foam (pounds per 1 inch width)		
Initial	1.0 1/	
After Wet Aging	0.8 1/	
Moisture Vapor Transmission		2%
Stiffness		
1/8 inch foam, standard conditions (lb)		.029 1/
1/8 inch foam, 20°F/2 hrs (lb)		.064 1/
Thickness		
1/8 inch foam	.100	.215
3/8 inch foam	.300	.475

1/ Reported separately front and back

* 3.5 Coated outer shells. The finished outer shells following the dipping process (see Table V, operation 5), shall show no evidence of separation between the base fabric and coating or between coatings and shall conform to the requirements specified in Table IV when tested as specified in 4.5.

Table IV - Finished requirements of outer shells

Characteristic	Requirement Minimum	Maximum
Overall weight of smooth surface, ounces per square yard	24	28
Bursting strength, pounds	80	--
Adhesion of coating, lbs per 2 inch width	3.0	--
Stiffness, cm:		
At +70°F (21°C) wale direction	--	10.0
At -40°F (-40°C) wale direction	--	12.0
Hydrostatic resistance, pounds per square inch	40	--
Porosity	Pass	--
Fuel resistance	Pass	--
Blocking, scale rating	--	No. 2

* 3.6 Outershell label. Each finished outershell shall be marked with a combination identification and size label conforming to type III or IV, class 4, of DDD-L-20, except that the marking medium shall be of any contrasting permanent type ink and shall bear the following inscription in letters not less than 1/8 inch in height:

MITTEN SET, EXTREME COLD WEATHER (OUTERSHELL)
CONTRACT NO: DLA 100-00-0-0000 (EXAMPLE)
STOCK NO: 8415-00-000-0000 (EXAMPLE)
SIZE: MEDIUM (EXAMPLE)
NAME OF CONTRACTOR:

* 3.6.1 Liner label. Each detachable liner shall be marked with a combination size, identification, and instruction label conforming to Type III or IV, class 4 of DDD-L-20, except that the marking medium shall be of any contrasting permanent type ink and shall bear the following inscription in letters not less than 1/8 inch in height.

MITTEN SET, EXTREME COLD WEATHER (LINER)
CONTRACT NO: DLA -100-00-0-0000 (EXAMPLE)
STOCK NO: 8415-00-000-0000 (EXAMPLE)
SIZE: MEDIUM (EXAMPLE)
NAME OF CONTRACTOR:
Laundering instructions:
Hand Wash in Warm Soapy Water at 100° F and Air Dry at Room Temperature

* 3.7 Design.

3.7.1 Outer shell. The finished chloroprene dipped outer shell of the mitten set ensemble, shall consist of a two (2) piece inseam sewn four (4) compartment configuration style. The one-piece set-in type thumb, first (index) finger, second finger, and third and fourth fingers shall be in individual compartments. The back side of the outer shell shall have an adjustable (take-up) strap with a buckle securely attached to reinforcement tabs (see Figure 1).

3.7.2 Insulating liner. The finished insulating liner of the mitten set ensemble, shall consist of the same four (4) compartment configuration style as the outer shell, except that the thumb shall be of two pieces and the overall construction shall be outseam sewn. The respective component parts for the palm and back sides shall be of separate thickness as specified herein (see Figure 2).

3.7.3 Figures. Figures 1 through 3 are furnished for information purposes only. When inconsistencies exist between the written specification and the figures, the written specification shall govern.

3.8 Dipping forms. The dipping forms used for the outer shell of mittens shall be furnished by the government (see 6.3).

3.9 Patterns. Standard patterns to be used to cut the working patterns for the outer shell and insulating liner of mittens will be furnished by the Government (see 6.3). The working patterns shall be identical to the Goverment patterns. Neither the Government patterns nor the working patterns shall be altered in any way.

3.9.1 Pattern parts. The component parts of the outer shell and detachable insulating liner, shall be cut from the material as specified and in accordance with the pattern parts required for the manufacturing process as follows:

Material	Nomenclature of pattern parts	Cut parts per pair
Cloth, cotton, interlock knit (see 3.3.1.1)	Outer shell	
	Palm and back side	2
	Thumb	2
Flame bonded cloth, polyurethane film laminate nylon, knit and polyurethane foam (see 3.3.1.2)	Insulating liner, palm side 1/8"	
	Palm	2
	Face of thumb	2
	Gauntlet	2
	Fourchette, first and second fingers	2
	Fourchette, second and third fingers	2
	Insulating liner, back side 3/8"	
	Back of hand and gauntlet	2
	Back of thumb	2

3.10 Construction.

3.10.1 Stitches, seams, and stitchings. Stitch, seam, and stitching types specified in Table V shall conform to FED-STD-751. The minimum and maximum number of stitches per inch shall be as specified in Table V. Whenever two or more methods, seams, or stitch types are given for the same operation, any one of them may be used.

3.10.2 Type 301 stitchings. Unless otherwise indicated, ends of seams and stitching produced with 301 stitch type, when not caught in other seams or stitching, shall be backstitched not less than 3/8 inch. Thread tension shall be maintained so there will be no loose stitching resulting in a loose bobbin or top thread or no excessively tight stitching resulting in puckering of the materials sewn.

3.10.2.1 Repairs of type 301 stitching. Repairs of type 301 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 3/8 inch back of the end of the stitching. 1/

b. Thread breaks, or two or more consecutive skipped stitches or run-offs noted during inspection of the item (in-process or end item) shall be repaired by overstitching. The stitching shall start a minimum of 3/8 inch back of the defective area, continue over the defective area and continue a minimum of 3/8 inch beyond the defective area onto the existing stitching. Loose or tight stitching shall be repaired by removing the defective stitching without damaging the material and restitching in the required manner. 1/

1/ When making the above repairs, the ends of stitching are not required to be backstitched.

3.10.2.2 Type 401 stitching. Thread tension shall be maintained so that there will be no loose stitching and the looper thread shall be on the inside of the gloves. Both ends of all seams or stitching produced with 401 stitch type, when not caught in other seams or stitching, shall have a 1/2 to 3/4 inch chain extending beyond each end.

3.10.3 Repair of types 401, 503, and 504 stitching. All repairs shall be made in accordance with 3.10.2.1 (a) and (b).

3.11 Manufacturing operations. The mitten set, consisting of an outer shell and detachable insulating liner, shall be manufactured in accordance with operation requirements specified in Table V. The contractor is not required to follow the exact sequence of operations as listed, provided the finished mittens are identical to those produced by following the exact sequence as shown.

3.12 Abbreviations in table of operations. The abbreviations used in table I are as follows:

Stch	-	Stitch
in	-	inch
Ndl	-	Needle
Bob	-	Bobbin
Lpr	-	Looper
Mchne	-	Machine
Brtck	-	Bartack
Comrcl	-	Commercial
smlr	-	similar
Btnhl	-	Buttonhole
incl	-	including
dbl	-	double
chnstch	-	chainstitch

TABLE V - CONSTRUCTION OF MITTEN SET

NO.	OPERATION	STCH TYPE	SEAM/ STCH TYPE	STCH IN	THREAD NDL	THREAD BOB/ LPR
1.	Cutting.					
	a. Cutting the cloth component parts of the outer shell from the interlock knit fabric in the length (wale) direction (see 3.3.1.1 and 3.9.1).					
	b. Cut the cloth component parts of the insulating liner, palm and back sides, from the applicable flame bonded polyurethane film laminate nylon tricot knit and polyurethane foam ensemble (see 3.3.1.2 and 3.9.1).					
	c. Cut two reinforcement tabs 3/4 inch long, one long adjustment strap 8-3/4 inches long, and one short adjustment strap 2-1/2 inches long from the cotton tape material (see 3.3.3).					
2.	Replacement of damaged parts. During the spreading, cutting, and manufacturing process, components having material defects or damages that are classified as defects in Section 4, shall be removed from production and replaced with non-defective and properly matched components.					
3.	Marking. Mark, ticket, or bundle all component cut parts of the outer shell and detachable insulating liner, to insure a uniform size throughout the respective assemblies.					
4.	Assemble outer shell.					
	a. Join and stitch edge of the one piece thumb to palm from the top edge to thumb crotch, 3/32 to 1/8 inch from the raw edge.	301 or 401	SSa-1	10-12	30/ 3	70/ 2
	b. Fold thumb piece to its finished position, and close by stitching from the top edge of thumb to top open edge of palm 3/32 to 1/8 inch from the raw edge. A reinforcement tab shall be simultaneously inserted 3 $\pm$ 1/8 inches down from the cut edge of the gauntlet and caught in this line of stitching.	301 or 401	SSa-1	10-12	30/ 3	70/ 2

TABLE V - CONSTRUCTION OF MITTEN SET

NO.	OPERATION	STCH TYPE	SEAM/ STCH TYPE	STCH IN	THREAD NDL	THREAD BOB/ LPR
	c. Fold and close outer shell by stitching the side nearest to the third and fourth finger compartments and around the fingers 3/32 to 1/8 inch from the raw edge, commencing or ending at top open edge of palm. A reinforcement tab shall be simultaneously inserted 3 ± 1/8 inches down from the cut edge of the gauntlet and caught in this line of stitching.	301 or 401	Sa-1	10-12	30/ 3	70/ 2
5.	Outer shell dipping process.					
	a. Turn outer shell and mount on the applicable size dipping form, with the seams at the sides and tips of fingers aligned with the corresponding locations on the dipping forms. The reinforcement tabs shall extend from the outer seams not less than 5/8 inch in length.					
	b. The mounted shell shall be evenly and completely dipped in the base dipping compound as specified in paragraph 3.3.2.1.					
	*c. Overdip the outer shell as shown in Figure 1, with the rough finish imparted by the final dip compound specified in paragraph 3.3.2.2. The rough finish shall extend a minimum of 7 inches from the tip of the second finger.					
	d. After application of coating, the outer shell shall be fully cured.					
6.	Assemble and attach adjustment (take-up) strap with buckle to outer shell.					
	a. The take-up strap shall consist of a long strap (adjustment) piece and a short strap piece, and shall be used with a buckle (see 3.3.3 and 3.3.4).					
	b. Turn under one end of the long strap 1/2 to 5/8 inch and position evenly over the reinforcement tab located on third and fourth finger side of outer shell.					

TABLE V - CONSTRUCTION OF MITTEN SET

NO.	OPERATION	STCH TYPE	SEAM/ STCH TYPE	STCH IN	THREAD NDL	THREAD BOB/ LPR
	c. Bartack across the width 3/16 to 1/4 inch from the folded edge.	Bar-tack		28 stitch-es per bartack	24/ 4	24/ 4
	d. Insert unhemmed edge of the long strap through the center opening of buckle, passing over and through the bar opening adjacent to the lip end, and extending beyond the lip end.					
	e. Turn under unhemmed edge of the long strap 3/8 to 1/2 inch and bartack across the width 3/16 to 1/4 inch from the folded edge.	Bar-tack		28 stitch-es per bartack	24/ 4	24/ 4
	f. Insert an end of the short strap through the opening of the buckle adjacent to the bar end and over the bar.					
	g. With both ends of the short strap even in length, turn under 3/8 to 1/2 inch and position evenly over the reinforcement tab located on thumb side of outer shell.					
	h. Bartack across the width, 3/16 to 1/4 inch from the folded edge.	Bar-tack		28 stitch-es per bartack	24/ 4	24/ 4
*7.	Hem outer shell. Trim top of opening even removing undipped edge of the cotton knit lining. Turn under the top edge of outer shell 3/8 to 1/2 inch and stitch 3/16 to 1/4 inch from the folded edge to meet a minimum length of 13 inches. The length of the left and right mitten of a matched pair shall not vary more than 1/2 inch.	301 or 401	EFa-1	10-12	30/ 3	70/ 2
8.	Assemble insulating liner.	301 or 401	SSa-1	8-9	30/ 3	70/ 2
	a. Superimpose face of thumb piece to back of thumb piece with all outer edges even, and stitch around its periphery 3/32 to 1/8 inch from the raw edge.					

TABLE V - CONSTRUCTION OF MITTEN SET

NO.	OPERATION	STCH TYPE	SEAM/ STCH TYPE	STCH IN	THREAD NDL	THREAD BOB/ LPR
	b. Seam the lower side edges of back of thumb piece to palm from wrist edge to wrist edge 3/32 to 1/8 inch from the raw edge, simultaneously catching the straight face of thumb piece edge in the line of stitching.	301 or 401	SSa-1	8-9	30/ 3	70/ 2
	c. Seam the gauntlet piece to palm across the wrist edge 3/32 to 1/8 inch from the raw edge.	301 or 401	SSa-1	8-9	30/ 3	70/ 2
	d. Stitch the curved side of each designated fourchette to appropriate fingers on back of hand and gauntlet piece 3/32 to 1/8 inch from the raw edge.	301 or 401	SSa-1	8-9	30/ 3	70/ 2
	e. Superimpose the pre-assembled palm side to backside with all outer edges even. Close by stitching from the top open edge of gauntlet and around the periphery of the fingers, simultaneously catching the straight side of the fourchettes in the line of stitching 3/32 to 1/8 inch from the raw edge. The stitching shall commence or end at top open edge on thumb side.	301 or 401	SSa-1	8-9	30/ 3	70/ 2
	f. Overedge the top open edge completely around its circumference.	503 or 504	EFd-1	8-9	30/ 3	70/ 2
9.	Marking. (See 3.6) a. Each outershell shall have the combination identification and size marking applied on the outside back of the shell in the gauntlet area, centered and positioned so that the distance between the bottom edge of the last line and the top edge of the outer shell is approximately 1-1/2 inches. The legend shall face the opening.					

TABLE V - CONSTRUCTION OF MITTEN SET

NO.	OPERATION	STCH TYPE	SEAM/ STCH TYPE	STCH IN	THREAD NDL BOB/ LPR
	b. Each insulating liner shall have the combination identification and size marking applied on the back of hand and gauntlet piece, centered and positioned so that the distance between the bottom edge of the last line and the top edge of the insulating liner is approximately 1-1/2 inches. The legend shall face the opening.				
10.	Pairing.				
	a. The finished outer shell and insulating liner shall be matched and paired together.				
	b. The matched pairs of outershells shall not vary in length by more than 1/2 inch.				
	c. Liners when inserted into the outershell shall be long enough to be within 1/4 inch of the length of the outershell.				
	d. Insert the insulating liner into the applicable size outer shell, and fasten together in accordance with the best commercial practice which will permit the mittens to be separated without tearing the mittens.				

* 3.12 Measurement. The sizes and measurements of the finished mitten set (outer shells and detachable insulating liner), shall conform to the dimensions specified in Tables VI and VII. All measurements and tolerances are expressed in inches and shall be made under no tension, while laid flat with palm side facing up. The shell shall be measured without the liner inserted.

Table VI - Finished measurements of outer shells

Measurement	SIZE Small	Medium	Large	X-Large	Tolerance
Overall length (min) (A)	13	13	13	13	
Width of palm (B)	5-5/8	5-3/4	5-7/8	6	+ 1/4 - 1/8
Width of opening (C)	7	7	7	7	± 1/4

NOTE: A through C refer to Figure 1.

(A) Measurement shall be taken from the tip of second finger to top open edge of outer shell.

(B) Measurement shall be taken across palm at thumb crotch, folded edge to folded edge.

(C) Measurement shall be taken across the top open edge, folded edge to folded edge.

Table VII - Finished measurements of detachable insulating liner

* Measurement	SIZE Small	Medium	Large	X-Large	Tolerance
Overall length (A)	Note A	Note A	Note A	Note A	
Length of palm (B)	7-1/2	7-5/8	7-3/4	7-7/8	± 1/8
Length of first (index) finger (min) (C)	2-3/4	2-7/8	3	3-1/8	
Length of second finger (min) (D)	3-1/4	3-3/8	3-1/2	3-5/8	
Length of third and fourth fingers (min) (E)	3	3-1/8	3-1/4	3-3/8	
Length of thumb (min) (F)	2-3/4	2-3/4	2-3/4	2-3/4	
Width of palm (G)	5	5-1/4	5-1/2	5-3/4	+ 1/4 - 1/8
Width of opening (H)	6-1/2	6-3/4	7	7-1/4	± 1/4

NOTE: A through H refer to Figure 2.

(A) The top opening shall finish within 1/4 inch of the top opening of the matching shell when inserted and measured from the top edge of outershell.

(B) Measurement shall be taken from tip of second finger to palm wrist edge of insulating liner.

(C) Measurement shall be taken from first finger crotch to tip of first (index) finger.

(D) Measurement shall be taken from first finger crotch to tip of second finger.

(E) Measurement shall be taken from second finger crotch to tip of third and fourth fingers.

(F) Measurement shall be taken from thumb crotch to tip of thumb.

(G) Measurement shall be taken across palm at thumb crotch, seam to seam.

(H) Measurement shall be taken across bottom edge of gauntlet from outer edge to outer edge.

3.13 Workmanship. The finished mitten set (outer shell and liner) shall conform to the quality established by this specification. The occurrence of defects shall not exceed the applicable quality levels.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or order, the contractor may use his own or any other facilities suitable for performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

* 4.1.1 Responsibility for compliance. All items must meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of assuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling in quality conformance does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective material.

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

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

1. First article inspection (see 4.3).
2. Quality conformance inspection (see 4.4).

4.3 First article inspection.

4.4 Quality conformance inspection. Sampling for inspection shall be performed in accordance with MIL-STD-105, except where otherwise indicated.

4.4.1 Component and material inspection. In accordance with 4.1 above, components and materials shall be tested in accordance with all the requirements of referenced specifications, drawings, and standards unless otherwise excluded, amended, modified, or qualified in this specification or applicable procurement documents. A certificate of compliance shall be submitted for the coating compounds used for the base and final dip applications on the outer shells (see 3.3.2.1 and 3.3.2.2) and for the requirements of the polyurethane film laminate of 3.3.1.2.3. In addition, components and materials listed in Table IX shall be tested for the characteristics specified in accordance with FED-STD-191 whenever applicable and as specified herein. All test reports shall contain the individual values utilized in expressing the final results. The sample size shall be in accordance with Tabel VIII, and the lot shall be unacceptable if one or more units fail to meet any requirement specified. The unit for expressing the lot sizes and sample unit shall be as indicated in Table IX.

Table VIII - Sample size

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

The basis for lot size and sample units for testing shall be as follows:

Component	Lot size expression	Sample unit
Cloth, cotton knit	Yards	1/2 yd full width
Cloth, nylon knit	Yards	1 yd full width
Polyurethane foam	Yards	1/2 yd full width

Table IX - Component testing

Component and lot size expressed in terms of	Characteristic	Requirement paragraph	Test method
Cloth, cotton knit for outer shell (yards)	Material identification	3.3.1.1	1200 1/
	Type of knit stitch	3.3.1.1	Visual 3/ 4/
	Yarn identification	3.3.1.1	1/
	Weight	3.3.1.1	5041
	Wales per inch	3.3.1.1	5070
	Courses per inch	3.3.1.1	5070
	Bursting strength	3.3.1.1	5120
Cloth, nylon knit for insulating liner cover (yards)	Material identification	3.3.1.2.1	1530 1/
	Type of knit stitch	3.3.1.2.1	Visual 3/ 4/
	Multifilament yarn	3.3.1.2.1	1/
	Color	3.3.1.2.1	Visual 3/ 4/
	Weight	3.3.1.2.1	5041
	Wales per inch	3.3.1.2.1	5070
	Courses per inch	3.3.1.2.1	5070
	Bursting strength	3.3.1.2.1	5120
	pH	3.3.1.2.1	2811
	Colorfastness to:		
	Perspiration	3.3.1.2.1.1	5680
	Crocking	3.3.1.2.1.1	5651
Polyurethane foam for insulating liner (yards)	Density	3.3.1.2.2	ASTM D3574-81
	Thickness		
	Palm	3.3.1.2.2	ASTM D3574-81
	Back	3.3.1.2.2	ASTM D3574-81
	Load deflection, ILD Value:		
	25% indentation	3.3.1.2.2	ASTM D3574-81
	65% indentation	3.3.1.2.2	ASTM D3574-81
	Cells per linear inch	3.3.1.2.2	2/ 3/ 4/ 5/

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

2/ A cut surface of the foam shall be lightly marked with a "felt tip marker" or equivalent. With a light shining across the surface, the number of cells lying across a line one inch in length is counted visually using a pick glass or any other suitable magnifying glass.

3/ Only one determination per sample unit is required.

4/ Report results as Pass or Fail

5/ Report results to the nearest whole number.

*4.4.1.1 Adhesion, polyurethane film nylon tricot knit fabric to foam. A representative sample of the flame bonded polyurethane film laminate nylon tricot knit cloth and polyurethane foam ensemble to be used for the palm and back component parts of the insulating liner shall be tested for adhesion as specified below (see 3.4). The sample unit for testing shall be 1/2 yard full width and the sample size shall be in accordance with Table VIII.

Initial.

Five strips shall be cut from the polyurethane film laminate materials, one inch in width by 6 inches in length. The nylon fabric cover shall be peeled back from the polyurethane foam for a distance of two inches. The testing of the specimens shall be made by using a power driven tensile testing machine as described in Method 5100 of FED-STD-191, except that all machine attachments for determining maximum load shall be disengaged. The polyurethane foam shall be fastened in one jaw and the polyurethane film nylon tricot fabric cover in the other jaw. The machine shall record the pound force required to separate the two layers for a distance of three inches at a rate of two inches per minute. The average force of the 10 readings of five specimens (front and back) exerted during the three inch separation, shall be reported as the adhesion value.

After wet aging.

Five strips shall be cut from the laminated materials, 1 inch in width by 6 inches in length. Wet aging shall be accomplished by placing the test specimens on a screen suspended above water in a vacuum dessicator, with the stopcock open. The dessicator shall be placed in an oven for 48 hours at 90°C (± 1°C), and then removed and conditioned at room temperature for 16 to 24 hours before testing for adhesion as described above.

* 4.4.1.2 Resistance to moisture vapor transmission. Three specimens from the 1/8 inch finished material and three specimens from the 3/8 inch finished material each shall be prepared by sewing the four edges of a 4 by 4 inch specimen using stitch type 301 and 401 as described under construction of mitten set. The specimens shall be placed in a dessicator as described in paragraph 4.4.1.1 under "after wet aging". The dessicator shall be placed in an air circulating oven for 24 hours at 100°F. The prepared specimens shall be weighed initially and after 24 hours conditioning and percent increase in weight recorded as a moisture vapor transmission value (see 3.4).

* 4.4.1.3 Stiffness. A representative of the flame bonded polyurethane film laminate nylon knit cloth and polyurethane foam ensemble to be used for the palm of the insulating liner shall be tested for stiffness in accordance with FED-STD-191, Test Method 5206, except testing shall be performed in a conditioned state as well as at $20^{\circ}F$ for two hours. Values for each condition shall be based on an average 10 readings of 5 specimens (front and back). Specimen size shall be 1 x 12 inch (see 3.4).

* 4.4.1.4 Thickness. A representative of the flame bonded polyurethane film laminate nylon knit cloth and polyurethane foam ensemble to be used for the palm of the insulating liner shall be tested for thickness in accordance with FED-STD-191, Test Method 5030, except that the readings shall be taken at .025 psi with a 20 $lb/inch^2$ pressure foot (see 3.4).

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

4.4.3 Intermediate examination. Examination of the completely assembled outer support shells shall be made prior to dipping. The defects found shall be classified in accordance with 4.4.3.1. The sample unit shall be one outer shell and selection shall be made in pairs. The lot size shall be expressed in units of one outer shell. The inspection level shall be II and the acceptable quality level shall be 2.5 major defects and 6.5 total (major and minor combined) defects per 100 units.

4.4.3.1 Visual examination.

Examine	Classification Major	Minor
I. MATERIAL DEFECTS AND DAMAGES		
a. Hole, cut, tear, smash, or dropped stitch(es)	X	
b. Not unbleached and unnapped		X
c. Missing yarn, broken yarn, loose yarn, thin place, visible mend, pulled or snagged yarn; more than 1/2 inch on outside (largest dimension in any direction)		X
II. DESIGN		
Not as specified	X	
III. CLEANNESS		
a. Thread ends not trimmed or loose threads not removed		X
b. Surplus material on seams not trimmed throughout the outer support shell (seam allowance shall not exceed 1/8")		X
IV. CUTTING		
Any component part not cut in accordance with specified pattern, directional lines on patterns, or not in accordance with specification requirements	X	
V. COMPONENT AND ASSEMBLY		
a. Any component part or required operation omitted	X	
b. Any component part twisted, distorted, or not securely attached	X	
c. Any component part not as specified, type, size, color, etc (unless otherwise classified herein)	X	
d. Any operation not performed as specified	X	

Examine	Classification Major	Minor
VI. SEAM AND STITCHING		
a. Accuracy of seaming		
1. Any part of outer support shell caught in unrelated operation		X
2. Seam twisted, puckered, or pleated	X	
3. End of seam or stitching (stitch type 301) when not caught in other seam or stitching, backtacked or backstitched less than 3/8 inch		X
4. End of seam produced with 401 stitch type, when not caught in other seam or stitching, having chain extending less than 1/2 inch or more than 3/4 inch beyond each end		X
5. End of seam produced with 401 stitch type, when not caught in other seam or stitching, not having chain extend beyond each end	X	
b. Open seam		
1. Any open seam	X	
2. Open seam repaired but not repaired as specified		X
NOTE: A seam shall be classified as open when one or more stitches joining a seam are broken or when two or more consecutive skipped stitches or run-offs occur.		
c. Seam and stitch type not as specified	X	
d. Stitch tension		
1. Loose tension resulting in a loosely secured seam	X	
2. Tight tension (stitches break when normal strain is applied in the direction of the seam or stitching)	X	
e. Stitches per inch (to be scored only when condition exists on major portion of seam)		
1. One or two stitches less than the minimum or any number in excess of the maximum		X
2. Three or more stitches per inch less than the minimum specified	X	

4.4.4 Examination of the end item. Examination of the end item shall be in accordance with 4.4.4.1 through 4.4.2.4. The applicable inspection levels and AQL's shall be as indicated in 4.4.4.3. The sample unit for this examination shall be one completely fabricated and assembled outer shell and insulating liner, selected in pairs. Defects for pairing shall be classified as a single defect. The lot size shall be expressed in terms of one outer shell and insulating liner each.

4.4.4.1 Visual examination.

Examine	Classification Major	Minor
I. PAIRING		
a. Not properly mated, i.e., right and left outer shell and insulating liner not same size	X	
b. Paired outer shells and insulating liners not securely fastened		X
c. Left and right mitten shell of material pair vary in length by more than 1/2 inch		X
II. MATERIAL DEFECTS AND DAMAGES		
a. Outer shell (exterior coated fabric)		
1. Any hole including a pinhole, cut, tear, or rip through material	X	
2. Any evidence of separation of coating	X	
3. Coated surface not homogenous in appearance, i.e., puckering, bubbling, pitting, waviness or general uneveness	X	
4. Any area of no coating	X	
5. Any brittle area which when bent results in a crack	X	
6. Any area of excessive coating, i.e., solid runs, ridges, or lumps		X
7. Any pit or abraded area but not through the material or to a degree where the base fabric is exposed		X
8. Any pit or abraded area which exposes base fabric	X	
9. Any foreign matter imbedded in coating which on removal leaves an uncoated or poorly coated area	X	
10. Exterior roughened texture omitted or not in accordance with standard sample	X	
11. Roughened texture not extending at least 7 inches down from tip of second finger	X	
12. Color of coating not as specified	X	
13. Any evidence of tackiness		X
14. Any blister or tunnel	X	
15. Any area of general uncleanness		X
16. Any ridge caused by lining being pleated or rolled		X

Examine	Classification Major	Minor
b. Insulating liner		
1. Any hole, cut, tear, smash, or dropped stitch(es)	X	
2. Any loose knitting of the nylon tricot knit fabric cover, as evident by sleaziness		X
3. Missing yarn, broken yarn, loose yarn, thin place, pulled or snagged yarn, or a visible mend; more than 1/2 inch on outside (largest dimension in any direction)		X
4. Any evidence of the polyurethane film laminate nylon tricot knit fabric cover not properly adhered or separating from the polyurethane foam	X	
III. DESIGN (INSULATING LINER)		
Not as specified	X	
IV. CLEANNESS		
a. Outer shell		
Any area of general uncleanness on outside coated area		X
b. Insulating liner		
1. Thread ends not trimmed or loose threads not removed		X
2. Surplus material on seams not trimmed throughout the insulating liner		X
3. Any permanent spot or stain on outside		X
V. CUTTING (INSULATING LINER)		
Any component part not cut in accordance with specified pattern, directional lines on patterns, or not in accordance with specification requirements	X	
VI. COMPONENT AND ASSEMBLY (INSULATING LINER)		
a. Any component part or required operation omitted	X	
b. Any component part not as specified, i.e., type, size, color, etc., (unless otherwise classified herein)	X	
c. Any component part tight, twisted, distorted, or pleated (unless otherwise classified herein)		X
d. Any operation not performed as specified (unless otherwise classified herein)	X	

Examine	Classification Major	Minor
VII. SEAMS AND STITCHING (INSULATING LINER)		
a. Accuracy of seaming		
1. Any part of insulating liner caught in unrelated operation		X
2. Seam twisted, puckered, or pleated (unless otherwise classified herein)	X	
3. End of seam or stitching (stitch type 301), when not caught in other seam or stitching, backtacked or backstitched less than 3/8 inch		X
4. End of seam produced with 401 stitch type, when not caught in other seam or stitching, having chain extending less than 1/2 inch or more than 3/4 inch beyond each end		X
5. End of seam produced with 401 stitch type, when not caught in other seam or stitching, not having chain extend beyond each end	X	
b. Gage of stitching and seam allowance		
1. Seam allowance not as specified by 1/16 inch or more (score only when condition exists on more than 1/2 the length of the seam)		X
2. Irregular, not within range specified, or varies more than 1/16 inch when no range is specified (score only when condition exists on more than 1/2 the length of the seam)		X
c. Open seam		
1. Any open seam	X	
2. Open seam repaired but not repaired as specified		X
NOTE: A seam shall be classified as open when one or more stitches joining a seam are broken or when two or more consecutive skipped stitches or run-offs occur		
d. Seam and stitch type not as specified	X	
e. Stitch tension		
1. Loose tension resulting in a loosely secured seam	X	
2. Tight tension (stitches break when normal strain is applied in the direction of the seam or stitching)	X	

Examine	Classification Major	Minor
f. Stitches per inch (to be scored only when condition exists on major portion of seam)		
1. One or two stitches less than the minimum or any number in excess of the maximum		X
2. Three or more stitches per inch less than the minimum specified	X	
g. Bartack, tack or tacking		
1. Omitted	X	
2. Misplaced, insecure, not serving intended purpose		X
VIII. ADJUSTMENT (TAKE-UP) STRAP (OUTER SHELL)		
a. Long or short strap component part of the ensemble omitted	X	
b. Ends of the long or short strap as applicable not turned under to specified dimension or not bartacked as specified		X
c. Not specified type, width, color, etc.		X
IX. BUCKLE (OUTER SHELL)		
a. Omitted	X	
b. Misplaced, not attached as specified		X
c. Not specified type or style		X
d. Misshapen, twisted, or distorted		X
X. REINFORCEMENT TABS (OUTER SHELL)		
a. One or both omitted	X	
b. Any reinforcement tab misplaced or insecurely caught in the applicable line of stitching		X
c. Not specified type, width, color, etc.		X
d. Any reinforcement tab protruding from the applicable seam less than 5/8 inch		X
XI. BOTTON HEM (OUTER SHELL)		
Finished hem less than 3/8 inch or more than 1/2 inch in width		X

Examine	Classification Major	Minor
XII. MARKING (OUTER SHELL AND INSULATING LINER)		
a. Omitted, incorrect, or illegible	X	
b. Misplaced, i.e., not finished as specified		X
c. Inscription lettering less than 1/8 inch in height		X
d. Ink not of a permanent type, i.e., can be easily removed with a moistened thumb	X	
e. Ink not of a contrasting color to the applicable component		X

4.4.4.2 Dimensional examination. The finished mitten set, outer shells and detachable insulating liners shall be examined for defects in dimensions as specified in Tables VI and VII. Any dimension that is not within the established tolerance shall be classified as a defect.

4.4.4.3 Inspection levels and acceptable quality levels. The inspection levels and the acceptable quality levels, expressed in defects per 100 units (DHU), shall be as follows:

	Inspection Level	AQL's Major	Total
For defects applicable to 4.4.4.1	III	2.5	6.5
For defects applicable to 4.4.4.2	S-3	-	4.0

4.4.5 Examination of packaging requirements. An examination shall be made to determine that packaging, packing, and marking comply with Section 5 requirements of this specification. Defects shall be scored in accordance with the list below. The sample unit shall be one shipping container fully prepared for delivery with the exception that it need not be closed. Defects of closure listed below shall be examined on shipping containers fully prepared for delivery. The lot size shall be on the number of shipping containers in the end item inspection lot. The inspection level shall be S-2 and the AQL shall be 2.5 defects per hundred units.

Examine	Defect
Marking (exterior and interior	Omitted, incorrect, illegible, of improper size, location, sequence, or method of application.
Materials	Any component missing, damaged, or not as specified.
Workmanship	Inadequate application of components, such as: incomplete closure of container flaps, loose strapping, improper taping, inadequate stapling, bulged or distorted container.
Content	Number of items per shipping container is more or less than required. Size shown on one or more items not as specified on shipping container. 1/

1/ For this defect, one item from each shipping container in sample shall be examined.

4.5 End item testing of outer shells. From each lot of end items, only the outer shells shall be tested for the characteristics specified in Table X and in accordance with FED-STD-191 whenever applicable. The physical and chemical values specified in Section 3, apply to the average of the determinations made on a sample unit for test purposes as specified in the applicable test method. The lot size shall be expressed in units of one outer shell each, and selection shall be made in pairs. The sample unit shall be 6 outer shells. The inspection level shall be S-1 with an AQL of 4.0 defects per 100 units, except that any failure encountered in the porosity test or the fuel resistance test shall be cause for rejection of the representative lot. All test reports shall contain the individual values utilized in expressing the final results.

Table X - End item tests of outer shells

Characteristic	Requirement paragraph	Test method
Overall weight of smooth surface	3.5	5041
Bursting strength	3.5	5120
Adhesion of coating	3.5	5970 1/
Stiffness:		
At +70°F (21°C) wale direction	3.5	5204
At -40°F (-40°C) wale direction	3.5	5204
Hydrostatic resistance	3.5	5512 2/
Porosity	3.5	4.5.1
Fuel resistance	3.5	4.5.2
Blocking	3.5	5872 3/

1/ Except that the result shall be the average of the five (5) lowest peak loads of resistance registered during the separation of coating.

2/ The water pressure shall be applied only to the uncoated side of the test specimen.

3/ Except that a 6 inch by 6 inch test specimen shall be used.

4.5.1 Porosity.

4.5.1.1 Test apparatus. The test apparatus shall be of a mechanism as described below or any other similar type in principle, provided the results can be obtained as specified in 4.5.1.2.

A hollow wooden shank, 3 inches in length, tapered on the outer surface to fit the open end of the outer shells and a steel ring tapered on the inner surface to fit over the wooden shank. The shank shall be attached to a steel base plate to make an airtight joint, and the tapered ring shall be bolted to the base place so that it can be tightened over the shank. The base plate shall be fitted with a 1/4 inch internal pipe size brass nipple which shall be connected with other pipe fittings to mount a tire inflation valve, an air pressure gauge, and a pressure release valve (see Figure 3).

4.5.1.2 Procedure. The open end of the outer shell shall be pulled over the shank of the test appratus and clamped firmly in place by tightening the steel ring against the base plate. Compressed air shall be fed into the shell to a pressure of 0.5 (± .25) p.s.i. The inflated shell shall be immersed in water for 1 minute for observation of porosity as indicated by air bubbles. No visible bubbles shall be permitted within the 1 minute period. One determination per sample unit shall be made, and the results reported as "pass" or "fail".

4.5.2 Fuel resistance test. A test specimen 3 X 3 inches shall be cut from the roughened (hand) portion of the outer shell to be tested. The test specimen shall be immersed completely for 15 minutes in a mixture of 70% iso octane and 30% tuluol. Remove the specimen and allow to dry at room temperature for four hours. When dry, the test specimen shall be folded in half and rolled with a roller of approximately 10 pounds in weight. The test specimen shall be folded again in half, perpendicular to the direction of the first fold, and rolled again in the same manner. The specimen shall be examined for evidence of cracking, softening, flaking, or separation of coating from the fabric. One determination shall be made per sample unit and the results as "pass" or "fail".

4..6 Palletization examination. An examination shall be made to determine that the palletization complies with the section 5 requirements. Defects shall be scored in accordance with the list below. The sample unit shall be one palletized unit load fully packaged. The lot size shall be the number of palletized unit loads in the end item inspected lot. The inspection level shall be S-1 and the AQL, expressed in terms of defects per hundred units, shall be 6.5 in accordance with MIL-STD-105.

Examine	Defect
Finished dimensions	Length, width,or height exceeds specified maximum requirements.
Palletization	Pallet pattern not as specified. Interlocking of loads not as specified. Load not bonded with required straps as specified.
Weight	Exceeds maximum load limits.
Marking	Omitted, incorrect, illegible, of improper size, location, sequence, or method of application.

5. PACKAGING

5.1 Preservation-packaging. Preservation-packaging shall be level A or C as specified (see 6.2).

5.1.1 Level A. Each mitten set shall be paired palm to palm and finger tips to cuff, and securely tied with any suitable tape or twine.

5.1.2 Level C (Commercial packaging). Mitten sets shall be preserved and packaged to afford adequate protection against physical damage during shipment from the supply source to the first receiving activity. The contractor may use his standard practice when it meets this requirement. The package and the quantity per package shall be the same as that normally used by the contractor for retail distribution.

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

* 5.2.1 Level A. Eight (8) pairs of mitten sets, of one size only and packaged as specified in 5.1, shall be packed in a fiberboard shipping container assembled, closed and reinforced conforming to type CF, class weather-resistant, variety DW, grade V15c, size 1A of MIL-B-17757. The fiberboard used for the liner shall conform to type CF, class domestic conforming to MIL-B-17757. Each container shall have the contents completely covered on top and bottom with a sheet of kraft paper of any suitable commercial grade. Towards the end of the contract, or when there are less than the required amount per container of the same size, mixed sizes may be packed within the same container.

* 5.2.2 Level B. Eight (8) pairs of mitten sets, of one size only and packaged as specified in 5.1, shall be packed in a fiberboard shipping container assembled, closed and reinforced conforming to type CF, class domestic, variety DW, grade 200, size 1A of MIL-B-17757. The fiberboard used for the liner shall conform to type CF, class domestic of MIL-B-17757. Each container shall have the contents completely covered on top and bottom with a sheet of kraft paper of any suitable commercial grade. Towards the end of the contract, or when there are less than the required amount per container of the same size, mixed sizes may be packed within the same container.

5.2.3 Level C. Item packaged, as specified in 5.1, shall be packed in a manner to insure carrier acceptance and safe delivery at destination at the lowest transportation rate for such supplies. The quantity per shipping container shall be the same as that normally used by the contractor for retail distribution. Containers shall comply with the US Postal Service Manual, Uniform Freight Classification Rules or National Motor Freight Classification Rules, as applicable.

5.3 Marking. In addition to any special marking required by the contract or order, interior packages and shipping containers shall be marked in accordance with MIL-STD-129.

5.3.1 Labels, mixed sizes. Each shipping container, packed with mixed sizes only, shall have securely attached to the end and side, directly under the printing or stenciling, a white paper label 4 by 5 inches with the words "MIXED NSN'S" plainly stamped or printed thereon and under these words shall be legibly stamped or printed the correct quantity and National Stock Numbers contained therein.

5.4 Palletization. When specified (see 6.2) item packed as specified shall be palletized on a 4-way entry pallet in accordance with load type Ia of MIL-STD-147. Each prepared load shall be bonded with primary and secondary straps in accordance with bonding means C, K, and L or O or P. Pallet pattern shall be in accordance with the appendix of MIL-STD-147.

The pallet shall be 4-way, Type IV; Type V, Class 1, Size 2; or Type VIII, fabricated from wood group I, II, III or IV, Grade A of NN-P-71, or 4-way, Style 1, Size A, Type I, Class 1 fabricated from wood groups specified of MIL-P-15011. Interlocking of loads shall be effected by reversing the pattern of each course. If the container is of a size which does not conform to any of the patterns specified in MIL-STD-147, the pallet pattern used shall be approved by the contracting officer.

6. NOTES

6.1 Intended use. The mittens are intended to be worn in cold and wet/cold areas as a component with other insulated extreme cold weather protective clothing.

* 6.2 Ordering data. Procurement documents should specify the following:

a. Title, number, and date of this specification
b. Sizes required (see 1.2)
c. When first article sample is required (see 3.2) the item tested should be first article sample. The contracting officer should include specific instruction in acquisition documents regarding arrangements for examination, quantity, and testing and approval of the first article.

d. Selection of applicable levels of packing and packaging (see 5.1 and 5.2).
e. When palletizationis required (see 5.4)

* 6.3 Samples and patterns. For access to samples, dipping forms, and patterns, address the procuring activity issuing the invitation for bids.

* 6.4 Changes from previous issue. The margins of this specification are marked with an asterisk to indicate where changes (additions, modifications, corrections, deletions) from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

* 6.5 Subject term (key word) listing.

Dipping forms
Extreme cold weather
Flame bonded ensemble
Liner, insulating
Polyurethane film laminate

Custodian:
Navy - NU

Preparing Activity:
Navy - NU

Review Activity:
DLA - CT

Project No. 8415-0574

User activities:
Navy - CG, YD, SH, MC

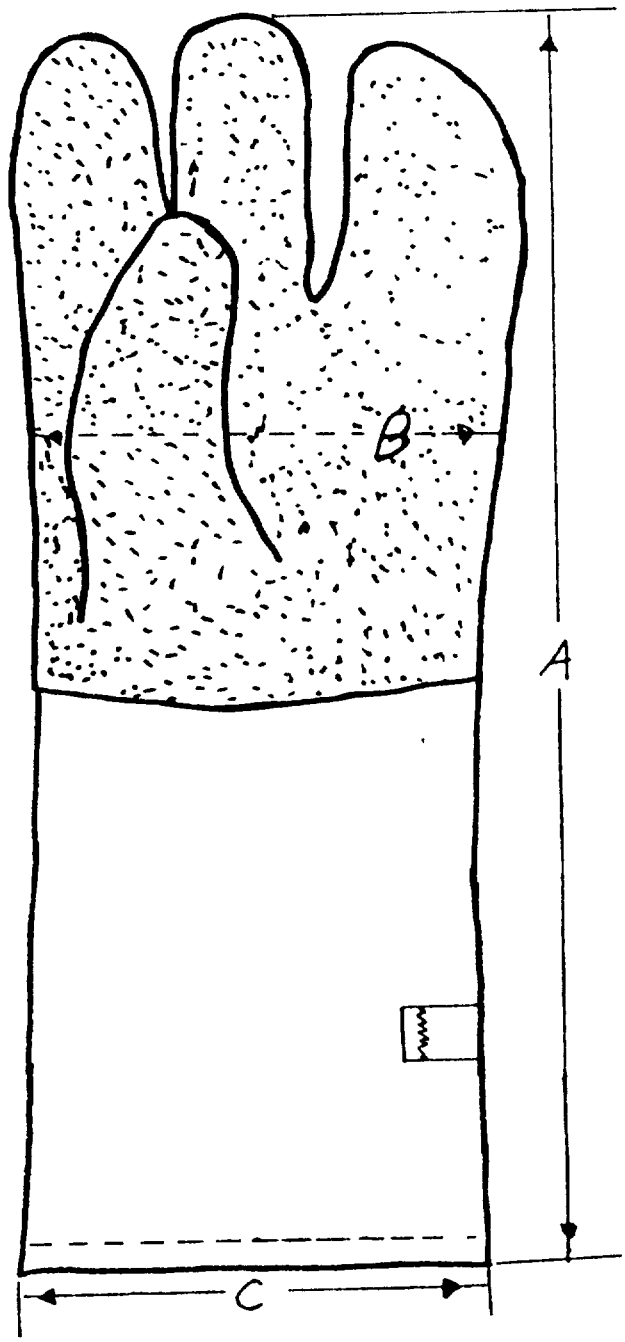

FIGURE 1 - MITTENS, EXTREME COLD WEATHER

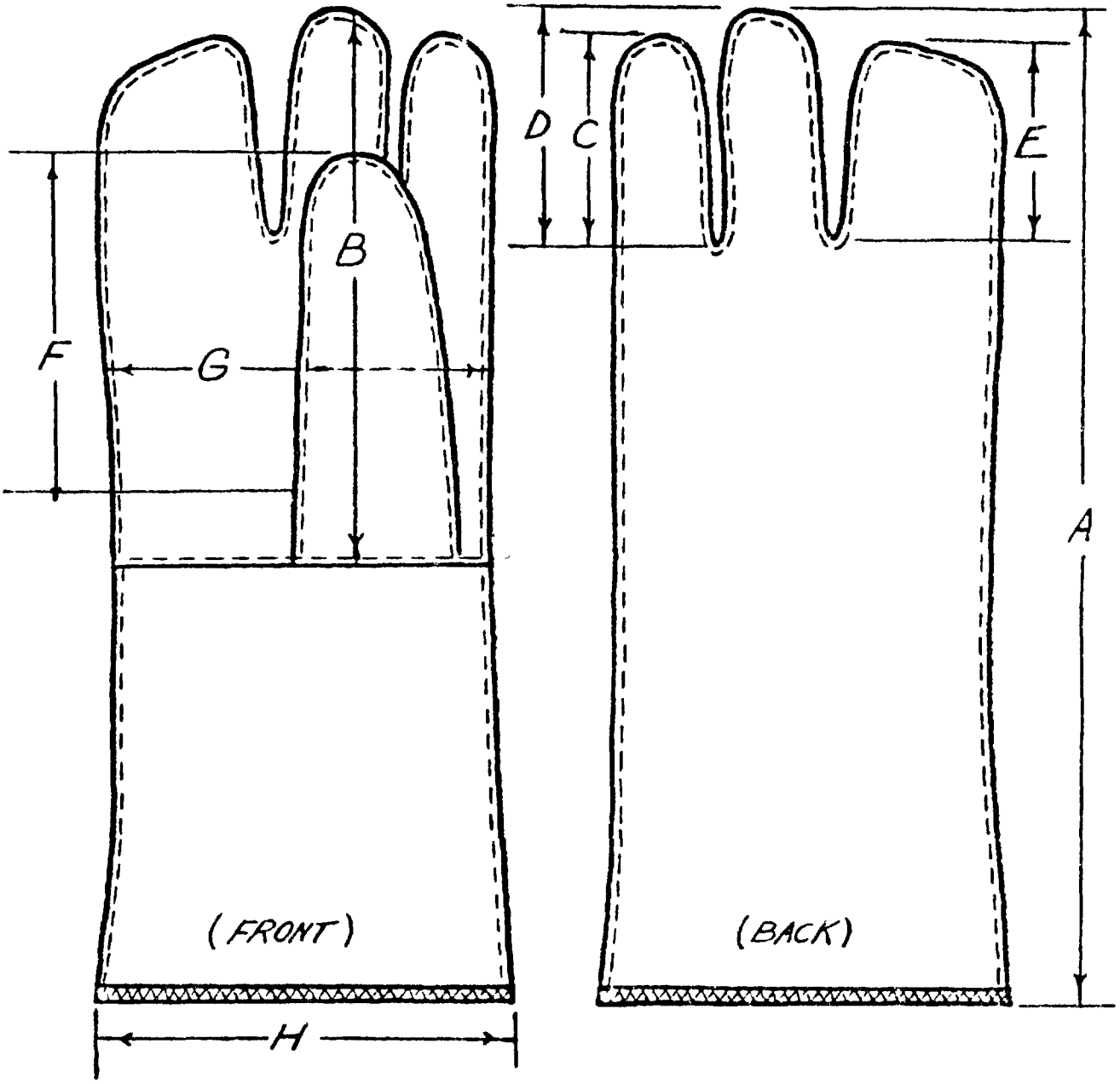

FIGURE 2 - INSULATING LINER FOR MITTENS, EXTREME COLD WEATHER

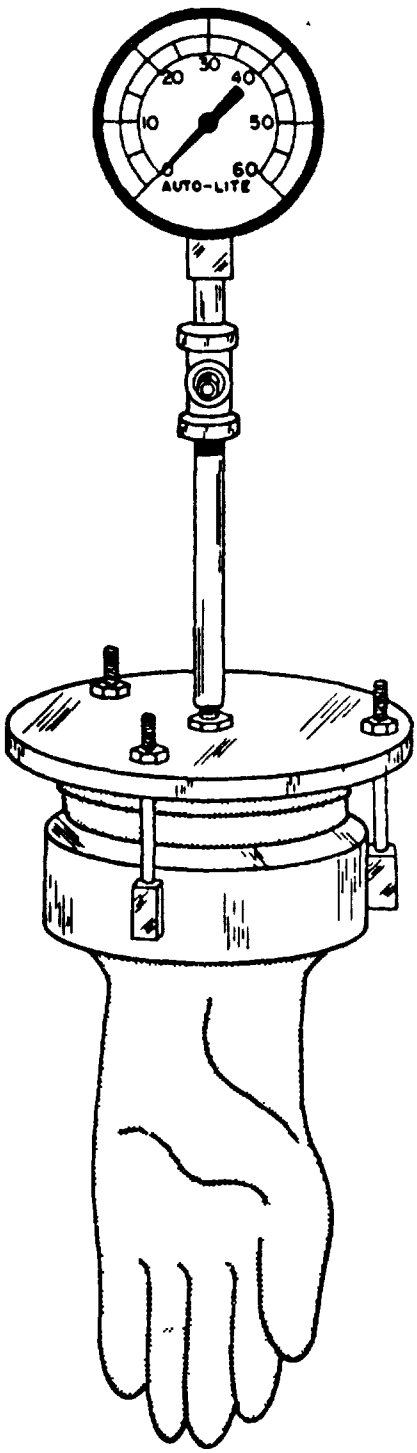

FIGURE 3 - Apparatus for porosity test.

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STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions – Reverse Side)

1 DOCUMENT NUMBER	2 DOCUMENT TITLE
MIL-M-87033A(NU)	MITTEN SET, EXTREME COLD WEATHER

3a. NAME OF SUBMITTING ORGANIZATION	4 TYPE OF ORGANIZATION *(Mark one)*
	☐ VENDOR
b ADDRESS *(Street, City, State, ZIP Code)*	☐ USER
	☐ MANUFACTURER
	☐ OTHER *(Specify)* _____

5 PROBLEM AREAS

a. Paragraph Number and Wording

b Recommended Wording

c Reason/Rationale for Recommendation

6 REMARKS

7a NAME OF SUBMITTER *(Last, First, MI)* – Optional	b WORK TELEPHONE NUMBER *(Include Area Code)* – Optional
c MAILING ADDRESS *(Street, City, State, ZIP Code)* – Optional	8 DATE OF SUBMISSION *(YYMMDD)*

DD FORM 82 MAR 1426 PREVIOUS EDITION IS OBSOLETE