

MIL-M-43945B  
18 July 1988  

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SUPERSEDING  
MIL-M-43945A  
31 March 1983

## MILITARY SPECIFICATION

### MASK, 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 document covers a mask assembly consisting of one face mask, one bib, and two oro-nasal masks. The oro-nasal masks are subject to replacement, and this document may be used to procure replacement quantities (see 6.5).

#### 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.

#### SPECIFICATIONS

##### FEDERAL

A-A-50083 - Bag, Plastic, Folded Garment  
JJ-W-155 - Webbing, Textile, (Cotton, Elastic)  
QQ-A-250/1 - Aluminum 1100, Plate and Sheet

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: U.S. Army Natick Research, Development, and Engineering Center, Natick, MA 01760-5014 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

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## MIL-M-43945B

- DDD-L-20 - Label: For Clothing, Equipage, and Tentage,  
(General Use)
- DDD-T-86 - Tape, Textile; Cotton, General Purpose  
(Unbleached, Bleached, or Dyed)
- PPP-B-636 - Boxes, Shipping, Fiberboard

## MILITARY

- MIL-T-3530 - Thread and Twine: Mildew Resistant or Water  
Repellent Treated
- MIL-F-21840 - Fastener Tapes, Hook and Loop, Synthetic
- MIL-L-35078 - Loads, Unit: Preparation of Semiperishable  
Subsistence Items; Clothing, Personal Equipment and  
Equipage, General Specification For
- MIL-C-43247 - Cloth, Knitted, Nylon, Tubular, Stretch Type
- MIL-T-43548 - Thread, Polyester Core: Cotton-, Rayon-, or  
Polyester-Covered
- MIL-T-43566 - Tape, Textile, Cotton or Polyester, 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 and Storage
- MIL-STD-147 - Palletized Unit Loads
- MIL-STD-731 - Quality of Wood Members for Containers and Pallets

(Copies of specifications, standards, and handbooks required by contractors in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting activity.)

- \* 2.2 Other publications. The following documents 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 issues of the nongovernment documents which are current on the date of the solicitation.

MIL-M-43945B

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

D 1564 - Testing Slab Flexible Urethane Foam

D 3951 - Standard Practice for Commercial Packaging

(Copies should be obtained from the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103-1187.)

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

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). Variation from this document may appear in the sample, in which case this document shall govern.

\* 3.2 First article. When specified in the contract or purchase order, a sample shall be subjected to first article inspection (see 4.3, 6.2, and 6.4).

3.3 Materials (see 6.7).

3.3.1 Basic material - face mask. The basic material for the face mask, chin piece, and the nose-bridge stiffener cover shall be made from nylon knitted and cotton jersey cloth laminated together. The components and lamination shall comply with 3.3.1.1, 3.3.1.2, 3.3.1.3 and 3.3.1.4.

3.3.1.1 Outer layer. The material for the outer layer shall be nylon knitted cloth conforming to class 1 of MIL-C-43247, except the color shall be chemically bleached white and may be supplemented with optical brighteners which fluoresce to the blue region and the requirement for colorfastness shall not apply. The degree of brightness shall match the standard sample.

3.3.1.2 Inner layer. The material for the inner layer shall be a flat (jersey) stitch knitted cloth, made of single or 2-ply combed cotton yarns having a minimum of 30 wales and 36 courses per inch, a minimum bursting strength of 55 pounds, and a minimum weight of 3.3 ounces per square yard.

## MIL-M-43945B

The cloth shall not shrink nor elongate more than 12 percent in the length (wale) or width (course) direction. It shall be scoured and bleached. The starch and protein content, including chloroform-soluble material of the finished cloth (non-fibrous material content), shall not exceed 6.0 percent and the pH value of the finished cloth shall be no less than 6.0 nor more than 8.0. The finished cloth shall meet these requirements when tested as specified in 4.4.1.

3.3.1.3 Polyurethane foam. The foam to be adhered to the nylon and cotton basic materials (see 3.3.1.1 and 3.3.1.2) shall be an unpigmented polyurethane foam with a minimum thickness of 0.235 inch and a maximum of 0.250, a maximum density of 2.0 pounds per cubic foot, a minimum tear strength of 3.5 pounds per inch thickness, and a maximum compression set of 15 percent, when tested as specified in 4.4.1.

3.3.1.4 Bonding of basic cloths to foam. One side of the polyurethane foam shall be flame laminated to the outer layer nylon base fabric (see 3.3.1.1) and the other side shall be flame laminated to the face (wale) side of the cotton cloth (see 3.3.1.2).

3.3.2 The basic material - bib. The basic material for the bib shall be made from nylon tricot and cotton jersey cloth laminated together. The components and lamination shall comply with 3.3.2.1, 3.3.2.2, 3.3.2.3, and 3.3.2.4.

3.3.2.1 Outer layer. The outer layer shall be white nylon tricot cloth knitted on a 28-gage tricot machine using 40-denier nylon yarn, having a minimum of 37 wales and 35 courses per inch, and a minimum bursting strength of 80 pounds. The weight of the cloth shall be not less than 1.8 nor more than 2.2 ounces per square yard. The cloth shall not shrink nor elongate more than 12 percent in length (wales) or width (course) direction when tested as specified in 4.4.1.

3.3.2.2 Inner layer. The material for the inner layer shall be flat (jersey) stitch knitted cloth conforming to the requirements of 3.3.1.2.

3.3.2.3 Polyurethane foam. The foam to be adhered to the nylon tricot and cotton jersey cloths (see 3.3.2.1 and 3.3.2.2) shall be an unpigmented polyurethane foam with a minimum thickness of 0.089 inch and a maximum of 0.099 inch, a maximum density of 2.0 pounds per cubic foot, a minimum tear strength of 3.0 pounds per inch thickness, and a maximum compression set of 20 percent when tested as specified in 4.4.1.

3.3.2.4 Bonding of basic cloths to foam. One side of polyurethane foam shall be flame laminated to the float side of the outer layer nylon knit tricot cloth (see 3.3.2.1) and the other side shall be flame laminated to the face (wale) side of the cotton jersey knitted cloth (see 3.3.2.2).

## MIL-M-43945B

\* 3.3.3 Oro-nasal mask. The oro-nasal mask consists of two air filtering masks (see table II (operation 3)) and shall conform to Minnesota Mining and Manufacturing Co., non-toxic nuisance dust particle mask, Model No. 8500, the 3M Air Warming mask, or the Gerson Co. mask, Model No. 1501, or equal (see 6.6). (Two finished oro-nasal masks, each one consisting of two air filtering masks with filler, are to be furnished with each cold weather mask.)

3.3.4 Oro-nasal barrier mask filler and nose-bridge cushion. The material for the barrier mask filler (see table II (operation 3)) and for the nose-bridge cushion shall be a natural or white, plain jersey-knit cotton cloth, napped on the inside, having a minimum of 19 wales and 22 courses per inch, a minimum weight of 10.5 ounces per square yard and a minimum bursting strength of 75 pounds when tested as specified in 4.4.1.

3.3.5 Malleable nose-bridge stiffener. The material for the nose-bridge stiffener shall be 0 temper, aluminum sheet, 0.020 inch thick conforming to QQ-A-250/1.

3.3.6 Eyeglass-retention holder. The material for the eyeglass-retention holder shall be bleached cotton elastic webbing, 1/2 inch wide, conforming to type I, class 1 of JJ-W-155, except it need not be water repellent or mildew resistant treated.

3.3.7 Adjustable head-harness and pull-tab on chin adjustment. The material for the adjustable head-harness and pull-tab on chin adjustment shall be a bleached or unbleached cotton elastic webbing, 1-1/4 inches wide, conforming to type I, class 9 of JJ-W-155.

3.3.8 Visual-port connector. The material for the connector for the visual-port shall be bleached or unbleached, cotton elastic webbing, 5/16 inch wide, conforming to type II, class 1 of JJ-W-155.

3.3.9 Pull-tab and binding for oro-nasal mask. The material for the pull-tab and binding for the oro-nasal mask shall be white cotton tape, 1/2 inch wide, conforming to type I or II, class 1 or 2 of DDD-T-86. Alternatively, the pull-tab and binding shall be 1/2 inch cotton tape conforming to type I, class 1 or 2 of MIL-T-43566.

3.3.10 Fastener closures. The fastener tapes shall be white nylon, hook and loop, conforming to type I, class 1 of MIL-F-21840. The hook tape for the nose-bridge and the loop tape for the oro-nasal barrier shall be 5/8 inch wide. All other hook and loop tapes shall be 1 inch wide.

3.3.11 Thread. The thread for stitching the mask shall be polyester cotton-covered or rayon-covered, unbleached or white, Ticket Nos. 50 and 70 conforming to MIL-T-43548. The thread shall be water repellent treated conforming to type II, class 3 of MIL-T-3530, except that the test to determine dynamic absorption of the treated thread shall be Method 4504 of FED-STD-191 in lieu of the test specified.

## MIL-M-43945B

3.4 Labels. Each mask shall have an identification label and instruction sheet.

3.4.1 Identification label. The identification label shall conform to type VI, class 1 of DDD-L-20.

3.4.2 Instruction sheet. An instruction sheet measuring not less than 7-1/2 by 7-1/2 inches shall be packed with each mask. The printing media shall be black, printed on white paper with capital letters 1/8 inch in height and lower case letters 1/16 inch in height and shall contain the following information:

INSTRUCTIONS FOR USE

MASK, EXTREME COLD WEATHER

Donning instructions:

1. Detach nose-mouth covering part of mask and detach the bib.
2. Assure that chin pocket adjuster is firmly connected.
3. Place chin into mask chin pocket.
4. Place mask nose-bridge over bridge of nose and hold entire mask in place with one hand.
5. Grasp tab on the back strap of mask, pull strap around back of head and firmly attach tab to loop fastener on right side of mask.
6. Center top strap of mask on head.
7. If mask is too loose, separate chin pocket adjuster, pull ends closer together, and reconnect firmly.
8. If mask is too tight, separate chin pocket adjuster, spread ends further apart, and reconnect firmly.

NOTE: Chin pocket adjuster affects position of eye holes and nose-bridge. Do not loosen chin pocket adjuster once it is properly fitted and adjusted.

9. Press down on nose-bridge stiffener bar in order to mold mask to face.
10. Replace nose-mouth covering and attach firmly to loop fastener around the opening.
11. If glasses are to be worn, place one leg of the glasses inside center elastic strap connecting eye opening, feed glasses through until centered on bridge of nose, and place each leg into the elastic glasses holder on each side of mask.
12. If required, replace bib.
13. To remove mask, simply pull back strap tab.

Use of bib: Bib is provided when additional protection to throat and neck is required. Bib should be attached to lower part of face mask by means of hook and loop fasteners.

## MIL-M-43945B

Laundry instruction: Wash all parts by hand in hot soapy water. Rinse in clear water and hang up to drip-dry in room temperature. DO NOT WRING OR TUMBLE DRY as such mechanical action will distort the nose-bridge stiffener.

3.5 Design. The mask is a contoured covering for the face; it includes a chin adjustment feature, with an elastic adjustable head harness, a visual port connected by an elastic strap, eyeglass retention holders, a padded malleable aluminum nose-bridge stiffener, a removable oro-nasal barrier mask, and a bib-type throat covering that attaches to the face mask by hook and loop fastener tapes.

3.5.1 Figure. Figure 1 is furnished for information purposes only. To the extent of any inconsistencies between the written document and the figure, the document shall govern.

3.5.2 Patterns. Standard patterns will be furnished by the Government. The standard patterns shall not be altered in any way and are to be used as a guide for cutting the contractor's working patterns. The patterns provide 1/8-inch trim-off for overedging the periphery of the face piece and the bib.

3.5.3 List of pattern parts. The mask shall be cut from the materials specified in accordance with the number of parts indicated in table I.

TABLE I. List of pattern parts

Material	Nomenclature	Cut parts
Bonded cloth (see 3.3.1)	Face	1
	Chin-piece	1
	Nose-bridge stiffener cover <u>1/</u>	1
Bonded cloth (see 3.3.2)	Bib	1
Napped jersey cloth (see 3.3.4)	Oro-nasal mask filler <u>2/</u>	2
	Nose-bridge cushion <u>1/</u>	1
Aluminum sheet (see 3.3.5)	Nose-bridge stiffener	1

1/ Same pattern part for nose-bridge cushion and stiffener cover.

2/ One filler is required for each of the two oro-nasal masks (see 3.3.3).

## MIL-M-43945B

### 3.6 Construction.

3.6.1 Stitches, seams, and stitching. Stitch, seam, and stitching types, as specified in table II, shall conform to FED-STD-751. When two or more seam or stitch types are given for the same part of an operation, any one of them may be used. When stitch type 401 is used, the looper (under thread) shall be on the inside of the mask. Seam allowances shall be maintained with seams sewn so that raw edges, run-offs, twists, pleats, puckers, or open seams will not result. All seams shall start and finish evenly. Thread tension shall be maintained so that no tight or loose tension will result. The gage of the safety stitching (when applicable) shall be no less than  $3/8$  inch.

3.6.2 Stitches per inch. The minimum and maximum number of stitches per inch shall be as specified in table II.

3.6.3 Thread breaks and ends of seams. Ends of all seams and stitchings shall be backtacked not less than  $1/4$  inch unless otherwise specified. The ends of a continuous line of stitching shall be overlapped not less than  $1/4$  inch except on labels, fastener tapes, or box stitching where the overlap shall be not less than 3 stitches. Thread breaks shall be secured by stitching back of the break not less than  $1/4$  inch.

3.7 Manufacturing operations requirements. The mask shall be manufactured in accordance with the operation requirements specified in table II. The contractor is not required to follow the exact sequence of operations. Any additional basting or holding stitching used to facilitate manufacture is permissible provided the thread is removed or does not show on the finished mask.



MIL-M-43945B

NO.	MANUFACTURING OPERATIONS REQUIREMENTS	STITCH TYPE	SEAM AND STITCHING TYPE	STITCHES PER INCH	THREAD	
					NEEDLE	BOBBIN/LOOPER COVER
1.	<p><u>Cutting.</u></p> <p>a. Cut all parts of the mask in strict accordance with patterns furnished, which show directional lines, notches, and locating marks for assembling all parts.</p> <p>b. Cut the two 1/2 inch elastic webbing (see 3.3.6) for the eyeglass retention holders of sufficient length to comply with operation 8.f and to measure 1-3/8 inches + 1/4 inch from the top edge of the face mask to the top edge of the cross-back piece.</p> <p>c. Cut the 1-1/4 inch elastic webbing (see 3.3.7) for center piece of head-harness of sufficient length to comply with operations 6.c and 9.a and to measure (relaxed) 9-5/8 inches + 1/4 inch from the top edge of the cross-back piece.</p> <p>d. Cut the 1-1/4 inch elastic webbing (see 3.3.7) for cross-back piece of head-harness of sufficient length to comply with operation 6.a and 9.a and b and to measure (relaxed) 6-3/4 inches ± 1/4 inch from side edge of mask to the turned-in edge at end of elastic.</p> <p>e. Cut the 1-1/4 inch elastic webbing (see 3.3.7) for the end of the loop fastener tape pull-tab of sufficient length to comply with operation 5. After hemming and attachment, the finished pull-tab shall measure 1-3/8 inches + 1/4 inch (relaxed).</p> <p>f. Cut the 5/16 inch elastic webbing (see 3.3.8) for the visual-port connector of sufficient length to comply with operation 8.j and to measure 1-5/8 inches ± 1/8 inch on the finished mask.</p>					

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MIL-M-43945B

NO	MANUFACTURING OPERATIONS REQUIREMENTS	STITCH TYPE	SEAM AND STITCHING TYPE	STITCHES PER INCH	T H R E A D		
					NEEDLE	BOBBIN/ LOOPER	COVER
1.	<p><u>Cutting.</u> (cont'd)</p> <p>g. Cut the 1/2 inch tape (see 3.3.9) for the pull-tab for the oro-nasal mask of sufficient length to comply with operation 3.b, and to measure 1-3/8 inches + 1/8 inch from folded edge to folded edge on the finished mask.</p> <p>h. Cut one 5/8 inch loop tape (see 3.3.10) for the oro-nasal mask 8-3/4 inches + 1/4 inch long.</p> <p>i. Cut one 5/8 inch hook tape (see 3.3.10) for the nose-bridge of face mask 4-7/8 inches ± 1/8 inch long.</p> <p>J. Cut the 1 inch loop tapes (see 3.3.10) as follows:</p> <p>1-3/4 inches, + 1/4 inch, - 1 each for head-harness  - 1/8 inch - 2 each for bottom edge of face piece  - 1 each for pull-tabs (applicable when operations 5.a, b, and c are used).</p> <p>2 inches ± 1/8 inch - 1 each for pull-tabs (applicable when operations 5.a, b, and c are used).</p> <p>2-1/2 inches ± 1/8 inch - 1 each for pull-tabs (applicable when operations 5.a, b, and c are used).</p> <p>k. Cut the 1 inch hook tapes (see 3.3.10) as follows:</p> <p>1-5/8 inches + 1/8 inch - 3 each for bib</p>						

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MIL-M-43945B

NO.	TABLE II. (cont'd) MANUFACTURING OPERATIONS REQUIREMENTS	STITCH TYPE	SEAM AND STITCHING TYPE	STITCHES PER INCH	T H R E A D	
					NEEDLE	BOBBIN/ LOOPER COVER
1.	<p><u>Cutting.</u> (cont'd)</p> <p>k. Cut the 1 inch hook tapes (see 3.3.10) as follows: (cont'd)</p> <p>2-5/8 inches <math>\pm</math> 1/8 inch - 2 each for each side of face piece. - 1 each for bottom edge of face piece.</p> <p>2-7/8 inches <math>\pm</math> 1/8 inch - each right side of face piece.</p>					
2.	<p><u>Replacement of damaged parts.</u></p> <p>Care shall be exercised during the spreading, cutting, and manufacturing operations to assure that material defects and damages, as classified in 4.4.2, are excluded and replaced with non-defective material.</p>					
3.	<p><u>Make oro-nasal mask (two each per face mask).</u></p> <p>a. Place a napped jersey filler (see 3.3.4) between two nested air filtering masks, with the mask having the nose-bridge (see 3.3.3) as the inside ply. The napped side of the filler shall be toward the inside of mask. Bind the three parts together, enclosing the raw edges. The ends of the binding shall overlap not less than 3/8 inch. On the finished mask, the nose-bridge on the inside ply shall be centered and placed at the top (as worn) of the mask.</p>	301	BSa-1	10-12	50	50

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MIL-M-43945B

NO.	TABLE II. (cont'd) MANUFACTURING OPERATIONS REQUIREMENTS	STITCH TYPE	SEAM AND STITCHING TYPE	STITCHES PER INCH	THREAD	
					NEEDLE	BOBBIN/ LOOPER COVER
3.	Make oro-nasal mask (two each per face mask). (cont'd)  b. Fold pull-tab tape in half crosswise; turn in raw edges and double-stitch, tack, or bartack to the right side (as worn) of the oro-nasal mask, through the binding. An automatic line tack may be used.  c. Center the loop tape (see operation 1.h) at the top, on the inside of the oro-nasal mask, 1/16 to 1/8 inch from bound edge and stitch to mask through all loops, 1/16 to 1/8 inch from edge of loop tape and stitch on all four sides. The stitching may be discontinued along the inner edge for the length of the nose-bridge, providing the ends of the stitching are backtacked not less than 1/4 inch. An off-center tolerance of 3/8 inch is acceptable.	301	LSb-2	10-12	50	50
		or bartack	LSb-1	28 per bartack	50 or 70	50 or 70
		or 301 (line tack)	LSb-1	28 per tack	50 or 70	50 or 70
4.	Make bib.  a. Edge-stitch or safety-stitch around bib.	301	LSbj-1	10-14	50	50
		503 or	EFd-1	8-12	50	50
		504 or	EFd-1	8-12	50	50
		512 or	EFd-1	8-12	50	50
		602 or	EFd-1	8-12	50	50
		515 or		8-12	50	70
		516 or			(chain stitch)	
519 or			70	70		
517 or			(overedging)	50	50	
518			(lock stitch) and	70	70	
			(overedging)	70	(overedging)	

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1 Dec 76

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MIL-M-43945B

NO.	TABLE II. (cont'd) MANUFACTURING OPERATIONS REQUIREMENTS	STITCH TYPE	SEAM AND STITCHING TYPE	STITCHES PER INCH	THREAD	
					NEEDLE	BOBBIN/ LOOPER
4.	<p>Make <u>bib.</u> (cont'd)</p> <p>b. Position the three 1 inch wide hook tapes on the bib (see operation 1.k) as indicated on pattern and stitch on all four sides.</p>	301	LSbj-1	10-14	50 or 70	50 or 70
5.	<p>Make <u>chin adjustment pull-tab.</u></p> <p>a. Hem one end of the elastic webbing (see operation 1.e) with two rows of stitching, or box-stitch with the rows of stitching 1/4 + 1/8 inch apart with one row 1/16 to 1/8 inch from the raw edge.</p> <p>b. Turn in the other end of the elastic piece in the same direction as the hemmed end; position on one end of the longer length of 1 inch loop tape (see operation 1.j) 1/4 to 3/8 inch from end, with the under-side of hem facing the back of the loop tape. Stitch together with two rows of stitching, or boxstitch with the rows of stitching 1/4 to 3/8 inch apart. Both rows of stitching shall be through both plies of the elastic and the loop tape.</p> <p>c. Position back to back, the shorter length of the 1 inch loop tape on top of the longer one with the end not more than 1/8 inch from the elastic piece and stitch on all four sides.</p> <p style="text-align: center;">-or-</p> <p>d. Hem only one end of the elastic piece as specified in operation 5.a. Position the raw end of the elastic between the two plies of loop tape (see operation 1.j) with the loop tapes back to back, and stitch with two rows of stitching 1/4 to 3/8 inch apart. Both rows</p>	301	EFa-2	10-14	50	50
		301	LSb-2	10-14	50	50
		301		10-14	50	50

NATICK Form 903  
1 Dec 76

EDITION OF 1 OCT 76 WILL BE USED UNTIL EXHAUSTED.

MIL-M-43945B

NO.	MANUFACTURING OPERATIONS REQUIREMENTS	STITCH TYPE	SEAM AND STITCHING TYPE	STITCHES PER INCH	THREAD	
					NEEDLE	BOBBIN/LOOPER COVER
5.	<p><u>Make chin adjustment pull-tab.</u> (cont'd)</p> <p>of stitching shall be through the two plies of loop tape and one ply of elastic. Continue the stitching joining the two plies of loop tapes together with the stitching along remaining three sides of the loop tapes.</p>	301	EFa-2	10-14	50	50
6.	<p><u>Make head-harness.</u></p> <p>a. Hem one end of cross-back pieces (see operation 1.d) with two rows of stitching, or boxstitch with the rows of stitching <math>1/4 + 1/8</math> inch apart, with one row <math>1/16</math> to <math>1/8</math> inch from the raw edge. On the finished mask, the hemmed end shall be on the right side (as worn) of mask.</p> <p>b. Center a 1 inch wide loop tape (see operation 1.j) on the underside of the cross-back piece <math>3/4</math> to 1 inch from hemmed end and stitch on all four sides.</p> <p>c. Position center-piece of head-harness on the underside of the cross-back piece <math>4-1/2</math> inches + <math>1/4</math> inch from the hemmed end (measured from center of center-piece) and with the raw end of the center-piece turned in, boxstitch (X-pattern) the center-piece to cross-back piece. The cross-piece shall overlap the full width of the center-piece.</p>	301	LSbj-1	10-14	50	50
7.	<p><u>Make padded nose-bridge cushion.</u></p> <p>Superimpose the nose-bridge cushion and nose-bridge stiffener cover and overedge together. Napped surface of cushion shall be on outside.</p>	502 or 503	EFD-1 EFD-1	6-8 6-8	50 50	50 50

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1 Dec 76

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MIL-M-43945B

NO.	TABLE II. (cont'd) MANUFACTURING OPERATIONS REQUIREMENTS	STITCH TYPE	SEAM AND STITCHING TYPE	STITCHES PER INCH	THREAD	
					NEEDLE	BOBBIN/ LOOPER COVER
8.	<p>Make face mask and attach label.</p> <p>a. Overedge or safety-stitch all edges of chin-piece.</p> <p>b. Abut raw edges of darts and stitch together.</p> <p>c. Overedge or safety-stitch all edges of face-piece except the two edges that join to the chin-piece and the two edges of the nose-bridge need not be over-edged or safety-stitched.</p>	502 or	EFd-1	8-12	50	50
		504 or				
		512 or				
		602 or				
		515 or				
		516 or				
		519 or	FSa-1	10-12	70	70
		517 or				
		518				
		304 or	EFd-1	8-12	50	50
		404				
		502 or				
		504 or				
		512 or				
		602 or				
515 or	FSa-1	10-12	50	70		
516 or						
519 or						
517 or	EFd-1	8-12	50	50		
518						

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1 Dec 76

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MIL-M-43945B

NO.	MANUFACTURING OPERATIONS REQUIREMENTS	STITCH TYPE	SEAM AND STITCHING TYPE	STITCHES PER INCH	THREAD	
					NEEDLE	BOBBIN/ LOOPER COVER
8.	Make face mask and attach label. (cont'd)					
	d. Abut raw edges of nose-bridge and stitch together.	304 or 404	FSa-1 FSa-1	10-12 10-12	50 50	50
	e. Position the label on the inside of the upper right side (as worn) of mask, with the top of the label not more than 1 inch from the edge of the mask so that on the finished mask, the label will be centered between the head-harness and the eyeglass retention holder. An off-center tolerance of 1/2 inch is acceptable. Stitch on all four sides. The stitching shall not be through the printing.	301	LSbj-1	10-12	50	50
	f. Position the two 1/2 inch elastic eyeglass retention holders on the outside of the mask, as indicated by pattern. Turn in the raw edges 1/4 + 1/16 inch and stitch or tack across the full width of the elastic, 1/16 to 1/8 inch from each end. An automatic line tack or bartack may be used.	301 or 301 (line tack)	LSD-1 LSD-1	10-12 28 per tack	50 50 or 70	50 50 or 70
	g. Center the 5/8 inch hook tape across the nose-bridge, on the outside of mask, as indicated by pattern, and stitch on all four sides. A 1/4 inch horizontal off-center tolerance shall be acceptable.	301	LSbj-1	10-12	50	50
	h. Position 1 inch hook tapes and loop tapes on the outside of mask, as indicated by pattern (see operation 1.k) and stitch on all four sides.	301	LSbj-1	10-12	50	50
	i. Center padded nose-bridge cushion on inside of mask as indicated by pattern, insert aluminum nose-bridge stiffener under the cover and stitch with two rows of stitching 1/8 to 3/16 inch apart, with the outer row not less than 1/16 inch from edge.	301	LSbj-2	10-12	50	50

NATICK Form 903  
1 Dec 76

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MIL-M-43945B

NO.	MANUFACTURING OPERATIONS REQUIREMENTS	STITCH TYPE	SEAM AND STITCHING TYPE	STITCHES PER INCH	T H R E A D		
					NEEDLE	BOBBIN/ LOOPER	COVER
8.	<p>Make face mask and attach label. (cont'd)</p> <p>j. Center 5/16 inch elastic webbing vertically across visual-port. Turn in raw ends 3/16 to 1/4 inch, and stitch or tack one end to upper and one end to lower edge of visual-port, across the full width of the elastic. The stitching shall be 1/8 to 3/16 inch from the turned-in ends. An automatic line tack may be used. The lower end of the elastic may be inserted between the basic material and the nose-bridge stiffener cover and caught in the stitching of operation 8.i. An off-center allowance of 1/8 inch shall be acceptable providing that it is not out of vertical alignment by more than 1/8 inch.</p> <p>k. Abut edges of chin-piece to edges of face-piece and stitch together.</p> <p>l. Bartack the ends of abutted chin-piece to face-piece joining seams (4 tacks). Automatic line tacks may be used.</p> <p>m. Overlap 1 inch hook tape on the outside of face-piece to the right of chin-piece as indicated by pattern, and stitch with two rows of stitching or boxstitch with the rows of stitching 3/16 to 1/4 inch apart. The outside row shall be 1/16 to 1/8 inch from edge of tape. Two automatic line tacks may be used providing they extend across the width of the tape.</p>	<p>301 or 301 (line tack)</p> <p>304 or 404</p> <p>Bartack or 301 (line tack)</p> <p>301 or 301 (line tack)</p>	<p>LSd-1 LSd-1</p> <p>FSA-1 FSA-1</p> <p>LSa-2 LSa-2</p>	<p>10-12 28 per tack</p> <p>10-12 10-12</p> <p>28 per bartack 28 per tack</p> <p>10-12 28 per tack</p>	<p>50 50 or 70</p> <p>50 50</p> <p>50 or 70 50 or 70</p> <p>50 50 or 70</p>		

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NO.	MANUFACTURING OPERATIONS REQUIREMENTS	STITCH TYPE	SEAM AND STITCHING TYPE	STITCHES PER INCH	THREAD	
					NEEDLE	BOBBIN/ LOOPER COVER
8.	<p><u>Make face mask and attach label.</u> (cont'd)</p> <p>n. Overlap the chin adjustment pull-tab on the outside of the face-piece to the left of chin-piece, as indicated on pattern, with the shorter length of loop tape on the top. Stitch to face-piece with two rows of stitching or boxstitch, with the stitching 3/16 to 1/4 inch apart. Two automatic line tacks may be used providing they extend across the full width of the loop tape.</p>	301 or 301 (line tack)	LSa-2 LSa-2	10-12 28 per tack	50 50 or 70	50 50 or 70
9.	<p><u>Attach head-harness.</u></p> <p>a. Turn in raw edge of center-piece of head-harness 3/16 to 1/4 inch; overlap on center of face-mask 1-1/4 inches + 1/8 inch and boxstitch (X-pattern) to mask. An off-center tolerance of 1/4 inch shall be acceptable.</p> <p>b. Turn in raw edge of cross-piece 3/16 + 1/4 inch; overlap on face mask, positioned as indicated by pattern 1-1/4 inches + 1/8 inch, and boxstitch (X-pattern) to mask.</p>	301		10-12	50	50
10.	<p><u>Clean mask and prepare for packing.</u></p> <p>a. Trim all ends of threads and remove loose threads.</p> <p>b. Remove spots and stains.</p> <p>c. Assemble parts for packing (one face mask, one bib, and two oro-nasal masks).</p>	301		10-14	50	50

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1 Dec 76

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## MIL-M-43945B

3.7 Finished measurements. The finished measurements shall conform to the measurements in table III. The tolerance for all measurements shall be  $\pm 3/8$  inch.

TABLE III. Finished measurements (in inches)

Mask	Bib
Length <u>1/</u> - 10-1/2	Length <u>3/</u> - 13
Width <u>2/</u> - 17	Width <u>4/</u> - 11

1/ Measured at center from top edge of mask to bottom of chin-piece.

2/ Measured across mask from side edge, through center of boxstitching to edge of opposite side.

3/ Measured at center from top to bottom edge.

4/ Measured across top of bib at base of curve.

3.8 Workmanship. The finished mask shall conform to the quality of product established by this document and the occurrence of defects shall not exceed the applicable acceptable quality levels.

#### 4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the 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 this document 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 document shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirement in the document 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.

## MIL-M-43945B

4.1.2 Certificates of compliance. When certificates of compliance are submitted, the Government reserves the right to inspect such items to determine the validity of the certification.

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

- a. First article inspection (see 4.3).
- b. Quality conformance inspection (see 4.4).

4.3 First article inspection. When a first article is required (see 6.2), it shall be examined for the defects specified in table V and the dimensions specified in table III. The presence of any defect shall be cause for rejection of the first article.

4.4 Quality conformance inspection. Unless otherwise specified, sampling for inspection shall be performed in accordance with MIL-STD-105.

4.4.1 Component and material inspection. In accordance with 4.1, components and materials shall be inspected in accordance with all requirements of referenced documents unless otherwise excluded, amended, modified, or qualified in this document or applicable purchase document. In addition, certificates of compliance will be acceptable for the testing for characteristics of the materials for the mask and bib as listed in table IV and the testing of the characteristics for MIL-C-43247 (see 3.3.1.1) cloth. Unless otherwise indicated, testing shall be conducted in accordance with FED-STD-191.

TABLE IV. Component tests

Component	Characteristic	Requirement paragraph	Test method
Cotton knitted jersey cloth (inner layer - mask and bib)	Material identification	3.3.1.2	1200
	Yarn ply	3.3.1.2	Visual
	Wales and courses	3.3.1.2	5070
	Bursting strength	3.3.1.2	5120
	Weight	3.3.1.2	5041
	Dimensional stability	3.3.1.2	5556 1/
	Non-fibrous material	3.3.1.2	2611
	pH of water extract	3.3.1.2	2811

## MIL-M-43945B

TABLE IV. Component tests (cont'd)

Component	Characteristic	Requirement paragraph	Test method
Polyurethane foam (for mask)	Thickness	3.3.1.3	D 1564 <u>2/</u>
	Density	3.3.1.3	D 1564 <u>2/</u>
	Tear strength	3.3.1.3	D 1564 <u>2/</u> <u>3/</u>
	Compression set	3.3.1.3	D 1564 <u>2/</u> <u>4/</u>
Nylon tricot cloth (outer layer bib)	Material identification	3.3.2.1	1530
	Wales and courses	3.3.2.1	5070
	Bursting strength	3.3.2.1	5120
	Weight	3.3.2.1	5041
	Dimensional stability	3.3.2.1	5556 <u>1/</u>
Polyurethane foam for bib	Thickness	3.3.2.3	D 1564 <u>2/</u>
	Density	3.3.2.3	D 1564 <u>2/</u>
	Tear strength	3.3.2.3	D 1564 <u>2/</u> <u>3/</u>
	Compression set	3.3.2.3	D 1564 <u>2/</u> <u>4/</u>
Cotton jersey knit cloth (oro-nasal mask filler and nose-bridge cushion)	Material identification	3.3.4	1200
	Dimensional stability	3.3.4	5070
	Weight	3.3.4	5041
	Bursting strength	3.3.4	5120

1/ The cotton laundering procedure shall be followed and pressing shall be omitted.

2/ Test method shall be in accordance with ASTM D 1564.

3/ Except that the test specimen shall be a piece of foam 2 inches by 6 inches in the thickness supplied. A slit 2 inches long shall be cut in one end of the specimen parallel to the long dimension to form two legs 1 inch wide which shall be gripped in opposite jaws of the testing machine. Machine speed shall be 2 inches per minute. Pounds pull shall be divided by the thickness to give tear-strength in pounds per inch thickness.

4/ Deflection shall be  $50 \pm 1$  percent of the thickness of the specimen and compression set shall be calculated as percentage of the original thickness.

## MIL-M-43945B

4.4.2 End item visual examination. The end items shall be examined for the defects listed in table V. The lot size shall be expressed in units of one mask assembly. The sample unit shall be one mask assembly. The inspection level shall be II and the acceptable quality level (AQL), expressed in terms of defects per hundred units, shall be 6.5.

TABLE V. End item visual defects

Examine	Defect
Cleanness	Spot or stain Thread ends not trimmed or loose threads not removed
Component and assembly	Any component or required operation omitted
Cutting	Not cut as indicated by pattern
Material defect and damages	Any hole (through any ply) Smash or multiple float Needle chew, cut, tear, or mend
Seams and stitching	Seam twisted, puckered, or pleated Any part of mask caught in unrelated operation Ends of stitching when not caught in other seam or stitching Backtacks less than 1/4 inch Stitches broken or missing Stitches skipped more than 1/4 inch in length Raw edge more than 1/4 inch Loose tension resulting in loose seam Tight tension (stitches break when strain is applied in direction of seam) Loose tension on bartacks Ends of stitching on labels and boxstitching overlapped less than 3 stitches
Gage of stitching and width of seam allowances	Irregularly gaged Not within range specified or varies more than 1/16 inch when no range is specified
Seam and stitch type	Not specified seam type Not specified stitch type
Stitches per inch	More or less than specified

## MIL-M-43945B

TABLE V End item visual defects (cont'd)

Examine	Defect
Label	Missing, incorrect, or illegible Not stitched on all four sides Stitching through the printing Not positioned as specified
Instruction sheet	Missing
Hook and loop tapes	Not stitched on all four sides (except for loop tape on oro-nasal mask) Not positioned as specified
Oro-nasal mask	Binding not securely caught Overlap of binding ends less than 3/8 inch Nose-bridge on bottom ply off-center by more than 3/8 inch or not positioned at top of mask Pull-tab not on right side of mask Pull-tab less than 1-1/4 inches or more than 1-1/2 inches long Unstitched portion of loop tape extending beyond the length of nose-bridge by more than 1/4 inch Loop tape off-center by more than 3/8 inch Loop tape less than 8-1/2 inches or more than 9 inches long
Bib	Any hook tape less than 1-5/8 inches or more than 2 inches long
Face mask	Eyeglass-retention holder(s) less than 1-1/4 inches or more than 1-1/2 inches long Visual-port connector less than 1-1/2 inches or more than 1-3/4 inches long Visual-port connector off-center by more than 1/8 inch Visual-port connector out of vertical alignment by more than 1/8 inch Hook tape on nose-bridge horizontally off-center by more than 1/4 inch Hook tape on nose-bridge less than 4-3/4 inches or more than 5 inches long Padded nose-bridge cushion not positioned as specified

MIL-M-43945B

TABLE V End item visual defects (cont'd)

Examine	Defect
Face mask (cont'd)	<p>Aluminum nose-bridge stiffener omitted</p> <p>Loop tapes (two) at bottom of face piece less than 1-5/8 inches or more than 2 inches long</p> <p>Hook tapes on each cheek less than 2-1/8 inches or more than 2-3/4 inches long</p> <p>Hook tape on right side of mask less than 2-3/4 inches or more than 3 inches long</p> <p>Hook tape (extending) to right of chin-piece less than 2-1/8 inches or more than 2-3/4 inches long</p>
Pull tab	<p>Elastic at end of pull-tab more than 1/8 inch from end of loop tape (applicable when elastic is lapped on loop tape)</p> <p>Elastic at end of pull-tab less than 1-1/8 inches or more than 1-5/8 inches long</p> <p>Top piece of loop tape (shorter length) less than 1-5/8 inches or more than 2 inches long (applicable when elastic is lapped on tape)</p> <p>Top piece of loop tape less than 2-3/8 inches or more than 2-5/8 inches long (applicable when elastic is between the two plies of tape)</p>
Head-harness	<p>Loop tape on cross-back piece less than 1-5/8 inches or more than 2 inches long</p> <p>Cross-back piece less than 6-1/2 inches or more than 7 inches from side edge of mask to the turned edge at end of free end</p> <p>Free end of cross-piece not on right side of mask</p> <p>Center-piece positioned less than 4-1/4 inches or more than 4-3/4 inches from the free end of cross-piece</p> <p>Center-piece not overlapped the full width of the cross-piece</p> <p>Center-piece less than 9-3/8 inches or more than 9-7/8 inches long from top edge of face mask to top edge of cross-back pieces</p>



## MIL-M-43945B

4.4.3 End item dimensional examination. The end items shall be examined for conformance to the dimensions specified in table III. Any dimension deviating from the specified requirement shall be classified as a defect. The lot size shall be expressed in units of one mask assembly. The sample unit shall be one mask assembly. The inspection level shall be S-3 and the AQL, expressed in terms of defects per hundred units, shall be 6.5.

4.4.4 Packaging examination. The fully packaged end items shall be examined for the defects listed below. The lot size shall be expressed in units of shipping containers. The sample unit shall be one shipping container fully packaged. The inspection level shall be S-2 and the AQL, expressed in terms of defects per hundred units, shall be 2.5.

<u>Examine</u>	<u>Defect</u>
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 sealing or closure of flap, improper taping, loose strapping, or inadequate stapling Bulged or distorted container
Content	Number per container is more or less than required

\* 4.4.5 Palletization examination. The fully packaged and palletized end items shall be examined for the defects listed below. The lot size shall be expressed in units of palletized unit loads. The sample unit shall be one palletized unit load, fully packaged. The inspection level shall be S-1 and the AQL, expressed in terms of defects per hundred units, shall be 6.5.

<u>Examine</u>	<u>Defect</u>
Finished dimensions	Length, width, or height exceeds specified maximum requirement
Palletization	Pallet pattern not as specified Load not bonded as specified
Weight	Exceeds maximum load limits
Marking	Omitted; incorrect; illegible; of improper size, location, sequence, or method of application

## MIL-M-43945B

## 5. PACKAGING

5.1 Preservation. Preservation shall be level A or Commercial, as specified (see 6.2).

5.1.1 Level A.

5.1.1.1 Cold weather mask. The bib shall be neatly folded over the folded instruction sheet and placed behind the face mask. The face mask shall then be neatly folded over the bib with the right and left sides and the top of the head portion placed in the area behind the face. Two nested oro-nasal masks shall then be positioned over the nose opening with the bottom oro-nasal mask engaging the hook fastener tape. The folded unit shall be neatly arranged to measure approximately 9 by 6-1/2 inches. One mask shall be inserted into a snug-fitting flat style clear polyethylene film bag conforming to A-A-50083.

5.1.1.2 Oro-nasal mask. When procured separately, each oro-nasal mask shall be unit packed into a snug-fitting, flat style, clear polyethylene film bag as specified in 5.1.1.1.

5.1.2 Commercial. Each cold weather mask or oro-nasal mask shall be preserved in accordance with ASTM D 3951.

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

\* 5.2.1 Level A packing. Sixty cold weather masks or 500 oro-nasal masks, preserved as specified in 5.1, shall be packed in a fiberboard shipping container conforming to style RSC-L, grade V2c of PPP-B-636. The inside of each shipping container shall be fitted with a box liner conforming to type CF, class weather-resistant, variety DW, grade V15c of PPP-B-636. Inside dimensions of the shipping container shall be approximately 25 inches in length, 21 inches in width, and 16 inches in depth. Approximate dimensions are furnished as a guide only. Unit packs shall be arranged to achieve a balanced pack within the shipping container. Each shipping container shall be closed in accordance with method III, waterproofed in accordance with method V, and reinforced as specified in the appendix of PPP-B-636, except that the inspection shall be in accordance with 4.4.4. Shipping containers shall be arranged in unit loads in accordance with MIL-L-35078 for the type and class of load specified (see 6.2). Strapping shall be limited to nonmetallic strapping, except for type II, class F loads.

\* 5.2.2 Level B packing. Sixty cold weather masks or 500 oro-nasal masks, preserved as specified in 5.1, shall be packed in a fiberboard shipping container conforming to style RSC-L, type CF (variety SW) or SF, class domestic, grade 275 of PPP-B-636. The inside of each shipping container shall be fitted with a box liner conforming to type CF, class domestic, variety DW, grade 275 of PPP-B-636. Inside dimensions of the shipping container shall be approximately 25 inches in length, 21 inches in width, and 16 inches in depth.

## MIL-M-43945B

Approximate dimensions are furnished as a guide only. Unit packs shall be arranged to achieve a balanced pack within the shipping container. Each shipping container shall be closed in accordance with method II as specified in the appendix of PPP-B-636, except that the inspection shall be in accordance with 4.4.4.

5.2.2.1 Weather-resistant fiberboard containers. When specified (see 6.2), the shipping container shall be a grade V3c, V3s, or V4s fiberboard box fabricated in accordance with PPP-B-636 and closed in accordance with method III as specified in the appendix of PPP-B-636, except that the inspection shall be in accordance with 4.4.4.

5.2.3 Commercial packing. Cold weather masks or oro-nasal masks, preserved as specified in 5.1, shall be packed in accordance with ASTM D 3951.

\* 5.3 Palletization. When specified (see 6.2), cold weather masks or oro-nasal masks, packed as specified in 5.2.2 and 5.2.3, shall be palletized on a 4-way entry pallet in accordance with load type Ia of MIL-STD-147. Pallet type shall be type I (4-way entry), type IV, or type V in accordance with MIL-STD-147. Pallets shall be fabricated from wood groups I, II, III, or IV of MIL-STD-731. Each prepared load shall be bonded with primary and secondary straps in accordance with bonding means K and L or film bonding means O or P. Pallet pattern shall be number 90 in accordance with the appendix of MIL-STD-147.

5.4 Marking. In addition to any special marking required by the contract or purchase order, shipping containers, and palletized unit loads shall be marked in accordance with MIL-STD-129 or ASTM D 3951, as applicable.

5.4.1 Polyethylene-bagged unit packs. Polyethylene-bagged unit packs shall have the required identification information legibly printed or stamped in black directly on the bag across the center face or on a white paper label inserted within the bag so as to permit ready identification.

## 6. NOTES

6.1 Intended use. The masks are intended to be worn by personnel of the Department of Defense performing operational duties in extreme low temperatures.

6.2 Ordering data. Acquisition documents should specify the following:

- a. Title, number, and date of this document.
- b. Item being procured - mask assembly (see 3.3.1) or oro-nasal mask (see 3.3.3).
- c. When a first article is required (see 3.2, 4.3, and 6.4).
- d. Selection of the applicable levels of preservation and packing (see 5.1 and 5.2).
- e. Type and class of unit load required (see 5.2.1).

## MIL-M-43945B

- f. When weather-resistant grade fiberboard shipping containers are required for level B packing (see 5.2.2.1).
- g. When palletization is required (see 5.3).

6.3 Samples. For access to samples, address the contracting activity issuing the invitation for bid.

- \* 6.4 First article. When a first article is required, it shall be inspected and approved under the appropriate provisions of FAR 52.209. The first article should be a preproduction sample. The contracting officer should specify the appropriate type of first article and the number of units to be furnished. The contracting officer should include specific instructions in all acquisition instruments regarding arrangements for selection, inspection, and approval of the first article.

6.5 Separate procurement of oro-nasal mask component. Separate procurement of the oro-nasal mask component may be effected by citing requirements of 3.3.3, 3.3.4, and the applicable packaging provisions.

6.6 Source of air filtering masks. Minnesota Mining and Manufacturing Co., 3M Center, 367 Grove Street, St. Paul, MN 55101 or Louis M. Gerson Co., Inc., 15 Sproat Street, Middleboro, MA 02346.

6.7 Recycled material. It is encouraged that recycled material be used when practical as long as it meets the requirements of this document (see 3.3).

- \* 6.8 International standardization agreements. Certain provisions of this document are the subject of international standardization agreement as cited in NATO STANAG No. 2333. When amendment, revision, or cancellation of this document is proposed which will affect or violate the international agreement concerned, the preparing activity will take appropriate reconciliation action through international standardization channels including departmental standardization offices, if required.

- \* 6.9 Subject term (key word) listing.

Clothing  
Extreme cold weather  
Mask

6.10 Changes from previous issue. The margins of this document 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.

MIL-M-43945B

Custodians:

Army - GL  
Navy - NU  
Air Force - 99

Preparing activity:

Army - GL  
Project No. 8415-0639

Review activities:

Army - MD  
Navy - MC  
Air Force - 82  
DLA - CT

User activity:

Air Force - 45

MIL-M-13945B

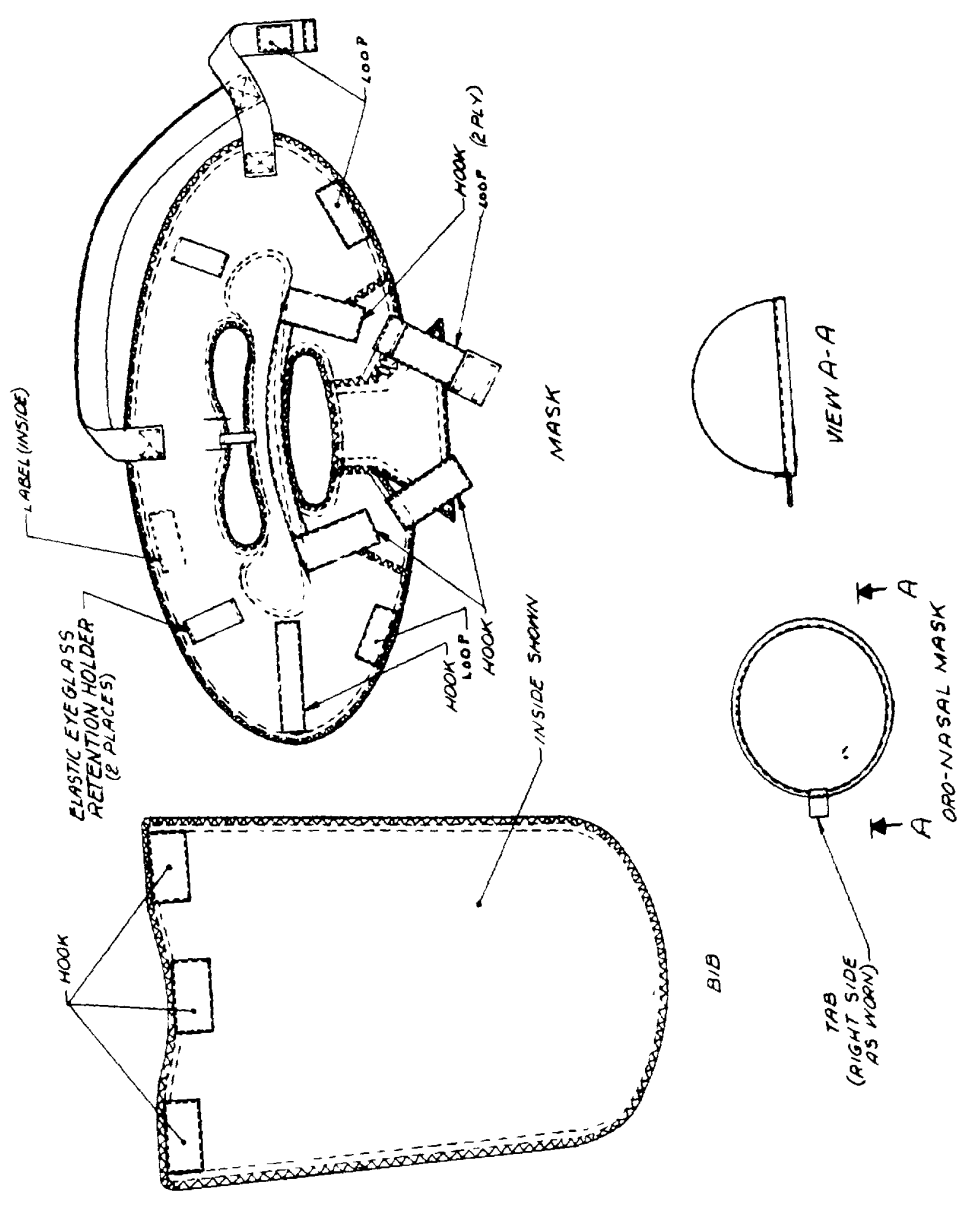


FIGURE 1. Mask, extreme weather.



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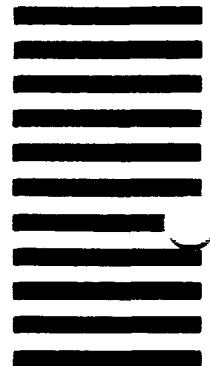
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