INCH-POUND

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MILITARY SPECIFICATION

GLOVES AND GLOVE SET, CHEMICAL PROTECTIVE

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

1. SCOPE

1.1 Scope. This specification covers butyl rubber gloves in three different thicknesses. The gloves provide protection from hazardous chemicals when worn with chemical protective suits and outfits. The type I glove set includes a pair of knitted cotton glove inserts. The gloves are special purpose Life Support Clothing and Equipment (LSC&E) items. All government administrative and surveillance procedures applicable to (LSC&E) items shall be envoked in accordance with the contract or purchase order (see 6.2).

1.2 Classification. The gloves shall be of the following types and sizes as specified (see 6.2).

Type I - Glove set (gloves with inserts), 25-mil rubber
Sizes - X-Small, Small, Medium, Large, X-Large

Type II - Gloves only, 14-mil rubber
Sizes - Small, Medium, Large, X-Large

Type III - Gloves only, 7-mil rubber
Sizes - Small, Medium, Large, X-Large

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be used in improving this document should be addressed to: U.S. Army Natick Research, Development and Engineering Center, Natick, MA 01760-5014 by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A FSC 8415

2. APPLICABLE DOCUMENTS

2.1 Government documents.

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

SPECIFICATIONS

FEDERAL

ZZ-G-381	-	Gloves, Rubber, Industrial
PPP-B-26	-	Bag, Plastic, (General Purpose)
PPP-B-636	-	Boxes, Shipping, Fiberboard

MILITARY

MIL-G-3866	-	Gloves, Men's, Cloth, Cotton, Knitted, Lightweight
MIL-D-12468	-	Decontaminating Agent, STB
MIL-L-35078	-	Loads, Unit: Preparation of Semiperishable Subsistence Items; Clothing, Personal Equipment and Equipage; General Specification For

STANDARDS

FEDERAL

FED-STD-601	-	Rubber: Sampling and Testing

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-282	-	Filter Units, Protective Clothing, Gas Mask Components and Related Products, Performance Test Methods
MIL-STD-731	-	Quality of Wood Members for Containers and Pallets

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Standardization Documents Order Desk, Bldg. 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

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

DRAWINGS

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

8-1-307 - Forms for Gloves, Chemical Protective

(Copies of drawings are available from the U.S. Army Natick Research, Development, and Engineering Center, ATTN: STRNC-EMSS, Natick, MA 01760-5014.)

FIELD MANUAL

U.S. ARMY CHEMICAL SCHOOL

FM 3-5, NBC DECONTAMINATION

(Copies of field manuals are available from the U.S. Army Chemical School, ATTN: ATZN-CM-NF, Fort McClellan, Anniston, AL 36205-5020.)

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

AMERICAN SOCIETY OF TESTING AND MATERIALS (ASTM)

D 297 - Rubber Product Chemical Analysis
D 412 - Rubber Properties in Tension
D 573 - Rubber-Deterioration in an Air Oven
D 1053 - Rubber Property - Stiffening at Low Temperatures, Flexible Polymers and Coated Fabrics

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103-1187.)

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

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

3. REQUIREMENTS

3.1 First article. When specified (see 6.2), a sample shall be subjected to first article inspection (see 6.3) in accordance with 4.3.

3.2 Samples. Samples, when furnished, are solely for guidance and information to the contractor (see 6.4). Variations from this specification may appear in the sample, in which case the specification shall govern.

3.3 Material. It is encouraged that recycled material be used when practical as long as it meets the requirements of this specification.

3.3.1 Rubber compound. The gloves shall be made of butyl rubber, pigmented black, suitably compounded and vulcanized to meet the requirements of table I when tested as specified in 4.4.5.

TABLE I. Vulcanized rubber glove requirements

	Type I	Type II	Type III
Thickness, inch	0.025 1/	0.014 2/	0.007 3/
Tensile strength, p.s.i., minimum:			
Original	1100	1100	1100
After aging	1000	1000	1000
After decontamination solution immersion	800	800	800
Tensile stress original at 200 percent elongation, p.s.i.	200 ± 125	200 ± 125	200 ± 125
Ultimate elongation, percent, minimum:			
Original	400	400	400
After aging	350	350	350
After decontamination	300	300	300
Low temperature stiffening	4/	4/	-
Deformation due to decontamination solution, maximum:			
After immersion, wet, percent increase in thickness	10.0	10.0	10.0
After immersion, wet, percent increase in length	7.5	7.5	7.5
After immersion and aeration, percent increase in thickness	5.0	5.0	5.0
After immersion and aeration, percent increase in length	5.0	5.0	5.0
Porosity	Pass 5/	Pass 5/	Pass 5/

TABLE I. Vulcanized rubber glove requirements (cont'd)

	Type I	Type II	Type III
Mustard resistance (break time in minutes) minimum	360	240	75
GB resistance (break time in minutes) minimum	450	450	360

1/ The thickness tolerance of all areas of the gloves, except the crotch areas, shall be -0.005, +0.007 inch. The thickness tolerance of the crotch areas shall be ± 0.007 inch.

2/ The thickness tolerance of all areas of the gloves shall be -0.002, +0.004 inch.

3/ The thickness tolerance of all areas of the gloves shall be -0.001, +0.003 inch.

4/ The rubber specimens shall have an angular twist no less than the values shown below for the thickness indicated. Interpolation shall be used for any thickness not shown below. No angular twist shall exceed 180 degrees.

Thickness, inch	Twist, angular degree, minimum
0.012	180
0.020	155
0.025	138
0.030	119
0.035	99

5/ There shall be no sign of porosity.

3.4 Design. The gloves shall be five finger style (see figure 1), made on glove forms conforming to the dimensions shown on Drawing 8-1-307. The glove shall terminate in a cylindrical beaded edge around the gauntlet no greater than 1/4 inch thick.

3.5 Color and finish. The color of the gloves shall be black with a dull, smooth finish.

3.6 Length and width. The length of all size gloves shall be 13-3/4 to 14-1/2 inches overall (see figure 1, reference A) measured from the tip of the middle finger to the cuff edge. The width (see figure 1, reference B) of the gloves shall be measured across the palm at the intersection with the thumb. The widths in inches (± 1/8 inch tolerance) shall be as follows:

X-Small	4-1/8
Small	4-5/16
Medium	4-1/2
Large	4-13/16
X-Large	5-1/8

All measurements shall be made with the gloves flat and unstretched.

3.7 Identification marking. Each glove shall be permanently and legibly marked on the outside of the palm side in bold-faced Gothic capital letters of not less than 1/4 inch in height with either yellow or white indelible marking ink (see 6.6). The marking shall be centered approximately 1-inch from the cuff edge with the following legend:

DO NOT USE FOR ELECTRICAL WORK OR FIRE FIGHTING

The back side of the glove shall be marked with the following information:

Stock number
Nomenclature
Specification number
Size
Contract number and date
Contractor's name
Date of manufacture (month and year)

The marking shall remain legible when tested as specified in 4.4.5.

3.8 Instruction sheet. A paper instruction sheet shall be placed inside each pair of gloves. The size of the characters shall be 1/4 inch (18 point) for headings and 1/8 inch (10 point) for instructions. The instruction sheet shall contain the information listed below.

GLOVES, CHEMICAL PROTECTIVE

GENERAL INSTRUCTIONS

a. These gloves are to be worn in the event chemical protection (CB protection) is required.

b. When wearing gloves with Clothing Outfit, Chemical Protective, wear over the liner shirt sleeve and under outer shirt or coat.

c. When wearing gloves with Suit, Chemical Protective, wear under the sleeve of the coat.

d. For maximum durability and when working with sharp objects, wear leather gloves over the chemical protective gloves.

e. In the event the chemical protective gloves become contaminated, do not under any circumstances wear leather gloves over them.

f. In cold weather, wear environmental handgear over these gloves.

g. Periodically inspect the chemical protective gloves for holes or punctures. In the event they do develop holes, are punctured, or become torn, discard immediately and use a serviceable pair.

h. With proper care, the gloves are capable of providing protection for at least 14 days of continuous wear.

i. Wear cotton gloves under your chemical protective gloves to assist in the absorption of moisture and to retain comfort.

DECONTAMINATION OF GLOVES

a. Gloves exposed to toxicological agents must be decontaminated before reuse. The gloves can be decontaminated by using the procedures specified in FM 3-5, NBC Decontamination.

b. Should your gloves become contaminated with gasoline, oil, grease or cleaning fluids, wipe-off and air dry within 2 minutes. If gloves cannot be wiped off and air dried within 2 minutes they should be replaced at the earliest possible time.

3.9 Dusting. The inside and outside of each finished glove shall be lightly dusted with whiting, talc, or other finely divided non-toxic mineral matter which does not support mildew growth. Gloves tested for porosity shall be thoroughly dried and redusted.

3.10 Put-up (type I only). One pair of cloth cotton knitted gloves conforming to type II of MIL-G-3866 shall be unit packed with each pair of type I chemical protective gloves (see 5.1.1). The small size cloth gloves shall be unit packed with the X-small and small size chemical protective gloves. The medium size cloth gloves shall be unit packed with the medium, large, and X-large size chemical protective gloves.

3.11 Workmanship. The finished chemical protective gloves and glove sets shall conform to the quality of product established by this specification, and the occurrence of defects shall not exceed the applicable acceptable quality levels. Utmost care shall be taken during component and subassembly fabrication to ensure quality workmanship and safety of the service person using the item.

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 (examinations and tests) 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 the specification where such inspections are deemed necessary to ensure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items shall 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 ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an acceptable practice to ascertain conformance to requirements, however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to accept defective material.

4.1.2 Responsibility for dimensional requirements. Unless otherwise specified in the contract or purchase order, the contractor is responsible for ensuring that all specified dimensions have been met. When dimensions cannot be examined on the end item, inspection shall be made at any point, or at all points in the manufacturing process necessary to ensure compliance with all dimensional requirements.

4.1.3 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 3.1 and 6.2), it shall be examined for the defects specified in 4.4.2, 4.4.3, and 4.4.4. The presence of any defect shall be cause for rejection of the first article. Preproduction samples of the gloves produced from the forms or molds which the contractor intends to use for production of the item, shall be furnished the contracting officer for approval of design and to determine that the forms or molds conform to dimensions shown on Drawing 8-1-307.

4.4 Quality conformance inspection. Unless otherwise specified, sampling for inspection shall be in accordance with the provisions of 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 the requirements of referenced documents unless otherwise excluded, amended, modified, or qualified in this specification or applicable purchase document.

4.4.1.1 Component and material certification. A certificate of compliance may be acceptable as evidence that the gloves were made on forms or molds conforming to the requirements specified in 3.4.

4.4.2 End item critical visual defect examination. Prior to performing the end item sampling examination in accordance with 4.4.3, 100 percent of the gloves shall be examined for the critical defects listed in table II. This 100 percent examination critical defects shall become a part of the contractor's inspection system or quality assurance program. Any glove found to contain one or more critical defects shall be rejected.

4.4.3 End item visual examination. The end items shall be examined for the defects listed in table II. The lot size shall be expressed in units of one glove. The sample unit shall be one glove and the selection shall be by pairs. Defects for pairing shall be classified as a single defect. The inspection level shall be II and the acceptable quality level (AQL), expressed in terms of defects per hundred units, shall be 2.5 for major defects and 6.5 for total (major and minor combined) defects. The finding of one or more critical defects shall be cause for rejection of the lot.

TABLE II. End item visual defects.

Examine	Defect	Classification Critical	Major	Minor
Pairing	Mispaired, i.e., two gloves of different sizes, or two gloves for the same hand.		101	
	Definite variation in color or appearance			201
Design	Any characteristic not in accordance with specified requirements.		102	
Color and finish	Not black.			202
	Not dull, smooth finish.			203
Construction and workmanship (applicable to inside and outside of glove)	Any cut, tear, hole, rip or rupture through material.	1		
	Any closed blister.	2		
	Any burned spot which cracks on flexing, bending or stretching (by hand).	3		
	Any pinch, pit, thin spot, abraded area, deep crease, readily removable foreign matter (see note) or similar defective condition which			

TABLE II. End item visual defects. (cont'd)

Examine	Defect	Classification Critical	Major	Minor
Construction and workmanship (applicable to inside and outside of glove) (cont'd)	results in a thickness at the defect less than the minimum thickness allowed for the glove.	4		
	Any 1 square inch area which contains more than three pinches, pits, thin spots, abraded areas, deep creases, readily removable foreign matter (see note) or similar defective condition not resulting in a thickness at the defect less than the minimum thickness allowed for the glove.			204
	Any foreign matter not readily removable in area beyond 4 inches from the cuff edge.			205
	Any foreign matter larger than 1/32 inch across, not readily removable in area within 4 inches of cuff edge.			206
	NOTE: Readily removable foreign matter is defined as material which can be removed by flexing or stretching the glove by hand or by rubbing the defective area with the ball of the thumb or fingers. Cutting, scratching, or otherwise puncturing the surface is not permitted.			
	Any repair or patch.	5		
	Any solid rubber ridge, run or lump resulting in a thickness greater than the maximum thickness of the rubber allowed for the glove.			207
	Tackiness after dusting (see 3.9).	6		
	Any malformation or distortion.		103	
	Not clean, i.e., dirty but can be cleaned with a non-petroleum based cleaning agent.			208
	Not clean, i.e., dirty but cannot be cleaned with a non-petroleum based cleaning agent.		104	

TABLE II. End item visual defects. (cont'd)

Examine	Defect	Classification Critical	Major	Minor
Construction and workmanship (applicable to inside and outside of glove) (cont'd)	Inside and outside of glove not dusted.		105	
Marking identification and instruction sheet	Not permanent, i.e., can be easily rubbed off with moistened thumb.			209
	Not in specified location, characters not height specified, not specified color or not accomplished as specified.			210
	Omitted, or illegible.		106	
	Missing, incomplete or incorrect.		107	

4.4.4 End item dimensional examination. The gloves shall be examined for conformance to the dimensions specified in 3.6. Any dimension that is not within the specified tolerance shall be classified as a defect. The lot size shall be expressed in units of one glove. The sample unit shall be one glove and the selection shall be by pairs. The inspection level shall be S-3 and the AQL, expressed in terms of defects per hundred units, shall be 4.0.

4.4.5 End item testing. The gloves shall be tested for the characteristics shown in table III. The lot size shall be expressed in units of one glove. The sample unit shall be one glove, and the selection shall be pairs. All requirements shall be applicable to the sample unit. When the data in the "Number of determinations per sample unit" and "Results reported as", columns are not specified in table III, they shall be as required by the referenced test method. All test reports shall contain the individual values used in expressing the final results. The sample unit for all tests other than porosity and Government acceptance tests shall be 9 pairs of gloves. The sample size shall be as specified below. One or more sample units failing to meet any specified requirement shall be cause for rejection of the lot.

Lot size	Number of sample units
800 or less	2
801 up to and including 22,000	3
22,001 and over	5

4.4.5.1 Porosity test. For the type I gloves (0.025 inch thickness) and the type II gloves (0.014 inch thickness), the maximum lot size for the porosity test shall be 5000 pairs of gloves. The sample unit shall be one glove and the sample size shall be 200 individual gloves. Any glove found to leak shall be cause for rejection of the lot represented by the sample.

4.4.5.1.1 Type III gloves. Each glove shall be tested for porosity. Any glove found to leak shall be rejected.

4.4.5.2 Government acceptance tests (see 6.7). The Government shall perform acceptance tests for sulfur mustard (HD) resistance and sarin (GB) resistance. The sample unit shall be two pairs of gloves and the inspection level shall be S-2. These tests are considered critical and any failure shall be cause for rejection of the lot represented by the sample.

TABLE III. End item tests

Characteristic	Requirement	Test method	No. of determinations per sample unit	Results reported as: Pass or fail	Results reported as: Numerically to nearest
Material identification (rubber)	3.3.1	D 297 1/ 2/	1	X	-
Thickness	Table I	4.5.1	-	-	-
Porosity	Table I	4.5.2	1	X	
Tensile strength:					
Original	Table I	D 412 2/ 3/	-	-	-
After aging	Table I	D 412 2/ 3/ 4/	-	-	-
After decontamination solution immersion	Table I	4.5.5	-	-	-
Tensile stress at 200 percent elongation	Table I	D 412 2/ 3/	-	-	-
Ultimate elongation:					
Original	Table I	D 412 2/ 3/	-	-	-
After aging	Table I	D 412 2/ 3/ 4/	-	-	-
After decontamination solution immersion	Table I	4.5.5	-	-	-
Low temperature stiffness	Table I	4.5.3	-	-	whole degree
Deformation due to decontamination solution:					
After immersion wet:					
Thickness	Table I	4.5.4	-	-	0.1 percent
Length	Table I	4.5.4	-	-	0.1 percent
After immersion and aeration:					
Thickness	Table I	4.5.4	-	-	0.1 percent
Length	Table I	4.5.4	-	-	0.1 percent
Permanence of marking	3.7	4.5.6	1	X	-

TABLE III. End item tests (cont'd)

Characteristic	Requirement	Test method	No. of determinations per sample unit	Results reported as: Pass or fail	Results reported as: Numerically to nearest
Mustard resistance	Table I	204 or T209 5/	2	-	1 minute
GB resistance	Table I	206 or T208 5/	2	-	1 minute

1/ Only the pyrolysis test shall be used.

2/ Refers to ASTM test method.

3/ Three gloves shall be selected from each sample unit and one specimen shall be tested from each glove selected. Method A of the test shall be used.

4/ The specimen shall be aged at 212°F for 48 hours in accordance with ASTM Method D 573 before being tested for tensile strength and elongation.

5/ Refers to test method in MIL-STD-282.

4.4.6 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.

Examine	Defect
Marking (exterior and unit packs)	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 closure of container flap, loose strapping, improper taping, or inadequate stapling. Open and noncontinuous heat sealed seams and closure of polyethylene bag. Incorrectly fabricated bag. Bulged or distorted container. Gloves not positioned cuff to fingertip, with back of each glove cuff not facing outward.
Content	Number of pairs of gloves per container is more or less than required. Wrong size cotton gloves unit packed with chemical protective gloves. (type I). 1/

1/ For this defect, two unit packs from each shipping container in the sample shall be examined.

4.4.7 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.

Examine	Defect
Finished dimensions	Length, width, or height exceeds specified maximum requirements.
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.

4.5 Methods of inspection.

4.5.1 Thickness test. Thickness of the gloves shall be determined in accordance with Method 2011 of FED-STD-601. Three gloves from each sample unit shall be tested. Five measurements shall be made on each of the three gloves in an area of not less than 1 inch nor more than 5 inches from the cuff edge. The crotches of the gloves shall also be measured for thickness. The sample unit shall fail if any single measurement is less than the minimum or greater than the maximum specified.

4.5.2 Porosity. The porosity test shall be performed as specified in ZZ-G-381 except that the air pressure shall be 0.5 pound per square inch for types I and II gloves and 0.25 pound per square inch for type III gloves, and except that the inflated glove shall be immersed in the water in stages, for observation of porosity as indicated by air bubbles. Initially, the glove shall be immersed to a point where the water line is just above the crotch of the fingers. The portion of the glove below the water line shall be manipulated (squeezed) with a free hand for a period of 10 seconds, while carefully observing for air bubbles. If no air bubbles are observed the glove shall be lowered until the water line is above the wrist. Again, while manipulating this area, carefully observe the glove for air bubbles for a period of 10 seconds. If no air bubbles are observed the remainder of the glove shall be immersed, manipulated, and observed for 10 seconds for air bubbles. No visible bubbling shall be permitted during the testing. At no time should the area of the glove being observed for air bubbles be further than 6 inches below the surface of the water, as the pressure exerted by the water below this 6-inch depth can be great enough to prevent the release of air bubbles from a small hole or tear.

NOTE: During porosity testing involving the types II and III gloves, it may become necessary to assist in immersing the gloves by supporting them with the manipulating hand.

4.5.3 Low temperature stiffness test. Low temperature stiffness shall be determined in accordance with ASTM D 1053, paragraph entitled, Routine Inspection and Acceptance with the following exceptions:

a. The test shall be conducted at -40°F.
b. The liquid coolant shall be methyl alcohol.
c. The exposure time shall be 5 minutes.
d. The black wire having a torsional constant of 0.125 gf. cm/degree shall be used instead of the standard wire.
e. The angular degree of twist shall be in accordance with 3.3.1.

4.5.4 Deformation due to decontamination solution test. Three gloves from each sample unit shall be tested. The resistance to decontamination solution shall be determined as follows:

a. Accurately mark a 3 by 6 inch area on each glove. Draw three straight lines along the entire length of the area as follows: The first line shall be 1/2 inch in from one edge of the marked area, the second line 1/2 inch in from the opposite edge. The third line shall be 1-1/2 inches from both edges. Then draw three straight lines across the entire width of the area as follows: The first line shall be 2 inches in from one edge of the marked area, the second line 2 inches in from the opposite edge. . The third line shall be 3 inches from both edges. Using a micrometer as described in Method 2011 of FED-STD-601, determine the thickness of the area at the nine points where the three length lines cross the three width lines. The thickness shall be the average of the nine values.

b. Mount the glove on a suitable form and immerse in test solution to within 1 inch of the cuff edge, taking care not to wet the interior. The test solution shall be a super-tropical bleach slurry. The slurry shall be made up (by weight) of 1 part super-tropical bleach conforming to MIL-D-12468 and 2 parts water. (NOTE: Super-tropical bleach is corrosive to most metals and is injurious to most fabrics. A protective mask and gloves should be worn when handling this material.) The temperature of the slurry during the test shall be 80° to 90°F. The time of immersion shall be 5 minutes.

c. After the 5 minute immersion in STB solution, withdraw the glove, wash off the slurry with water, then rinse in 95 percent ethyl alcohol and, while the glove is still wet, measure the marked area immediately for thickness and length. Thickness shall be determined as described in "a" above. The length shall be measured along the three length lines and the length recorded as the average of the three measurements.

d. Place the wet gloves on heavily talced paper towels and allow to stand at room temperature for 18 hours.

e. After the 18 hours air drying, remeasure the marked area for thickness and length. Determine thickness in accordance with "a" above. Determine the length in accordance with "c" above.

f. The percent increase in thickness and percent increase in length shall be calculated as follows:

$$\text{Percent increase in thickness after immersion (wet)} = \frac{T1 - T}{T} \times 100$$

$$\text{Percent increase in thickness after immersion and aeration} = \frac{T2 - T}{T} \times 100$$

$$\text{Percent increase in length after immersion (wet)} = \frac{L1 - L}{L} \times 100$$

$$\text{Percent increase in length after immersion and aeration} = \frac{L2 - L}{L} \times 100$$

Where:

T = Original thickness as determined in "a".
T1 = Thickness after immersion as determined in "c".
T2 = Thickness after immersion and aeration as determined in "e".
L = Original length (6 inches)
L1 = Length after immersion as determined in "c".
L2 = Length after immersion and aeration as determined in "e".

4.5.5 Tensile strength and ultimate elongation after decontamination test. The tensile strength shall be determined in accordance with ASTM D 412 (method A). The cross sectional area of the specimen shall be calculated using the thickness determined in 4.5.4a. The ultimate elongation shall be determined in accordance with ASTM D 412 (method A). One specimen shall be cut from each glove that was tested for decontamination. The specimens shall be cut from the 3 by 6 inch area marked on the gloves. The long dimension of the specimen shall be parallel to the long dimension of the 3 by 6 inch area. The specimens shall be cut in such a manner that the ends of the specimen are equidistant from the adjacent 3 inch long edges of the marked area.

4.5.6 Permanence of marking test. The gloves shall be tested to determine the durability of the marking as follows:

a. Boil gloves for 2-1/2 to 3 hours in a solution containing 1.25 ounces/gallon of standard calcium hypochlorite bleach powder (70 percent available chlorine).

b. Remove gloves from the bleach solution and soak in fresh water at 70°F for 15 minutes. Change water and repeat this step two additional times.

c. Hang the gloves and allow them to dry at about 110°F. When the gloves are dry, examine them for legibility of markings.

5. PACKAGING

5.1 Preservation. Preservation shall be level A.

5.1.1 Level A. One pair of type I chemical protective gloves with instruction sheet (see 3.8), and one pair of cotton knitted gloves of matching size (see 3.10), or one pair of type II, or one pair of type III gloves shall be unit packed in a plastic bag conforming to type II, style 1 of PPP-B-26. Each pair of chemical protective gloves shall be positioned fingertip to cuff with the back side of each glove facing outward to permit the required markings to be read. The cotton gloves shall be sandwiched between the type I chemical protective gloves. The poly-ethylene bag shall be formed with heat sealed seams that are straight, contin-uous and parallel to each other and the formed edges of the bag. The final closure of the bag shall be heat sealed with the seal made as close as possible to the open end. The bag may be fabricated from the polyethylene film tubing or sheeting. Prior to or during the closure operation, excess air within the bag shall be expelled.

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

5.2.1 Level A packing. Seventy-two type I glove sets or one hundred and forty-four type II or type III gloves of one size only, preserved as specified in 5.1, shall be packed in a fiberboard shipping container conforming to style RSC-L, grade V2s 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. Level A unit packs shall be packed flat, four in length, one in width, and eighteen or thirty-six, as applicable to glove type, in depth within a shipping container. Inside dimensions of the shipping container shall approximate 24-1/2 inches in length, 15-1/2 inches in width, and 10 inches in depth. Approximate dimensions are furnished as a guide only. Each shipping container shall be closed in accordance with method III, water-proofed 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 4.4.6. 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. Seventy-two type I gloves sets, or one hundred and forty-four type II or type III gloves of one size only, 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, minimum grade 200 of PPP-B-636. Level A unit packs shall be packed flat, four in length, one in width, and eighteen or thirty-six, as applicable to glove type, in depth within a shipping container. Inside dimensions of the shipping container shall approximate 24-1/2 inches in length, 15-1/2 inches in width, and 10 inches in depth. Approximate dimensions are furnished as a guide only. 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 4.4.6.

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 4.4.6.

5.3 Palletization. When specified (see 6.2), glove sets or gloves packed as specified in 5.2.2, 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 straps in accordance with bonding means C and D, or film bonding means F or G, as specified in MIL-STD-147. Pallet pattern No. 3 shall be used 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, bundles, shipping containers and palletized unit loads shall be marked in accordance with MIL-STD-129.

6. NOTES

6.1 Intended use. The type I glove sets and types II and III gloves are intended for use with the Suit, Chemical Protective, and Clothing Outfit, Chemical Protect-ive.

6.2 Acquisition requirements. Acquisition documents must specify the following:

a. Title, number, and date of this specification.
b. Special provisions for verification inspection of Life Support Clothing and Equipment (see 1.1).
c. Type and size required (see 1.2).
d. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1.1 and 2.2).
e. When a first article is required (see 3.1, 4.3, and 6.3).
f. Put-up, if other than specified (see 3.10).
g. Level of packing (see 5.1 and 5.2).
h. Type and class of unit load (see 5.2.1).
i. When weather-resistant grade fiberboard shipping containers are required for level B packing (see 5.2.2.1).
j. When palletization is required (see 5.3).

6.3 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 also include specific instructions in acquisition documents regarding arrangements for selection, inspection, and approval of the first article.

6.4 Sample. For access to samples, address the contracting activity issuing the invitation for bids.

6.5 Glove forms. Blocks and casings for the glove forms used in the dipping process are Government owned and are stored at the General Porceline Company, Inc., 951 Pennsylvania Avenue, Trenton, NJ 08638. Forms for the gloves may be purchased from this company.

6.6 Marking ink. Markem JXN-7410-H-White or Yellow, made by Markem Machine Company, 40 Putnam Street, Keene, NH, has been found to be suitable when dried under infrared light for 24 hours.

6.7 Government acceptance tests (see 4.4.5.2). Government acceptance tests shall be directed to the U.S. Army Armament, Munitions and Chemical Command, ATTN: AMSMC-QAO-C (A), Building E5100, Aberdeen Proving Ground, MD 21010-5423.

6.8 Subject term (key word) listing.

Butyl
Handwear
Hazardous chemicals
LSC&E
Rubber

6.9 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

Custodians:

Army - GL
Navy - NU
Air Force - 11

Preparing activity:

Army - GL

(Project 8415-0770)

Review activities:

Army - MD, EA
Air Force - 11, 50, 82, 99
DLA - CT

User activities:

Navy - SH
Air Force - 45

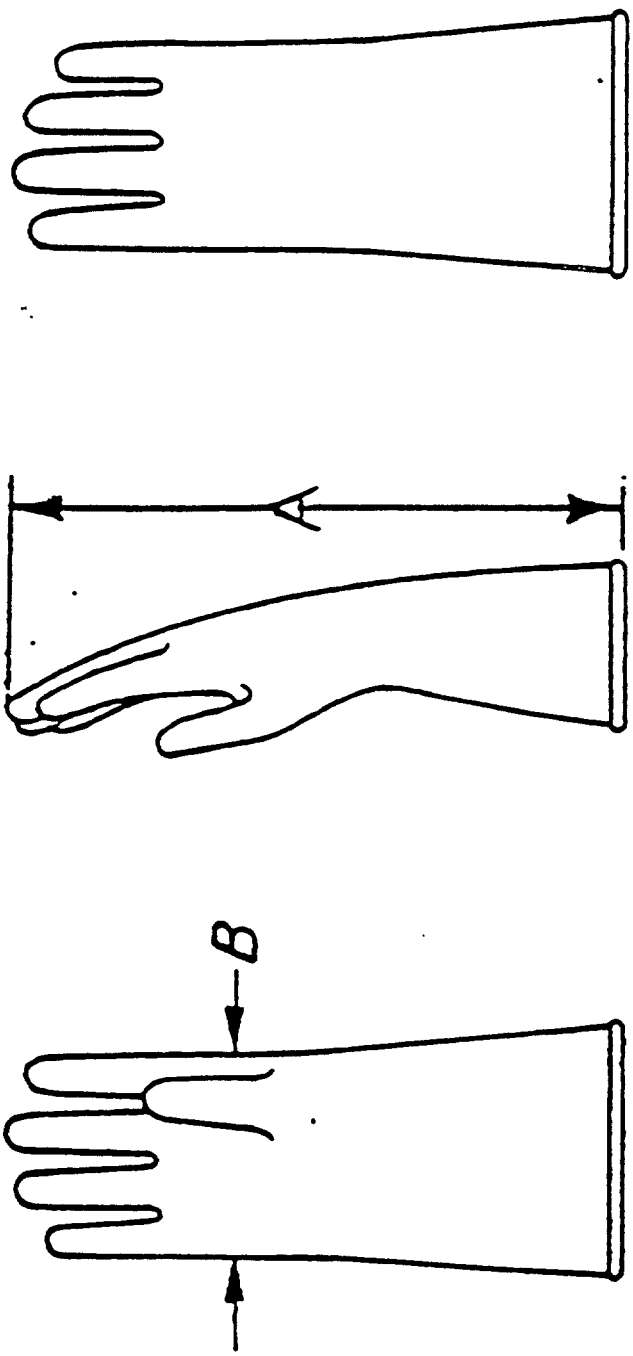

FIG. 1 GLOVE, CHEMICAL PROTECTIVE