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4 February 1987

SUPERSEDING
MIL-G-82242C
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MILITARY SPECIFICATION

GLOVE SHELLS, RADIOACTIVE CONTAMINANTS, 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 the requirements for unsupported dipped rubber gloves, made of natural latex.

* 1.2 Classification. The gloves shall be of one type and shall be procured in the following sizes and lengths as specified (see 6.2):

<u>Schedule of sizes</u>	<u>Lengths</u>
8-9-10-11	12 and 18 inch

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/NA

FSC 8415

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SPECIFICATIONS

FEDERAL

- NN-P-71 - Pallet, Material Handling, Wood Stringer Construction, 2-Way and 4-Way Entry
- PPP-B-636 - Boxes, Shipping, Fiberboard

MILITARY

- MIL-P-15011 - Pallet, Material Handling, Wood, Post Construction 4-Way Entry

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-168 - Visual Inspection Guide for All Rubber Gloves Except Surgical

(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.

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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).

AMERICAN SOCIETY FOR TESTING AND MATERIALS

Test methods D-412-83 and D-792-86

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

* 2.3 Order of Precedence. In the event of a conflict between the text of this specification and the reference 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 Rubber compound. The gloves shall be made of a natural latex without the use of plasticizers or inert fillers, pigmented orange-yellow in color, and suitably compounded and vulcanized to meet the requirements specified herein (see 4.4.1).

3.4 Chlorination (case hardening). The rubber surfaces of each glove (interior and exterior) shall be case hardened utilizing a chlorination or an equivalent process (see 4.4.1). An excessive amount of case hardening material shall be avoided to prevent excessive stiffening, discoloration, or slipperiness. Residual chlorine shall be removed from the gloves by a tap water rinse (see 4.4.1). The finished glove surfaces shall be clean with no evidence of dusting powder, i.e., whiting or talc.

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3.5 Markings. Each finished glove shall have the radiation symbol illustrated in figure 2 along with an identification inscription as shown below, centered and positioned on the palm side. The markings shall be of any contrasting color permanent type ink, with the height of the inscription letters not less than 1/8 inch:

CONTRACT NO: DLA 100-00-0-000 (EXAMPLE)
STOCK NO: 8415-00-000-0000 (EXAMPLE)
SIZE: 9 (EXAMPLE)

The label inscription shall face the glove opening, with the distance between the bottom edge of the last line and top rolled edge approximately 1 inch.

3.6 Design. The gloves shall be of a standard four finger and thumb style, with a rolled bottom edge rolled inwardly and securely bonded along its entire length (see figure 1).

3.6.1 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.

* 3.7 Dipping forms. The dipping forms shall be supplied by the contractor and shall have a non-slip embossed pattern imparted as an integral design to approximate and cover the same area as reflected in figure 1. The resulting gloves shall conform to the dimensions in Table II.

* 3.8 Physical requirements. The finished gloves shall conform to the requirements shown in Table I when tested as specified in 4.5.

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Table I - Physical requirements

Characteristic	Requirement	
	Minimum	Maximum
Tensile strength, p.s.i.		
Initial	3800	-
After aging <u>1/</u>	3420	-
After immersion in distilled water <u>2/</u>	3000	-
Ultimate elongation, percent		
Initial	750	-
After aging <u>1/</u>	600	-
After immersion in distilled water <u>2/</u>	600	-
Specific gravity	0.94	1.150
Tension set, percent	-	10.0
Volume change, percent		
After immersion in distilled water <u>2/</u>	-	15.0
Thickness, inch:		
Cuff, palm, and back	0.018	-
Crotch	0.016	-
Porosity	Pass <u>3/</u>	-

1/ Except that the test specimen shall be aged for 72 (+ 1) hours.

2/ Except that the test specimen shall be immersed at a temperature of 158° (+ 1.8°)F.

3/ There shall be no evidence of air bubbles.

* 3.9 Measurements. The sizes and measurements of the finished gloves shall conform to the dimensions specified in Table II. All measurements and tolerances are expressed in inches, and shall be made with the glove flattened and without stretching.

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Table II - Finished measurements
SIZE

Measurement	8	9	10	11	Tolerance
<u>12 inch glove</u>					
Overall length (A)	12	12	12	12	Min
Width of cuff (B)	4-1/2	5	5-1/2	6	+ 1/4
Width of palm (C)	4	4-1/2	5	5-1/2	+ 1/4
Width of wrist (D)	3-1/4	3-3/4	4	4-1/4	Min
<u>18 inch glove</u>					
Overall length (A)	18	18	18	18	Min.
Width of cuff (B)	6-1/4	6-3/4	7	8-1/2	+ 1/2
Width of palm (C)	4	4-1/2	5	5-1/2	+ 1/4
Width of wrist (D)	4	4-1/4	4-1/2	5	Min.

NOTE: A through D refer to figure 1.

- A. Measurement shall be taken from tip of second finger to top rolled edge of glove.
- B. Measurement shall be taken across the top rolled glove opening.
- C. Measurement shall be taken across palm at thumb crotch, folded edge to folded edge.
- D. Measurement shall be taken across the narrowest part of the wrist area, folded edge to folded edge.

3.10 Workmanship. The finished glove shall conform to the quality established by this specification. 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, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract, 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 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.

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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. When required, the first article submitted in accordance with 3.2, shall be inspected as specified in 4.4.2.1 and 4.4.2.2 for compliance with design, construction, workmanship, and dimensional requirements.

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

4.4.1 Component and material inspection. In accordance with 4.1 above, components and material 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 purchase document. A certificate of compliance shall be submitted for the rubber compound requirements of 3.3.1 and the chlorination (case hardening) process requirements and laundering requirements of 3.4.

4.4.2 Examination of the end item. The defects found during examination of the end item shall be classified in accordance with 4.4.2.1 and 4.4.2.2. The applicable inspection levels and AQL's shall be as indicated in 4.4.2.3. The sample unit for this examination shall be one glove. Selection of the sample shall be by pairs. The sample unit for pairing defects shall be one pair. Defects for pairing shall be classified as a single defect. The lot size shall be expressed in terms of one glove each.

4.4.2.1 Visual examination.

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Examine:	Classification	
	Major	Minor
Pairing		
Gloves not mated in pairs e.g., two left, two right gloves submitted as a pair, not same size	X	
Definite variation in color or appearance		X
Design		
Any characteristic not in accordance with specified requirements (unless otherwise classified herein)	X	
Color		
Not as specified		X
Cleanness		
a. Grease, oil stain, or dirt on glove which cannot be easily removed	X	
b. Not clean, i.e., dirty, but dirt can be easily removed		X
Construction and Workmanship (applicable to inside and outside of glove)		
a. Any cut, hole, tear, rip or rupture through material	X	
b. Evidence of improper vulcanization, e.g., tacky, etc.	X	
c. Any repair or patch	X	
d. Any blister, open or closed	X	
e. Any pinch, thin spot, pit, abraded area, deep crease, or similar defective condition resulting in a thickness at the defect less than the minimum thickness allowed.	X	
f. Any burned spot	X	
g. Any malformation or distortion: -Seriously affecting serviceability	X	
-Affecting serviceability, but not seriously		X
h. Any solid rubber ridge, run, or lump		X
i. Not constructed as specified, i.e., top open edge of glove not rolled as specified	X	
j. Top rolled edge of glove crooked or loose		X
k. Length not as specified	X	
NOTE: For rubber defect illustrations, see MIL-STD-168		
Markings		
a. Missing, incorrect, illegible	X	
b. Misplaced, height of characters not as specified, or not accomplished as specified		X
c. Not permanent, i.e., can be easily rubbed off with a moistened thumb		X

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4.4.2.2 Dimensional examination. The finished gloves shall be examined for dimensional defects in accordance with the following requirements as shown below:

- a. Any measurement deviating from nominal dimensions and tolerances specified in Table II, shall be scored as a size measurement defect.
- b. Variation of more than 1/2 inch in length of pair, shall be scored as a size measurement defect.

4.4.2.3 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 4.4.2.1	II	2.5	6.5
For defects applicable to 4.4.2.2 (one class)	S-3	-	4.0

4.4.3 Examination of packaging requirements. An examination shall be made to determine that packaging, packing, and marking comply with Section 5 requirements. The sample unit shall be one shipping container fully prepared for delivery except that it need not be closed. Examination for the closure defects listed below shall be made. The lot size shall be 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 100 units.

<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 closure of container flaps, loose strapping, improper taping, inadequate stapling, open and noncontinuous heat sealed seams of polyethylene bag, or incorrectly fabricated bag. Bulge or distortion of container.
Content	Number of intermediate boxes per shipping container are more or less than specified. Number of paired gloves per intermediate box are more or less than specified <u>1/</u> .

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

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4.5 Testing of the end item. Each lot of the end item shall be tested for the characteristics specified in Table III and in accordance with FED-STD-601 and ASTM test methods whenever applicable. The lot size shall be expressed in units of one glove each and selection shall be made in pairs. Except for the porosity characteristic, the sample unit for all tests shall be 2 pairs of gloves. The inspection level shall be S-1 and any failure will result in rejection of the lot represented by the sample. For the porosity characteristic, the sample unit shall be 1 pair of gloves. The inspection level shall be S-2 and any failure will result in rejection of the lot represented by the sample. All test 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, they shall be as required by the referenced test method.

Table III - End item test

Characteristic	Requirement paragraph	Test method	No. of Determinations per sample unit	Results reported as
Tensile strength:				
Initial	3.8	ASTM D-412 <u>1/</u>	3	-
After aging	3.8	ASTM D-412 <u>1/</u> and 7221 <u>1/</u>	-	-
After immersion in distilled water	3.8	ASTM D-412 <u>1/</u> and 6111 <u>1/</u>	-	-
Ultimate elongation				
Initial	3.8	ASTM D-412 <u>1/</u>	3	-
After aging	3.8	ASTM D-412 <u>1/</u> and 7221 <u>1/</u>	-	-
After immersion in distilled water	3.8	ASTM D-412 <u>1/</u> and 6111 <u>1/</u>	-	-
Specific gravity	3.8	ASTM D-792	-	-
Tension set	3.8	ASTM D-412 <u>1/</u>	-	-
Volume change, after immersion in distilled water	3.8	6211	-	-
Thickness:				
Cuff, palm and back	3.8	2011	1	<u>2/</u>
Crotch	3.8	2011	1	<u>3/</u>
Porosity	3.8	4.5.1	2	Pass or fail

1/ The test specimens shall be dumbbell shaped according to die C. The test specimens shall be cut so that the length portion of the specimen will be in the mill (dipping) direction and vertically in line with the fingers.

2/ Two measurements at each location, and averaged to the nearest 0.001 inch.

3/ One measurement at each of the four (4) crotch areas, and averaged to the nearest 0.001 inch.

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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 glove 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 plate 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 glove shall be pulled over the shank of the test apparatus 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 glove 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.

* 4.5.2 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 inspection 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.

<u>Examine</u>	<u>Defect</u>
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. Preservation shall be level A or C as specified (see 6.2).

5.1.1 Level A.

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5.1.1.1 Unit packaging. Each pair of gloves shall be inserted in a flat style, polyethylene film bag, of 0.00125 inch thick (+ 25 percent tolerance). The polyethylene bag shall be formed with heat sealed seams that are straight, continuous, and parallel to each other and the formed edges of the bag. The bag may be fabricated from polyethylene film tubing or sheeting. The final closure of the bag shall be heat sealed, with the seal made as close as possible to the open end. Prior to or during the closure operation excess air within the bag shall be expelled.

* 5.1.1.2 Intermediate packaging. Six (6) pairs of gloves of one size and length only, unit packaged as specified in 5.1.1, shall be packaged in a paperboard box of sufficient size to meet the requirements of 5.2 without excessive voids in the shipping container.

5.1.2 Level C. Gloves shall be preserved 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.

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

* 5.2.1 Level A. Six (6) intermediate boxes (thirty-six (36) pairs of gloves) of one size and length only and preserved-packaged as specified in 5.1, shall be packed in a fiberboard shipping container conforming to type CF, class weather resistant, variety DW, style RSC, grade V15C of PPP-B-636. Level A boxed gloves shall be packed flat three in length, one in width, and two in depth within the shipping container. Inside dimensions of each shipping container shall approximate 16-1/4 inches in length, 12-3/4 inches in width, and 7-1/8 inches in depth. Approximate dimensions are furnished as a guide only. 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. Toward 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 shipping container.

* 5.2.2 Level B. Six (6) intermediate boxes (thirty-six (36) pairs of gloves) of one size and length only and preserved-packaged as specified in 5.1, shall be packed in a fiberboard shipping container conforming to type CF, class domestic, variety DW, style RSC, grade 275 of PPP-B-636. Level A boxed gloves shall be packed flat, three in length, one in width, and two in depth within the shipping container. Inside dimensions of the fiberboard shipping container shall approximate 16-1/4 inches in length, 12-3/4 inches in width, and 7-1/8 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. Toward 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 shipping container.

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5.2.3 Level C. Gloves, 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, 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 ends and side, directly under the printing or stenciling, a white paper label 5 by 4 inches with the words "MIXED SIZES" plainly stamped or printed thereon and under these words shall be legibly stamped or printed the correct quantity and sizes 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 1A 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, V or VIII, Class 1, Style A, Size 2, wood group I, II, III, or IV, Grade A of NN-P-71, or 4-way, Style 1, Size A, Type I, Class 1 of wood group I, II, III, or IV, Grade A 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 gloves covered by this specification are intended to be used by military personnel for their protection when working in the presence of low level radioactive contamination. This glove is required to be worn over a cotton insert along with the other applicable items of protective clothing.

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

- a. Title, number, and date of this specification.
- b. Sizes and lengths required (see 1.2).
- c. Selection of applicable levels of packaging and packing (see 5.1 and 5.2).
- * d. When first article inspection is required (see 3.2), the item will be tested and should be a first article sample. The contracting officer should include specific instructions in acquisition documents regarding arrangement for examinations, quantity, and testing and approval.
- e. When palletization is required (see 5.4).

6.3 Samples and molds. For access to samples and the standard molds, address the procuring office issuing the invitation for bids.

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* 6.4 Die C. Dies conforming to ANSI/ASTM TM 412 may be obtained from the following suggested sources:

- a. Boston Cutting Die Co., 50-52 Freeport St., Boston, MA 02122
- b. Philadelphia Consolidated Die, 327 Race St., Philadelphia, PA 19103

In case of dispute, dumbell specimens shall be cut from paper or oil board and measured to determine conformance to the Die C measurements listed in ANSI/ASTM TM 412.

* 6.5 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.

* 6.6 Subject term (key words) listing.

Color, orange yellow
Latex, natural
Radioactive contaminants protective
Rolled bottom edge
Style, four finger and thumb
Utility

Custodian:
Navy - NU

Preparing activity:
Navy - NU

Review Activity:
Navy - SH, MS
DLA - CT

Project No. 8415-0395

User Activity:
Navy - AS, OS, YD, CG

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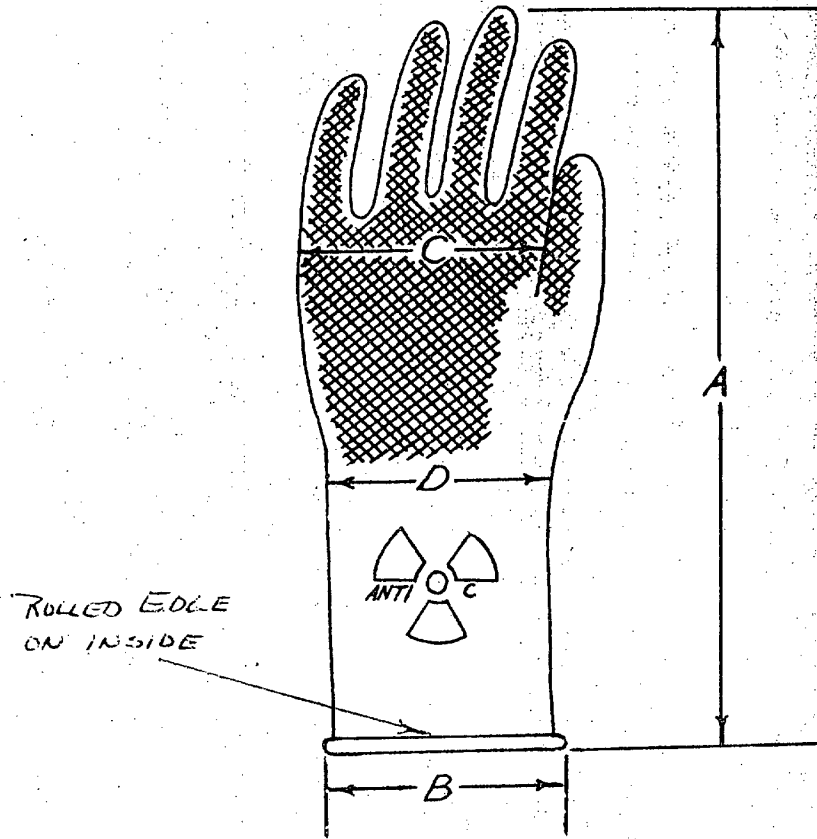


FIGURE 1 - GLOVES, RADIOACTIVE CONTAMINANTS, PROTECTIVE

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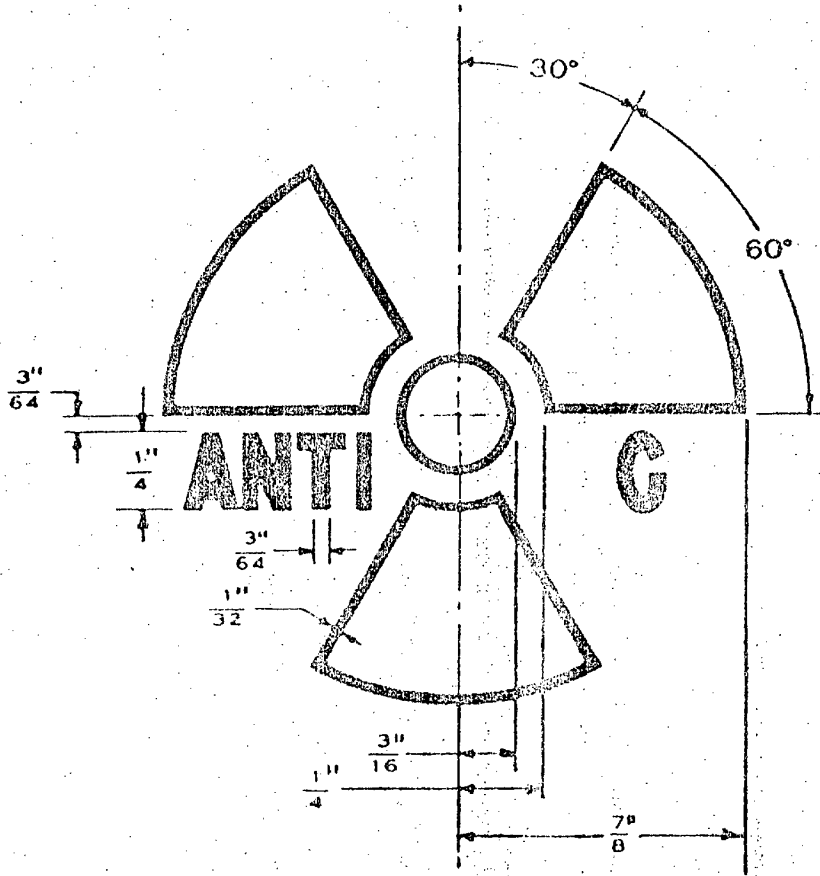


Figure 2 - RADIATION SYMBOL

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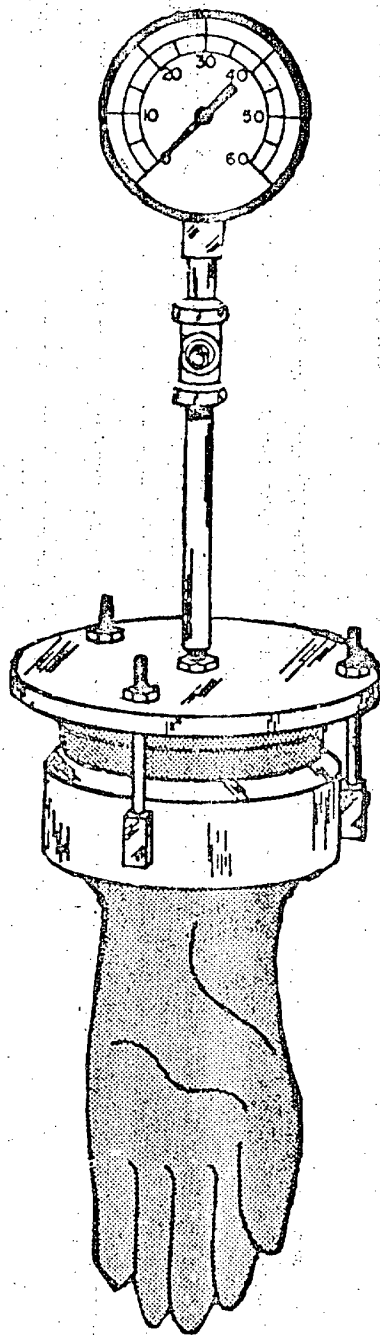


FIGURE 3 APPARATUS FOR POROSITY TEST