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8 March 1988
USED IN LIEU OF
MIL-O-43995A
8 April 1986

MILITARY SPECIFICATION

OVERSHOES, MEN'S AND WOMEN'S BOOT, COMBAT

This military specification has been prepared by the Navy Clothing and Textile Research Facility, based upon currently available technical information, but it has not been approved for promulgation as a coordinated revision of MIL-O-43995B(NU). It is subject to modification. However, pending its promulgation as a coordinated military specification, it may be used in acquisition.

1. SCOPE

1.1 Scope. This specification covers the requirements for a slip resistant, fuel/oil resistant, chemical warfare agent resistant molded vinyl plastisol overshoe.

1.2 Classification. The overshoe shall be of one type and width and shall be furnished in the following sizes as specified (see 6.2).

Schedule of sizes. 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, and 14

2. APPLICABLE DOCUMENTS

2.1 Government documents.

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

AMSC N/A FSC 8430

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 Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation.

SPECIFICATIONS

FEDERAL

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

MILITARY

MIL-F-495	- Finish, Chemical, Black for Copper Alloys
MIL-D-12468	- Decontaminating Agent, STB
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-282	- Filter Units, Protective Clothing Gas Mask Components and Related Products, Performance Test Methods

DRAWINGS

US ARMY NATICK RESEARCH, DEVELOPMENT AND ENGINEERING CENTER

2-1-1371	- Overshoes, Boot, Combat

(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 20402-0001.)

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 documents which are indicated as 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 document which is current on the date of the solicitation.

AMERICAN SOCIETY FOR TESTING AND MATERIALS

D 638 - Tensile Properties of Plastics
D 746 - Brittleness Temperature of Plastics and Elastomers By Impact
D 1004 - Initial Tear Resistance of Plastic Film and Sheeting
D 2240 - Rubber Property - Durometer Hardness

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

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 20036-1404.)

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, IL 60606-5808.)

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 Samples.

3.1.1 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.

3.1.2 Standard sample. The traction sole tread design of the finished overshoe shall match the traction sole tread design of the standard sample. The standard sample for tread design shall be one completely fabricated overshoe. The overshoe shall also match the standard sample for color and finish. The standard sample for color and finish shall be a swatch of vinyl (see 6.3).

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

3.2 Material (see 6.4).

3.2.1 Vinyl. The molding compound shall consist of virgin vinyl resins, plasticizers, stabilizers and pigments which are suitable for either slush or injection molded overshoes conforming to the requirements of this document, when tested as specified in 4.4.1.

3.2.2 Button assembly. The button assembly shall consist of a 27 line, open top brass button, when tested as specified in 4.4.1, conforming to Universal style UB 807 or equal and an 18 line two prong capped fastener conforming to Universal style UB 878 or equal. The two components shall have a black chemical finish conforming to MIL-F-495. Prior to the use of the "or equal" item, the contractor shall furnish a sample of the button assembly with the supporting data to the contracting officer for subsequent evaluation by the responsible Military agency. The assembly of the components shall be as shown on Drawing 2-1-1371. The button assembly, after being secured to the overshoe, shall withstand a minimum pull of 35 pounds without separation of the button from the fastener or the fastener pulling through the overshoe when tested as specified in 4.4.5.

3.2.3 Fastening loop. The fastening loop shall consist of a green nylon braid with an elastic core and a corrosion resistant, black metal clip suitable for forming around the braid without fracturing. The fastening loop construction and dimensions shall be as shown on Drawing 2-1-1371. The completed fastening loop shall withstand a static load of 25 pounds for not less than 30 minutes without breaking when tested as specified in 4.4.1.

3.3 Design. The overshoe shall be a vinyl plastisol, slush or injection molded pull-on type with a folding gusset and three metal buttons on each side of the gusset. Closure shall be accomplished with three fastening loops (see Drawing 2-1-1371). The design of the overshoe shall be as shown on Drawing 2-1-1371.

3.4 Molds. The molds used for slush or injection molding the overshoe shall be furnished by the contractor. The molds shall be fabricated so as to produce a finished overshoe conforming to the design shown on Drawing 2-1-1371.

3.5 Construction.

3.5.1 Moldings. The overshoes shall be slush or injection molded in such a

manner that the dimensions of the overshoes including the thickness conform to Drawing 2-1-1371. The molding process shall be performed in a one-feed operation so that the vinyl plastisol formulation is uniformly cured throughout the thickness of the overshoe. The cured vinyl plastisol shall have a uniform appearance throughout the thickness of the cross section of the material and shall not peel, blister, delaminate or separate when tested as specified in 4.4.5. The overshoes shall not have any drips or runs on the inner surface which are so thick that they cause a noticeable increase in stiffness.

3.5.2 Attachment of fastening loops. Three fastening loops, one per button, shall be attached to the three buttons on the inward side of each overshoe by passing the smaller of the two formed loops over the button.

3.5.3 Extra fastening loops. Two extra fastening loops shall be placed inside the right overshoe of each pair of overshoes before the overshoes are packaged.

3.5.4 Color and finish. The color of the overshoes shall be Army Shade Olive Green 420. The outer surface of the overshoes shall be sprayed with a clear lacquer so as to produce a lustreless appearance. The overshoes shall match the standard sample (see 3.1.2 and 6.3) for color and finish. The inside of the overshoes shall be coated with a slip finish to permit easy donning and doffing. The overshoes shall not have any tacky or sticky area.

3.5.5 Marking and identification. Each overshoe shall have the following inscription marked in indelible white ink (see 6.7) on the outer leg portion of the overshoe, centered to the left of the bottom button.

FOR CHEMICAL WARFARE PROTECTION ONLY

The size of the lettering shall be 3/8 inch in height.

3.5.5.1 Identification symbol. The size and the contractor's name or identification symbol shall be embossed in raised lettering in the shank area on the outside of the overshoe. The characters shall be 1/4 to 1/2 inch in height.

3.5.5.2 Identification sheet. The polybag of each pair of boots shall contain an identification sheet of white paper approximately 4 X 5 inches with the following information printed in black ink. The lettering size shall be no less than 1/8 inch in height (see 5.1.1):

NOMENCLATURE
SIZE
CONTRACT NO.
NATIONAL STOCK NO.
MANUFACTURER
DATE MANUFACTURED

The information contained on the sheet shall be positioned in the polybag so that it is visible to users.

3.5.5.3 Wearing instructions. The polybag of each pair of overshoes shall

contain an 8 1/2 by 11 inch sheet of white paper with the following instructions printed in black ink. The lettering size shall be no less than 1/8 inch in height (see 5.1.1):

OVERSHOES, CHEMICAL PROTECTIVE, SIZES 3 TO 14

WEARING INSTRUCTIONS

1. THESE OVERSHOES ARE TO BE WORN OVER CONVENTIONAL FOOTWEAR IN THE EVENT CHEMICAL PROTECTION (CB PROTECTION) IS REQUIRED. THE SIZE RANGE IS 3 TO 14. SELECT A SIZE CLOSE TO THE BOOT SIZE.

2. ALWAYS WEAR THE OVERSHOES UNDER YOUR OUTER TROUSERS.

3. PERIODICALLY, INSPECT YOUR CHEMICAL PROTECTIVE FOOTWEAR OVERSHOES FOR HOLES OR PUNCTURES. IN THE EVENT THEY DO DEVELOP HOLES, ARE PUNCTURED, OR BECOME TORN, DISCARD IMMEDIATELY AND REPLACE WITH A SERVICEABLE PAIR.

4. SHOULD YOUR OVERSHOES BECOME CONTAMINATED WITH GASOLINE, OIL, GREASE OR CLEANING FLUIDS, WIPE OFF AND AIR DRY WITHIN TWO MINUTES. IF THEY CANNOT BE WIPED OFF AND DRIED WITHIN TWO MINUTES THEY SHOULD BE REPLACED IMMEDIATELY.

DONNING INSTRUCTIONS

1. SELECT OVERSHOE CLOSEST TO YOUR BOOT SIZE.

2. INSERT BOOT INTO OVERSHOE. MAKE SURE THE FIT IS NEITHER TOO TIGHT NOR TOO LOOSE.

3. CLOSE OVERSHOE WITH LOOP CLOSURES AND SEE THAT OVERSHOE COMPLETELY COVERS THE FOOTWEAR AND FUNCTIONS DURING LOCOMOTION.

3.6 Physical characteristics.

3.6.1 Tensile strength at 100 percent elongation. The tensile strength of the overshoe at 100 percent elongation shall be greater than 250 psi but less than 500 psi when tested as specified in 4.4.5.

3.6.2 Tensile strength at break. The overshoe shall have an average tensile strength at break greater than 900 psi when tested as specified in 4.4.5. No individual test value shall be less that 750 psi.

3.6.3 Tensile strength at 100 percent elongation after immersion in Medium No. 6. The tensile strength of the overshoe at 100 percent elongation after immersion in Medium No. 6 shall not increase by more than 125 percent over the initial tensile strength at 100 percent elongation (see 3.6.1) when tested as specified in 4.4.5.

3.6.4 Elongation at break. The overshoe shall have an elongation at break greater than 300 percent when tested as specified in 4.4.5.

3.6.5 Tear strength. The overshoe shall have an average tear strength greater than 110 pounds per inch of thickness when tested as specified in

4.4.5. No individual tear strength value shall be less than 95 pounds per inch of thickness.

3.6.6 Hardness. The overshoe shall have a durometer reading of not greater than 65 when tested as specified in 4.4.5.

3.6.7 Brittleness temperature. The overshoe shall have a brittleness temperature of -40°C or lower when tested as specified in 4.4.5.

3.6.8 Leakage. The overshoe shall show no evidence of leaking when tested as specified in 4.4.5.

3.7 Performance.

3.7.1 Deformation due to decontamination solution. After immersion in contamination solution (see 4.5.6), the overshoe material shall meet the following thickness and length requirements when tested as specified in 4.4.5.

	Thickness	Length
After immersion, wet, percent increase, maximum	5.0	2.0

3.7.2 Mustard and GB resistance. The fully cured overshoe material shall meet the following mustard and GB resistance requirements when tested as specified in 4.4.5.

Mustard (break time in minutes) minimum - 360

GB (break time in minutes) minimum - 450

3.8 Replacement of defective components. During the manufacturing process, components having material defects or damages that are classified as defects in 4.4.3 shall be removed from production and replaced with non-defective components.

3.9 Workmanship. The finished overshoes shall conform to the quality of product 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 or order, the contractor may use his own or any other facilities suitable for performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items must meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality

program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of assuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling in quality conformance does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective material.

4.1.2 Responsibility for dimensional requirements. Unless otherwise specified in the contract, the contractor is responsible for assuring 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 assure compliance with all dimensional requirements.

4.1.3 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. The first article submitted in accordance with 3.1.3 shall be inspected as specified in 4.4.3 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.

4.4.1 Component and material inspection. In accordance with 4.1 above, components and materials shall be tested in accordance with all the requirements of referenced specifications, drawings, and standards unless otherwise excluded, amended, modified, or qualified in this specification or applicable procurement documents. In addition, testing shall be performed on components and materials listed in Table I. The sample unit for testing the fastening loop shall be one completly fabricated fastening loop. The sample unit for dimensional testing of the button assembly shall be one button and one fastener. All requirements are applicable to the sample unit. The lot shall be unacceptable if one or more sample units or the vinyl compound fails to meet any requirement specified. The sample size shall be as follows:

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

The lot shall be unacceptable if one or more units fail to meet any requirement specified.

Table I - Component tests

Component and lot size expressed in terms of	Characteristic	Requirement paragraph	Test method	No. of determinations per sample unit
Vinyl compound (batch)	Material identification	3.2.1	1/	-
Button Assembly (one button and fastener)	Material identification	3.2.2	1/	-
	Dimension	3.2.2	gauge 2/	1
Fastening loop (one fastener)	Material identification	3.2.3	1/	-
	Breaking strength	3.2.3	4.5.1	1
	Dimension	3.2.3	gauge 2/	1

1/ A certificate of compliance shall be submitted and will be acceptable for the stated requirement.

2/ Results shall be reported to the nearest 0.001 inch or 1/32 inch as applicable.

4.4.2 In-process inspection. Inspection shall be made at any point during any phase of manufacture to assure compliance with all operations and processes which cannot be determined in the completely fabricated overshoe. The Government reserves the right to exclude from consideration for acceptance any lot for which in-process inspection has indicated non-conformance.

4.4.3 Examination of the end item. The overshoes shall be examined for the defects listed below. The lot size shall be expressed in units of one overshoe. The sample unit shall be one completely fabricated overshoe and the selection shall be by pairs. The inspection level shall be II and the acceptable quality level (AQL) in terms of defects per hundred units shall be as follows:

Critical defects	see note
Major defects	1.0
Total defects (major and minor combined)	4.0

NOTE: Any critical defect found in sampling inspection for major and total defects shall be cause for rejection of the lot. One hundred percent inspection shall be performed for critical defects on each lot found acceptable under sampling inspection and any overshoe found to contain a critical defect shall be rejected.

Defect		Classification Critical	Major	Minor
I. Pairing	Not properly mated, i.e., not right and left of same size	X		

Defect		Classification Critical	Major	Minor
	Variation in color between pair			X
	Variation in height over 1/4 inch			X
II. Cleanness	Any spot or stain seriously affecting appearance			X
	Any embedded foreign matter not readily removed without leaving a thin spot	X		
III. Design	Any characteristic not in accordance with specified requirements (i.e., overshoe not slush or injection molded, not pull on type with folding gusset, not having three buttons on each side)		X	
IV. Color and finish (applicable to all components)	Color not uniform or not as specified			X
	Inside of overshoe not coated with a slip finish			X
	Outside finish glossy		X	
	Finish tacky or sticky		X	
V. Fastening loop	Braid cut or frayed, fastener (except extra fastening loops) missing or not attached as specified	X		
	Clip missing, mispositioned or not securely attached	X		
	Extra fastening loops not in overshoe			X
VI. Vinyl	Any hole, cut, tear, rupture or crack	X		
	Any blister, weak or thin spot or bubble	X		
	Any repair or patch	X		
	Drip or run on the inner surface which causes a noticeable increase in stiffness			X
VII. Construction and workmanship	Any part of button malformed, broken, missing or otherwise defective, i.e., too loose	X		

Defect		Classification Critical	Major	Minor
	Any button clinched too tightly		X	
	Any component or assembly omitted or misplaced; any operation omitted or not properly performed (unless otherwise classified herein)			X
VIII. Marking	Omitted, incorrect, incomplete, illegible or misplaced			X
	Chemical warfare inscription not indelible; i.e., easily removed when rubbed	X		

4.4.4 End item dimensional examination. The overshoes shall be examined for conformance to the thickness and finished dimensional requirements of Drawing 2-1-1371. The thickness shall be measured using a dial micrometer with a throat at least 12 inches deep. The anvils of the micrometer shall be 3/8 inch diameter. Any dimension or thickness that is not within the established tolerance shall be classified as a defect. The lot size shall be expressed in units of one overshoe. The sample unit shall be one overshoe 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 Testing of the end item. The overshoe shall be tested for the characteristics listed in Table II. The lot size shall be expressed in units of one overshoe. The sample unit shall be one pair of overshoes. All test requirements shall be applicable to the sample unit. All test reports shall contain the individual values used to express the final results. The lot shall be unacceptable if one or more sample units fail to meet any test requirement specified. The sample size shall be as follows:

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

Table II End item tests

Characteristic	Requirement paragraph	Test method	No. of determinations per sample unit	Results reported as
Pull test (button assembly)	3.2.2	4.5.2	3	Pass or fail
Uniform molding and curing	3.5.1	4.5.3	1	Pass or fail

Characteristic	Requirement paragraph	Test method	No. of determinations per sample unit	Results reported as
Tensile strength: At 100 percent elongation	3.6.1	ASTM D 638 1/	3	To nearest 10 psi
At break	3.6.2	ASTM D 638 1/	3	To nearest 10 psi
At 100 percent elongation after immersion in Medium No. 6	3.6.3	4.5.4	3	To nearest 10 psi
Elongation at break	3.6.4	ASTM D 638 1/	3	To nearest 1 percent
Tear strength	3.6.5	ASTM D 1004 1/	3	To nearest 1 pound
Hardness	3.6.6	ASTM D 2240	3	To nearest whole number
Brittleness temperature	3.6.7	ASTM D 746	1	To nearest 1°C
Leakage	3.6.8	4.5.5	1	Pass or fail
Deformation due to decontamination solution:				
After immersion, wet: Thickness	3.7.1	4.5.6	3	To nearest 0.1 percent
Length	3.7.1	4.5.6	3	To nearest 0.1 percent
Mustard resistance (see 4.4.5.1)	3.7.2	T204 or T209 2/	2	1 minute
GB resistance (see 4.4.5.1)	3.7.2	T206 or T208 2/	2	1 minute

1/ The speed of the machine shall be 12 inches per minute.
2/ Refers to MIL-STD-282.

4.4.5.1 Government acceptance testing. The government shall perform

acceptance tests for mustard and GB resistance. The sample unit for these tests shall be 2 overshoes and the inspection level shall be S-2. The sample size shall be as specified in 4.4.5 (see 6.6).

4.4.6 Examination of packaging requirements. An examination shall be made to determine that the packaging, packing and marking comply with the section 5 requirements. The sample unit shall be one shipping container fully prepared for delivery. Defects of closure listed below shall be examined on shipping containers fully prepared for delivery. 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 in accordance with MIL-STD-105.

Examine	Defect
Marking (exterior)	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, inadequate stapling or improper taping.
	Bulged or distorted container.
Contents	Number of items per container is more or less than required.
	Not packaged as specified.

4.4.7 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.

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

4.5 Methods of inspection.

4.5.1 Breaking strength test of fastening loop. One loop of the fastening loop shall be placed over a fixed suspension hook. A second hook suitable for attaching weights shall be passed through the other loop and weights applied in increments not exceeding 10 pounds until a total load of 25 pounds has been applied. The weights shall hang freely exerting a 25 pound load on the fastening loop for a period of 30 minutes. Any loop that breaks during the 30 minute period shall be a test failure.

4.5.2 Pull test. The vinyl specimen shall be 4 inches long and 1 1/2 inches wide and shall be cut from the overshoe so that the middle of the button is in the center of the specimen. The specimen shall be mounted in the button pull test fixture as shown on Drawing 2-1-1371 and the test conducted using a tensile testing machine operating at a speed of 12 inches per minute. A test failure shall be reported if either the button and fastener separate or if the fastener pulls through the vinyl upper at a pull of 35 pounds or less.

4.5.3 Uniform molding and curing test. The sole from an overshoe from each sample unit shall be cut with a sharp knife along the center line from the toe to the heel. Evidence of any blister, peeling, delamination or separation of material shall be a test failure.

4.5.4 Tensile strength test at 100 percent elongation after immersion in Medium No.6. The dumbell shaped specimen shall be as specified in ASTM D 638 except that the specimen shall be 4 3/8 inches long. The specimen shall be immersed in fuel conforming to Medium No. 6 as specified in method 6001 of FED-STD-601. The temperature of the medium shall be 23 + 2°C and the time of immersion shall be sixteen (16) hours. At the end of the required immersion time, the specimen shall be removed from the medium, dried with a soft absorbent cloth and allowed to air dry for 4 hours. The specimen shall then be tested for tensile strength at 100 percent elongation in accordance with ASTM D 638 except that the speed of the machine shall be 12 inches per minute. The thickness of the specimen shall be determined after the specimen has been air dried for four (4) hours.

4.5.5 Leakage test. The specimen shall be an overshoe with all fastening loops in place so as to keep the gusset closed. The overshoe shall be filled with water at 23 ± 2°C to within 1/2 to 1/4 inch of the middle button assembly. After 15 minutes, the outside of the water filled overshoe shall be examined. Any evidence of leakage shall be a test failure.

4.5.6 Resistance to decontamination solution. The resistance to decontamination solution shall be determined by marking a 3 by 6 inch area on the side of each overshoe selected for testing.

(a) Draw three (3) 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 (3) 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 side. 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 of the specimen shall be the average of the nine values.

(b) Mount the overshoe on a suitable form and immerse in test solution to within one (1) inch of the top edge, taking care not to wet the interior of the overshoe. The test solution shall be 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°F to 90°F. Immersion time shall be five (5) minutes.

(c) After the five (5) minute immersion in STB solution, withdraw the overshoe, wash off the slurry with water and rinse in 95% ethyl alcohol. While the overshoe is still wet, measure the marked areas immediately for thickness and length. The length shall be measured along the three length lines and recorded as the average of the three measurements.

(d) The percent increase in thickness and percent increase in length shall be calculated as follows:

$$\text{Percent increase in thickness after immersion (wet)} = \frac{(T_1 - T)\,100}{T}$$

$$\text{Percent increase in length after immersion (wet)} = \frac{(L_1 - L)\,100}{L}$$

Where:

T = Original thickness as determined in (a) above.

T_1 = Thickness after immersion as determined in (c) above.

L = Original length (6 inches)

L_1 = Length after immersion as determined in (c) above.

5. PACKAGING

5.1 Packaging. Packaging shall be level A or C as specified (see 6.2).

5.1.1 Level A. Button overshoes prior to folding. Each overshoe shall have the top portion folded inward under the bottom portion of the overshoe. After folding, each pair shall be placed bottom to bottom and wrapped with two rubber bands of a suitable length and width for the purpose intended. Each

band shall be positioned approximately 3 inches from each end of the bundle. The bundle shall be approximately 10 inches in length by 13 inches in width. Each pair shall be placed in a polyethylene bag of 4 mil (.004 inch) thickness, (+ 25 percent tolerance) approximately 9 inches X 10 1/2 inches with a 2 inch gusset. An identification sheet and wearing instructions sheet shall be added to each bag (see 3.5.5.2 and 3.5.5.3). Each poly bag shall have the excess air removed and shall then be heat sealed.

5.1.1.1 Intermediate packaging. Twelve (12) pairs of overshoes shall be placed in an inner polybag liner of 4 mil (.004 inch) thickness (+ 25 percent tolerance), of a suitable size to fit the dimensions of the shipping container. Overshoes shall be packed on edge, four in length, three in width and one in depth within the polybag liner. The top of the bag shall be secured with a rubber band of a suitable length and width for the purpose intended.

5.1.2 Level C. Overshoes shall be packaged to afford adequate protection against damage during shipment from the contractor to the first receiving activity. The package and the quantity per package shall be the same as that normally used by the contractor for retail distribution.

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

5.2.1 Level A. One (1) polybag liner consisting of twelve (12) pairs of overshoes of one size only, packaged as specified in 5.1, shall be packed in a fiberboard shipping container (regular slotted carton) conforming to type CF, class weather-resistant, variety DW grade 275, size 3A of PPP-P-636. The fiberboard for the box liner shall conform to type CF, class domestic of PPP-P-636. Inside dimensions of each shipping container shall approximate 19 1/2 inches in length, 15 inches in width, and 15 5/8 inches in depth. Approximate dimensions are furnished as a guide only. Each container shall have the contents completely covered on the top and bottom with a sheet of commercial grade kraft paper. Each 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 4.4.6.

5.2.2 Level B. One (1) polybag liner, containing twelve (12) pairs of overshoes of one size only, packaged as specified in 5.1, shall be packed in a fiberboard shipping container (regular slotted carton) conforming to type CF, class domestic, variety DW, grade 275, size 3A of PPP-P-636. The fiberboard for the box liner shall conform to type CF, class domestic of PPP-P-636. Inside dimensions of each shipping container shall approximate 19 1/2 inches in length, 15 inches in width, and 15 5/8 inches in depth. Approximate dimensions are furnished as a guide only. Each container shall have the contents completely covered on the top and bottom with a sheet of commercial grade kraft paper. Each container shall be closed in accordance with method III and reinforced as specified in the appendix of PPP-B-636 except that the inspection shall be in accordance with 4.4.6.

5.2.3 Level C. Overshoes, packaged as specified in 5.1, shall be packed in 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 be in accordance with Uniform Freight

Classification Rules or National Motor Freight Classification Rules, as applicable.

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

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

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

6. NOTES

6.1 Intended use. The overshoes are intended to be worn over safety footwear by Navy personnel. The overshoes will provide chemical warfare agent protection and wet environment protection.

6.2 Ordering data. Procurement documents should specify the following:

a. Title, number and date of this specification.
b. Sizes required (see 1.2).
c. When a 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 arrangements for examination, quantity, and testing and approval.
d. Selection of applicable levels of packaging and packing required (see 5.1 and 5.2).
e. When palletization is required (see 5.2.4).

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

6.4 Recycled material. It is encouraged that recycled material be used when practical as long as it meets the requirements of this document (see 3.2).

6.5 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 modify the international agreement concerned, the preparing activity will take appropriate action through international standardization channels including departmental standardization offices to change the agreement or make other appropriate accomodations.

6.6 Government acceptance tests (see 4.4.5.1). Government acceptance tests

shall be performed at US Army Armament Munitions and Chemical Command, (Edgewood Area), Chemical Test Branch, Bldg. E5100, Aberdeen Proving Ground, MD 21010-5423.

6.7 Marking. An indelible white ink for marking the overshoes, (see 3.5.5) may be obtained from Raffi & Swanson, Co. Inc., 100 Eames St., Wilmington, Ma. 01887 (style number 9093-L29W).

6.8 Subject term (key word) listing:
Chemical Warfare Protective
Footwear
Feet, protection
Green
Rubber

Custodian:
Navy - NU

Preparing Activity:
Navy - NU

Project No. 8430-0370

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STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions – Reverse Side)

1. DOCUMENT NUMBER	2. DOCUMENT TITLE
MIL-O-0043995B(NU)	OVERSHOE, MEN'S AND WOMEN'S BOOT, COMBAT

3a. NAME OF SUBMITTING ORGANIZATION

b. ADDRESS *(Street, City, State, ZIP Code)*

4. TYPE OF ORGANIZATION *(Mark one)*

- ☐ VENDOR
- ☐ USER
- ☐ MANUFACTURER
- ☐ OTHER *(Specify)*: _____

5. PROBLEM AREAS

a. Paragraph Number and Wording:

b. Recommended Wording:

c. Reason/Rationale for Recommendation:

6. REMARKS

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

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