

INCH-POUND

MIL-I-44411A

30 June 1994

SUPERSEDING

MIL-I-44411

29 June 1990

MILITARY SPECIFICATION

INSECT REPELLENT, PERMETHRIN

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

1. SCOPE

1.1 Scope. This specification covers permethrin insect/arthropod repellent for dilution in water and application to outer clothing, insect netting, and fabric.

1.2 Classification. The insect repellent shall be of the following types as specified (see 6.2).

Type I - In 151-mL bottles for dilution and hand spray application in the field

Type II - In drums for industrial application to fabric

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 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).

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 01760-5019 by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

FSC 6840

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

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SPECIFICATIONS

FEDERAL

- PPP-B-601 - Boxes, Wood, Cleated-Plywood
- PPP-B-636 - Boxes, Shipping, Fiberboard

STANDARDS

FEDERAL

- FED-STD-101 - Test Procedures For Packaging Material
- FED-STD-595 - Colors Used in Government Procurements

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

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Standardization Documents Order Desk, Building 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.

ENVIRONMENTAL PROTECTION AGENCY (EPA)

40 CFR 162 - Regulations for the Enforcement of the Federal
Insecticide, Fungicide and Rodenticide Act

(Copies are available from the Pesticide Regulations Division,
Environmental Protection Agency, 401 M Street, S.W., Washington, DC 20460.)

DEPARTMENT OF TRANSPORTATION (DOT)

Title 49 Code of Federal Regulations (CFR), Parts 106-180.

(Application for copies should be addressed to the Superintendent of
Documents, Government Printing Office (GPO) Washington, DC 20402)

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JOINT MILITARY REGULATIONS

AFR 71-4; TM 38-250; NAVSUP PUB 505; MCO P4030.19E, DLAM 4145.3, Packaging and Material Handling; Preparing Hazardous Materials For Military Air Shipments.

(Application for copies should be addressed to local Installation or Base Document Control Unit)

2.2 Non-Government publications. The following document forms 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).

ASTM

D 3951 - Standard Practice for Commercial Packaging

(Application for copies should be addressed to the ASTM, 1916 Race Street, Philadelphia, PA 19103-1187.)

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

INTERNATIONAL MARITIME ORGANIZATION (IMO)

International Maritime Dangerous Goods Code (IMDG), Publication 200 89.10.E, Vols I-IV

(Application for copies should be addressed to the International Maritime Organization, 4 Albert Embankment, London SE1 7SR)

INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA)

Dangerous Goods Regulations

(Application for copies should be addressed to the Publications Assistant, International Air Transport Association, 2000 Peel Street, Montreal, Quebec, Canada H3A 2R4)

INTERNATIONAL CIVIL AVIATION ORGANIZATION (ICAO)

Technical Instructions for the Safe Transport of Dangerous Goods by Air, DOC 9284-AN/905.

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(Application for copies should be addressed to the Document Sales Unit, International Civil Aviation Organization, 1000 Sherbrooke Street West, Suite 400, Montreal, Quebec, Canada H3A 2R2).

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 Insect repellent solution. The insect repellent concentrate for the type I and type II application methods shall meet the requirements specified in 3.1.1 through 3.1.3. Required concentration on fabric processed by industrial padder method shall be as specified in appropriate fabric specification.

3.1.1 Composition. The insect repellent for type I and type II application methods shall be a concentrated solution of the following components (percent by weight):

- 40 - 42 % - Permethrin U.S. Patent No. 4,024,163
 (3-phenoxyphenyl)methyl(±)cis/trans
 3-(2,2-dichloroethenyl)2,2-dimethyl-cyclopropane carboxylate
 cis/trans ratio: maximum 35% (±)cis, minimum 65% (±)trans
- 58 - 60 % - Inert solvent

3.1.2 Appearance. The insect repellent concentrate shall be a homogenous translucent, yellow to amber colored solution free from insoluble matter when tested as specified in 4.3.4.

3.1.3 Emulsifiability. The insect repellent concentrate shall form a creamy emulsion and shall readily re-emulsify when tested as specified in 4.3.4.

3.2 Marking pen. The marking pen used to mark garments after treatment shall have sufficient ink to mark 12 sets (coat and trousers) of military battle dress uniforms. The marking pen ink shall be resistant to both dry cleaning and laundering.

3.3 Type I, multiple uniform method. The insect repellent solution for the type I spray method shall meet the requirements specified in 3.1 through 3.1.3 and shall be furnished in 151 mL quantities.

3.3.1 Plastic bottle, 151 mL. One hundred fifty one (151) mL of insect repellent concentrate shall be supplied in a fluorinated high density polyethylene (2F HDPE) bottle with UV blocker conforming to UNIP.2. The color of the bottle shall approximate Olive Drab (color chip 24097), Brown (color chip 30051) or Amber (color chip 32169) of FED-STD-595 (see 6.3.3).

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The screw cap shall be black or match the bottle color and shall be furnished with a resilient, leakproof lining and facing which are highly resistant to degradation by the repellent concentrate, and shall have a plastic seal to prevent inadvertent opening or loosening. The bottle and cap shall not leak when tested as specified in 4.3.4.1.

3.4 Type II, industrial method. The insect repellent concentrate for the type II industrial method shall meet the requirements specified in 3.1 through 3.1.3.

3.5 Application, types I and II. The application procedure for the type I spray method shall be as specified on the label affixed to the bottle. For the type II industrial method, the concentrate shall be applied in a water emulsion to fabric utilizing an industrial padder in order to obtain a uniform level of emulsion on the fabric.

3.6 Labels and labeling information, type I and type II. The labels shall be legibly and neatly printed, stenciled, lithographed, or silk-screened directly on the container if compatible with the type of material of which the container is made. As an alternate, the label information shall be neatly printed on paper stock approximating olive drab (Color Chip 24097) or Brown (Color Chip 30051), and Amber (color chip 32169) of FED-STD-595 and shall be sealed to the container with water-resistant adhesive. In all cases, the ink shall be black, regardless of how the label information is applied to the container. The label shall not smear or be loosened from the container when tested as specified in 4.3.4. Labeling shall be in compliance with the requirements of the Federal Insecticide, Fungicide and Rodenticide Act as amended. Labels shall contain, as a minimum, the directions for use and precautionary information (see 6.3). All directions and cautions on the labels shall be in accordance with and approved by the Environmental Protection Agency (EPA), Washington, DC.

3.7 Workmanship. The end item shall conform to the quality of product established by this specification.

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 this 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 assurance program. The absence of any inspection

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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.

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

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

4.3.1 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.

4.3.1.1 Component and material certification. A certificate of compliance may be acceptable as evidence that the composition conforms to the requirements specified in 3.1.

4.3.2 End item visual examination. The end items shall be examined for the defects listed in table I. The lot size shall be expressed in units of filled unit containers. The sample unit shall be one filled unit container. The sample shall be transferred into a clear glass container, let stand for 3 hours, and then examined. The inspection level shall be S-4.

TABLE I. End item defects

Examine	Defect
Markings (label)	Missing, incomplete, incorrect, illegible, not as specified
Workmanship	Dirty, not uniform, contains foreign matter; any other defect affecting serviceability

4.3.3 Net contents examination. The end items shall be examined for net contents. The lot size shall be expressed in units of filled unit containers. The sample unit shall be one filled container. The inspection level shall be S-2. The lot shall be unacceptable if the average net contents per container, for all sample units examined, is less than or more than that specified on the label.

4.3.4 End item testing. The end items shall be tested in accordance with table II. For the permethrin content, appearance, and emulsifiability tests, a representative specimen of 100 mL shall be removed from each sample unit

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and placed in a clean, dry container labeled to identify the lot and container from which it was taken. The lot size shall be expressed in units of unit containers. The sample unit shall be one unit container. Any test failure shall be cause for rejection of the lot. The sample size shall be as indicated below:

<u>Lot size (containers)</u>	<u>Sample size (sample units)</u>
2 to 25	2
26 to 150	3
151 to 1,200	5
1,201 to 7,000	8
7,001 to 20,000	10
over 20,001	20

TABLE II. End item tests

<u>Characteristic</u>	<u>Requirement paragraph</u>	<u>Test method</u>
Permethrin content	3.1.1	4.4.1
Appearance	3.1.2	4.4.2
Emulsifiability	3.1.3	4.4.3
Label resistance to water and repellent	3.6	4.4.4

4.3.4.1 Container leakage testing. The sample unit shall be one unit container. The inspection level shall be S-1. The leakage test shall be conducted in accordance with hot water technique of test method 5009 of FED-STD-101. A stream of air bubbles or cloudy emulsion escaping from the container shall be considered evidence of leakage.

4.3.5 Packaging examination, type I only. 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.

<u>Examine</u>	<u>Defect</u>
Marking (exterior and interior)	Omitted; incorrect; illegible; of improper size, location, sequence, or method of application
Materials	Any component missing, damaged, or not as specified
Workmanship	Inadequate application of components, such as: incomplete sealing or closure of flap, improper taping, loose strapping or inadequate stapling Bulged or distorted container

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Content	Number of intermediate containers is more or less than specified
	Number of bottles per intermediate container is more or less than specified 1/

1/ For this defect one intermediate container shall be examined.

4.3.6 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.

<u>Examine</u>	<u>Defect</u>
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

4.4 Methods of inspection.

4.4.1 Gas chromatographic method of analysis for determination of permethrin.

4.4.1.1 Scope. The method describes a gas chromatographic procedure for determining permethrin. Permethrin is determined by direct comparison to an external standard containing a known weight of permethrin. A solution of the unknown sample is injected into the gas chromatograph and the peak areas obtained are compared to the standard.

4.4.1.2 Apparatus.

4.4.1.2.1 Gas chromatograph. Gas chromatograph equipped with an electron capture detector.

4.4.1.2.2 Argon/Methane (95 percent/5 percent) gas tank and appropriate gas regulator.

4.4.1.2.3 6-foot by 1/8-inch I.D. glass column.

4.4.1.2.4 Column packing. 3 percent OV-225 on 100/120 mesh Gas Chrom Q (or equivalent).

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4.4.1.2.5 GC septa

4.4.1.2.6 10 microliter syringe.

4.4.1.2.7 Analytical balance.

4.4.1.3 Reagents.

4.4.1.3.1 Permethrin standard: 40 percent solution of Technical grade permethrin, 35 percent cis(±)/65 percent trans(±).

4.4.1.3.2 A mixture of 80 percent 190 UV cutoff reagent grade acetonitrile and 20 percent reagent grade methanol.

4.4.1.4 Procedure.

4.4.1.4.1 Stock solution of standard. Prepare a stock solution of standard by weighing 1.250 g permethrin concentrate (see 4.4.1.3.1) to the nearest 1 mg into a 100 mL volumetric flask and dilute to volume with acetonitrile/methanol (80/20). The stock solution will contain 500 mg permethrin.

4.4.1.4.2 Standard preparation. Place 1 mL of the stock solution into a 50 mL volumetric flask and dilute to volume with acetonitrile/methanol (80/20). Two microliters of this external standard contains 200 ng permethrin. This amount is within the linear portion of the permethrin concentration x peak area standard curve performed under the gas chromatographic procedure described in 4.4.1.4.3 (the curve is linear from 0 - 400 ng permethrin). Multiply the total weight by the percent of combined cis and trans isomers (from assay) to calculate the actual weight of permethrin in the standard.

4.4.1.4.3 Standard injection. Inject 2 microliters of the external standard solution into a gas chromatograph equipped with an electron capture detector. Use carrier gas containing 95 percent argon, 5 percent methane and a 6-foot by 1/8-inch I.D. glass column packed with 3 percent OV-225 on 100/120 mesh Gas Chrom Q or its equivalent. Use the following gas chromatograph settings in the analysis:

- a. Oven temperature - 245°C
- b. Injector temperature - 255°C
- c. Detector temperature - 275°C
- d. Injection volume - 2 microliters
- e. Carrier gas flow rate - 50 mL/min
- f. Run time - 10 minutes

Repeat the injection of standard three times and calculate the average area for the standard.

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4.4.1.5 Unknown Sample analysis.

4.4.1.5.1 Solution preparation. Prepare a stock solution containing 1.250 g of the unknown sample to the nearest 1 mg as described in 4.4.1.4.1 and dilute the sample stock 1:50 as described for the standard in 4.4.1.4.2.

4.4.1.5.2 Permethrin area counts. Inject 2 microliters of the diluted sample into the gas chromatograph using the conditions outlined in 4.4.1.4.3. Repeat the analysis with a second 2 microliter injection. If the second injection varies widely from the first injection, then repeat with a third injection. Calculate the average for the sample.

4.4.1.5.3 Calculation of weight of Permethrin in Sample. Calculate as follows:

$$\text{Weight of Permethrin in sample} = \frac{(\text{Weight of standard}) \times (\text{Average area for sample})}{\text{Average area for standard}}$$

4.4.1.5.4 Calculation of percent permethrin in sample. Calculate as follows:

$$\text{Percent of permethrin in sample} = \frac{(\text{Weight of Permethrin in sample})}{\text{Weight of standard}} \times 100$$

NOTE: The conditions described in the method are optimum for the gas chromatograph employed. These conditions may have to be varied to meet individual laboratory conditions.

4.4.2 Appearance. Examine the insect repellent for color homogeneity, and the presence of suspended particles or sediment.

4.4.3 Emulsifiability. Add 5 mL of insect repellent to a 100 mL graduated cylinder containing 85 mL of distilled water. Agitate gently by inverting the cylinder 10 times. A creamy emulsion shall be formed. Let stand for 15 minutes. If any separation has occurred, re-invert the cylinder gently 10 times, let stand for 15 minutes and examine for homogeneity of the emulsion.

4.4.4 Labels.

4.4.4.1 Resistance to water, for type I and type II. The unit container shall be completely immersed in water at 70° to 80°F for 1 hour. Remove the unit container and rub fingers over the face of the label to determine if the label either smears or loosens to the point that it can be moved. Any smearing or loosening of the label constitutes a failure.

4.4.4.2 Resistance to insect repellent, for type I and type II. The unit container shall be completely immersed in the type and concentration of repellent contained therein at 70° to 80°F for 1 hour. Remove the

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container and rub fingers over the face of the label to determine if the label either smears or loosens to the point that it can be moved. Any smearing or loosening of the label constitutes a failure.

5. PACKAGING

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

5.1.1 Level A preservation.

5.1.1.1 Intermediate packaging. Twelve bottles of repellent and twelve marking pens as specified in 3.2 shall be packaged in a U.N. certified 4G fiberboard box with absorbent material if required. Bottle shall conform to U.N.IP.2.

5.1.1.2 Industrial container quantity. Repellent for industrial use shall be unit packed in a drum. The drum shall conform to type I of PPP-D-705. The drum shall be furnished with a double lining that shall not adversely affect nor be affected by the product. Each closure shall be fitted with a cap seal. The closed drum shall not leak when tested as specified in 4.3.4.1.

5.1.2 Commercial preservation. Insect repellent shall be preserved in accordance with ASTM D 3951.

5.2 Packing. Packing shall be in accordance with U.N. packaging requirements or Commercial, as specified (6.2).

5.2.1 Level A packing. One hundred forty-four 151-mL bottles of repellent, preserved as specified in 5.1, shall be packed in a shipping container conforming to overseas type, style A, grade B of PPP-B-601. Each box shall be closed and strapped in accordance with the appendix of PPP-B-601.

5.2.2 Level B packing. One hundred forty-four 151-mL bottles of repellent, preserved as specified in 5.1, shall be packed in a shipping container conforming to style RSC, type CF (variety SW) or SF, class domestic, grade 275 of PPP-B-636. Each box shall be closed in accordance with method II as specified in the appendix of PPP-B-636.

5.2.2.1 Weather-resistant shipping container. 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 the appendix of PPP-B-636.

5.2.3 Commercial packing. Insect repellent preserved as specified in 5.1, shall be packed in accordance with ASTM D 3951.

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5.3 Palletization. When specified (see 6.2), repellent packed as specified in 5.2, shall be palletized on a 4-way entry pallet in accordance with load type I, Ia, XII, XIIa or XIIb of MIL-STD-147. Pallet types 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. Pallet pattern shall be 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, unit containers, intermediate packs, shipping containers, and unit loads shall be marked in accordance with MIL-STD-129 or ASTM D 3951, as applicable.

5.5 Hazardous material packaging requirements. In addition to the above packaging specifications, a shipment which meets or exceeds the criteria of a hazardous material shipment as set forth by 49 CFR (see 2.1.2), shall comply with all of the prescribed packaging, marking and labeling requirements appropriate for the mode(s) of transportation through which it will move (see 2.1.2 and 2.2).

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. The type I insect repellent is intended for use in treating individual outer clothing units, such as the Battle Dress Uniform, insect netting and tentage. The type II is intended for use in industrial impregnation of fabric used to manufacture the Battle Dress Uniform, and is not intended for direct purchase by the Government.

6.2 Acquisition requirements. Acquisition documents must specify the following:

- a. Title, number, and date of this specification.
- b. Type required (see 1.2).
- c. 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).
- d. Levels of preservation and packing (see 5.1 and 5.2).
- e. When weather-resistant grade fiberboard shipping containers are required for level B packing (see 5.2.2.1).
- f. When palletization is required (see 5.3).

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6.3 Labels. An example of a label approved by the EPA is as follows:

INSECT/ARTHROPOD REPELLENT FABRIC TREATMENT

FOR USE BY CERTIFIED OR TRAINED PERSONNEL ONLY

FOR MILITARY USE ONLY

OUTER CLOTHING AND BED NETTING TREATMENT ONLY

EPA Reg. No. 63120-1

EPA Est.

ACTIVE INGREDIENT:

Permethrin*

40 percent

INERT INGREDIENTS

60 percent

Total 100 percent

*(3-phenoxyphenyl) methyl (+) cis/trans-3-(2,2-dichloroethenyl) 2,2-dimethyl-cyclopropane carboxylate cis/trans isomer ratio: max 35% (+) cis and min 65% (+) trans.

NET CONTENTS: 5.1 fluid oz (151 mL)

WARNING

KEEP OUT OF REACH OF CHILDREN

SEE BACK PANEL FOR ADDITIONAL PRECAUTIONS

Produced and Packaged For:

DEPARTMENT OF DEFENSE
DEFENSE GENERAL SUPPLY CENTER
RICHMOND, VIRGINIA 23297-5000

PRECAUTIONARY STATEMENTS

HAZARD TO HUMANS AND DOMESTIC ANIMALS

WARNING

HARMFUL IF SWALLOWED OR INHALED
CAUSES EYE IRRITATION

DO NOT APPLY TO SKIN. Keep away from food, mess gear and water supplies. Thoroughly wash mess gear if contaminated with this product. Avoid breathing vapors or contact with face, eye, or skin. Wash thoroughly after handling fluid, container, or wet treated uniform and before eating and smoking. Wear protective gloves when mixing and applying.

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STATEMENT OF PRACTICAL TREATMENT FOR EXPOSURE TO
PERMETHRIN FLUID IN SMALL BOTTLES

If on skin: Wash affected areas with soap and water.

If in eyes: Flush eyes with plenty of water. Contact a physician if irritation persists.

If swallowed: Contact a physician or Poison Control Center immediately. Do not induce vomiting unless directed by a physician. Vomiting may cause aspiration pneumonia.

If inhaled: Remove person to well ventilated area. Apply artificial respiration if indicated.

ENVIRONMENTAL HAZARD

This pesticide is extremely toxic to fish and other aquatic organisms. Do not apply directly to any body of water. Do not contaminate water by cleaning of equipment or disposal of equipment washwaters.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Treated uniform, netting and tentage provides protection to covered areas of body from bites of mosquitoes, ticks, chiggers, and human body lice.

6840-01-334-2666

Military Specification MIL-I-44411

Application Procedure: TO AVOID INHALATION, APPLICATOR MUST WEAR RESPIRATOR. Thoroughly clean 2-gallon field sprayer by triple rinsing with clean water. Add entire contents of permethrin container to 2-gallons of clean water in a 2-gallon field sprayer. Agitate and bring to a pressure of 55 psi. For clothing: Place Battle Dress Uniform (jacket and trousers) on the ground and spray each side for 50 seconds at 55 psi. Hang the uniform for 3 hours or until dry. When dry, garment is ready to wear. Mark uniform with date of treatment. DO NOT RE-TREAT UNIFORM; one treatment is effective for life of the uniform. DO NOT TREAT UNDERWEAR OR CAP. For bednet: Spread netting on the ground and spray at a distance of 12-18 inches using a fan nozzle at 55 psi. Spray with a slow sweeping motion to completely cover the netting fabric without runoff.

STORAGE AND DISPOSAL: Do not store below 32°F. Do not contaminate water, food, or mess gear by storage or disposal. Recap empty permethrin container, place in plastic bag and put in trash.

6.4 Sources.

6.4.1 Permethrin. Permethrin can be purchased from w/Roussell UCLAF, 238 Wilson Avenue, Newark NJ 07105 as Permethrin R 40MFG Concentrate.

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6.4.2 Marking pen. Marking pen can be purchased from Mark-Tex Corporation, Englewood, NJ 07631.

6.4.3 Bottle (151 mL). Bottles can be purchased from Wheaton, 1501 North Street, Millville, NJ 08332.

6.5 Subject term (key word) listing.

Arthropod
Bites protection
Clothing application
Uniform treatment

6.6 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.

MILITARY INTERESTS:

Custodians:

Army - GL
Air Force - 68

Review activities:

Army - EA, MD
DLA - GS
AFPMB - PM

Preparing Activity:

Army - GL
(Project 6840-1030)

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

1. RECOMMEND A CHANGE:	1. DOCUMENT NUMBER	2. DOCUMENT DATE (YYMMDD)
	MIL-I-44411A	940630

3. DOCUMENT TITLE
INSECT REPELLENT, PERMETHRIN

4. NATURE OF CHANGE (Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)

5. REASON FOR RECOMMENDATION

6. SUBMITTER		
a. NAME (Last, First, Middle Initial)	b. ORGANIZATION	
c. ADDRESS (Include Zip Code)	d. TELEPHONE (Include Area Code)	7. DATE SUBMITTED (YYMMDD)
	(1) Commercial (2) AUTOVON/DSN	
8. PREPARING ACTIVITY		
a. NAME	b. TELEPHONE (Include Area Code)	(2) AUTOVON/DSN
U.S. Army Natick RD&E Center	(1) Commercial 508-651-4532	256-4532
c. ADDRESS (Include Zip Code)	IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:	
Commander, U.S. Army Natick RD&E Center ATTN: SATNC-IR Natick, MA 01760-5019	Defense Quality and Standardization Office 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466 Telephone (703) 756-2340 AUTOVON 289-2340	