

O-I-515A
July 30, 1976
SUPERSEDING
Fed. Spec. O-I-515
March 13, 1961

FEDERAL SPECIFICATION

INSECTICIDE, CHLORDANE, (CONCENTRATE, WATER EMULSIFIABLE)

This specification was approved by the Commissioner, Federal Supply Service, General Services Administration, for the use of all Federal agencies.

1. SCOPE

1.1 This specification covers concentrated insecticide containing chlordane, kerosene and an emulsifying agent, that upon dilution with water will serve as a residual type spray suitable for insect control (see 6.1).

2. APPLICABLE DOCUMENTS

2.1 The following documents, of the issue in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein:

Federal Specifications:

VV-K-220 - Kerosene, Deodorized
PPP-P-704 - Pails, Metal: (Shipping, Steel, 1 Through 12 Gallon)

Federal Standards:

Fed. Std. No. 123 - Marking for Shipment (Civil Agencies.)
Fed. Test Method Std. No. 141 - Paint, Varnish, Lacquer, and
Related Materials; Methods of
Inspection, Sampling and Testing.

(Activities outside the Federal Government may obtain copies of Federal Specifications, Standards, and Handbooks as outlined under General Information in the Index of Federal Specifications and Standards and at the prices indicated in the Index. The Index, which includes cumulative monthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

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(Single copies of this specification and other Federal specifications required by activities outside the Federal Government for bidding purposes are available without charge from Business Service Centers at the General Services Administration Regional Offices in Boston, New York, Washington, DC, Atlanta, Chicago, Kansas City, MO, Fort Worth, Denver, San Francisco, Los Angeles, and Seattle, WA.

(Federal Government activities may obtain copies of Federal Specifications, Standards, and Handbooks and the Index of Federal Specifications and Standards from established distribution points in their agencies.)

Military Standards:

- 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 for 40" x 48" Pallets

(Copies of Military Specifications and Standards required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

LAWS AND REGULATIONS

Federal Insecticide, Fungicide, and Rodenticide Act

(Title 7 United States Code Section 135 et seq.) as amended by the Federal Environmental Pesticide Control Act of 1972 (PL 92-516) and any regulations promulgated thereunder by the Administrator of the Environmental Protection Agency.)

(Application for copies should be addressed to the Environmental Protection Agency, Pesticide Registration Division, 401 M Street, S.W., Washington, DC 20460.)

Title 49, Code of Federal Regulations (CFR) 1975 edition, Parts 170 through 179, Department of Transportation Rules and Regulations for Transportation of Explosives and Other Dangerous Articles

(Application for copies should be addressed to the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. Orders for the above publication should cite "49 CFR 170 to 179").

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2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless a specific issue is identified, the issue in effect on date of invitation for bids or request for proposal shall apply:

National Motor Freight Traffic Association, Inc., Agent

National Motor Freight Classification

(Application for copies should be addressed to the American Trucking Associations, Inc., Tariff Order Section, 1616 P Street, N.W., Washington, DC 20036.)

Uniform Classification Committee, Agent

Uniform Freight Classification

(Application for copies should be addressed to the Uniform Classification Committee, Room 1106, 222 South Riverside Plaza, Chicago, IL 60606.)

3. REQUIREMENTS

3.1 Composition. The water-emulsifiable, chlordane concentrate insecticide shall be composed of chlordane, deodorized kerosene, and an emulsifying agent and shall contain a minimum of 72 grams of chlordane ingredient per 100 grams of finished product.

3.1.1 Chlordane ingredient. The chlordane ingredient used in formulating this insecticide shall consist of clarified technical chlordane (comprising not less than 60.0 percent by weight of 1, 2, 4, 5, 6, 7, 8, 8-octa-chloro-4, 7-methano-3a, 4, 7, 7a-tetrahydroindane and not more than 40.0 percent by weight of related active compounds formed in the manufacturing process). Conformance to this requirement shall be verified by the manufacturer in a certificate of compliance to the contracting officer. In addition, the chlordane ingredient shall conform to table I, when tested as specified in table II.

TABLE I. Chemical and physical requirements of technical chlordane ingredient

Property	Requirement	
	Minimum	Maximum
Chlorine content (percent by weight)	64	67
Color (hellige units)	--	8
Kerosene insolubles (ml./ml.)	--	0.05

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3.1.2 Emulsifying agent. The emulsifying agent shall be completely miscible when combined with the other ingredients comprising the finished insecticide, shall neither affect nor be affected by the chlordane and shall be such as to enable the finished product to meet the emulsion stability test specified in table III (see 3.2.2).

3.1.3 Kerosene. The kerosene used shall conform to Federal Specification VV-K-220 and shall be completely miscible with the chlordane and emulsifying agent.

3.2 End item.

3.2.1 Appearance. The finished product shall be substantially free of sediment and shall show no evidence of separate phases when tested as specified in table III.

3.2.2 Emulsion stability. The emulsion formed upon dilution of the product with hard water shall show not more than 4 ml. of creamy layer separation and no oil separation when tested after formation and after reformation as specified in table III.

3.2.3 Active ingredient (as chlorine). The finished insecticide shall contain a minimum of 460 milligrams (mg.) of chlorine per gram of finished product when tested as specified in table III.

3.2.4 Staining. The product shall show no staining when tested as specified in table III.

3.2.5 Qualitative color test. When tested as specified in table III, the insecticide concentrate shall exhibit a red color approximately equal in intensity to that exhibited by the insecticide ingredient.

3.3 Labeling. The labeling shall be approved by and registered with the Pesticide Registration Division, Environmental Protection Agency, and shall be in compliance with the requirements of the Federal Insecticide, Fungicide and Rodenticide Act, as amended, of 1972.

3.3.1 Label data. Label data must include those insects and usage patterns listed in this specification. Variable directions for use, to include application rates, from those outlined in this specification are acceptable if approved by and registered with EPA. Label data shall be durably and legibly marked on the main body by lithographing or stenciling with a noncorrosive, weather-resistant, waterproof ink which will not smear or rub off during handling. Label data shall include the following:

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EPA REGISTRATION NUMBER

EPA ESTABLISHMENT NUMBER

INSECTICIDE, CHLORDANE (72 percent water emulsifiable concentrate)
(Approximately 8 pounds chlordane/gallon)

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Percent by weight

Active ingredients:

Technical chlordane 1/
Petroleum hydrocarbons

72

--

Inert ingredients

--

Total

100

1/ Equivalent to 43.2% octachloro - 4, 7 methano tetrahydroindane and 28.8%
of related compounds.

National stock number

Manufacturer's name and address:

Date of pack:

Lot number:

Contract number:

Net contents:

WARNING

KEEP OUT OF REACH OF CHILDREN
DO NOT USE WITHOUT DILUTING

To be applied by trained personnel only. May be fatal
if swallowed. If swallowed, drink emetic of mustard and
call a physician. Causes eye and skin irritation. Do
not get in eyes, on skin, or on clothing. In case of
contact with skin, wash with soap and water. Avoid
breathing vapors.

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SUBTERRANEAN TERMITE CONTROL. Use a one percent emulsion (add one part of concentrate, while stirring, to 95 parts of water). For additional details see manual (AFM 91-16, TM 5-632, MO-310).

1. Slab type construction:

- (a) Apply 1 gallon per 10 square feet as an overall pre-construction treatment under the slab and under attached porches and entrance platforms.
- (b) Apply 2 gallons per 5 linear feet per each foot of depth by rod, or to a narrow trench to critical areas under slab as pre-construction treatment. Treat to a depth of 1 foot but not below top of footing. Treat along both sides of foundation walls, interior foundation walls, and around utility entrances. Mix emulsion well with back fill.
- (c) Treat all voids in hollow masonry units of the foundation at a rate of 1 gallon per 5 linear feet of wall. Apply emulsion so as to reach the footing.

2. Buildings with crawl spaces and basements.

- (a) Apply 2 gallons per 5 linear feet per each foot of depth as a trenching application to critical areas under the building, such as along the inside of foundation walls and around piers and utility entrances. Mix emulsion well with back fill.
- (b) Apply 2 gallons per linear feet in a trench along the outside of foundation walls, including entrance platforms and porches where the foundation is not more than 15 inches deep. If over 15 inches deep, but not over 30 inches deep, apply 4 gallons per 5 linear feet of trench. Mix emulsion with back fill.
- (c) Apply 1 gallon per 10 square feet of soil surface as a pre-construction treatment under basement floor as well as where the attached porches, entrance platforms, utility entrances, etc., have covering slab on fill of ground.

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2. Buildings with crawl spaces and basements. (cont'd)

- (d) Treat all voids in hollow masonry units of the foundation at a rate of 1 gallon per 5 linear feet of wall. Apply the emulsion so as to reach the footing.

JAPANESE BEETLE LARVAE, IMPORTED FIRE ANT. (Limited to use under Federal/State Quarantine Programs) Ornamentals, turf and sod. Apply at the rate of 5 to 10 pints per acre (2 to 4 ounces in 5 gallons of water applied to 1,000 square feet) in sufficient water for coverage. Disc into the soil before planting.

IMPORTED FIRE ANTS - BROADCAST TREATMENT. Apply 1 to 1-1/2 pints per acre in sufficient water for coverage (0.5 ounces per 1,000 square feet). Do not treat when soil is wet. Do not apply to pasture and rangeland. Do not contaminate feed and food crops.

CONTAINER DISPOSAL.

1. Empty container in normal manner and drain an additional 30 seconds.
2. Add the correct amount of rinse solution (water or designated spray carrier) as follows:

<u>Container size</u>	<u>Amount of rinse solution</u>
5 gals.	1 gal.

3. Replace closure.
4. Shake container or tumble to get rinse on all interior areas.
5. Drain into sprayer or mix tank.
6. Repeat the above steps for a total of 3 rinses. (Puncture container in the top before draining the third rinse).
7. Crush and recycle for scrap or bury at an approved dump site.

3.4 Workmanship. The end product shall be a uniform emulsion which does not separate on standing and contains no sediment.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance

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of all inspection requirements as specified herein. Except as otherwise specified in the contract or order, the supplier 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 that supplies and services conform to prescribed requirements.

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

4.2.1 Component and material inspection. In accordance with 4.1 above, components and materials shall be inspected in accordance with all the requirements of referenced specifications, drawings and standards unless otherwise excluded, amended or qualified in this specification or applicable purchase document. In addition to testing provisions contained in subsidiary specifications, drawings or standards, testing shall be performed on components listed in table II for characteristics noted. The lot size shall be expressed in pounds of chlordane. The sample unit for testing shall be a 4 ounce composite obtained by randomly selecting and thoroughly mixing equal portions from all containers in the lot. The composite sample shall be placed in a clean dry amber glass container and care shall be exercised to prevent contamination or alteration of the composite during sampling and testing. All test reports shall contain the individual values utilized in expressing the final result. The lot shall be unacceptable if the composite sample fails to meet any of the test requirements specified. The lot size and sample size shall be in accordance with the following:

<u>Lot size (pounds)</u>	<u>Sample size</u>
800 or less	2
801 up to and including 22,000	3
22,001 and over	5

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TABLE II. Component testing

Component	Characteristic	Requirement	Test method	Results reported as	
				Pass or fail	Numerically to nearest
Chlordane	Color	Table I	4.4.1.1		1 (hellige unit)
	Kerosene insolubles	Table I	4.4.1.2		0.001 ml./ml.
	Chlorine content	Table I	4.4.1.3		1 percent
	Composition	3.1.1	Certificate of compliance		

4.3 Inspection of the end item.

4.3.1 Examination of the end item. The end item shall be examined for the defects in the applicable subparagraphs at the inspection levels and acceptable quality levels (AQLs) set forth in 4.3.3. The lot size for purposes of determining the sample size in accordance with MIL-STD-105, shall be expressed in units of filled containers for the examinations in 4.3.1.1 and 4.3.2.1.

4.3.1.1 Examination of filled container for net contents. The sample unit for this examination shall be one filled unit container. The lot shall be unacceptable if the average net contents per container for all sample units examined is less than specified or indicated.

4.3.2 Examination of preparation for delivery requirements.

4.3.2.1 Examination for packing and marking. An examination shall be made to determine whether packing and marking requirements of section 5 of this specification are complied with. Defects shall be scored in accordance with the list below. The sample unit for this examination shall be one shipping container fully prepared for delivery. The lot size shall be the number of shipping containers in the end item inspection lot.

<u>Examine</u>	<u>Defect</u>
Marking	Omitted; incorrect; illegible; of improper size, location, sequence or method of application.
Materials	Any component missing. Any component damaged.
Workmanship	Incomplete closure of container. Bulged or distorted container.

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4.3.3 Inspection levels and acceptable quality levels (AQLs) for examination. The inspection levels, for determining the sample size, and the acceptable quality levels (AQLs), expressed in defects per 100 units, shall be as follows:

<u>Examination</u>	<u>Inspection level</u>	<u>AQL</u>
4.3.1.1	S-2	N/A
4.3.2.1	S-2	2.5

4.3.4 Testing of the end item. The end item shall be tested for the characteristics specified in table III. The lot size shall be expressed in gallons of insecticide. The sample unit for testing shall be a 1 gallon composite obtained by combining and thoroughly mixing equal portions from containers selected at random throughout the lot. The composite shall be placed in a clean, dry, sealed container. Care shall be exercised to prevent contamination or alteration of the insecticide during the sampling, compositing, storage and testing. All test reports shall contain the individual values utilized in expressing the final result. The lot shall be unacceptable if the composite fails to meet any test requirements specified. The lot size and sample size shall be in accordance with the following:

<u>Lot size (gallons)</u>	<u>Sample size</u>
800 or less	2
801 up to and including 22,000	3
22,001 or more	5

TABLE III. Instructions for testing of the end item

<u>Characteristic</u>	<u>Requirement</u>	<u>Test method</u>	<u>Pass or fail</u>	<u>Results reported as</u>
				<u>Numerically to the nearest</u>
Appearance	3.2.1	4.4.2.1	X	
Emulsion stability	3.2.2	4.4.2.2		1 ml.
Chlorine content	3.2.3	4.4.2.3		1 mg.
Staining	3.2.4	4.4.2.4	X	
Qualitative color test	3.2.5	4.4.2.5	X	

4.4 Test methods.

4.4.1 Tests of chlordane ingredient. Tests of chlordane ingredient shall be performed as follows:

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4.4.1.1 Color. Dissolve 2 g. of chlordane concentrate in 6 g. of kerosene conforming to Federal Specification VV-K-220. Determine color value of resultant solution by use of a number "1" hellige comparator using Method 4242 of FED-STD-141.

4.4.1.2 Kerosene insolubles. Dissolve 10 g. of the concentrate in sufficient kerosene conforming to Federal Specification VV-K-220 to make a final volume of 50 ml. Shake thoroughly to insure that the sample has been dissolved completely and store solution at room temperature for 5 days. After this period, reagitrate the sample thoroughly to obtain a uniform distribution of any sediment that has formed (swabbing the walls of the container if the precipitate adheres to them) and transfer 10 ml. to a calibrated centrifuge tube and spin for 10 minutes at 1,700 revolutions per minute (rpm), approximately. Record the volume of sediment in the tube.

4.4.1.3 Chlorine content. 1/ Weigh a 0.10 ± 0.02 g. sample of the ingredient into a clean dry 300-ml. standard tapered-neck flask. Add 20 ml. of isopropyl alcohol (99 percent) and 2-1/2 g. of freshly cut sodium (cut into small pieces) and swirl the flask to mix its contents. Connect the flask to a water-cooled reflux condenser having a corresponding standard tapered male fitting and boil gently for 2-1/2 hours, swirling occasionally. Destroy the excess sodium by adding 15 ml. of isopropyl alcohol followed by the cautious addition of 10 ml. of 50 percent isopropyl alcohol. Transfer the contents of the flask quantitatively to a 600-ml. beaker; rinse the flask, condenser and joint thoroughly with water, catching the washings in the beaker. Add a few glass beads, cover with a watchglass and boil gently on a hotplate until the volume is 75 to 100 ml. Cool, add a few drops of phenolphthalein, neutralize with nitric acid (1:1) and add 5 ml. of the acid in excess. Transfer the solution to a 500-ml. separatory funnel, rinsing the beaker a few times with distilled water. Wash down the sides of the beaker with two successive 20 ml. portions of a mixture consisting of ethyl ether and isoamyl alcohol (2:1), transferring the washings successively to the funnel. Finally rinse the beaker three times with distilled water; adding these washings successively to the funnel. Shake the funnel vigorously for 1 minute and let stand until a clean separation of phases occurs. Draw off the aqueous layer into a 600-ml. beaker; wash the organic layer in the funnel with 10 ml. of distilled water, shaking vigorously for 1 minute. Again let the phases separate cleanly and add the wash water to the beaker. Repeat the washing with a second 10-ml. portion of water. Add slowly while stirring an accurately measured volume of standard 0.1N silver nitrate solution (30 to 35 ml.). Coagulate the precipitate by heating on a steam bath for 4 hours, cool and filter through a No. 42 Whatman paper. Wash thoroughly with distilled water, receiving the filtrate and washings in a 500-ml. Erlenmeyer flask.

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Add 5 ml. of ferric ammonium sulfate indicator and titrate with 0.1N ammonium thiocyanate solution. Compute the net number of milliliters of silver nitrate solution used by the sample. Then compute the percentage chlorine in the sample by the equation:

$$a = \frac{b \times 0.3547}{\text{weight of sample (grams)}}$$

where:

a = Percentage chlorine
b = Net number of milliliters of
0.1000N silver nitrate used

1/ The decomposition of the sample by sodium is recommended. However, it is permissible to use the Parr bomb method using sodium peroxide as the fusion material for dechlorination. If the latter method is used, the subsequent procedure shall be as specified in 4.4.1.3 starting with the instructions for transferring the material to the separatory funnel and extracting with the ether-isoamyl alcohol mixture. In the event of dispute the results obtained by the sodium decomposition method specified shall govern.

4.4.2 Testing of the end item.

4.4.2.1 Appearance. Examine the sample of insecticide visually by transmitted light for clarity, homogeneity, and sedimentation.

4.4.2.2 Emulsion stability. Place 96 ml. of hard water at $80^{\circ} + 5^{\circ}$ F. into a 250-ml. beaker and add while stirring 4.0 ml. of the insecticide concentrate from a pipette. Continue stirring vigorously for 1 minute. Pour the resulting emulsion into a 100-ml. graduated, glass-stoppered cylinder, note the time and set aside for exactly 30 minutes. Immediately after that period, examine the emulsion carefully under strong transmitted light for signs of separation of phase and record the percentage separation by volume. Allow the emulsion to stand at the test temperature for 24 hours. Reform the emulsion by inverting the cylinder through 30 complete cycles. Exactly 30 minutes after reformation, examine again under strong light and record the results.

4.4.2.2.1 Hard water. The hard water specified in 4.4.2.2 shall have the following composition and is designed to provide a hardness of 342 parts per million (ppm) calculated as calcium carbonate:

CaCl₂ (anhydrous) -- 0.3037 g.

MgCl₂·6H₂O ----- 0.1388 g.

H₂O (distilled) ----- Sufficient to make 1 liter of solution

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4.4.2.3 Chlorine content. Accurately weigh 10 grams of finished product into a 500-ml. volumetric flask. Make to volume with 99 percent isopropyl alcohol (at 25°C.), mix thoroughly and transfer a 10-ml. aliquot into a 300-ml. standard tapered neck flask. Proceed at this point as specified in 4.4.1.3. Compute the milligrams of chlorine per gram of sample by the equation.

$$C = \frac{d \times 177}{G}$$

where:

C = milligrams of chlorine per gram of finished product
 d = Net number of ml. of 0.1000N silver nitrate used by aliquot
 G = Weight of sample taken (in grams)

4.4.2.4 Staining. Immerse a 6-inch square of bleached cotton sheeting in the diluted concentrate (1 part of the concentrate and 19 parts of water made up as described in 4.4.2.2), wet completely, wring to remove excess liquid and allow to dry for 48 hours in a well ventilated room. At the end of that period examine the cloth for staining, comparing it to an untreated piece of sheeting.

4.4.2.5 Qualitative color test.

4.4.2.5.1 Insecticide concentrate. Dilute 1 ml. of the insecticide concentrate with 100 ml. of isopropyl alcohol, mix thoroughly and pipette a 1-ml. aliquot into a test tube (10- to 20-ml. capacity).

4.4.2.5.2 Chlordane ingredient. Repeat the above, substituting 3/4-ml. of chlordane ingredient for the 1-ml. insecticide concentrate.

4.4.2.5.3 Procedure. To each test tube, add 3 ml. of a solution containing diethanolamine and 1 N methanolic potassium hydroxide (2 parts of the amine and 1 part of caustic). Stir and place the test tubes on a steam bath for 30 minutes. The development of a red color indicates the presence of chlordane.

5. PREPARATION FOR DELIVERY

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

5.1.1 Level A. The insecticide shall be furnished in five-gallon pails conforming to type I, class 4 of PPP-P-704. The interior and exterior of pails shall be coated as specified in the pail specification (see 6.4).

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5.1.2 Level B. The insecticide shall be packed as specified in 5.1.1.

5.1.3 Level C. Insecticide shall be packaged to insure carrier acceptance and safe delivery to destination at the lowest transportation rate for such supplies. Containers shall comply with the Uniform Classification or National Motor Freight Classification, as applicable.

5.2 Palletization. When specified (see 6.2), the insecticide packed as specified in 5.1, shall be palletized in accordance with load type III of MIL-STD-147. Each prepared load shall be bonded with primary, secondary and horizontal straps in accordance with bonding means E, K, and L, respectively; and shall have storage aid 5 applied.

5.3 Marking. Marking shall be in accordance with 5.3.1 or 5.3.2 as specified (see 6.2).

5.3.1 Military requirements. In addition to the marking specified in 3.3 and any special marking required by the contract or order, shipments shall be marked in accordance with MIL-STD-129 and in accordance with the marking and labeling requirements of Regulations for Transportation of Explosives and Other Dangerous Articles, etc.

5.3.2 Civil agencies. In addition to the marking specified in 3.3 and any special marking required by the contract or order, shipments shall be marked in accordance with FED-STD-123 and in accordance with the marking and labeling requirements of Regulations for Transportation of Explosives and Other Dangerous Articles, etc.

6. NOTES

6.1 Intended use. The intended uses for this product are the control of subterranean termites. Japanese beetle larvae and imported fire ants (under Federal/State Quarantine Programs) and imported fire ants on Federal lands.

6.2 Ordering data. Purchasers should select the preferred options permitted herein, and include the following information in the procurement documents:

- (a) Title, number and date of this specification.
- (b) Selection of the applicable level of packing (see 5.1).
- (c) When palletization is required (see 5.2).
- (d) Marking required (see 5.3).

6.3 Insecticide, chlordane concentrate water-emulsifiable is purchased by volume, the unit being a U.S. Gallon at 25° C. (77° F.).

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6.4 The following are considered satisfactory coatings for lining the container specified in 5.1.1:

7 ND lacquer
14 ND lacquer
Both furnished by Jones & Laughlin Steel Co.

W-9 Lacquer
Marketed by Wheeling Steel Co.

Custodians:

Army - GL
Air Force - 68

Preparing activity:

Army - GL

Civil Agency Coordinating Activities:

GSA - FSS
AGR - AFS
GPO - GPO
HEW - FDA

Project No. 6840-0300

Orders for this publication are to be placed with General Services Administration, acting as an agent for the Superintendent of Documents. See section 2 of this specification to obtain extra copies and other documents referenced herein. Price 35 cents each.

