



MALATHION ULV* CONCENTRATE INSECTICIDE

ACTIVE INGREDIENT:		
Malathion (0,0-dimethyl phosphorodithioate of diethyl mercaptosuccinate)	95.0%	
INERT INGREDIENTS:	5.0%	
TOTAL	100.0%	

*Trademark of American Cyanamid Company

One Gallon Contains 9.7 Pounds of Malathion.

KEEP OUT OF REACH OF CHILDREN CAUTION

SEE SIDE PANELS FOR OTHER PRECAUTIONARY STATEMENTS

E.P.A. Reg. No. 8720-207

E.P.A. Reg. No. 8720-FL-1

NET CONTENTS:

Manufactured by
SOUTHERN MILL CREEK PRODUCTS COMPANY, INC.
P.O. BOX 16706
TAMPA, FLORIDA 33687

ACCEPTED

MAR 15 1989

EPA Reg No. 8720-207

STATEMENT OF PRACTICAL TREATMENT

If swallowed — Call a physician or Poison Control Center immediately. Do not induce vomiting. If vomiting occurs, do so under medical supervision. Drink one or two glasses of water and induce vomiting by rubbing the back of the throat with the finger. Do not induce vomiting or give anything by mouth to a child or an unconscious person.

If inhaled — Remove victim to fresh air. Apply artificial respiration if required.

If on skin — Remove contaminated clothing and wash affected areas with soap and water.

If in eyes — Flush with plenty of water. Call a physician immediately.

Note to Physician — MALATHION is a cholinesterase inhibitor. If symptoms of cholinesterase inhibition develop, atropine sulfate is antidotal. 2-PAM is also antidotal and may be administered in conjunction with atropine.

Before using, read the directions for the proper methods and procedures which must be followed to achieve effective insect control and avoid permanent damage to automobile and other paint finishes.

PRECAUCION — CAUTION

AL USUARIO: Si usted no lee inglés, no use este producto hasta que la etiqueta haya sido traducida y le sea entendible.
(TO THE USER: If you cannot read English, do not use this product until the label has been fully explained to you.)

PRECAUTIONARY STATEMENTS Hazards to Humans and Animals KEEP OUT OF REACH OF CHILDREN CAUTION

Harmful by swallowing, inhalation or skin contact. Avoid breathing spray mist. Avoid contact with skin, eyes, nose. Wash thoroughly after handling. Change contaminated clothing.

ENVIRONMENTAL HAZARDS

This product is toxic to fish. Keep out of lakes, streams, or ponds. Do not apply where fish are present. Do not apply when weather conditions favor drift from areas to be treated. Do not apply to water bodies where fish are present. Do not apply to water bodies where fish are present. Shrimp and crab may be killed at application. Do not apply to water bodies where fish are present. Do not apply to water bodies where fish are present. Apply this product only as specified on this label.

MALATHION, LIQUID

ORM-A



NA 2783

Lot No.:



ble oil and apply this mixture with proper application equipment.

IMPORTANT

Undiluted spray droplets of CYTHION or MALATHION ULV will permanently damage automobile paint. If accidental exposure does occur, the vehicle should be washed immediately.

Consult your state experiment station or state extension service for proper timing of sprays.

These products are highly toxic to bees exposed to direct treatment or residues on crops. Protective information may be obtained from your Cooperative Agricultural Extension Service.

All applicable directions, restrictions and precautions on the EPA registered labels are to be followed.

Operator should inspect and calibrate equipment to assure that the proper amounts of pesticide are being applied, and that uniform coverage is obtained.

This label must be in the possession of the user at time of pesticide application.

Lower rates should be used only with close field supervision and low pest numbers.

MOSQUITO CONTROL IN POPULATED AND RURAL AREAS

AERIAL APPLICATION

ADULT MOSQUITO CONTROL OVER CITIES, TOWNS, AND OTHER AREAS WHERE AUTOMOBILES, TRAILERS, TRUCKS AND PLEASURE BOATS ARE PRESENT: Apply 2.6 to 3.0 fluid ounces of CYTHION or MALATHION ULV per acre. Apply only when weather conditions are favorable. Wind and rising air currents may cause undesirable spray drift and reduce insect control.

IMPORTANT—Undiluted spray droplets of CYTHION or MALATHION ULV will permanently damage vehicle paint finishes unless the air lift used for the ultra low volume application meets all of the specifications listed below.

FIXED WING AIRCRAFT

1. Aircraft is operated at 150 mph or more.
2. There are no leaks in the ultra low volume spray system.
3. Nozzles are placed on the boom at a 45° angle down and into the wind.
4. Diaphragm check valves are used on all nozzles to insure positive cut-off of the spray.
5. Dosage of CYTHION or MALATHION ULV does not exceed 3 fluid ounces per acre.
6. The spray system produces droplets of this product in the 50 to 60 mass median diameter (MMD) micron range, with no more than 10% of the droplets exceeding 100 microns, as determined by readings made from microscope slides coated with DRI-FILM® or TEFLON®.

HELICOPTER

Equipment specifications

1. Rotary nozzle equivalent to Beecomist Spray Head Assembly Model No. 350 equipped with:
 - a. a direct reading RPM tachometer or low RPM signal light readily visible to operator;
 - b. a stainless steel porous metal sleeve, 20 micron pore size, dynamically balanced to the nozzle;
 - c. a diaphragm check valve as near to the rotary nozzle as possible to insure positive cut off of the spray;
 - d. nozzle on-off switch separate from main switch and pump switch.

2. Minimum no-load nozzle speed of 10,500 RPM.
3. A continuous nonpulsating metered flow must be maintained by a variable speed metering pump equipped with:
 - a. a positive cut off valve between tank and pump;
 - b. a flow gauge or tachometer visible to operator;
 - c. a pump on-off switch separate from main switch and nozzle switch.
4. Maximum flow rate of 0.5 gallon per minute per nozzle.
5. Rotary nozzle must be mounted behind and below the boom with the sleeve directed toward the rear of the aircraft and parallel to the ground during flight. Nozzle must be positioned to minimize air turbulence and the collection of CYTHION or MALATHION ULV droplets on mounting brackets, feed lines, fittings, etc., or any part of the aircraft.

Operating Procedures

1. CYTHION or MALATHION ULV must be prefiltered through a 10 micron filter prior to transfer into helicopter tank. A 50 mesh stainless steel line strainer must be installed in the pump feed line.
2. Entire system, including tank, pump, nozzle and feed lines, to be used only for application of CYTHION or MALATHION ULV.
3. Entire system must be inspected daily to insure that there are no leaks.
4. Sleeve must be removed and cleaned immediately after each use by washing with hot water and blowing dry from outside in with clean air.
5. Rotating nozzle must be turned on and operating before turning on pump. For shut off, pump must be shut off and lines cleared prior to stopping nozzle rotation.
6. Dosage of CYTHION or MALATHION ULV does not exceed 3 fluid ounces per acre.
7. The spray system must produce droplets of CYTHION or MALATHION ULV with a mass median diameter (MMD) of less than 50 microns, with no more than 2.5% of the droplets exceeding 100 microns, as determined by readings made from microscope slides coated with DRI-FILM or TEFLON.

GROUND APPLICATION

Thermal Aerosols or Fogs

For control of adult mosquitoes with thermal aerosols or fogs, apply CYTHION or MALATHION ULV at the rate of 6-8 oz. actual/gallon (3.9-5.2 gallons CYTHION or MALATHION ULV in 100 gallons finished solution*) by ground equipment delivering 40 gallons per hour at a vehicle speed of 5 miles per hour to treat a swath width of 300-400 feet.

*There is a great variation in the chemical composition of fuel oils which may be used as thermal fog solvents. These differences may cause sludge and/or affect the solubility of the CYTHION or

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MALATHION ULV. For more complete details on tests for charge formation and stability in standard fog solutions, write American Cyanamid Company, One Cyanamid Plaza, Wayne, New Jersey 07470.

Nonthermal Aerosols

Over a 300-foot swath can be produced using the non-thermal ultra low volume aerosol method with CYTHON or MALATHION ULV.

Vehicle Speed Rate per Hour	Flow Rate of MALATHION Fluid Ounces per Minute	Maximum Flow Rate per Hour
5	1.0 to 2.1 fluid ounces	1 gallon
10	2.0 to 4.3 fluid ounces	2 gallons
15	3 to 6.45 fluid ounces	3 gallons
20	4 to 8.6 fluid ounces	4 gallons

For control of adult stable fly in populated and rural areas with non-thermal aerosols of CYTHON or MALATHION ULV using the ultra low volume method, use the following flow rates at the indicated vehicle speeds:

Vehicle Speed Miles per Hour	Flow Rate of MALATHION Fluid Ounces per Minute	Maximum Flow Rate per Hour
5	2.1 fluid ounces	1 gallon
10	4.3 fluid ounces	2 gallons

DROPLET SIZE

1. The Mass Median Diameter (MMD) of the droplets should not exceed 17 microns. The MMD is the drop diameter which divides the spray volume into two equal parts; i.e., 50% of the volume is in the drop sizes below the MMD and 50% is above the MMD.
2. Spray droplets should not exceed 32 microns in size. Three percent of the spray droplets (6 droplets out of 200) can exceed 32 microns providing the MMD does not exceed 17 microns and no droplets exceed a maximum of 48 microns. Larger droplets, when transported by natural air currents, impinge more readily on objects in their pathway and will permanently damage automobile-type paints.
3. More than one-half of the total spray mass must consist of droplets in the 6 to 18 micron range to achieve adequate dispersal of insecticide over a 300-foot swath.
4. A minimum of two-thirds, preferably four-fifths of the total spray mass must consist of droplets not exceeding 24 microns in range.

OPERATING EQUIPMENT

Each Nonthermal Aerosol Generator used for dispersal of CYTHON or MALATHION ULV to control adult mosquitoes must have minimum capability of producing the droplet spectrum described under DROPLET SIZE. The initial determination of droplet size is made after the unit is installed in a vehicle and prior to its use in mosquito control operations. The unit should be rechecked as frequently as necessary to insure that proper droplet size is maintained for each operation. Determination of droplet size every two months is usually sufficient if the unit has been maintained in good operating condition. Equipment manufacturer's instructions setting forth cleaning and maintenance of the unit must be followed. The unit must be inspected before each operation to correct any leaks or obstructions in the spray system; to detect whether the nozzle, hoses, or other parts are worn and need replacement; to insure that the flow meter is properly calibrated; and to determine that the pressure recommended by the manufacturer is being maintained.

Flow Rate—must be regulated by accurate flow meter
 —not greater than 1 gallon per hour at 5 mph, 2 gallons per hour at 10 mph, 3 gallons per hour at 15 mph, or 4 gallons per hour at 20 mph

Nozzle Direction—rear of the vehicle.
 —upward at an angle of 45° or more.

Vehicle Speed—not greater than 20 miles per hour
 —shut off spray equipment when vehicle is stopped

IMPORTANT—Spray droplets of undiluted CYTHON or MALATHION ULV will permanently damage automobile paint unless all the conditions described and recommended in this leaflet are met.

**Directions for Determining the droplet size of
 CYTHON or MALATHION ULV
 nonthermal aerosols**

Permanent records of each droplet size determination must be kept and made available to American Cyanamid upon request.

1. Preparation of Slides with DRI-FILM

CYTHON or MALATHION ULV droplet sizes are determined by depositing a sample of the aerosol on a coated glass slide and measuring the droplets under a high-power microscope. Ordinary 3" x 1" glass slides must be coated with silicone (General Electric SC-87 DRI-FILM) prior to sampling to prevent excessive spreading or coalescence of the droplets. The slides are dipped into a 10 percent solution of DRI-FILM in toluene, drained and dried at about 200°F. for 30 minutes, after which they are dipped in acetone, allowed to dry and stored in a tight slide box. Coating solution must be freshly prepared. Do not store coating solution because it will deteriorate. Slides are lightly polished with a soft tissue before using to remove any foreign particles.

**2. Deposition of CYTHON or
 MALATHION ULV Droplets on Slides**

Droplets should be collected under ideal operating conditions to insure representative sampling of droplets in the aerosol. A sample of the CYTHON or MALATHION ULV aerosol is deposited on a slide by waving the slide as rapidly as possible perpendicular through the aerosol cloud at a distance of 25 feet from the point of discharge. The slide velocity may be increased by attaching it to a 3 or 4 foot stick by means of a spring paper clip. At least two slides should be exposed to insure an adequate sample. Store slides in a tight slide box for transfer to a location where measurements can be made. Avoid excessive heat during transit and store in a cool place until measurements can be made.

Although label specifications require the aerosol nozzle to be angled upward at 45° or more during operation, it is more convenient to position the nozzle parallel to the ground for droplet sampling. If this is not possible it will be necessary to be positioned at a sufficient height to obtain a representative sample of the aerosol.

**3. Determination of CYTHON or
 MALATHION ULV Droplet Sizes**

A microscope with mechanical stage and an eyepiece micrometer are used to determine the size of the individual aerosol droplets. Prior to taking measurements, the divisions of the eyepiece micrometer must be calibrated into microns by means of a stage micrometer. In the example represented in Table 1, droplets were measured at 400x magnification. At that magnification each division of the eyepiece was calibrated to equal 3.5 microns.

At least 200 droplets should be measured. Usually this is easily accomplished on one slide. An accurate method is to measure all droplets that pass through the micrometer scale as the slide is moved from one edge to the other by using the mechanical stage. Measurements should not be taken along the margins of the slide. It is more convenient to measure in terms of the divisions of the eyepiece micrometer and then convert these divisions into microns.

The measurements converted into microns must then be corrected for the amount of spread that occurred on the slides. The CYTHON or MALATHION ULV spread factor for silicone-coated slides is 0.5. Therefore, in Table 1 each division of the eyepiece actually equals 1.75 microns (3.5 microns times the 0.5 spread factor).

The spread factor for TEFLON-coated slides is 0.06. The following procedure is given for silicone-coated slides, would be the same for TEFLON-coated slides once the value for each eyepiece division has been determined.

The measurements are tabulated and processed as in Table 1. The Maximum Diameter is calculated by converting the diameter of the largest droplet measured into microns. In Table 1, the largest droplet measured had a diameter of 19 eyepiece divisions. Therefore, the Maximum Diameter is 33.3 microns (19 x 1.75 = 33.3).

To determine the Mass Median Diameter (MMD), the cumulative percentages from the last column in Table 1 are plotted against the eyepiece divisions (D) on semilogarithmic paper as in Figure 1. Directly across from the 50 percent point on the Y-axis is the median droplet size in eyepiece divisions which must be converted to microns. In Figure 1, 9.2 eyepiece divisions times the conversion factor of 1.75 equals a Mass Median Diameter of 16.1 microns.

leaf 1.

Figure 1.

Percentage of the total volume of aerosol samples below each stated droplet size (from Table 1). The Mass Median Diameter is determined from the 50 percent point on the line. The Mass Median Diameter (MMD) = 8.2 divisions times 1.75 = 14.1 microns.

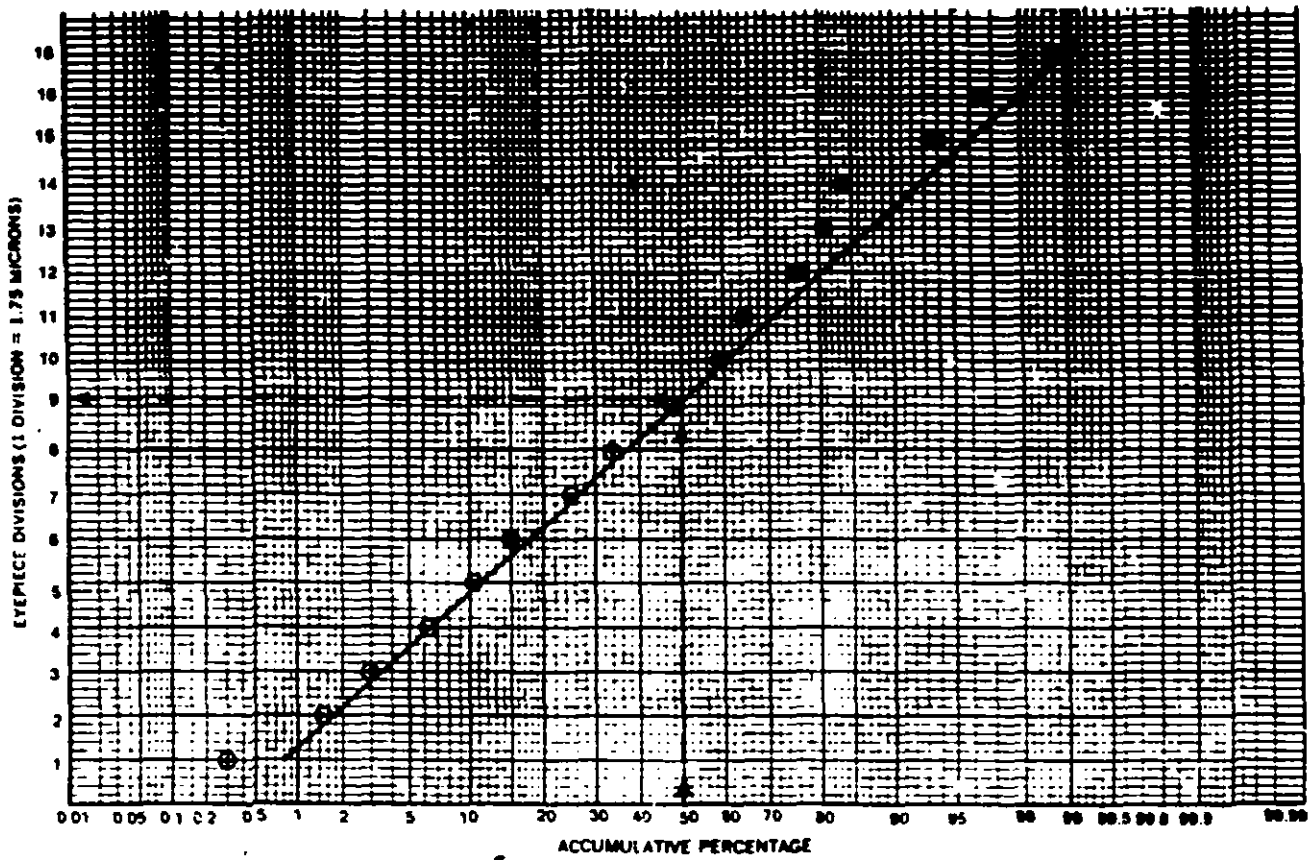


Table 1—Representative Count of CYTHION or MALATHION ULV Aerosol Droplets Impinged on Microscope Slides Coated with DRI-FILM.

Eyepiece Divisions (D)*	Number of Droplets (N)	DxN	% of Total DxN $\Sigma(DxN)$	Accumulative Percentages
1	5	5	0.31	0.31
2	10	20	1.22	1.53
3	9	27	1.65	3.18
4	12	48	2.93	6.11
5	15	75	4.58	10.69
6	12	72	4.40	15.09
7	25	175	10.70	25.79
8	14	112	6.85	32.64
9	28	252	15.40	48.04
10	19	190	11.61	59.65
11	14	154	9.41	65.06
12	10	120	7.33	76.39
13	6	78	4.77	81.16
14	4	56	3.42	84.58
15	11	165	10.09	94.67
16	2	32	1.96	96.63
18	2	36	2.20	98.83
19	1	19	1.16	99.99
Total	199	1636		

*Measurements were taken at 400x magnification. Each eyepiece division equals 1.75 microns (3.5 microns times the 0.5 spread factor).

Also for use in accordance with the recommendations and instructions issued by the United States Department of Agriculture for quarantine programs. To be used only by or under the direction of Federal/State personnel for quarantine treatments.