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READ THE ENTIRE LABEL BEFORE USING THIS PRODUCT.

USE ONLY IN ACCORDANCE WITH INSTRUCTIONS.

KEEP OUT OF REACH OF CHILDREN

KILLAMITE

INGREDIENTS

Cypermethrin 24.8%
Other ingredients 75.2%

For use by individuals/firms licensed or registered by the State to apply termiticide products. States may have more restrictive requirements regarding qualifications of persons using this product. Consult the structural pest control regulatory agency of your State prior to use of this product.

Trade Names Of Other Firms: Trade names for products containing Cypermethrin hi-cis include Acritet, Caswell No. 010, ENT 54, Fumigrain and Ventox.

What is Cypermethrin and how does it work?

Cypermethrin affects the insects' nervous system, causing muscle spasms, paralysis and death.

Key Benefits of KILLAMITE:

1. Broad spectrum insecticide
2. Highly effective against pests
3. Low potential to leach to groundwater

PRECAUTIONS

Hazards to Humans (and Domestic Animals) Caution

Harmful if inhaled, swallowed or absorbed through the skin. Causes moderate eye irritation. Avoid breathing vapor or spray mist. Avoid contact with skin, eyes and clothing. The active ingredient may produce sensations (burning, numbing and tingling) in some individuals. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before

reuse.

All pesticide handlers (mixers, loaders, and applicators) must wear long-sleeved shirt and long pants, socks, shoes, and chemical-resistant gloves. After the product is diluted in accordance with label directions for use and/or when mixing and loading using a closed spray tank transfer system (such as U-Turn®), or an in-line injector system, shirt, pants, socks, shoes and waterproof gloves are sufficient. In addition, all pesticide handlers must wear a respiratory protection device¹ when working in a non-ventilated space and all pesticide handlers must wear protective eyewear when working in a non-ventilated space or when applying termiticide by rodding or sub-slab injection.

Use one of the following:

A NIOSH approved respirator with any R, P or HE filter or a NIOSH approved respirator with an organic vapor (OV) cartridge or canister with any R, P or HE prefilter.

When treating adjacent to an existing structure, the applicator must check the area to be treated, and immediately adjacent areas of the structure, for visible and accessible cracks and holes to prevent any leaks or significant exposures to persons occupying the structure. People present or residing in the structure during application must be advised to remove their pets and themselves from the structure if they see any signs of leakage. After application, the applicator is required to check for leaks. All leaks resulting in the deposition of termiticide in locations other than those prescribed on this label must be cleaned up prior to leaving the application site. Do not allow people or pets to contact contaminated areas or to reoccupy contaminated areas of the structure until the clean-up is completed.

Environmental Hazards

This product is extremely toxic to fish. Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water by cleaning of equipment or disposal of equipment washwaters. Apply this product only as specified on this label. Care should be used when spraying to avoid fish and reptile pets.

SYMPTOMS OF POISONING

Irritation on skin or eyes.

MEDICAL TREATMENT

Treatment is symptomatic.

FIRST AID

If poisoning occurs, contact a doctor or Poisons Information Centre (telephone 13 11 26). If swallowed, give one atropine tablet every 5

minutes until dryness of the mouth occurs. If poisoned by skin absorption or through lungs, remove any contaminated clothing, wash skin thoroughly and give atropine tablets as above. Get to a doctor or hospital quickly.

NOTE TO PHYSICIAN

A pyrethroid insecticide containing the active ingredient cypermethrin. Oral toxicity is low, but because cypermethrin is lipophilic, do not administer milk, cream or other substances containing vegetable or animal fats, which enhance absorption. Treatment is otherwise symptomatic and supportive.

DIRECTIONS OF USE

General Information on the Use of This Product

The use of this product prevents and controls termite infestations in and around structures and constructions. The dilute insecticidal emulsion must be adequately dispersed in the soil to establish a barrier between the wood and the termites in the soil. As a good practice: 1) all non-essential wood and cellulose containing materials should be removed from around foundation walls, crawl spaces, and porches; 2) eliminate termite access to moisture by repairing faulty plumbing and/or construction grade. Soil around untreated structural wood in contact with soil should be treated as described below.

To establish an effective insecticidal barrier with this product the service technician must be familiar with current termite control practices such as: trenching, rodding, sub-slab injection, coarse fan spraying of soil surfaces, crack and crevice (void) injection, excavated soil treatment, and brush or spray applications to infested or susceptible wood. These techniques must be correctly employed to prevent or control infestations by subterranean termites such as: *Coptotermes*, *Heterotermes*, *Reticulitermes* and *Zootermopsis*. The biology and behavior of the species involved should be considered by the service technician in determining which control practices to use to eliminate or prevent the termite infestation.

Choice of appropriate procedures should include consideration of such variable factors as the design of the structure, location of heating, ventilation, and air conditioning (HVAC) systems, water table, soil type, soil compaction, grade conditions, and location and type of domestic water supplies and utilities. For advice concerning current control practices with relation to specific local conditions, consult resources in structural pest control and state cooperative extension and regulatory agencies.

Important: Contamination of public and private water supplies must be avoided by following

these precautions: Use anti-backflow equipment or procedures to prevent siphonage of insecticide into water supplies. Do not contaminate cisterns or wells. Do not treat soil that is water saturated or frozen or in any conditions where runoff or movement from the treatment area (site) is likely to occur. Consult state and local specifications for recommended distances of wells from treated areas, or if such regulations do not exist, refer to Federal Housing Administration Specifications (H.U.D.) for guidance.

Note: Crawlspace are to be considered inside of the structure.

Critical Areas: Critical areas include areas where the foundation is penetrated by utility services, cracks and expansion joints, bath traps and areas where cement constructions have been poured adjacent to the foundation such as stairs, patios and slab additions.

Structures with Wells/Cisterns Inside Foundations

Structures that contain wells or cisterns within the foundation of a structure can only be treated using the following techniques:

1. Do not treat soil while it is beneath or within the foundation or along the exterior perimeter of a structure that contains a well or cistern. The treated backfill method must be used if soil is removed and treated outside/away from the foundation. The treated backfill technique is described as follows:
 - a. Trench and remove soil to be treated onto heavy plastic sheeting or similar material or into a wheelbarrow.
 - b. Treat the soil at the rate of 4 gallons of dilute emulsion per 10 linear feet per foot of depth of the trench, or 1 gallon per 1.0 cubic feet of soil. See "Mixing Directions" section of the label. Mix thoroughly into the soil taking care to contain the liquid and prevent runoff or spillage.
 - c. After the treated soil has absorbed the diluted emulsion, replace the soil into the trench.
2. Treat infested and/or damaged wood in place using an injection technique such as described in the "Control of Wood Infesting Insects" section of this label.

Structures with Adjacent Wells/Cisterns and/or Other Water Bodies

Applicators must inspect all structures with nearby water sources such as wells, cisterns, surface ponds, streams, and other bodies of water and evaluate, at a minimum, the treatment recommendations listed below prior to making an application:

1. Prior to treatment, if feasible, expose the water pipe(s) coming from the well to the structure, if the pipe(s) enter the

Amount of KILLAMITE (Gallons except where noted)			
Emulsion Concentration	Amount of KILLAMITE	Amount of water	Desired gallons of finished emulsion
0.25%	1.33 oz.	126.67	1
	6.67 oz.	oz.	5
	13.33 oz.	19.8 qts	10
	0.25	9.9	24
	0.5	23.75	48
	1.0	47.5	97
	2.0	96	194
0.5%*	2.67 oz.	125.33	1
	13.33 oz.	oz.	5
	26.67 oz. 0.5	19.6 qts.	10
	1.0	9.8	24
	2.0	23.5	48
	4.0	47	97
		95	194
	190		

2. structure within 3 feet of grade. Prior to treatment, applicators are advised to take precautions to limit the risk of applying the termiticide into subsurface drains that could empty into any bodies of water. These precautions include evaluating whether application of the termiticide to the top of the footer may result in contamination of the subsurface drain. Factors such as depth to the drain system and soil type and degree of compaction should be taken into account in determining the depth of treatment.
3. When appropriate (i.e., on the water side of the structure), the treated backfill technique (described above) can also be used to minimize offsite movement of termiticide.

Prior to using this technique near wells or cisterns, consult state, local or federal agencies for information regarding approved treatment practices in your area.

Application Rate:

Use a 0.25 % emulsion for subterranean termites. For other pests on the label use specific listed rates.

Mixing Directions: Mix the termiticide use dilution in the following manner: Fill tank 1/4 to 1/3 full. Start pump to begin by-pass agitation and place end of treating tool in tank to allow circulation through hose. Add appropriate amount of KILLAMITE termiticide/insecticide. Add

remaining amount of water. Let pump run and allow recirculation through the hose for 2 to 3 minutes.

KILLAMITE may also be mixed into full tanks of water, but requires substantial agitation to insure uniformity of the emulsion. To prepare a 0.25% water emulsion, ready to use, dilute 1 gallon of KILLAMITE with 96 gallons of water.

Mixing: For the desired application rate, use the chart below to determine the amount of KILLAMITE for a given volume of finished emulsion:

Common units of measure:

1 pint = 16 fluid ounces (oz.)

1 gallon = 4 quarts = 8 pints = 128 fluid ounces (oz.)

*For termite applications, only use these rates in conjunction with the application volume adjustments as listed in the section below or in the foam or underground service application sections.

Pre-Construction Subterranean Termite Treatment

Pre-Construction Treatment: Do not apply at a lower dosage and/or concentration than specified on this label for applications prior to the installation of the finished grade.

When treating foundations deeper than 4 feet, apply the termiticide as the backfill is being replaced, or if the construction contractor fails to notify the applicator to permit this, treat the foundation to a minimum depth of 4 feet after the backfill has been installed. The applicator must trench and rod into the trench or trench along the foundation walls and around pillars and other foundation elements, at the rate prescribed from grade to a minimum depth of 4 feet. When the top of the footing is exposed, the applicator must treat the soil adjacent to the footing to a depth not to exceed the bottom of the footing. However, in no case should a structure be treated below the footing. Effective pre-construction subterranean termite control is achieved by the establishment of vertical and/or horizontal insecticidal barriers using 0.25% emulsion of KILLAMITE. To meet termite proofing requirements, follow the procedures in the latest edition of the Housing and Urban Development Minimum Property Standards.

Horizontal Barriers: Create a horizontal barrier wherever treated soil will be covered by concrete, such as footing trenches, slab floors, carports, and the soil beneath stairs and crawl spaces.

For a 0.25% rate, apply 1 gallon of dilution per 10 square feet, or use 1.33 fluid ounces of KILLAMITE per 10 square feet in sufficient water (no less than 1/2 gallon or more than 2 gallons)

to provide thorough and continuous coverage of the area being treated.

If the fill is washed gravel or other coarse material, it is important that a sufficient amount of dilution be used to reach the soil substrate beneath the coarse fill. Applications shall be made by a low pressure spray (less than 50 p.s.i.) using a coarse spray nozzle. If slab will not be poured the same day as treatment, cover treated soil with a water-proof barrier such as polyethylene sheeting. This is not necessary if foundation walls have been installed around the treated soil.

Vertical Barriers: Vertical barriers must be established in areas such as around the base of foundations, plumbing, utility entrances, backfilled soil against foundation walls and other critical areas. For a 0.25% rate, apply 4 gallons of dilution per 10 linear feet per foot of depth or 5.32 fluid ounces of KILLAMITE per 10 linear feet per foot of depth from grade to top of footing in sufficient water (not less than 2 gallons or more than 8 gallons) to ensure complete coverage.

- a. When trenching and rodding into the trench, or trenching, it is important that emulsion reaches the top of the footing. Rod holes must be spaced so as to achieve a continuous termiticide barrier, but in no case more than 12 inches apart.
- b. Care should be taken to avoid soil wash-out around the footing.
- c. Trenches need not be wider than 6 inches. Emulsion should be mixed with the soil as it is being replaced in the trench.
- d. For a monolithic slab, an inside vertical barrier may not be required. Hollow block voids may be treated at a rate of 2 gallons of emulsion per 10 linear feet so that the emulsion will reach the top of the footing.

Prior to each application, applicators must notify the general contractor, construction superintendent, or similar responsible party, of the intended termiticide application and intended sites of application and instruct the responsible person to notify construction workers and other individuals to leave the area to be treated during application and until the termiticide is absorbed into the soil.

Post-Construction Soil Treatment

Application Volume: To provide maximum control and protection against termite infestation apply the specified volume of the finished water emulsion and active ingredient as set forth in the directions for use section of this label. If soil will not accept the labeled application volume, the volume may be reduced provided there is a corresponding increase in concentration so that

the amount of active ingredient applied to the soil remains the same.

Note: Large reductions of application volume reduce the ability to obtain a continuous barrier. Variance is allowed when volume and concentration are consistent with label directed rates and a continuous barrier can still be achieved. Where desirable for pre- and post-construction treatments, the volume of the 0.5 % emulsion may be reduced by 1/2 the labeled volume or a 1.0 % emulsion may be applied at 1/4 the labeled volume (see Volume Adjustment Chart). Volume adjustments at 1.0% are not recommended for subslab injection. See Volume Adjustment Chart below.

Note: When volume is reduced, the hole spacing for subslab injection and soil rodding may require similar adjustment to account for lower volume dispersal of the termiticide in the soil.

Volume Adjustment Chart			
Rate (% emulsion) Volume allowed:	0.25%	0.5%	1.0%
Horizontal (gallons emulsion/10 ft.2)	1.0 gallon	0.5 gallons	0.25 gallons*
Vertical (gallons emulsion/10 lin. ft.)	4.0 gallons	2.0 gallons	1.0 gallons*

*Not recommended for subslab injection.
After Treatment: All holes in commonly occupied areas into which KILLAMITE has been applied must be plugged. Plugs must be of a non-cellulose material or covered by an impervious, non-cellulose material. Use a 0.25% emulsion for post-construction treatment. Post-construction soil applications shall be made by injection, rodding, and/or trenching or coarse fan spray with pressures not exceeding 25 p.s.i. at the nozzle. Care should be taken to avoid soil wash-out around the footing. Do not apply emulsion until location of wells, radiant heat pipes, water and sewer lines and electrical conduits are known and identified. Caution must be taken to avoid puncturing and injection into these elements.

Foundations: For applications made after the final grade is installed, the applicator must trench and rod into the trench or trench along the foundation walls and around pillars and other foundation elements, at the rate prescribed from grade to the top of the footing. When the footing is more than four (4) feet below grade, the

applicator must trench and rod into the trench or trench along the foundation walls at the rate prescribed to a minimum depth of four feet. The actual depth of treatment will vary depending on soil type, degree of compaction, and location of termite activity. When the top of the footing is exposed, the applicator must treat the soil adjacent to the footing to a depth not to exceed the bottom of the footing. However, in no case should a structure be treated below the footing.

Slabs: Vertical barriers may be established by sub-slab injection within the structure and rodding and/or trenching outside at the rate of 4 gallons of emulsion per 10 linear feet per foot of depth. Special care must be taken to distribute the treatment evenly. Treatment should not extend below the bottom of the footing. Treat along the outside of the foundation and where necessary beneath the slab on the inside of foundation walls. Treatment may also be required beneath the slab along both sides of interior-supported walls, one side of interior partitions and along all cracks and expansion joints. Horizontal barriers may be established where necessary by long-rodding or by grid pattern injection vertically through the slab.

- a. Drill holes in the slab and/or foundation to allow for the application of a continuous insecticidal barrier.
- b. For shallow foundations (1 foot or less) dig a narrow trench approximately 6 inches wide along the outside of the foundation walls. Do not dig below the bottom of the footing. The emulsion should be applied to the trench and soil at 4 gallons per 10 linear feet per foot of depth as the soil is replaced in the trench.
- c. For foundations deeper than 1 foot follow rates for basement.
- d. Exposed soil in bath traps may be treated with a 0.25% emulsion.

Basements: Where the footing is greater than 1 foot of depth from grade to the bottom of the foundation, application must be made by trenching and rodding into the trench, or trenching at the rate of 4 gallons of emulsion per 10 linear feet per foot of depth. Rod holes must be spaced so as to achieve a continuous termiticide barrier, but in no case more than 12 inches apart. Sub-slab injection may be necessary along the inside of foundation walls, along cracks and partition walls, around pipes, conduits, piers, and along both sides of interior footing-supported walls.

Accessible Crawl Spaces: For crawl spaces, apply vertical termiticide barriers at the rate of 4 gallons of emulsion per 10 linear feet per foot of depth from grade to the top of the footing, or if

the footing is more than 4 feet below grade, to a minimum depth of 4 feet. Apply by trenching and rodding into the trench, or trenching. Treat both sides of foundation and around all piers and pipes. Where physical obstructions such as concrete walkways adjacent to foundation elements prevent trenching, treatment may be made by rodding alone. When soil type and/or conditions make trenching prohibitive, rodding may be used. When the top of the footing is exposed, the applicator must treat the soil adjacent to the footing to a depth not to exceed the bottom of the footing. Read and follow the mixing and use direction section of the label if situations are encountered where the soil will not accept the full application volume.

1. Rod holes and trenches must not extend below the bottom of the footing.
2. Rod holes must be spaced so as to achieve a continuous termiticide barrier but in no case more than 12 inches apart.
3. Trenches must be a minimum of 6 inches deep or to the bottom of the footing, whichever is less, and need not be wider than 6 inches. When trenching in sloping (tiered) soil, the trench must be stepped to ensure adequate distribution and to prevent termiticide from running off. The emulsion must be mixed with the soil as it is replaced in the trench.
4. When treating plenums or crawl spaces, turn off the air circulation system of the structure until application has been completed and all termiticide has been absorbed by the soil.

Inaccessible Crawl Spaces: For inaccessible interior areas, such as areas where there is insufficient clearance between floor joists and ground surfaces to allow operator access, excavate if possible, and treat according to the instructions for accessible crawl spaces.

Otherwise, apply one or a combination of the following two methods.

1. To establish a horizontal barrier, apply to the soil surface, 1 gallon of emulsion per 10 square feet overall using a nozzle pressure of less than 25 p.s.i. and a coarse application nozzle (e.g., Delavan Type RD Raindrop, RD-7 or larger, or Spraying Systems Co. 8010LP TeeJet or comparable nozzle). For an area that cannot be reached with the application wand, use one or more extension rods to make the application to the soil. Do not broadcast or powerspray with higher pressures.
2. To establish a horizontal barrier, drill through the foundation wall or through the floor above and treat the soil

perimeter at a rate of 1 gallon of emulsion per 10 square feet. Drill spacing must be at intervals not to exceed 16 inches. Many States have smaller intervals, so check State regulations, which may apply.

When treating plenums and crawl spaces, turn off the air circulation system of the structure until application has been completed and all termiticide has been absorbed by the soil.

Masonry Voids: Drill and treat voids in multiple masonry elements of the structure extending from the structure to the soil in order to create a continuous treatment barrier in the area to be treated. Apply at the rate of 2 gallons of emulsion per 10 linear feet of footing, using a nozzle pressure of less than 25 p.s.i. When using this treatment, access holes must be drilled below the sill plate and should be as close as possible to the footing as is practical. Treatment of voids in block or rubble foundation walls must be closely examined: Applicators must inspect areas of possible runoff as a precaution against application leakage in the treated areas. Some areas may not be treatable or may require mechanical alteration prior to treatment. All leaks resulting in the deposition of termiticide in locations other than those prescribed on this label must be cleaned up prior to leaving the application site. Do not allow people or pets to contact contaminated areas or to reoccupy the contaminated areas of the structure until the clean-up is completed.

Note: When treating behind veneer care should be taken not to drill beyond the veneer. If concrete blocks are behind the veneer, both the blocks and the veneer may be drilled and treated at the same time.

Excavation Technique: If treatment must be made in difficult situations, along fieldstone or rubble walls, along faulty foundation walls, and around pipes and utility lines which lead downward from the structure to a well or pond, application may be made in the following manner:

- a. Trench and remove soil to be treated onto heavy plastic sheeting or similar material.
- b. Treat the soil at the rate of 4 gallons of emulsion per 10 linear feet per foot of depth of the trench. Mix the emulsion thoroughly into the soil taking care to prevent liquid from running off the liner.
- c. After the treated soil has absorbed the liquid emulsion, replace the soil in the trench.

FOAM APPLICATIONS

KILLAMITE termiticide emulsion, from 0.25% to

1.0% may be converted to a foam with expansion characteristic from 2 to 20 times and the foam used to treat voids to control or prevent termite, ant, bee or wasp infestations.

Localized Application

Foam Applications: The emulsion may be converted to a foam and the foam used to control or prevent termite infestations. Depending on the circumstances, foam applications may be used alone or in combination with liquid emulsion applications. Applications may be made behind veneers, piers, chimney bases, into rubble foundations, into block voids or structural voids, under slabs, stoops, porches, or to the soil in crawlspaces, and other similar voids.

Foam and liquid application must be consistent with volume and active ingredient instructions in order to insure proper application has been made. The volume and amount of active ingredient are essential to an effective treatment. At least 75% of the labeled liquid emulsion volume of product must be applied, with the remaining percent delivered to appropriate areas using foam application. Refer to label and use recommendations of the foam manufacturer and the foaming equipment manufacturer.

Foam applications are generally a good supplement to liquid treatments in difficult areas, but may be used alone in difficult spots.

Application Under Slabs or to Soil in Crawlspaces:

Application must be made using KILLAMITE foam in combination with liquid emulsion applications. At least 75% of the labeled liquid emulsion volume of termiticide must be applied.

Sand Barrier Installation and Treatment

Termites can build mud tubes over treated surfaces as long as they have access to untreated soil and do not have to move KILLAMITE treated soil. Fill in cracks and spaces with builder's or play box sand and treat the sand with KILLAMITE. The sand should be treated as soil following the termiticide rate listed on the KILLAMITE label.

Retreatment for subterranean termites can only be performed if there is clear evidence of reinfestation or disruption of the barrier due to construction, excavation, or landscaping and/or evidence of the breakdown of the termiticide barrier in the soil. These vulnerable or reinfested areas may be retreated in accordance with application techniques described in this product's labeling. The timing and type of these retreatments will vary depending on factors such as termite pressure, soil types, soil conditions and other factors which may reduce the effectiveness of the barrier.

Annual retreatment of the structure is

prohibited unless there is clear evidence that reinfestation or barrier disruption has occurred.

APPLICATION IN CONJUNCTION WITH THE USE OF FIRSTLINE® TERMITE BAITS

As part of the integrated pest management (IPM) program for termite control, KILLAMITE may be applied to critical areas of the structure including plumbing and utility entry sites, bath traps, expansion joints, foundation cracks and areas with known or suspected infestations at a rate of 0.25% as a spot treatment or complete barrier treatment. Applications may be made as described in the Postconstruction treatment section of this label.

SPECIFIC PEST CONTROL APPLICATIONS UNDERGROUND SERVICES

such as: wires, cables, utility lines, pipes, conduits, etc. Services may be within structures or located outside structures, in right-of-ways or to protect long range (miles) of installations of services. Soil treatment may be made using 0.25 to 0.5% KILLAMITE emulsion to prevent attack by termites and ants.

Apply 2 gallons of emulsion per 10 linear feet to the bottom of the trench and allow to soak into the soil. Lay services on the treated soil and cover with approximately 2 inches of fill soil. Apply another 2 gallons per 10 linear feet over the soil surface to complete the treatment barrier. In wide trenches, only treat the soil in the area near the services. It is important to establish a continuous barrier of treated soil surrounding the services. Where soil will not accept the above labeled volume, 1 gallon of 0.5% KILLAMITE may be used per 10 linear feet of trench both to the bottom of the trench and over the soil on top of the services. Finish filling the trench with treated fill soil. The soil where each service protrudes from the ground may be treated by trenching/rodding of no more than 1 to 2 gallons of emulsion into the soil.

Precautions: Do not treat electrically active underground services.

Posts, Poles, and Other Constructions

Create an insecticidal barrier in the soil around wooden constructions such as signs, fences and landscape ornamentation by applying a 0.3% emulsion. To prepare a 0.3% emulsion, mix 1.6 fl. oz. KILLAMITE termiticide per 1 gallon of water. Previously installed poles and posts may be treated by sub-surface injection or treated by gravity-flow through holes made from the bottom of a trench around the pole or post. Treat on all sides to create a continuous insecticidal barrier around the pole. Use 1 gallon of emulsion per foot of depth for poles and posts less than six inches in diameter. For large poles, use 1.5 gallons of emulsion per foot of depth. Apply to a

depth of 6 inches below the bottom of the wood. For larger constructions, use 4 gallons of emulsion per 10 linear feet per foot of depth.

Spot Treatment for the Control of Wood Infesting Insects

For the control of insects such as termites, carpenter ants, ants and wood-infesting beetles in localized areas of infested wood in and around structures, apply a 0.3% emulsion to voids and galleries in damaged wood and in spaces between wooden members of a structure and between wood and foundations where wood is vulnerable. Paint on or fan spray application may also be used. Plastic sheeting must be placed immediately below overhead areas that are spot treated except for soil surfaces in crawlspaces. Application may be made to inaccessible areas by drilling, and then injecting emulsion with a crack and crevice injector into the damaged wood or void spaces. Spot applications may be made to control visible workers and reproductive forms. This type of application is not intended to be a substitute for soil treatment, mechanical alteration or fumigation to control extensive infestation of wood-infesting insects.

To control wood-infesting insects active inside trees, utility poles and/or fence posts, drill to find the interior infested cavity and inject a 0.3% emulsion.

Termite carton nests in trees or building voids may be injected with 0.3% emulsion. Multiple injection points to varying depths may be necessary. It is desirable to physically remove carton nest material from building voids when such nests are found.

Broadcast Treatment of Wood for the Control of Wood-Infesting Insects Outside of the Structure

Apply a 0.3% emulsion with a coarse fan spray using a maximum pressure of 25 psi. Treatment should be made just to the point of run-off.

Firewood Protection

Prior to stacking firewood, soil beneath the wood may be treated with 0.3% emulsion at 1 gallon per 10 square feet to prevent infestation by ants, spiders, cockroaches, silverfish, firebrats, millipedes, centipedes, earwigs, sowbugs, pillbugs.

Note: Firewood is not to be treated.

General Insect Control

For residual pest control in and on buildings and structures and their immediate surroundings and on modes of transport. Permitted areas of use include industrial buildings, houses, apartment buildings, laboratories, buses, greenhouses, and the nonfood/feed areas of stores, warehouses, vessels, railcars, trucks, trailers, aircraft (Do not use in aircraft cabins), schools, nursing homes,

hospitals, restaurants, hotels, and food manufacturing, processing, and servicing establishments. KILLAMITE is to be diluted with water for spray or brush application. Fill sprayer with the desired volume of water and add KILLAMITE. Close and shake before use in order to insure proper mixing. Mix only the amount of solution needed for the application; repeat treatments as necessary.

Pests	Concentration of Active Ingredient	Dilution Rate
Ants Biting Flies**† Boxelder Bugs Centipedes** Cockroaches (Maintenance) Crickets Earwigs Elm Leaf Beetles†	Firebrats Fleas* Flies* Millipedes Mosquitoes*† Pillbugs Silverfish Sowbugs	.1% 1/2 fl. oz. per 1 gal. water
Bees Cockroaches (Clean-out) Spiders Ticks Wasps		.2% 1 fl. oz. per 1 gal. water

*Outdoor use only.

**Not for indoor use in California.

† Not for use in California.

Indoor Use

Crickets, Cockroaches, Firebrats, Silverfish, Spiders and Ticks: Apply as a coarse, low pressure spray to areas where these pests hide, such as baseboards, corners, storage areas, closets, around water pipes, doors and windows, attics and eaves, behind and under refrigerators, cabinets, sinks, furnaces, and stoves, the underside of shelves, drawers and similar areas. Pay particular attention to cracks and crevices; also see OUTDOOR USE.

Ants: Apply to any trails, around doors and windows and other places where ants may be found. Refer to BARRIER TREATMENT directions to prevent infestation; also see OUTDOOR USE.

Bees and Wasps: Application to nests should be made late in the evening when insects are at rest. Thoroughly spray nest and entrance and surrounding areas where insects alight; also see OUTDOOR USE.

Boxelder Bugs, Earwigs, Elm Leaf Beetles, Centipedes, Millipedes, Pillbugs and Sowbugs: Apply around doors and windows and other places where these pests may be found or

where they may enter premises. Spray baseboards, storage areas and other locations. Refer to BARRIER TREATMENT directions to prevent infestation; also see OUTDOOR USE.

Food Handling Establishments: Places other than private residences in which food is held, processed, prepared or served.

Non-Food/Feed Areas: Includes garbage rooms, lavatories, floor drains, (to sewers) entries and vestibules, offices, locker rooms, machine rooms, boiler rooms, garages, mop closets, and storage (after canning or bottling). KILLAMITE may be used as a general spot, crack and crevice treatment in nonfood areas. All areas where insects hide or through which insects may enter should be treated.

Food/Feed Areas: Do not use in food/feed areas of food/feed handling establishments, restaurants or other areas where food/feed is commercially prepared or processed. Do not use in serving areas while food is exposed or facility is in operation. Serving areas are areas where prepared foods are served such as dining rooms, but excluding areas where foods may be prepared or held. In the home, all food processing surfaces and utensils should be covered during treatment or thoroughly washed before use. Exposed food should be covered or removed. Not for use in USDA meat and poultry plants.

Outdoor Use

For control of ants, bees, biting flies, boxelder bugs, centipedes, chiggers, cockroaches, crickets, earwigs, elm leaf beetles, firebrats, fleas, flies, millipedes, mosquitoes, pillbugs, silverfish, sowbugs, spiders, ticks and wasps. Apply by brush or as a residual spray either by hand or power sprayer. Apply to surfaces of buildings, porches, screens, window frames, eaves, patios, residential lawns only such as grass areas adjacent or around private homes, duplexes, townhouses, condominiums, house trailers, apartment complexes, carports, garages, fence lines, storage sheds, barns, and other residential and non-commercial structures, vegetation, refuse dumps, garages and in other areas where these pests are found.

Barrier Treatment: To prevent infestation of buildings, apply to a band of soil and vegetation 6 to 10 feet wide around and adjacent to the building. Also, treat the building foundation to a height of 2 to 3 feet where pests are active and may find entrance. Apply as a coarse spray. Thoroughly and uniformly wet the band area, using 1 gallon of spray mix per 400 square feet.

Cluster Flies (*Calliphoridae* sp.): Apply to the outside of the structure where flies are found. Mix 1 fl. oz. KILLAMITE termiticide to 10 fl. oz. deodorized light weight mineral oil; apply to 1,000 square feet of wall area. Use a fogging apparatus which delivers the material in a strong air carrier,

producing a small particle size (10-50 microns). Hold the nozzle about three feet from the surface to be treated. Apply when wind velocity is less than 2 mph to avoid drift. The surface to be treated should be dry at the time of application. Attics and unoccupied lofts should be treated at the same time and at the same rate.

Note:

Do not use water base sprays of KILLAMITE in conduits, motor housings, junction boxes, switch boxes, or other electrical equipment because of possible shock hazard.

Not for use in warehouses where raw or cured tobacco is stored and in greenhouses where crops used for food or feed are grown.

Do not apply this product to edible crops.

Keep people and pets off surfaces until dry.

Protect aquariums from spray mist.

For best results, thoroughly wash out sprayer and screen with water and detergent before using KILLAMITE.

Do not use this product with oil (except for cluster fly control).

Do not treat pets with this product.

DISPOSAL METHODS

Pesticide Disposal

Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative of the nearest EPA Regional Office for guidance.

Container Disposal

Metal Containers: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities. Plastic Containers: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

Glass Containers: Triple rinse (or equivalent). Then dispose of in a sanitary landfill or by other approved state and local procedures.

Returnable/Refillable Sealed Containers: Do not rinse container. Do not empty remaining formulated product. Do not break seals. Return intact to point of purchase.

STORAGE CONDITION

Do not store below 40°F. Keep out of reach of children. Store in original containers only. Store in a cool, dry place and avoid excess heat.

Carefully open containers. After partial use, replace lids and close tightly. Do not put

concentrate or dilute material into food or drink containers. Do not contaminate other pesticides, fertilizers, water, food or feed by storage or disposal. In case of spill, avoid contact, isolate area and keep out animals and unprotected persons. Confine spills. Call FMC (800) 331-3148.

To confine spill: If liquid, dike surrounding area or absorb with sand, cat litter, commercial clay or gel absorbents. If dry material, cover to prevent dispersal. Place damaged package in a holding container. Identify contents.

For More Details including effects on environment email contact@ivorychem.com with Subject "KILLAMITE DETAILS"

More Details:

TOXICOLOGICAL EFFECTS

- **Acute toxicity:** Cypermethrin is a moderately toxic material by dermal absorption or ingestion [2,8]. Symptoms of high dermal exposure include numbness, tingling, itching, burning sensation, loss of bladder control, incoordination, seizures, and possible death (2,8). Pyrethroids like cypermethrin may adversely affect the central nervous system [2,8]. Symptoms of high-dose ingestion include nausea, prolonged vomiting, stomach pains, and diarrhea which progresses to convulsions, unconsciousness, and coma. Cypermethrin is a slight skin or eye irritant, and may cause allergic skin reactions [8]. The oral LD50 for cypermethrin in rats is 250 mg/kg (in corn oil) or 4123 mg/kg (in water) [2,8]. EPA reports an oral LD50 of 187 to 326 mg/kg in male rats and 150 to 500 mg/kg in female rats [8]. The oral LD50 varies from 367 to 2000 mg/kg in female rats, and from 82 to 779 mg/kg in mice, depending on the ratio of cis/trans- isomers present [2]. This wide variation in toxicity may reflect different mixtures of isomers in the materials tested. The dermal LD50 in rats is 1600 mg/kg and in rabbits is greater than 2000 mg/kg [2,8].
- **Chronic toxicity:** Not Available
- **Reproductive effects:** No adverse effects on reproduction were observed in a three-generation study with rats given doses of 37.5 mg/kg/day, the highest dose tested [8].
- **Teratogenic effects:** Cypermethrin is not teratogenic [2]. No birth defects were observed in the offspring of rats given doses as high as 70 mg/kg/day nor in the offspring of rabbits given doses as high as

30 mg/kg/day [8].

- **Mutagenic effects:** Cypermethrin is not mutagenic, but tests with very high doses on mice caused a temporary increase in the number of bone marrow cells with micronuclei. Other tests for mutagenic effects in human, bacterial, and hamster cell cultures and in live mice have been negative [2].
- **Carcinogenic effects:** EPA has classified cypermethrin as a possible human carcinogen because available information is inconclusive. It caused benign lung tumors in female mice at the highest dose tested (229 mg/kg/day); however, no tumors occurred in rats given high doses of up to 75 mg/kg/day [8].
- **Organ toxicity:** Pyrethroids like cypermethrin may cause adverse effects on the central nervous system. Rats fed high doses (37.5 mg/kg) of the cis-isomer of cypermethrin for five weeks exhibited severe motor incoordination, while 20 to 30% of rats fed 85 mg/kg died 4 to 17 days after treatment began [2]. Long-term feeding studies have shown increased liver and kidney weights and adverse changes in liver tissues in test animals [8]. Pathological changes in the cortex of the thymus, liver, adrenal glands, lungs, and skin were observed in rabbits repeatedly fed high doses of cypermethrin [23].
- **Fate in humans and animals:** In humans, urinary excretion of cypermethrin metabolites was complete 48 hours after the last of five doses of 1.5 mg/kg/day [2]. Studies in rats have shown that cypermethrin is rapidly metabolized by hydroxylation and cleavage, with over 99% being eliminated within hours. The remaining 1% becomes stored in body fat. This portion is eliminated slowly, with a half-life of 18 days for the cis-isomer and 3.4 days for the trans-isomer [2].

ECOLOGICAL EFFECTS

- **Effects on birds:** Cypermethrin is practically non-toxic to birds. Its acute oral LD50 in mallard ducks is greater than 4640 mg/kg [8]. The dietary LC50 in mallards and bobwhite quail is greater than 20,000 ppm [8]. No adverse reproductive effects occurred in mallards or bobwhite quail given 50 ppm, the highest dose tested [8].
- **Effects on aquatic organisms:** Cypermethrin is very highly toxic to fish and aquatic invertebrates. The LC50 (96-hour) for cypermethrin in rainbow trout is 0.0082 mg/L, and in bluegill sunfish is 0.0018 mg/L [20]. Its acute

LC50 in *Daphnia magna*, a small freshwater crustacean, is 0.0002 mg/L [20]. Cypermethrin is metabolized and eliminated significantly more slowly by fish than by mammals or birds, which may explain this compound's higher toxicity in fish compared to other organisms [20]. The half-lives for elimination of several pyrethroids by trout are all greater than 48 hours, while elimination half-lives in birds and mammals range from 6 to 12 hours [20,23]. The bioconcentration factor for cypermethrin in rainbow trout was 1200 times the ambient water concentration, indicating that there is a moderate potential to accumulate in aquatic organisms [8]. Elimination of half of the accumulated amount of the compound took nearly eight days. After 14 days 70 to 80% of the material had been eliminated from the organisms [8].

- **Effects on other organisms:** Cypermethrin is highly toxic to bees [8,24].

ENVIRONMENTAL FATE

- **Breakdown in soil and groundwater:** Cypermethrin has a moderate persistence in soils. Under laboratory conditions, cypermethrin degrades more rapidly on sandy clay and sandy loam soils than on clay soils, and more rapidly in soils low in organic material [8]. In aerobic conditions, its soil half-life is 4 days to 8 weeks [8,12,25]. When applied to a sandy soil under laboratory conditions, its half-life was 2.5 weeks [26]. Cypermethrin is more persistent under anaerobic conditions [8]. It photodegrades rapidly with a half-life of 8 to 16 days. Cypermethrin is also subject to microbial degradation under aerobic conditions [8]. Cypermethrin is not soluble in water and has a strong tendency to adsorb to soil particles. It is therefore unlikely to cause groundwater contamination [12].
- **Breakdown in water:** In neutral or acid aqueous solution, cypermethrin hydrolyzes slowly, with hydrolysis being more rapid at pH 9 (basic solution). Under normal environmental temperatures and pH, cypermethrin is stable to hydrolysis with a half-life of greater than 50 days and to photodegradation with a half-life of greater than 100 days [8]. In pond waters and in laboratory degradation studies, pyrethroid concentrations decrease rapidly due to sorption to

- sediment, suspended particles and plants. Microbial degradation and photodegradation also occur [22,27].
- **Breakdown in vegetation:** When applied to strawberry plants, 40% of the applied cypermethrin remained after one day, 12% remained after three days, and 0.5% remained after seven days, with a light rain occurring on day 3 [14]. When cypermethrin was applied to wheat, residues on the wheat were 4 ppm immediately after spraying and declined to 0.2 ppm 27 days later. No cypermethrin was detected in the grain. Similar residue loss patterns have been observed on treated lettuce and celery crops [28].

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PHYSICAL PROPERTIES AND GUIDELINES

Physical Properties:

- **Appearance:** Pure isomers of cypermethrin form colorless crystals. When mixed isomers are present, cypermethrin is a viscous semi-solid or a viscous, yellow liquid [2,12]
- **Chemical Name:** (R, S)-alpha-cyano-3-phenoxybenzyl (1RS)-cis, trans-3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropane-carboxylate [12]
- **CAS Number:** 52315-07-8
- **Molecular Weight:** 416.30
- **Water Solubility:** 0.01 mg/L @ 20 C; insoluble in water [12]
- **Solubility in Other Solvents:** methanol v.s.; acetone v.s.; xylene v.s. [12]
- **Melting Point:** 60-80 C (pure isomers) [12,2]
- **Vapor Pressure:** 5.1×10^{-7} nPa @ 70 C [12]
- **Partition Coefficient:** 6.6020 [25]
- **Adsorption Coefficient:** 100,



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