

Subterranean Termite Control Products for Alabamians

► There are five types of termite treatment programs: liquid termiticides, baiting systems, wood preservatives, mechanical barriers, and biological termiticides. Learn about the advantages and limitations of each of these five programs. Included are charts demonstrating the properties of non-repellent termiticides, repellent synthetic pyrethroids, and the chemicals found in bait systems.

Termites are the most destructive and costly insects, affecting large numbers of wood structures and causing more than \$5 billion in property damage annually in the United States. Meanwhile, termites are one of the most difficult pests to control and prevent. Termite control in homes requires special skills, specialized equipment, and knowledge on both termite biology and building construction. Therefore, termite treatment is better left for certified pest control professionals. A possible exception would be termite infestations in a mailbox, sandbox, or other small wooden object not attached to the house.

There are more control options available today than ever before. In general, there are six types of treatment programs (liquid termiticides, baiting systems, wood preservatives, physical barriers, supplemental barriers, and biological termiticides). Their success depends on professional workmanship. Each year, new products are developed, tested, and made available to users. This publication explains the pros and cons of each type.

Although none of the following products contains a restricted pesticide, most of the products are for professional use.

Do-it-yourself products sold to homeowners at retail stores or bought over the Internet will seldom eradicate an existing termite problem.

Pesticide applicators are required by law to comply with the instructions and directions for use in product labeling.

Liquid Termiticides

Control Concept

Liquid termiticides are used for both pre- and post-construction treatments. Applying liquid termiticide in the ground beneath and around a structure creates a chemical barrier to prevent termites from entering the structure or to kill termites. Homeowners should ask their pest management professionals which product to use and should learn about the active ingredient in the product formulation to understand how the chemical application is designed to work.

Based on chemical activity, there are two groups of termiticides: nonrepellent termiticides and repellent synthetic pyrethroids.



Worker termites and the damage they can do to untreated building materials



Nonrepellent termiticides kill termites through direct contact while they travel through a treated soil barrier. The control effect is advanced by the chemical's slow-action property, which allows transfer of the chemicals from contaminated termites to unexposed colony mates. Applying nonrepellent termiticides provides relatively quick protection of a structure and suppresses termite activities around a structure.

Synthetic pyrethroids act as repellents in the soil, and most emit an odor. Termites that encounter these chemicals may turn away and avoid the treated area. Termites will not be killed unless they make contact with the treated barrier. Therefore, a uniform continuous barrier is critical because any gap may provide access to the structure.

Application

Preconstruction Soil Treatment

Before pouring a slab, apply termiticides at a rate of 1 gallon of finished solution per 10 square feet (soil fill) or 1.5 gallons of finished solution per 10 square feet (coarse fill) or as specified in the product label; this creates a horizontal barrier of the fill material that will be covered by the slab. After the slab is poured, apply at a rate of 4 gallons per 10 linear feet per foot of depth to create a vertical barrier in soil backfill areas next to foundation elements such as walls, piers, pipes, slab expansion joints, etc. Hollow masonry units receive 2 gallons per 10 linear feet or as specified in the product label.

Table 1. Termiticides for Soil and Spot Treatment

Common Name	Class	Trade Name	Company Name (Check company websites for label instructions.)
fipronil	phenyl-pyrazole	Termidor SC Termidor DRY* Termidor H·E (Co-pack) Termidor H·E (Premix) Termidor FOAM* Termidor 80 WG There are several generic fipronil products, such as Taurus™ SC, available on market for termite control.	BASF BASF BASF BASF BASF BASF
chlorfenapyr	pyrrole	Phantom Prescription Treatment brand Phantom Pressurized Insecticide*	BASF BASF
Chlorantranili-prole	Anthranilic diamide	Altriset	Syngenta professional product
dinotefuran	chlorinated nicotine derivative	Prescription Treatment brand Alpine Ant & Termite Foam*	BASF
imidacloprid	chlorinated nicotine derivative	Premise™ 75 WP Premise 2 Premise Foam Premise Granules Premise Pro	BAYER CropScience

*Not a substitute for mechanical alteration, soil, or foundation treatment

Table 2. Synthetic Pyrethroids

Common Name	Trade Name	Company Name (Check company websites for label instructions.)
Acetamiprid-Bifenthrin	Transport termiticide	FMC Professional Solutions
bifenthrin	Talstar termiticide/insecticide Bifen I/T Bifen L/P granules	FMC Professional Solutions
Cyfluthrin	Prescription Treatment brand CY-KICK CS* Prescription Treatment brand FastOut CS Foam RTU* Tempo SC	BASF Bayer
cypermethrin, beta	Prevail FT Cyper EC Cypermethrin TC Demon Probuild TC	FMC Group
deltamethrin	D-Foam	
permethrin	Dragnet FT Permethrin TC Prelude termiticide	
λ -Cyhalothrin	Prescription Treatment brand 221L* Prescription Treatment brand CYHALOCAP CS	BASF BASF
Natural Pyrethrins		
Natural Pyrethrins (synergized) + Silica Dioxide	Prescription Treatment brand TRI-DIE Pressurized*	BASF
Natural Pyrethrins (synergized) + Silica Dioxide	Prescription Treatment brand TRI-DIE Dust*	BASF
Botanical Oils		
Geraniol Lemongrass Oil	MotherEarth Exempt*	BASF
d-Limonene	MotherEarth ProCitra- DL*	BASF

*Not a substitute for mechanical alteration, soil, or foundation treatment.



Postconstruction Soil Treatment

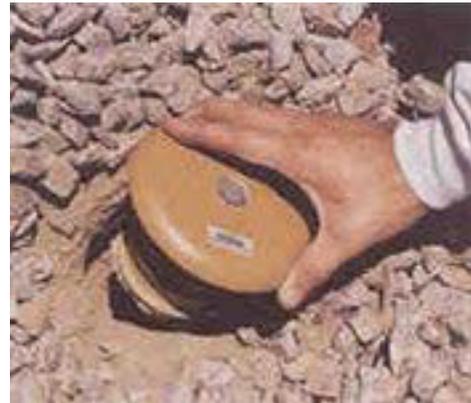
For a house with slab-on-ground and foundation elements, use a trench-and-drench method along the exterior foundation from grade to the top of the footing to create a perimeter barrier. Trench must be a minimum of 6 inches deep and 4 inches wide. Apply at the rate of 4 gallons finished solution per 10 linear feet per foot of depth. Where necessary, substitute rodding for drenching. To treat soil under slab or concrete or to treat termites inside walls, drill holes through slab, foundation, walls, or along concrete expansion joints vertically or horizontally in intervals of 1 foot or less and inject liquid termiticide at the same rate or as specified in the product label. Treat soil beneath bath trap by rodding or drenching at a rate of about 4 gallons of finished solution per square foot. For basement and inaccessible crawl space construction, apply at the same rate from grade to the top of the footing or at a minimum depth of 4 feet.

For accessible crawl space construction, trench and rod the soil around the foundation and all piers and pipes at the same rate from grade to the top of the footing.

Treat the existing interior termite activity site and extend the treatment for at least 2 feet in two or more directions radiating from the site by injecting or foaming or as specified in the product label.

Advantages

- A relatively quick control of termites and protection of the treated structure.
- Low maintenance.
- Relatively inexpensive.



Disadvantages

- Application (trenching, drilling, injecting, foaming) is sometimes intrusive and messy.
- Synthetic pyrethroids not recommended for application within 50 feet of a body of water, well, or cistern.



Table 3. Termite Baiting System			
Common Name	Active Ingredient	Class	Company Name (Check company websites for label instructions.)
Sentricon	noviflumuron	Insect growth inhibitor (IGI)	Dow AgroSciences
Exterra Termite Interception and Baiting System Prescription Treatment brand ADVANCE Compressed Termite Bait II	diflubenzuron	Insect growth regulator (IGR)	Ensystem, Inc. BASF
FirstLine Termite Defense System	Befenthrin	Synthetic pyrethroid	FMC Corporation

Bait Systems

Control concept

Instead of applying a chemical barrier designed to exclude termites from a food source, termites are offered food in the form of baits. Treatment baits have two components: a termite food source and a slow-acting termiticide, such as an insect growth regulator (IGR). Termites feeding on the bait are not killed immediately, so they have time to recruit nest mates to the bait and to pass the termiticide to other colony members, *ultimately leading to the decline or perhaps elimination of the colony.*

Using baiting systems is an ongoing process that involves monitoring, baiting, and inspecting because no persistent pesticide is applied in the vicinity of a structure. Long-term inspection tracks activity of a new or recovered colony of termites entering previously baited area.

Application

Install plastic stations containing a food source inside in the ground, around the structure, or above ground in the path of termite tunnel or termite-infested wood in the structure. Inspect the stations monthly or quarterly. Replace the food source with a bait after termites are

found inside the station. Continue the inspection process as long as the contract between a homeowner and pest control company is effective.

Sentricon HD may be used in lieu of a preconstruction termiticide treatment as a means of preventing termite infestation of new structures. Some baits are applied as stand-alone treatments—they are the sole control method. Others are used in combination with a local or complete liquid treatment.

Advantages

- Environmentally friendly with extremely low toxicity to humans and pets.
- Can be used in situations where infested structure is within 50 feet of a well or 100 feet of a body of water.
- Less intrusive—no drilling or trenching and easy to install.

Disadvantages

- Slower action against termites.
- Expensive because baits must be inspected and serviced at intervals for ongoing prevention and control of termite colonies.

Table 4. Wood Treatment Products

Active Ingredient	Trade Name	Character	Application (Check company websites for label instructions.)
Disodium Octaborate Tetrahydrate (DOT) = borate	Tim-Bor	Powder	Mix 1 pound Tim-Bor in 1 gallon of water and treat about 200 square feet of wood. Spray, brush, or roll on to the point of runoff.
	Bora-Care	A liquid mixture of DOT and glycol-based components to enhance wood penetration	Mix 1 gallon of Bora Care with 1 gallon of water and treat up to 800 square feet of wood. Spray, brush, or roll on to the point of runoff. EPA-registered label allows it to be used on wood as a stand-alone two-foot barrier termite pretreatment.
	Jecta Gel	Ready-to-use	
	Armor-Guard	Powder	NovaGuard Technologies, Inc
	Shell-Guard EZ-Bor	Liquid, penetrates into wood deeper than Armor-Guard	
	Term-A-Rid 613	Treated wood stakes or mulch	Termarid, LLC http://www.termarid.com/
d-Limonene	XT-2000	Liquid	XT-2000, Inc
Thiamethoxam	OptiGard ZT	Liquid or foam as wood injection or void application.	Syngenta

Wood Preservatives

Control concept

Wood is treated with a preservative that is toxic or repellent to termites and other wood-destroying organisms.

Application

Liquid preservatives are sprayed or brushed on unfinished wood. They can be used to treat an entire wood structure or to drill and inject infested wood. All borate-based products are water soluble, thus borate-treated wood should be used only interiorly or where the wood is kept free from water and ground contact.

(In addition to the chemicals listed here, most nonrepellent termiticides are also labeled for wood treatment)

Advantages

- Low in mammalian toxicity
- Less expensive
- Long-lasting (for decades) unless exposed to constant rewetting

Disadvantages

- Interior use only due to leaching problem
- May not penetrate to the center of a wood beam

Table 5. Termite Physical Barrier			
Physical Barrier	Trade Name	Character	Registrant (Check company websites for label instructions.)
Plastic barrier	Impasse termite blocker	A termiticide “locked in” between polyethylene plastic sheeting. Example termiticide is lambda cyhalothrin	Syngenta Crop Science
Stainless steel mesh barrier	Termi-Mesh	A marine grade 316 stainless steel wire mesh (aperture of 0.66 x 0.44 mm)	Termi-Mesh Australia Pty Ltd.
Aluminum	Alterm	Solid 0.5 mm marine grade aluminum	Alterm Pty Ltd
Basaltic particle barrier (BTB)	Granitgard	Common volcanic rock crushed to particles of 1.6 to 2.5 mm. Installed as a layer of several inches thick below and around the foundation.	GranitGard Pty, Ltd.
Sand particle barrier		Graded stone particles of 2.0 to 2.8 mm (roughly 16-grit). Not recommended for all climates or types of construction. May combine with termiticide application.	

Termite-proof Materials (Physical or Mechanical Barriers)

Control concept

Install mechanical barriers and physical barriers before a structure is built to prevent termites from entering the structure and to offer the advantage of indefinite longevity without or less pesticide use.

Two types of termite-proof durable material are available. One is pesticide-free and made of durable materials that are too hard for termites to chew and too tight for termites to pass through. The other contains a termiticide placed between durable polymer layers. Termites are killed when they come in contact with the termiticide.

Application

Termite-proof material is installed before the concrete slab is poured, and it is positioned around utility conduits (plumbing, electrical pipes and wires, and bath trap areas).

Advantages

- Environmentally favorable profiles.
- Durable, long-term solution.

Disadvantages

- Preconstruction use only.
- Use only as a complement to liquid or bait treatments.

Supplemental Barriers

Control concept

Create form or dust barriers that are used in conjunction with liquid termiticides.

Application

Foam can be created by mixing a termiticide with a foaming agent and applied using a small compressed air-tank. The mixture under pressure forms shaving cream-type foam that expands into drilled voids in walls and under slabs.

Dust termiticide can be applied to wall voids and other space where liquid or foams are impractical.



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Use termite control products only according to the directions on the label. Follow all directions, precautions, and restrictions that are listed.

The termiticide rates in this publication are recommended ONLY if they are registered with the Environmental Protection Agency and the Alabama Department of Agriculture and Industries. If a registration is changed or cancelled, the rate listed here is no longer recommended.

Trade names are used only to give specific information. The Alabama Cooperative Extension System does not endorse or guarantee any product and does not recommend one product instead of another that might be similar.

Under pressure from EPA, Dow Chemical pulled Dursban from retail shelves at the end of 2001, but continue to sell it for termite pretreatments in new home construction. Until its use as a termiticide is banned in 2006 for new home and building, it's still being used.

For more information, contact your county Extension office. Visit www.aces.edu/directory.

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