

Product Performance Study Review
by
Kevin J. Sweeney, Entomologist
Insecticides Branch
May 8, 2002

Kevin J. Sweeney
5/8/02

EPA Reg. Nos. 432-900 & 901

Product Name: Termidor 80WG and Termidor SC

Registrant: Aventis Environmental Science

Reviewer: Ann Sibold

Product Manger: Marion Johnson, PM 10

Submission No. S608936 & S608917

DP # D281039 & D281037

Active Ingredients: 80% fipronil applied to soil at 0.06% and 0.125%
9.1% fipronil applied to soil at 0.06% and 0.125%

OPPTS Guideline: 810.36

Sites: Residential and commercial structures

Pests: all subterranean termite species of economic importance in the United States.

Amendment: Add additional uses for ant control, subterranean termites above ground, and drywood termites. Foam treatment directions were also revised.

Studies submitted in support of ant control:

Termidor 80WG:

MRID 45558001 Field Tests to Determine Efficacy of Termidor 80 WG or Termidor 0.8SC in Control of Carpenter Ant Infestations-2000 by L.D. Hansen, Spokane Falls Community College.

MRID 45558002 Efficacy Tests and Residual Activity of Fipronil Used as a Perimeter Spray in Carpenter Ant Control - 1997- Rhone Poulenc Ag. Company. By L.D. Hansen,

OPTIONAL FORM 99 (7-90)

FAX TRANSMITTAL

of pages ► 9

To <i>Adrian Kuyperman</i>	From <i>Kevin Sweeney</i>
Dept./Agency <i>3438</i>	Product # <i>Ann Sibold</i>
Fax # <i>201 307 6386</i>	Fax # <i>3386</i>
NSN 7540-01-317-7365	5099-101

GENERAL SERVICES ADMINISTRATION

Spokane Falls Community College.

MRID 45558003 Treatment of Trees with Termidor 80WG by Ed Freytag, New Orleans Mosquito and Termite Control Board completed on 1/07/01.

MRID 45558004 Progress Report: Aventis Termidor (Fipronil) 80WG Treatment of 2000 Trees, 9/13/01 by Ken Lewis (AES) and Ed Freytag, (NOMTCB).

MRID 45558005 Progress Report: Aventis Termidor (Fipronil) 80WG Treatment of 1999 Trees, 9/13/01, by Ken Lewis (AES) and Ed Freytag (NOMTCB).

Termidor SC:

MRID 45558101 Evaluation of Carpenter Ant Control-Summer 2000 by Mark Coffelt (AES) and Jeff Preece (Zip-Zap Pest Control).

MRID 45558102 Field Tests to Determine efficacy of Termidor 0.8SC on Carpenter Ant Infestations - 1999, Rhone Poulenc Ag. Company, by Laurel Hansen, Spokane Falls Community College.

MRID 45558103 Perimeter Applications of Two Concentrations of Fipronil for Control of Carpenter Ants in Field Trials - 1998 by Laurel Hansen, Spokane Falls Community College.

MRID 45558104 Evaluation of Termidor SC to Arboreal Termites by R. Hickman (AES), 11/30/01

MRID 45558105 Termidor Wood Injection Study by M. Chapman (AES), 11/30/01.

Summary of Findings

All of the submitted studies evaluated Termidor product formulations at the labeled concentrations under actual field conditions at structures or in and around trees for the new use patterns proposed on the label. However, the design of these experiments makes a quantitative comparison of the data difficult because each application was customized to the pest problem on site. The studies showed that Termidor products killed and effectively controlled ants - primarily carpenter ants - at the lowest label rate of 0.06%. Re-application for ant control was not necessary in nearly all instances. It is unclear why one applicator used so much finished solution while another used very little to accomplish the same objective in a perimeter treatment. We can assume or theorize that some of the PCOs/researchers needed to make more frequent spot applications and/or chose to drench the soil with finished solution. Tree/arboreal Termidor treatments for Formosan termite control were successful.

Conditional efficacy data are needed for the most common ant pests in the United States-the Black Carpenter ant-*Camponotus pennsylvanicus*, and the Argentine ant-*Linepithema humile*. The label directions for controlling and preventing ants appear to be based primarily on the biology of these two species.

The drywood termite data were a laboratory based simulation of field applications with Termidor SC. They support localized treatments of infested wood members only and can be bridged to Termidor 80WG. Preventive treatment claims should not be allowed on the label because there are no data to show that fipronil treated wood prevents drywood termite colonization.

Entomologist's recommendations:

I. Conditional efficacy data are needed for the most common ant pests in the United States-the Black Carpenter ant-*Camponotus pennsylvanicus*, and the Argentine ant-*Linepithema humile*..

II. Label reviews

Termidor 80WG

Page 2 - The first sentence under the directions for use is difficult to follow. Revise it.

Page 3 - OK

Page 4 - OK except the language under **Horizontal Barriers for pre-construction treatments** is unacceptable. Revise the second sentence because it is unclear. Include a maximum volume per square foot for spraying (using language such as - up to or do not exceed xx gallons/square foot) over washed gravel or other coarse material. The AES proposed language can not be enforced and could lead to an over application. Be sure that the first sentence of the second paragraph under the section on **Vertical Barriers** agrees with the maximum treatment rate stated for horizontal treatments.

Page 5 - OK

Page 6 -

1. Under the **Inaccessible Crawl Space** section, correct high- er to read higher.

Page 7

1. Under the **Hollow Block Foundations/Voids** section of the post-construction treatment directions: Remove "It may be necessary to drill..." and replace it with "Drill and treat voids..." as stated in the PR Notice. Remove the word "may" from the directions in this section.

PR Notice 96-7 states that the following wording is to be used:

"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."

Pages 7-8 Foam application

The proposed changes to the **foam application** section are unacceptable. The mixing table must remain in this section (from the revised label submitted on March 4, 2002). Remove the term "preventive treatment" and revise the sentence to read as directed by PR Notice 96-7 - and the previously accepted label. Add 0.125% to the sentence on % application type so it reads as follows, "At least 75% of the gallons of the 0.06% or 0.125% Termidor 80WG Termiticide/Insecticide finished solution must be applied as a typical liquid treatment."

Remove the proposed mixing instructions for foaming equipment. It is unclear how flow-thru equipment common to the industry can be used to achieve the proper foam dilution ratio while maintaining the required % active ingredient using these directions. Nearly all equipment of this type requires addition of a concentrate, not the finished solution to the foam equipment system. You could not do a foam injection like that described in MRID 45558003 using the proposed label directions.

Page 8 -

Termites Above Ground - OK except you must revise the first sentence. Treatments shall only be made to infested areas of wooden members/voids. The sentence should read, "...apply 0.06% or 0.125% solution of Termidor 80WG Termiticide/Insecticide to voids and galleries in damaged wood.."

Nuisance Ant Control - Carpenter ants are not nuisance ants. Revise to read, "Carpenter ant and nuisance ants (Big-Headed ants, Argentine ants, Odorous House ants, and Pavement ants)

control."

1. Explain the wall void application. Directions are not included. Is it by injection with foam from the outside or inside? - or- is it a liquid treatment to the void adjoining or bordering the top of the sill plate area? - or - are both required?
2. Revise volumes for spray application. State an application rate per 1000 square feet of surface area treated. I believe that an application rate of 1 gallon per 1000 square feet is a sufficient treatment rate based on the submitted data and other EPA product registrations for fipronil. The label be changed to I don't see any reason to register the 0.125% rate for ant control. The 0.06% solution appears to be efficacious based on submitted field data. See discussion below.

A 2000 square foot house measures 50 x 40 feet. The perimeter equals 180 feet. 180 multiplied by a 3 foot wide band application equals a soil treatment area of 540 square feet. In addition, we can add a foundation treatment area of approximately 200 square feet to bring the total minimum treatment area to 740 square feet for a 2000 square foot home. Since decking, porches, walks, sills, doors, windows, trees exist within three feet of the foundation, an additional 260 feet can be added-on average-for a total treatment area of 1000 square feet for a 2000 square foot home. Based on these calculations, it may be reasonable to assume that an area about half the area of the house itself may need to be treated to control ants and prevent them from entering the home. Therefore, a 1000 square foot home has 500 feet of treatment area, a 2000 square foot home-1000 feet of treatment area, a 3000 square foot home-1500 square feet treatment area, etc. As stated in the proposed labeling, the gallons of finished solution required to treat each home will vary widely but if a label rate is stated per 1000 square feet, it will enable the PCO to calculate the amount of finished solution needed per application. This is especially important with Termidor 80WG applications because it is mixed in 25 gallon batches - 1 packet of Termidor 80WG is mixed with 25 gallons of water to yield a 0.06% solution.

In the submitted field studies, the rate per 1,000 square feet varied widely. Some homes were treated with as little as one gallon of solution while others were treated with nearly 20 gallons. The label proposes a rate of 5 gallons per 1,000 square feet of treated area (a 2,000 square foot home). Therefore-as proposed-one packet of Termidor 80WG (2.1 ounces of fipronil) should treat a 5,000 square foot area and provide long-term ant control. This application rate can also be expressed as 0.13 lbs fipronil/5,000 square feet. This rate appears low until it is compared with other fipronil products registered for a similar use pattern. The application rate for H&G 61743A-EPA Reg. No. 432-1224, a 0.05% ready to use solution, is one pint (0.0005 ounces fipronil) per 200 square feet (applied as a one-foot band around the perimeter) to control fleas, ticks, fire ants and nuisance ants. The direction for use mentions that this is sufficient to treat a 2000 square foot home although this appears unlikely based on the AES field studies. This results in an application rate of 0.0125 ounces of fipronil (25 pints or 3.125 gallons of product) per 5,000 square feet or just 0.625 gallons per 1,000 square feet. Therefore, comparison of the two product labels reveals that the proposed application rate for Termidor 80WG is 10x higher when compared to H&G 61743A for the same use pattern. In addition, 3 applications per year are

proposed for Termidor 80WG while just one per year was registered for H & G 61743A.

The H & G 61743A product was registered based primarily on laboratory data with some field studies and most of these were directed at fire ants and some nuisance invaders. In the field trials conducted by researchers and pest control applicators with Termidor products at homes, it appears that more product was required to gain sufficient coverage of the treatment area when compared to the registered use pattern for HG 61743A. However, a rate as high as five gallons per 1,000 square feet is more fipronil than needed, especially if up to 3 application per year are made. Note that the AES field studies did not require re-application to accomplish control of ants at homes. Fipronil residues are likely to remain in the treatment area for a prolonged period of time.

The registrant must revisit the application rate proposal for ants. They need to explain why more Termidor 80WG is needed per applications and why more applications are required annually. In the submitted studies, as little as one gallon of Termidor 80WG finished solution was effective with many applications averaging 1-2 gallons. Treatment made with the 0.06% solution were successful.

3. For void treatments, the rate of application should be the same or less than for termites.

Page 9 -

Retreatment language:

The proposed retreatment language is unacceptable. Retain the previously accepted language on the label which is consistent with PR Notice 96-7.

Termidor SC

Page 2 - The first sentence under the directions for use is difficult to follow. Revise it.

Page 3- OK

Page 4 - **Sub-Slab injection**

1. Delete the word "may". Retain the previously approved label language.

2. Reference to a garage is to be removed. Technically, the garage is part of the exterior perimeter and the entire perimeter of the slab inside the garage should be treated. Any reference to garages should appear in the directions for the exterior perimeter. This is probably a good idea and one that most labels ignore since it is assumed by everyone that the perimeter of the garage

must be treated. It is not part of the living space.

Page 5 - OK

Page 6

Under the **Hollow Block Foundations/Voids** section of the post-construction treatment directions, remove "It may be necessary to drill...", and replace it with "Drill and treat voids..." as stated in the PR Notice. Remove the word "may" from the directions in this section.

PR Notice 96-7 states that the following wording is to be used:

"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."

Page 7 - Revise the foam application directions.

The first sentence is OK.

The remaining proposed changes to the **foam application** section are unacceptable. Add 0.125% to the sentence on % application type so it reads as follows, "At least 75% of the gallons of the 0.06% or 0.125% Termidor 80WG Termiticide/Insecticide finished solution must be applied as a typical liquid treatment."

Remove the proposed generalized mixing instructions for foaming equipment. Instead, you may simply want to state that closed-system automated foaming equipment can be used provided the foam is prepared according to the foam mixing table on this label. The foam mixing table must

remain in this label section and must be expanded to include the foam expansion ratio- and-foam volume and % active ingredient in the finished foam solution.

Pages 7 & 8

Termites Above Ground - OK except you must revise the first sentence. Treatments shall only be made to infested areas of wooden members/voids. The sentence should read, "...apply 0.06% or 0.125% solution of Termidor SC Termiticide/Insecticide to voids and galleries in damaged wood.."

Nuisance Ant Control - Carpenter ants are not nuisance ants. Revise to read, "Carpenter ant and nuisance ants (Big-Headed ants, Argentine ants, Odorous House ants, and Pavement ants) control."

1. Explain the wall void application. Directions are not included. Is it by injection with foam from the outside or inside? - or- is it a liquid treatment to the void adjoining or bordering the top of the sill plate area? - or - are both required?

2. Revise volumes for spray application. State an application rate per 1000 square feet of surface area treated. I believe that an application rate of 1 gallon per 1000 square feet is a sufficient treatment rate based on the submitted data and other EPA product registrations for fipronil. The label be changed to I don't see any reason to register the 0.125% rate for ant control. The 0.06% solution appears to be efficacious based on submitted field data. See discussion below.

A 2000 square foot house measures 50 x 40 feet. The perimeter equals 180 feet. 180 multiplied by a 3 foot wide band application equals a soil treatment area of 540 square feet. In addition, we can add a foundation treatment area of approximately 200 square feet to bring the total minimum treatment area to 740 square feet for a 2000 square foot home. Since decking, porches, walks, sills, doors, windows, trees exist within three feet of the foundation, an additional 260 feet can be added-on average-for a total treatment area of 1000 square feet for a 2000 square foot home. Based on these calculations, it may be reasonable to assume that an area about half the area of the house itself may need to be treated to control ants and prevent them from entering the home. Therefore, a 1000 square foot home has 500 feet of treatment area, a 2000 square foot home-1000 feet of treatment area, a 3000 square foot home-1500 square feet treatment area, etc. As stated in the proposed labeling, the gallons of finished solution required to treat each home will vary widely but if a label rate is stated per 1000 square feet, it will enable the PCO to calculate the amount of finished solution needed per application.

In the submitted field studies, the rate per 1,000 square feet varied widely. Some homes were treated with as little as one gallon of solution while others were treated with nearly 20 gallons. The label proposes a rate of 5 gallons per 1,000 square feet of treated area (a 2,000 square foot home). Therefore-as proposed this application rate can also be expressed as 0.13 lbs

1

fipronil/5,000 square feet. This rate appears low until it is compared with other fipronil products registered for a similar use pattern. The application rate for H&G 61743A-EPA Reg. No. 432-1224, a 0.05% ready to use solution, is one pint (0.0005 ounces fipronil) per 200 square feet (applied as a one-foot band around the perimeter) to control fleas, ticks, fire ants and nuisance ants. The direction for use mentions that this is sufficient to treat a 2000 square foot home although this appears unlikely based on the AES field studies. This results in an application rate of 0.0125 ounces of fipronil (25 pints or 3.125 gallons of product) per 5,000 square feet or just 0.625 gallons per 1,000 square feet. Comparison of the two product labels reveals that the proposed application rate for Termidor SC is 10x higher when compared to H&G 61743A for the same use pattern. In addition, 3 applications per year are proposed for Termidor SC while just one per year was registered for H & G 61743A.

The H & G 61743A product was registered based primarily on laboratory data with some field studies and most of these were directed at fire ants and some nuisance invaders. In the field trials conducted by researchers and pest control applicators with Termidor products at homes, it appears that more product was required to gain sufficient coverage of the treatment area when compared to the registered use pattern for HG 61743A. However, a rate as high as five gallons per 1,000 square feet is more fipronil than needed, especially if up to 3 application per year are made. Note that the AES field studies did not require re-application to accomplish control of ants at homes. Fipronil residues are likely to remain in the treatment area for a prolonged period of time.

The registrant must revisit the application rate proposal for ants. They need to explain why more Termidor SC is needed per applications and why more applications are required annually. In the submitted studies, as little as one gallon of Termidor finished solution was effective with many applications averaging 1-2 gallons. Treatment made with the 0.06% solution were successful.

3. For void treatments, the rate of application should be the same or less than for termites.

Retreatment language:

The proposed retreatment language is unacceptable. Retain the previously accepted language on the label which is consistent with PR Notice 96-7.