

# TERMITE PROTECTION FOR WOOD-FRAMED CONSTRUCTION



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## INTRODUCTION

Termites occur in virtually every state of the United States except Alaska. The presence or abundance of termites is determined by their environmental requirements such as temperature, humidity, soil moisture and availability of food. Termite damage can be controlled with proper building practices and preventative measures.

## DESCRIPTION

Based on their habitat and mode of attack, termites found in the U.S. can be grouped in three classes: subterranean, drywood, and dampwood termites.

### Subterranean Termites

Subterranean termites develop and maintain their colonies underground. They tunnel through earth and build pencil-sized mud tunnels around obstructions above ground while foraging for the wood that they need for food. At certain seasons of the year, male and female winged termites swarm from the colony, fly a short time before losing their wings and, if successful in locating a suitable place, mate and start new colonies. Their appearance during the mating season is similar to flying ants. Their shed wings are an indication that a termite colony may be near. Because of their resemblance to flying ants, suspicious insects should be identified before steps are taken to eradicate termites.

Subterranean termites are responsible for most of the termite damage done to wood structures in the United States. Their occurrence and damage are much greater in the southern states than in the northern states where low temperatures do not favor their development. Subterranean termites are not typically transported in lumber. They establish colonies by entering from a ground nest after a building has been constructed. Telltale signs of their presence are earthen tubes or tunnels built over the surfaces of foundation walls to reach the wood above. In the wood itself, the termites make galleries that follow the grain, leaving a layer of sound wood to conceal their activities. Since the galleries seldom show on the wood surfaces, probing with an ice pick or a knife is advisable if the presence of termites is suspected.

The Formosan termite is a type of subterranean termite that has spread from the Far East to Hawaii, Florida and to southern states through to Texas. The Formosan termite has been reported in California also. Experts believe that this special species of termite will eventually spread to other areas of the United States, especially along the southern coasts and the lower Mississippi Valley area.

The Formosan subterranean termite is a much greater threat to structures than our native species. It is more vigorous and aggressive, as indicated by rapid population development. Formosan termites use an extensive tube and tunnel system to aggressively locate and attack new sources of wood. According to research experiments, the Formosan species has greater resistance to soil insecticides currently used to control other subterranean termites.

### Drywood Termites

Drywood termites, unlike the subterranean termites, can live entirely in wood that is moderately to extremely dry. They require no contact with the soil or with any other source of moisture.

Drywood termites occur across the southernmost states, along the eastern coast to North Carolina, along the western coast to northern California and in Hawaii. Drywood termites are fewer in number and do not multiply as rapidly as subterranean termites. Their ability to live in damp or dry wood without outside moisture or contact with the ground makes them a definite menace in the regions where they occur. Although the total amount of destruction they cause in the United States is much less than that caused by subterranean termites, their damage is considerable in southern California, Florida and Hawaii.

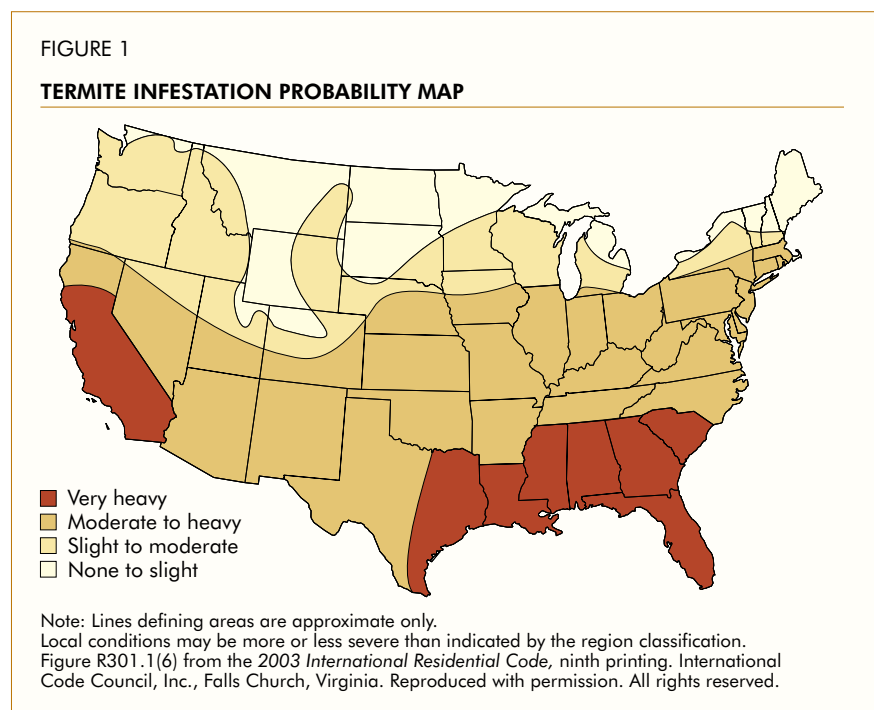
### Dampwood Termites

Dampwood termites generally do not require contact with damp ground. Dampwood termites locate their colonies in damp, often decaying, wood where their moisture requirements are satisfied by the moist wood. Once established, they may extend their activities into sound and even relatively dry wood if they maintain contact with damp wood.

Dampwood termites occur along the Pacific Coast and the northwestern states and are most common in northern California and in western Oregon and Washington. Because a dampwood-termite infestation generally requires moisture conditions conducive to decay (conditions contrary to modern construction practices), the economic hazard of dampwood termites is minor compared to that of subterranean and drywood termites.

## REGIONAL TERMITE HAZARD

The need for termite protection varies regionally and depends primarily on climatic conditions. Figure 1, from the International Residential Code<sup>(1)</sup>, indicates the general geographic distribution of termite infestation in the United States. Local building departments or pest control operators should be consulted to determine whether termite protection is required or recommended for specific regions.



## TERMITE PROTECTION

Techniques for termite protection involve preventing access to wood or moisture required for termite existence.

### Jobsite Sanitation

Houses built on land recently cleared of trees and brush are probably in the midst of subterranean termite colonies when located in geographic areas where subterranean termites exist. In these areas jobsite sanitation is critical. Proper jobsite cleanup includes removal or burning of all debris, lumber, logs, limbs and stumps. The presence of buried wood attracts termites and can lead to infestation of the house. Lumber scraps should be removed from the site prior to enclosing with the wood or concrete floor.

### Construction

Where termites are prevalent, the best protection is to build using techniques that prevent their gaining access to the building. Foundations may be the Permanent Wood Foundation (PWF), poured concrete or masonry block with a poured concrete cap, through which termites cannot penetrate. Crawl space and attic vents must be screened to prevent access of winged termites during mating season.

Required minimum clearances between the ground surface and any untreated wood in the building are presented in the table below. Lesser clearances are also acceptable provided such wood is pressure-preservative-treated.

	<b>Minimum Clearance Grade to Wood</b>
<b>Outside Grade</b>	
- to framing	8 inches
- to siding	6 inches
<b>Inside Grade (crawl space)</b>	
- to floor joists	18 inches
- to floor girder	12 inches

With less than 18 inches of clearance under floor framing or less than 12 inches under floor girders, the shallow underfloor space is generally inaccessible for inspection. In such cases any wood that is at or below the level of the floor sheathing (including the floor sheathing itself, the floor framing, girders, posts, rim joists and blocking, and PWF if used) must be pressure-preservative-treated.

Proper ventilation and use of vapor barriers on the ground in the crawl space will help prevent the moist conditions that subterranean and dampwood termites favor. The minimum ventilation requirements in model building codes are based on the ratio of the net free ventilation area to the area to be ventilated. The required ratio applicable to crawl spaces is 1:150. When a ground cover is placed in the crawl space, the ratio may be reduced to 1:1500.<sup>(2)</sup>

### Soil Treatment/Wood Treatment

In regions where a termite hazard exists, treat the soil outside of foundation walls, along the inside of crawl space foundation walls, under basement floors or slabs, and at other points of ground contact. For underfloor plenum heating/cooling systems, use only termiticides which have been approved for applications when treating soil inside the plenum.

If soil treatment is not used in termite hazard regions, preservative-treated wood should be considered for the subfloor sheathing, floor framing and supports. The foundation walls and underside of the floor structure should be inspected periodically for evidence of termite infestation, especially if untreated materials are used in the floor sheathing, framing and supports.

Plywood should be treated in accordance with American Wood-Preservers' Association (AWPA) Standards U1 (Use Category System: User Specification for Treated Wood) and T1 (Use Category System: Processing and Treatment Standard)<sup>(3)</sup> or equivalent code-approved preservative-treating and quality control requirements; and should be marked by an approved inspection agency, certified to inspect preservative-treated wood, indicating compliance with these requirements. All such treated wood should be dried to a moisture content of 19% (18% for plywood) or less after treatment to minimize subsequent shrinkage.

## REFERENCES

1. *International Residential Code, for One- and Two-Family Dwellings*, 4051 West Flossimoor Road, Country Club Hills, IL 60478. Phone: (800) 214-4321.
2. *International Building Code*, 4051 West Flossimoor Road, Country Club Hills, IL 60478. Phone: (800) 214-4321.
3. *Book of Standards*, American Wood-Preservers' Association, P.O. Box 361784, Birmingham, AL 35236. Phone: (205) 733-4077.

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