WOOD DESTROYING BEETLES

BORA-CARE®

TECHNICAL BULLETIN

NISUS™

100 Nisus Drive • Rockford, TN 37853 USA
800.264.0870 • www.nisuscorp.com

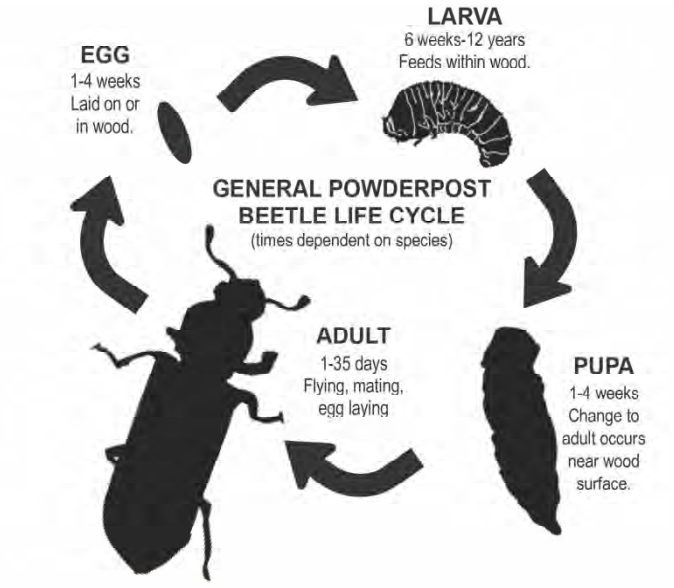
BORA-CARE® TECHNICAL BULLETIN: WOOD DESTROYING BEETLES

(ALWAYS READ AND UNDERSTAND LABEL DIRECTIONS COMPLETELY BEFORE ANY APPLICATION.)

WOOD DESTROYING BEETLES

Customers often start calling about wood destroying beetle infestations when the adult beetles emerge from the wood to mate, producing exit holes and powder frass.

Wood destroying beetles are a major cause of structural damage in homes and other structures. Some beetles attack softwoods, others attack hardwoods and some attack both. Although often referred to as "powderpost beetles," three separate families of beetles – *lyctidae*, *anobiidae* and *cerambycidae* – are responsible for most of the beetle damage to structural wood.



Wood destroying beetles have life cycles that include egg, larvae, pupae and adult stages. Bora-Care can potentially kill the eggs and eliminates young larvae, thus preventing re-infestation by interrupting their life cycle.

Bora-Care application methods for treating all beetle infestations are similar; however you should become familiar with the different infestation characteristics in order to know what to look for during inspections and what to expect after treatment.

Lyctidae: True powderpost beetles infest only hardwoods and are often found in manufactured products in relatively new homes. They can be introduced as eggs or larvae in firewood, improperly dried wood, or wood that has been stored. Flooring, furniture, door and window frames, and decorative trim made of hardwood components are particularly susceptible to attack.

Powderpost beetles will attack wood with moisture levels of eight to thirty-two percent but prefer a range of ten to twenty percent, typical of that found in most homes. The greatest period of activity occurs in late winter or early spring. The adults conceal themselves in cracks and holes in the wood during the day and become active at night.

Their short life cycle, large initial populations, and high survival rate often result in rapid and expensive damage. The larvae are responsible for all damage and feed entirely within the wood; however most infestations are not discovered until adult beetles emerge through the wood surface. Emergence holes are round, 1/32" to 1/8" in diameter and the frass is loosely packed with the feel of fine talcum powder, thus, their common name of powderpost beetle.

Lyctidae – True powderpost beetles

1. Adults – reddish brown, 3/32" - 7/32" long.
2. Exit holes 1/32" - 1/16" wide.
3. Talc-like frass.
4. Consume starch in hardwoods.
5. Lays eggs in pores of wood.
6. Will reinfest.

Ptinidae (formerly Anobiidae)***:*** Larvae feeding in softwoods produce numerous oval pellets that have a gritty feel. Infestations usually begin in crawl spaces or other areas where wood is near the ground. High

moisture levels in the wood will speed the development of these beetles and, under favorable conditions. The cycle of re-infestation can occur within one to two years. Damage is usually detected in homes older than ten years since infestations develop slowly. Adult beetles are more active at night and may become numerous in early to late spring, but are rarely seen during an inspection.

If an active infestation is found in a 15- to 20-year-old building, all wood should be carefully inspected for signs of infestation. This is especially important for structures on poorly drained sites or in warm, humid climates. Exit holes indicate that adult beetles have emerged and will continue to re-infest unless controlled.

Ptinidae – common names include furniture beetles, deathwatch beetles

1. Bun-shaped pellets in frass
2. Lays eggs in cracks and exit holes
3. Usually attacks older softwoods and hardwoods of homes
4. Head nearly concealed from above by hooded pronotum.
5. Digests cellulose.
6. Exit holes 1/16" - 1/8"
7. Will reinfest.

Cerambycidae: In some areas of the country, the old house borer (*Hylotrupes bajulus*) is second only to termites in damage to structural wood. Found from Maine to Florida and west to Michigan and Texas, the behavior of old house borers is far different than their name suggests. Old house borers prefer to attack recently seasoned wood and are typically found in newer homes. Infestations are often introduced in fire-wood or through the use of lumber that contains eggs or small larvae. Usually, noticeable infestations are limited to a few wood members; however, adjoining sound boards may also be infested by young larvae. Depending on conditions, damage may not be detected until adults emerge three to ten years after the initial infestation.

As opposed to most other beetle species, old house borers prefer dry wood containing ten to twelve percent moisture content. Both the adult exit holes and the feeding tunnels of large larvae are oval and about 1/4" in diameter. Galleries near the surface cause lighter colored streaks to appear on the wood surface. The frass is a coarse, tightly packed powder. One typical characteristic of an old house borer infestation is the noise older larvae make while feeding. Often this chewing noise is what will first alert the homeowner that an infestation is present.

Cerambycidae – Old House Borers (*Hylotrupes)* and other longhorned beetles

1. Average 2-10 year life cycle, up to 32 years.
2. Antennae length less than half the length of body.
3. Thorax with smooth raised spots.
4. Attacks new softwoods and can reinfest.
5. Laval galleries are oval with distinct ripple marks.
6. Oval exit holes, 1/4"- 3/8".
7. Larvae can sometimes be heard feeding.
8. Will reinfest.

Powderpost beetle exit hole.

Powderpost beetle damage to the sapwood of a pitch pine rafter on Cape Cod, Massachussetts

Porch damage from powderpost beetles with dime for size

Bostrichidae: Originally a tropical pest, bostrichids, or false powderpost beetles, are now found throughout North America, especially in the mid-Atlantic region and Florida. They mainly attack seasoned hardwood, but will also infest softwood with high levels of moisture and starch. A few are associated with woody fungi or stored grain. Both adults and larvae feed on the infested wood.

Bostrichididae – Horned Powderpost Beetles (common names include false powderpost beetles, bamboo borers, branch-and-twig borers, auger beetles)

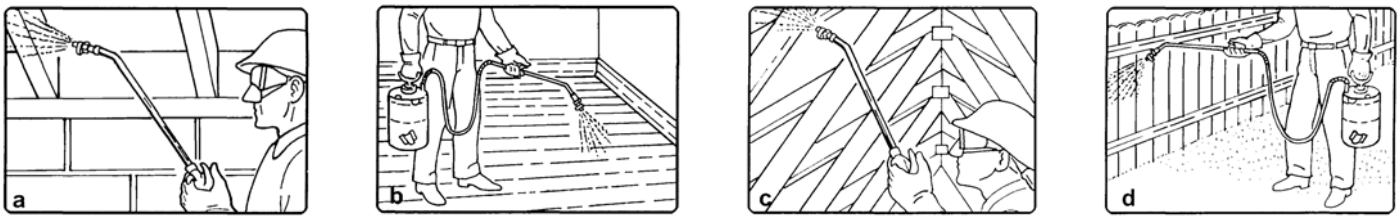
1. Vary in size from 1/16" to 1", small, stout
2. Dark brown to black.
3. Coarse frass that sticks together.
4. Will bore into wood to lay eggs.
5. Usually infests seasoned hardwoods, can attack softwoods.
6. Digests starches, not cellulose.
7. Exit holes, 1/8"- 3/8".
8. Reinfestation may not take place.

Other Wood Infesting Beetles (Non-Reinfesting):

1. Other long-horn beetles
2. Buprestid beetles (flat-headed borers)
3. Ambrosia beetles
4. Bark beetles

BEETLE TYPE	TUNNEL/ EXIT HOLE SIZE & SHAPE	DESTRUCTIVE STAGE	TYPICAL LIFE CYCLE	FRASS / PREFERRED WOOD TYPE
Lyctidae (True Powderpost Beetles)	• • • **Round 1/32"-1/16"**	Larva	3-12 months	Loosely packed with very fine, talc-like powder. Hardwoods.
Ptinidae (fomerly Anobidae) (Deathwatch Beetles)	• • ● **Round 1/16"-1/8"**	Larva	1-3 years	Loosely packed with fine to coarse powder with oval, gritty pellets. Mostly softwoods.
Bostrichidae (False Powderpost Beetles)	● ● ● **Round 1/8"-3/8"**	Larva and adult	~1 year	Fine to coarse and tightly packed. Tends to stick together. Mostly hardwoods.
Old House Borers	⬬ ⬬ **Oval 1/4"-3/8"**	Larva	Up to 32 years (normally 2-10 years)	Tightly packed with coarse powder often formed into small pellets. Softwoods.

NOTE: Illustrations of holes are actual size.



Treat all unfinished wood and wood components with Bora-Care.

TREATMENT OF WOOD INFESTED BY BEETLES

Bora-Care will help prevent powderpost beetles as well as other listed wood destroying beetles. Bora-Care may be used on all cellulosic materials including wood, plywood, particle board, paper, oriented strand board (OSB), cardboard and wood composite structural components. It also can be applied to concrete, metals, PVC plumbing pipes, and other non-cellulosic materials.

Bora-Care Characteristics: Bora-Care is packaged as a water-soluble, liquid concentrate that contains 40% Disodium Octaborate Tetrahydrate (DOT) active ingredient and proprietary penetrants that enhance penetration and absorption into wood. Once applied to the wood, Bora-Care will not degrade or volatize.

Treat the infested and surrounding area with Bora-Care according to label directions. When practical, inject diluted Bora-Care solution into beetle emergence holes and galleries. It is important to treat the entire infested wood member.

Because wood can contain active beetle larvae with no surface evidence of infestation, the best method of control is to treat the entire area where an infestation has been found. This would include all of the wood in a crawl space, wall or attic showing any signs of damage.

Infested wood flooring can be treated with Bora-Care by spray or brush application. Any existing finish must be removed by sanding or stripping prior to application. Apply a 2:1 Bora-Care solution at a rate of approximately one gallon of solution per 500 square feet of floor surface. (Refer to the Bora-Care label section on treating flooring for detailed application rates and methods.) When possible, direct spray application is recommended; however, inaccessible areas such as wall voids can be treated by foam application.

Preventative Treatments: Uninfested wood can be protected from beetles with a Bora-Care treatment. For framed wood surfaces above ground, apply a 5:1 Bora-Care solution to unfinished wood for beetle control. After treatment, exterior treated wood surfaces should be coated with a water repellent finish such as paint or stain. It is important to allow the Bora-Care to completely dry before applying any protective topcoat. (Refer to the Bora-Care label section on preventative treatment of wooden structures for detailed application rates and methods.)

Efficacy of Treatment: The time required to completely eliminate a beetle infestation with Bora-Care is influenced by several factors. These include the time of year the treatment is performed, beetle species, the degree and age of the infestation, the wood species, moisture content, wood thickness and application technique. Bora-Care is toxic to beetle eggs and young larvae; however, older larvae of species such as old house borers are more resistant and must ingest a larger quantity of the treated wood in order to be controlled. Because some of these older larvae can take several years to mature and eat very little wood, they may be able to pupate and emerge several months after treatment. This normally occurs only in logs or large beams. Any beetles that do emerge will not re-infest treated wood and their life cycle is broken at that point. Should isolated beetle activity continue after treatment, individual larvae may be located and eliminated using localized injection techniques.

The season when treatment is performed may also influence the time required for proper control. Applications during late fall and winter, when the beetles are dormant, will have limited

immediate effect on mortality. When the larvae become active again in the spring, they will ingest the treated wood, causing death. Complete elimination of adult large beetles such as old house borers may require several months to a year; however, the large majority of active beetle larvae and eggs will be killed more quickly.

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