



Learn More About New Wood Protection Treatments

Have you heard about this great new wood treatment? It is completely non-toxic, non-corrosive, inexpensive, looks great, and protects wood forever in any application!

If this sounds too good to be true, it probably is. The quest to protect wood from biodegradation—damage from fungi, insects, marine borers, and bacteria—has taken many approaches over the past two centuries, including natural extractive products, barrier treatments, wood preservatives, wood modifiers, and heat treatments. Some of these approaches were somewhat effective but others failed to provide protection and some even promoted decay. A few wood preservatives have proven to be highly effective and have been used to provide long-term protection for commodities ranging from utility poles to backyard decks.

Recent years have brought increasing pressure to develop wood treatments that have very low toxicity to non-target organisms. This has led to the marketing of alternative treatment products that claim to be safe and non-toxic. Unfortunately, not all of these alternative products have been adequately tested for long-term wood protection.

Wood treatment products have a tough job—they must provide long-term protection from a wide range of wood-attacking organisms. In a rapidly changing market, not all manufacturers will want to wait for time-consuming wood treatment evaluation tests.

How is a Treatment Evaluated?

Many tests are useful for evaluating wood protection treatments (including wood preservatives). Some of the most important tests are described here; however, those listed should be considered only a minimum.

- The **laboratory leaching** test evaluates how rapidly the treatment is depleted by exposure to water. Good leach resistance is needed for long-term protection. In this test, small cubes of wood are immersed in water for 2 weeks.
- The **laboratory decay** test challenges the treated wood with certain fungal isolates that are known to aggressively attack wood. This test should be conducted with specimens that have been through the laboratory

leaching test. The decay test helps determine the treatment level needed to prevent decay.

- The **field stake evaluation** test is the most important test because it challenges the treated wood with a wide range of natural organisms under severe conditions. Treated wood stakes are placed into the soil for at least 3 years in areas with a warm, wet climate (usually the Southeast or Hawaii). At least two different sites are used to account for differences in soil properties and types of organisms present.
- The **aboveground field exposure** test is for treatments that will be used to protect wood aboveground. It is not as severe as the field stake test, but does provide useful data on aboveground durability. Treated specimens are exposed to the weather for at least 2 years in an area with a warm, wet climate (usually the Southeast or Hawaii). The wood specimens are designed to trap moisture and create ideal conditions for aboveground decay.
- The **corrosion** test is used to determine the compatibility of the wood treatment with metal fasteners.
- The **treatability** test evaluates the penetration of a treatment into the wood. Surface treatments rarely provide long-term protection because degradation organisms can still attack the interior of the wood.
- The **strength** test compares mechanical properties of the treated wood with those of matched, untreated specimens. Treatment chemicals or processes have the potential to damage the wood, making it weak or brittle.



Field stake testing is extremely important when evaluating new wood treatments.

How Do I Know if a New Treatment Will Work?

It can be difficult to determine if a new type of wood treatment has been thoroughly tested. Experience is required to determine if appropriate tests have been conducted and to interpret test results.

For wood preservatives, this problem is addressed by standard-setting bodies such as the American Society for Testing and Materials (ASTM) and the American Wood Preservers' Association (AWPA). The purpose of the standards is to ensure that preservative-treated wood performs as expected. Standards benefit consumers of treated wood by ensuring a reliable product. The AWPA is the primary standard-setting body for wood preservatives and treated wood in the United States. Before it can be standardized by AWPA, a new preservative must have a data packet that includes results of all the tests described previously, as well as other tests. This data packet is reviewed by AWPA members—including representatives of government agencies, universities, and treated-wood users and producers—who are familiar with the tests. The AWPA standards also detail how much preservative is needed and how deeply it should penetrate the wood to be effective.

For non-preservative treatments, or for preservatives not listed by a standard-setting body such as AWPA, the consumer must be careful to review the performance data generated for the treated wood and ensure that proper tests have been conducted. Warranties offered for treated wood typically cover only the replacement cost of the wood, not the labor involved in replacing a defective member, which is often more costly than the treated wood. Even poorly protected wood can last for several years, so processing a warranty claim may be difficult.

Do All Treatments Work in Every Location?

Even standardized treatments may not provide long-term protection in every type of application. An evaluation and standardization process is used to determine the effectiveness of a specific treatment in each of the five primary exposure types:

1. Indoors and mostly dry
2. Partially protected outdoors
3. Aboveground but fully exposed to the weather
4. Direct contact with soil or fresh water
5. Contact with seawater

In general, the least protection is needed for wood used indoors and the most protection is needed for wood used in contact with soil or seawater. Pressure-treatment preservatives are most commonly used to protect wood that is used outdoors and fully exposed to the weather.

The amount of protection conveyed by a treatment can also vary by wood species and wood product. Again, a thorough testing process is needed to determine the appropriate use for a new treatment.

Is Treatment Application Critical?

Even the most effective treatment may not perform as expected if improperly applied. Standards should specify minimum treatment concentration (retention) and minimum treatment penetration into the product.

With changes rapidly taking place regarding the types of wood treatments, it is more important than ever to ensure that wood is being treated to standard specifications.

For wood pressure treated with preservatives, the U.S. Department of Commerce American Lumber Standard Committee (ALSC) accredits third-party inspection agencies. Updated lists of accredited agencies can be found on the ALSC website (www.alsc.org). The easiest way to be sure that wood has been treated to standard specifications is to look for a quality mark or symbol of an ALSC-accredited agency on the front or back of the end tag.

Additional information about the currently standardized preservative treatments or the standardization process can be found on AWPA's website (www.AWPA.com). Additional information about specific types of wood treatments and their appropriate uses can be found on the USDA Forest Products Laboratory website (www.fpl.fed.us).

References

Wood Handbook, Chapter 14, Wood Preservation
www.fpl.fs.fed.us/documnts/fplgtr/fplgtr113/ch14.pdf

What's in That Pressure-Treated Wood?
www.fpl.fs.fed.us/documnts/techline/whats-in-that-pressure-treated-wood.pdf

Changes in Pressure-Treated Wood for Residential Construction
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