

The Science Behind Wood Preservation

Wood preservation has been around for centuries. Coal-tar creosote was patented as a preservative treatment in 1836. Dr. Karl Wolman, a pioneer in wood preservation, first patented a fluoride-based preservative in 1907.

Water in Wood – The Diffusion Process

Wood is hygroscopic, meaning that it can attract and hold water molecules from the surrounding environment. The mechanism by which all non-pressure wood undergoes preservation is through water vapor Diffusion – Replacing the water in wood cells with the preservative chemical. We don't have to replace *all* the water in wood. Preservation is primarily concerned with sapwood – the outer layer directly beneath the bark. This is the physiologically active part of the wood and most susceptible to decay.

Within the wood cells are two types of water: *bound water* is held within the cell wall by absorption forces, *free water* exists as either condensed water or water vapor within the cell cavity. The point at which all free water is removed from the cell cavity is known as the Fiber Saturation Point.

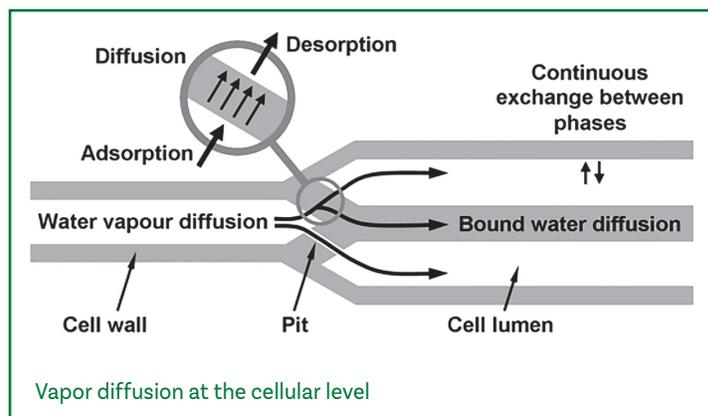
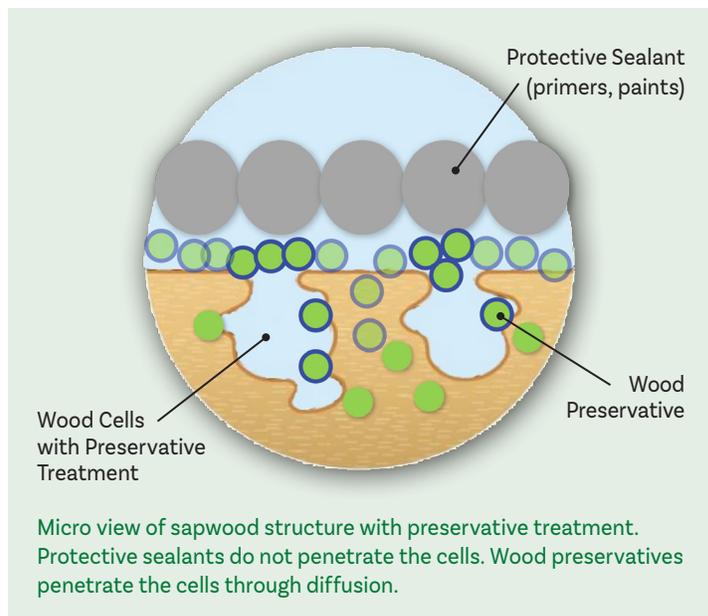
Diffusion forces determine the movement of free water in wood and thus the movement of a preservative into the cell cavities.

To ensure that this action can take place and the sapwood accepts a water-based preservative such as Wolman AG, wood should be at or below 20% moisture content.

Concerns about the health and environmental impacts of metallic wood preservatives have created a market interest in non-metallic wood preservatives such as Propiconazole-Tebuconazole-Imidacloprid better known as PTI.

Preservatives improve performance

PTI wood products are very well adapted for paint and stain applications with no bleed-through. PTI treated wood products are no more corrosive than untreated wood and are approved for all types of metal contact, including aluminum. Wolman® AG (PTI) preservative, is a carbon-based treatment listed with the EPA. This product has earned a listing in the GreenSpec® directory of environmentally preferable products.



It is also qualified under the Window and Door Manufacturing Association's Water-Repellent Preservative Treatment Certification Program. PTI treated wood may be used in the following Use Categories:

- UC1 – Interior Dry
- UC2 – Interior Damp
- UC3A – Exterior Above Ground, Coated with Rapid Water Runoff
- UC3B – Exterior Above Ground, Uncoated or Poor Water Runoff

ABOUT BELCO FOREST PRODUCTS – In business since 1978, the company operates three manufacturing plants on 16 acres in Shelton, Washington. Belco produces a variety of exterior wood products including the best-selling XT brand, a line of premium treated trim for residential and commercial applications. All Belco products are available through leading distributors nationwide.