How to Apply Borate Treatments

Ever since Perma-Chink Systems introduced borate treatments to the log home industry over 30 years ago they have been the preferred method of protecting log homes from wood destroying insects and decay fungi. We are still the world's largest supplier of borate containing preservatives for log homes and although there are other borate-based products now available, most are based on technology developed by Perma-Chink Systems back in the late 1980s.

Perma-Chink Systems Borate-Based Preservatives/Pesticides

PenaShield® –
A borate/glycol formulation that requires no mixing and can be used directly out of the container. PenaShield® is a water-soluble treatment containing proprietary penetrants that all it to diffuse quickly and thoroughly into wood. A Lifeline™ finish may be applied after the treatment has dried which usually takes between 1-3 days.

Bora-Care® –
A thick, viscous liquid borate/glycol that must be mixed with water for use. It requires a minimum of 48-72 hours of dry time and must be washed down with Log Wash solution (2 cups per gallon of water) before applying the first coat of Lifeline™ finish.

Tim-Bor® –
A water-soluble borate powder that acts as a wood preservative, fungicide, and insecticide. It can also be dusted into termite galleries to kill termites in as little as 7 days. Since it contains no glycol, it does stay near the surface of treated materials. If the finish system is physically or chemically removed, we recommend re-applying.

Cobra® Rods –
Fused borate rods that are inserted into the wood providing localized protection to high-risk zones like log ends and the base of posts. In addition to the borate, Cobra® Rods contain a small amount of copper oxide to increase their efficacy against some species of decay fungi.

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PenaShield®, Bora-Care® and Tim-Bor® Application Information

Applications of PenaShield®, diluted Bora-Care®, and solutions of Tim-Bor® must be to bare wood. If the surface of the wood has any type of coating, finish or water-repellent on it, or if a mill glaze is present on the surface, the active borate ingredient will not penetrate the wood, and the wood will remain unprotected.

Borate solutions must be applied to bare wood.

Application Equipment

Any type of pump-up, compressed air sprayer is suitable for applying PenaShield®, diluted Bora-Care®, or solutions of Tim-Bor®. Either a cone or fan spray tip will work. Do not attempt to use an airless sprayer. Airless sprayers put out a fine liquid mist that can be carried away with even a slight breeze. In addition, the high surface area of the small droplets allows the water contained in the solution to rapidly evaporate leaving behind a high concentration of borate and in the case of PenaShield® and Bora-Care®, mixed glycols form a sticky film on the surface of the wood rather than penetrating the wood.

For treating small areas, you can use a brush or hand sprayer to apply borate solutions.

Product Preparation

PenaShield® – No preparation is required. PenaShield® is used “as is” right out of the container. Any unused solution may be poured back into the original container.

Bora-Care® – Pour Bora-Care® concentrate into a pail. Do not attempt to mix the concentration in a sprayer, you run the risk of the heavy concentrate blocking hoses and spray tips. Add an equal volume of warm water. Physically stir the mixture until the mixed solution is uniform and there is no thick concentration remaining at the bottom of the pail. Using a paint mixer in an electric drill will speed the mixing process. Once the diluted Bora-Care® is completely mixed and uniform pour the solution into the spray tank. Use 1:1, 2:1, and 3:1 Bora-Care® solutions within 24 hours after mixing; 5:1 solution will remain stable for up to 30 days. Do not leave diluted Bora-Care® in the sprayer overnight, it will block up the spray tip. Clean and/or flush equipment and lines with water after use.

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Tim-Bor® – If preparing a 10% Tim-Bor® solution, add approximately 80% of the required volume of water to the mixing vessel. While stirring, gradually add one pound of Tim-Bor® powder per gallon of water. If preparing a 15% Tim-Bor® solution, you would gradually add 1.5 pounds of Tim-Bor® powder per gallon of water. Keep agitating until there are no visible lumps and the solution has dissolved. Do not leave any unused solution in your sprayer overnight. The borate will drop out of solution and block up the sprayer.

Borate Solution Applications

Step 1: Be sure the surface of the wood is clean and dry before starting. Never wet the wood right before applying a borate treatment. If you do, the wood cells will be saturated with water preventing the borate solution from absorbing into the wood.


Spray Tip Pattern

Step 2: If you have an adjustable spray tip, set it to either a fan or cone relatively coarse spray. If set to a fine spray it will be more susceptible to wind drift and it will take longer to complete the job.

Step 3: Start spraying the solution at the bottom of the wall and work your way up. If the solution begins to run down the wall you are applying too much. You only need to wet the surface, not saturate it. However, on exposed log ends keep applying the borate solution until it no longer absorbs into the wood. Log ends are typically the most decay-prone areas of a log home and need the greatest protection. Be sure to get some borate into all upward-facing checks and fissures. It is not necessary to back-brush the borate solution. If you miss a small spot (less than an inch in diameter) here and there, do not worry. The solution will spread out in the top layer of wood.

Step 4: (PenaShield® and Tim-Bor®): In the case of treatment with PenaShield® or Tim-Bor® the surface will be ready for the first coat of finish within two to three days. If for some reason there is a delay in applying the finish, the borate treatment will typically not have to be reapplied unless there is a torrential downpour within three days after the application. However, do not purposely wash the surface for at least a week after treatment. You run the risk of removing some of the active ingredients.

Step 4: (Bora-Care®): After a treatment with diluted Bora-Care® you must wait at least two weeks for the active ingredient to make its way into the wood and for the glycol constituents to dry before applying any sealants or a finish. Even then, there may still be enough glycols remaining on the surface to interfere with the adhesion of the finish. We recommend washing any walls treated with diluted Bora-Care® with two cups per gallon Log Wash™ solution one or two days before the application of the first coat of Lifeline™ finish but no sooner than two weeks after the initial Bora-Care® application.

Step 5: Wash hands, clothing and equipment with soap and water.

Step 6: For long term protection exterior wood surfaces that have been treated with a borate solution should be coated with a Lifeline™ exterior finish. If the exterior surfaces are to remain bare a re-application should be made every six years regardless of which product is used. Interior borate treated surfaces do not require a water repellent coating.

Maintenance

PenaShield® and Bora-Care® treatments are permanent and should never need to be re-applied. In the case of a borate treatment using Tim-Bor®, if the home is subsequently stripped or media blasted, an additional treatment is recommended once the wood is bare.

Cobra™ Rods Installation Information

Cobra™ Rods may be used to help eliminate an existing localized decay problem or to prevent decay from talking hold in a high-risk area like the bottom of a support post. They may be installed into wood that is bare or have already been finished. Cobra™ Rods are two inches long and although are labeled as being 1/2” in diameter they are 7/16" so they easily fit into a 1/2” diameter hole. A black plastic plug is supplied with each Cobra™ Rod.

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Equipment

- Electric drill with a 1/2” diameter bit Screwdriver
- Trowel
- Energy Seal™ or Woodsman™ sealant
- Small amount of stain and topcoat (optional)

Installation

Step 1: Drill a 1/2” diameter hole in the wood to a depth of at least 3” deep. This depth leaves room for the rod and the plug. For large diameter round or rectangular logs, two rods may be inserted into the same hole but drill the hole at least 5” deep.

Step 1

Step 2: Insert the Cobra™ Rod into the hole as far as it will go.

Step 3: Insert the plastic plug and use a screwdriver, twist it clockwise to set the plug into the hole.

Step 4: The plastic plug may be hidden from view by placing a layer of appropriately colored Energy Seal™ over the end. The Energy Seal™ may then be stained to match the surrounding wood.

Step 2

Step 5: Wash hands with soap and water.

Step 3

Step 4a

Step 4b