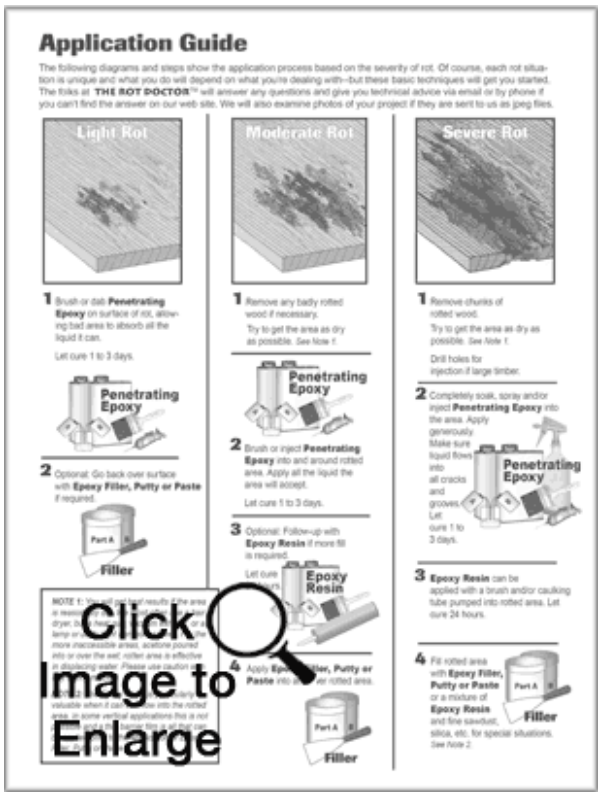
Wood Treatment and Preservation Products

We know wood rot and how to repair it!

We are available 7 Days a week
By Phone 206-364-2155
and Email drrot@rotdoctor.com

CPES™ Clear Penetrating Epoxy Sealer

An Overview



CPES™ is the leading product for treating rotted wood. Here's why: The fungus that causes dry rot retains a lot of moisture and resists the penetration of sealers and other rot treatments that cannot displace water. Also, the relatively high viscosity of most epoxy dry rot treatments prevents penetrating deep into the affected wood. In addition to alcohol, CPES™ contains other precisely measured organic solvents which act as "carriers" and take the epoxy deep into the wood and then evaporate out over a period of time. The resin is carried through the soft or bad wood and into the top layers of the solid wood to seal and form a bonding surface no other product on the market can achieve. The resins used in CPES™ are derived mostly from wood and when cured have a toughness and flexibility similar to the wood itself. To see test results of CPES™ and other epoxies marketed for wood restoration, go to our product test section.

CPES™ is also an excellent primer. All wood contains moisture, as well as varying amounts of "sap". Different woods have different amounts of these which are chemically attached to the cellulose wood fibers. To obtain a good bond between the wood and a surface coating, the fibers on the surface of the wood must be strongly bonded to the coating. If not, the wood surface soaks up the liquid part of the coating and leaves the solids on top where deterioration is relatively rapid. CPES™ contains a high percentage of special solvents to displace and dissolve both the wood moisture and the sap and oils to form an enduring bond with the wood fibers.

Are there alternative ways you can treat bad wood using cheaper epoxy resins? The answer is no,

not if you want to do it right. All standard epoxy resins (including WEST) are petroleum based. They cure hard and brittle. WEST and others suggest that you can thin their resins using such things as acetone, MEK, toluene, or alcohol for greater penetration. This is true, but are you a chemist to mix the right thinners in the right proportions to carry resin through bad wood and into good wood? And when whatever you put in there evaporates, you're still left with a hard resin. It's like putting rocks in your wood. Why bother? We've done it all for you with a tested, tough, flexible wood derived resin product. You mix it 1:1, stir vigorously, and apply. It's that simple.

Minwax makes a wood hardener which is acrylic-based. This is not epoxy, is not nearly as strong, its long-term endurance is questionable, and in our experience its penetration is spotty. The solvents tend to leave the acrylic hardener behind, and it doesn't penetrate as well as CPES™. We do not recommend it.

What if you have resin on hand that you want to use? Will it bond with the CPES™? The answer is yes. Any epoxy or urethane resin/paint/coating will make a tight molecular bond with the CPES™. If you have resin on hand that you want to use, it'll work. It is also been suggested that you can heat a standard resin and possibly even the wood itself for greater penetration. We believe that heating polymer resins and wood is not a good idea — for obvious reasons. It can be dangerous, the penetration will be much less than CPES™, and it will dry hard and brittle. Rocks in your wood again.

Packaging

CPES™ is available in 2 Pints, 2 Quarts and 2 Gallon units.

This stuff is *very* easy to use ...

CPES™ is a two-component product with the consistency of diesel fuel, mixed 1:1, part A and part B. Apply by brush, solvent-resistant roller, sprayer, or inject by syringe until wood is completely saturated and will accept no more epoxy. Allow approximately 1–3 days for solvents to evaporate before applying paints, urethanes, varnishes, Fill-It™ Epoxy Filler or regular epoxy resin (see cure time chart below). Unmixed CPES™, kept in closed cans and at above freezing temperatures, has a shelf life of over 5 years.

NOTE: Use disposable natural-bristle brushes (Foam brushes melt). For an excellent syringe, order Dr. Rot's **Penetrating Injection Kit** which also includes everything you'll need for the injection method. A **spray bottle with funnel** is also available.

CLEAR PENETRATING EPOXY SEALER™ • CURE TIME CHART

	Warm Weather Formula	Cold Weather Formula
Pot Life At Temperature		
86°F/30°C	4 hours	NR
68°F/20°C	8 hours	2 hours
50°F/10°C	16 hours	4 hours
32°F/0°C	NR	8 hours
Full Cure Time Required		
86°F/30°C	2 days	NR
68°F/20°C	4 days	2 days
50°F/10°C	8 days	2 days
32°F/0°C	NR	4 days

NR = Not Recommended

The different temperature formulations are only applicable during application and for a few days while it is curing.

WARNING: This product is inherently unsafe. It cannot be made safe. That's why

it works so well. We recommend the use of a respirator capable of filtering organic solvent fumes and vinyl gloves during application.

Product Coverage and Shelf Life

Unmixed CPES™, kept in closed cans and at above freezing temperatures, has a shelf life of over 5 years. If you mix it, though, you must use it.

The coverage of CPES™ will depend entirely on the surface to which it is being applied. On rotted logs in log homes it can take a gallon every three to four feet to soak bad wood, yet for surface application on clean, sanded hardwood it can go about 300 sq. feet per gallon (7 sq. meters/liter). In any application of CPES™ the key is to allow the wood to absorb all that it can. It is especially important that CPES™ be applied generously to edges and end-grain areas because this is where the rot likes to get started.

To determine how much CPES™ you might need, use your best judgment based on the type, finish and condition of the wood. On new wood you can plan between 200 and 300 sq ft per gallon (5 to 7 sq meters/liter), although on rough, porous woods such as Cedar the coverage can go down to 100 sq ft per gallon (2.5 sq meters/liter). If the wood is rotted or deteriorated, or if there are large areas of end-grain, then it's pretty much a guess. Just look at the area that is going to be treated, imagine how much water it would absorb if generously applied, and that's going to be close to the amount of CPES™ you will require.

And remember — the drier the wood the better the absorption. If you press the wood and water emerges then it's too wet for CPES™ treatment. If it's slightly damp application is okay, but you should always try to apply CPES™ to wood which is in the normal range, 12% to 20% moisture in average humidity conditions.

CPES™ USES & TECHNIQUES

For restoring rotted wood:

If the bad wood is accessible, we recommend tearing out all of the rot that can be reached. While you should remove all you can, there is no need to be obsessive about it. Large timbers may require drilled holes about ¼", sloping downward, for the injection of the CPES™. If there is a substantial amount of moisture present, the wood should be allowed to air dry, or, a technique we have used successfully on many occasions when time was important, use a hair dryer full blast to remove the moisture from the wood. We often simply prop the dryer into position and go about other tasks until the wood is moisture-free. Please be careful of nearby combustible materials. We have also used an air compressor blowing into drilled holes for the same effect. For large areas we've used the commercial kerosene heater/blowers rented by rent-all stores. The wood will get the dry, cracked, brittle surface appearance that bad wood has when the moisture has been removed.

Next, apply CPES™ by brush and/or syringe *generously* until the wood will accept no more and it pools or dribbles out of the rotted area. Allow the epoxy to fully cure (see time chart above). Next, depending on the situation, we do one of two things:

1. If the rotted area is on a horizontal surface so that the epoxy flows into it by gravity or you're saturating through drilled holes, we follow the cured CPES™ with our thicker Layup and Laminating™ Epoxy Resin. This is flowed into the area until it too begins to leak or flow out of the wood. After this has cured, we follow up with Fill-It™ Epoxy Filler. After curing, the filler/resins can be painted over as desired.
2. If the rotted area is on a vertical surface with no pockets for gravity flow, we simply follow up the CPES™ with a generously brushed coating of the Layup and Laminating™ Epoxy Resin and then the Fill-It™ Epoxy Filler. Fill-It™ filler applied directly over the CPES™ will work well, too. In either case, the wood fibers saturated with the CPES™ will form a bond with the resin or filler that cannot be achieved with either alone.

Sometimes the deteriorated wood is in such a location that tearing away at the wood is not practical. In this case, we use a long-shank ¼" bit to drill downward sloping holes and determine the extent, type and degree of rot present. If the whole piece of wood is gone, then there's nothing to do but replace it. CPES™ is good but it won't work miracles. More often than not, there is still good wood around and the rot is reasonably dry. A compressor with air hoses can be used to blow dry air through the wood if necessary. We then inject the CPES™ until it flows out the holes or runs out of the wood somewhere else. After curing, we follow this up with Layup and Laminating™ Epoxy Resin until the wood will accept no more. This sometimes must be done in multiple sequences until the void is effectively filled with cured resin. Occasionally there are pockets of "black mush", wood so far gone and wet that there is nothing to do but chisel through and scoop it all out. Dry with a hair dryer or blower and the follow the epoxy sequence outlined above.

The Use of Borates:

It is our opinion that anywhere that you are applying CPES™, you don't really need to apply borates. However, if you wish to do so, some borate products can be used as a pre-treatment of deteriorated wood prior to the application of CPES — as long as the borate is the ***pure disodium octaborate tetrahydrate powder***. This powder is sold under several trade names. It is dissolved in water, applied to the wood, and then allowed to dry. After the wood is dry the CPES™ can be applied. **NOTE: DO NOT USE the disodium octaborate tetrahydrate in an ethylene glycol base. The glycols inhibit the ability of the CPES™ to penetrate. For more information on this, click here**

As a primer on wood:

No matter what you plan as your finish coat on wood, CPES™ is a superior base. It not only dissolves any moisture and sap present, but penetrates the surface fibers like no other product on the market for a secure bond which will last for years. Paint (including Latex), varnish and one or 2-part polyurethane finishes will adhere better and last longer.

One generous coating of CPES™ is usually sufficient, although in areas that require additional protection multiple coats can be applied. CPES™ can be used over wood stains once they are completely dry. The CPES™ will not redistribute the stain in any way. *CPES™ is a light amber color and it's effect on the color of wood is about the same as normal varnish — it will darken it.*

When applied as a paint/varnish primer outdoors, apply early enough in the day to prevent evening dew/condensation from contaminating a wet CPES™ application.

CPES™ Application:

Choose warm or cold weather formula according to ***the temperature at the time and place of application/cure. After curing the temperature variations do not matter.***

- Warm Weather Formula: 50°F (10°C) and higher
- Cold Weather Formula: 28°F (-2°C) to 70°F (21°C)

Mixing Containers: CPES™ can be mixed in polyethylene and polypropylene containers (plastic paint buckets, margarine tubs, cottage cheese tubs, etc.), and metal containers. Do **NOT** use paper containers (cardboard paint buckets), polystyrene (foam) containers, or any disposable drink containers.

Brushing: Use only natural bristle brushes, such as the disposable brushes sold by the home stores. Do not use foam brushes!

Rolling: CPES can be easily rolled on any flat surface. Use a solvent-resistant roller with a medium nap.

Spraying: Use high quality insecticide spray bottles/equipment or the spray bottle we sell, which has been tested for handling strong carrier solvents. When spraying the nozzle should be set to coarse spray, and a cartridge respirator should be worn to protect against inhaling the solvent fumes.

Injecting: Use our special nylon-bushing syringe, or a high quality medical or solvent syringe.

Cleaning: All brushes/equipment can be cleaned with our Epoxy Clean-up Solvent or lacquer thinner.

Pouring CPES™: The initial pouring of CPES™ from gallon cans can be difficult unless it is done correctly. We supply free pour spouts with all our gallon units. If you have a pour spout, do this: tilt can on broad side bottom wide edge with the opening at the top. Tip carefully with the container lip under the edge of the can opening/pour spout. CPES™ will pour freely without gurgling or splashing.

As a general purpose sealant and preservative:

We apply CPES™ generously to any exposed wood that is in an area that is subject to heat and moisture. We inject it into nooks, cracks and crannies that are exposed when prepping for painting. We apply it to the end grain of all wood, especially in corner locations. Such as into cracks between the rub rail and the hull. We use it for any nailed or screwed wood interfacings, such as decking planks to joists. We inject it into fastening holes when hardware is removed or replaced. If there is bare wood around, it gets soaked in CPES™.

ALWAYS MIX THOROUGHLY!
Improper mixing is the greatest cause of epoxy systems failure.

CPES™ is a hazardous product. Check the shipping options page for details on shipping hazardous items. For additional information refer to the CPES Safety Data Sheet.

Have fun! This stuff is true magic!

The Rot Doctor, Inc.
P.O. Box 30612
Seattle, WA 98113
Voice: 206.364.2155
Fax: 206.364.4744
E-mail: drrot@rotdoctor.com

Order by phone, fax, mail, or e-mail.

All products ship within 2 business days from both coasts!
Our business hours are 6:30 AM to 5:30 PM Pacific Time, Monday–Friday.
Tech support is available over weekends and holidays.
