

**Sanding:** Allow the unassembled wood parts to cure for several days before sanding. Wipe each piece with a damp sponge prior to sanding. Begin sanding with 80 or 100 grit paper. Finish with 150 or 220 paper. Wet sanding on thoroughly coated pieces is acceptable as the wood is now waterproof.

**Assembly:** After sanding, put the parts together once more without glue to make sure that the joints still fit. Sand to a fit if necessary. Use System Three T-88® structural epoxy adhesive to glue the parts. It is waterproof and will not shrink on curing. Apply mixed adhesive to both bonding surfaces, with an excess on the concave or female surface. Press the pieces together and wipe up any excess glue. Keep glued parts in place during cure. Avoid excess clamping pressure. Any device that holds the parts together while the glue cures is acceptable. Allow twenty-four to thirty-six hours before unclamping and at least a week of curing before heavy stress.

**Apply topcoat:** Sand the assembled project with 150 or 220-grit sandpaper to remove any glue drips or runs. Then apply your choice of System Three clear finishes. Spar Urethane Varnish will be easier to apply than WR-LPU, but is not quite as durable and will need to be reapplied sooner.

**Spar Urethane Varnish.** Apply the finish directly from the container; no thinning is necessary. Use a natural bristle or foam brush. Allow to dry between coats. Spar Varnish cleans up with mineral spirits. See the Product Data Sheet for complete application instructions.

**WR-LPU.**

Add crosslinker to WR-LPU base according to the instructions on the label. For brush or roller application, product can be used directly from the can or thinned up to 20% with water. For spray application, thin WR-LPU 20-30% with water. Let dry a minimum of two hours and

apply a second coat. See Product Application Guide for complete instructions.

The epoxy coating is as thick as ten coats of dry varnish or polyurethane, so only two or three coats of clear varnish or LPU will usually be required to build a deep, rich finish.

**Maintenance:** If the finish becomes dull or begins to flake after several years of exposure it can easily be sanded to remove any loose or chalky material, and recoated. Reapplying varnish or LPU before it weathers off will allow you to avoid reapplying the epoxy coating.

With the System Three resin and varnish combination protecting your clear-finished project from the elements, it will remain bright and beautiful for years to come.



## SYSTEMTHREE®

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# SYSTEMTHREE®

## PREMIUM ADHESIVES & COATINGS

# CLEAR FINISHING OF OUTDOOR WOOD

SYSTEMTHREE®  
CLEAR COAT  
EPOXY Part A

SYSTEMTHREE®  
CLEAR COAT  
PRIMER

SYSTEMTHREE®  
MARINE COATINGS  
WR-LPU  
TWO-PART POLYURETHANE TOPCOAT  
Gloss White

SYSTEMTHREE®  
MARINE COATINGS  
WR-LPU  
TWO-PART POLYURETHANE TOPCOAT  
Gloss White

SYSTEMTHREE®  
MARINE COATINGS  
SPAR URETHANE GLOSS

## MAINTAINING THE BEAUTY OF CLEAR WOOD OUTDOORS

For many years builders of wooden boats have used a combination of two-part epoxy resins and marine spar varnishes to make "furniture quality" clear-finished watercraft. That these boats look good after several years of outdoor exposure is testament to the synergistic effect of using these products together. The same techniques can be used to protect many wood projects, allowing them to be left outdoors uncovered for months at a time without fear of the finish failing, the wood warping, splitting, or discoloring, and joints coming apart.

Common clear wood finishes are usually separated into two types: film-forming and penetrating. They protect and bring out the beauty of fine woods. Film-forming finishes seal the wood to protect it. Penetrating finishes, usually in the form of stains or water-repellants, allow moisture to move in and out of wood with minimal effect. Outdoor versions of these finishes contain ultraviolet (UV) light inhibitors which enable them to stand up well to the rigors of sunshine. Unfortunately, these finishes are generally poor at excluding both liquid and vapor moisture from cycling in and out of the wood. It is this cycling, combined with degradation from sunlight, that usually causes these finishes to fail. The finish will flake, crack, peel, or simply weather away, and the wood will begin to discolor and split.



**System Three Clear Coat™** resin is an excellent barrier to both liquid and vapor moisture. It is easy to apply with a brush or a roller and contains no hazardous solvents. It will cure to a tough, clear, high-gloss film which will waterproof the wood. But the epoxy film, because it is clear, does not protect the wood from sunlight. In addition, exposure to the sun will dull, darken, and eventually degrade an epoxy coating. To avoid ultraviolet light

damage, and offer complete protection to the wood, overcoat the epoxy with either one of System Three's clear finishes.

**System Three Spar Urethane Varnish™**, a high gloss, high-solids, "oil-base" finish, is designed for marine and exterior wood surfaces. Our Spar Urethane Varnish contains ultraviolet light absorbers, which will keep wood looking beautiful even with constant exposure to sunlight. It was formulated specifically to cure properly over System Three epoxy resin products.

**System Three WR-LPU™ Marine Topcoat**, a two-part, waterborne, polyurethane enamel, will provide appearance and performance equal to its solvent-borne counterparts. Like Spar Urethane Varnish, it contains UV-absorbers. WR-LPU topcoat comes in clear gloss and satin, is extremely weatherable and abrasion-resistant, and will retain its properties for long periods in a variety of environments.

Clear Coat resin, combined with either Spar Urethane or WR-LPU are the perfect finish system for retaining the natural look and beauty of wood outdoors. The epoxy resin sealer will offer protection from everything but sunlight, and it will bring out the natural beauty of the wood. The spar varnish or polyurethane topcoats will block the sun's rays and provide scratch and abrasion resistance. Together, these products will give your outdoor wood projects the ability to withstand the elements and retain their "like new" appearance.



## PROCEDURE

Before beginning your outdoor wood finishing project, please read the following procedure to give you an idea of what's involved that's different from typical wood finishing. For instance, several wooden boatbuilding methods are employed, which might take more time and patience, but will pay off in the end:

### Sealing the wood:

Every piece of wood used must be fully encapsulated with at least two coats of liquid epoxy to waterproof it. Coating only one side of the wood can result in warping or cupping, and moisture can still get in and out. Saturating the end grain is especially important.

Wood must be coated with epoxy resin and sanded before it is assembled, to ensure no moisture is able to get to the bare wood.

All glue joints must be made with epoxy resin, which is waterproof, and does not shrink on curing.

Use disposable tools whenever possible, as cured epoxy resin is almost impossible to remove or rinse out with solvents.

### Dry fitting the wood:

- Cut and fit all the pieces of your project together. Do all milling, routing, and other woodworking before epoxy sealing and assembly. Round all corners and edges.
- Make joints a little sloppy because epoxy adhesives work best when filling small gaps.
- Plan for final assembly by seeing how "subassemblies" can be made and then assembled into the finished part.

**Epoxy Coating:** Measure and mix System Three Clear Coat™ epoxy according to the instructions on the container. The epoxy may be applied as mixed with a brush or roller. No thinning is necessary. Spraying is not recommended without proper application and personal protection equipment. Wear gloves and proper clothing to avoid skin contact with the resin. Pouring the mixed Clear Coat into a shallow pan to increase the surface area will increase working time. The end grain will absorb a great deal more epoxy resin, so paint it on every few minutes as long as the piece continues to absorb it. Apply at least two coats. Allow the resin to cure between coats, which will usually take 6-8 hours. The curing time will vary depending on the temperature. It is not necessary to sand between coats if they are applied within about 72 hours of each other. Do not apply Clear Coat™ in direct sunlight or when the temperature is rapidly rising. Expanding air pockets in the wood can cause bubbles in the coating.