EPOXY WORKS®

BUILDING, RESTORATION, & REPAIR WITH EPOXY

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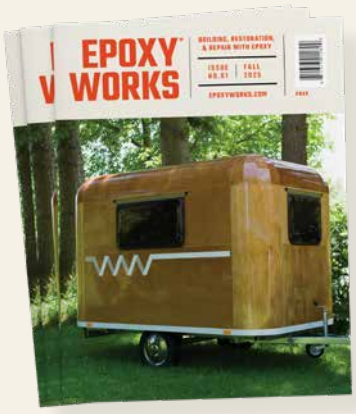
In This Issue



On the cover

Plystream Caravan by Robin Benjamin. P.10

MANAGING EDITOR Jenessa Hilger
DESIGNER Derick Barkley
SUBSCRIPTIONS Mari Verhalen

CONTRIBUTORS
Ray McCarthy, Avery Jorgensen, Brandon Parker, Don Gutzmer, Robin Benjamin, Rachael Geerts, Greg Hatten, Russell Brown, Michael Loebig, and Jenessa Hilger

DID YOU:

- Wrap up an interesting project?
- Discover a useful technique?
- Find a new or unusual use for epoxy?

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Shenanigans Part Deux

GRAVITY VS. SUNFISH SAILBOAT – WEST SYSTEM® TO THE RESCUE

Shenanigans sailing on Great Pond in Eastham on Cape Cod.

Two holes were cut in the deck to bond in a backing plate for the lifting handle.

I love to sail when I can, but my Sunfish spends most of its days suspended from my very busy garage ceiling. Last year, I rebuilt *Shenanigans*, a 1980 Sunfish. Having ricocheted off a few too many rocks in her day, she deserved a better patch job and a new coat of paint. (See "Patching up *Shenanigans*," *Epoxyworks* 58).

So, being a handyman with a stubborn streak, I hoist the boat up and down from the rafters of my garage as the season demands. Things went well with storing the hull there for the winter. Unfortunately, this spring gravity showed its strength as I tried to single-hand the boat back down to its trailer. The ratchets became overwhelmed, the boat twisted on its axis, and the front chrome handle ripped out of the deck. I learned the hard way that this particular boat had no backing plate for the front handle.

Faired and painted, with the handle reinstalled.

Sporting the WEST SYSTEM decal on the hull.

I righted the hull and assessed the damage. My solution was to take a 3" hole saw and cut two holes in the bow. This gave me enough room to thread a 1"x2"x12" piece of mahogany through. Buttered with thickened WEST SYSTEM Epoxy, I attached it under the deck for a backing plate. Once the epoxy had cured, I used more 105 Epoxy Resin®/206 Slow Hardener® to epoxy in the two 3" disks from my hole saw. I applied two layers of 10 oz. fiberglass cloth over the entire zone to tie the area together.

After several rounds of random orbital sanding, the repair area was fair. I prepared the area for primer and sealed it with two coats of Rustoleum® Top Coat white paint.

The handle is now firmly attached with stainless steel screws. My grandson and I have taken it to Great Pond in Eastham on Cape Cod for many great sails.

Lesson Learned: I'm 71, it's time to ask for help when fighting gravity!

SHOP TALK BY AVERY JORGENSEN - GBI COMPOSITE MATERIALS ENGINEER

Small to Big OR Big to Small?

THE AGE-OLD QUESTION OF WHICH GOES FIRST

When performing a repair on a fiber reinforced laminate, which goes down first—The biggest patch or the smallest? Since this article is longer than a couple of sentences, it's safe to assume the answer is a little bit complex. We at West System® tend to recommend doing what we call a marine repair, where the largest of the layers is applied first. We recommend this for two main reasons: adhesion and finishing. However, there are many advantages to each of these methods.

Adhesion

Placing the small patch down first is appealing because it is the method recommended for repairs in the aviation world. When performing a repair on an aircraft, it is extremely important to have a continuous load path running over the exterior of the repair. This requires the longest uninterrupted fibers (the large patch) to be on the exterior of the repair to carry that load. Also, all the fibers must be aligned with those surrounding the repair area, and each layer needs to be trimmed precisely. This kind of effort, while it may be beneficial, is generally unnecessary for marine repairs.

When a repair fails on a boat, the most common reason is that there was insufficient bond strength between the patch and the repair surface. When the largest patch is placed down first, then the most surface area is covered by the same piece of fabric. This creates a uniform bond between the patch and the repair surface. When placing the small patch down first, you are relying on a much smaller area for the adhesive strength of each layer.

Finishing

Placing the largest patch down first can also help improve the aesthetics of the final finish and the integrity. This is extremely important in marine repairs because the quality of a repair is often judged by the final finish. When performing a small patch first repair, the largest patch is the top-most surface to which any finishing is applied. This finishing process commonly includes a lot of sanding. That means you will be sanding into the largest amount of continuous fiberglass. Conversely, as you sand the surface where the largest patch is placed down first, the only area being sanded is the frayed edges of each layer. This allows for flush sanded repairs with the most continuous fiberglass left intact.

Another significant factor is the work that goes into creating a fair surface. When the small patch is applied first, a lip is created where the patch overlaps the original surface. This lip is then translated up through the layers of the patch, creating a humped, uneven surface in your final repair. This means more sanding and fairing. The possible

hump can be eliminated with precise fabric cutting and step scarfing. Step scarfing is the recommended aerospace repair technique that requires hours of precise routing to create steps for each layer of fabric to nest into. This reduces waviness, increases fiber alignment, and makes a flush surface. The problem with going down this route is the time and effort required to achieve results similar to those placing the large patch first.

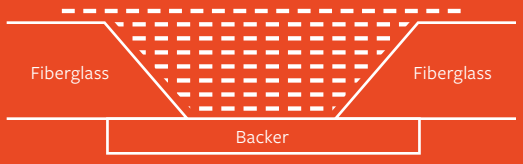
Stiffness vs. Strength

When placing the smallest patch down first, the goal is to align the layers to create one uniform flow of stresses across the repair. Aligning the layers of your repair with the layers in the fiberglass you are repairing will give a more continuous strength profile. This is especially important if you are performing a step scarf. Though this does provide a slightly stronger composite in tensile strength, the increase is only slight.

For marine applications, the most important thing to remember is that most production boats are generally designed for stiffness. If they are stiff enough, they are usually strong enough. Being stiff prevents fatigue failures from repeated impacts, such as the waves on the hull of a boat. For repairs, we recommend using the same thickness of laminate and material as was removed to ensure enough stiffness. Most marine structures are made with fiberglass, but we recommend repairing fiberglass with fiberglass and carbon fiber with carbon fiber. Having the same thickness of laminate and laminate material (the repair and the surrounding area) will prevent sudden changes in flexibility. This prevents stress concentration points. Soft or hard spots are a major concern because they will ultimately cause failure.

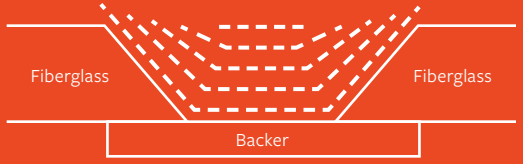
Fiber orientation will also be a factor in the strength and stiffness of the repair, but most often, adhesion will be the limiting factor on a boat.

The age-old question of which patch goes down first, the big one or the small one, has many possible answers. If you are looking for the easiest application method, with the least likely chance to pop off, I recommend placing the largest patch first. This allows you to achieve consistent adhesion across the entire repair surface. If you are looking for a slightly stronger repair that may be more difficult, the smallest first is the choice for you.



SMALL PATCH FIRST ADVANTAGES

Continuous Load Path
Recommended for Aerospace
Large Patch Over Top for 100% Coverage
Precise Trimming of Fibers is Recommended



LARGE PATCH FIRST ADVANTAGES

Fewer Failures Related to Adhesion
Easy to Match the Thickness
Only Frayed Edges are Removed if Patch is too Thick
Tolerant of Fiber Orientation and Fabric Trimming

From Wrecked to Watertight:

PROFESSIONAL HULL REPAIR WITH WEST SYSTEM® EPOXY

The Story Behind the Damage

During a severe storm, a moored sailboat broke free from its anchor and collided with a luxury motor yacht docked at a marina in Charleston, SC. The result was extensive fiberglass and gelcoat damage to the yacht's hull.

The yacht's owner was promptly notified and contacted his insurance company. As part of the claims process, the owner sought repair estimates. After seeking word-of-mouth referrals and a thorough online search for reputable fiberglass boat repair in Charleston, all signs pointed to Total Boat Repair.

The next day, we assessed the damage dockside. It became clear that this was a serious structural impact—far more than cosmetic damage. The collision not only cracked the exterior hull, but it also delaminated the interior fiberglass inside nearby compartments.

Many yacht hulls aren't constructed of solid fiberglass. They're made using a core sandwich structure—an inner and outer fiberglass laminate bonded to a core material. The core is often foam, honeycomb, or wood. In this case, it was made of balsa core blocks, similar in appearance to Jenga pieces. The impact had shattered these blocks, which were now scattered loosely inside the compartment. The inner fiberglass wall had a delaminated area that was greater than a 4' radius.

The damaged fiberglass once the boat was hauled out. **FIG. 1**

Selecting Proper Repair Materials

When it comes to repairs of this magnitude, material choice is critical. We've often seen repairs fail due to poor-quality materials or subpar techniques. At Total Boat Repair, we back every job with a guarantee, so we only use premium products we can stand behind.

In marine fiberglass work, there are three primary resin types:

- **Polyester Resin:** Cost-effective, but it shrinks when cured. It's the weakest in water resistance and bond strength.
- **Vinyl Ester Resin:** A step up in durability, water resistance, and flexibility.
- **Epoxy Resin:** Maximum water resistance. Excellent bond strength. Low to no shrinkage and has long-term reliability.

The damaged fiberglass was cut out before we began grinding the taper around the perimeter of the repair area. **FIG. 2**

Our team in the hatch compartment getting ready to roll out a few layers of fiberglass onto the interior of the hull. **FIG. 3**

For this job, there was no hesitation—we used WEST SYSTEM Epoxy. It's a high-performance epoxy designed for serious marine structural repair.

We paired this with a vinyl ester-based fairing compound and color-matched gelcoat to restore the aesthetic finish. While it's commonly believed that gelcoat won't adhere to epoxy, this is only true if proper surface preparation is neglected. Understanding epoxy's amine blush and cured properties allows us to transition smoothly from the structural to cosmetic phases without adhesion issues.

Whether you're a DIYer or a professional, WEST SYSTEM Epoxy is widely accessible through retailers like West Marine or marine distributors such as Paxton or Lewis Marine.

Fiberglass Damage Assessment

The boat's extensive fiberglass damage meant it could not be repaired dockside and had to be hauled out. We recommended a reputable nearby boatyard and scheduled the repairs immediately.

We first began thoroughly assessing the damage, specifically the extent to which the fiberglass had delaminated. We determined the boundaries of the damaged area and exposed it by removing the gelcoat. This allowed us to get to the actual fiberglass underneath. Surface cracks often mask deeper fractures and core damage, especially in high-impact scenarios.

Once we had a good visual of the damage, we cut and ground away all the fiberglass that had been compromised. This left a hole measuring roughly 2' wide by 18" tall.

On the interior, we did just like we had on the exterior. We removed all the compromised fiberglass and core material. The delaminated fiberglass was cut away and ground to a nice taper along the edges. The interior repair area measured over 7' wide by 6' in height.

A Two-Sided Fiberglass Repair

We insisted on a two-sided repair, which is the strongest option for any fiberglass boat repair. Since the bulk of the damage was on the interior, we began rebuilding there first. We attached a temporary backing to the exterior of the hull. The backer had a spacer the same thickness as the exterior fiberglass and was covered with a layer of release fabric to keep it from bonding to the inside repair. We used latex sealant around the edge of the backer to keep the weather out of the repair. The backer helped with the alignment of the balsa during installation and prevented it from being pushed through the opening.

Fresh balsa core, identical in size to the manufacturer's specs was used. A large sheet of balsa was installed first to bridge the opening in the repair and help maintain the shape of the hull. Then the remaining area was filled with smaller sections of balsa. Each piece was bonded using WEST SYSTEM 105 Epoxy Resin® with the 206 Slow Hardener®. This

allowed ample working time and full saturation. Balsa absorbs epoxy well, making it an ideal pairing for structural reinforcement. Additionally, we thickened some of the epoxy mixture with fumed silica to fill any large gaps or voids in between the balsa core panels.

Next came the application of biaxial fiberglass cloth. Due to the large size of the layers, we applied them dry and wet them out in place using WEST SYSTEM Epoxy. This allowed us to ensure total impregnation with minimal air entrapment. We used release fabric over the final layer to simplify the amine blush removal procedure.

Once cured, the release fabric was removed, and we transitioned to gelcoat application. We matched the gelcoat to mimic the surrounding compartment.

Now, we were ready to continue on the exterior repair area. We ground a taper back from the hole we had cut to allow our fiberglass to gradually transition into the surrounding laminate. We applied several layers of biaxial fiberglass with the 105/206 to match the existing thickness of the boat hull. Again, we used the release fabric as the final step of the layup.

Once the epoxy cured, we removed the release fabric and prepped our repair for fairing. We used a vinyl ester fairing compound, which was applied in thin layers where needed. Then we sanded to fair it back to the original hull shape. Since we allowed the epoxy ample cure time, and utilized the release fabric, we had no concerns about adhesion issues between the epoxy and vinyl ester.

There were many chips, gouges, scratches, and scrapes in the gelcoat that littered the damaged side of the hull. We removed the damaged gelcoat, filled, faired, and prepped that side of the hull for gelcoat application.

The yacht prepped for gelcoat application. **FIG. 4**

Repair completed and boot stripe repainted. **FIG. 5**

Gelcoat Application

We applied multiple coats of gelcoat, modifying the MEKP catalyst and wax ratios per layer to control the exothermic reaction. This allowed proper curing and prevented pinholes caused by trapped styrene monomers.

Once cured, we began sanding down the gelcoat, starting at lower grits and working our way towards higher grits. We continued until we had removed all the imperfections from the surface, and we were sure it was flush and fair with the existing contour of the boat.

The Awlcraft Boot Stripe

The boot stripe had sustained damage in the collision and needed to be repainted. The owner had the boot stripe painted on in Florida when he purchased the boat. Luckily, he was able to remember the boat repair shop that applied the boot stripe, and we were able to contact them to find out the product they had used. It turned out to be Awlgrip® Awlcraft SE, which is a metallic paint. When metallic paints such as these are sprayed, they can take on different color tones depending on the air pressure you use when spraying. We performed several test sprays and

The gelcoat repaired and polished up to a high gloss. **FIG. 6**

Our team holding a piece of the damaged laminate next to the finished repair. **FIG. 7**

found the right pressure to match our boat's color. After the area around the repair was prepped and taped off, we applied several coats of the Awlcraft SE paint to the hull of the boat. This was followed by several coats of clear coat.

Our Mobile Boat Detailing Team

To complete the job, our Charleston-based mobile detailing team stepped in. They compounded, polished, and waxed the repaired area using dual-action polishers and marine-grade products to bring the final luster up to showroom quality.

Bringing the Fiberglass Repair to Completion

The yacht's owner was thrilled. He admitted he had feared the damage might be irreparable. Thanks to the reliability of WEST SYSTEM Epoxy and our skilled marine repair team at Total Boat Repair, the vessel was not only restored but also structurally enhanced for the future. Expertise paired with WEST SYSTEM Epoxy ensures every boat repair is stronger, sleeker, and safer.

NOTE: *Total Boat Repair is a professional mobile boat repair team. Over the years they have attended many of our Fiberglass Boat Repair Trainings (affectionately named Glue-U).*

Veneering a Wooden Aristo Craft

It has always been hard for me to say no to a customer—especially when they want work done on a beautiful little wooden boat like this Aristo Craft. Unfortunately, someone had backed into her port side and put a hole in her hull. Patched incorrectly, the boat needed a wood veneer bonded over the repair to create a uniform look on both sides. The customer had plans to leave the area in four days, with the boat in tow. Time was ticking to not only complete the project, but complete it correctly.

The first thing I needed to do was fair the hull sides. High or low spots would cause the thin wood veneer to look wavy. On the port side, the previous veneer repair had an area that was not well bonded. I ground off the veneer until only well-attached, void-free veneer remained. Guided by my straight, but flexible wood batten (a paint stick), I walked around the boat marking any low spots with a pencil. Unfortunately, the grinding had left about a 6" diameter low spot on the hull. I then grabbed my 12"-long sanding block and faired the hull, eliminating many of the high spots. There were a few spots that were too low to be removed by fairing, so I remarked those areas to be filled with thickened epoxy.

Since it was fall, and the temperatures were cool, I heated my garage to around 90°F with electric heaters. This elevated temperature makes the epoxy cure faster. Considering my four-day timeline, accelerating the cure time would help me complete the repair quickly while still maintaining the quality of my work. I mixed a batch of WEST SYSTEM® 105 Epoxy Resin® and 207 Special Clear Hardener® and thickened the epoxy with 407 Low-Density Filler. I spread this mixture into the low areas I had marked. Over this wet epoxy, I applied a layer of 879 Release Fabric. The release fabric helped minimize sanding because of the textured surface it leaves behind, and it also aided in supporting the application of the thickened epoxy so it didn't sag.

Once the epoxy had cured overnight, I started again with my 12" sanding block. Holding the block parallel to the rail, I worked it at a 45/-45-degree angle, creating an X pattern. By sanding in this manner, it helped keep the surface fair. At this point, it was easy to see the areas the sandpaper hadn't touched yet. They remained

The beautiful patinaed wood on the bow of the boat. **FIG. 1**

A corner of the previous repair was already coming off due to poor adhesion. **FIG. 2**

After fairing the hull, there were still low areas to be filled with thickened epoxy. **FIG. 3**

shiny in comparison to the already sanded portion of the hull. I started with course 40-grit sandpaper to remove the cured epoxy quickly, then transitioned to a 60-grit, and finally to an 80-grit. This left a smooth finish. Continually changing out the sandpaper helped to make sure the paper was cutting through the epoxy and not getting clogged by dust. After numerous hours of sanding and checking over my work, I felt confident the hull sides were fair and the new veneer would have a solid base.

To determine the shape of the veneer, I cut a rough template out of thin cardboard to fit to the side of the hull. I then taped the template to the veneer.

The veneer was not long enough to do an entire side in one piece, so I had to include a seam in the middle. To avoid a gap in the seam, I overlapped the fore and aft veneer. Then, using a straight edge, I ran a utility knife through both pieces. This way any imperfections with my cut would be an exact match on both halves, therefore fitting together perfectly.

I marked the shape onto the veneer with a pencil and used sharp scissors to cut it out. I used the same template for both sides of the boat, as the sides are a mirror image.

In order to epoxy the wood veneer to the hull without fasteners, I needed to apply the veneer while the epoxy was still tacky to the touch. This meant that I had to time the cure process just right. Not cured enough, and the curl of the veneer could cause it to pull back off the surface and leave a void underneath. Too cured, and you may not get a solid bond, which again, could cause it to lift off the surface and create voids underneath. Because this was such a critical step, I needed to run some tests on scrap pieces of veneer to get the timing perfect. I found that 35 minutes of curing at 90°F gave me the tacky surface I was looking for.

I used an 800 Roller Cover to coat the back of the new veneer and sides of the boat with WEST SYSTEM 105 Epoxy Resin and 207 Special Clear Hardener. After 35 minutes, it was time to apply the veneer. I started bonding the veneer at the bottom and slowly worked it up onto the hull with a plastic spreader. I applied the veneer with firm pressure, pushing it onto the hull. The first side went great. By the time I got to the second side, I was running out of time in my application window. I tried my best to achieve a uniform application, but with the garage being so warm, the partially cured epoxy had a thicker viscosity and was harder to work with. Getting the veneer to lie perfectly flat on the surface was a challenge. Some areas had small imperfections that I would need to touch up with clear epoxy. In hindsight, it would have been helpful to open the garage door just before I started applying the veneer. This would allow the garage to cool down, slowing the cure process and slightly extending my window of time.

With both sides of the veneer installed, I needed to deal with the small waves in the veneer—mainly on the starboard side. The waves could be faired out with a little extra buildup of WEST SYSTEM 105 Epoxy Resin and 207 Special Clear Hardener. I didn't have time to apply multiple thin coats of epoxy, and I couldn't just apply a really thick coat because it would run. With this challenge in mind, I determined the only way to apply the epoxy thicker was to turn the hull on its side. After three coats, I had enough epoxy buildup that I could finish fairing the small waves without cutting into the veneer.

I righted the boat and applied the last two coats of epoxy. It was back to the sanding block again to begin the final sanding before varnish. In total, the project ended up being about 20 hours of work. In those 20 hours, I was able to remove the improperly applied veneer, fair the hull, apply a new veneer, and deliver a beautiful result for a beautiful boat.

Areas not hit by the sanding block remained dark and shiny. **FIG. 4**

The hull side faired and ready for the application of the new veneer. **FIG. 5**

105 Epoxy Resin and 207 Special Clear Hardener were applied over the new wood veneer. **FIG. 6**

The Woodenwidget Plystream

LIGHTWEIGHT AERODYNAMIC CARAVAN

The Plystream aerodynamic caravan simply couldn't exist if not for epoxy. It's as simple as that. No other wood glue would have the strength to hold the curved panels in place, keep the structure waterproof, and ensure that it doesn't simply fall apart during use.

The Plystream is made from a wooden framework fixed to a standard 2.5 m (8.2') trailer and then clad inside and out with 3 mm exterior-grade Okoume plywood. Between the sheets, XPS foam board is used for insulation. The only screws used in the construction are those used to screw the framework together. Once the frame is completed, every single panel is epoxied onto the frame.

Initially the frame is very flimsy, but as more and more wood is added, it gets stronger and stronger. Once the panels are epoxied on, the strength increases again. In the end, despite its extremely light construction, it is extremely rigid.

The first step is to make a jig for the 30 corner beams, which create the rounded corners of the Plystream. I made two jigs so I could make two beams each day. Each corner beam was made up of six pieces of plywood epoxied into a curve. This helped to minimize springback when they were removed from the jig.

Once the framework is completed, the curved panels are fitted to the inside of the framework. It is not too hard to bend 3 mm plywood around this radius, so long as the plywood is cut across the grain and not along it, of course. As the larger flat panels have not yet been fitted, there is plenty of space to use clamps to hold the panels in place while the epoxy cures.

One of the 30 corner beams being laid up in the jig. **FIG. 1**

The framework on the trailer before the fitting of any of the panels. **FIG. 2**

One of the inner curved panels being epoxied onto the framework. **FIG. 3**

The top corner pieces cut out and ready for epoxy. **FIG. 4**

The framework with all the curved panels fitted. **FIG. 5**

The fillet on the curved rain deflector above the door. **FIG. 6**

The Plystream attached to the 1976 Citroen GS. **FIG. 7**

The vertical corner panels are relatively easy to glue in place, but the top corner ones are more challenging. I started with the inner ones. They proved quite tricky. To get the inside corner panels to fit the space well, it was necessary to shape the center piece like an arrow. In fact, on yachts with teak decks, often the planks are 'joggled' into the 'King plank' (the center plank of a deck) in this fashion. I had planned on using four pieces to get the shape, but ultimately three worked better and simplified the design. The Plystream is more challenging to build than most of our designs, but still well within reach if you can follow instructions.

When it came to creating the outer corner top pieces, I found that three pieces would not give the nice rounded shape I was looking for. So, I had to use four. It's not always easy to take a two-dimensional piece and turn it into a nice curve. I knew that if the plywood would bend without breaking, the strength of the epoxy and its gap-filling properties would hold it there. After using WEST SYSTEM for over three decades, I have come to trust its strength! For the Plystream build, I used WEST SYSTEM 105 Epoxy Resin® with 205 Fast Hardener® and 406 Colloidal Silica to thicken the mix. I would thicken the epoxy to a no-sag consistency for use on vertical surfaces and to ensure any gaps would be filled.

With all the curved panels in place, it is much easier to fit than the flat ones. All in all, about 20 sheets of 3 mm plywood were used! Despite all that wood, the entire completed Plystream trailer only weighs a mere 300 kilos (661 lbs.)!

The interior is kept simple. There are two single bunks that convert to a spacious double bed simply by dropping in the seat bunks. Under the bunks is a massive amount of storage. A simple galley was constructed on one side at the rear. The other side was left open for storage, or perhaps for a shower at some time in the future. Of course, if you are building your own Plystream, you can fit the interior out anyway you like!

To keep the Plystream as airy and light inside as possible, three opening double-glazed windows are fitted. There's even a small, round, non-opening window fitted to the rear door. Having the door at the back means it is easy to load up long items such as boats or bicycles. While I was there, I decided it would be nice to have the door in two halves.

The outside of the Plystream is finished with Epifanes® yacht varnish. I created a Woodenwidget graphic on the sides using white and cream paints and fine-line masking tape. As an added feature, I incorporated no less than 2000 brass upholstery nails, mainly to disguise the joints, but also to make it look as if the Plystream is constructed using rivets!

On the road, the Plystream is a delight. Because it only weighs 300 kg (661 lbs.), you hardly even notice the weight. Even better, it is unaffected by passing trucks or side winds. This must be due to the curved sides which make the Plystream somewhat aerodynamic. This was also born out by the fact that the fuel consumption barely increased which came as quite a surprise.

The Plystream was tested on a family holiday to the Cévennes in the south of France, where it proved a hit with young and old. We were greeted with smiles and waves and made friends everywhere we went. We drove over 1000 trouble-free kms (620 miles), and the Plystream passed all its tests with flying colors.

Interior shot looking forwards. **FIG. 8**

The graphics and 'rivets'. **FIG. 9**

The interior with the seat backs dropped between the bunks to make a large double 2m x 1.6m (2'6" x 5'3"). **FIG. 10**

Exterior shot from the back. **FIG. 11**

DIY REPAIR

Updating a Camper?

Check out this fiberglass wall repair article.

WEST SYSTEM®'S NEW Online Selection Guide

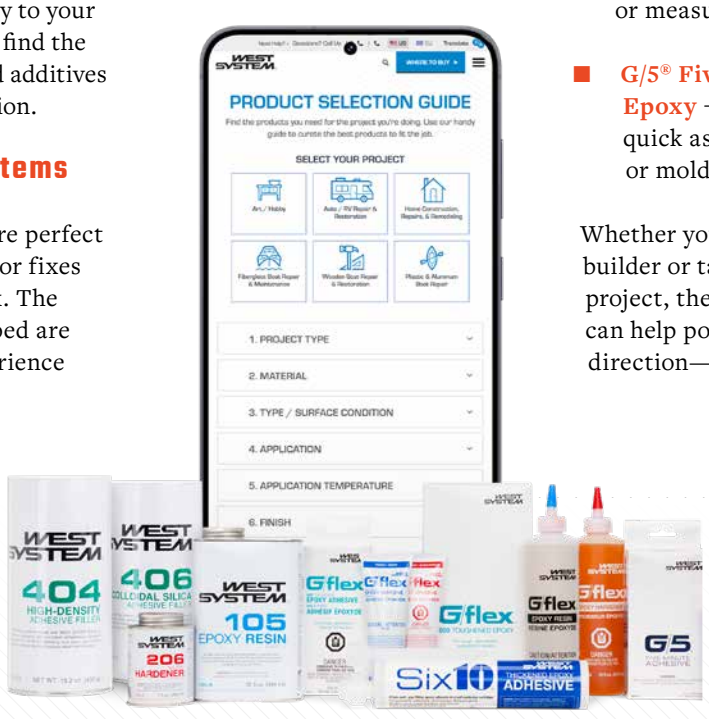
Choosing the right epoxy system is essential for ensuring the success and longevity of your project—whether you're repairing your boat, bonding wood, or crafting composite parts. WEST SYSTEM® offers a variety of epoxy formulations tailored to different materials, environmental conditions, and performance requirements.

To help simplify the selection process, we've developed an easy-to-use Epoxy Selection Guide. All you need to do is answer a few short questions about your project—such as the surface material, project type, temperature, and cure time. You'll receive tailored product recommendations which can be sent directly to your inbox. It's a quick way to find the right resin, hardener, and additives for your specific application.

Reliable Epoxy Systems

WEST SYSTEM Epoxies are perfect for everything from minor fixes to major structural work. The systems we have developed are built on decades of experience in the marine and composites industries. Using this knowledge base, the selection guide helps pair your project's requirements with the system that has properties best suited for your application. The systems offered by WEST SYSTEM are:

- **105 System** – From filling small holes to building a whole boat, the 105 System has the versatility to be the go-to epoxy in your shop.
- **G/flex® Epoxy** – Designed for tough-to-bond materials or applications that need a bit of flex.
- **Six10® Thickened Epoxy Adhesive** – A thickened epoxy in a cartridge, ideal for bonding and gap filling. No mixing or measuring required.
- **G/5® Five-Minute Adhesive Epoxy** – A fast-curing option for quick assemblies, temporary jigs, or mold-making.



Whether you're an experienced builder or tackling your first epoxy project, the WEST SYSTEM guide can help point you in the right direction—saving time and ensuring reliable results. WEST SYSTEM makes repairs approachable, so you can spend less time worrying and more time on the water.

Explore the Epoxy Selection Guide

Try it out at: **westsystem.com/selection-guide**

Additives Explained

The 105 System is designed with a flexible, mix-and-match approach, like a chemistry set, allowing you to tailor formulations to your specific needs. Starting with the West System® 105 Epoxy Resin® as a base, cure speed or clarity is determined by hardener selection, and viscosity can be increased by adding fillers. What is lesser known is the West System additive line. The dry and liquid additives can also be used to modify other properties of your mixed epoxy, including hardness, wear, moisture exclusion, and color.

Dry Additives

The dry additives are beneficial for increasing durability, adding moisture resistance, or decreasing friction when added to mixed epoxy. Since all of the dry additives are opaque particles, they do provide a little UV-stability to the epoxy. The additive particles in the top layer or two of epoxy prevent sunlight from damaging the epoxy below. Please note that the top layers will still become chalky due to UV degradation if no UV-stable finish coat (i.e., paint, varnish, polyurethane, etc.) is applied over the cured epoxy. While these additives do impact the color, their purpose is to increase other properties of the epoxy.

420 Aluminum Powder

As the name suggests, this additive is made of fine particles of aluminum. In fact, the average particle size of the aluminum is only 50-60 microns (or about 0.002"). For scale, the average diameter of a human hair is around 100 microns (or 0.004").

We recommend mixing this additive into the epoxy at a loading of 5% to 10% by volume. At this loading, the additive can increase the hardness and abrasion resistance of the surface without significantly impacting the other properties of the epoxy—namely, tensile elongation.

Common applications for this additive include visible or wear surface repairs on aluminum substrates and surfaces where increased hardness and abrasion resistance are desired.

422 Barrier Coat Additive

The 422 Barrier Coat Additive is a blend of aluminum powder and muscovite mica. The muscovite mica is a common mica mineral that tends to have a platelet shape. When mixed with West System Epoxy, it can improve the epoxy's already great moisture resistance. Blending the muscovite with aluminum powder further increases the epoxy's durability.

The 422 Barrier Coat Additive is gray in color. We recommend adding it to mixed epoxy at a rate of 15%-20% by volume.

The most common application for this additive is for use during the blister repair process. Once the blisters have been removed, coating the bottom of a fiberglass boat will help seal the hull to prevent future blisters from forming. For more information about blister repairs, see our Fiberglass Boat Repair Manual.

423 Graphite Powder

The 423 Graphite Powder is made up of fine graphite (carbon) particles. The particles are measured by the size of mesh that they can pass through. Almost all of the graphite particles in our 423 Graphite Powder can pass through a 325 Mesh (0.0017"). This means they can pass through a mesh that has 325 holes in a square inch.

We recommend adding the 423 Graphite Powder into the mixed epoxy at up to 10% loading by volume. Once the epoxy mixture has cured, the surface should be sanded to expose the graphite powder. Now that the wear surface has been "activated", the small particles can release and act as bearings to create a lower friction surface.

Common applications for the 423 Graphite Powder include running surfaces on the bottom of boats and bearing surfaces. It should be noted that as the graphite particles are exposed, they will act much like pencil lead and can transfer to other surfaces, giving a smeared, black appearance.

Liquid Additives

Liquid additives' primary purpose is to color the epoxy through the use of pigment particles suspended in an epoxy resin base. The colorants will not make the epoxy UV-stable, so it will still require a UV-stable topcoat over the cured epoxy for applications that will see direct or indirect sunlight. The epoxy resin base of the liquid colorant additives means they have excellent compatibility with all our WEST SYSTEM products.

We recommend adding the pigments to your epoxy at up to a 3% loading by volume. Though they are potent, you may need multiple coats of pigmented epoxy to achieve a truly opaque surface. The exact number of coats will depend on the color of the substrate being coated and the liquid additive selected. Please note that all our epoxy systems should be cured, the amine blush removed (where applicable), and prepped (usually sanded) before applying a finish coat over the epoxy.

501 White Pigment

This is our white colorant. Though the colorants can be used with any of our epoxies, hardeners with strong yellow/amber colors will influence the color of the mixed epoxy. To achieve the whitest surface, you will want to use our 105 Epoxy Resin with 207 Special Clear Hardener®.

Common applications for epoxy with 501 White Pigment include as a finish coat in a bilge or as a primer for light-colored paint.

502 Black Pigment

The 502 Black Pigment is a very rich, dark black. Because of this, it can hide the yellow/amber tones some hardeners have very well.

When mixed with epoxy, the 502 Black Pigment becomes great for many applications. These include coloring the epoxy to fix a black surface, using it as a primer coat for dark-colored paint, and for filling knot holes, cracks, or checks in wood.

503 Gray Pigment

The 503 Gray Pigment can be used in much the same way as the 501 White Pigment and the 502 Black Pigment. Being gray, however, tends to lend itself to being used on applications with stone and concrete to blend in better. It also works well as a signal layer for fairing applications when used in conjunction with the 501 White Pigment or the 502 Black Pigment.

The WEST SYSTEM line of additives further enhance the versatility of the 105 System and give you peace of mind in the compatibility of the products. Whether you are looking for increased hardness, moisture exclusion, wear resistance, or simple color enhancement, the WEST SYSTEM line has products to help make your projects successful. As always, if you have any questions about our products or how to use them, feel free to reach out to our Technical Advisors either over the phone or through westsystem.com.

BY GREG HATTEN

SKILL LEVEL

Giving a Canoe a Second Life

RESTORING A 1929 OLD TOWN CANOE—AND ITS HISTORY

This 1929 Old Town Canoe, with classic lines, was found hanging from the rafters of a barn in Missouri. **FIG. 1 & 2**

In the spring of 2024, I got a call from a friend to have a look at an old wooden canoe. It was hanging from the rafters of a barn in my hometown of St. Joseph, Missouri, about to be sold in an estate sale. I was a little more than shocked to see that it was a 16' Old Town Canoe. Judging from its old school style and dilapidated condition, I was sure it hadn't touched water in decades.

I saw beyond the "weathered and worn" and had a hunch that a canoe with such classic lines and elegant features must have quite a story to tell. I bought the canoe, hauled it home, and immediately launched a scavenger hunt to uncover its history.

After some research, I discovered it was built in 1929 and originally shipped to a family summer lodge in northwest Wisconsin. The canoe had been purchased by Frazer Ford, a prominent banker in St. Joseph. Out of his three children, Margot had the most enthusiasm for the canoe. Her exploration with the canoe would fuel her passion for adventure. Margot Ford was a trailblazing woman. She was a college graduate, athletic, and flew in WWII as part of the Women Airforce Service Pilots (WASPs). She later returned to Missouri with the canoe, where she shared her passion with her daughters before storing it away in the rafters of that barn.

Despite the rich history, the boat was in rough shape. The restoration involved a long punch list of repairs to bring it back to life—and back to the water. As I repaired, restored, and revived this one-hundred-year-old boat, I sensed the spirit of adventure embedded in the bones of this canoe. Wooden boat builders call it the "soul" of the boat. It is forged by the builder and shaped by the rower.

The essence of Margot's dark green Old Town canoe is an extension of her personality, her passion for life, her sense of adventure, and her trailblazing accomplishments. I discovered the soul of the boat by learning about the history of the Old Town Canoe Co., the Ford family, and the rower of the canoe who called it her own.

There were a hundred items on my list that needed fixing before it was ready for a relaunch. Here are the major items and how I went about the repair.

The leather laces were disintegrating and needed replacement. **FIG. 3**

Six10 was used to reassemble the parts and the caning pattern is what was used in 1930. **FIG. 4**

Seats

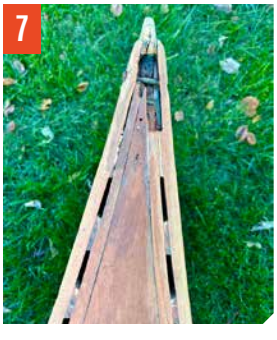
The original seats were in rough shape. Somewhere along the way, leather laces replaced the traditional reed caning that was a signature of Old Town Canoe seats. When I removed both seats from the canoe, the leather laces disintegrated in my hands.

I took the seats completely apart, which was easy because the original glue had long lost its power of adhesion. I stripped off the stain and lacquer with a light sanding and applied several coats of marine varnish. The mahogany came to life and a beautiful, rich red tint shone through the high gloss of the new finish. To reassemble the seat parts, I used WEST SYSTEM® Six10® Thickened Epoxy Adhesive. I clamped the pieces snuggly, and then let them cure for 24 hours. I sent the re-finished seats to Dennis King, who lives in Old Town, and he did a fantastic job replicating the caning pattern from 1930. He shipped them back in less than two weeks.

A couple of gouges damaged the skin of the canoe. The gaps were filled with Six10. **FIG. 5 & 6**

Holes

Somewhere in its river-running history, the canoe suffered a couple of puncture wounds from pointed rocks in a nameless riverbed or lakeshore. The rocks penetrated the outer canvas membrane of the canoe and caused some "push-ups" that cracked the cedar ribs on the interior of the canoe. Because the canvas was otherwise in good condition, I chose to repair the fabric using WEST SYSTEM Six10 to fill the gaps. I waited for it to dry thoroughly and then rolled a single coat of 105 Epoxy Resin® and 206 Slow Hardener® over the area to seal it up tight. For the interior floor push-ups and cracked cedar strips, I used 105/206 and, in some of the worst cases, fiberglass cloth strips to repair the damage and make it water-tight. After several coats of varnish on the interior, it was sealed and waterproof.



Dry rot is a very common issue, particularly at the tips of the canoe. **FIG. 7**

The rot was excavated and the missing material was filled with custom-fit mahogany. **FIG. 8**

Rot

A common problem to solve with wooden canoes is damage to the bow of the boat, where the gunwales and stem come together. The tip of a canoe often gets battered by rocks, docks, and trailers, and it is the first line of defense when meeting an immovable object. Cracks and dry rot are typically the result, and this old canoe had it at both ends. After digging out the decay, like a dentist removing decay from a tooth cavity, I custom-fit pieces of mahogany, securing them in place with Six10 Thickened Epoxy Adhesive.

Floor Boards

The "sturdy floor rack" was not so sturdy after 100 years of service. Many of the brass brads had pushed through their holes, and the five cross slats were all rotted. They were so soft they wouldn't hold a nail. I rebuilt the cross slats out of white oak and replaced every brass brad. Then I coated the entire floor rack with 105 Epoxy Resin and 207 Special Clear Hardener, which I topped with varnish.

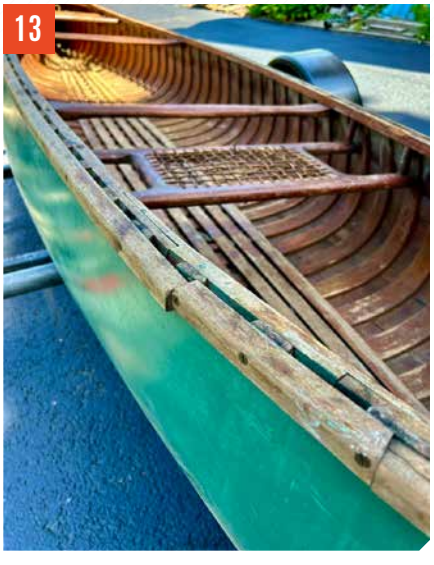
> "THE SEEDIEST, SAFEST, AND MOST CAPACIOUS CANOE THAT WE BUILD. THE SIDES ARE CONVEX, THUS PRODUCING A HANDSOME TUMBLE-HOME, AND THE FLOOR IS FLAT AND WIDE WITH A STURDY REMOVABLE FLOOR-RACK."
>
> 1929 OLD TOWN CANOE CATALOG

The removable floor racks were so rotted that they had to be completely rebuilt from white oak. **FIG. 9**

The entire floor rack was coated with 105/207 and topped with varnish. **FIG. 10**

New pieces had to be scarfed into the gunwales to fill missing sections. **FIG. 11**

The bright finished gunwales help accentuate one of the boat's best features, the arc of the sheer line. **FIG. 12**



There were a couple of damaged sections along the gunwale. **FIG. 13**

Gunwales

Why anyone would cover mahogany trim with green paint is a mystery to me, but somewhere along the years, the entire boat was painted dark green. With a lot of scraping and sanding, the gunwales and their natural wood finish re-emerged to perfectly frame the elegant sheerline that is a signature of Old Town canoes. The dark mahogany accentuates the curvaceous arc of the sheer. The green-painted trim had disguised one of the best features of this old canoe. One section of the gunwale was mangled. It needed to be removed and a new section scarfed into place, which was a relatively easy repair with the 105 System and several coats of varnish.

NOTE: *This article is adapted from one published in WoodenBoat Magazine. For more about the history of this boat, and canoes in general, check out the article from the January/February 2025 issue.*

The completely restored canoe ready to join the fleet. **FIG. 14**

BY MICHAEL LOEBIG – GBI MARKETING

Historic Win at This Year's WA360 Race

Team Puget Sound Navigation Company was the first to finish in this year's WA360, placing first in the wind division! The three-person team—consisting of Michael Karas, Molly Karas, and Anthony Boscolo—sailed their Gougeon 32, *Incognito*. "We had an amazing race getting to put the Gougeon 32 through its paces and seeing the boat shine in every condition the Puget Sound had to offer!"

***Incognito* was previously owned by long-time WEST SYSTEM® user and Epoxyworks contributor, Russell Brown. "Not much refit was needed. Just rigged up a lee cloth so we could sleep, and we changed out the screecher Harken® roller furling system to a Karver® continuous line furler." The team obliterated the course record by a day and a half! The previous course record: 3 days, 6 hours, 59 minutes. The new course record? 2 days, 18 hours, 24 minutes.**

Congratulations to team Puget Sound Navigation Company on their historic win!

Team sailing Gougeon 32 takes first place and crushes WA360 course record.

BY RUSSELL BROWN

SKILL LEVEL

No Sand Fillets

Pre-finishing surfaces with WEST SYSTEM® Epoxy, before assembling them, is a method pioneered by the Gougeon brothers—and one that I use whenever possible. Working on flat panels laid out on a bench or sawhorses is often faster, easier, and results in a higher-quality finish. These parts and panels are often joined with an epoxy fillet that can be cosmetic, structural, or both. While pre-finishing panels is much easier, what isn't easy is filleting all the intersections—assembly, sanding, and finishing.

I recently started using a new method. I apply the fillets and the finish coat in one day, without sanding the fillets or even cleaning up the squeeze-out. It's not a method for absolutely perfect fillets, and it only really applies to bright finished (not painted) interiors, but remember, no sanding!

This method starts with sanding the pre-finished surfaces for the width of the fillet only. It sounds hard, and does take some care, but it goes surprisingly quickly with the right tool. The magic tool is a custom sanding block. Cut a strip of firm foam rubber down to your desired width, usually a ¼" or so. The width of the sanding should match the width of the desired fillet (use the fillet stick to determine). Then attach sticky-back sandpaper. It seems there is some leeway with how careful you have to be sanding, because I haven't been that careful and have still been impressed with the outcome. The part where the most care is needed is keeping the sanding tool in the corner to avoid making scratches "out of bounds".

The next step is taping off to the sanded edge. Taping off at the intersection between the sanded and glossy surface isn't super easy, but like so many things, care at the beginning can mean far less work in the end. I use a good quality masking tape because the tape will have to be pulled after the fillet is partially cured. The filleting and finish coating, with a partial cure between, have to happen on the same day. This way a chemical bond forms between coats, and there is no need for an additional

Fillets created using the "no-sand" technique. **FIG. 1 & FIG. 2**

The tool that makes these fillets possible is the ¼" sanding block made of firm foam rubber. **FIG. 3**

The sanded area needs to be just as wide as the radius of your filleting tool. **FIG. 4**

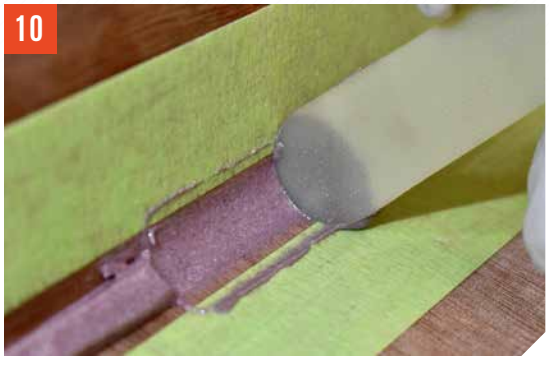
Be sure to keep the sanding block tight to the corner to avoid making scratches outside of the fillet area. **FIG. 5**

Apply tape just outside the sanded area to remove excess epoxy after filleting. **FIG. 6**

Sanding and taping can get a bit time consuming, so it may be good to do them the day before epoxying. **FIG. 7**

A plastic bag, with the corner cut off, is a great way to lay down a long bead of epoxy. **FIG. 8**

Notice the clean margins of the fillet land right on the edge of the tape. **FIG. 9**



The first pass with the fillet stick should be laid back a bit to show where more epoxy is needed before the final pass. **FIG. 10**

The fillet is sealed with a neat coat of 105/207. **FIG. 11**

Pull the tape before the epoxy cures. **FIG. 12**

sanding step. To maximize available time, it is best to sand and tape the day before filleting. The methods I use for filleting are described in detail in the book *Epoxy Basics* (from *PT Watercraft.com*).

Priming for the fillets requires a thin coat of unthickened epoxy applied with a small brush. This step provides better adhesion and makes the application of the fillet easier. Wipe up the excess unthickened epoxy with scraps of paper towel. For applying the thickened epoxy, I use a Ziploc® or cake decorating bag to lay a bead of the thickened epoxy. Applying a bit more than necessary is often an advantage.

The first pass with the fillet stick should be with the stick laid back a bit (not at 90 degrees). This will show where more epoxy is needed before making the final pass at near 90 degrees. If possible, form the final fillet in one pass—moving continuously from one end to the other.

I used a sharpened "chisel stick" to clean up the bigger areas of squeeze-out. This makes it easier to pull the tape later. Bumps or imperfections can sometimes be smoothed out by pushing on them with a gloved fingertip later in the day, when the epoxy has set up a bit, before finish coating.

The finish coating (with 105 Epoxy Resin® and 207 Special Clear Hardener®) is quick and easy because everything is already taped off, and it just takes brushing on a coat of epoxy. I give my disposable brushes a haircut. I cut them to half their width, which means half as many bristles falling out into your finish coat. Cutting a bit off the tip also makes the bristles stiffer, which is better for epoxy.

Because the fillets will be a bit rough compared to sanded fillets, apply the finish coat slightly heavier than usual. Wait 10-20 minutes before pulling the tape so that any excess epoxy has time to run onto the tape.

When using this method, the fillets will have a slightly rougher finished surface than a sanded fillet. The edges of the fillet will be noticeable, and of course, it requires good filleting skills. However, when there are miles of filleting ahead, and pre-finishing panels is your technique of choice, this method can help.

Repairing a Wood Kitchen Island

They say the kitchen is the heart of the home. Well, that's certainly true at my grandmother's home. Around her kitchen island, we cook, swap stories, and make memories – each memory leaving a mark on the well-worn surface. In recent years however, the glued and nailed edge strip running across the end grain had begun to pull away from the island. The gap created at the sharp, mitered corners has drawn blood from more than one person. The foundation of so many projects has now become the project itself.

Investigation

The first step was to perform a thorough investigation of just how detached the edging had become. As I pried open the gap, the entire length of edging popped off the island. That made the repair approach fairly simple: scrape off the old, crumbling glue and epoxy it back on.

As mentioned earlier, the edging was glued and nailed to the island. I removed every other nail from the edging. Though I no longer needed the nails for fastening strength, they would help to guide realignment once the edging was coated with epoxy and made slippery. Having fewer nails would make realignment easier later. I did a simple test fit to make sure none of the nails were bent in the removal process. It is easier to take care of bent or misaligned nails now, instead of when everything was wet with epoxy.

The color matching of the G/flex, thickened with 410, blends in almost seamlessly. **FIG. 1**

Ratchet straps were used to hold the edge strip tight to the island. The straps were wrapped in cellophane to prevent them from bonding to the epoxy. **FIG. 2**

Surface Preparation

The crumbling 30+ year old glue was my next target. Using a putty knife, I was able to chip away the old glue on the back of the edging and on the island, with relative ease. Any stubborn spots I attacked with 80-grit

Running a gloved finger along the joint helped lower the profile of the seam. This made it about flush with the wood surface, once the tape was removed. **FIG. 3**

The repaired island looks like it's always been this way. **FIG. 4**

sandpaper. Then I gave the entire strip a good sanding with the 80-grit sandpaper. It was important to remove all of the loose glue for two reasons. First, it would result in a tighter, more appealing bond line. Second, the joint will only be as strong as the material it's bonded to. Therefore, if the epoxy is bonded to crumbling glue, that will greatly reduce the holding power of the joint. Though this isn't a high-load joint, I did want good adhesion.

Since the island is a wooden surface, I needed to take extra care not to get epoxy on any of the visible surfaces. The wood is porous, so even if the epoxy was cleaned up quickly, you would always see a "shadow" where the epoxy had gotten on the surface. I used painter's tape to protect the counter surfaces from squeeze out or errant drips, and laid a plastic drop cloth under the repair area.

Selecting Materials

With the surfaces prepped, it was time to select my materials. I chose WEST SYSTEM® 655 G/flex® Thickened Epoxy Adhesive. Since the grain in the edge piece runs perpendicular to the grain of the island, I was worried about the differences in expansion due to changes in temperature and humidity. The hot humid summers, and cold dry winters, can cause a lot of movement within the wood. I suspect this movement is why I have seen failure along this edge, but not on the two adjacent sides (where the grains run parallel). Having that little bit of extra flexibility with the toughened system should help the repair last a long time.

G/flex does come in a thickened (655) and unthickened version (650). I opted for the thickened version of G/flex since I knew I would need to add fillers anyway to bridge the gaps in the joint. The epoxy being pre-thickened gets me part of the way there already, so I only need to add a small amount of filler to reach my desired consistency. An additional benefit is that G/flex has a fairly long working time, which came in handy for this project. The edge strip was about 6' long, so I had plenty of working time to mix the epoxy, add fillers, apply it, position the edging, and clamp the edging in place.

Next, it was time to select my filler, which was a little more complicated. Typically, you would select a filler based on its strength or handling properties. In my case however, aesthetics was the primary factor I was concerned with. Because the island was built with a very blond wood, and all the other wood joints

on the counter fit very tightly, the resulting mixture needed to be light in color to disappear as much as possible. After a little trial and error, I found the best color match to be 410 Microlight® Filler.

410 Microlight is a fairing filler formulated for easy sanding, so it is not designed for high-load applications. Since the G/flex was already pre-thickened, I wouldn't have to add much of the filler. Additionally, there will still be nails in the edge strip offering some support, and it's a narrow strip without a lot of leverage. I was willing to take the risk. Worst-case scenario, the joint fails, and the strip falls off again. It's not like I would be stranded at sea; I'll just have to spend a couple of hours repeating the project.

Application

When bonding porous surfaces, like wood, it is good practice to coat the mating surfaces with neat epoxy first. The wood soaks up this coating of epoxy, rather than pulling epoxy out of the highly thickened mixture, making for a stronger bond. I mixed up a batch of 655 G/flex Thickened Epoxy and brushed it onto the mating surfaces.

In that same cup, I mixed up a second batch of 655 G/flex. This time however, I added my 410 Microlight. The batch was just thick enough so the epoxy would not run out of the vertical bond line after installation. I generously spread this mixture on the back of my edge strip. There needed to be enough epoxy to squeeze out of the top and bottom edge of the joint, ensuring continuous contact.

Installation

Using the nails, with their original holes, for alignment of the edge strip was incredibly helpful. A few gentle taps with a rubber mallet coaxed the edging tight to the island. A couple of ratchet straps and some rope helped hold the edging snug while the epoxy cured.

Close up of the repaired island.
FIG. 5

The repaired island, looking as good as new.
FIG. 6

The extra squeeze out from the top of the joint could easily be lifted and removed with the straight edge of an 808 Mixing Stick. I left the squeeze out on the bottom side of the island to act as a sort of fillet to help with support and provide more surface area for bonding.

I wanted the top side of the joint to be as close to finished as possible once the epoxy cured. It would not be practical to sand the joint flush later, as it would damage the surrounding finished wood surface. Using the mixing stick got the joint close to flush, but once the tape was removed, the epoxy would still be proud of the surface by the thickness of the tape. To solve this, I gently dragged my gloved finger along the joint to give it a slightly concave profile and remove the bulk of the excess material.

After about a half hour, the tape was ready to be removed. You want to remove the tape once the epoxy starts to gel, but before the epoxy cures too much. If the epoxy is too far along in the cure process, the tape can tear, and you can end up with little blue bits of tape sticking out from under your cured epoxy. Not a huge deal if you are sanding your surface down later, but it's not very aesthetically pleasing if that's your finished surface.

Finishing

After curing overnight, I could remove the ratchet straps. Most of the joint turned out very clean, and there was no need for additional finishing. The spots under the ratchet straps had been a little harder to get to; therefore, they remained slightly proud of the finished wood surface. It was a very thin line; I could scrape these areas flush with my fingernail. No need for sandpaper, which would scuff up the surrounding wood.

Happy Customer

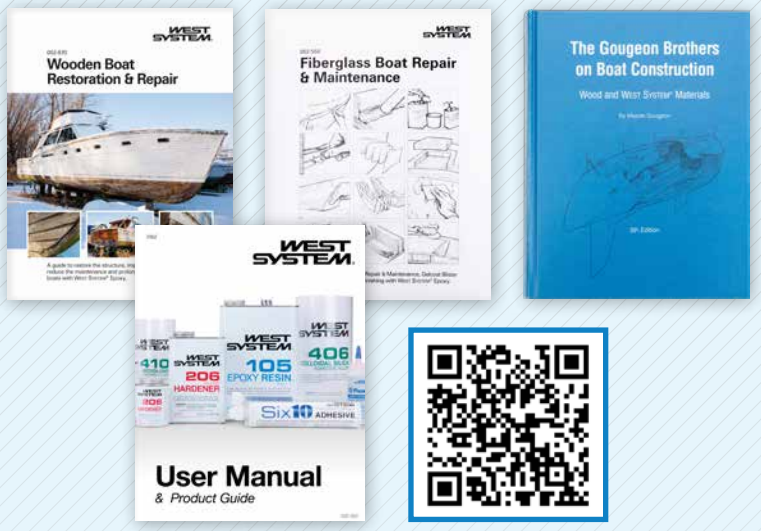
Needless to say, my grandmother was very impressed with the results. She's my grandmother, so of course, she wouldn't tell me anything less. I, on the other hand, am very critical of my own work, but even I was pleasantly surprised with the results.

From a functionality standpoint, there would be no more snagged arms or sweaters on its sharp corners. Aesthetically, the joint blends in with the wood, and it does not look like it has been repaired. Mission accomplished. With this project complete, we can now direct our attention to creating new projects and memories on its well-loved surface.

NOTE: *WEST SYSTEM Epoxy is not certified by the FDA to be food safe. Though the epoxy is used on a kitchen counter, it would not be in direct contact with food.*

WEST SYSTEM®

Publications



WEST SYSTEM® offers a range of detailed publications that can help you get started on your building or repair projects. These publications are available at your local WEST SYSTEM dealer or as free downloadable PDFs at westsystem.com.

Contacts by Region

North and South America, China, Japan and Korea

WEST SYSTEM

P.O. Box 665
Bay City, MI 48707
westsystem.com
P: 866-937-8797

Europe, Africa, the Middle East and India

Wessex Resins & Adhesives Ltd.

eu.westsystem.com

Australia and Southeast Asia

Atl Composites Pty. Ltd.

atlcomposites.com

New Zealand and Southeast Asia

Adhesive Technologies Ltd.

adhesivetech.co.nz

EPOXYWORKS®
Building. Restoration. Repair.

Readers' Projects

VINTAGE RESTORATION

CASTING BY LOU YELGIN

To restore a vintage wooden screw for a bench vise, Lou needed a custom nut with a rare 3½ TPI thread. Since machining wasn't an option, he used the screw itself to mold the threads by coating it in petroleum jelly and casting WEST SYSTEM® Epoxy around it. The result was a perfect, functional epoxy nut.

CREATIVE REPLACEMENT

WINDVANE BY JOHN MIKOLICH

While winterizing his sailboat, John Mikolich accidentally crushed a plastic windvane with an 80-pound outboard. Over breakfast, he spotted a cereal box and used it to trace and cut a replacement, then saturated it with WEST SYSTEM® Epoxy. By dinnertime, he had a durable, colorful new part—better than the original.

HOUSEHOLD REPAIR

LEVELING FEET BY DARYL BRUNETTE

After moving into a new house, my workbench wobbled on the sloped garage floor, and I didn't want winter water puddling around the shimmed wooden legs. As a longtime WEST SYSTEM® user, I knew epoxy could help, but encapsulating the feet with thickened epoxy felt too complicated. Instead, I poured leftover epoxy into small cups and cast the heads of bolts into them, creating simple, custom leveling feet. It was a free, durable fix that put waste epoxy and spare parts to good use.

WOODEN BOAT BUILD

CANOE BY OTTO GLASS

When Otto's wife turned out to be allergic to cedar, he got creative and used untreated 2x6 framing lumber to build their canoe. He milled the boards into strips himself and constructed a 14' long, 40" wide, 16" deep custom canoe. Despite having no prior experience with canoe building or fiberglass, he praised the ease of WEST SYSTEM® Epoxy and the 300 Mini Pumps.

BUILT SOMETHING AWESOME? WE'D LOVE TO SEE IT–SHARE YOUR PROJECT @ EPOXYWORKS.COM/SUBMISSIONS