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# Technique

Story and photography by Ken Wells

## Curing soft decks

### A wet and rotten core is not the end of the world

**T**he best cure for soft decks? Niagara Falls—over the falls with the whole damn boat. It's the only sure way to be rid of squishy decks, expensive yard bills or difficult repairs that, given time, may have to be repeated. I admit this may be a bit cynical, but after owning four vintage fiberglass sailboats I've found it's nearly impossible to completely avoid the dreaded "Soft Deck Syndrome." Still, if Niagara Falls seems too extreme and you don't own a high-tech racer that's fixed by professionals, there is another method, a cure that has evolved over years of boat ownership.

Six years ago my brother David and I purchased a 1970 Tartan 34.

One of the things that really impressed us about the boat was how firm the decks felt. It looked like Soft Deck Syndrome was finally behind me. Inevitably, however, cracks began appearing on the deck, roughly outlining areas that had already been repaired in three places. (One of the old repairs was more than 4 square feet in size.) Eventually, black fluid would weep out whenever we stepped near the cracks after a good rain, and it was time to take a new look at deck repair. Fortunately, from what I had learned from previous repairs and what has been written on the subject, I have come up with a technique that has worked for me. In

some ways, my methods are different from that of many professionals. But more on that later.

#### The problem

Soft decks are the result of core deterioration or delamination of the fiberglass to the core material. Balsa wood is amazing stuff, strong and light, with only one drawback—it will soak up water like a sponge and rot quickly. Plywood will do the same thing, although at a slower pace. If you have a synthetic core, you're still not free from the danger of soft decks. Many older cores will absorb water just like balsa. And even higher quality cores, like Airex, although



The author goes "to the mat" in the struggle against soft decks.

## Boats & Gear



*When drilling down to a wet core, but sure not to go through the bottom layer of fiberglass.*

they do not rot or absorb water, can still become delaminated from the fiberglass either through damage to the deck or inadequate adhesion to the fiberglass. Cracks will eventually appear allowing water to get inside.

The first step is to find out the extent of the damage. Using a plastic hammer or a piece of wood, hammer and rap on the deck to determine the area of the repair. You

won't have any trouble figuring out where it's bad. Solid areas will almost ring with the impact, whereas the delaminated areas will emit a soft thunk. Using a large felt-tip marker outline the entire area.

The next step commits you to the job, because you are going to use an electric drill and a 1/4-inch bit to drill holes in the entire repair area. Space the holes about one to two inches apart. Be very

careful to only drill through the top layer of fiberglass. You can purchase a screw-on device that fits to the drill bit to limit the depth of the hole—a good addition to your tool kit.

The idea is to drill through the top layer of fiberglass and into the core but to leave the bottom layer of fiberglass untouched. For the first hole, before you attach the drill stop, drill slowly and carefully. You will feel the resistance change as you get through the outside layer of fiberglass. After drilling literally hundreds of holes, I have a good feel for the job, but I did slip a few times. If you accidentally drill through the bottom layer, don't worry too much. It's easily repairable.

As you drill, you will quickly realize the condition of the core material. If it's dry and there is just air where the core has delaminated from the deck, then you can skip ahead to the next section "in with the good." If not, continue reading.

### **Out with the bad**

My own fate with sailboats has been to find dampness and rot

where the core once was. This is easy to determine by examining the material from the drill hole, particularly the material from the core. If it looks like potting soil and is wet you will need to remove most of the rot and all of the water, which is where I have come to disagree with the experts. Many of them will tell you that if there's water coming out, then forget it. You're never going to get the water out.

I, however, have gotten both the water and rotten core out and the epoxy back in on a number of occasions and with great success. It's been four years since the repair on our Tartan 34, for example, and the cracks have yet to come back despite having been sailed for much of the time by large teenagers.

In order to do this you will need an industrial tank vacuum or a large shop vacuum, one with a fair amount of power and built strong enough to take some abuse. The bigger and more powerful the vacuum, the better and quicker this step will proceed. I use a vacuum cleaner like those used by professional chimneysweeps, but

## Boats & Gear

a heavy-duty shop vac, with the biggest motor you can get, will also work.

Starting at one side of the repair area, tape the end of the vacuum hose over a group of holes. I use a large plastic funnel, with the small end cut to fit the vacuum hose and the big end duct-taped to the hull to increase the footprint of the vacuum hose.

With the vacuum running, begin by getting rid of as much of the old core as possible. I use an electric drill with a bent wire attached inserted into the holes to break the core small enough to be vacuumed out. You will also suck out some water, but the first stage is to get rid of as much of the rotted core as you can. Drill more holes if you have to.

The moisture is going to take a little longer to remove, and it is a project best begun on a warm, dry day. With the vacuum hose attached to one end of the area you are working on, just let it run. This can take from several hours to several days, depending on the size of the affected area and the amount of water in the core.

Even after you think all the water is out, moisture can migrate



*After you've filled the void with epoxy, sand smooth and apply primer, paint and nonskid.*

back into the repair area from other wet areas. The best way to check is to come back the next day and start the vacuum again. You know it's getting dry when you look into the hose and don't see water droplets lining the inside.

This may seem like a lot of work, but it's really the vacuum doing the job. You just need to move the hose from time to time. If you find a stubborn wet area you can use sheet plastic and cover some holes, controlling

where the air is being sucked in. The incoming air is doing the drying and moisture is slowly migrating toward the hose so work in a pattern from one side to the other.

Once you have the vacuum and hose set up you can go on to other jobs. Getting all the moisture out can take several days, but leaving it running all night unattended is probably not a good idea. A vacuum big enough to do the job can make a lot of noise, so earplugs will make

things more comfortable even if you are working away from the vacuum. The core will eventually dry out using this method, but it won't happen immediately. Be patient. It's worth the effort if you want a solid repair.

### **In with the good**

Now that you have a hollow, dry core, it's time to fill the void, and the best material for this is slow-setting epoxy. I usually use West System 206 slow hardener, mixed with 105 resin, but any high-quality epoxy will do. Companies like Gougeon Bros., which manufactures West System, or System Three and MAS, which also manufacture a complete line of epoxy products, publish handy how-to books on how best to use their materials. The 206 hardener has a pot life of around 20 minutes and sets solid in half a day. It will set to full strength in one to four days, depending on the ambient temperature. If you want even longer times to ensure good penetration, use 209 extra-slow hardener. This will give you a pot life of 45 minutes or so.

You don't really need a lot of working time, as the epoxy goes in fairly quickly. The slow cure will

allow the epoxy to soak in as far as it can and let the epoxy at the edge of the repair soak into the remaining good material. Pour the epoxy right on the repair area. It is fairly viscous, and I use a pack of playing cards as throw-away squeegees. Pass the squeegee around, and the epoxy will drain right into the holes.

As the void fills up, bubbles will start to come up through the holes. Use the corner of your squeegee to pop the bubbles and keep things flowing. Be sure to check below often to make sure the epoxy has not found a way to the inside of the cabin. Check around the edges of the ceiling liner and the dorade holes. If epoxy has found a way in, say through an old screw hole, use tape to dam up the hole. You can also use tape to dam up any

holes you might have inadvertently drilled all the way through both layers of fiberglass.

You can do the pouring in several stages, as it will all drain to the lowest part of the void. You may very well think you have it filled, and then come back the next day to see that the holes are empty. That's a

good sign, as it means the epoxy has soaked into the surrounding area. As the void begins to fill up you can mix smaller amounts of epoxy for the remaining few holes that are still accepting epoxy.

For the final stage, when the holes are all filled, the epoxy has set and the void is now solid epoxy, you can treat

it as a normal surface. Sand away enough material from the repair area to provide a depression. Use epoxy to fill the depression slightly below the surface. Sand back to the surface of the deck, paint and add nonskid. You now have a strong deck that will



A strong vacuum will draw air between the deck drying out the space in preparation for new material.

## QUICK TIPS

- Rap on the deck with a plastic hammer to determine the extent of the effected area.
- Be sure to install a stop on the drill bit so you won't drill through the bottom layer of fiberglass.
- Use an industrial-grade vacuum to remove bits of core material and draw air through the effected area to dry out the remaining core material.
- Be patient when drying the core. It's worth the effort if you want a solid repair.
- Use a pack of playing cards as throwaway squeegees when pouring

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OS1 Atlantic Jacket

OS2 Key West Jacket

4330 Dinghy/One Design Smock



Respect The Element

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it as a normal surface repair. Grind away enough material over the whole repair area to produce a shallow depression. Use epoxy and mat to fill the depression slightly above the deck surface. Sand back to match the shape of the deck, paint and, if necessary, add nonskid. You now have a solid, strong deck that will last.

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