

Gelcoat Repair: Intro



***Above:** some fairly serious gelcoat damage to the forward bow section of a fibreglass boat. Damage like this is caused in any number of ways: hitting a rocky shoreline, a collision with another boat, dropping the hull while unloading it from or onto the car.*

Look carefully at the photo above and you may notice that the damage to the gelcoat looks like cake frosting someone has taken a shallow bite out of.

The analogy sort of works. Gelcoat is a sort of frosting on a fibreglass hull in that it is an over coating. Strong and durable, gelcoat also provides UV protection for the fibreglass and epoxy which truly make the hull a hull.

Gelcoat is the first layer of protection against minor damage, gives a boat its colour, and absorbs the majority of the nicks, cuts, scratches and scrapes that a well-used boat takes under normal usage.

Gelcoat is easy to repair. Again, Brian Nystrom will show us how.

All you need are sandpaper, base gelcoat and tint, more sandpaper, wet sandpaper, and finally, if you're the fussy sort, buffing compound.

There's lots of good reasons to learn how to repair gelcoat. You save the time and expense of having a local shop do it. You also ensure the longevity of your hull by attending to the minor damage that can lead to larger problems such as seepage. Finally you keep your boat in near-new condition should you decide to sell it.

Below, Brian checks the depth of the gelcoat damage to be sure that all that is damaged is gelcoat. Were the fibreglass also damaged, Brian would repair the fibreglass damage using the process explained in previous posts.

Satisfied that the damage is to gelcoat only, Brian will load up his rubber sanding block with heavy grit sandpaper, then have at the damage with vigour to be sure that all the damaged gelcoat - whatever is chipped, cracked, or loose - gets removed.

He'll then be ready for the rest of the job, to be described in posts to follow.



Repairing Gelcoat Part 1: Sand the Repair Area



To repair the gelcoat damage shown in the [previous post](#), Brian gets down to work with a rubber sanding block and some fairly heavy grit sandpaper - in this case probably 80 grit.

Look carefully at Brian's index finger and at the section forward of the keel, to the right. Note the sanding dust. Brian will keep sanding with the 80 grit, perhaps moving up to 120, until he has transformed the rugged, textured damage into a smooth hollow.

This step is important. You want to sand extensively and aggressively, so that none of the gelcoat around the damage chips or flakes off when you knock the damage area with your hand or pick at it with your fingernail. If any gelcoat chips off, sand it down.

There's a note here worth mentioning also: sanding dust. It's toxic. Not suffocate-you-today toxic, but toxic nonetheless. So although you might be tempted to sand without a mask, think twice. At the least work in a well-ventilated area.

As for masks, there are two sorts made for consumers: dust masks, which look rather like a surgeon's mask, and VOC respirators, which use multiple filters to protect you from dust particles and the fumes you will encounter come time to apply fresh gelcoat.

Your better bet is the VOC respirator. It provides superior protection.

VOC respirator is nowhere near as esoteric as it may sound. You can buy one at places like Home Depot for under \$40/U.S. Once you've bought one you have it for good and simply replace its filters according to the packaged specs.

Below, the damage after Brian went at it with his rubber sanding block. He knocked down all of the damage - the rough, burred, and chipped spots - and has left in the hull a simple hollow:





Here's the damage before. Note how much longer the sanded area is than the damage area. That's because Brian sanded off not only the obvious damage but the radiated damage:

Gelcoat Repair Part 2: Choose the Correct Gelcoat, Mix and Apply It



Now that you've finished sanding down the damage ([Part 1](#)) it's time to indulge in junior chemistry by going online or to one of the ubiquitous (at least in North America) West Marine marine supply stores in your area.

Buy finish gelcoat, which will cure well in open air, not laminating gelcoat, which will not. Also buy a couple pairs of gloves and some throwaway brushes. Finally, if you haven't already done so, buy a VOC respirator - whose utility is explained in [Part 1](#) - at the local Home Depot or Lowes.

Be sure to buy the right kind of gelcoat and, if you need it, tint that matches the colour of your boat.

Gelcoat's sort of expensive, but cheaper in the long run than the effort, time and money you'd spend on having your local shop do the repair.

Once you've got the gelcoat, mask off the sanded damage area:



Note that Brian applied masking tape around the damage area to create a no-fly zone around the area to be re-gelcoated. Should gelcoat drip past the repair area, it will stick to the masking tape, not the undamaged hull, thus reducing the amount of clean-up and sanding off - a handy timesaver and visual reminder to aim for neat, slick repairs.

In this case Brian left extra room around the repair area because he also planned to fill in a few scratches.

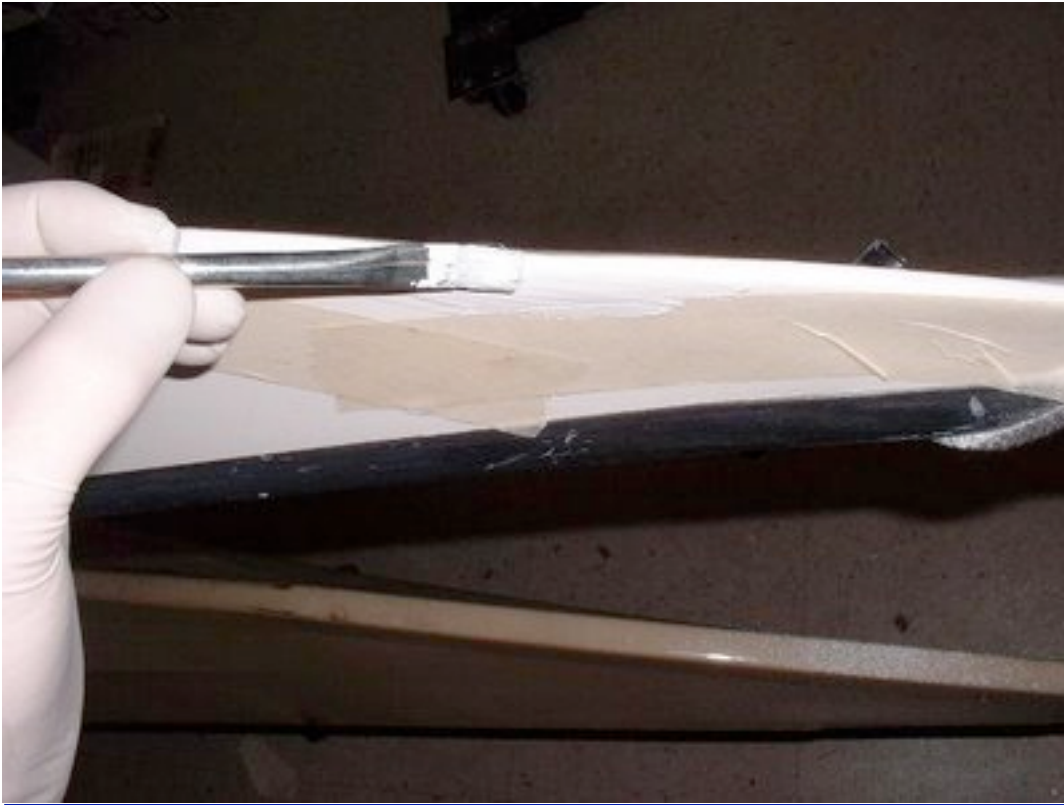
As shown below, break up the solids in the can of gelcoat before pouring out a measured amount and adding drops of hardener. Note glove (gelcoat is goopy stuff), tube of hardener, and inexpensive throwaway brush:



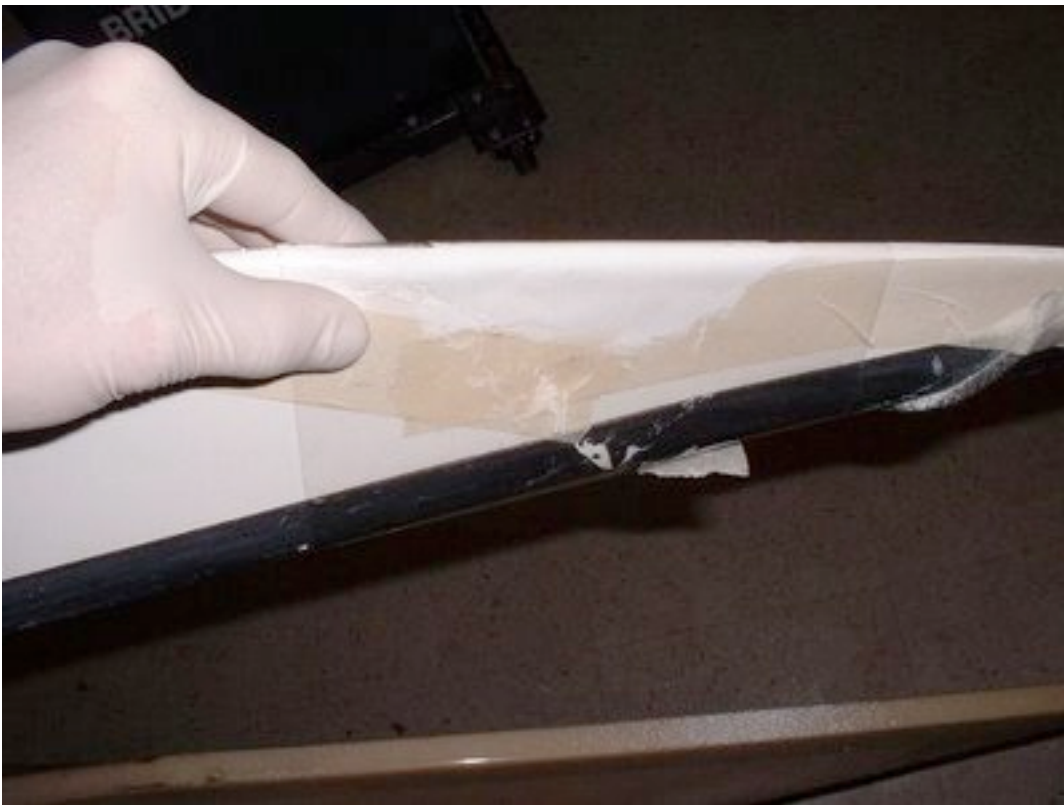
Next, once you've used a stirring stick to break up the gelcoat solids, just as you would with house paint, pour a measured amount of gelcoat into a solvent-resistant container and add the proper amount of hardener, usually a certain number of drops. The directions on the gelcoat can will tell you how many:



Next, down to business. Brush the mixed gelcoat onto the sanded damage area. Note how the masking tape catches runs and drips:



Gelcoat Repair Part 3: Slicking the Gelcoat



After you've applied the mixed gelcoat to the repair area, the best way to ensure a slick finish that won't require an inordinate amount of sanding is to cover the area with stiff plastic, as shown above. Use mylar, which won't degrade against gelcoat. After you bend the mylar over the wet gelcoat, tape it down so it won't slip off.

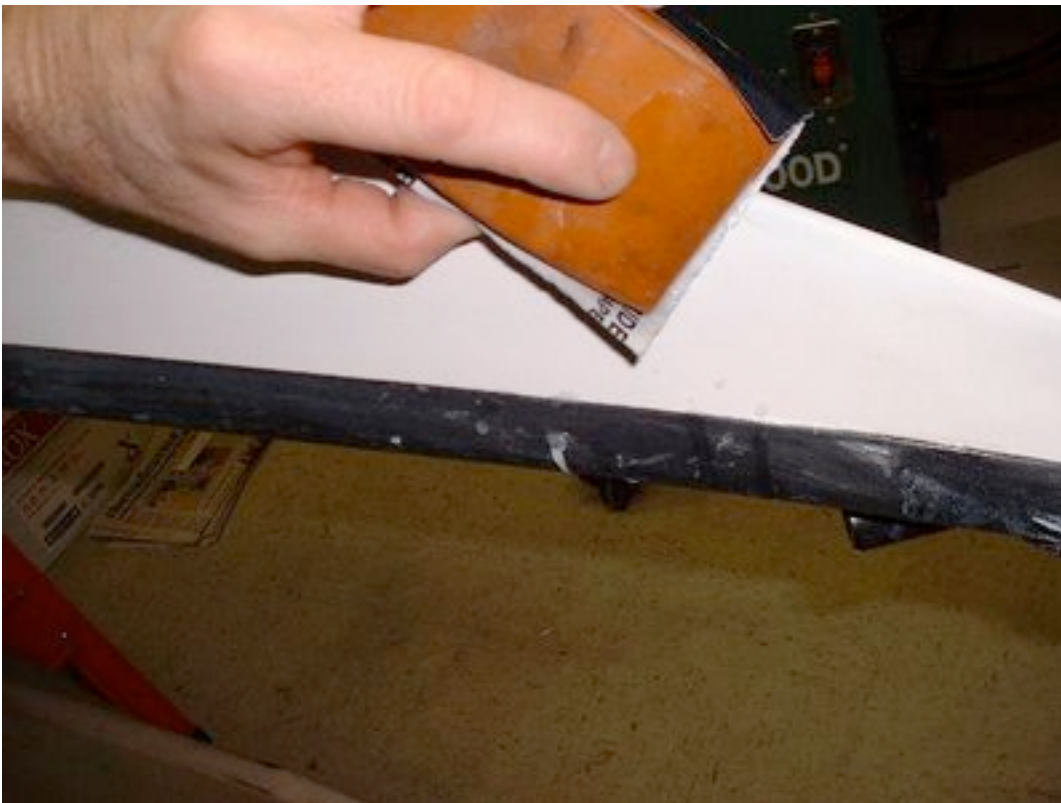
This is a form of vacuum bagging, and it serves many purposes.

First, on vertical surfaces, the mylar prevents the wet gelcoat from sagging off while it cures. Second, dust and other workshop crud won't collect on the gelcoat while it cures. Third, the mylar keeps the gelcoat smooth. The pressure of the mylar against the curing gelcoat presses the gelcoat into the repair area, shaping the gelcoat to match the contours of the repair.

Strapping down with smooth plastic either epoxy, fibreglass, or gelcoat while they cure is an excellent way to make repairs that are smoother and slicker-looking and to reduce sanding time. And in some cases, such as when using epoxy, you can use pressure from a plastic sheet to hold the work in place while you speed up curing time with the heat from a hair dryer.

It's a good trick. Helps prevent drips, sags, and overruns.

Gelcoat Repair Part 4: Wet Sanding



After the gelcoat cures (the directions on the can will tell you how long to wait) it's time to create a smooth finish with wet sandpaper.

Wet sandpaper is good stuff. It has waterproof adhesive and backing, and the grit material is also waterproof. You place a sheet of it on a sanding block, dip the block into a bucket of water, and sand. You rinse the paper between passes. There's no dust. The sanded particles are held in suspension in water. Also you can achieve a very fine finish with wet sandpaper, as the water provides an additional lubricant.

Buy several grits of wet sandpaper, from say 120 up to the upper 300's. Wet sandpaper is available everywhere, but if you plan to use a lot of it over the years (gelcoat repair can be a lucrative home business) buy 8x10 sheets on mail order from a place like [Ohio Supergrit](#), whose prices are as close to wholesale as you can get.

As shown below, work up through the grits. Look carefully and you'll see that wet sanding creates not dust but a viscous sludge you can wipe off with a rag or sponge.

Don't forget to remove the masking tape before you sand.



Finally, as shown below, every gelcoat job inevitably produces a setback or two. After working your way through a few grits, you may discover that an air-pocket or two formed in the gelcoat during curing. This is no big deal. Finding air pockets and breaking their roofs is one of the functions of sanding. Simply mix some a little more gelcoat, fill in the air pocket, wait for cure, then sand again.



Gelcoat Repair Part 5: Final Wet Sand and Buff



You're done wet-sanding when you've moved up through the wet sandpaper grits into the mid to upper 300's, or even the 400's or 500's. The choice is yours, as essentially all you're doing is adding cosmetic spit and polish to your repair job.

If you own an older boat that's already marked up and which you don't need to gussy up for resale, you can stop here, at whatever grit of wet sandpaper's finish appeases your eye.

But if you own a newer boat, or whacked a divot into a fussy friend's, or want to prep your boat for resale, you can move on to buffing and buffing compounds to add a gloss to the repair that will match the rest of the boat.

To do so you'll need some of the products below, which include good old rubbing compound, polishing compound, re-glazers and colour restorers. Each is a type of abrasive or type of wax used to add a buffed or chemical gloss. This is the kind of stuff car shops and a host of other finish fanatics use. For some you'll need a buffing tool (a high speed implement) and a variety of buffing bonnets.

At a minimum, use a buffing compound such as that from Turtle Wax. You can achieve a pretty good gloss with wet sandpaper if you move up into the truly higher grits, such as the 800's and so on, but in the end you will need a little something else.

But ask yourself whether the extra time is worth it. For a brand-new boat, yes. For an older boat, perhaps not.



Below is the repair area after all of the work is done. The air pocket uncovered by the wet-sanding in Part 4 got filled with gelcoat, sanded again, and buffed. This boat is ready for use: the cosmetics taken care of, but more important, the gelcoat restored so that it continues its crucial job of protecting the fibreglass and epoxy beneath which truly make the hull a hull.



Here's the before and after. Quite a difference. The repair area is indistinguishable from the rest of the hull. This kayak has many more seasons of hard landings and rock-garden troweling ahead of it:



For a personal narrative on gelcoat repair, go to [Derrick's post](#) at his blog kayakwisconsin.net
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