

Epoxy Blade Repair 101

By Spencer Wiberley McLaughlin Boat Works

Repairing small chips and dings on an epoxy race blade is not very complicated. It just takes a little time and patience. The most common type of damage we see at McLaughlin is on the trailing edge. We will focus on this type of repair but most techniques can be applied to all repairs.

Materials List

Safety and Application Tools- Disposable gloves, Small flat wooden blocks for sanding, tongue depressors, small paper cups, masking tape, wax paper, Small disposable paint brushes, acetone, scissors

Epoxy- West System 207 Hardener and 105 Resin or equivalent. The blades are made of EPOXY not Polyester or Vinyl Resin. West System is a very common and user friendly epoxy because of their calibrated pump system. Make sure the epoxy you buy is designed for clear laminates and has UV inhibitors

Sand Paper- 60, 80, 180, 220, 400, 600 Grit sheets. 220, 400, and 600 should be waterproof for final sanding

Additional supplies for structural repairs- 1 to 1.5oz mat fiberglass cloth, milled fiber to thicken epoxy

Tools- A Dremel tool is great for preparing the surface but not absolutely necessary.



Step #1 Surface Preparation

This may be the most important step. The surface of the area to be fixed must be prepared properly or the repair will not adhere. Take your time.

Clean and Dry- Make sure the area is clean and dry before starting. Use soap and water to remove salt and sand. Use acetone or paint thinner to remove tar or residue from tape. A hair drier on low heat helps to dry the blade. You can also set them inside the house for a few days to make sure to dry. If there is evidence of water intrusion such as a dark spot in the foam, use acetone to flush the area after it is sanded. If



Damage to be repaired Notice the irregular shape and area where the glass is pulling away from the foam core.

you are not sure if the area is dry then tape plastic wrap over it and let it stand in a warm spot overnight. If there is any condensation on the plastic wrap then you are not dry.



Damage prepared for repair. Notice the bevel in the repair edges and the uniform shape. The Tape along the underside of the repair will act as a dam to help shape to edge of the repair.

Sand- If it is a small chip then simply use 60-180 Grit sandpaper to rough-up the surfaces that the epoxy will adhere too. Try to smooth any jagged or irregular chips in the damage and bevel the cross section of the repair to increase the bonding surface of the repair. Sand about $\frac{1}{4}$ to $\frac{1}{2}$ inch around the damage because you will want to build up the repair so you can fair it. If the damage is more extensive a Dremel tool may be needed to grind away the area that is delaminated. Try not to Dremel into the foam.

Clean- Once you have the area sanded, wipe it down with acetone. This will dissolve the dust and insure adhesion of the epoxy and help the tape stick.

Tape and prepare your materials- Use masking tape to tape off the repair area. If you are working on the edge of the blade you can use the tape to also create a dam for the epoxy to collect. This helps build out the edge of the blade without worry of it sagging or running. Now is also when you want to cut any glass you need. Dry fit the pieces so you do not have to trim them after the epoxy is catalyzed.

Step #2 Working with the Epoxy

Epoxy is a two part resin that has a limited amount of working time. You want to make sure you read the instructions to the epoxy before using it. Highlight any key instructions such as mixing ratios or working temperatures. Use a small paper cup to mix the two parts together thoroughly. If you need to thicken it, milled fiber works great and will keep the solution clear. Add the thickening agent to the catalyzed resin. Use a small paint brush or tongue depressor whittled to a point. You want to build up the repair just above the surrounding area

Step #3 Sanding and fairing the repair

Once the repair has cured use 80-180 grit sandpaper to remove excess material. Use a wooden block as a sanding block so equal pressure will be applied. Constantly move the block so the repair is brought down evenly. Take your



Use a tongue depressor to drizzle the epoxy into the repair



time and wipe the repair often with a damp rag to remove sanding dust. Once the repair is nearly blended with the area use 220-600 to final sand the repair. Use water as a lubricant to keep the sandpaper from clogging.

Step #4 Buffing and Final Surface Preparation

After sanding, wipe the surface with acetone. This will remove any residual dust. If you are after a high gloss finish then start with rubbing compound and then buff to a gloss with buffing compound. If your blade has a matte finish then sanding to 600 should blend the repair in with the rest of the blade. You'll know you are done when you can close your eyes, run your hand over the repaired area, and not be able to tell where the repair begins. Don't worry too much with how it turns out cosmetically and focus more on the structure and feel of the repair.

As you can see, blade repair does not require very many specialized tools and can be a great winter project. The main thing is just take your time and be prepared. Even if you fail the first time, you can always sand down the repair and try again.

For a more detailed approach of repairs see the FAQ section of Optistuff.com. There you will find several how to articles,