

Filleting and Fairing

Tips and Techniques for Filler Use and Selection

The addition of fillers to an epoxy resin system in order to modify it for various uses is similar to having different size drill bits for one drill. No longer is it necessary to have many different resin systems around for laminating, filling, filleting, fairing and adhesive bonding. Our MAS Low Viscosity or FLAG Resin and MAS Hardeners will give the builder and repairer all that is required to make the many different thickened putties for standard build and repair operations.

Making Fillets

Spreading thickened epoxy in the joints between panels makes fillets (pronounced "fill -its".) The fillets, along with the fiberglass covering them, join the panels and greatly strengthen the joint.

The size of the fillet is determined by the thickness of the laminate and the angle between the laminate panels being joined. A good rule of thumb is to make the fillets at least as 1 1/2 times the thickness of the laminate being joined.

When mixing epoxy for fillets, use a filler that absorbs the epoxy, i.e., Wood flour, as it makes a stiff and strong paste. Wood flour's dark brown color also looks nice in a wooden boat.

Filleting and trowelable fairing formulas

Just a mid section note - laminating epoxies, which have been optimized for fiber wetting and flow, tend to do the same thing when used in a thickened system. In order to avoid this situation the above recommendation of absorptive filler is highly effective. In addition, if Wood Flour or Microballoons are used in conjunction with Colloidal Silica, the filleting material tends to stay put and will feather or pull to a finer edge and smoother surface.

In the event you are still having trouble getting your fillets and or fairing mix to stay put, Medium speed curing agent should be used with your resin. Medium cure speeds cut back on the allowed flow time of the resin system and the fillet gets sooner. Typically we use a "MEDIUM" speed curing agent. Use this with MAS FLAG Resin @ 2 parts resin to 1 part Medium hardener.

Formulas:

Trowelable Fairing:

1 Part Resin/Hardener mix using FLAG Resin and Medium hardener (Mix Resin and Hardener first before adding fillers)

1 Part Colloidal Silica or Aerosil 200

3 Parts Microballoons

Reduce the amount of micro balloons if a looser mix is required.

TIP: Use a measuring cup to add Fillers for consistent mix

Filleting:

1 Part FLAG Resin/Hardener mix using Medium hardener

1 Part Colloidal Silica M5 or Aerosil

2-3 Parts Wood Flour

Additives

Colloidal Silica and other white fillers may be added to make the wood flour paste match the color of the plywood exactly. Adding some microballoons or Colloidal Silica (no more than 30 percent by volume) has the added benefit of making wood flour fillets smoother and easier to spread.

Often two fillers used in conjunction are more effective than any single filler used alone. This can be

attributed to the synergistic effects found when two different particle size ranges are blended together.

Remember to mix the epoxy resin and hardener thoroughly before adding the thickening powder. Make a paste that is about the consistency of peanut butter. The paste should be smooth (not chunky) and spread without "pulling".

One secret to making good fillets is having the right tools. These are simple spreaders cut from thin plywood or from inexpensive MAS putty spreaders. Make an assortment of tools.

Long popsicle sticks are particularly useful for making fillets in narrow sections of kayaks and rowing shells. Distribute lumps of epoxy along the seam to be joined. Push the epoxy along the joint with a spreader. Carefully scoop up any epoxy that squeezes past the sides of the spreader. Scrape up any epoxy that's not part of the fillet it's best to scrape excess epoxy up now rather than sand it off later. (A PVC pipe dipped in lacquer thinner and held at an angle quickly swiped is an effective tool and technique for pulling a really smooth fillet.)

