

# Epoxy Resins, Fiberglass, and Tools

## Which resin?

Not all resins are equal. They are not equal in price, in ease of use or performance. An epoxy resin suitable for our boat building method does not need to be expensive but not every resin will do the job. For boat building, using wet lay up in "amateur" conditions, we need a resin that:

Cures well in an uncontrolled environment, in sometimes humid conditions.

It must "wet out" well, this means wet the fiberglass at normal pressures in an acceptable period of time

It must be forgiving of mixing ratio mistakes: some resins require very accurate measurements on a scale or they will not cure.

Cure speed must be adjustable with different hardeners: slow, medium and fast.

Most brand name epoxy resins **formulated for boat building** will fulfill these requirements but not generic resins. They may be formulated for other uses like fiber glassing tanks, automotive repair, vacuum bagging etc. or just plain cheap resins diluted with unknown additives.

## Brand names etc.

The following is our opinion based on more than 30 years of professional boat building. We used and tested three major brand names of resins and tried a couple other ones. We sometimes had bad surprises with generic resins: incomplete or very slow cure, high viscosity, poor packaging (paint cans?) etc.

We selected three types of resin:

**MarinEpoxy:** formulated for our company, it is the best all around resin with a great cost to quality ratio

System Three standard resins are very close to the MarinEpoxy and produced by a company that has sold epoxies for over 40 years. More expensive than MarinEpoxy.

**Silver Tip:** a top of the line resin manufactured by System Three. This is without a doubt the best epoxy resin on the market. It has superior mechanical and physical properties and can be post-cured by the amateur. That resin is our preferred choice for foam sandwich applications, parts made with carbon fiber, and any of our larger boats. It costs more and may be overkill for a small stitch and glue dinghy. Silver Tip is a line of products that has other advantages: glues, fillet and fairing compounds are available pre-mixed.

## Putty and fillers:

You will also need putty and "glue". Glues and putties can either be bought pre-mixed (products like Quick Fair, EZ fillet, Gel Magic, etc...) or you may use a general-purpose epoxy resin and mix in the various fillers yourself to make putties and glues. Putty for fillets is usually made by adding fillers to the same resin. The fillers are woodflour for small boats or non-structural parts of larger boats, micro balloons and colloidal silica for larger boats. The micro balloons are a very light powder that will add bulk and viscosity. The silica is there for thixotropy: to keep the putty from running on vertical surfaces. The silica is very hard and difficult to sand: we use as little of it as possible in fairing putties.

The woodflour that we use is very fine and very dry: it does not roll under a putty knife. Recipes for putties are given in the Epoxy Book and in our Stitch and Glue manual. Other fillers can be used like milled fibers. Epoxy glue, used for our butt blocks for example, is simply a liquid putty of epoxy resin and wood flour (see our video on mixing epoxy glue). All necessary fillers are included in our kits.

Pre-mixed fairing compounds are far superior to homemade putties. They may cost a little more but give better results and are much easier to work with. The same remark applies to pre-mixed glues and fillet compounds. You will also need putty and "glue". Glues and putties can either be bought pre-mixed (products like Quick Fair, EZ fillet, Gel Magic, etc...) or you may use a general-purpose epoxy resin and mix in the various fillers yourself to make putties and glues. Putty for fillets is usually made by adding fillers to the same resin. The fillers are woodflour for small boats or non-structural parts of larger boats, micro balloons and colloidal silica for larger boats. The micro balloons are a very light powder that will add bulk and viscosity. The silica is there for thixotropy: to keep the putty from running on vertical surfaces. The silica is very hard and difficult to sand: we use as little of it as possible in fairing putties.

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## Fiberglass

The other important material is fiberglass. For our small boats, we use a light biaxial tape 6 oz., 6" wide or, if not available, plain woven tape, 9 oz., 4" wide.

For larger boats we use heavier biaxial tape: 12 oz. in general. Biaxial means that the fibers are oriented in a certain way and most of the structural properties of our larger boats rely on that fact. The wide fiberglass fabrics used in our designs are generally directional (biaxial) glass, sometimes combined with mat for bulk, to obtain stiffness.

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The decks and soles are often covered with woven fabrics.

Directional fabrics (biaxials, triaxials) are much stronger while lighter than the common woven fabrics. They cost more by the area but almost the same by weight. As they use less resin (less weight), the resulting composite does not cost more than the low tech one.

Most sales people in boating centers or resin stores do not know much about these fabrics. If you do not order our kits, do not let them sell you another type of fabric than the one we list in our BOM: to specify composites is an engineer's job. You can find fiberglass in auto parts store. Do not buy that tape from anybody else than an epoxy supplier: tape for polyester may contain a binder that is not soluble in epoxy and never wet out!

### Tools

Very few tools are required for fiber glassing:

- Some containers to mix the resin: Graduated cups cost very little, and are cheap insurance against a bad mix ratio
- Throw away brushes or rollers to apply the resin: We use the cheap bristle brushes from BBC store
- Spatulas, plastic spoons, or tongue depressors to shape the fillets
- Plastic squeegee to squeeze the excess resin out of the glass and to spread faring putty
- Some gloves to protect your hands. You can use household ones but we sell latex ones at BoatBuilderCentral.com.
- Metering pumps for the resin. These are used to pump the resin out of the containers.

### Where to buy and prices:

There are three ways to buy your epoxy resin and fiberglass:

- Locally from a retailer
  - In many places in the US, you can buy these supplies from West Marine, Boat US or other Boating Center type store. There you will find brand names like WEST® or MAS®. Sold retail, those supplies always cost much more than at our [online store](#). Local suppliers for auto body shops or small specialized stores sometimes carry resin and glass but despite some misleading labeling those generic resins are not always proven boat building epoxies and we have heard horror stories from of our builders. Frequently, these resins are at the same price or more expensive than bought online.
- As a kit of from our online store [BoatBuilderCentral.com](#)
  - The safest and least expensive method is to buy online: always less expensive and our shipping costs are very low. We ship same day, and will always be cheaper than a local store
- As a kit from the vendor of your plans
  - The safest and least expensive method is to buy our kits: always less expensive thanks to a volume rebate, complete and made of the right type and amounts of materials. We ship our kits worldwide.