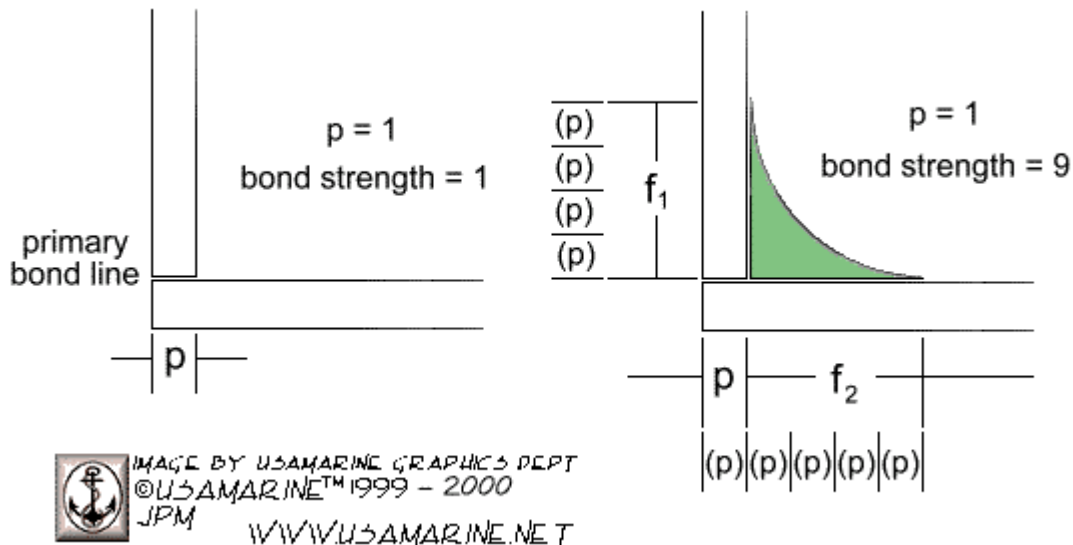


Fillets in general Fillets are the strongest reinforcement that can be added to a angled joint. As illustrated in the following diagram, the surface area of the bond is greatly increased, by the two contact sides of the fillet. The amount of this increased surface area is dependent on the radius of the fillet and the area of the primary bond line. The greater the radius of the fillet, the greater the increase in strength.



Let's say that in this case the bond line is 1/4" wide and 12" long, giving a primary bond surface of 3 square inches. By adding a fillet with a radius of 1", the bond strength is increased by a factor of 9 times, or 27 square inches.

The radius of the fillet should be at least equal to the width of the primary bond line, which would yield an increase of 3 times the strength without the fillet. Less than this, while it still increases the strength of the bond, the fillet becomes more cosmetic than structural.

Large radius fillets should be build up in stages, where as small radius fillets can be added in as little as a single step.

Tips on bonding and making fillets with epoxy:

A clean rough surface is prerequisite to assuring a good bond. Use #80 grit sand paper to thoroughly cut into the surfaces to be bonded. Do not bond directly to polyester gelcoat. While epoxy will have no problem bonding to the gelcoat, the bond of the gelcoat to the fiberglass layup should not be trusted. Cut all the way through the gelcoat into the glass.

Who ever said "cleanliness was next to godliness" must surely have been knowledgeable about epoxy bonds. Clean all of your sanded bond surfaced well with denatured alcohol and clean rags. This step can't be over stated.

Wet out all bond lines with un-thickened epoxy. You want the epoxy to penetrate all surface porosity and the sanding tooth. The epoxy you use to wet out should fairly thin, such as a layup resin. If you are using a thick 1:1 laminating resin to wet out with, thin it, after mixing, by 50% with denatured alcohol.

Allow the wetted out bond lines to tack up before proceeding. Depending on the ambient temperature and type of catalyst used, this should be between 2 and 6 hours. When touched, no visible epoxy should be on your finger, but the finger should be sticky now. Call it the "sticky finger test"...

Next, preferably using a 1:1 ratio laminating resin, mix a batch of epoxy and thicken it to the consistency of peanut butter. Use cabosil and milled fiber glass as the thickening agents at a ratio of 1 part cabosil and 1 part milled fiber. Apply a bed of the thickened epoxy to the boat side of the bond line, and position the console bubble into place. Clamping should not be necessary, but if deemed so, use the lightest clamp pressure possible. Epoxy is at it's strongest with a slight gap between the two surfaces.