

PVC Repair – How to use MEK, LA4123 & Stabond

CAUTION MEK, LA4123 and Stabond are extremely toxic and highly reactive. Repairs **must** be done in a well-ventilated environment such as outdoors. Gloves, masks and eye-protection are highly recommended. LA4123 and Stabond have limited shelf lives and must be replaced periodically even if unopened. MEK is highly volatile and will evaporate even from sealed containers. You should consider replenishing your repair kit at the beginning of every season.

Getting Started

MEK, LA4123 and Stabond will melt, scar and discolor on contact most plastics and synthetics, including your boat. Ideally, restrict MEK's contact to only the area you are patching. It is advised that you isolate your patching area using wide masking or duct tape. Limiting your working area with tape will significantly increase your probability of a tidy patch and reduce your probability of sloppy errors.

Glue Considerations

LA4123 and other one part glues are well suited to on river repairs because glue and catalyst mixing is not required. Therefore, most emergency repair kits include one part glues. Two part glues such as Stabond will always yield a superior repair. You should consider using Stabond when you have the luxury of a controlled environment at home. Two part glues are especially recommended for anything that will be load bearing (i.e. D-rings, handles, etc.)

Required tools and supplies

LA4123 or Stabond, MEK, 1 inch wide paint brush, 2 clean rags, PVC material (preferably of a color, texture and appearance that matches your boat), scissors, a sharp edge and a ball point pen. We suggest rags rather than paper towels because paper towels can tatter and inadvertently stick to glued surfaces. Paper towels can be kept around for cleanup purposes. A ball point pen is used because its ink is easily removed by MEK.

Preparing your glue brush

You will have better control applying glue by cutting your brush bristles down to at most one inch. Cutting down the bristles will also result in a more uniform application of glue. If you are doing "precision" gluing, for even better control, cut your bristles at an angle so that you can apply glue precisely using the tip end of the brush.

Preparing your patch

Patches should be cut to extend at least two inches beyond damaged areas. For extreme repairs (tears) consider three inches. For long tears you should consider applying an interior and exterior patch. Corners of the patch must always be rounded. Patches with square corners tend to snag and the taper of square corners do not have enough surface area to adequately bond. If you are installing an extremely long patch, such as a chafer, you should consider working in sections rather than trying to do it all at once.

Marking your working area

Once you have cut a patch of adequate size you should mark your working area on the boat using the patch as a template. This is done by centering the patch over the damaged area. When centered, outline the patch using a ball-point pen. Mark about an eighth of an inch outside the patch perimeter. You can also outline your working area using tape.

Using one part glue

One part glue does not require mixing. Use it straight out of the can.

Mixing two part glues (if used)

If you are using two part glues you must properly mix the glue and catalyst. The glue is usually in a pry-top container and the catalyst is usually in a small glass bottle. There is precisely enough catalyst in the bottle for the accompanying container of glue. To facilitate mixing small quantities of glue, you should mark both containers with lines that break its content into quarters. To do this first mark each container's content mid-point. Then mark each containers quarter points. Eye-balling it is an adequate measuring tool of halving and quartering. Your marks should then be adequate to mix appropriate quantities, e.g. half a bottle of glue with half a bottle of catalyst. Mixing must be done in a clean container such as a 12 oz beverage can (e.g. a beer can which is frequently available when doing river repairs) Cutoff these containers to three or four inches. Please be careful of sharp edges. A beverage can is ideal because of its size and because an aluminum can is inert (some plastic containers will melt on contact with glues or MEK). You should use your modified brush to completely mix glue and catalyst. Mixing must done by stirring slowly and completely to prevent bubbles from forming in the glue. Be sure to stir completely around the edges and the bottom of the can so that an even mix is assured. You should stir at least a minute or two or until you can see that your glue has a consistent pastiness and appearance, e.g. an even light amber color. You now have at most a 4 hour working time for your properly mixed two part glue.

Preparing your working surfaces

Use MEK to clean working surfaces of oxidation or other contaminates. This is done using a MEK soaked rag until the color of the material is present on the rag. Allow the MEK to evaporate but proceed to glue application immediately before the "softened" texture of the cleaned surfaces fades.

Glue application

Apply a thin coat of glue to the working surfaces of the boat and patch. Allow that thin coat to dry completely, as long as 20 minutes(dry-to-touch). Then apply a second thin coat of glue stroking on glue at angles as-best-as-possible perpendicular to the texture of the first coat. Allow that layer to dry.

Reactivation

Reactivation prepares both surfaces for a true molecular bond. Reactivation can be done using a light wipe with MEK or heat. A MEK wipe should not be a wet dousing wipe. Heat activation can be done using a heat gun on a low setting or a hair dryer on a high setting (if the airstream hurts it is to hot (keep it less than 180 degrees)). If using a heat gun be sure not to "bubble" the glue. In either case, MEK or heat gun, proceed to the next step while the two surfaces are aggressively tacky, such as duct tape. If no MEK or heat source is available, the patch may be applied when the second coat is tacky.

Patch application

A patch must be perfectly aligned the first time or you're screwed. To prevent air pockets the patch must be laid starting at one edge. Then slowly and very carefully laying must progress to the other edges meticulously preventing air pockets under the patch. "Working out" air pockets weakens the initial molecular bond. The initial molecular bond is the best possible bond. After laying the patch perfectly, apply as much direct pressure as possible to patch using a smooth hard object. A roller rasp can be extremely helpful. The more pressure you can apply the deeper the molecular bond will extend into both properly prepared surfaces.

Cure Time

Total cure time is at least twenty four hours, but repairs will be usable under low pressure within one hour in most cases. For optimum results place the repair under pressure for 36 hours using wood blocks and C-clamps.

Perfection

The process defined above should yield a "life-of-the-boat" repair. However, critical or large repairs should include a urethane over-painting using a brand-name product such as Flex-Tough.