

Set-Polyinject Low Viscosity Laminating Resin

Set-Polyinject is a 100% solid two-component epoxy system. It is a high modulus, high strength, low viscosity epoxy liquid binder. It is moisture insensitive, fast curing, and has no shrinkage. Set-Polyinject is available in Fast and Slow versions.

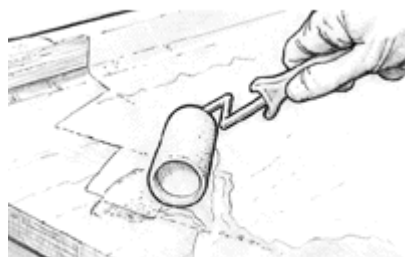
Properties@ 75°C Room Temperature	A (resin)	B (hardener)	Mixed
Color, visual (tracer dies are available for part B)	Amber	Amber	
Viscosity, cps	500-600	120-200	250-350
Mix Ratio, Volume	2:	1	
Pot Life, Fast (minutes)			15
Pot Life, Slow (minutes)			30-35
Tensile Strength, psi			5000
Tensile Elongation %			1-3
Tensile Modulus, psi			200,000-300,000
Compressive Strength, psi			10,000
Compressive Modulus, psi			250,000-320,000
Shelf Life	12 months minimum		

Note: Before using material, make a test sample to insure that material works in your application. The above information is a guideline. All testing was done in-house.

Fairing

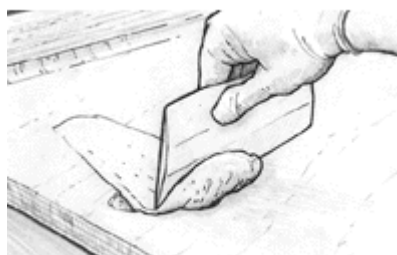
Fairing is the filling and shaping of low areas so they blend with the surrounding surfaces and appear "fair" to the eye and touch. After major structural assembly has been completed, final fairing can be easily accomplished.

Figure 21



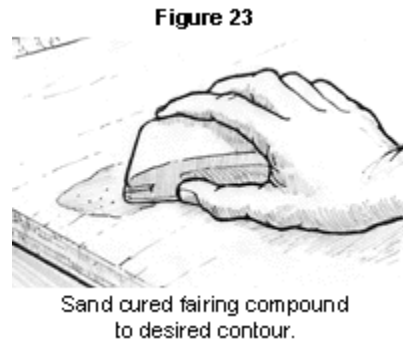
Wet out porous surfaces before applying fairing compound.

Figure 22



Apply fairing compound to fill all voids and smooth to shape.

1. Prepare the surface as you would for bonding. Sand smooth any bumps or ridges on the surface and remove all dust from the area to be faired.
2. Wet out porous surfaces with unthickened epoxy (Figure 21).
3. Mix resin/hardener and a filler to a peanut butter consistency. The thicker the mixture, the easier it will be to sand when cured.
4. Trowel on the thickened epoxy mixture with a plastic squeegee, working it into all voids and depressions. Smooth the mixture to the desired shape, leaving the mixture slightly higher than the surrounding area (Figure 22). Remove any excess thickened epoxy before it cures. If the voids you are filling are over 1/2" deep, apply the mixture in several applications.
Note: On vertical and overhead surfaces, allow the wet-out coat to gel before applying fairing compound. The fairing compound may sag or slide off the fresh wet-out coat. Apply the fairing compound while the wet-out is still in the gel stage.



5. Allow the final thickened epoxy application to cure thoroughly.
6. Sand the fairing material to blend with the surrounding contour (Figure 23). Begin with 50-grit sandpaper if you have a lot of fairing material to remove. Use 80-grit paper on the appropriate sanding block when you are close to the final contour. **CAUTION!** Don't forget your dust mask. Remove the sanding dust and fill any remaining voids following the same procedure.
7. Apply several coats of resin/hardener to the area with a disposable brush or roller after you are satisfied with the fairness. Allow the final coat to cure thoroughly before final sanding and finishing.

Applying Woven Cloth and Tape

Fiberglass cloth is applied to surfaces to provide reinforcement and/or abrasion resistance. It is applied in multiple layers (laminated) and in combination with other materials to build composite parts.

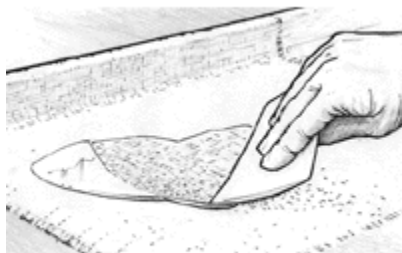
Fiberglass cloth may be applied to surfaces by either of two methods. The "dry" method refers to applying the cloth over a dry surface. The "wet" method refers to applying the cloth to an epoxy-coated surface often after the wet-out coat

becomes tacky, which helps it cling to vertical or overhead surfaces. Since this method makes it more difficult to position the cloth, the dry method is the preferred method especially with thinner cloth.

Dry method

1. Prepare the surface as you would for bonding.
2. Position the cloth over the surface and cut it several inches larger on all sides. If the surface area you are covering is larger than the cloth size, allow multiple pieces to overlap by approximately two inches. On sloped or vertical surfaces, hold the cloth in place with masking or duct tape, or with staples.
3. Mix a small quantity of epoxy.
4. Pour resin/hardener near the center of the cloth.
5. Spread the epoxy over the cloth surface with a plastic spreader, working the epoxy gently from the pool into the dry areas (Figure 24). Use a foam roller or brush to wet out fabric on vertical surfaces. Properly wet out fabric is transparent. White areas indicate dry fabric. If you are applying the cloth over a porous surface, be sure to leave enough epoxy to be absorbed by both the cloth and the surface below it. Try to limit the amount of squeegeeing you do. The more you "work" the wet surface, the more minute air bubbles are placed in suspension in the epoxy. This is especially important if you plan to use a clear finish. You may use a roller or brush to apply epoxy to horizontal as well as vertical surfaces. Smooth wrinkles and position the cloth as you work your way to the edges. Check for dry areas (especially over porous surfaces) and re-wet them as necessary before proceeding to the next step. If you have to cut a pleat or notch in the cloth to lay it flat on a compound curve or corner, make the cut with a pair of sharp scissors and overlap the edges for now.

Figure 24



Spread the epoxy over the cloth surface with a plastic spreader.

Figure 25

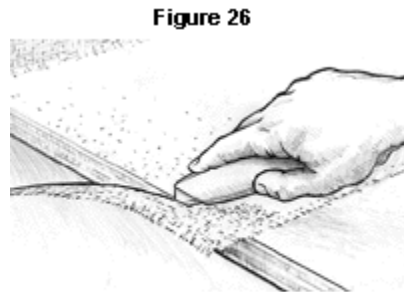


Squeegee away excess epoxy before it begins to gel.

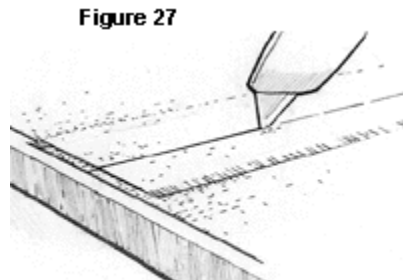
6. Squeegee away excess epoxy before the first batch begins to gel (Figure 25). Slowly drag the squeegee over the fabric at a low, almost flat, angle, using even-pressured, overlapping strokes. Use enough pressure to remove excess epoxy that would allow the cloth to float off the surface,

but not enough pressure to create dry spots. Excess epoxy appears as a shiny area, while a properly wet-out surface appears evenly transparent, with a smooth, cloth texture. Later coats of epoxy will fill the weave of the cloth.

7. Trim the excess (Figure 26) and overlapped cloth (Figure 27) after the epoxy has reached its initial cure. The cloth will cut easily with a sharp utility knife. Trim overlapped cloth, if desired, as follows:

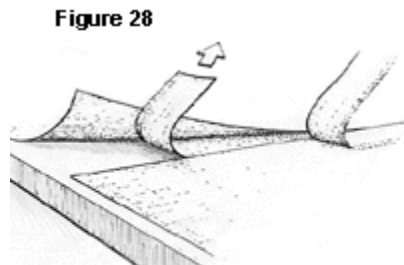


Trim excess cloth after the epoxy gels.

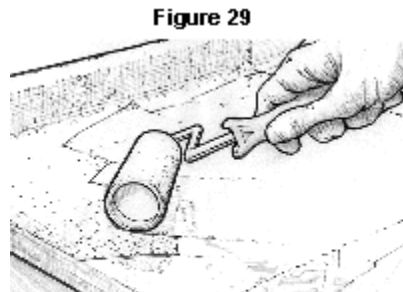


Trim overlapped cloth after the epoxy gels.

Place a metal straightedge on top of and midway between the two overlapped edges. b) Cut through both layers of cloth with a sharp utility knife. c) Remove the top-most trimming and then lift the opposite cut edge to remove the overlapped trimming (Figure 28). d) Re-wet the underside of the raised edge with epoxy and smooth into place.



Remove the top-most trimming, lift the opposite cut edge to remove the overlapped trimming.



Coat the surface to fill the weave before the wet-out reaches its final cure stage.

The result should be a near perfect butt joint, eliminating double cloth thickness. A lapped joint is stronger than a butt joint, so if appearance is not important, you may want to leave the overlap and fair in the unevenness after coating.

8. Coat the surface to fill the weave before the wet-out reaches its final cure stage (Figure 29).

Follow the procedures for final coating in the next section. It will take two or three coats to completely fill the weave of the cloth and to allow for a final sanding that will not affect the cloth.

Wet method

An alternative is to apply the fabric or tape to a surface coated with wet epoxy. As mentioned, this is not the preferred method, especially with large pieces of cloth, because of the difficulty removing wrinkles or adjusting the position of the cloth as it is being wet out. However, you may come across situations when this method may be useful or necessary.

1. Prepare the surface for bonding. Pre-fit and trim the cloth to size. Roll the cloth neatly so that it may be conveniently rolled back into position later.
2. Roll a heavy coat of epoxy on the surface.
3. Unroll the glass cloth over the wet epoxy and position it. Surface tension will hold most cloth in position. If you are applying the cloth vertically or overhead, you may want to thicken the epoxy slightly with filler, then wait until it becomes sticky. Work out wrinkles by lifting the edge of the cloth and smoothing from the center with your gloved hand or a squeegee.
4. Apply a second coat of epoxy with a foam roller. Apply enough epoxy to thoroughly wet out the cloth.
5. Remove the excess epoxy with a squeegee, using long overlapping strokes. The cloth should appear consistently transparent with a smooth cloth texture.
6. Follow steps 7, 8 and 9 under the dry method to finish the procedure.

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