

OCEANPOLY®

LAMINATION PROCESS





Lamination Process for Adhering OceaPoly®

The lamination process for adhering OceaPoly® (OP) to Fiberglass, Aluminum and Steel is an exact science. Although, this process allows for certain latitudes during the different processes, there are also some steps, procedures and environmental requirements that must be followed with extreme exactness. These steps, procedures and environmental requirements will be noted with **bold underlined** copy. Everything else needs to be followed as closely as possible. Failure to follow these steps and condition requirements will lead to an unsuccessful adhesion and failure of the lamination.

The following steps are for the purpose of adhering OP to Aluminum, Fiberglass and Steel.

Environment:

The room climate for preparing, applying, and curing is extremely important. Follow these guidelines carefully for successful results.

Room temperature:	55 – 100degrees F
Boat surface temperature:	55 – 85 degrees F
Epoxy temperature:	55 – 88 degrees F
Curing temperature:	55 – 120 degrees F

For best results it is especially important that all items used in this process remain at the same relative temperature throughout the entire process. The warmer the temperature the faster the adhesive will set up.

Examples:

- Do not apply OP without first bringing the boat surface to room temperature.
- Do not work with a surface that is wet or have any type of condensation on it.
- Do not use adhesive without first bringing it up to temperature.
- Do not put boat or bonded material outside to cure unless the temperature is over 60 degrees for the duration of the cure cycle. The cooler the temperature the slower the cure time.

STEP 1 – Set-up

The surface to be bonded must be placed in a level or upright position. Position boat or product surface so you can access all areas and from all sides of the “to be bonded” surface easily. All parts or surfaces need to be secured on a sturdy non-moving platform.

STEP 2 – Preparing the OP for application

Use a CNC router, water jet cutter, or like equipment to cut the OP to fit area(s) you desire to cover with OP. The OP to be adhered can be an all-in-one piece, or individual pieces.

If you have radius sides on your boat, or the part for bonding has a radius, the OP can be put in a break press and bent* just as you would bend aluminum or steel. You will need to add three (3) to five (5) degrees more bend to the OP to equal the same degree of radius as the aluminum. **Make sure break press has been degreased before using.**

*Note: OP has a memory, so it is important that the break press bending process be performed and checked just before the OP is to be applied.

When applying OP to a radius surface 1/8” shim should be applied to the center point of the radius to separate the OP from the parent material. The Plexus MA 590 (see material list) needs to be a thickness of 1/8” to chemically react properly. Shims at the outside edge of a lamination is also recommended, so the vacuum bagging process does not compress the Plexus adhesive out from between the two parent materials (OP and the parent material).

See material list for Plexus products because cure times vary. Plexus MA 590 working time is approximately 90 to 105 minutes, and the fixture time is 6 to? hours depending on the environmental temperature.

Shim material should be the same material as parent material, i.e., Steel with steel, fiberglass with fiberglass. Shim size: 1/8” thick. A larger type of plastic paper clip works well.

STEP 3-Preparing the OP for adhesion to surface.

Apply vinyl ester resin to cloth side of OP with a trowel, enough to saturate cloth backing, and then scrape off excess. Allow too fully dry.

(See the materials list for vinyl ester resin. Curing time for Vinyl ester is 8 to 10 hours.)

STEP 4 - Preparing the surface for sanding.

Once boat or bonded product is secure, using clean cotton rags, clean the surface wherever OP will be adhered thoroughly with the degreaser denatured alcohol. Make sure the surface dries completely, and no chemical residue remains before proceeding.

Once completely dry, bonding surface is ready to be sanded.

IMPORTANT SANDING REQUIREMENTS

When working with aluminum, **oxidation begins occurring within three (3) minutes after the surface has been sanded.**

After the surface has been sanded, or sandblasted, you will need to etch the sanded surface before applying the epoxy.

Plan to prepare the epoxy ahead of time to be ready as soon as the aluminum surface has been sanded and etched.

STEP 5 - Sanding the surface

In this step you will prepare the surface to be etched.

A sandblaster is the preferred choice for sanding, but if not available, sanding disk should be used on alumina and steel.

First - Choose the correct sandpaper for your surface.

For aluminum: 36 grit zirconium alumina sanding disk abrasive.

For steel: 36 grit zirconium alumina sanding disk abrasive.

For fiberglass: 80 grit sandpaper.

Using the correct sand media, sand the entire desired contact area on the boat.

Using clean cotton rags, wipe down entire sanded surface to remove any dust or debris left due to sanding with denatured alcohol. Blowing off the surface with high-pressure (clean) air works well.

You should now have a clean, evenly sanded area, ready to be etched.

Remember: Work quickly, and do not allow the surface to oxidize before the epoxy is applied.

STEP 6 – Etching an Aluminum surface

In this next step you will “etch” the surface to prepare it for receiving the epoxy.

Using PC 120 Primer/Conditioner (a red etching liquid) on a clean cotton rag, lightly wipe down entire sanded surface.

If sandblasted, a paint spray gun works best. Apply only a thin mist of the PC 120 etching material.

Do not apply too much PC 120 etching liquid. Apply until the surface has a **pinkish tint.**

Let the surface dry completely before proceeding to the next step. Drying will take approximately 15 to 30 minutes. Surface needs to be dry to the touch.

STEP 7– Applying the adhesive

Using the thoroughly mixed adhesive, pour a generous portion of the adhesive in the center of the sanded surface. You will have approximately 70 to 105 minutes to work with the adhesive. All depends on environmental temperature.

Using a serrated trowel, pull the epoxy from the center of the sanded area to the edges of the sanded area. The serrated grooves allow the air to evacuate when laying down the OP, so align the grooves perpendicular to the edges of the sanded area.

Using the same serrated trowel, workout any bubbles that may have appeared while applying the epoxy. The epoxy must be virtually free of bubbles before proceeding.

The finish coat of epoxy needs to be uniform across the sanded area, and approximately 1/8” thick plus. If dents are present, epoxy can also be used as filler up to 2” deep.

STEP 8 – Applying the OP

Carefully lay the cut OP onto the epoxy-covered surface. If possible, lay the OP from the center out. This will also help assure little to no air becomes trapped between the OP, epoxy, and parent material.

Lightly press the OP into the epoxy. Do not apply too much pressure, as this is only intended to seat the OP into the epoxy, so it does not move around during the bagging process.

STEP 9 – Applying the breather cloth.

Once OP is in place, apply the breather cloth. The purpose of the breather cloth is to allow the air to be evacuated.

STEP 10 – Bagging Process

With all the OP pieces in their correct positions, carefully lay the bagging film over the breather cloth making sure none of the OP pieces move. Adjust the bag to achieve a smooth contact between the bag and the OP. Seal the bag with the yellow sealing tape, and slowly apply pressure. Bring pressure up to between 7 to 12 inHg of pressure to remove the air.

DO NOT exceed the recommended pressure. If the recommended pressure is exceeded, the epoxy will be pressed out from between the OP and parent material, resulting in poor, or even non-adhesion, and product failure.

Bring the bagged boat or bonded product up to pressure. The bag pressure must remain constant, and the boat or bonded product must remain in the temperature-controlled environment until the end of the curing process. Again, it must remain in the temperature-controlled environment until the end of the curing process.

STEP 11 – Vacuum timing

Vacuum must be maintained during the entire curing process to the recommended times on the attach chart.

Once the curing time has expired, release the pressure, and remove the bagging film and breather cloth from the boat or product.

STEP 12 – Clean up

Now the lamination process is finished and ready for cleanup. During the bagging process some of the epoxy probably squeezed out between the OP and parent product. Using a sanding disk, go around the edge of the OP and remove any debris. Make sure to wear proper breathing and skin protection.

To finish use a hand-held router with a 60-degree bevel to grove out material in all seams. Then with small 80 grit sanding disk ruff up surface on inside of grove and ½” on each side of seam.

Next step is to weld the seams with an extrusion welder. Remove excess of the welding spline with a flat tip router bit.

Your boat or product is now finished and ready for service.

If you have any questions before, during, or after your project, please do not to hesitate to call us directly. We will be glad to answer any questions you have or walk you through any of the steps.

Thank you for using LinkTech’s bondable UHMW product... OceaPoly®.