

InterProtect[®]

The INTERPROTECT[®] System

To reduce water absorption by a fiberglass hull

For prevention and repair of gelcoat blistering

Universal primer for above and below the waterline

Excellent for use on underwater metals, hulls and keels

Easy to apply – Dries quickly – No sanding

New Temperature
& Overcoating Ranges

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I CAUSES OF BLISTERING

Fiberglass has proven to be a marvelous material for use in boat construction, but it has limitations just as any other material. Gelcoat and fiberglass laminates can absorb water, which can cause changes in the physical makeup of the hull. Osmotic Blister damage in fiberglass boats is defined as the hydrolytic breakdown of the resin matrix caused by the presence of water in the laminate and is characterized by the formation of liquid filled blisters and eventual structural failure of the laminate. It is the purpose of this Technical Bulletin to address the subject of water absorption by a fiberglass hull, the problems created and the preventative and repair measures necessary to reduce these problems.

The use of fiberglass laminate and resin as construction materials for boats has created one of the most dramatic changes in the industry since man first hollowed a log. Simply described, most fiberglass hulls are made in molds of the desired hull shape from the outside in. This means the surface of the mold is coated with gelcoat (pigmented resin), and then layers of resin-saturated fiberglass cloth (laminate) are laid against the gelcoat. First a layer of fiberglass mat is used or even a thin layer of chop strand mat is used to provide a smooth surface and to prevent 'print through' of the woven mat layers that give the boat it's structural integrity. These layers of cloth and resin are built up with a resin that doesn't fully cure in the presence of oxygen. The final layer of resin has an antioxidant in it and the layers of resin and cloth cure together. Manufacturers may also post-cure the boat by exposing it to heat. In the mold the gelcoat, resin and fiberglass laminate bind together and when hard conform to the desired shape and provides a very durable and strong structure.

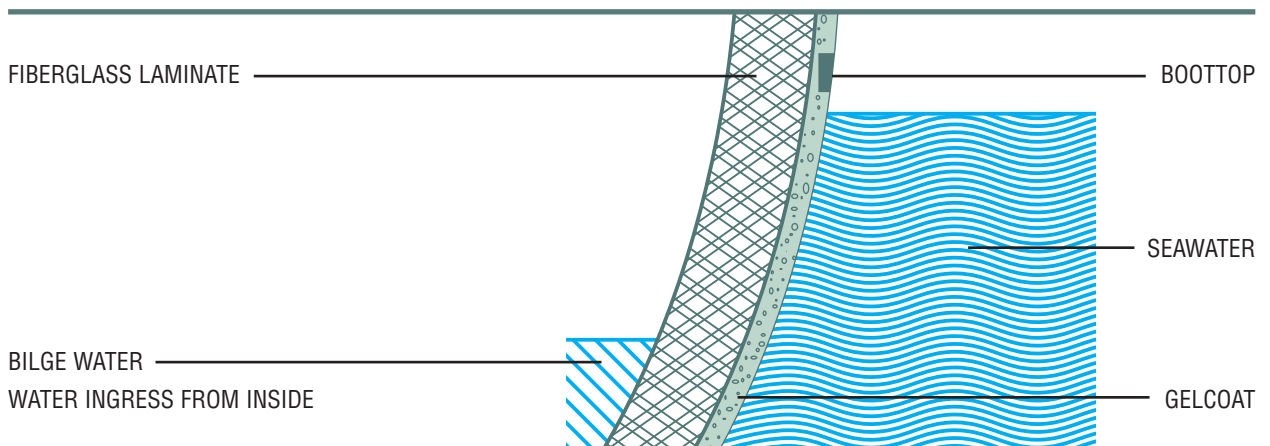
Osmosis and hull blistering

The gelcoat on fiberglass hulls was once believed to be an almost indestructible surface and impervious to water. However, field experience and extensive testing have proven water will pass through the gelcoat and reach the laminate layer at some point during the hull's lifetime.

The water gets into the laminate in the form of water vapor. Water vapor will penetrate ALL polymeric materials. The penetration rate varies but is generally quite fast. Once water permeates the gelcoat and reaches the laminate layers it forms concentration cells in the voids and draws in additional moisture. It then begins to break down the resin in the laminate by hydrolyzing the polyester back to its constituents despite the cross-linking of the resin. This creates more solutes and draws more water into the cell. The liquid solution behind the gelcoat seeks to reach equilibrium with the water on the outer skin of the gelcoat. During the attempted equilibrium process, pressure increases and is responsible for distension of the gelcoat. It is difficult to determine how much water a fiberglass hull laminate must absorb to cause gelcoat blistering. On some hulls the gelcoats were very thick and did not blister, instead they cracked but whether blistered or cracked the hulls were still absorbing water. Not only does the water vapor pass through the gelcoat from the exterior, but exposed interior laminate in the bilge can absorb water, too.

It is reasonable to assume that keeping water from the gelcoat and laminate is an effective method of preventing water absorption and will reduce the potential of gelcoat blistering. This penetration or absorption process can take days, months or years. Regardless, the hull steadily gains weight, loses efficiency through the water, suffers increased fuel consumption and can result in hull blisters.

Schematic of fiberglass construction



II EPOXY TECHNOLOGY

In the marine marketplace there are three main choices of materials to use to increase the barrier; polyester, vinylester and epoxy. Polyester is the least expensive, easy to use and cures quickly but as shown it suffers from osmotic attack, it is physically weak and brittle and has poor adhesive qualities. Vinylester has better strength and moisture resistance than polyester, familiar processing (like polyester), cures quickly and is of moderate cost but is still physically weak and brittle, has only modest adhesive properties and according to some manufacturers, full water resistant properties will only be achieved with a heated post-cure. Epoxies have a higher cost, and slower cure than polyester or vinylester but they have much higher strength & toughness, excellent adhesion, a 'fixed' cure system with no un-reacted components or additives and most importantly epoxies are not attacked by water.

With the above in mind, **Interlux®** set out to specifically design an epoxy coating to reduce water absorption.

The following characteristics were required:

- Fast drying characteristics that would enable the applicator to achieve a complete protective coating over the gel-coat in a single weekend.
- A coating easily applied by a do-it-yourselfer, as well as the highly skilled applicators.
- Improved sag resistance allowing film build without runs or sags.
- A natural structure within the epoxy coating to create a barrier against water permeation.

The Interlux chemists have developed a unique two-part epoxy coating system called the InterProtect System.

The InterProtect epoxies are formulated specifically to reduce the potential of water absorption by the hull.

InterProtect 2000E and InterProtect 3000 have a unique protective barrier within their film to retard water permeation.

Technically, the InterProtect Micro-Plate® formula provides millions of overlapping microscopic plates. When bound in the epoxy coatings, they create an overlapping barrier similar to shingles on a roof. Enlarged 900 times in this electron microscope photo, the overlapping Micro-Plates clearly eliminate any direct path for water migration. (Photo #2)

Electron microscope photos

Traditional two-part epoxy coatings were adaptations of products designed for other applications which were not specifically developed to resist water permeation. This electron microscope photograph of a conventional epoxy coating enlarged 900 times shows the pigment randomly dispersed, creating no uniform barrier to water permeation. Water can find almost a direct path through and around these randomly dispersed particles.



PHOTO #1

Magnified 900 times, the Micro-Plate effect of InterProtect is demonstrated in this electron microscope photo. The overlapping Micro-Plates create a material barrier against water migration yet provide a smooth, hard epoxy finish.

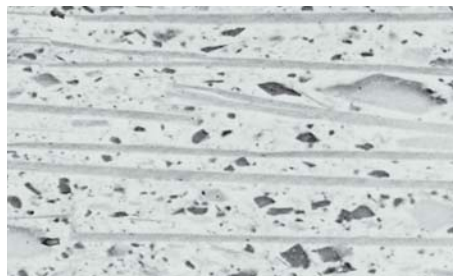


PHOTO #2

The InterProtect System is the most widely used blister prevention and repair system in the marine industry for good reason – It has been tested by an independent marine lab and shown to be the best system for reducing water absorption in fiberglass.

III INCREASE THE VALUE OF YOUR BOAT WITH PREVENTATIVE MAINTENANCE

The InterProtect System was designed to repair hulls which have experienced gelcoat blistering. However, the best time to attack hull blistering is before it happens. Taking preventative action before a problem occurs greatly reduces the likelihood of an expensive repair and has been shown to increase resale value of your boat. If you're buying a new boat, protect your investment with the InterProtect System before it ever goes into the water!

IV THE IMPORTANCE OF PROPERLY DRYING THE HULL

The importance of having a moisture-free hull cannot be overemphasized. The drier the laminate, the lighter the hull, the better the performance, better fuel efficiency and longer gelcoat life. If InterProtect is applied over a wet hull, it will trap moisture in the laminate and blistering will continue. Only when you are convinced of dryness, proceed with application. Allow the hull to completely 'dry'. Allow hull to dry as long as possible. (A saturated hull may require three months or longer to dry and some boats may require force drying.) Atmospheric conditions and boat age will affect drying time. Older boats in cold, damp conditions will dry slower than newer boats in hot, dry conditions.

For used boats without any visible signs of water absorption, remove all antifouling paint with Interlux® Interstrip® 299E and then sand with 80-grit production paper. For boats with visible signs of water absorption (blisters, weeping, etc.) remove antifouling paint with Interstrip 299E and then sand with 80-grit production paper or professional sandblasting. Open all blisters by grinding to solid laminate. Scrub and rinse these areas with fresh water. Be sure bilges are dry as water may penetrate the laminate from the inside.

In areas where boats are stored out of water during the off-season, complete the surface preparation when the boat is hauled. Apply InterProtect System prior to spring launch. In this way, the hull will have a long drying cycle. The recurrence of gelcoat blistering cannot be completely assured, although longer drying times decrease the possibility of future blistering.

Water and Glycol

Thorough drying of the laminate is vital for successful treatment, but often this is where mistakes and compromises are made. This is because water is assumed to be the only liquid to be removed from the hull. In addition to water, glycol is a commonly found liquid in blistered hulls, which must be removed. Glycol is used in the manufacture of polyester, which explains its presence in the hull. Unlike water, which is volatile and will readily evaporate, glycol is not volatile and must be removed physically from the hull. Glycols are hygroscopic, which means they are attracted to water, therefore, it follows that water can be used to remove them. If the laminate is pressure washed with fresh water, preferably hot, on a regular basis, glycol will be washed off, and the underlying glycol will migrate towards the surface. If this treatment is carried out 1-2 times a week for 3-4 weeks, all glycol and other contaminants should be removed, and the hull will then dry quickly in natural conditions.

Testing for hull dryness

Because much care and technique must be employed in using a moisture meter accurately. Calibration, sensitivity, depth of sample, number of samples, and experience are all factors in using moisture meters correctly, it is a good practice to have a competent marine surveyor or applicator take readings with a moisture meter before applying the InterProtect system even if your boat is not blistered.

The best method of using a moisture meter is to test several places on the hull both above and below the waterline. Moisture meters should not be used to measure through antifouling paint, as the paint may retain moisture for long periods of time and provide a false reading on the meter. Remove all antifouling paint, open the blisters and wash with fresh water. Allow the hull to dry overnight and then begin to take moisture meter reading on the hull. You should measure for moisture every two to three feet on the hull below the waterline. Mark the spots on the boat where you take readings and write in the date and the moisture reading. Measure those areas again every couple of weeks and mark down the new date and the new reading.

Blasting and peeling

The most common methods of preparing hulls for osmosis treatment are blasting and peeling. Blasting will remove weak areas of laminate, which produces a very uneven surface. An uneven surface will have a much greater profile than a smooth surface and greatly helps the drying process, and helps to ensure good adhesion of paint coatings. Peeling produces a much smoother surface that will take less time to fair but will take longer to dry. If the hull is peeled the surface should be lightly blasted or ground using 36-grit discs.

Complete removal of gelcoat should be undertaken only under the advice of a competent yacht surveyor. Blasting or peeling should only be done by personnel who are experienced in working with fiberglass.

V HOW MUCH INTERPROTECT DO I NEED?

Once the hull is dry, applying the proper film thickness of InterProtect is critical in keeping hull laminate dry. The following is designed to help estimate the amount of material required for a specific hull. Proper film thickness will improve the performance of the InterProtect system.

Calculating wetted surface area

It is best to actually measure the wetted surface area of the hull. If this is difficult to do, a close approximation can be made by multiplying the length overall, times the beam, times 85%. (L.O.A. x Beam x .85 = wetted surface area.) The following chart is offered as an approximation. Dividing the wetted surface area by the expected coverage will give you the number of gallons needed to get to the proper film thickness.

BOAT SIZE & TYPE	ESTIMATED SURFACE AREA (SQ FT)	INTERPROTECT 2000E 4-5 COATS TOTAL BRUSH APPLIED (GALLONS)	INTERPROTECT 3000 3-4 COATS TOTAL SPRAY APPLIED (GALLONS)	EPIGLASS® HT9000 IF REQUIRED BRUSH APPLIED ONLY (QUARTS)
18' Power & Sail	120	2	1	3
21' Power & Sail	150	2	1.5	4
28' Power & Sail	240	4	2.5	5
31' Sailboat	270	4	3	6
32' Sportfisherman	300	5	3	7
36' Cruising Sailboat	330	5	3.5	8
36' Powerboat	350	6	4	8
41' Cruising Sailboat	435	7	5	10
42' Powerboat	500	8	5	11
53' Cruising Sailboat	590	10	6	13
53' Powerboat	650	11-12	7	15

Wetted surface areas and product volume requirements for boats listed above are approximate and are supplied as reference only.

All quantities should be rounded up because a thicker coating provides greater protection against water penetration.

- Average expected coverage of Epiglass HT9000 is approximately 175 sq ft per gallon kit but surface condition will greatly affect coverage. Apply enough Epiglass HT9000 to seal all bare laminate.
- Average expected coverage of InterProtect 2000E is 60 sq ft per gallon kit when brushing or rolling and 45 sq ft per gallon kit when spraying to achieve 10 mils of dry finished coating.
- Average expected coverage of InterProtect 3000 is 90 sq ft per gallon per kit when spraying and 110 sq ft per gallon kit when brushing or rolling to achieve 10 mils of dry finished coating.

NOTE: InterProtect 2000E is available in two colors, gray and white, so an optional method of application is to alternate the color for each coat, for example, when applying InterProtect 2000E to a white hull start with InterProtect gray, then use white for the second coat and so on. Continue to alternate the colors through all of the coats to reach 10 mils. This will help ensure complete coverage and make it easier to apply the correct amount of paint. Take this in to account when determining how much InterProtect 2000E will be needed.

VI APPLYING INTERPROTECT FOR PREVENTION AND PROTECTION

Surface Prep

New or non-blistered hulls

To prevent delamination, all mold release wax and other contamination must be removed prior to the application of InterProtect Epoxies. If the boat is already painted remove all antifouling paint with **Interstrip® 299E** (follow directions on label).

There are two methods of cleaning the hull:

1. Scrub well using **Fiberglass Surface Prep YMA601** and a maroon plastic scrub pad. Flush well with fresh water and allow surface to dry.

or...

2. Wipe a small area with a clean rag that has been wetted with **Interlux® Fiberglass Solvent Wash 202**.

Before the **Fiberglass Solvent Wash 202** dries wipe with a clean dry rag. Change rags frequently.

Repeat wiping with **Fiberglass Solvent Wash 202** until surface is clean.

Run water over the surface to determine if it is clean. If the water separates or beads up clean again.

Do not sand the surface before cleaning. Sanding grinds contamination into the surface making it harder to remove.

Once the surface is clean, sand the gelcoat thoroughly using 80-grit sandpaper and remove sanding residue by wiping with a cloth dampened with **Fiberglass Solvent Wash 202**.

Applying InterProtect 2000E to new or non-blistered hulls

1. Clean and sand the surface following the instructions above.
2. Mix three parts of **2000E Gray Base** or **2002E White Base** with one part **2001E Reactor**, and allow it to stand mixed for a minimum of twenty minutes for induction time. Mix only what can be used in five hours.
3. Apply coats of **InterProtect 2000E** as per chart below. Apply **InterProtect 2000E** to build a 10 mil (0.010 inch) dry film thickness. It usually takes four to five coats to apply the proper amount of **InterProtect 2000E**, but the final dry film thickness is more important than the number of coats. See Section V for amounts.

Overcoating times of InterProtect 2000E

SUBSTRATE TEMPERATURE °F (°C)	TIME BETWEEN COATS OF INTERPROTECT 2000E		HOURS BETWEEN LAST COAT OF INTERPROTECT 2000E & ANTIFOULING PAINT*	
	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM
41-50 (5-10)	5 hours	6 months	7 hours	9 hours
50-60 (10-15)	5 hours	6 months	7 hours	9 hours
60-80 (15-27)	3 hours	6 months	5 hours	7 hours
80-90 (27-32)	2 hours	6 months	3 hours	5 hours

* Overcoating times will vary due to wide variations in temperature and humidity. The best method to determine when the **InterProtect 2000E** is Ready-to-Overcoat with antifouling paint is to check the paint film using the 'Thumb Print' test. If the primer feels tacky and you can leave a thumb print in the paint film without getting any paint on your thumb the **InterProtect 2000E** is ready for overcoating. Test the paint film 1 hour after starting the application. Continue testing every 15 minutes using the 'Thumb Print' test until reaching the Ready-to-Overcoat stage. Immediately, begin to apply the **Interlux®** antifouling paint once the primer has reached the Ready-to-Overcoat stage. Do not use the 'Thumb Print' test when applying **VC® Offshore**, **Baltoplate®** or any vinyl antifouling over **InterProtect**. Allow the **InterProtect** to cure overnight and then sand with 80-grit sandpaper.

Applying InterProtect 3000 to new or non-blistered hulls

1. Clean and sand the surface following the instructions above.
2. Mix 4 parts of **InterProtect 3000 Base** with 1 part of **3001 Reactor** and allow to sit for 20 minutes induction time. Mix only enough epoxy for one coat.
3. Apply coats of **InterProtect 3000** as per chart below. Apply enough **InterProtect 3000** to build a 10 mil (0.010 inch) dry film thickness. It usually takes 3 to 4 coats to apply the proper amount of **InterProtect 3000**, but the final dry film thickness is more important than the number of coats. See Section V for amounts.
4. Allow final coat of **InterProtect 3000** to dry overnight. After an overnight (16 hours) dry, apply one coat of **InterProtect 2000E** or **Fiberglass No Sand Primer YPA200**.

Apply antifouling paint to the **InterProtect 2000E** or **Fiberglass No Sand Primer YPA200** using the 'Thumb Print' test.

Overcoating times of InterProtect 3000

SUBSTRATE TEMPERATURE °F (°C)	TOUCH DRY HOURS	HARD DRY HOURS	POT LIFE HOURS	OVERCOATING INTERVAL BETWEEN COATS OF 3000	
				MINIMUM	MAXIMUM
32 (0)	16	48	8	20 hours	7 months
41 (5)	8	20	5	10 hours	3 months
50 (10)	6	10	4	7 hours	2 months
73 (23)	2	4	2.5	3 hours	1.5 month
95 (35)	1	2	1	1.5 hours	1 month

Apply **InterProtect 2000E** or **Fiberglass No Sand Primer YPA200** prior to application of antifouling paint.

VII USING INTERPROTECT FOR REPAIR AND PROTECTION

Blistered Hulls

Surface Prep

1. Remove all antifouling paint with **Interlux® Interstrip® 299E** and clean surface as above.
2. Sand the entire bottom with 80-grit production sandpaper.
3. Remove the sanding residue by wiping with **Interlux Fiberglass Solvent Wash 202** on a damp cloth.
4. Open all blisters and remove any bad gelcoat and laminate. Open all blistered areas either by physical grinding or by professionally sandblasting or peeling. On severely blistered boats the entire gelcoat below the waterline may need to be removed. Complete removal of the gelcoat should be done only after the advice of a competent Marine Surveyor. If the gelcoat has been peeled off lightly sandblast or sand with 60-80 grit sandpaper to remove any soft spots in the laminate and to provide more surface area to aid in drying the hull. It also makes a better surface for the **Epiglass® Epoxy Resin** to adhere to.
5. Wash the entire underwater surface with fresh water (preferably hot water) in order to remove glycol and other water-soluble contaminants. Repeat periodically during the initial phase of the drying process.
6. Allow the hull to dry as long as necessary (2-3 months average) to ensure all water has left the hull. Moisture in the hull will cause additional blistering.
7. Before beginning repair wipe the surface using **Interlux Fiberglass Solvent Wash 202** on a damp cloth.

Repair

1. Clean surface as above.
2. Mix **Epiglass HT9000 Epoxy Resin** Base and Cure. Stir together and then immediately pour material into a wide flat tray to prevent premature curing. Mix only what can be used in 20 minutes.
3. Apply Epoxy Resin to all areas where the gelcoat has been removed wait a minimum of four hours and scrub with a stiff bristle brush using soap and water to remove amine blush. Rinse with fresh water. Sand with 80-grit production sandpaper and wipe clean with **Interlux Fiberglass Solvent Wash 202**. If it has not been overcoated within 24 hours, rewash with fresh water.

NOTE: It may take several coats of epoxy to fill laminate that has been voided of resin. When using Epiglass Epoxy Resin you may put one coat on top of another without sanding using the 'Thumb Print' test. If you can leave a thumb print in the epoxy without getting any epoxy on your thumb it is ready to overcoat. This method can also be used with Epiglass Epoxy Resin that has been mixed with Epiglass Fairing Blend HT450. This will greatly simplify the filling and fairing part of the repair process.

4. Mix **Watertite Epoxy Filler** and apply to blistered areas and allow an overnight dry.
5. Sand entire surface with 80-grit production sandpaper. Remove sanding residue using a cloth dampened with **Interlux Fiberglass Solvent Wash 202**.

Protection

Once the surface is completely covered and smooth, apply the water barrier using **InterProtect 2000E** or **InterProtect 3000**.

Applying InterProtect 2000E to boats with blistered hulls

After repairing the hull as described above.

1. Mix three parts of **2000E Gray Base** or **2002E White Base** with one part **2001E Reactor**, and allow it to stand mixed for a minimum of twenty minutes for induction time. Mix only what can be used in five hours.
2. Apply coats of **InterProtect 2000E** as per overcoating chart on page 6. Apply **InterProtect 2000E** to build a 10 mil (0.010 inch) dry film thickness. It usually takes four to five coats to apply the proper amount of **InterProtect 2000E**, but the final dry film thickness is more important than the number of coats. See Section V for amounts.
3. Apply antifouling paint as per chart on page 6.

Applying InterProtect 3000 to boats with blistered hulls

1. After repairing the hull as described above.
2. Mix four parts of **InterProtect 3000 Base** with one part of **3001 Reactor** and allow to stand for a minimum of twenty minutes induction time. Mix only enough epoxy for one coat.
3. Apply coats of **InterProtect 3000** as per overcoating chart on page 6. Apply enough **InterProtect 3000** to build a 10 mil (0.010 inch) dry film thickness. It usually takes three to four coats to apply the proper amount of **InterProtect 3000** but the final dry film thickness is more important than the number of coats. See Section V for amounts.
4. Allow final coat of **InterProtect 3000** to dry overnight (16 hours) and apply one coat of **InterProtect 2000E** or **Fiberglass No Sand Primer YPA200**. Apply Antifouling paint to the primer using the 'Thumb Print' test.

VIII RELAMINATING WITH EPIGLASS® AND FIBERGLASS CLOTH

If the boat has been severely blistered it may be necessary to have the bottom peeled or sandblasted. If that is the case the bottom will need to be built up with resin and cloth.

1. Sand or plane out bumps and any ridges left by the peeling process. If the hull has large hollows, fill them after sanding and cleaning.
2. Wash and let dry.
3. Apply a coat of **Epiglass HT 9000 Resin** to the entire hull.
4. Wet out cloth for laminating and apply it to the hull when the **Epiglass** coating is tacky. Squeegee or use a rubber roller to eliminate voids. If needed, cut cloth to fit the area being covered.
5. If a second laminate is required, apply it when the first laminate is at the tacky stage.
6. Apply Peel Ply to the hull to get a patterned finish and to reduce voids, or when the laminate is cured to the tacky stage apply a sanding coat of **Epiglass** and allow it to dry thoroughly. Let dry for at least a week before sanding.
7. Sand the bottom with 80-grit sandpaper and remove sanding residue by wiping with a cloth that has been dampened with **Fiberglass Solvent Wash 202**.

If the hull is fair apply the water barrier of **InterProtect 2000E** or **InterProtect 3000** and apply antifouling paint.

IX DO I NEED TO FAIR THE BOTTOM?

At this point you should decide how smooth you want the bottom of the hull. A racing bottom is a lot smoother than the bottom of a cruising boat. We'll go through the process of putting a smooth racing bottom on the hull, with the understanding that you can stop almost anywhere along the way.

To get the best racing bottom the hull should be very, very fair and smooth.

1. Sand the bottom with 80-grit sandpaper and remove sanding residue by wiping with a cloth that has been dampened with **Fiberglass Solvent Wash 202**.
2. Apply one coat of **InterProtect 2000E** and allow to dry 4 hours but no more than 18 hours.
3. Make up a fairly thick mix of **Epiglass Resin** and **Epiglass Filler Blend HT450**. (You can also use **Interfill 830** or **Watertite**.)
4. Spread the mix into the hollow area and use a batten to get it smooth and fair.
5. Put a long batten (about 6 feet long), made from a piece of 3/8 or 3/4 inch (10 to 20 mm) plastic pipe along the bottom of the hull. Use thinner pipe or batten transversely across the hull and thicker pipe or batten longitudinally. Mark any hollows on the hull.
6. When it is set up, sand the area back using a 'longboard.' A long board is a sanding board that is at least 4' (just over 1 meter) long and up to 10' (about 3 meters long) depending on the size of the boat, and three to six inches 75 to 150 mm wide. A long board can be easily made in the yard as required. Use this board with 80 to 100-grit sandpaper working in a fore and aft direction to get the hull bottom smooth.

NOTE: Use a batten often to check the fairness of the hull bottom

7. Keep going back over the hull until all the hollows are filled and faired as described above.
8. Apply a coat of **Epiglass HT9000 Resin** over the entire bottom, allow to cure and apply water barrier of **InterProtect 2000E** or **InterProtect 3000**.

Fairing with Epiglass®



Go to yachtpaint.com for more information on using Epiglass Epoxy Resin for relaminating, filling and fairing.

X INTERPROTECT AS A PRIMER FOR UNDERWATER METALS & KEELS

InterProtect is the recommended as a universal anti-corrosive primer for aluminum, bronze, stainless steel, cast iron and lead. Below the waterline it can be used to prime props, shafts, keels, trim tabs, thru-hulls and the lower units of outboards and outdrives. Above the waterline it is recommended for priming any metal that needs to be protected.

Surface Prep for metal

1. Remove all grease and other contaminants by wiping the surface with **Interlux® Special Thinner 216** or **Fiberglass Solvent Wash 202**.
2. Bring metal to a uniform bright finish by sandblasting or by sanding using a 36-grit sanding disc. All rust and other oxidation must be removed.
3. Remove all blast or sanding residue by using an air hose and broom or vacuum. Metal must be clean and bright with no residue remaining on the surface. Begin applying coatings as soon as possible.
4. Within one hour of sandblasting apply one coat of **InterProtect 2000E** or **InterProtect 3000** directly to the bare metal. If sandblasting is not possible or if more than one hour has passed since sandblasting, apply one thin coat of **Interlux Viny-Lux® Primewash 353/354** that has been thinned 25% with **Viny-Lux Solvent 355**. Allow **Viny-Lux Primewash** to dry for one hour but no more than twenty-four hours before application of **InterProtect 2000E** or **InterProtect 3000**.

Applying InterProtect as a primer

Application in progress.



Applying InterProtect 2000E to keels and underwater metals

1. If fairing is necessary, allow first coat of **InterProtect 2000E** to dry for at least 4 hours but no more than 18 hours and apply **Watertite Epoxy Filler**.
2. Apply 4 more coats of **InterProtect 2000E**, allowing the appropriate dry times (see overcoating chart on page 6).
3. Refer to page 7 for dry times between last coat of **InterProtect 2000E** and antifouling paint.

Application of InterProtect 3000 to keels and underwater metals

1. If fairing is necessary, allow the first coat of **InterProtect 3000** to dry overnight and sand with 80-grit sandpaper and remove sanding residue, then fair with **Watertite Epoxy Filler**.
2. Apply at least 3 more coats of **InterProtect 3000**. See Dry Time chart on page 6 for overcoating intervals.
3. Allow final coat of **InterProtect 3000** to dry overnight. Apply one coat of **InterProtect 2000E** or **Fiberglass No Sand Primer YPA200**. Apply antifouling as per instructions.

Applying InterProtect to underwater metals



1



2



3

XI HEALTH AND SAFETY RECOMMENDATIONS

1. Be sure to follow all instructions properly.
2. Wear protective clothing, gloves, eye protection and appropriate mask when working with any paint or epoxy.
3. Apply **InterProtect** in well-ventilated areas.
4. If rash or skin irritation occurs with the use of **InterProtect**, discontinue use and thoroughly wash with soap and water.

SEE APPROPRIATE LABEL FOR FURTHER DETAILS ON THE SPECIFIC FORMULA.

5. Material Safety datasheets are available at your local dealer or on the web at yachtpaint.com

XII EQUIPMENT RECOMMENDATIONS

Epiglass® HT9000

Apply by brush or roller **ONLY**.

Brush: Use a natural bristle brush.

Roller: Use a 1/8" 'yellow' foam roller.



Interprotect® 2000E

Apply by Brush, Roller or Spray.

Brush: Use a natural bristle brush.

Roller: Use a 5/16" or 3/8" nap solvent resistant roller.

Airless Spray Pressure: 2400 psi Tip Size: 17-21 thou.

Conventional Spray Pressure Pot: Pressure: 50-65 psi (gun pressure); 10-15 psi (pot pressure). Tip Size: 60-70 thou.

Siphon Cup: Pressure: 50-65 psi – gun pressure; Tip Size: 70-85 thou.

**NOW AVAILABLE
IN 2 COLORS –
GRAY 2000E
& WHITE 2002E**



Interprotect® 3000

Apply by Brush, Roller or Spray.

Brush: Use a natural bristle brush.

Roller: Use a 5/16" or 3/8" nap solvent resistant roller.

Airless Spray Pressure: 2500-3000 psi. Tip Size: 21-26 thou.

Conventional Spray Pressure Pot: Pressure: 50-65 psi (gun pressure); 10-15 psi (pot pressure); Tip Size: 70-85 thou.

Color: White.








When spraying InterProtect Epoxies, be sure to wear the appropriate safety equipment.

See product label for details.

For complete information on spray application get the Product Data Sheets and Material Safety Data Sheets at yachtpaint.com

XIII ACCESSORY PRODUCTS

FIBERGLASS SURFACE PREP	FIBERGLASS SOLVENT WASH	WATERTITE	INTERFILL	INTERSTRIP®
				
YMA601	202	YAV135	YAA830	299E
For cleaning bare fiberglass and Epoxy prior to sanding.	For cleaning bare fiberglass and Epoxy after sanding.	For filling and fairing. Available in 500mL and Liter containers.	Use for large filling and fairing jobs. Available in half gallon and 2 gallon containers.	Paint Remover.

XIV APPLICATION NOTES

- The 3 most important things to getting a good, long lasting blister repair or prevention job are:
Hull Preparation – Getting the hull cleaned and sanded properly.
Hull Dryness – Making sure that the laminate is dry.
Using the right amount of epoxy – Thin films will re-blister.
- **InterProtect 2000E** has been made easier to use by allowing up to 2 weeks between coats.
- **InterProtect** epoxies should only be applied over sanded or sandblasted surfaces.
- **Epiglass® Epoxy Resin** may be used in place of **InterProtect 1000**. **Epiglass** saturates better into bare fiber-glass cloth, dries with less amine blush, and is easier to mix. **Epiglass** has 3 hardener speeds to match application temperatures.
- **Watertite Epoxy Filler** or **Epiglass Epoxy Resin** with the **HT450 Filler Blend** can be used when filling blisters or fairing the hull or keel.
- For large filling and fairing projects **Interfill 830** can be used with the **InterProtect System** and is available in 2 gallon kits.
- **Epiglass HT9000** must be overcoated with **InterProtect 2000E** or **InterProtect 3000** prior to the application of antifouling paint.
- Minimum overcoating times for **InterProtect 2000E** are provided as a guide. The best method to determine when the **InterProtect 2000E** is Ready-to-Overcoat with antifouling paint is to check the paint film using the 'Thumb Print' test which is:

If the primer feels tacky and you can leave a thumb print in the paint film without getting any paint on your thumb the **InterProtect 2000E** is ready for overcoating. Test the paint film 1 hour after starting the application. Continue testing every 15 minutes using the 'Thumb Print' test until reaching the Ready-to-Overcoat stage. Immediately, begin to apply the **Interlux®** antifouling paint once the **InterProtect 2000E** has reached the Ready-to-Overcoat stage.
- **Do not use the 'Thumb Print' test when applying VC® Offshore, Baltoplate® or any vinyl antifouling over InterProtect. Apply and extra coat of InterProtect and allow to cure overnight and then sand with 80-grit sandpaper.**
- Before mixing **InterProtect 2000E** or **InterProtect 3000** stir each component separately. This will insure there is no settling and help make the blending of the two components easier.
- After being mixed it is important to let **InterProtect 2000E** or **InterProtect 3000** sit for 20 minutes induction time to begin the reaction.
- **Epiglass HT9000** do not need an induction time and should be used as soon as they are mixed as they have a short Pot Life.
- **InterProtect 2000E** is available in two colors gray and white so an optional method of application is to paint each coat an alternate color. This ensures complete coverage and the correct amount of paint is applied.

XV EXPECTATIONS OF SUCCESS

All yachts that are well built with high-quality materials and good workmanship are likely to perform in a completely satisfactory manner for many years. However, there are many reasons why water absorption can occur. The cause and contributory factors have been analyzed and not completely understood. What seems to be clear is that nearly all blistering problems arise from the presence of water in the laminate. Proper use of the Interprotect® System will reduce water absorption. Its success is directly related to your following of the application guidelines.

The performance of any marine paint or coating depends on many factors outside the control of International Paint, Inc., including surface preparation, proper application, and environmental conditions.

Therefore, International Paint, Inc. cannot guarantee this product's suitability for your particular purpose or application.

IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY ARE EXCLUDED. INTERNATIONAL PAINT SHALL NOT, UNDER ANY CIRCUMSTANCES, BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

By purchase or use of this product, buyer agrees that the sole and exclusive remedy, if any, is limited to the refund of the purchase price or replacement of the product at International Paint option.

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XVI CHOOSING THE RIGHT INTERPROTECT SYSTEM

InterProtect 2000E was developed to be easy to apply by brush or roller without sagging or running. The quick overcoat times of **InterProtect 2000E** allow the entire system, 10 mils of epoxy and the first coat of antifouling, to be applied in one weekend. Antifouling paint can be applied without additional surface preparation. (Be sure to follow label directions).

InterProtect 3000 High Build Epoxy meets the most restrictive of VOC regulations in this country today and can be applied in temperatures ranging from 32°F to 95°F. **InterProtect 3000** has a higher volume of solids and can be used at lower temperatures than the **InterProtect 2000E**. It takes less paint to get to the required dry film thickness, which translates to a saving of time and money in application labor. This product was developed for spray application by professional applicators but it can be applied using a brush and roller.

Regardless of which **InterProtect System** you choose, you are getting the industry standard of gelcoat repair systems. The chart below compares the product characteristics of both **InterProtect 2000E** and **InterProtect 3000**. You decide which product best suits your application procedures, drying times, VOC restrictions, etc.

	INTERPROTECT 2000E		INTERPROTECT 3000	
Color	Gray 2000E & White 2002E		Off-White	
Application Methods	Roll, brush or spray		Spray, roll or brush	
VOC	464 grams per liter		166 grams per liter	
Volume Solids	45%		80%	
Application Temperature	41-95°F (5-35°C)		32-90°F (0-32°C)	
Theoretical Coverage	240 sq ft/gal/coat brush or roll applied		270 sq ft/gal/coat spray applied	
Mixing Ratio	3:1		4:1	
Solvent	Not recommended		Interlux 2316n	
Clean-Up	Interlux 2316n		Interlux 2316n	
Pot Life	5 hours		4 hours	
SUBSTRATE TEMPERATURE	OVERCOAT TIMES WITH SELF		OVERCOAT TIMES WITH SELF	
	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM
32°F (0°C)	N/A	N/A	20 hours	3 months
41°F (5°C)	5 hours	6 months	10 hours	2 months
50°F (10°C)	5 hours	6 months	7 hours	1.5 months
73°F (23°C)	3 hours	6 months	3 hours	1 month
90°F (32°C)	2 hours	6 months	1.5 hours	7 days
SUBSTRATE TEMPERATURE	OVERCOAT TIMES WITH ANTIFOULING PAINT			
	MINIMUM	MAXIMUM		
50-60°F (10-15°C)	7 hours	9 hours	Apply InterProtect 2000E or Fiberglass No Sand Primer YPA200 to InterProtect 3000 before applying antifouling paint	
60-80°F (15-27°C)	5 hours	7 hours		
80-90°F (27-32°C)	3 hours	5 hours		

Use this chart as a guide. For best results use the 'Thumb Print' method to determine when InterProtect 2000E is ready to overcoat. It usually takes 4-5 coats to apply the proper amount of InterProtect 2000E, but the amount of paint applied is more important than the number of coats. See section V for how to calculate the proper amount of paint.

Typical work schedule for application of InterProtect 2000E at 70°F (21°C)

DAY ONE	DAY TWO UP TO TWO WEEKS IS ALLOWED BETWEEN COATS OF INTERPROTECT® 2000E
8 AM: Give boat final sanding and wipe down	8 AM: Apply fourth coat of InterProtect 2000E
9 AM: Apply first coat of InterProtect 2000E	11 AM: Apply fifth coat of InterProtect 2000E (if necessary)
12 NOON: Apply second coat of InterProtect 2000E	4 PM: Apply first coat of Interlux Antifouling Paint
3 PM: Apply third coat of InterProtect 2000E	



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