

*The Best Protection
Against Osmotic blistering
and Water Absorption*

PETTIT PROTECT



PRODUCTS AND APPLICATIONS

Pettit Protect for Osmotic Blister Protection

- High Solids Epoxy Primer
- High-Build for Easier Application
- Unique Mica Shield Technology
- Industry Leading Water Vapor Transmission Rates
- Easier Application Due to Fewer Coats
- Only 2 Coats Instead of 6 are Necessary for Protection
- Less Solvent, Less Solvent Smell
- VOC Compliant in all Air Districts
- Available in 2 Colors – Gray and White
- Preferred Choice by Professionals
- Also Offers Excellent Protection for Steel, Aluminum, and other Metals



What causes blistering?

The easy answer is water being absorbed through the gelcoat and into the laminate. Polyester resin and fiberglass have been used for building boats for more than 60 years and has proven to be an excellent material for this purpose but it does have some drawbacks. One of the drawbacks is that gelcoat and resin can absorb water. This absorption is primarily done through water vapor transmission through the gelcoat into the laminate beneath. Once water gets into the laminate, it begins to form cells and pull more water vapor toward them and begins to break down the polyester laminate into its various components. Some of these components are water loving and will attract more moisture, eventually causing blistering.

When first introduced, fiberglass hulls were built using thick gelcoats followed by using chopped strand fiberglass and polyester resin which made the hulls very stiff and heavy. As the gelcoat aged it became more brittle and after about 12-15 years, many would show cracking. Resin technology has changed over the years and with the introduction of new types of resin technology, newer hulls are built thinner and are more flexible and more likely to show blistering than cracking. In either case, the problem is still water getting to the laminate and breaking it down.

What makes Epoxy better than polyester?

Epoxy is stronger, more flexible and has better adhesive qualities than polyester resin. While water vapor can pass through any polymeric resin, epoxy is not attacked by water and is not broken down into its various components by water.

Epoxyes have a fixed cure which means that since the two parts of an epoxy cross-link the rate at which the two parts of the epoxy are mixed are fixed at a given rate and both become part of the cured system. Polyester resin uses an MEKP (methyl ethyl ketone peroxide) catalyst which does not stay in the resin but starts the reaction which cures the resin.

PettitProtect® High-Build Epoxy Primers –

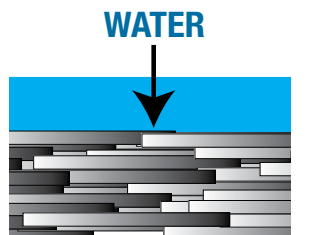
- Faster and easier application
- Comprehensive gelcoat blister repair and prevention
- High-build formula covers in 2 coats vs the competitions' 5 or 6 coats
- Exclusive Low-VOC formula developed specifically for friendly application
- Available in 2 colors for light and dark over-coating

What makes Pettit Protect® High Build Epoxy the better choice?

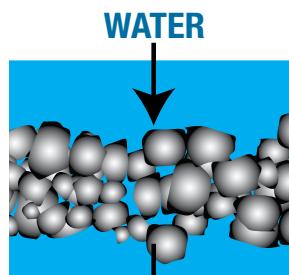
Pettit Protect High-Build Epoxy Primer is a heavy duty, two component epoxy coating for use where maximum resistance to fresh or salt water is required. *Mica Shield Technology* makes Pettit Protect® an excellent choice for the prevention and repair of osmotic blisters because it reduces water vapor transmission through the coating and works to prevent water penetration into the gelcoat and fiberglass laminate.

Pettit Protect high-solids formula saves time and money because it allows for quicker and easier application with fewer coats necessary for effective protection. When compared to competitive products, Pettit Protect's high-build formula allows for application of heavier coats without it running or sagging while still providing a smooth finish for antifouling paint. Pettit Protect uses less solvent than competition and this reduces solvent smell. Together this results in less labor and less product needed to obtain the Dry Film Thickness (DFT) necessary for the ultimate in protection.

Pettit Protect also provides dependable corrosion protection on steel, aluminum, and all other underwater metals. It is ideally suited for commercial and pleasure craft applications and has excellent durability.



**High Aspect Sheet Mica
(INPENETRABLE)**



**Low Aspect
Ground Particle Mica**

What makes **Pettit Protect®** different? That would be **MICA SHIELD TECHNOLOGY.**

Aspect Ratio – All premium epoxy primers use Mica to prevent water intrusion. Pettit Protect Mica is incorporated into the epoxy resin while in sheet form, whereas other competitors use Mica in a ground form. The differences between the types of mica used in epoxy primers is the ratio of the mica particle length to its width.

Pettit Protect uses a high aspect ratio mica whereas other competitors used a low aspect ratio mica.

The sheets with high aspect ratio Mica are forced to overlay each other creating an impenetrable layer of epoxy. The issue with low aspect ratio Mica is that when rolled out, there is no structure. The Mica isn't guaranteed to overlap and create the impenetrable layer of epoxy. See diagram at the Left.

Water Vapor Transmission testing is done to show how fast and how much water vapor will penetrate through a coating. Testing has shown that the water vapor transmission through Pettit Protect is the best in the industry.



General Application Instructions

- 1** **Mix both components of the Pettit Protect High-Build Epoxy Primer thoroughly.**
Then mix the two components together in the ratio of 3 parts of Component A to 1 part of Component B by volume. Allow to stand 15 minutes at approximately 70° before using. (Allow to stand at least 30 minutes if temperature is between 50° and 65°F). Do not mix more material than can be used within the specified pot life shown.
- 2** **For new unblistered hulls or hulls with minor blistering, apply 2 coats of Pettit Protect 4700/4701 Gray or 4100/4101 White and for severely blistered hulls, apply 3 coats of Pettit Protect.** Wet film thickness should be 7 mils per coat, which yields 4 mils dry film thickness (DFT). Avoid applying more than 10 wet mils per coat as this may result in solvent entrapment. A wet film thickness gauge should be used to monitor paint application. Total dry film thickness (DFT) for a two coat application will be 8 mils and for a three coat application, there should be 12 mils minimum DFT for maximum coating performance. Make certain that the proper dry film thickness has been achieved by applying the correct amount of Pettit Protect. Apply the Pettit Protect High Build Epoxy Primer per the recoat schedule below.
- 3** **Apply the first coat of Pettit antifouling paint over the last coat of epoxy within the specified overcoating schedule shown below.**
If these dry times are exceeded, you must sand the last coat of epoxy thoroughly with 80 grit production paper before applying antifouling paint or apply another coat of epoxy if recoat window has not been exceeded. Do not apply antifouling paint before the minimum dry time, as mud cracking of the antifouling may result.
- 4** **Allow the system to cure thoroughly before launching the boat.** Follow the recommended launch times shown below.

Air Temp	Induction Time	Pot Life
90° F	10 minutes	2.5 hours
70° F	15 minutes	5 hours
45° F	30 minutes	10 hours

Hull Temp	Time to Recoat with Pettit Protect		*Time to Coat with Antifouling	
	Min	Max	Min	Max
90° F	2 hours	60 days	3 hours	6 hours
70° F	2.5 hours	60 days	5 hours	8 hours
45° F	5 hours	60 days	7 hours	10 hours

Air Temp	Minimum Launch Time after Last Coat of Epoxy
90° F	48 hours
70° F	72 hours
45° F	120 hours

*If the maximum dry time between coats is exceeded, you must sand the previous coat thoroughly with 80-grit production paper before applying the next coat. Failure to sand will result in poor adhesion between coats and eventual coating delamination. Recoating before the minimum dry time may result in solvent entrapment, also causing coating failure.

No Sand Priming System for New or Unpainted Fiberglass Hulls

Pettit Protect can also be used as an effective one-coat no-sand priming system.

- 1** **If the boat is new or has never been bottom painted, clean and prep the surface thoroughly using Pettit 92 Bio-Blue.** Scrub the Pettit 92 Bio-Blue with a 3M™ Doodlebug™ and a maroon or brown Scotch-Brite™ abrasive pad. Ensure that all areas have been thoroughly scrubbed with the Doodlebug™ and pad.
- 2** **Apply one coat of Pettit Protect 4700/4701 Gray or 4100/4101 White.** Wet Film Thickness (WFT) should be seven (7) mils per coat, which yields four (4) mils Dry Film Thickness (DFT).
- 3** **Apply the first coat of Pettit bottom paint over the Pettit Protect.** Make sure the Pettit Protect is still thumbprint tacky. See chart above, for dry times.
- 4** **After the required dry time, of the bottom paint, apply a second coat of the Pettit bottom paint.**

Preventive Maintenance of New or Non-Blistered Hulls

- 1** ***If the boat is new or has never been bottom painted, clean and prep the surface thoroughly using Pettit 92 Bio-Blue.*** Scrub the Pettit 92 Bio-Blue with a 3M™ Doodlebug™ and a maroon or brown Scotch-Brite™ abrasive pad. Ensure that all areas have been thoroughly scrubbed with the Doodlebug™ and pad.
-OR-
If the boat has been bottom painted, remove the existing paint with a bottom paint remover made for fiberglass hulls, or remove by sanding with 80-grit production paper. All traces of antifouling paint (or any other paint or coating) must be removed completely.
- 2** ***Sand the gelcoat thoroughly*** with 80-grit production paper. All surfaces should be a uniform dull, frosty finish. Inadequate sanding of the surface will result in eventual failure of paint adhesion.
- 3** ***Remove sanding residue*** with Pettit 120 Brushing Thinner and plenty of clean rags.
- 4** ***Follow General Application instructions*** on previous page.

Repair of Hulls With Minor Blistering

- 1** ***Remove the existing paint*** with a bottom paint remover made for fiberglass hulls, or remove by sanding with 80-grit production paper. All traces of antifouling paint (or any other paint or coating) must be removed completely.
- 2** ***Clean and prep the surface thoroughly using Pettit 92 Bio-Blue.*** Scrub the Pettit 92 Bio-Blue with a 3M™ Doodlebug™ and a maroon or brown Scotch-Brite™ abrasive pad. Ensure that all areas have been thoroughly scrubbed with the Doodlebug™ and pad.
- 3** ***Sand the surface thoroughly*** with 80-grit production paper and rewash with Pettit 120 Brushing Thinner to remove the sanding residue.
- 4** ***Puncture all blisters and grind out any bad gelcoat or laminate.***
- 5** ***Rinse the entire surface with fresh water*** to remove the water-soluble contaminants leaching from the blistered areas and let dry.
- 6** ***Check the moisture content of the hull with a moisture meter.*** Take numerous readings along the length of the hull both above and below the waterline. When the hull has approached maximum achievable dryness, the moisture meter readings will be around 2 - 3%. Do not proceed with the blister repair until all readings are below 3%, as moisture trapped in the hull will lead to further blistering and a wet substrate cannot provide permanent bonding.
- 7** ***Apply West System 105/205 or System Three SilverTip Epoxy following instructions for application.*** Apply the epoxy to the blister cavities by brush making sure all blister surfaces are thoroughly saturated with epoxy resin. Let dry 3 - 5 hours at 77°F. Then proceed to Step 8 or allow the epoxy to cure hard and then lightly scrub it with plenty of fresh water and a Scotch-brite pad or soft scrub brush to remove any amine blush formed during curing.
- 8** ***Sand West System or System Three Epoxy*** with 80-grit production paper and wash with Pettit 120 Brushing Thinner to remove the sanding residue.
- 9** ***Follow General Application instructions*** on previous page.



Surface Preparation and Hull Drying

In the case of a severely blistered boat, it is generally recognized that complete removal of the gelcoat is necessary in order to correctly address the blistering problem. Gelcoat removal may be accomplished by grinding, sanding, sandblasting, water blasting, or gelcoat peeling. Sandblasting and gelcoat peeling are by far the fastest ways to remove gelcoat, and when performed by a skilled professional, yield a surface which will readily accept the coating system applied over it.

Complete removal of the gelcoat should only be performed upon the advice of a qualified Marine Surveyor.

- 1** ***Remove all existing antifouling paint and/or gelcoat*** by sanding, sandblasting, or gelcoat peeling. Make sure all blistered areas have been opened up and any bad laminate removed.
- 2** ***Flush the entire surface with fresh water*** to remove water-soluble contaminants leaching from the blistered gelcoat or laminate.
- 3** ***If the gelcoat has been peeled,*** it is possible that the surface may actually be too smooth and may require sanding with 80-grit production paper. Sandblasted surfaces should be checked for adequate surface roughness as well. All surfaces should possess the equivalent surface roughness of that obtained by sanding with 80-grit production paper.
- 4** ***Clean the surface*** with Pettit 120 Brushing Thinner.
- 5** ***Check the moisture content of the hull with a moisture meter.*** Take numerous readings along the length of the hull both above and below the waterline. When the hull has approached maximum achievable dryness, the moisture meter readings will be around 2 - 3%. Do not proceed with the blister repair until all readings are below 3%, as moisture trapped in the hull will lead to further blistering.
- 6** ***While the hull is drying out, wash the surface frequently with fresh water to remove water solubles weeping from the laminate as it dries.*** These washings will not appreciably affect the moisture content of the hull or retard the drying process. The removal of water-soluble contaminants is critical to the success of a blister repair system and must not be neglected.
- 7** ***Apply West System 105/205 or System Three SilverTip Epoxy following instructions for application.*** Apply the epoxy to the blister cavities by brush making sure all blister surfaces are thoroughly saturated with epoxy resin. Allow the epoxy to cure hard and then lightly scrub it with plenty of fresh water and a Scotch-brite pad or soft scrub brush to remove any amine blush formed during curing. If the surface is very porous, additional coats of epoxy should be applied.
- 8** ***When the final coat of West System 105/205 or System Three SilverTip Epoxy has cured hard, scrub with fresh water and a Scotch-brite pad or soft bristled brush*** to remove any amine blush formed during curing and sand thoroughly with 80-grit production paper. Wipe clean with Pettit 120 Brushing Thinner.
- 9** ***Mix Pettit 7050 EZ-Fair Epoxy Fairing Compound according to the label instructions.*** Knife or squeegee the compound into the blister cavities until they are flush with the surface and allow to cure hard. Wipe off excess fairing compound before it hardens to avoid unnecessary sanding. When completely hardened, sand the fairing compound smooth with 80-grit production paper and wipe clean with Pettit 120 Brushing Thinner.
- 10** ***Follow General Application instructions*** on Page 4.

Corrosion Protection for Underwater Metals

Pettit Protect is also an excellent primer for corrosion protection for all underwater metals. When combined with Aluma Protect, it provides a top-of-the-line corrosion protection system for all aluminum hulls from pontoon boats to superyachts.

Applying Pettit Protect to Underwater Metals

Bare Steel

Sandblast to SSPC-SP 6 Commercial blast, blow off residue with clean, compressed air, and immediately apply three coats* of Pettit Protect following application and recoat instructions. Alternatively, hand sand with 80 grit sandpaper or power hand tool clean, then remove residue with clean compressed air or by vacuuming. Immediately apply one coat of Pettit 6980 Rustlok Steel Primer and let dry to a tack free state (usually 30 minutes to 2 hours, dependent on temperature). Then apply three coats of Pettit Protect following application and recoat instructions. Do not let Rustlok Primer dry longer than 2 hours under any circumstances before applying Pettit Protect.

Bare Aluminum

Sandblast (using non-metallic media) or disc sand the aluminum to clean, bright metal. Wipe clean of residue and immediately apply one thin coat of Pettit 6455/044 Metal Primer. Let dry 8 hours minimum, 48 hours maximum, and apply three coats* Pettit Protect following application and recoat instructions.

Keels - Lead

Disc sand or otherwise abrade surface to bright metal; clean off residue. Apply one thin coat of 6455/044 Metal Primer and allow to dry eight hours. Apply one coat of Pettit Protect. Let dry to recoat. Then, if fairing is required, apply Pettit 7050 EZ-Fair Epoxy Fairing Compound. Sand smooth with 80 grit sandpaper and follow with two additional coats of Pettit Protect per label directions.

Keels - Steel or Cast Iron

Disc sand or otherwise abrade surface to bright metal and clean off residue. Apply one coat of 6980 Rustlok Steel Primer, allowing to dry only 1/2 - 2 hours prior to overcoating, no more, no less! Apply one coat of Pettit Protect. Let dry to recoat. Then, if fairing is required, apply Pettit 7050 EZ-Fair Epoxy Fairing Compound. Sand smooth and follow with two additional coats of Pettit Protect per label directions.

Previously Primed Surfaces

Pettit Protect may be applied over existing two-part epoxy finishes, provided they are in sound condition. Brush-off sandblasting or very heavy sanding with 60 grit sandpaper is required to maintain maximum adhesion. Then apply three coats* of Pettit Protect per instructions. Remember, coating performance is only as good as the surface to which it's applied. All existing two package epoxy finishes in poor condition, as well as one package primers and bottom paints, should be removed completely and the appropriate bare system, as described above, should be followed before using Pettit Protect.

*Total dry film thickness is more important than the actual number of coats applied. On metal and fiberglass, if 12 mils total DFT is not achieved with three coats, additional coats are recommended until 12 mils total DFT is achieved.



Helpful Hints & Tips



Plan your work so that the first coat of antifouling paint is applied the same day as the last coat of epoxy.



Use a 5/16" – 3/8" nap to apply Pettit Protect. Using a roller with too thin a nap will result in extra work, as additional coats will be necessary to get to the correct dry film thickness. It may also result in a rougher surface. We suggest a microfiber roller such as the Linzer Microfiber Roller.



Always start at the keel and work towards the waterline.



Pettit Protect should be applied at the rate of 225 square feet per gallon per coat to obtain 7 mils wet film thickness. This is best measured with a wet film thickness gauge. Total dry film thickness is more important than the actual number of coats applied.



Thinning is not usually needed but to slow drying in hot weather or windy conditions small amounts of Epoxy Thinner 97 may be added, but no more than 10% by volume.



Minimum overcoating times are defined as the time you begin the first coat until the time you begin the second coat. For instance, at 70°F if you begin the first coat of Pettit Protect at 9:00 AM, you can begin the second coat at 11:30 AM.



Alternate colors gray-white-gray or white-gray-white, depending on the color of the antifouling. Many applicators alternate between our white and gray epoxy. If the white hides the gray, they have applied enough mils and they've avoided missing any spots.



Apply up to three (3) layers of tape around the waterline initially so that each layer can be peeled off after each coat.



Use the thumb-print test. The temperature charts are good guidelines but the overcoat time can vary if the mil thickness changes. Test the product by applying pressure with your thumb on to the epoxy. If there is any paint transfer, the window is not open to continue. If it is "tacky to the touch" (sticky but no paint transfers), you have three (3) hours to apply the first coat of antifouling.



For the avid "racer", to achieve a smoother surface, roll out a 10-12 square foot area and tip off the roller marks with a brush. (Some non-racers may also be concerned about smooth bottoms.)



For airless spray applications, use .015" - .019" tip at 85 pounds of pressure.

Colors That Work for You

Pettit Protect is available in gray and white.

Both offer all the benefits of Gray Pettit Protect High Build Epoxy Primer. The gray makes it easier to see where you have applied the coating when applying it to a white hull and the white will not bleed color through even the lightest colored bottom paints.

You can also ***alternate the color for each coat*** to help ensure complete coverage with the correct amount of paint. Pettit Protect has excellent durability in exterior exposures, although, like most epoxies, it will chalk if not top coated.



GRAY 4700/4701



WHITE 4100/4101

Note: The swatch colors shown on this page are printed approximations of the actual primer colors.

Pettit Protect

EPOXY PRIMER



How Much Pettit Protect Do I Need?

LOA	AVERAGE SQUARE FOOTAGE	GALLON KITS PER COAT	TOTAL GAL. KITS FOR NEW OR NON-BLISTERED HULLS	TOTAL GAL. KITS FOR SEVERELY BLISTERED HULLS
20	102	0.5	1	1.5
25	170	0.75	1.5	2.25
30	255	1.25	2.5	3.75
35	342	1.5	3	4.5
40	459	2	4	6
45	574	2.5	5	7.5
50	723	3.35	6.5	9.75

PHYSICAL DATA	APPLICATION DATA	ASSOCIATED PRODUCTS
<p>VEHICLE TYPE: Epoxy/Polyamide FINISH: Low Luster COLORS: 4700/4701 Light Gray 4100/4101 White COMPONENTS: 2 MIX RATIO (A/B): 3 to 1 (by volume) CURING MECHANISM: Chemical Cure SOLIDS (theoretical) By weight: 71 ± 2% By volume: 56 ± 2% COVERAGE: 225 sq. ft./gal. VOC: 337 Grams/liter (2.81 lbs./gal) - Part A Only 347 grams/liter (2.89 lbs./gal) - Part B only 340 grams/liter (2.83 lbs./gal) - Parts A and B FLASH POINT: 80°F</p>	<p>METHOD: Brush, Roller, Airless or Conventional Spray INDUCTION PERIOD: 15 minutes @ 70°F NUMBER OF COATS: 2 minimum DRY FILM THICKNESS PER COAT: 4 mils (7.1 wet mils) APPLICATION TEMP: (air & substrate) 50° F. Min. - 90° F. Max. POT LIFE: 2½ hrs. @ 90°F, 5 hrs. @ 70°F, 10 hrs. @ 50°F DRY TIME: Substrate Temp To Recoat To Bottom Paint To Launch* 90°F 2hrs-60 days 3-6 hrs 48 hrs min 70°F 3hrs-60 days 5-8 hrs 72 hrs min 50°F 6hrs-60 days 7-10 hrs 120 hrs min If these recommended intervals are exceeded, sand thoroughly with 80 grit sandpaper before recoating or applying bottom paint. THINNER: 97 Epoxy Thinner</p>	<p>92 Bio-Blue Hull Surface Prep 97 Epoxy Thinner 6455/044 Metal Primer 6980 Rustlok Primer A-788 Splash-Zone Epoxy Repair Compound 7050 EZ-Fair Epoxy Fairing Compound Pettit Antifouling Paints</p>

Pettit Marine Paint manufactures and markets a complete line of high performance, American made, marine coatings. Pettit's name is recognized throughout the world as a leader in the marine Industry, and our reputation is based on results; our products out-perform all other major brands in the Industry time and time again. We're committed to keeping your boat protected and beautiful by providing long lasting, quality products that let you spend less time maintaining your boat and more time enjoying it. From topside paints to antifoulant bottom paints and everything in-between, Pettit's products have you covered. Pettit's plant is located in Rockaway, New Jersey, and our products are available throughout the world.

If we can be of assistance, please contact us Monday through Friday, 8:30 a.m. to 4:30 p.m. (EST).

For Sales Department, Customer and Technical Service (800) 221-4466 or (973) 625-3100

For Material Safety Data Sheets (973) 625-3100 or they can be found at www.pettitpaint.com

For Medical Emergencies (800) 548-0489

For Poison Center (412) 681-6669



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