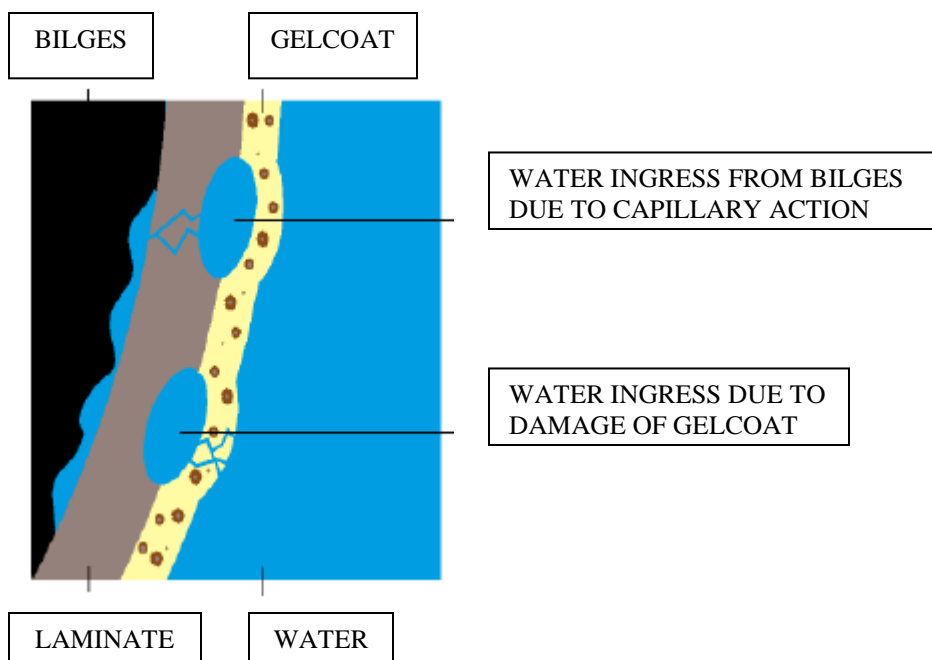


Prevention and Repair of Gelcoat Blistering

Fiberglass boats are constructed of polyester resin strengthened by fiberglass cloth. The fiberglass cloth is soaked with resin to form the laminate. A further resin layer, either polyester or vinylester, called the gelcoat, provides a water barrier on the outside surface. The final structure is very strong but could have its problems as defects in the hull could allow water ingress into the laminate, which can cause blistering of the gelcoat and lead to serious structural problems.

What is Gelcoat blistering?

Gelcoat blistering is caused by degeneration within a fiberglass laminate. This process is a reaction between water and unreacted substances remaining in the manufactured hull. The water enters the hull through the gelcoat and reacts with chemical components within the laminate creating acidic substances. These substances create pressure behind the gelcoat which causes blisters and eventually cracking. Once the gelcoat is breached in this manner, the underlying laminate is capable of absorbing water like a sponge. Blistering is not only caused by water on the outside of the hull - bilge water can also cause the problem. It is therefore worth the effort to keep your bilges dry.



When might blistering occur?

Any unprotected hull could show signs of osmotic damage, like rust on a car. The exact length of time in which this will occur depends on many factors including:

The type of water in which the boat is moored, the temperature of the water, the length of time the boat is left in the water, and most importantly, the quality of the original hull construction. In some cases, reactive impurities in the gelcoat and laminate will cause blistering within the early life of the boat. Approximately 15% of all cases of gelcoat blistering are accounted for in this way and will normally become evident within the first three year of the boat's life.

REMEMBER PROTECTION IS BETTER THAN CURE.

How to Recognize Gelcoat Blisters

The main symptom – blisters

Blisters are the most common warning sign and if identified should be followed up with immediate professional examination.

Blisters can vary from being small pinheads, to blisters to as large as the palm of your hand. The presence of any fluid behind a blister indicates a potential problem. If the fluid has a pungent, vinegary odor or feels greasy or sticky when rubbed between the forefinger and thumb, there is a high probability of osmotic damage.

Before any treatment is done, we recommend that you seek the advice of a professional boat surveyor to give you an assessment of the damage and what will need to be done to correct the problem.



Osmotic blisters under the gelcoat

Other warning signs to look for are:

Crazing – This effect can occur where the gelcoat is brittle. Fine cracks usually form due to severe flexing or impact damage, allowing water to seep into the laminate.

Prominent Fibers – Seen protruding beneath or through the gelcoat and can cause water to be “wicked” into the hull by capillary action.

Under curing of the gelcoat – Incorrect mixing or application in unsuitable conditions can cause failure to properly cure. This results in the gelcoat being porous.

IMPORTANT

The application of the correct coating system could prevent serious and costly structural problems in the later life of your boat.

Protection from Gelcoat Blistering

If bottom is new or unpainted

1. Scrub the surface thoroughly with soap and water using a stiff brush. Flush with fresh water to remove soap residue and allow surface to dry.
2. Dampen clean rag with T-36 solvent. Wipe surface thoroughly to remove mold release agents, wax and other contamination. Wipe off with a clean, dry rag before liquid dries. Wipe only a few square feet at a time and change rags frequently.

3. Lightly spray the surface with water to insure all contamination has been removed. If water beads up or separates repeat Step 2.
4. Sand the gelcoat thoroughly using 80 grit sandpaper.
5. Remove the sanding residue using T-36 solvent.
6. Mix 4 parts V-38 epoxy primer base to one part Z-78 hardener, by volume and let stand mixed for a minimum of twenty minutes for induction time. Mix only what can be used in five hours.
7. Apply coats of V38 allowing 12 hours between coats. Apply enough V-38 to build a 150um dry film thickness. This usually takes 3-4 coats but the final dry film thickness is more important than the number of coats.
8. Apply antifouling paint following the dry times listed for the type of antifouling used. If bottom has been previously painted, remove all antifouling paint and begin with step 4.
If you exceed the maximum dry times between the last coat of V-38 and the first coat of antifouling sand with 80 grit paper and apply another coat of V-38 and then be sure to hit the proper over coating interval before the application of the antifouling paint.

Repairing Minor Gelcoat Blisters

1. Carefully remove all existing paint coatings back to the original gelcoat.
2. Carefully remove blisters by grinding, peeling or blasting back to a sound, clean substrate.
 1. Wash area with fresh water; allow to dry thoroughly; this may take several months, Force dry if necessary. This step is very critical in the process, if you do not get the hull dry it will reblister. If hull reblisters with epoxy on it, it will be more difficult to dry out.
4. Prime affected areas where blistering has occurred with one coat of West System Epoxy Resin
5. Within 4–6 hours, spot fill with West System Epoxy Resin and a mixture of West 411 Filler Powder until you achieve a thick consistency.
6. Apply a minimum of two coats of West System Epoxy on the entire underwater area allowing only sufficient time between coats for the surface to “tack up” before the second coat is applied. A total thickness of 300 microns is required. Tip off a roller applied coat with a brush to give a smooth, even surface.

DISCLAIMER: *The information in this data sheet is given to the best of our knowledge based on laboratory testing and practical experience. However, as the product is often used under conditions beyond our control, we cannot guarantee anything but the quality of the product itself. We reserve the right to change the given data with out notice.*

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