

## ANTIFOULING PAINT PROBLEMS

There are occasional complaints about the failure of conventional antifouling paints used on boat bottoms and outdrive units. The customer gets very upset and wants to know what happened. Unfortunately there is usually no simple answer. Many factors influence antifouling paints to cause premature failure. They are:

1. Low water in harbors - boat can sit in mud or hit bottom occasionally.
2. Influx of fresh water from heavy rains - brings in silt, dirt and nutrients.
3. Water temperature above average or below average - affects toxicant release.
4. Salinity of the water too low - slows toxicant leaching.
5. Acid or alkaline waters - chemicals (or pollutants) affect leaching of toxicant.
6. Too little paint applied.
7. Bad slime conditions - paint is sealed up.
8. Electric current present - neutralizes antifouling paint.
9. Improper immersion times observed.
10. Improper surface preparation - paint peels.
11. Porous fiberglass - blistering in the paint film.

A general rule is that fouling varies year to year and seasonally within the year due to the above listed factors. With the low water in many harbors and channels, due to silting and the restrictions on dredging, boats can easily hit bottom many times when in use and lie in the mud at low tide when moored. The mud has enough pollutants and chemicals in it to neutralize antifouling paint and also coat the surface to stop any further leaching of the toxicant. Hitting bottom can abrade off antifouling paints and fouling can commence in these areas.

Influx of fresh water due to heavy rains also brings with it silt, dirt, and food, and a temporary lowering of the salinity of the water. The silt and dirt can coat the boat bottom and the food nourishes any growth present. The lower the salinity of the water, the slower the leaching of the toxicant from the paint. This condition is only temporary but it can slow down the toxicant enough to adversely affect the action of the antifouling paint against marine growth.

Salt water is slightly alkaline in character but chemicals and other contaminants can temporarily change the condition of the water. If there is too much alkaline material present in the water, it will stop the leaching of the toxicants and in some cases completely seal it off. Acid type water, if too strong, will quickly deplete the toxicant from the system and leave the antifouling paint virtually dead.

In the springtime, when most of the antifouling paint is applied, weather conditions often force the customer to rush his bottom paint job or apply it under adverse conditions. Many times, too little paint is applied and by mid season the paint has released all its toxicant and is dead. One brush coat of antifouling paint usually equals about one thousandth of an inch thickness, and this is not adequate paint to protect a boat bottom for an entire season.

Weather conditions can greatly affect slime accumulations on boat bottoms, and once the paint is covered with slime, toxicant release is greatly slowed or stopped completely. The slime can also hold on to the silt from the water and fouling results.

With the many electrical components put on boats these days, improper grounding procedures occur. Electricity in the area around the boat can neutralize the antifouling paints on many boats right in the area with very rapid fouling occurring. All electrical work should be done properly and checked out thoroughly.

Occasionally, boat owners get caught up in a time problem and do not follow the recommended immersion times listed on the can. Consequently, the paints do not open up properly, due to oxidation, and rapid fouling occurs within a few weeks time.

Bottom painting is a chore and the preparation of the old paint surface on boat bottoms is not a pleasurable pastime. Many customers cheat, and as a result of improper preparation, new antifouling paint peels from the old paint or from the boat surface. Occasionally on fiberglass boats, the peeling can be caused by porous gelcoat which absorbs water, blisters, and pops off the antifouling paint, especially after the boat has been hauled at the end of the season.

One general rule is that the more attention paid to the boat bottom, during preparation and once in the water, the longer the life of the antifouling paint. If the boat owner occasionally checks the boat to see if any slime, dirt or fouling of any type is starting, usually a scrubbing with a soft brush will remove these things from the antifouling paint and keep the toxicant properly leaching from the paint throughout the season.

Many of the difficulties associated with conventional antifouling paints are eliminated with the use of ACP-50 and Aqua-Clean, one of the newer ablative polymer types.

1. Because toxicant is exposed by the process of the paint film actually washing away, rather than by leaching through the paint binder, water salinity and alkalinity do not affect antifouling performance.
2. Slime is not a problem because it usually washes off, along with the surface of the paint itself, once the boat moves through the water.
3. Because the paint washes away with use, there is no buildup of old paint to be sanded off when it is time to recoat. In many cases, an easy washing with water and a sponge is all that is necessary before repainting.

4. Ablative polymer paints are not affected by exposure to air, allowing the paint to be applied at any time that is convenient, thereby avoiding adverse weather conditions. Paint at your leisure and launch when it's convenient.

Since ablative polymer paints wash away with use, premature failure is almost always a matter of insufficient paint film thickness. Simply put, if it wears off too soon you did not put enough on. Certain water conditions, as well as boat speed, will also affect the rate of wear.

#### Outdrive Antifouling Paint Failures

Causes: Too little paint applied; improper primers used; severe fouling conditions.

Solution: We can only emphasize that the customer apply enough paint to the unit to insure an adequate film thickness for protection and then occasionally scrub the lower unit to remove any growth that is starting to attach itself.

Occasionally fiberglass and wood boat owners are warned by the outdrive manufacturers not to use copper-containing antifouling paints on the boat bottom because of electrolysis occurring with the aluminum outdrive. Over many years we have never seen this occur. There is not enough copper in the water to react with the aluminum. If corrosion does occur in the lower unit, we suspect that there is an electrical leak in the motor itself that is causing the problem.

#### Peeling of Antifouling Paint From Underwater Metal Parts

Causes: Paint applied to dirty metal; improper primers used on the metal.

Solution: The underwater metal parts, like the propeller shaft, the throughhull fittings should be thoroughly cleaned to bright metal by solvent washing and sanding. Then, a thin coat of Pettit 6455 Metal Primer and two full coats of 6627 Tie Coat Primer should be applied. These products give good adhesion to the metal and set up a barrier coat to insulate the metal from the antifouling paint. Sand with 80 grit sandpaper the final coat of 6627 Tie Coat Primer and apply two full coats of antifouling paint. Also, can obtain in kit form - 6456 Underwater Metal Kit - containing the above primers.