



**INCLUDES  
TEAR-OUT  
MAINTENANCE  
GUIDE**

# Antifoulings and the Environment

Interlux® – An Industry Partner





There are several factors impacting the boating environment. For example, some of these factors are excessive fuel consumption, engine inefficiency, waste tank discharges, antifouling maintenance protocols and of course, choice of paint system. Fortunately, most of these factors can be controlled & any potential environmental impact minimized, ensuring a clean, safe environment for all of us to enjoy our passion for boating.

## Central to Interlux is our Product Stewardship program which is about respect for people and society beyond compliance.

Product Stewardship demands that human and environmental safety be considered at every stage of a product's evolution. Minimizing the impact on the environment is therefore considered at the very early design stages during the development of new products, from the choice of raw materials to the types of products developed.

Under our Product Stewardship initiative a computer driven Global Raw Material Evaluation Process (GRMEP) has been introduced so that our laboratory chemists can study the environmental and safety properties of all substances they are considering for use in a new product.

The process takes the chemist through a series of checks for each raw material to ensure that the final product contains substances which can be used safely with minimum impact on the environment. An environmental risk assessment module is a key component of the GRMEP.



Significant work has been carried out to determine the optimum levels of active ingredients required in our antifouling paints to achieve the industry-leading performance that our customers expect. This work ensures that formulations are properly engineered rather than over engineered and that the environmental impact is minimized. At the same time, Interlux is actively funding work developing efficient biocide delivery systems to ensure that the 'right' amount of biocide is released into the environment when it is needed. Together, these two activities will ensure that we continue to offer our customers the most effective antifouling with the least environmental impact.

## We are investing heavily in research into more environmentally benign solutions for keeping the bottoms of boats clean – both within our own research and development departments and with third parties such as universities and industrial partners.

For example, we have been a key partner involved in the AMBIO project (*Advanced Nanostructured Surfaces for the Control of Biofouling*) under the European Commission Sixth Framework Program.

We are also involved in screening programs to identify more effective, more biodegradable alternatives to current biocides.

We have introduced products with low levels of biocides and that are biocide-free. We have introduced a number of lower VOC (*volatile organic compound*) products into our product ranges. Water based technologies as well as high solids antifouling & primers make up this lower VOC offer. Lower VOC content will limit the solvent emissions (and the carbon dioxide and sulfur dioxide release) into the air. A large proportion of the Interlux R&D product development projects that are underway are aimed at significantly increasing the number of such low VOC products we offer to our customers.

### Is copper safe for the environment?

Copper occurs naturally in all waters around the world. While high concentration levels can be harmful to humans and the environment, copper is an essential micronutrient to life and a certain amount is essential for the well-being of animals, including humans. Copper does not bio-accumulate in the environment because organisms have mechanisms to regulate the amount of copper in their bodies and because the majority of it is quickly detoxified when it leaves the paint film surface.

The use of copper in antifouling coatings must go through an exhaustive review by the regulatory authorities before being approved. Copper has been allowed for this use because the authorities have determined that copper in antifouling paints is safe for the environment and for users when used as directed.

On a global scale, the total amount of copper released to the aquatic environment from antifouling paints is negligible relative to the total copper amount present at naturally occurring levels in the oceans. For example, it has been calculated that it would take over 100,000 years of use of copper in antifouling paints at the current level to double the copper content of the world's oceans and this doubled absolute amount would still be below environmental quality standard for copper. Releases of copper to the aquatic environment from antifouling paints is also low relative to other sources such as that from heavy industry and diffuse sources such as from copper water pipes used in domestic plumbing and releases from copper used in car brake pads. Another source of copper is plumbing such as the water pipes in homes.

On a micro-scale, there are a small number of enclosed environments where copper from antifouling paints can contribute a higher proportion of the total copper present. However, the total copper level in these environments has to be high before measured negative effects to the environment occur.



## INTERLUX® – A YACHT INDUSTRY PARTNER THAT SHARES THE PASSION FOR BOATING

Interlux works closely with various regulatory bodies to ensure that protecting the environment is a priority for all yacht paint manufacturers;

- We have been proactive with California in formulating the Southern California Copper guidelines for San Diego and Los Angeles.
- We have been working closely with the **National Marine Manufacturers Association (NMMA)** on guidelines for use of copper-containing antifouling paints.
- For cleaning guidelines and best practices that protect both our industry's environmental goals and presenting the best performance for boat owners, we work closely with underwater maintenance providers.
- Through the **American Coatings Association (ACA)** we are working with the **Environmental Protection Agency (EPA)** and the **Antifouling Working Group** on the development of risk assessment methodology for marinas.

- We have worked closely with copper suppliers in Europe and the USA to study the environmental impact of copper from antifouling paint usage and have shown that copper is an effective and safe antifouling active ingredient. The use of effective copper antifouling coatings is crucial in the prevention of the transport of invasive species, which is a growing environmental and commercial threat to our waters.
- We are working closely with international organizations such as the **International Council of Marine Industry Associations (ICOMIA)** and **The European Council of the Paint, Printing Ink and Artists' Colours Industry (CEPE)**, to learn from the difficult experiences that boatyards have had in trying to implement the **Solvent Emissions Directive (SED)**.
- We have a proactive Product Stewardship program which ensures that our products have the minimum effect on the environment and on human health possible while maintaining product performance, as well as establishing best practices for using our products responsibly.

### Common Questions: How can using an effective antifouling benefit the environment?

While this may seem like a strange question there are in fact many reasons why using an antifouling is acting responsibly toward the environment.

Imagine not using an antifouling on a boat. Over a short period of time there would be a build up of slime, algae and animal (barnacles, mussels, hydroids etc) fouling leading to a very rough and heavy hull. If motoring, in order to maintain the previous cruising speeds, it would require more power from the engines due to the extra weight and drag from the fouling. This in turn increases the consumption of oil and thus emits more waste gases. It has been proven that a fouled vessel burns 40% more fuel and emits 40% more waste gasses (CO<sub>2</sub>, SO<sub>x</sub>) increasing air pollution.

**Using an antifouling will reduce the drag caused by fouling and, according to figures produced by the American Chemistry Council, will save ~200 million tonnes of CO<sub>2</sub> and ~5 million tonnes of SO<sub>2</sub> being emitted annually.**

There are also thousands of pleasure craft that circumnavigate the globe annually. Consider that any number of these vessels could now journey to various oceans and rivers across the globe and it is easy to see how invasive species (aggressive non-native species) can be transported easily from one area (and from continent to continent) to another on the bottom of hulls of boats. A fouled vessel can transport these unwanted invasive species into sensitive ecosystems, resulting in catastrophic damage. Using antifouling prevents the chance of this occurring and helps to protect our sensitive ecosystems.

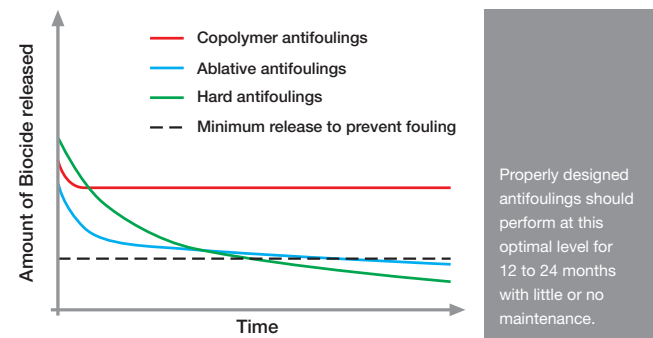
“It is my experience that Interlux has been a terrific partner in the industry's efforts to be good stewards of the ocean. All of us that love boating want absolutely a pristine ocean to fish, dive, swim and recreate in and on. We in the marina industry applaud the proactive approach that Interlux has taken to both educate us how to use and maintain their products, but also their innovation to create new alternative products.”





## DESIGN OF ANTIFOULINGS

It's simple to control fouling, yet the process is a complex one! The paint must be formulated to release just enough biocide to stop fouling. But no more. The following graph shows how these paints are designed to provide just the right amount of fouling control.



There are many antifouling paints on the market today, but there are two technologies in particular that are designed to have minimal maintenance requirements. These are the Polishing or Ablative technologies.

### Polishing Antifoulings

These paints are formulated to polish away (like a bar of soap) over time with the motion of water passing against the hull. Biocide is released at the same time as the paint film wears away, revealing a fresh, new and active surface each time. They are designed to deliberately polish away, preventing the build-up of the so called 'leached layer' that can block biocide from releasing effectively impairing performance. Polishing antifoulings do not require underwater cleaning. They must not be scrubbed as this will prematurely remove too much film thickness (and hence active biocides). As with most things offered in life, too much of anything is not great, and that includes paint waste. In-water cleaning can cause an accumulation of paint waste on the seabed. To aid our industry's overall ambitions for cleaner marinas and indeed the objectives of the **Clean Water Act**, we recommend that polishing antifouling paints are left to work on their own, without mechanical cleaning or interference where possible. Inspect the condition of the paint frequently, if in-water cleaning is required, it may be carried out by wiping with a soft cloth or sponge, minimizing the removal of paint.

You can also rest assured that with Interlux polishing technologies such as that found in the Micron® Technology products, you have products that control their biocidal release rate. As well as providing maximum performance, these products will not release unnecessary, or excessive amounts of biocide such as copper, as they were designed with longevity in mind, so they release only a small amount of copper during a longer period of time. Avoid high concentration levels in antifouling, choose products that are developed with sustainability in mind!

Polishing antifoulings (such as Micron Technology) are suitable for a range of fouling conditions, and some can be hauled and relaunched without repainting for 2 seasons. Apply them and set your worries aside! Self-polishing copolymer antifouling paints (such as Micron® 66®) chemically react with seawater to control the release of biocides from the paint, and don't need the motion of water to work. This means they polish whether your boat is underway or sitting at the dock.

	High-Copper Hard Bottom Paint	Micron Technology
Long lasting protection	✓	✓
For use on power and sailboats	✓	✓
Prevents fouling in all fouling conditions	✓	✓
Predictable performance	✓	✓
Can haul and re-launch without repainting		✓
Paint polishes away, eliminating paint film build-up and the need for removal		✓
Polishes to a smoother surface for fuel savings and speed		✓
No need to scrub bottom to keep clean		✓
Uses less copper more efficiently		✓
No sanding required when time to repaint		✓

Note: Micron Extra VOC is available for Southern California

## ANTIFOULING MAINTENANCE

An antifouling paint can't be effective under all conditions of exposure. Pollution and natural occurrences can adversely affect an antifouling paint's performance. Extreme water temperatures, silt, oil, brackish water and the effect of electrolysis can ruin an antifouling paint. Therefore, we strongly suggest that the hull is checked regularly to make sure it is clean and free from fouling. The antifouling is most effective when the boat is used frequently. The less the boat is used, and the longer the idle periods, the higher the chance of fouling growth.

Properly functioning antifouling paint will repel all hard growth and requires only occasional light wiping with a soft cloth to remove slime. Use only soft rags or a sponge or fleece mitt when light wiping is required.



Overly aggressive, in-water cleaning of antifouling paint will shorten the effective life of the paint significantly. Aggressive cleaning of this nature increases the amount of copper entering the water column and sediment. The boat should be hauled and re-coated with fresh antifouling paint before this style of cleaning is ever required. Never use aggressive tools such as heavy duty scrubbing pads or steel wool.

By avoiding extensive scrubbing the following benefits should be observed:

- Boat Owners should see improved performance against slime and weed pick-up and extended periods between cleaning or repainting schedules
- By reducing the in-water cleaning intervals and applying a method of 'wiping' as opposed to 'scrubbing', our water quality in marinas should improve as less paint, including copper, is removed hence a reduction in inorganic material is deposited on the sea bed (and within the sediment).





**Common Questions:**

**What about Biocide-Free Technologies such as Intersleek® 900 – can I use that on the boat?**

A biocide-free, foul-release type coating – Intersleek 900 – already exists in our Interlux range and this type of technology performs best for boats with high usage rates, and at average speeds of 10 knots or higher to ensure self cleaning takes place. It may be used for boats with different usage profiles (i.e. slower boats or those used less frequently) but more frequent cleaning may be required to ensure proper performance. Intersleek 900 is a unique, patented fluoropolymer coating, that works by deterring slime and weed due to its very slippery, non-stick surface. The smoothest coating available from Interlux, it's popular among sailing racers and charter boats. It does not contain any biocides or copper to fight growth; instead it's designed to 'release' any fouling that has adhered once the boat gets under way. For stubborn growth or circumstances where a boat has been sitting on the mooring for a prolonged period of time, periodic cleaning may be required to keep the hull clean.

Intersleek 900, is designed to be low maintenance so easy to clean by gently wiping with a cloth (no scrubbing allowed as this

will damage the coating). While up front costs for this product are higher than that for traditional biocidal products, the investment is worthwhile as a well maintained coating should last for 3-5 years with just occasional small repairs. No seasonal repainting required.

To ensure these coating systems work to your expectations, we manage – very carefully – the distribution of the product and also the relevant training for associated boat yards/marinas. After all, this is not your regular 'antifouling'. We also take great steps to ensure you have complete information regarding potential cleaning cycles, the special handling and launch procedures involved and tailored guidance on the use of this coating system.

A well maintained Intersleek 900 system could offer great environmental benefits and performance longevity. Boat owners just need to be aware that some "tender, loving care" may be necessary to get the most out of the system. The Intersleek 900 foul release system is available from Interlux and may be applied by qualified boat yards. A pre-approval process is necessary. If you're interested, contact us today!

Image courtesy of Billy Black

**COPPER-FREE SOLUTION THAT WORKS!**

For a more traditional antifouling that is copper-free, there is now a great performing solution based on the non-copper alternative Ecomea™, a new biocide on the market that avoids some of the accumulation concerns of copper. At Interlux® we have been astonished by the excellent performance of Pacifica® Plus, now a proven performer in cold and warmer waters, popular from the South Florida Keys and throughout the North East, the Gulf States, West Coast and of course the Great Lakes.

**Pacifica Plus is unlike any copper-free product you may have previously tried. It really works.**

It contains Biolux® Technology to deter slime and the Ecomea™ will ward off barnacles and severe growth. We also reduced the amount of solvent in the paint to lower the solvent emissions into the air. Suitable for any substrate and any boat types, Pacifica Plus can be found on everything from pontoon boats through to Megayachts.

**Pacifica® Plus:  
The First Product to the Yacht Market with Ecomea™!**

Pacifica Plus from Interlux contains up to 80% less active biocide ingredients than other leading antifouling paints!

Acting on the market demand for 'environmentally considered solutions', Interlux is the first company to introduce an antifouling with Ecomea™ to the market place.

To enhance performance, Interlux has boosted Pacifica Plus with the renowned Biolux® Slime Blocking Technology. With the dual biocide approach to a copper-free antifouling, Pacifica Plus is expected to be one of the best copper-free performers on the market. Its abrasive action reduces paint build up and helps to improve fuel efficiency. Pacifica Plus is the perfect choice for boat owners and boat yards seeking to reduce their environmental footprint.

This is achieved through the following attributes:

- Reduced solvent emissions
- Copper-free
- Polishing action for improved fuel efficiencies, which equals reduced carbon dioxide and sulfur dioxide into the air
- Low biocide content



**Common Questions:  
What is Biolux® Technology?**

Developed exclusively by Interlux, Biolux Technology is a unique system consisting of organic boosting biocides that are incorporated in a highly effective controlled release film to deter slime.



**Common Questions:  
What is Ecomea™?**

Ecomea™ is a copper-replacement technology that aids antifouling performance at very low concentrations. Ecomea™ also breaks down quickly once emitted from the paint film, and unlike Copper Oxide it is safe for use on aluminum. Ecomea™ helps protect against the more severe fouling organisms, such as barnacle and weed.

**PRODUCT SELECTION – KEEP IT SIMPLE**

When making the product selection, whether for yourself or for your customer, consider the key attributes of the paint during its use and offer the product that yields the most benefits during use (eg. speeds, fuel efficiencies, longevity) and ease of maintenance (frequency of repair needed, accessibility, easy cleaning and repainting etc). That will keep both you and your customer worry-free and returning year after year.



# Make a Difference the waterfront challenge

## THE WATERFRONT CHALLENGE – TOGETHER WE CAN MAKE A DIFFERENCE!

The Waterfront Challenge is an annual competition created by Interlux to encourage people who care about their local waterfront – including lakes, rivers, streams, and oceans – to improve their local environment. This contest is open to any group of three or more people who want to spend a minimum of one weekend of their lives between March and August, making a difference to their environment and encouraging others to do the same.



## Ask the Experts...

**“Why should  
I choose  
Interlux®  
bottom  
paints?”**



**Rusty Rutherford**  
Regional Sales Manager

- Un-rivalled technical service support
- Superior chemistry and un-matched performance
- Complete line of paint systems and options to suit your needs
- We help you gain greater efficiencies on the water

Interlux – with over 100 years of leading product development, we’re proud to support boating in North America & beyond.

To find out what is your perfect paint option, contact us today!



### Micron® Technology The Responsible Choice for All:

- **Increased Fuel Economy** – reduced carbon dioxide and sulfur dioxide emissions
- **Multi-seasonal performance** – fewer applications during a boat’s lifetime means a reduction in overall emissions
- **Self Polishing** – No need for scrubbing (minimizes the effect of paint deposit waste)
- **Lloyds Register Certified** – contains no Tributyl Tin or other banned substances



“Brewer Yacht Yards have been using Interlux Paints for over 45 years in our service facilities from New York to Maine. The results have been very positive. The relationship between Brewer Yacht Yards and Interlux is an added bonus for our valued customers who expect the best.”



# Maintenance Guide



## WHAT IS CLEAN?

The definition of clean varies greatly between boat owners and individual expectations. There are the cosmetic reasons, where most will expect as clean of a waterline as possible and at most, some slime on the bottom of the hull. Due to many variables, it's quite impossible to forecast how exactly one product will perform on every boat. Examples of these variables that affect antifouling performance are:

- The water temperature
- Salinity levels
- Frequency of use (of boat)
- Roughness of hull (peaks and troughs in substrate itself or previous paint film)
- Travel pattern of boat (local, long distance & cruising speed)
- External effects in the water (level of silt, oil or other contamination materials that may be the result of construction and/or discharge procedures).

The most important fouling growth to deter is the severe growth, the hard fouling such as barnacles and grass weed. This type of fouling will cause serious drag and fuel or cruising inefficiencies and once attached, is difficult to remove without damaging the substrate underneath. The premium performance antifouling generally contain biocides that help fight slime. A small amount of slime won't affect the boat's performance but build-up of further slime may indicate the paint is at the end of its lifetime and the boat should be re-painted before the condition deteriorates. Be pro-active, it's much easier for weed and barnacles to attach themselves to a hull covered in slime.



## CLEANING GUIDELINES – IN WATER MAINTENANCE

As discussed there are several styles or types of Antifouling paints and they all prevent fouling but they do this with different technology and as such require slightly different maintenance.

### Hard Matrix Antifouling and Dual Resin Technology Paints

- ✗ NO scrapers (metal/plastic/wood)
- ✗ NO abrasives (sandpaper/steel wool)
- ✓ USE soft cloth or fleece mitt
- ✓ Scrubber pads, should they be needed, use nothing more aggressive than a White Light Duty Cleaning Pad.

**Note:** Nearing the end of the paint lifecycle, a Blue pad may be necessary.

### Top Tip

Types of 3M™ Doodlebug™ Scrubber Pads:



- Scotch-Brite™ White Cleaning Pad 8440 – *Light Duty*
- Scotch-Brite™ Blue Scrub Pad 8242 – *Medium Duty*
- Scotch-Brite™ Brown Scrub 'n Strip Pad 8541 – *Tough cleaning or removal*
- Scotch-Brite™ Black Hi Pro Pad 8550 – *Heavy Duty*

### Polishing, Ablative and Copolymer Paints

- ✗ NO scrapers (metal/plastic/wood)
- ✗ NO abrasives (sandpaper/steel wool)
- ✓ USE soft cloth, fleece mitt or if required a Scotch-Brite™ Ultra Fine Hand Pad 7448 (gray).

**Note:** Nearing the end of the paint lifecycle, a White or a Blue 3M™ Doodlebug™ Scrubber pad may be necessary.

### Biocide-Free Foul-Release Coating

- ✗ NO scrapers (metal/plastic/wood)
- ✗ NO abrasives (sandpaper/steel wool)
- ✓ If required, Scotch-Brite™ Ultra Fine Hand Pad 7448 (gray)
- ✓ IDEAL is a soft cloth or fleece mitt only

## FREQUENCY OF INSPECTION AND REPAIR/MAINTENANCE

Seasonal boaters that launch their boat every year for a 5-10 month season (immersion) prior to hauling again for winterization/storage, are recommended to have the hull high pressure, fresh water washed and inspected for any potential repairs. Two fresh coats of Antifouling are recommended for each season, to ensure the correct amount of biocide is present to protect against fouling throughout the season. With unique Polishing Copolymer paints such as the Micron® Technology range, a longer lifetime is achievable. With Micron, it is possible to haul and relaunch without repainting for a couple of seasons.

For warmer climates where the boat is left in the water all year around, inspect and repair as necessary. An out of water inspection is recommended every 24-36 months, to assess repairs and recoating needs. For premium protection and long term performance, two coats minimum are recommended and it's always good practice to finish with a third coat in the waterline and leading edges (high wear areas).

