

How to Select an **ALTERNATIVE HULL PAINT**

A Boater's Guide

ENVIRONMENT



Unified Port
of San Diego

sandiegobaycopperreduction.org

Copper from anti-fouling hull paints can be a significant source of water pollution in marina basins.

Copper harms marine life by impeding or altering their development. As a result, boaters are beginning to convert to alternative hull paints that are better for the environment.


What is a biocide?

It's a substance that slows or stops the growth of living things. The copper biocide in hull paint acts similarly to pesticides you might use on your lawn to prevent infestations of insects or weeds. Currently, copper is the most commonly used biocide in hull paints.

What is an Alternative Hull Paint?

Alternative hull paints protect the boat without the use of copper, and consist of two categories:

1. **Alternative biocide hull paints** use zinc or other chemicals to act as the biocide instead of copper. Most alternative biocides are ablative, meaning they wear away as a result of the chemical reaction with the water and the scouring action of water on the hull.
2. **Non-biocide hull paints** contain no polluting chemicals. They protect the boat hull by creating a slick surface or hard protective layer.



ALTERNATIVE HULL PAINTS are better for the environment because they do not contribute to copper pollution. However, using a non-biocide hull paint is the best option to reduce water pollution.

Alternative Hull Paints that Perform Well



Testing alternative hull paints on panels (Port of San Diego)

The Port of San Diego analyzed 46 hull paints to determine how well they prevented fouling and their cost-effectiveness. The study found that alternative hull paints are environmentally-friendly, work well and can be cost effective over the long-term because they last longer than copper hull paints. The complete report is available at sandiegobaycopperreduction.org and you can also review the paint manufacturers' specifications for additional information.

TIPS FOR CLEANING YOUR ALTERNATIVE HULL PAINT

Regular cleaning can improve your boat's performance, reduce fuel costs, and increase the life of your hull paint. However, improper cleaning can severely reduce the life of your hull paint and its effectiveness.

Maintenance needs for alternative hull paints depend on the type of paint. For example, many alternative biocide hull paints are ablative, meaning that aggressive cleaning will remove the paint. Non-biocide hull paints are more prone to build-up of fouling such as algae, and the frequency of cleaning and types of tools needed vary. Soft non-biocides may be less durable, but fouling can be wiped off easily with gentle cleaning tools. Hard non-biocides tend to be very durable but require more frequent cleaning. Your best bet is to inform your hull cleaner of the type of paint on your boat and work with them to identify the most appropriate cleaning strategy.

Results of the Port's Study

Category of Paint	How it Works	Paints That Performed Well (Paint Manufacturer)
Soft Non-Biocides	<ul style="list-style-type: none"> Designed to present a slippery surface Commonly formulated with silicon compounds Can be cleaned relatively easily 	<ul style="list-style-type: none"> Hempasil X3 (87500) (Hempal USA) Intersleek 900 (Interlux) Propspeed (Propspeed) Klear N' Klean (Petit) Phase Coat Bare Bottom (Microphase)
Hard Non-Biocides	<ul style="list-style-type: none"> Composed of hard materials like epoxy or ceramic Provides a hard slick surface designed to withstand more aggressive and frequent cleaning Very durable 	<ul style="list-style-type: none"> VC Performance Epoxy (Interlux)
Zinc Oxide Non-Biocide	<ul style="list-style-type: none"> Not considered a regulated biocide May be photoactive, meaning it creates a layer of hydrogen peroxide around the boat hull which helps inhibit marine growth when exposed to sunlight. 	<ul style="list-style-type: none"> Sunwave (EPaint) EP-21 (EPaint)
Organic Biocide	<ul style="list-style-type: none"> Usually contains biocides other than copper or zinc Designed to work similarly to copper hull paints 	<ul style="list-style-type: none"> Experimental Metal Free (Blue Water Marine) Experimental Metal Free Plus (Blue Water Marine)
Zinc Biocide	<ul style="list-style-type: none"> Generally contains zinc pyrithione and often contains zinc oxide Designed to work similarly to copper hull paints Most are ablative paints 	<ul style="list-style-type: none"> Seaguard HMF (Sherwin Williams) Ecominder (EPaint) B49 (Harbor Engineering Services) B69 (Harbor Engineering Services) Mission Bay (New Nautical Coatings) Bluewater Shelter Island (Blue Water Marine) SN-1 1 (EPaint) Eco (EPaint) Vivid Free (Petit) Pacifica Plus (Interlux) Hydrocoat Eco (Petit) EP-2000 (EPaint)

Red = top performing alternative hull paints

How to Select an Alternative Hull Paint for Your Boat

Selecting an alternative hull paint for your boat is far from a one-size-fits-all strategy. It's important to understand how your alternative hull paint works and the predicted costs and maintenance required in the short and long-term.

Consider the following factors related to your decision:

- Boat use
- Application cost
- How long the paint will last
- Boat type
- Long-Term cost
- Maintenance

Make the Choice

This table can help you choose the alternative hull paint that is best suited for your boat type. It helps you weigh your options by looking at application method, costs, repainting needs, and how often you will need to clean it. Then, it's up to you to decide on the best alternative hull paint for your boat.

Select the boat use style that best relates to how you use your boat from this list:

Inactive (I) - boats that do not move for long durations of time (six months to several years), sometimes remaining in the same slip and/or same position at all times.

Frequent-Use Power Boats (F) - boats that are actively used for work related purposes or recreational/commercial activities (fishing, skiing, etc.).

Racers-Sail (R) - sailboats that are regularly used for racing purposes.

Cruisers (Cr) - boats that are used for long-range trips. Use may be periodic, but the travel lasts for long periods of time and the boat may enter foreign waters for extended stays.

Pleasure (P) - power and sail boats with varying use patterns. These boats are used for personal enjoyment and short-range travels such as sunset excursions or local pleasure trips.

Trailered Boats (T) - boats kept out of the water on a trailer or rack when not in use.

		Initial Hull Preparation and Coating Application (For 30' Boat)			Long-Term Cost (For 30' Boat)	Longevity	Cleaning Maintenance		Special Considerations
Boat Use	Paint Category	One Time Stripping Required?	Method	One-Time Cost ²	Annualized Cost Over 30 year Period ²	Estimated Years Until Repainting ³	Optimal Inspection Frequency	Resistance to Cleaning Impacts ³	
I,F,P,R	Soft Non-Biocides ¹	Yes*	S	\$\$\$	\$-\$	5-10	3 to 4 weeks	Good	NB,1
			R	\$\$\$	\$				
I,P,T,R	Hard Non-Biocides ¹	Yes*	S or R	\$\$\$	\$	7.5-10	3 to 4 weeks/ winter 2 weeks/ summer	Excellent	NB,2
Cr,P	Zinc Oxide Nonbiocide ¹	Depends on specific coating*	R	\$-\$	\$\$-\$\$\$	1.5-2	3 to 4 weeks	Fair	NB,1,3,4
Cr,P	Organic Biocide	No	R	\$-\$	\$\$\$	1-1.5	3 to 4 weeks	Fair	B,1,3,4
F,Cr,P,T	Zinc Biocide	No	R	\$-\$	\$\$	1.5-2	3 to 4 weeks	Fair	B,1,3,4
BOAT USE KEY Inactive (I) Frequent-Use Power (F) Racers –Sail (R) Cruisers (Cr) Trailer (T) Pleasure (P)		* Stripping may be required for initial application, but may not be required for subsequent applications	Spray (S) Roller (R)	\$ = \$900-1,500 \$\$ = \$1,501-2,000 \$\$\$ = \$2,001+	One time cost for soft and hard non-biocides includes stripping costs.		Cleaning may not be required during every inspection. The appropriate cleaning strategy should reduce or prevent the removal (i.e., thinning) of hull paint.		NB = Product does not contain biocide B = Product contains biocide 1 = Soft cleaning tools, extra care for cleaning 2 = Periodic cleaning by power tool is acceptable 3 = Cleaning likely not necessary for 90-120 days after application 4 = May require more coats at waterline

¹ The non-biocide paints identified in this table include only those products that do not require registration with California Department of Pesticide Regulation at the time of publishing.

² Prices based on information gathered during 2009-2010 from San Diego Bay boatyards. ³ Assumes use of appropriate cleaning strategy

Information for both tables was compiled as part of the EPA-funded "Safer Alternatives to Copper-Based Anti-Fouling Paints Study" (NP 00946501-4)