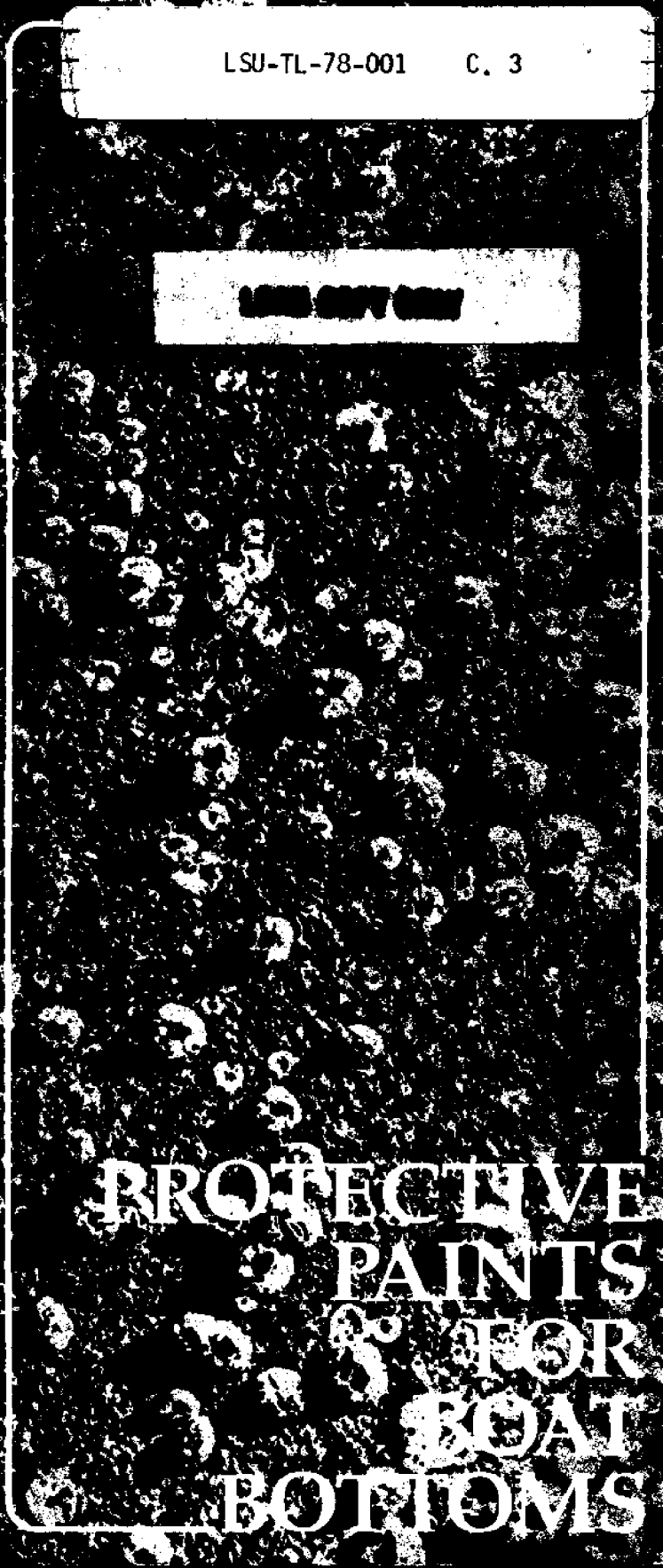


PROTECTIVE PAINTS FOR BOAT BOTTOMS

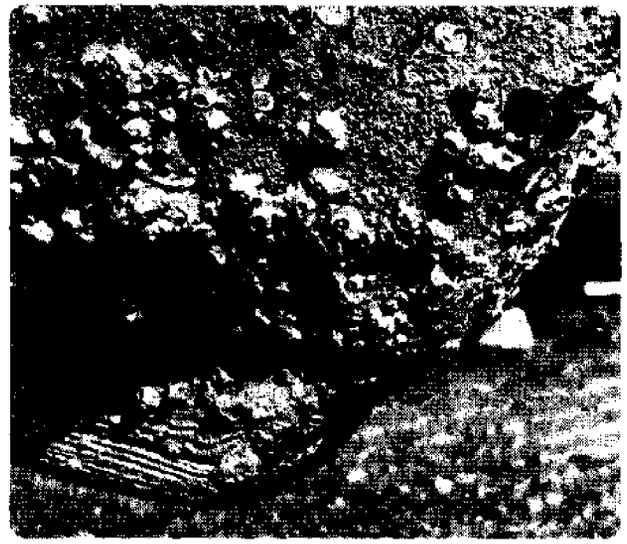
Six months' accumulation of marine organisms on the bottom of a boat can reduce its speed by 10 percent, fuel efficiency by 40 percent, and even damage the hull itself. Experts call it "marine fouling"—the algae, slime, molluscs, marine borers, and barnacles that accumulate on the bottom of boats used in salt or brackish waters. Fouling on boats in the Gulf of Mexico may become visible after a week in the water. To boat owners, marine fouling is a never ending and expensive problem.

The most realistic way to deal with the fouling problem is to paint the bottom of a boat with a toxic coating of antifouling paint. It is expensive—in 1976 in Louisiana it cost from $70 to $150 per gallon when bought in small quantities—and even with proper maintenance it will only effectively control growth for 18 to 24 months. But when fuel efficiency is considered, it's worth the cost: on a hundred mile trip, a 40 foot boat that isn't clean on the bottom will use twenty more gallons of gasoline than one that is clean.

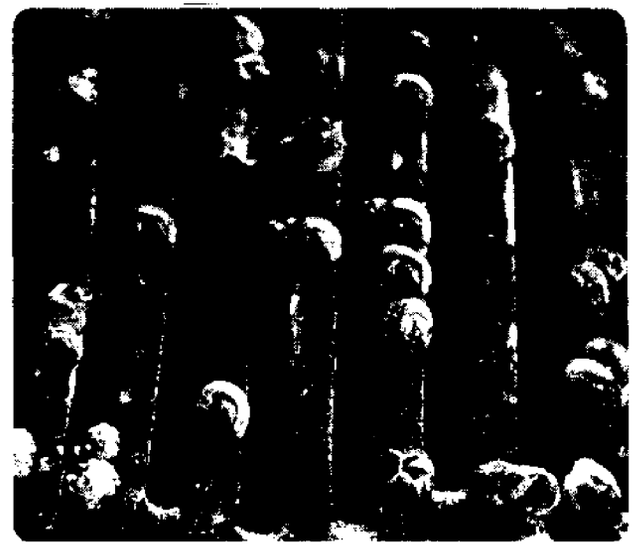
Paints that prevent marine fouling are combinations of bases mixed with chemical toxicants, which slowly leach out to keep marine organisms from growing. The right combination of base and toxicant depends on the boat and the way it is used.

A serious racer may haul out his boat every six months and recoat the hull with a smooth, resistant coating even though it isn't necessarily the most durable or effective coating to reduce fouling. A bay shrimper may plan to replace his boat every few years, when the hull is stressed or mechanically degraded by use. Since his main concern is with the total cost of fuel needed to reach the fishing ground in a hurry, he could tolerate some borer attack as long as protection is provided against marine attachment. On the other hand, an owner planning to live on board or keep a boat in the water for extended periods may not consider speed as a primary objective. Rather, he may seek long hull life and protection against fouling.

Antifoulant paints are available from several manufacturers, and since each company makes different coatings for use on wood, metal, or fiberglass, buyers should look for the application purpose as stated by the manufacturer.



After six months. An antifoulant coating was not used on this keel. Photo by D. D. Boyd



After twenty-four months. Intake surface of a boat that has been properly treated with antifoulant coating. Photo by Coastal Science Associates, Inc.

Antifouling paints are combinations of paint bases and chemical toxicants. Four kinds of bases are commonly mixed with one or two kinds of toxicants. The bases are either alkyd, epoxy, vinyl, or urethane; the toxicants are either copper or tin compounds or a mixture of both.

Bases

Alkyd-base paint is most suitable for wooden and metal boats. It is generally not used on fiberglass because it is soft and doesn't adhere well. Alkyd base paint is sold premixed and is good for all around marine use. Although it cures slowly in temperatures below 70° F., it dries well and is available in several colors.

Epoxy-base paint is good for fiberglass, metal, and wooden boats. Although it is usually more expensive, it flows out evenly and forms a hard, tough coating that resists abrasion and adheres well. It comes in two-part packages that need to be mixed and used within 24 to 48 hours. It shouldn't be applied if the temperature is below 70° F. Natural bristle brushes should be used since the epoxy paint will attack nylon brushes.

Vinyl-base paints can be used on wood, steel, aluminum, and fiberglass, although they don't adhere well. Paints specifically designed for racing frequently are vinyl based.

Urethane-base paints are more suitable for fiberglass. They are more abrasion resistant than alkyd-base paints, more resistant to acid and water than epoxies, and more resistant to alkalies and solvents than vinyls. Like epoxy-base paints, urethane coatings adhere so well that strong chemicals, scraping and sanding are often required to remove the old paint layers.

Toxicants

A *copper* compound, cuprous oxide, is good for wooden and fiberglass hulls, but not for metal hulls as it causes corrosion. If it is used on metal hulls, a barrier primer base must be applied first. It is effective against growth of algae and other marine fouling organisms.

Tin compounds can be used on wood, fiberglass, aluminum, and steel hulls. They are highly effective, appear to present no long-lasting environmental hazard, and do not cause corrosion as does copper oxide. Tin compounds are more effective than copper compounds against barnacle growth.

Since antifouling paints are toxic to humans and other organisms, safety precautions must be taken both when applying the paint and when removing it. When painting, whether by brushing or spraying, protect your skin from any contact with the paint. When removing the paint, whether by chipping, sanding or grinding, use gloves, goggles, and an air respirator. The abraded paint and dust, masking materials, rollers, brushes, and empty cans should be placed in steel containers, sealed, and buried in an approved dumping site. The work site should be washed down carefully.

After the boat has been in the water a short time, organisms will appear in a narrow strip at the waterline area, even though the rest of the hull is clean. To remove this light growth with minimal damage to the painted surface, wipe the area with a sponge or cloth and a mild abrasive. Don't use a stiff brush, steel wool, or any other hard object that might damage the paint. If that happens, new growth will attach much more rapidly, resulting in a shorter lifetime for the paint.

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