Metal Abuse

From a length of 1 inch x 1/8-inch steel, we cut 26 samples 6 inches long. We ground the cut ends until smooth, then drilled two holes in each. We wire-brushed them to expose a clean surface and engraved identification numbers on them. We then degreased, rinsed, and dried them.

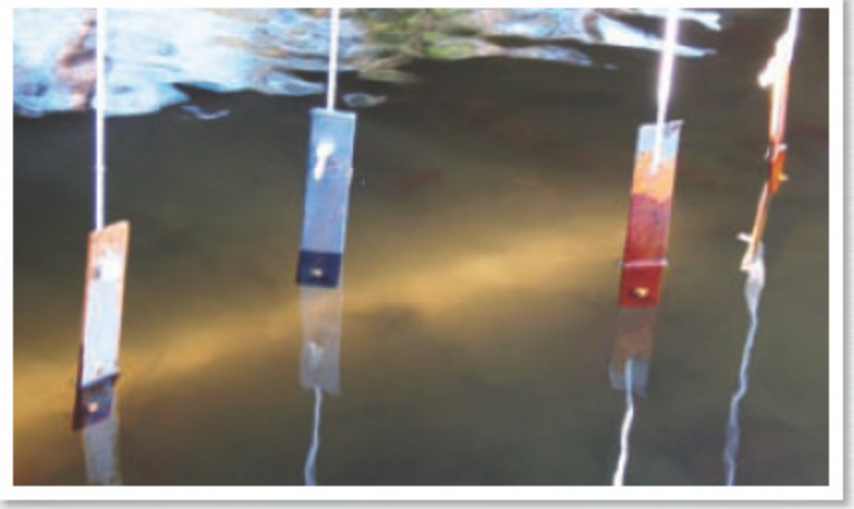
The test had essentially four parts: a two-part saltwater test and a two-part freshwater test. To simulate real world situations—where metals do get mixed—we fastened a No. 10 brass nut and bolt through one of the holes in each metal strip before applying the corrosion inhibitors.

Each product was applied to one side of two metal strips and allowed to cure for 24 hours. The flip sides were coated with the same product, but were allowed to cure for only a few hours to see whether an incomplete cure time affected the performance—after all, we're dealing with conditions found on boats, not in laboratories.

During application, the strips were laid flat, however, the machine screw raised the samples at one end, causing the coating to be thicker at that end on some of the strips (the upper end of the suspended strips).

One set of strips was suspended from a dock on a creek off the Chesapeake Bay at a level where the tide would immerse them regularly in salt water, then expose them to the air. The dock has no electrical supply.

The freshwater test samples were suspended along the back patio of a tester's house and regularly received a heavy spritz of fresh water. (Editor's Note: Tap water at the test site was not used because it comes from a shallow well and does awful things to carbon-steel kitchen knives.)



The saltwater test strips were suspended from a dock, where they faced the daily tide cycles.

For comparison, a bare control sample was mounted with the coated test strips. The freshwater control showed some rust after two days, and after seven days, the corroded areas had grown, especially around the screw. The saltwater control was rusted all over after just three days.

A few of the manufacturers were not happy with our test protocol. One claimed that using steel in seawater is not relevant to real-life applications. *PS* feels that's true to a degree, but a component like a propeller-shaft coupling is steel and is likely to get wet if it's in the vicinity of a conventional stuffing box. We also heard comments that our rigorous accelerated test created conditions that the products were not advertised to withstand. We agree that some of these products may well live up to their advertised claims. The best products, however, came closer to our expectations. The real world does not throw softballs.