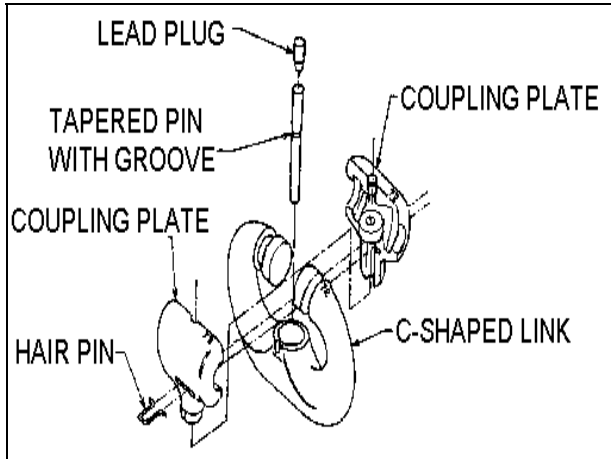


Case Study: Detachable Anchor Links



PROBLEM

Detachable anchor links are used in marine applications where disassembly of lengths of chain is necessary. The detachable links are used to connect sections of chains. The detachable links consist of a C-Link, two coupling plates and a locking pin, which is inserted through two holes, one on each coupling plate. Corrosion of the interior of the detachable links is a problem if it causes longer disassembly time or requires destruction of the link. Current preservatives have proven ineffective or are lead-containing (toxic). Application of various E products to the internal cavities were evaluated.

TESTING

Detachable anchor links were subjected to a cyclic corrosion test. Each cycle consisted of an immersion in 5 % by weight salt water solution (15 minutes), drying at ambient lab conditions (75 minutes), and exposure to 100% relative humidity per ASTM-D2247 specification, but at an elevated temperature of 120F (22.5 Hours). Periodically, the amount of effort required to move the tapered locking pin was measured. After exposure to 150 cycles of cyclic corrosion test exposure, the link was disassembled for final inspection.

DISCUSSION

No significant difficulty was encountered removing the tapered locking pin from the link during the test with any of the E products samples. After removal of the tapered pin, the coupling plates were separated with only a light hammer tap. At 150 cycles, the E-2000 inside the anchor link appeared to have become translucent; the surfaces contacting the tapered pin remained without red rust. Sea trials are underway with a companion product, E-2400. E-2000 has been shown to be more resistant to washout and was shown in this cycle test to be superior to E-2400, E-1270EPL, and E-1000.

CONCLUSIONS

The use of E-2000 to fill the internal cavities of the detachable anchor links adequately protected the internal surfaces and tapered locking pin through 150 cycles of cyclic corrosion test exposure. Sea trials on the U.S.S. Detroit have demonstrated similar satisfactory performance.
(U.S. Patent Number: 6,010,985)



**E-2000-Protected Samples after 150 cycles,
Closed (top) and Open (bottom)**

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