

20 YEAR SEAWATER IMMERSION R&D

ECO LINER

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The saltwater marine environment has always been a challenging one. Ship owners and operators are in constant need of effective coatings that can withstand the effects of corrosive seawater for long periods. Traditional coatings need to be replaced within 5 years. Practically every bit of the steel that is exposed to weather or seawater needs to have a protective coating to prevent rapid corrosion causing thinning or weakening of the steel as well as the unsightly appearance of rust. It is costly to repair and replace marine coatings, especially coatings found on the hulls below the water line, on traffic bearing decks, inside cargo holds, freshwater storage tanks, seawater ballast tanks, fuel tanks, etc.

Nanotech Coatings has recently developed its own line of patent pending technology to enable effectively coating all of these areas of the ship. This is done without the use of any solvents and with zero VOC emissions, especially important in the many confined space environments found onboard ships and in other marine environments such as barge interiors and shore tanks.

An essential aspect of the marine testing program was a series of seawater trials that were first initiated in November 1990 and April 1991 by a predecessor company to Nanotech Coatings. In November 1990, a test slug was prepared and immersed in a bucket of North Pacific Ocean seawater and kept at year round ambient conditions off Canada's west coast on Vancouver Island, British Columbia.

In April 1991, a similar test block was prepared and machined using an industrial wood planer into a set of thin wafers or shavings of approximately 0.002 inches or 0.05 mm thickness at the thick edge, and tapered to zero thickness at the other edge. These slender shavings were about 1/4 inch or 5 mm wide.

Both the 1990 test slug and the 1991 shavings have been monitored and measured from time to time for a period of 20 years. The slug trial has been discontinued after 20 years duration with the slug having been dissected. The 1991 shavings trial is being continued and is entering its 22nd year as of the time of writing. Similar to the test slug results, the shavings which have a much higher surface area to volume/mass ratio than the slug, also maintained excellent flexibility and physical properties, virtually unchanged since day one.

There were no significant changes in weight or size measurements of the test slug over the 20 year period. Shore D Hardness values also remained unchanged at approximately Shore D50 for the duration of the test. Similar to the shavings, slices of the test slug revealed no significant change of flexibility.



These excellent results are similar to the results for freshwater and saltwater ship deck coatings and water tank linings which were first being applied to ships in the mid 1990s. Many of these installations are still in service as more are being added. It appears that in some cases the predecessors to the Eco Liner coatings outlived the service life of some of these early vessels.

The excellent 20 year test and field results bodes well for the continuing marine business development as well as other environments where continuous or intermittent seawater or freshwater immersion is a key aspect. Water and wastewater applications such as those found in virtually every city and municipality in the world represent excellent market applications in addition to the marine applications.

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