

GROUND BREAKING NAVAL AND MARINE CORROSION PROTECTION WITH FIELD APPLICABLE FLUOROSEAL® PVDF COATING

AI Technology, Inc. is proud to introduce the world's first naval and marine field applicable PVDF corrosion protection coating at the 2023 MEGARUST Show.

PRINCETON JUNCTION, NJ, UNITED STATES, June 6, 2023

/EINPresswire.com/ -- AIT Coating Division of AI Technology, Inc. is proud to introduce the world's first naval and marine [field applicable PVDF corrosion protection coating](#) at the 2023 MEGARUST Show at Hampton (Hampton Roads Convention Center), Virginia on June 13-15, 2023.

Can a marine and naval corrosion

protection coatings that can more than double the operational time at sea?

FLUOROSEAL® crosslinked PVDF naval and marine protection coatings are proven to be more than 3-5 orders of magnitude more effective than current protective coatings in blocking dissolved salt ions and corrosive gases from penetrating into the base steel metal to prevent corrosion. It also blocks UV light from damaging the structural epoxy coating and accelerate the corrosion processes. This novel coating can dramatically increase the time naval and marine assets can remain in service at sea.

[Ships at sea are subjected to one of the most corrosive environments](#) above and below the waterline. Steel superstructure above the waterline suffers from UV damage to the protective organic coating, salt-spray and salt-fog laden with dissolved salt ions, along with dissolved corrosive gases, and corrosive gases from burning fossil fuels, penetrate through the traditional epoxy coatings and corrode the base steel. Steel structures below the waterline suffers from direct salt-water corrosion, galvanic corrosion and biofouling that are even more difficult to protect. The damages and losses associated with marine and naval corrosion now costs more than \$80 billion USD or approximately 3-4% of the worldwide economy.



Naval assets show significant corrosion both above and below the sea waterline after just 200 days at sea. The costs to the economy include redundancy in assets and costs of maintenance and out of service assets.

How does FLUOROSEAL® naval and marine corrosion protection coating block dissolved salt ions from corroding steel hull above and below waterline?

Naval and marine ships are primarily built with steel and are traditionally protected by paints of all kinds. Epoxy and/or polyurethane are predominantly used. Epoxy-Polyurethane molecules, while strong mechanically, are known to be vulnerable to UV degradation. Epoxy-Polyurethane paints are also known to be molecularly “porous” with high permeability to moisture laden with corrosive acidic and ionic species.

Ship hull and infrastructure above the waterline are vulnerable to degradation and corrosion failure by:

1. UV induced molecular damage of traditional epoxy-polyurethane coatings to allow direct exposure of steel to salt-spray and salt-fog.
2. Gradual penetration of corrosive ions and/or acidic gases laden salt-fog and salt-spray.

Ship hull and infrastructure below the waterline are vulnerable to degradation and corrosion failure by:

1. Gradual penetration of corrosive salt ions and/or acidic gases laden salt-water.
2. Mechanical collision damages permitting direct salt-water induced steel corrosion.
3. Bacteria, seaweeds, barnacles and other biofouling elements.

FLUOROSEAL® naval and marine corrosion protection coating is a chemically modified version of the commonly known PVDF polymer. It's moisture and corrosive gases ultra-low permeability properties have been improved to provide 3-5 orders higher capability in blocking salt-spray and sea-water with dissolved salt ions and corrosive gases.

- FLUOROSEAL® PVDF corrosion protection coating also maintains its intrinsically 1-2 orders of magnitude lower moisture-water absorption and retention in blocking off medium for corrosion.
- It is further improved by incorporating UV blocking capability while maintaining its UV resistance in protecting the traditional epoxy structural protective coating.
- FLUOROSEAL® PVDF corrosion protection coating also incorporates a biocide for basic biofouling protection and is compatible with additional and more aggressive marine biocide by

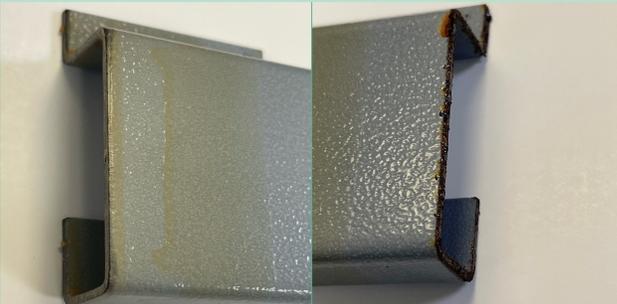
FBE (Fused Bonded Epoxy) Steel bar with one side cut and protected with FLUOROSEAL® coating and exposed to 5% salt water at 60°C for just 24 hours demonstrated the unparalleled ability in blocking off dissolved salt ions by the FLUOROSEAL® coating from penetrating to cause corrosion.



FBE coated edges corrode quickly upon exposure to 5% salt water. The corrosion quickly propagated outward to other areas.

FLUOROSEAL® Corrosion Protection Coating is used to coat on the side that was cut to exposed bare-steel. No sign of corrosion is seen under the same salt water condition.

FBE coated steel bar cut edge exposed to sulfur-chlorine-moisture at 60°C for 10 weeks



Cut edge coated with FLUOROSEAL® CPC-EXT-7280 shows no sign of corrosion

Cut edge directly exposed and shows obvious corrosion on steel edge and inside the FBE

An effective naval and marine corrosion protection coating must be field applicable to block off penetration of dissolved salt ions and corrosive gases in both vapor or liquid water forms. FLUOROSEAL® coatings are developed from the scientifically known P

the user - if desired and needed.

- FLUOROSEAL® PVDF corrosion protection coating is a single component, VOC-exempt solution that can be roller, brush or spray coated onto bare steel or over epoxy coated steel. In air, it is dry to the touch in less than an hour and fully cured in 2-3 days. It can also be painted over again anytime as a transparent protection.
- FLUOROSEAL® [PVDF corrosion protection coating can easily double naval and marine assets](#) operation time at sea when applied as a topcoat over existing protective coatings.

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FLUOROSEAL® crosslinked PVDF corrosion protection coating is a single component, roller, brush and spray coating that is dry to the touch in hours and can be put into service in 2-3 days. A thin 30-50micron coating thickness is adequate when used as topco

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