



TRI/Austin, Inc.

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Advantages of Bond-Coat NCC

Stops Cathodic Delamination

Increases Initial Bond Strength

Removes Need for Toxic Primer Systems

Enhances Bond Longevity



Applications

Underwater Connectors

Downhole Assemblies

Transducer Housings

Marine Sensor Applications

Any Critical Rubber-to-Metal Bond

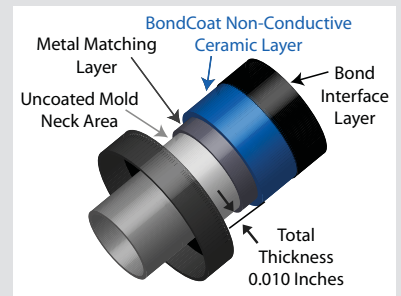
Bond-Coat NCC

A Product of TRI/Austin, Inc.

In test after test, Bond-Coat NCC outperforms standard overmolding preparations designed to protect hardware exposed to harsh environmental conditions. The result is a bond that can survive the most corrosive conditions and last five times longer. Developed by TRI for the U.S. Navy to fight cathodic delamination (pre-mature bond failure) of submarine connectors, Bond-Coat NCC's metal pretreatment system is ideal for use in harsh environments such as industrial, sub-sea and down-hole operations. That's because Bond-Coat NCC firmly adheres rubbers and metals needed to survive chemical exposure and high-pressure, extreme-temperature conditions.

BondCoat NCC:

- creates bonds that survive harsh environments (high pressures, high temperatures, chemical exposure, electrolysis)
- increases the bond strength of exotic materials such as Vitons®, Neoprene and polyurethane
- non-conductive, eliminating cathodic delamination/corrosion due to chemical or moisture penetration
- works with existing molds
- can anodized after application of Bond-Coat NCC
- ideal for all metallic substrates, including Inconel, titanium and aluminum



Three Layer Bond-Coat NCC System

Five times the protection of standard coating solutions

In an accelerated life test simulating 15 years of corrosive and stressful conditions, metals treated with Bond-Coat NCC significantly outperformed standard primed metal. In a test developed to simulate submarine conditions, both standard primed backshells and backshells treated with Bond-Coat NCC were subjected to a variety of saltwater conditions, pressure changes and temperature swings. While the standard coating degraded quickly in the first few equivalent years, the Bond-Coat NCC-coated backshells lasted an equivalent of 15 years – five times the life of the standard shells – and lost only 16% of their original bond strength.

BOND-COAT NCC required by the U.S. Navy

In the late 1970s, the U.S. Navy sought TRI's help with a chronic problem: the failure of underwater electrical connectors on submarines. The problem was cathodic delamination, which caused underwater cable connectors to fail prematurely, sometimes in two to three years due to dissimilar metal coupling and ensuing electrolytic reaction.

In response, TRI created Bond-Coat NCC. Applied to the connector back shell, Bond-Coat NCC prevented cathodic delamination and extended connector life by 200%. Plus, it saved the Navy \$814,400 per submarine over the life of the connectors, even before considering savings due to improved combat readiness. The federal government now requires Bond-Coat NCC on Navy underwater connectors and other outboard equipment.

Use of Bond-Coat NCC

On any metal surface prior to elastomer bonding or encapsulation.

Alcohol wipe is the only surface preparation needed.

All metal substrates can be coated: stainless steel, Monel, titanium and aluminum-silicon bronze.

Improves bond strength for longer life

Bond-Coat NCC significantly outperforms standard rubber to metal bonds exposed to harsh environmental conditions. It's the perfect protection for bonded materials in high-pressure, extreme temperature environments, such as down-hole assemblies, transducer housings and marine sensor packages – any application where corrosion, debonding and peeling are a problem.

Eliminates cathodic delamination

Because Bond-Coat NCC is non-conductive, it is impervious to cathodic delamination, a primary cause of adhesive primer deterioration in marine environments.

Use with existing processes

Bond-Coat NCC can be selectively applied to discrete areas of a part to be over-molded, leaving other surfaces unaffected. As a result, existing connector molds do not have to be altered. Aluminum hardware can also be anodized after applying the Bond-Coat NCC providing a seamless interface between the Bond-Coat and the anodized area.

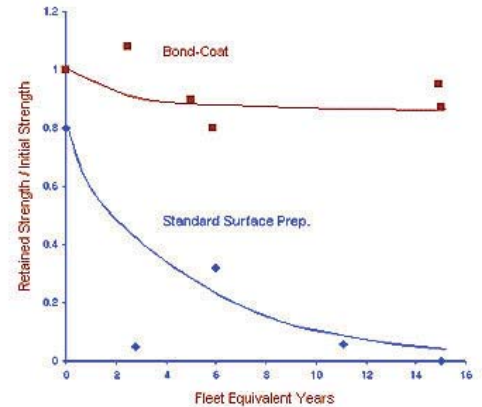
Superior molding properties for metals and polymers

Use Bond-Coat NCC with all metal substrates, including stainless steel, monel, inconel titanium, aluminum and aluminum-silicon bronze. It even increases the bond strength of many standard elastomers, such as Neoprene, polyurethane and some Vitons.

About TRI/Austin, Inc.

TRI/Austin has over 30 years experience in the fields of materials research and development, nondestructive inspection and evaluation, and aerospace structure design, analysis, integration and testing.

We have developed a variety of innovations that are now commercially available, including protective coatings for electrical connectors, an environmentally friendly lead substitute, and a new aircraft adhesive.



Full article test comparing Bond-Coat NCC connectors with uncoated rubber-to-metal bond.



An uncoated connector backshell is shown on the left. The backshell on the right has been treated with Bond-Coat NCC.

To learn if Bond-Coat NCC can help you with your application, contact:

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