

INTERPLASTIC

C A S E

history



Tier I Automotive Supplier Builds “Showcase” Part

Challenges...

- HIGH PHYSICAL PERFORMANCE CAPABILITIES
- COSMETICS TO EXCEED TIER I OEM STANDARDS
- EXCELLENT REPARABILITY
- ROBOTIC SPRAY-UP
- FAST, CONSISTENT CURE
- LOW VOC RESIN



The Gold Standard



GOLD SHIELD
OF INDIANA, INC.

Gold Shield is a manufacturer of molded composite components, products and assemblies for OEM customers. One of their customers, Hino Trucks - A Toyota Group Company, has particularly stringent standards for part quality and production volumes, and original Gold Shield product systems could not perform up to the physical and cosmetic demands of Hino. Consequently, Interplastic Corporation created a CoREZYN® system that met Hino's expectations and allowed Gold Shield to build a showcase-quality part.

“Gold Shield approached us for a unique resin that would provide high end physicals and nearly a Class A finish,” stated Tony Bennett, Manager, Corrosion and Laminating Resins, Interplastic Corporation Thermoset Resins Division. Fiber print through and bonding lines (heat distortion) were exacerbated by the thinness of the laminate, he said. Orange peel effect and UV fading were unacceptable. Any repairs that needed to be done before the part shipped had to equal the original gloss specifications. “The marine industry faces similar issues with cosmetics and composites performance,” Bennett said. “I started with a marine grade polyester blend and modified it to meet Gold Shield's specific requirements.”

The result was a custom resin that provided significant physical performance improvements and predictable results for Gold Shield and satisfied Hino Trucks. “The specifications that came from Japan for the physicals were very high and qualifying the new resin was difficult,” said Ted Johnston, Gold Shield Materials Manager. “However, the resin works extremely well and Hino Trucks is very impressed with the results.”

Process Challenges Abound



The resin system is sprayed robotically. “We’re manufacturing 45 to 50 parts per day on two shifts,” George Toscos, Process Unit Manager, explains. “Having robotics in our plants has been positive but it has demanded that we have considerable internal expertise about them. There are some limitations on how well the robot can be programmed and how much we can influence the movement of the arm. The resin system had to accommodate those issues, too.” Areas of concern included corners, where the composite might be slightly thicker and cure slightly faster, thereby creating some heat distortion.

Bennett says the resin and catalyst weren’t fully compatible with an external mix gun. The problem showed up as spots after curing. He collaborated with Akzo Nobel® to solve the problem which included using an internal mix gun with an air assisted airless tip, and a chemical mix aid.

To help ensure that the cure was complete, Bennett says he used a surface wave scanner to check the mold and then the part’s surface for distortion, thickness, etc. Tests were run on the part immediately after demolding and then a few hours after the part is fully cured to learn whether there was any shift in the part’s surface. The data revealed little to no change in the surface cosmetics, thereby ensuring excellent stability on parts in the field.

“We’ve been told many times that this is the best looking hood in the industry,” Greg Bleeke, Gold Shield Assistant Materials Manager, said. “It is probably the best looking part we make in terms of style and cosmetics. We show it off every chance we can.”

It has become the “Gold Standard.”

TYPICAL PROPERTIES

CURRENT COREZYN RESIN SYSTEM VS. PREVIOUS RESIN SYSTEM 1/8 inch (3.2 mm) Laminate 4 Plies, 1.5 oz/ft², 33% Glass Mat

Physical Property Tested	Current CoREZYN Resin System		Previous Resin System	
Flexural Strength, ASTM D790	29,900 psi	206 MPa	23,360 psi	161 MPa
Flexural Modulus, ASTM D790	11.6 × 10 ⁵ psi	8000 MPa	9.7 × 10 ⁵ psi	6690 MPa
Tensile Strength, ASTM D638	14,700 psi	101 MPa	13,200 psi	91 MPa
Tensile Modulus, ASTM D638	13.2 × 10 ⁵ psi	9100 MPa	11.6 × 10 ⁵ psi	8000 MPa
Tensile Elongation, ASTM D638	1.9%	1.9%	1.7%	1.7%
Barcol Hardness, 934-I gauge, ASTM D2583	45-50	45-50	48-52	48-52



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