



INNOVATIONS FOR LIVING®

CASE STUDY

ShieldStrand® S Reinforcements Strengthen Body Armor Inserts

General Dynamics Armament and Technical Products (GDATP) joined forces with 3TEX, Inc. to provide state-of-the-art composite body armor solutions for personal protection using ShieldStrand® S high-performance glass fiber reinforcements from Owens Corning

Body Armor Insert Process

- Vacuum-assisted resin transfer molding (VARTM)

Reinforcements

- 3WEAVE® fabric preform
- ShieldStrand® S glass fiber reinforcements
- Single-end roving

Principal Markets

- Military
- Law enforcement
- Security
- Aircraft armor
- Personal shields



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Body armor inserts are hard plates traditionally made with a metal or ceramic face and backed with composite material to absorb the energy of impact on the hard face. Using ShieldStrand® S, in combination with high-tech three-dimensional weaving, improves ballistic performance while keeping the armor affordable.

GDATP and 3TEX are developing solutions to meet National Institute of Justice (NIJ) 0101.06 Level IV standalone/in-combination, as well as a low-cost solution for NIJ 0101.04 Level IV.

To create the new inserts, ShieldStrand® S fiber is woven into a three-dimensional 3WEAVE®* preform by 3TEX, Inc. The fabric is then encapsulated with a hard face using a vacuum-assisted resin transfer molding (VARTM) process by GDATP.

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“Our body armor inserts are being engineered to exceed the latest standards from the NIJ, said Matthew Diehl, Engineering Manager for advanced programs at GDATP.

“The incorporation of three-dimensionally woven fabrics and a proprietary construction process provide armor plates with increased multi-hit and edge impact capability, reduced edge damage from field conditions and excellent resistance to environmental and chemical exposure,” Diehl continued. “These lightweight inserts are designed to defeat multiple strikes from a variety of threats.”

Significantly enhanced fiber properties

ShieldStrand® S reinforcement provides significantly enhanced fiber properties compared to E-glass for better finished part performance. The product’s high strength, stiffness and temperature resistance increase ballistic protection while lowering weight, helping to meet higher NIJ threat levels and stretching budgets. Cutting-edge technology at Owens Corning enables large-scale, direct-melt production of the high-performance reinforcements to meet growing demand.



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For more about ShieldStrand® S reinforcements visit
www.ocvreinforcements.com/hp/index.asp.

* 3WEAVE is a registered trademark of 3TEX, Inc.



OCV Reinforcements

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