

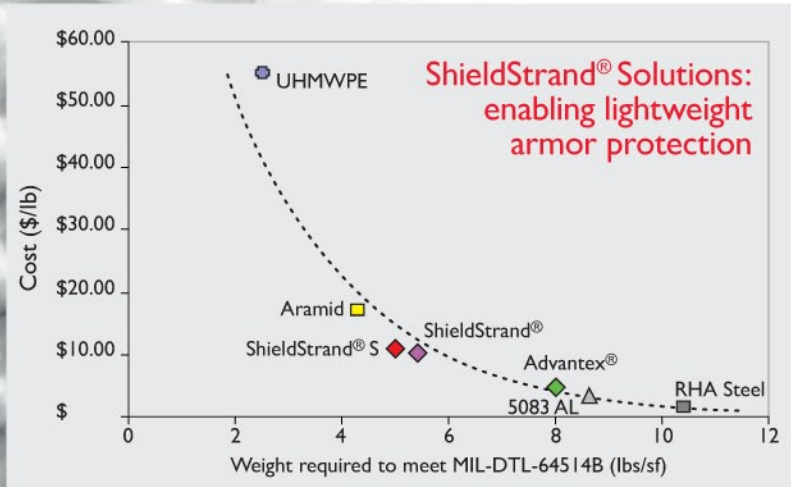
4 Owens Corning Returns to S-Glass Production



Building on its heritage of leadership and innovation, Owens Corning has developed a new generation of high-performance glass fiber reinforcements that redefine the value of composites materials.

Breakthrough glass fiber manufacturing technology has made possible an extensive lineup of Owens Corning high-performance reinforcements.

- This new era in reinforcements is the result of more than 70 years of advancing technology, including the 1997 introduction of Advantex® glass, a patented boron- and fluorine-free platform that produces a higher-performing E- and E-CR glass fiber combination, and a significantly smaller environmental footprint compared with standard E-glass processes.
- In 2006, Owens Corning introduced a family of high-performance reinforcements based on an R-glass formulation. Now the company is launching a large-scale S-glass platform of high-performance reinforcements made with a direct-melt process, an achievement previously thought to be technically unfeasible.
- The first products in the S-glass reinforcement portfolio are ShieldStrand® S reinforcements for the defense market and XStrand® S reinforcements for industrial, sports and recreation applications. FliteStrand® reinforcements for aerospace applications will be available in 2010.



“ We are excited to have scale production of high-performance reinforcements because increased availability will enable expanded use of high-strength glass fiber to replace steel and aluminum, as well as aramid and carbon fiber,” says **Byron Hulls**, global program general manager, High-Performance Reinforcements. “Designers and manufacturers can now have confidence that the material will be available in the quantities they need for large-volume production.”

5 Innovations Enable Move from Niche to Scale

Since the company first commercialized the processes for making fiberglass reinforcements, Owens Corning has continued to deliver innovative solutions.

When Owens Corning introduced S-glass to the market in 1963, the new glass formulation required a special melting process due to its elevated processing temperature. This led to the development of the paramelt process still used today for some fibers.

In the nearly 50 years since S-glass was developed, Owens Corning continued to advance fiber-forming science and redefine what is possible. The company now makes high-strength glass fibers with new glass melting technology, new glass delivery technology, new glass fiberizing technology and new glass chemistry and application technology. Used together, these cutting-edge technologies are enabling large-scale, direct-melt production of high-quality, high-strength glass fiber reinforcements.

Ashish Diwanji, vice president, innovations, Composites Group, says technical successes have made it possible for the company to produce high-strength glass fibers at a level of performance, availability and value never before achieved.



“ The processes for making large-scale high-performance reinforcements are ‘enabling technologies,’” says Diwanji. They allow more applications that are cost competitive with other materials. These high-performance reinforcements will help open doors for customers in new markets as well. This is a great example of our commitment to drive innovations that deliver value for our customers and end-users. ”





6 Products Meet Performance Standards

The development of new high-performance glass fiber reinforcements is being driven by the need for large-volume production of high-strength material that will compete effectively by significantly improving the value of composites.

Owens Corning high-performance reinforcements are made from R- and S-glass compositions specifically formulated to yield higher tensile strength and stiffness.

"Bare glass properties are comparable to other commercial high-strength glasses," says Wisdom Dzotsi, business manager, High-Performance Reinforcements. "With advances in sizing and application technology, laminate properties can actually exceed previous standards."

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“Dzotsi says global combat and security needs are driving demand for ballistic solutions that can defeat increasing threats. At the same time, enhancing safety and security must be balanced with practical constraints such as weight and cost. The result is a need for armor that can withstand new threats while weighing less and providing a level of value that allows the military to protect more vehicles and structures.

Grey Chapman, key account manager, OCV™ Reinforcements, says most current armor solutions are driven by a metals culture that adds weight. "Increased weight reduces vehicle maneuverability and decreases the amount of payload that can be carried," explains Chapman. "The military's future combat strategy requires vehicles that are lighter and more nimble."

"Composites are helping to save life and limb today," says Dave Hartman, senior research associate, Science and Technology. "Lightweight composite armor enhances metal structures for mitigation of lethal behind-armor effects from overmatch threats of roadside bombs. ShieldStrand® composite armor is an excellent material to help protect against blast and fragmentation which causes over 90 percent of the loss of life and limb. We will see the ballistic armor market transforming as applications migrate from armor kits on existing vehicles to integration of composites through the entire vehicle for lightweight structure and protection.”