



Your Formula for Success
RESINS | GEL COATS | COLORANTS

CASE HISTORY



Composite Panels Save Lives

Market Segments:	Military Specialty
Composite Applications:	Solid ballistic armor panels Cored panels for transportation & other markets
Gelcoat Application:	Vibrin® Gel Coats
Resin:	Altek® unsaturated polyester proprietary polymer concrete
Manufacturing Process:	Wet lay-up/Vacuum & Infusion
Diameter:	10 feet (3 meters)
Maximum Dimensions:	Up to 11 feet by 60 feet (3.4 by 18.meters)

Composite panel fabricator Fiber-Tech has significantly increased its participation in ballistics and military applications over the past few years due to homeland security concerns and the need for troop protection in Iraq and Afghanistan. The same AOC Altek® polyester resin Fiber-Tech uses for commercial panel applications is employed in Fiber-Tech ballistics armor.

“We use a similar fabrication process but for ballistic applications produce panels which are solid fiberglass and resin,” says Fiber-Tech Vice President of Technology Bob Pfeifer. “Laminate thicknesses are one-eighth-inch to one-and-a-quarter inch (0.32- to 3.2-centimeters), depending on the National Institute of Justice (NIJ) ballistic rating required for a given application.”

The NIJ has a rating system for different projectiles or “threat levels.” The higher the rating or threat level, the more resin and fiberglass Fiber-Tech uses in order to produce a thicker ballistic panel.



Ballistic armor panels made without cores meet National Institute of Justice (NIJ) Standards criteria.



Fiber-Tech is a leading manufacturer of composite panels for transportation applications.

Composite Panels Save Lives, continued

Using fiberglass woven roving in AOC resin, Fiber-Tech's solid ballistic panels have passed NIJ Standards 0108.01 criteria.

Fiber-Tech's largest ballistic panel job so far was the production of ceiling tiles designed to resist mortar shrapnel in soft-sided structures using the Altek resin in 0.5-inch (1.3-centimeter) thick laminates.

From manufacturing sites in Washington, Ohio and Michigan, Fiber-Tech produces large, flat composite panels for the transportation, marine, military, construction, and corrosion resistant markets among others, with transportation as a mainstay.

The majority of the composite panels for Penske and U-Haul trucks in the past 18 years were fabricated by Fiber-Tech using Altek unsaturated polyester resin. "Penske and U-Haul began using composite walls in the late 1980s and have since gone to 100% FRP (instead of aluminum) walls for their consumer rental truck bodies," explains Fiber-Tech Vice President, Sales, Wayne Durnin.

Fabricating with AOC technology

Using Altek resins and Vibrin® gel coats from AOC, Fiber-Tech produces large, structural panels manufactured in a wet-layup process. "We're not just gluing components together," Durnin says. "We manufacture the entire composite in one complete process to produce a seamless, structural panel, cured under heat and pressure."

The closed-mold fabrication process used by Fiber-Tech is a combination of vacuum bagging and infusion. Pfeifer, says theirs is a proven process under the Fiber-Tech name dating back to 1984, but was originally developed in the late 1960s.

Most panels produced by Fiber-Tech employ a core material surrounded by resin/fiberglass composite on both sides. A variety of cores are used including plywood, PP honeycomb, and several different types of foams. For its ballistic applications, Fiber-Tech uses a solid resin and fiberglass woven roving construction without a core.

Highly Reactive Resins = Faster Cycle Times

Fiber-Tech differentiates itself through its ability to produce very large panels and to do so quickly. The company can fabricate panels up to 11-feet wide and 60-feet long (3.4 by 18.3 meters) for use in truck bodies and

architectural applications. "We build the largest panels in the marketplace so we can maximize the yield from our panels," Durnin points out. "If a customer needs four-foot by eight-foot (1.2-by-2.4-meter) panels, we can manufacture parts that are eight feet by 56 feet (2.4 by 17 meters) and cut them to customers' exact specifications."

The high reactivity of the Altek resin is another critical factor in Fiber-Tech's success. "Our ability to produce a large quantity of panels very quickly is a big advantage," Durnin says. "Using a highly reactive resin allows us to manufacture panels with the highest square foot throughput in the industry," says Pfeifer. "Fiber-Tech is able to exceed the daily capacity of some of our competitors before our morning break!"

Altek Performance

Among the properties exhibited by AOC resins and gel coats Fiber-Tech considers the most critical are the resin's flex, wet out and ease of processing.

"We really wanted to use the same resin in our ballistic applications as we do in our standard products," explains Pfeifer. "Even when we went to a 30% resin ratio for ballistics, we were able to stick with our established fabrication process and the same Altek resin from AOC."

"The resins and gel coats have been very high quality and very consistent," Pfeifer says. "Since we began using the AOC products, we've made very few process changes."

AOC Service

When tech service is needed, AOC brings technical personnel into Fiber-Tech plants, usually to assist with process changes and specific projects in which the company is involved.

"They helped us a lot when we made the switch from standard to low-VOC products," he continues. "It was a year-long project to get our styrene levels from the mid-30s (percentages) down to the mid 20s. AOC adapted their products to our processes because we don't want to make unnecessary changes," Pfeifer says.

"AOC's customer service and on-time delivery has been very good for us. We view Salesman Herb Knudson and the rest of the AOC team as Fiber-Tech partners."

Composite Panels Save Lives, continued

About Fiber-Tech

Dedicated to quality FRP solutions, Fiber-Tech provides panels for a variety of industries, including transportation, construction and marine. For more information on the wide variety of composite panel products from Fiber-Tech Industries, contact Wayne Durnin by e-mailing wdurnin@fiber-tech.net or phoning (800) 879-4377 or visit www.Fiber-Tech.net.

About AOC

AOC is a leading global supplier of resins, gel coats, colorants, additives and synergistic material systems for composites and cast polymers. For more information on AOC technology, quality and service, e-mail sales@aoc-resins.com, phone (866) 319-8827, or go to AOC-RESINS.com.