

Vehicle Armor Composite System (VACS)

Composite armor solutions for a wide variety of vehicle systems made with glass fiber manufactured by AGY and processed by proven industry partners. The VACS system has a composite protection solution to meet your needs.



AGY Featherlight™

Improved Ballistic Performance for Your Most Severe Ballistic Threats

Featherlight S-2 Glass® roving is designed to meet your toughest ballistic protection applications with weight savings of approximately 5% over standard S-2 Glass roving solutions. S-2 Glass has set the standard for high-strength glass fiber reinforcements for over 25 years, with a 40% higher strength than conventional glass fiber roving, and a 20% higher modulus. The improvement made by Featherlight is a step change progression that will allow armor designers to make significant reduction in weight and increase in ballistic protection.

The Featherlight technology is a result of advanced process improvements that allow for the production of S-2 Glass filaments with increased tensile strength. The result is a composite armor that protects at the same level with a 5% lighter panel.

Because Featherlight is a fiber enhancement, it can be manufactured in any of the standard S-2 Glass fiber formats. Designed to work seamlessly in AGY's HJ1 system, users will find that the Featherlight fibers process identical to the matching S-2 Glass fiber product. The advantages of Featherlight become apparent when the panels are subject to a ballistic event. The Featherlight roving is currently available in an epoxy compatible sizing that it is appropriate for ballistic applications in phenolic and thermoplastic resins. It can also be custom manufactured with the full range of standard S-2 Glass roving sizings as warranted by specific programs.



strength in materials

AVAILABLE PRODUCTS

Product Identification	Type	Tex	Yards/Pound
463-AF-750	Assembled Roving	677	733
463-AF-250	Assembled Roving	2033	244

PROPERTIES

Characteristic (in epoxy)	Test Method	Values
Impregnated strand tensile strength	ASTM D-2343	3.6-4.3 GPa (520-620 ksi)
Horizontal shear (short beam)	ASTM D-2344	55-76 MPa (8-11 ksi)
Wet strength retention after 6-hr. water boil — 95%		

GLASS COMPOSITION

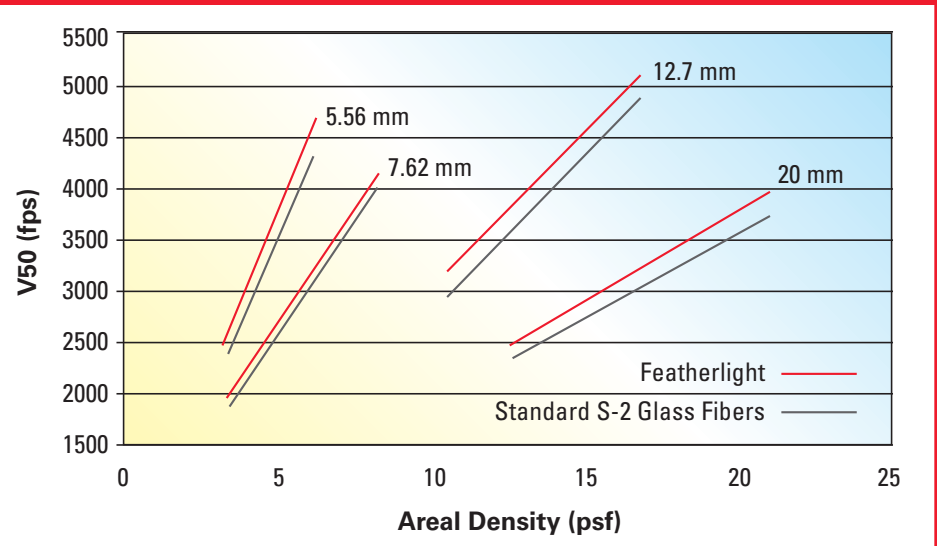
“S Glass” (reference: AMS 3832A, ASTM C 162-90, MIL-R-60346C Type IV Class 1, MIL-DTL-64154B Class A)

SOLIDS (% LOI*)

0.80 min. 1.00 nom. 1.20 max.

* Loss on ignition after drying

Fragment Simulating Projectiles



Featherlight has been tested in AGY’s HJ1 composite armor system to determine the level of ballistic improvement due to the processing change. The performance improvement is shown graphically.

Composite armor panels manufactured with Featherlight will exhibit excellent fire, smoke and toxicity performance typical of with glass fiber reinforced phenolic composite armor. Composite panels manufactured with Featherlight are expected to have mechanical performance similar to or greater than standard

S-2 Glass fiber composite panels. Featherlight can be deployed in both structural and nonstructural components on a vehicle, enabling lightweight, fire retardant and load bearing structures to compete head-to-head with steel and aluminum solutions.

Consider using AGY Featherlight fibers for your next tough armoring challenge!



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