



**strength** in materials

# 449 S-2 Glass® Roving

High-Strength Solutions for Your Toughest Reinforcement Challenges

AGY's S-2 Glass® high-strength fibers are specifically designed to meet your most demanding performance processing and cost requirements. AGY's global network of people and facilities are ready to help you develop innovative solutions to your most difficult reinforcement challenges.

### Product Application

449 S-2 Glass roving is designed to be used in aerospace, defense and recreation applications such as:

- Helicopter blades
- Golf shafts
- Pressure vessels
- Aircraft flooring
- Aircraft fuel tanks

### Product Solutions

S-2 Glass fibers offer a unique combination of properties: strength, impact resistance, stiffness, radar transparency and temperature and fatigue resistance. Compared with other reinforcing materials, S-2 Glass fibers weigh less than conventional glass fiber and deliver better cost performance than aramid and carbon fibers. In addition, they meet the requirements of MIL-R-60346 Type IV, Class 1 specifications.

### Product Description

449 S-2 Glass roving consists of numerous G-filament (9 micron) continuous glass strands, gathered without mechanical twist and treated with an amino-silane, epoxy-compatible sizing.

### Resin Compatibility

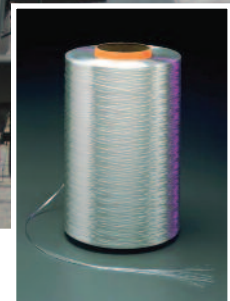
- Epoxy (amine-cured)
- Urethane (selected)

### Processes

- Weaving
- Hand Lay-up
- Uni-Directional Pre-Impregnation
- Filament Winding
- Contact Molding
- Compression Molding



Black Hawk Helicopter Blades



S-2 Glass Roving

Features	Benefits
S-2 Glass fiber offers significantly more strength than conventional glass fiber: 85% more tensile strength in resin impregnated strands	Consistent high performance for reliable and durable finished parts
Better fiber toughness, modulus of resilience and impact deformation than conventional glass fiber	Improved impact capabilities to finished parts and higher composites durability and damaged tolerance
Softening point: 1056°C (1932°F) Annealing point: 816°C (1500°F) Strain point: 766°C (1410°F)	Greater fiber tensile strength and stability at elevated temperatures in thermoset and thermoplastic applications
Enhanced stiffness	Delivers 25% more linear-elastic stiffness than conventional glass fiber
Excellent tolerance to damage accumulation	The ability of composite parts to withstand high levels of tension and flexural fatigue without catastrophic failure
S-2 Glass fibers deliver 20% reduction in dielectric constant over E-Glass fibers	Radar transparency
Long shelf life, good machinability and excellent durability	Consistent performance and reliability
Quick wet-out (penetration of resin into the strand)	Faster, more efficient processing

## PRODUCT INFORMATION

Available Products			Properties		
<b>Linear Density (Nominal Yield)</b>			<b>Characteristic (in epoxy)</b>	<b>ASTM Method</b>	<b>Values</b>
<b>Product Identification</b>	<b>TEX</b>	<b>Yards/Pound</b>	Impregnated strand tensile strength	D-2343	3.7-4.1GPa (450-600ksi)
449-AA-1250	406	1222	Horizontal shear (short beam)	D-2344	55-76MPa (8-11ksi)
449-AA-750	675	735	Wet strength retention after 6 hour water boil	-	95%
449-AA-250	2025	245			

### Glass Composition

"S Glass" - reference AMS 3832A, ASTM C 162-90, MIL-R-60346

### Nominal Filament Diameter

"G" or 9 microns

### Solids (% LOI\*)

0.55 minimum  
0.65 nominal  
0.75 maximum  
\* Loss on ignition after drying

### Additional References

Customer acceptance standard: RF-49

Packaging				
Package #	4057		4078*	
Type Build	Rhino Tube		Rhino Tube	
Descriptions	Metric (cm)	English (in)	Metric (cm)	English (in)
Outside diameter	17.8	7.0	25.4	10.0
Inside diameter	7.6	3.0	7.6	3.0
Tube length	27.7	10.9	27.7	10.9
Traverse	25.4	10.0	25.4	10.0
Pallet Type	Carton		Carton	
Approximate package weight	6.8kg	15.0lbs	14.5kg	32.0lbs
Packages/pallet	60		36	
Approximate net weight/pallet	408kg	900lbs	523kg	1152lbs
Pallets/typical truckload	44		34	

Note: Metered length packages (type 4059) are also available as follows: 750 yield – 11,025yds  
The weight of the package depends upon the metered length.

\*4078 package is only available for 449-AA-250 product.

S-2 Glass is a registered trademark of AGY.

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