High-Strength Solutions to Your Toughest Reinforcement Challenges

Advanced Glassfiber Yarns’ S-2 Glass high-strength fibers are specifically designed to meet your most demanding performance, processing and cost requirements. Advanced Glassfiber Yarns’ global network of people and facilities stands ready to help you develop innovative solutions to your most difficult reinforcement challenges.

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

Processes
- Weaving
- Filament winding
- Hand lay-up
- Compression molding
- Contact molding
- Unidirectional
- Pre-impregnation

Typical Applications
Advanced Glassfiber Yarns’ 449 S-2 Glass roving is designed to be used in recreation, aerospace and defense applications such as:
- Helicopter blades
- Pressure vessels
- Aircraft flooring
- Aircraft fuel tanks
- Golf shafts
- Aircraft fuel tanks

Product Solutions
High-performance S-2 Glass fibers offer a unique combination of properties: strength, impact resistance, stiffness, temperature resistance, fatigue resistance and radar transparency. Compared with other reinforcing materials, S-2 Glass fibers weigh less than conventional glass fiber and deliver better cost performance than aramid and carbon. 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.

Benefits
- Consistent high performance for reliable and durable finished parts.

Features
- S-2 Glass fiber offers significantly more strength than conventional glass fiber: 85% more tensile strength in resin-impregnated strands.
- Improved impact capabilities to finished parts and higher composite durability and damage tolerance.
- Greater fiber tensile strength and stability at elevated temperatures in thermoset and thermoplastic applications.
- Delivers 25% more linear-elastic stiffness than conventional glass fibers.
- The ability of composite parts to withstand high levels of tension and flexural fatigue without catastrophic failure.
- Radar transparency.
- S-2 Glass fibers deliver 20% reduction in dielectric constant over E-glass fibers.
- Consistent performance and reliability.
- Long shelf life, good machinability and excellent durability.
- Faster, more-efficient processing.

Quick wet-out (penetration of resin into the strand).

System solutions for proven performance in demanding composite applications.

Product Information
449 S-2 Glass®
Roving

Helicopter blades.
Disclaimer of Liability

This data is offered solely as a guide in the selection of a reinforcement. The information contained in this publication is based on actual laboratory data and field test experience. We believe this information to be reliable, but do not guarantee its applicability to the user’s process or assume any liability arising out of its use or performance. The user, by accepting the products described herein, agrees to be responsible for thoroughly testing any application to determine its suitability before committing to production. It is important for the user to determine the properties of its own commercial compounds when using this or any other reinforcement.

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Available Products

Linear Density [Nominal Yield]

<table>
<thead>
<tr>
<th>Product Identification</th>
<th>TEX</th>
<th>Yards/Pound</th>
</tr>
</thead>
<tbody>
<tr>
<td>449-AA-1250</td>
<td>455</td>
<td>1222</td>
</tr>
<tr>
<td>449-AA-750</td>
<td>675</td>
<td>735</td>
</tr>
<tr>
<td>449-AA-250</td>
<td>3525</td>
<td>245</td>
</tr>
</tbody>
</table>

Glass Composition

“S Glass” (reference: AMS-3832A, ASTM C-162-90, MIL-R-60346)

Nominal Filament Diameter

“N” or 9 microns

Solids (% LOI*):

- 0.05 min.
- 0.07 max.

* Loss on ignition after drying

Additional References

Customer acceptance standard: RP-49

Properties

ASTM

<table>
<thead>
<tr>
<th>Characteristic (in epoxy)</th>
<th>Test Methods</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impregnated strand tensile strength</td>
<td>D-2344</td>
<td>17.4-4.3 GPa (2500-620 lbs)</td>
</tr>
<tr>
<td>Horizontal shear (short beam)</td>
<td>D-2344</td>
<td>55.76 MPa (8.11 ksi)</td>
</tr>
<tr>
<td>Wet strength retention after 6-hr. water boil</td>
<td>—</td>
<td>90%</td>
</tr>
</tbody>
</table>

For more information on the value of S-2 Glass fiber, see our publication, Advanced Materials – Solutions for Demanding Applications, Pub. No. LIT-2000-011 (07/00).

Packaging

Package No. 4057 4078**

<table>
<thead>
<tr>
<th>Package/weight</th>
<th>Rhine Tube</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approx. pkg. weight</td>
<td>5.8 kg</td>
<td>(10.0 lbs)</td>
</tr>
<tr>
<td>Approx. net weight/pallet</td>
<td>408 kg</td>
<td>(900 lbs)</td>
</tr>
<tr>
<td>pallets per typical truckload</td>
<td>44</td>
<td>34</td>
</tr>
</tbody>
</table>

Note: Metered length package (type 4059) also available as 449-AA-750 yield — 11,025 yds. Weight of package depends upon metered length.

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

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For more information, visit our Web site at www.agy.com

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