



# S-2 Glass® Fiber for UAV Applications

High strength fibers that provide high impact resistance combined with radio and optical transparency



## PRODUCT FEATURES AND BENEFITS

- Higher fiber toughness, modulus of resilience and impact deformation than conventional glass fibers, or many other materials.  
**Higher impact properties in finished parts. Higher part durability and damage tolerance.**
- S-2 Glass fibers have higher tensile strength than conventional E glass fiber: 85% more tensile strength in resin impregnated strand testing.  
**Consistent high performance for reliable and durable finished parts.**
- S-2 Glass fibers deliver 20% reduction in dielectric constant over E-Glass fibers.  
**Radars and radio transparency.**
- Excellent optical transmission when combined with thermoset resin from Kaneka Aerospace LLC.  
*(See picture below)*  
**Ability to inspect internal components, and internal damage in the composite. Potential to eliminate nondestructive testing.**

AGY's S-2 Glass® Fibers are ideally suited for use in Unmanned Aerial Vehicles (UAVs) to help provide a balance of mechanical and electrical properties. AGY's global network of people and facilities are ready to help you develop innovative solutions to your most difficult reinforcement challenges.

### Product Application

S-2 Glass rovings are designed to be used in defense, commercial, and recreational UAV applications such as:

- Fuselage
- Leading edges
- Landing gear
- Pressure vessels
- Radomes

### Product Solutions

S-2 Glass fibers have a unique combination of properties: strength, impact resistance, stiffness, radar transparency, optical 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.

### Resin Compatibility

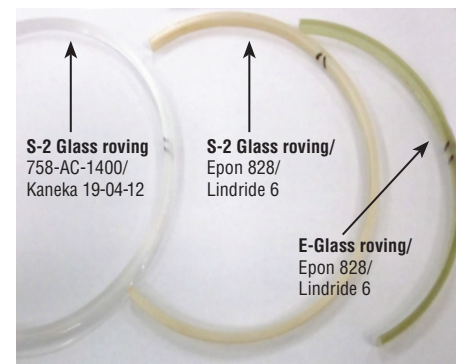
AGY has developed sizing systems to work in a number of thermoset and thermoplastic resins including:

- Thermosets
  - Epoxy, Vinyl Esters, BMI, LCP, Phenolics
- Thermoplastics
  - PEEK, PEI, PA, PPS, PSU, PC and PBT

### Processes

AGY offers formats to work in a number of thermoset and thermoplastic process including:

- Injection Molding
- Weaving
- Filament Winding
- Hand Lay-up
- Compression Molding
- Unidirectional Pre-Impregnation



**MECHANICAL BENEFITS**

The Stress –Strain graph (*below*) compares 5 common types of fiber used in reinforcing composite parts. The four attributes that can be found on the graph are:

- Strength (Stress)
- Stiffness (Slope)
- Elongation (Strain)
- Energy absorption (Area of the triangle)

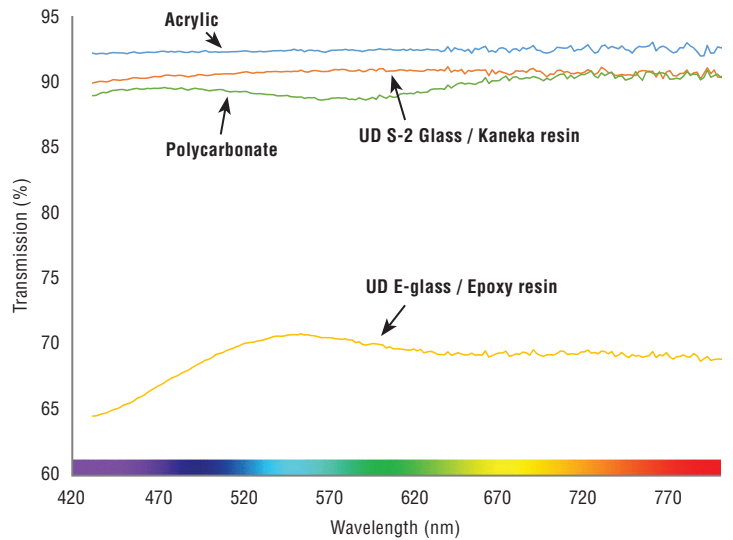
Some of the unique benefits of S-2 Glass® fibers are:

- S-2 Glass fibers absorbs almost 4 times more energy before failure than carbon fiber
- Has tensile strength similar to carbon fibers
- Provides a balance of both compression and tensile strength
- Offers highest performance of % strain to failure of any fiber

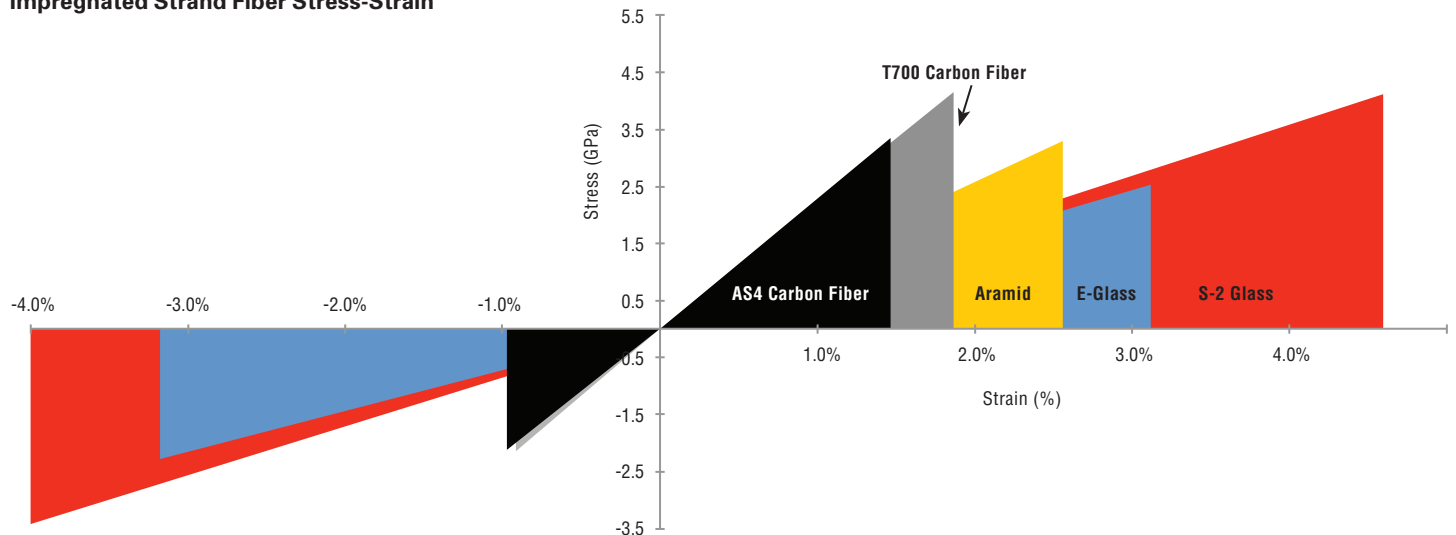
**PHYSICAL BENEFITS**

- S-2 Glass fibers are transparent to light and radio waves
- S-2 Glass fibers are a great choice for radomes because of their high strength with great electrical properties
- When paired with the appropriate resin, the composite can be molded to be colorless and transparent
- The light transmission graph (*at right*) demonstrates that the S-2 Glass fibers in a Kaneka resin combination can offer the same optical transparency as polycarbonate and acrylic resins
- S-2 Glass fibers have very high fatigue life performance

**Light Transmission**



**Impregnated Strand Fiber Stress-Strain**



For more information, visit us at [www.agy.com](http://www.agy.com)



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