



HIGH STRENGTH FLAT GLASS FIBERS

Glass described as a high strength material may appear as a natural paradox. However, advances in polymer coating and high tensile strength ribbon fiber production are bringing new applications to glass that may not have been previously considered.

A fiber is round? Not necessarily. Accu-Glass is the only producer of flat fibers from a continuous melt process. With an aspect ratio up to 20:1 and glass as thin as 15 microns, a glass ribbon can provide composite manufacturers with opportunities to produce high strength optically transparent composites.

In a composite made from a round fiber, light impinges the interface resulting in scattering. Using a flat fiber (i.e., a ribbon) maximizes perpendicular incidence and reduces the scattering. The result is a composite with high optical transmission (>95%) and clarity.

Polymer coating applied during ribbon glass production protects the glass surface to maximize the tensile strength. This enhances the composite tensile strength and impact characteristics.

The benefits include:

- Minimal visual distortion
- Enhanced strength to weight ratios over conventional transparent materials
- Greater personnel safety with high impact resistant properties
- Reduced fossil fuel consumption

Potential applications include:

- Defense: Vehicle and personal armor
- Aviation: Aircraft windows
- Energy: Substrate for solar energy panels
- Law Enforcement: Protective face and security shields

Glass ribbons can be produced from various compositions to match the refractive indices of different polymers.

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