

## The Fiberglass Difference.

- High strength-to-weight ratio
- Low conductivity
- Resists warping
- Resistant to corrosion from chemicals and salt air
- Insulates from heat and cold
- Insulates from electricity
- Cost-efficiently can be made into complex shapes
- Coefficient of thermal expansion similar to glass
- Low thermal conductivity
- Dimensionally stable
- Rot resistant
- Easily paintable and re-paintable with minimum preparation
- Excellent insulators with high R-values and low U-factors
- Made from an abundant natural resource, silica sand
- Long product life
- Low life cycle costs
- Safely disposed since it is completely inert



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## Advantages of Fiberglass Windows

Fiberglass framed windows and doors are high performance products that are more **energy efficient, longer lasting, stronger, more aesthetically appealing** and **environmentally friendlier** than typical wood, aluminum or vinyl windows.

### What is Fiberglass?

Fiberglass is a composite structural material that consists of fiber reinforcements (typically glass) that are bound together in a resin matrix. Fiberglass has a high strength-to-weight ratio, resists warping and is resistant to environmental and chemical corrosion. It insulates from heat, cold and electricity, withstands temperatures from -40 to 350 degrees Fahrenheit and can cost-efficiently be made into complex shapes.

#### The unique properties of fiberglass include:

- Coefficient of thermal expansion similar to glass
- Low thermal conductivity
- Dimensional stability
- High strength
- Rot resistant
- Chemically inert
- Easily paintable and re-paintable with minimum preparation
- Low environmental impact – made of readily available silica sand
- Future recyclable capability

Over the past 10 years, fiberglass is used more and more in residential and light commercial construction. It is becoming the preferred material for window frames and door panels. According to Ducker Worldwide, fiberglass framed windows has been the fastest growing segment of the residential window industry for the past several years.

### What makes Fiberglass “Green”

Fiberglass has earned a reputation as a smart choice for green building products because of its energy-efficiency characteristics. This is significant because buildings consume 30% of all of our nation’s energy and 50% of all electrical energy. Using fiberglass products, including window and door frames, can help reduce the world’s energy consumption.

Fiberglass windows and doors insulate extremely well. Their high R-values and low U-factors will save energy for decades. Filling the fiberglass frames with sustainable foam insulation and glazing the windows with high efficiency insulating glass creates an incredibly high-performing window.

To be a “truly green” the fiberglass product must be sustainable as well. The embodied energy in fiberglass is less than other common building materials such as PVC (vinyl) and aluminum. Fiberglass is made from silica sand, an abundant natural resource that is readily available almost everywhere. Fiberglass also contributes to long product life and low life cycle costs. These attributes are critical when creating a sustainable product.

Fiberglass products can contribute to National Association of Home Builders (NAHB) or Leadership in Energy and Environmental Design (LEED) credit programs. These programs assess building projects based on overall environmental impact and reward those that follow green building practices.

## Fiberglass vs. Aluminum

**Fact:** For heavy commercial windows the only choice in the past was aluminum due to its strength. Fiberglass windows now offer higher strength and more flexibility in design.

**Fact:** Aluminum is excellent for conducting temperature for applications like pots and pans, but for windows it is the worst material as you do not want to conduct temperature. Even the best thermal barriers are not effective in reducing the conductivity or energy loss.

**Fact:** Fiberglass provides the strength and low conductivity to optimize window design and maximize glass area.

**Fact:** Aluminum corrodes from salt spray in coastal locations. Fiberglass does not.

## Benefits of Fiberglass Windows

Using fiberglass for window frame material is preferable to other window frame materials like wood, aluminum and vinyl, because fiberglass:

- Performs well in humidity extremes and hot and cold environments.
- Has high condensation resistance which helps keep humidity within a proper range and limits the growth of mold and mildew.
- Very low coefficient of thermal expansion and contraction (CTE).
  - Since fiberglass is mostly glass, it expands and contracts at about the same rate as plate glass.
  - Aluminum expands and contracts 3 times as much as fiberglass and vinyl moves over 7 times as much.
- Stress on seals, caulks and joints is minimized, contributing to higher efficiency windows.
- Tight seals maintain the resistance to air leakage and water penetration.
  - Seal failure can increase the risk of water damage or mold and shorten the life of the product.
- About 3 times stronger than aluminum and 9 times stronger than vinyl windows.
  - Strength decreases the limitation on glass size making large picture windows possible and energy efficient.
- Unlike wood framed windows, fiberglass does not rot or warp.
- Does not require a “thermal break” found in most aluminum windows.
- Does not require the stiffeners that many vinyl frames need.
- Easier to install
  - Frames stay square and do not twist or warp, a common problem during the installation of other types of windows.
- Practically maintenance free.
- Takes paint easily with excellent adhesion.
- Available in a large selection of colors.

## SeriousWindows

SeriousWindows™ fiberglass products meet the needs of designers, builders and owners who want to go beyond the limitations inherently found in metal, plastic or wood window systems. Serious Windows and Doors set a new standard in energy efficiency, increasing indoor comfort and saving you money with beautifully designed premium products.



1250 Elko Drive  
Sunnyvale, CA 94089  
(800) 797-8159

[www.seriousmaterials.com](http://www.seriousmaterials.com)  
[www.seriouswindows.com](http://www.seriouswindows.com)

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