For Consumers, Buyers & End Users

Why Select Composites?

FRP composites consist of an engineered polymer resin (plastic) and a fiber reinforcement (i.e. glass) and can be additionally enhanced with other elements such as additives and core materials. This combination can produce some of the strongest materials for their weight that technology has ever developed...and the most versatile.

FRP composites have many benefits to their selection and use. The selection of the materials depends on the performance and intended use of the product. The composites designer can tailor the performance of the end product with proper selection of materials. FRP composites provide a host of benefits including:

- Resistance to Environmental Factors - Composites display excellent resistance to the corrosive effects:

  o Freeze-thaw: because composites are not attacked by galvanic corrosion and have low water absorption, they resist the destructive expansion of freezing water.

  o Weathering and Ultra-Violet Light: FRP composite structures designed for weather exposure are normally fabricated with a surface layer containing a pigmented gel coat or have an ultraviolet (UV) inhibitor included as an additive to the composite matrix. Both methods provide protection to the underlying material by screening out UV rays and minimizing water absorption along the fiber/resin interface.

  o Chemicals and Temperature: Composites do not rust or corrode and can be formulated to provide long-term resistance to nearly every chemical and temperature environment. Of particular benefit, is composites ability to successfully withstand the normally destructive effects of de-icing salts and/or saltwater spray of the ocean.

- **High Strength and Stiffness Retention** - composites can be designed to provide a wide range of mechanical properties including tensile, flexural, impact and compressive strengths. And, unlike traditional materials, composites can have their strengths oriented to meet specific design requirements of an application.

- **Light Weight/Parts Consolidation** - FRP composites deliver more strength per unit of weight than most metals. In fact, FRP composites are generally 1/5th the weight of steel. The composite can also be shaped into one complex part, often times replacing assemblies of several parts and fasteners. The combination of these two benefits makes FRP composites a powerful material system.

- **Design flexibility** – composites can be formed into virtually any shape.

- **High Dielectric Strength** – composites have excellent electrical insulating properties making them an obvious choice for current carrying components.

- **Finishing** – composites can have their color molded into the product for a long-lasting, minimum maintenance appearance. Nearly all finishes are available including high gloss, matte, gritty, etc. depending on the requirement of the composite part.

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