



Battle of the Boxes: 7 Ways Polycarbonate Beats Fiberglass and Stainless Steel Enclosures

Stainless and fiberglass have long been the industry standard when it comes to industrial enclosures. While each has its own set of positive attributes, there's one material that has them both beat: polycarbonate. Polycarbonate industrial enclosures, like those made by Integra, feature more positive attributes than fiberglass and stainless steel combined.

To understand how each one stacks up, here's a helpful chart that breaks down these top enclosure materials by seven important characteristics:

	Polycarbonate	Fiberglass	Stainless
Lightweight?	✓	✗	✗
Quick & Easy Modification?	✓	✗	✗
Ability to Withstand Impact?	✓	✗	✗
Reasonable Cost?	✓	✓	✗
Recyclable?	✓	✗	✓
No Damage from Shipping/Handling?	✓	✗	✓
UV Resistant?	✓	✗	✓

Polycarbonate rises to the top when it comes to weight; it's up to 40% lighter than fiberglass and up to 6 times lighter than stainless—an important factor when it comes to shipping costs, and the ability for one-man installation.

Before and even during installation, enclosure modification is very common. Hand drills are often used to allow power or air access inside the enclosure. With stainless, holes are very difficult to drill. Fiberglass is even trickier, posing a danger with its particles and requiring a mask and gloves to protect the technician from lung and skin irritation from flying fiberglass shards.

Fiberglass is also tough on tools and often chips while machining, leaving sharp, unsightly edges. Many times, the manufacturer will leave modification up to the customer because it is more hassle than it's worth to provide this extra service. On the contrary, Integra Enclosures modifies almost every enclosure ordered to spec before it leaves the warehouse. While some additional modification may be necessary in the field, it can be done easily and safely by the installer.

Polycarbonate also has an unmatched ability to withstand impact. The average tensile strength of a fiberglass enclosure is approximately 220 inches/pound. Polycarbonate has a tensile strength of 900 inches/pound, giving it in more than 4 times the impact resistance of fiberglass.

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When it comes to cost, stainless enclosures are by far the most expensive of the group, by a ratio of about 3:1 when compared to polycarbonate. Fiberglass is also slightly more expensive than polycarbonate, especially when factoring in the cost to manufacture.

Fiberglass enclosures, or more accurately, fiber reinforced polyester (FRP), are made using a process called thermoset molding. During the manufacturing process, FRP can crack or scratch—these imperfect enclosures are usually discarded and sent to a landfill. The material cannot be reused or recycled, leading to higher manufacturing costs and ultimately driving up the cost of fiberglass enclosures.

Naturally, damage from shipping and handling is a major concern for fiberglass enclosure customers. A very brittle material, fiberglass risks damage any time it is dropped or mishandled. Because of its durability, Polycarbonate is rarely damaged from shipping or handling.



With a fiberglass enclosure, UV protection is offered as a shield that attempts to safeguard the fibers from inevitable deterioration or even failure. Stainless offers UV protection but with such a high price tag, it's not the ideal solution for outdoor applications. With polycarbonate, the UV inhibitor is a component of the polycarbonate formulation, meaning that no additional layer of UV protection is needed on a polycarbonate enclosure.

When it comes to enclosure material, polycarbonate clearly outranks fiberglass and stainless. Durable, aesthetically pleasing, pad-lockable and extremely versatile, Integra Enclosures are an upgrade to all but the most demanding metal enclosure applications.

Interested in learning more? Head over to IntegraEnclosures.com/Blog and search for "Poly Wins."



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ABOUT INTEGRA ENCLOSURES

Integra manufactures and markets thermoplastic enclosures designed for use in construction, water treatment, utility, telecommunication, instrumentation, remote monitoring, energy and other applications requiring enclosures that are non-corrosive, non-conductive, easy to install/modify and competitively priced.

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