



1418 S. Alameda St.
 Compton, CA 90221
 Phone: 310-328-6661
 E Mail: Technicalsupport@performancecomposites.com
www.performancecomposites.com

Design covers and enclosures with Fiberglass & Composites

Fiberglass and composites are ideal material for making shaped shell structures. It is the dominant material in applications such as boat hulls, small aircraft, architectural domes, and camper shells. Composites are also an ideal material for making covers and enclosures for machinery and equipment. The covers can have any shape or contour the designer wishes. They are lightweight, corrosion resistant, have class A finish, and are cost effective.

The cover can also be large and complex so one single cover can replace numerous individual panels. Consolidating parts greatly reduces costs and simplifies assembly. Traditionally, covers and enclosure for machinery and equipment have been made out of sheet metal. It is a material many engineers and designers are familiar with, and sheet metal is a good choice for covers that are simple and box shaped. If the covers need to have contour, such as a chamfer or radius corners, or if the covers are large, fiberglass and composites are the materials of choice.

The cover of the machine conveys a very strong signal to the customer as to the quality and performance of the machine. A Corvette would not be a world-class sports car if it had a boxy sheet metal body. Performance Composites has helped numerous companies design, develop and manufacture state of the art covers and enclosures. The stylish covers have helped our customers differentiate their products and have helped them increase their sales and market share. We can do the same for you. If you have any questions or specific applications, please contact us via e-mail or phone.

Advantages and disadvantages of fiberglass and sheet metal enclosures

	Fiberglass or Composite Material	Sheet Metal
Production quantities	<ul style="list-style-type: none"> * 10 to 1000+ per year. * Tooling cost can be amortized even in low volume production. 	<ul style="list-style-type: none"> * 1 to 1000+ per year.
Size	<ul style="list-style-type: none"> * Can be made in any size (limited by shipping constraints). * Larger parts are more cost effective. 	<ul style="list-style-type: none"> * Difficult to make covers larger than 3' x 5' x 3' due to weight and handling issues.
Shape	<ul style="list-style-type: none"> * Can have any shape the designers desire. Able to make your part unique. * Shape can also be used to stiffen the part (i.e. molded in ribs). 	<ul style="list-style-type: none"> * Limited to simple box shapes. * Complex shapes can be made but will be expensive.
Cost	<ul style="list-style-type: none"> * For complex shapes or large covers, fiberglass will be the most economical. * For simple small box shapes sheet metal will be cheaper. 	<ul style="list-style-type: none"> * Economical for simple box shapes. * Become expensive if the shape is complex or if the cover is large. * If aluminum is used to save weight or



1418 S. Alameda St.
Compton, CA 90221
Phone: 310-328-6661

E Mail: Technicalsupport@performancecomposites.com
www.performancecomposites.com

		stainless steel is used for corrosion resistant, the covers will cost more than fiberglass.
Exterior finish	<ul style="list-style-type: none"> * Can be painted or gel coated Class A finish * The finish can be either textured or glossy. 	<ul style="list-style-type: none"> * Can be painted (textured or glossy) or powder coated. * Difficult to achieve good smooth aesthetic appearance.
Tooling	<ul style="list-style-type: none"> * Requires mold and fixtures to fabricate the part. * Typical cost of tooling is 6 to 10 times the part price. * Tools can be made within 4 weeks. 	<ul style="list-style-type: none"> * Need some jigs and fixtures.
Durability	<ul style="list-style-type: none"> * Will not dent or bend, but will crack when damaged. * Cracks can be repaired. 	<ul style="list-style-type: none"> * Will dent and bend when damaged.
Corrosion Resistant	<ul style="list-style-type: none"> * Will not corrode. * Can tolerate most chemicals, solvents, acids, and bases. 	<ul style="list-style-type: none"> * Will corrode if the metal is exposed to moisture or chemicals.
Fire resistance	<ul style="list-style-type: none"> * Fire retardant resins can be used if required. Certified for use on interior of buildings, buses, and aircrafts. 	<ul style="list-style-type: none"> * Will not burn.
EMI/ RFI shielding, and electro static grounding	<ul style="list-style-type: none"> * Can add a conductive layer to provide EMI/RFI shielding and electro static grounding. 	<ul style="list-style-type: none"> * The cover is conductive and will block EMI/RFI.
Stiffness	<ul style="list-style-type: none"> * Covers can be made very stiff. * If a large unsupported span is necessary honeycomb core can be used to increase stiffness. 	<ul style="list-style-type: none"> * Very flexible. * Need to add stiffeners of additional structure for large covers, which often warp and distort the surface.
Tolerances	<ul style="list-style-type: none"> * $\pm .010$ on mold side and $\pm .030$ on non-tool mold for critical features. * Overall size and shape $\pm .060$ on large covers. 	<ul style="list-style-type: none"> * $\pm .010$ on critical features. Overall size and shape $\pm .060$ on large covers.
Weight	<ul style="list-style-type: none"> * Density of the material is .05 lb/ft³. * Typically fiberglass covers will weigh less than ½ of steel covers (typical wall 	<ul style="list-style-type: none"> * Density of the material is .3 lb/ft³. * Larger covers get very heavy due to the additional reinforcement



1418 S. Alameda St.
Compton, CA 90221
Phone: 310-328-6661
E Mail: Technicalsupport@performancecomposites.com
www.performancecomposites.com

thickness is 1/8" to 1/4").
* Lighter covers are often safer.

necessary.