



## Composite Sandwich Panels for Marine Applications

**Replace complicated in-house panel fabrication with ready-to-install engineered composites.**

Advanced composites offer the marine industry an alternative to the extensive labor and time required by traditional methods for fabricating watercraft panels. No matter which process you choose—assembling panels from aluminum, steel or wood; hand lay-up with composites; or producing panels using the vacuum assisted resin transfer molding (VARTM) process—throughput remains low while costs are high. Adding to the complexity are the multiple parts and SKUs to manage. And because each panel is individually fabricated, laid up or molded, it can be difficult to ensure uniform quality.

PolyOne's industry-leading portfolio of engineered composite panels offers a solution to these challenges. Our high fiber volume, glass-reinforced thermoplastic panels and continuous resin transfer molding (CRTM) thermoset sandwich panels can streamline production and reduce system costs by eliminating assembly steps such as welding, drilling, bolting and riveting. Because the manufacturing process is continuous, it also provides significant cost savings over

traditional composite panel manufacturing techniques. In contrast to VARTM panels, which are highly labor intensive and require extended curing, PolyOne panels come ready to install.

### THE RESULT

**Faster throughput, a streamlined supply chain, and a consistently high level of quality.**

PolyOne engineered composite panels can be tailored to your design and performance specifications. Benefits include:

- Superior strength-to-weight ratio
- Resistance to ultraviolet (UV) light and chemicals
- Resistance to moisture degradation and rot
- Impact strength
- Vibration damping and acoustic insulation
- Thermal insulation
- Nearly unlimited lengths, widths up to 10 feet, and thicknesses customized to the application

These versatile panels can be used for interior bulkheads, decking, hatches, covers, cabinetry and fittings. They are ideal for watercraft of any size, from powerboats and sailing yachts to ferries and fishing boats.

Our extensive experience in composite panel technology and rapid, customized product development capabilities can help you meet specific needs. Working together, we can help optimize your marine manufacturing system to raise throughput, increase efficiency and achieve repeatable quality.

Our composite panels are custom engineered by varying core thicknesses to increase or decrease stiffness; by varying core materials (including end-grain balsa, foam or engineered woods) to increase or decrease weight; by varying fiber to modify the stiffness-to-weight ratio; and by varying the base polymer to increase or decrease strength.

## TYPICAL SANDWICH PANEL PROPERTIES

SPECIMEN	TYPICAL SKIN THICKNESS (in)	TYPICAL WEIGHT (lb/ft <sup>2</sup> )	TYPICAL PANEL THICKNESS (in)	TYPICAL FLEXURAL FAILURE LOAD* (lbf)
Glass/Thermoplastic Skinned, PET Foam Core	0.05	0.75-0.85	1.0-1.5	135-195
Glass/Thermoset Skinned, PET Foam Core	0.05	1.0-1.2	0.5	120-150
Glass/Thermoset Skinned, PET Foam Core	0.06	1.6-1.7	1.0-1.5	340-395
Glass/Thermoset Skinned, Balsa Core	0.12	1.2-1.4	0.50-0.75	850-1500
Glass/Thermoset Skinned, Balsa Core	0.09	3.0	2.25	3000

\* 4 point flex., 44 in. span, ASTM 7249

Note: Additional core materials available. Properties shown are based on a representative sample and may vary based on actual material selection.



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