# Specifications for ProtectoliteTM Composites

# Pro’Deck Tank Covers

**Part 1.0: GENERAL**

**Description of Work**

 The scope of this specification is intended to cover FRP Pro’Deck Panel sections, and all required accessories shown on the drawings. This includes but is not limited to the following:

* Fiberglass Reinforced Plastic (FRP) tank covers panels “Pro’Deck”
* FRP supports and structural shapes
* FRP trim and flashing
* Fasteners required to secure the panels and flashing
* Closures required for a complete installation

**References**

* 1. ASTM D 256 - Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics
	2. ASTM D 570 - Standard Test Method for Water Absorption of Plastics
	3. ASTM D 638 - Standard Test Method for Tensile Properties of Plastics
	4. ASTM D 696 – Standard Test Method for Coefficient of Linear Thermal Expansion of Plastics Between -30 degrees C and 30 degrees C.
	5. ASTM D 790 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
	6. ASTM D 2583 - Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor
	7. ASTM D2344, Standard Test Method for Short-Beam Strength of Polymer Matrix Composite Materials and Their Laminates.
	8. CSA S806, Design and Construction of Building Structures with Fibre-Reinforced Polymers.
	9. UL 94, UL Standard for Safety Tests for Flammability of Plastic Materials for Parts in Devices and Appliances.

**Submittals**

**Product Data**

 Submit manufacturer’s product data, including description and physical properties of the FRP laminate.

 Submit manufacturer’s installation instructions.

 Covers which require light, medium, or heavy foot traffic shall have a P. E. stamped FEA analysis performed and submitted with shop drawings to verify the design meets the load requirements

**Shop Drawings**

 Submit manufacturer’s shop drawings showing plans, elevations, components, supports, dimensions, attachments, mounting, fasteners and anchors.

**Manufacturer’s Certification**

 Submit manufacturer’s certification that materials comply with specified requirements.

**Quality Control Submittals**

 Manufacturer’s Certificate of Compliance.

 Special shipping, storage and protection and handling instructions.

 Manufacturer’s written/printed installation instructions.

 A list of five installations of comparable size in operation for at least ten years in North America

**PRODUCTS**

**Manufacturer**

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**Part 2: Materials and Finishes**

Tank cover units shall be Protectolite™ Pro’Deck or an approved equal that conforms to these specifications.

* 1. All FRP components used in the Pro’Deck Cover system shall be manufactured by the FRP Pro’Deck Cover system supplier
	2. Pro’Deck panel systems shall be manufactured using a pultruded process, in match metal die moulds, using an Isophthalic Polyester or Vinylester resin with flame retardant and ultraviolet (UV) inhibitor additives as required. A synthetic surface veil fabric shall encase the glass reinforcement.
	3. Reinforcement shall be continuous strand mat & rovings. Glass content shall be a minimum of 45% by weight. Sandwich panels, core panels or laminate structures not produced of 100% resin and fiberglass are not acceptable.
	4. FRP products exposed to weather shall contain ultraviolet inhibitors. Should additional ultraviolet protection be required, a one mil minimum UV coating can be applied, owner to specify.
	5. An Anti-skid surface is molded into the product for covers rated for occasional foot traffic. Anti-skid grit top is applied postproduction for heavy foot traffic
	6. For sections longer than 20’ ft in length, adequate structural supports may need to be included in FRP, HDG Steel or Stainless Steel as specified by the owner. FRP structural supports and shapes shall be given preference over HDG and Stainless-Steel supports if not specified or requested. FRP Laminate construction shall adhere to the same requirements as set out in items 2.1 through 2.3 in this specification.
	7. Fasteners shall be stainless steel (304 series or Owner directed in 316SS or other), spaced and installed per manufacturer's recommendations on the drawings.
	8. Sealant tape for side and end laps: 3/32 in. thick non-shrinking non-hardening butyl tape.
	9. EPDM Rubber and/or foam closed cell sponge for hatches
	10. Sealant: GE "Silpruf" silicon sealant or equivalent.

**PART 3. DESIGN**

* 1. Fiberglass Panels shall be Pro’Deck as designed by Protectolite Composites Inc.
	2. Tank covers shall meet the performance criteria described below for the spans indicated on the drawings.

Fiberglass Reinforced Plastic (FRP) Physical Properties

**Loads**
Tank covers:
15 lbs./ft2 wind.
50 lbs./ft2 snow (Live Load).
350 lbs. Point load.

**Allowable Deflections**Tank covers: L/360.

**Factors of Safety**

Live loads: Minimum Factor of Safety (FOS) = 2.5

 Uniform loads: Minimum Factor of Safety (FOS) = 2.5

* 1. All Pro’Deck panels feature integrally molded “J” hooks to connect to each other. The “J” hook may be removed per the design by the manufacturer, fabricator or contractor as recommended by the designer and contract drawings.
	2. If required, after fabrication, all cut ends, holes, and abrasions of FRP shapes shall be sealed with a compatible resin coating.
	3. FRP End plates, closure plates and hold down plates, channels or angles lock the panels to the tank, walkway and support walls or beams.
	4. As required, hatches shall be installed in owner specified dimensions. Access hatches shall be flush mounted and can be hinged or removable. A safety net or FRP grating for fall hazard protection shall be supplied.
	5. Airtight odor control to be requested by the owner. The manufacturer shall design to those requirements using the stated materials in Part 2.

**Part 4: Execution**

**4.1 Handling**

Protect the surface of FRP Launder Cover components from cuts, scratches, gouges, abrasions, and impacts. Do not use wire slings unless material is fully protected. Use spreader bars when lifting FRP.

**4.2 Storage**

Store panels under cover. Keep panels dry. Stack panels off ground with one end elevated to permit draining of incidental water which can permanently stain panels.

**4.3 Installation of FRP Pro’Deck**

**Installation Instructions**

Installer shall follow manufacturer's installation instructions and the shop drawings.

**Pilot Holes in Panels**

 Pilot holes shall be drilled in panels for all fasteners. Drill holes with a sharp carbide tipped bit. Pilot holes in panels shall be sized so that the fastener threads just clear the edges of the hole.

**Pilot Holes in Supports**

 Pilot holes in supports shall be sized as recommended by the panel or fastener manufacturer.

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