# Specifications for ProtectoliteTM Composites FRP Launder Covers

# GENERAL

**Description of Work**

 The scope of this specification is intended to cover all FRP Launder Covers and required accessories shown on the drawings. This includes but is not limited to the following:

* Fiberglass Reinforced Plastic (FRP) cover panels,
* FRP mounting perimeter angles
* Fasteners required to secure the panels and perimeter angles

**References**

* 1. ANSI/AWWA F102 - Matched-Die-Molded, Fiberglass – Reinforced Plastic Weir Plates, Scum Baffles, and Mounting Brackets; American Water Works
	2. ASTM D 256 - Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics
	3. ASTM D 570 - Standard Test Method for Water Absorption of Plastics
	4. ASTM D 638 - Standard Test Method for Tensile Properties of Plastics
	5. ASTM D 696 – Standard Test Method for Coefficient of Linear Thermal Expansion of Plastics Between -30 degrees C and 30 degrees C.
	6. ASTM D 790 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
	7. ASTM D 2583 - Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor

**Submittals**

**Product Data**

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

 Submit manufacturer’s installation instructions.

**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**

 Protectolite Composites Inc.

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**Part 2: Materials and Finishes**

FRP Launder Covers shall be Protectolite™ Composites or an approved equal that conforms to these specifications.

* 1. All FRP components used in the Launder Cover system shall be manufactured by the FRP Launder Cover system supplier.
	2. Resin shall be premium grade Isophthalic Polyester or Vinylester Resin in Type I or Type II as requested.
	3. Nominal thickness ¼ inch
	4. Glass Reinforcement shall be continuous strand mat or continuous filament mat. Glass content shall be a minimum of 30% by weight.
	5. Chopped Strand Mat and Coreglass with layered chopped strand matt with non-woven core material synthetic fibers are not acceptable. Similarly, stiffening and thickness increasing materials such metal stiffeners, balsa wood and foam are not acceptable.
	6. UV Resistance Panel material shall be made from a UV stabilized resin system molded throughout the entire laminate. Additional UV resistance may come from surfacing mats and gel coats as needed.
	7. UV resistance solely provided by a gel coated surface is not acceptable.
	8. Color: grey. Color molded-in with ultraviolet inhibitor

**PART 3. DESIGN**

* 1. Technical Properties
		1. **Fiberglass Reinforced Plastic (FRP) Physical Properties**

Tensile Strength: ASTM D 638: 15,000 psi

Flexural Strength: ASTM D 790: 25,000 psi

Barcol Hardness: ASTM D 2583: 35

Notch Izod Impact: ASTM D 256: 15 ft-lbs/inch

Water Absorption: ASTM D 570: <0.10%

Coefficient of Thermal ASTM 696 10.5 x10^-6

Expansion

* 1. The Launder Cover shall consist of a system of molded fiberglass panels that are attached together to form a continuous cover over the launder trough, weir and scum baffle within the treatment tank. The Cover shall be designed and manufactured to inhibit incident sunlight from striking the surfaces of the launder and weir. Each panel shall be made of Protectolite™ Series 210 Corrosion ISO or Series 310 VE Grade FRP Laminate compression molded corrosion-resistant laminate with, moulded-in UV inhibitors throughout the entire laminate. UV resistance solely provided by a gel coated surface is not acceptable.
	2. Individual sections shall be designed to suit individual requirements and contoured to follow the curvature of the tank. The Cover shall extend over the trough and weir as far as possible and may extend to a point immediately inside the scum baffle so long as the Cover does not interfere with the sweep arm. The Cover shall be designed such that adjacent panels fit together properly and the completed Cover, when installed, forms a rigid structure, and has a well-engineered and professional appearance.
	3. Covers shall be straight cover panels contoured to match the tank radius as shown on drawings. Covers shall also be straight in rectangular tanks.
	4. Covers shall be flat over the width of the launder trough with sufficient supports or radius to strengthen the panel and minimize possible deflections against wind and snow load. Arched, domed and/or curved launder covers are not acceptable
	5. The Cover shall be designed to allow the owner to specify one of the following 3 options: to open away from the operator and toward the center of the tank or to the side following the curvature of the tank or towards the operator and the outer launder wall. Each Cover segment shall consist of two sections, a fixed Mounting Section and a hinged Cover Section connected by a continuous stainless-steel hinge affixed by stainless steel rivets.

The Mounting Section shall provide a rigid mount for the Cover and is fastened to the weir wall with FRP brackets as shown in the contract drawings as to not impede the flow of water. The Mounting Section extends inward to a point just inboard the scum baffle. The hinged Cover Section extends outward toward the tank wall and swings open to allow inspection and maintenance of the launder and weir. In the closed position, the Cover Section rests on an FRP support flange attached to the inner wall of the tank throughout the entire perimeter of the tank. As an alternative, each cover can be opened.

* 1. A stainless-steel backing strip shall be supplied on the backside of all hinged covers at the request of the owner.
	2. Provision shall be made to lock the Cover in the closed position for safety and security. This shall be accomplished by means of an easily operated latch mechanism that secures the hinged Cover Section to the support flange. Handles or lift rings may also be required for some panels. A means of limiting the travel of the hinged Cover section, in the form of a stainless-steel restraint cable, may also be provided to protect against damage.
	3. The hinged Cover sections shall also be designed such that alternating sections have integral tabs at each side which rest on the adjacent section, ensuring that the seams between panels are covered and enabling the alternate panels to open independent of every other panel.
	4. Where the circumference of the trough is interrupted by a bridge-support or another obstacle, a fixed panel(s) shall be installed over the trough beneath the support such that the surface of the Cover is continuous around the entire tank. Alternatively, vertical panels may be installed on both sides of the bridge supports to block out sunlight.

* 1. The Cover system shall be designed to withstand common wind and snow loads (50 lbs/ft2) but shall not be intended as a “walk-on” Cover designed to support the weight of plant personnel. No integral stiffeners are acceptable in any of the cover panel sections.
	2. The FRP product supplier shall also be the product manufacturer. Subcontracting of the FRP product manufacturing is not acceptable.
	3. All cut and exposed FRP edges shall be factory seal with a water repellent and resistant Pro’Lac solution. The manufacturer shall supply the owner/installer enough to allow for field cuts and maintenance as needed.

**Part 4: Mounting Fasteners**.

* 1. Type 304 or Type 316 stainless steel (owner to specify)
		1. Fasteners: 3/8"x1-1/2", HEX HEAD BOLT
		2. Wedge Anchor Bolts: 1/2"DIA x 4-1/4 LG

**Part 5: Execution**

* 1. **Handling**
		1. 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
	2. **Storage**
		1. Store panels under cover. Keep panels dry in accordance with manufacturer’s instructions.
	3. **Installation Instructions of FRP Launder Covers**
		1. Installer must follow manufacturer's installation instructions and the shop drawings.
		2. Seal cut edges with manufacturer’s sealant Pro’Lac 50**.**

The property values are based upon tests believed to be reliable, performed on laboratory test plaques. However, no liability is assumed resulting from its use. We suggest that the user perform tests to establish the material suitable for the specific application.

**Revised: January 2022**