# Specifications for ProtectoliteTM Composites FRP Weirs & Baffles

# GENERAL

**Description of Work**

 The scope of this specification covers FRP “V” Notched Weirs, Baffles and all required accessories shown on the drawings. This includes but is not limited to the following:

* Fiberglass Reinforced Plastic (FRP) Weir panels,
* Fiberglass Reinforced Plastic (FRP) Baffle panels,
* FRP mounting and baffle brackets & FRP cover splice plates,
* Fasteners

**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 sales & technical product data, including brochures, sample O&M manual, description, and physical properties of the FRP laminate.

Submit manufacturer’s installation & product maintenance instructions.

**Shop Drawings**

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

Submit P.E. or P. Eng stamp in the state or province of installation.

**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 ten installations of comparable size in operation for at least ten years in Canada

3-year manufacturer’s warranty

## PRODUCTS

**Manufacturer**

 Protectolite Composites Inc.

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**Part 2: Materials and Finishes**

FRP Weirs and Baffles shall be Protectolite™ Composites or an approved equal that conforms to these specifications.

* 1. All FRP components used in the Weir and Baffle system shall be manufactured by the FRP weir and baffle system supplier. Subcontracting of the manufacturing of the FRP product is not acceptable. Each weir & baffle plate/panel shall be made of *Protectolite™ Series 210 Corrosion ISO or VE 310 Grade FRP Laminate match metal die* compression molded corrosion-resistant laminate with molded-in UV inhibitors throughout the entire laminate.
	2. FRP components shall be manufactured using matched metal die compression molding processes.
	3. Resin shall be premium grade Isophthalic Polyester or Vinylester Resin as requested/owner specified.
	4. Nominal thickness ¼ inch
	5. Glass Reinforcement shall be continuous strand mat or continuous filament mat. Glass content shall be a minimum of 30% by weight.
	6. Chopped Strand Mat and Coreglass which is layered chopped strand mat with non-woven synthetic fibers as core material are both not acceptable. Similarly, stiffening and thickness increasing materials such metal stiffeners, balsa wood and foam are not acceptable.
	7. UV Resistance Panel material shall be made from a UV stabilized inhibitors shall be mixed in the resin matrix system thereby being present throughout the entire FRP laminate. Additional UV resistance may come from surfacing mats and gel coats as needed.
	8. UV resistance solely provided by a gel coated surface is not acceptable.
	9. All cut edges including notches, splice plates and holes shall be sealed with a water-phobic penetrating edge sealer. Protectolite Pro’Lac 50 sealer
	10. Color: Light gray. Color shall be mixed throughout the resin matrix/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: 40

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. Standard weir plate widths are recommended to be 9’’High. Weir plate lengths shall not exceed 8’ in length. The mounting holes will be on 12” or 24’’ centers and shall allow for 2 inches of vertical horizontal adjustment.
		2. Standard baffle widths are recommended to be 12’’ high. Baffle plate lengths shall not exceed 8’ in length. Mounting holes are required to attach to support brackets on 12” or 24’’ centers.
		3. Scum baffle support brackets shall be Protectolite Composites match metal die compression molded FRP Gusseted Brackets.
		4. Should a weir washer be in use, the upper FRP gusseted brackets may be substituted for a FRP 3/8’’ thick, 6x6 angle upper bracket.
		5. All cut and exposed FRP edges shall be factory sealed with a water repellent, penetrating Pro’Lac 50 sealer. The manufacturer shall supply the owner/installer with enough sealer to allow to coat all field cuts.

**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 or Epoxy Anchor Bolts:1/2"DIA x 4-1/4 LG owner to select.

**Part 5: Execution**

* 1. **Handling**
		1. All flat FRP plate materials shall be properly strapped to wooden skids with a protective poly wrapping of a minimum of 4 mils thick.
		2. All other FRP materials & hardware shall be packaged in wood crates for protection and for loss prevention.
		3. Protect the surface of FRP components from cuts, scratches, gouges, abrasions, and impacts. Do not use wire slings unless the material is fully protected. Use spreader bars when lifting the FRP items.
	2. **Storage**
		1. Once removed from the wooden crates & skids, store panels under cover. Keep panels dry in accordance with manufacturer’s instructions.
	3. **Installation Instructions of FRP Weirs and Baffles**
		1. The installer must follow the manufacturer’s installation instructions and the shop drawings.
		2. Seal cut edges with manufacturer’s supplied sealant Protectolite Pro’Lac 50**.**

**Revised: January 2024**