



Fiberglass Fabricators, Incorporated

Standard Specification for Density Current Baffles

1. Scope

- 1.1. This specification shall govern all work necessary to furnish fiberglass Density Current Baffles including all anchorage hardware required for proper installation of the system components.

2. General

- 2.1. The manufacturer shall furnish Density Current Baffles with all associated anchoring hardware as specified by the plans. The baffles shall be fiberglass-reinforced plastic as described in this specification.
- 2.2. The baffles shall be manufactured using the hand lay-up method and shall include a UV inhibitor; the use of chop strand roving is not acceptable for use with this product.* The baffles shall be resin-rich, free of voids and porosity without dry spots, crazes, or unreinforced areas. The laminate shall contain a thermosetting corrosion resistant polyester resin. The laminate used shall consist of alternating plies of woven roving and chopped strand mat.
- 2.3. The thickness of the laminate shall be such that when in operation there will be a factor of safety of 4:1. Dynamic pressures shall be calculated to determine the loads used for the stress analysis. Stresses due to moisture and thermal expansion must also be considered. In areas where bolts are used for fastening, stress concentrations arising from the hole must be evaluated and used in the calculations.
- 2.4. The design of the baffle panel shall include a 4-inch adjustable molded-in shiplap to compensate for slight variances in nominal tank diameter.

Each panel shall incorporate two drilled vent holes on the upper inclined surface of the baffle panel.

* The use of chopped strand roving is expressly prohibited for use in this product due to the reduced physical properties (i.e. compressive strength) which may result in bearing or bolt failure under loading conditions. These conditions may occur at any bolted connection.

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- 2.5. A non-integral bracket shall be supplied based on the governing loading conditions with a factor of safety of 4:1.
- 2.6. The seller must own and operate the manufacturing facility and have full control over all quality assurance and fabrication processes. Outsourcing of the product is not permitted.

3. Materials

3.1. All materials shall be new and shall be specifically designed or selected for the function and service specified. No material may be used in the project that has not been approved by the engineer.

3.2. Resin Requirements

Resin shall be general purpose, corrosion resistant polyester unless otherwise specified containing no bulk extenders or fillers except for viscosity control. Ultraviolet light inhibitors shall be added to the laminate.

3.3. Glass Content

The glass content of the finished laminate shall be 40-50% by weight.

3.4. Laminate Sequence

The laminate shall be comprised of the following materials ply-by-ply in the following sequence:

1. Surface veil
2. 1 ½ oz. Chop Strand Mat
3. 2 plies 2415 Combined Woven Roving and Mat.
4. ¾ oz. Chop Strand Mat

3.5. Laminate Minimum Physical Properties

Minimum physical properties for the product shall conform to those presented in Table 1 below:

Table 1. Laminate Minimum Physical Properties – HLU FRP

Property @ 70°F	Value	Test Method
Tensile Strength	26,500 psi	ASTM D 638
Compressive Strength	30,000 psi	ASTM D 695
Flexural Strength	39,400 psi	ASTM D 790
Flexural Modulus	1,550,000 psi	ASTM D 790
Glass Content	45.6%	ASTM D 2584
Water Absorption	.09% Max	ASTM D 570
Barcol Hardness	50	ASTM D 2584
Coefficient of Linear Thermal Expansion (in/in/°F)	3.6 x 10 ⁶	ASTM D 696

Exterior surface shall be a resin-rich coat with ultraviolet protection. A paraffinated wax additive shall be used in the top coat to eliminate the air inhibition (14-18 mils thick). Standard color will be blue-green.

Cut edges or drilled holes must be deburred and resin sealed.

4. Submittals

4.1. Final approval for incorporation into the project will be made only after the review of shop drawings, specifications, and data as follows:

- a. Shop drawings complete with all dimensions, details of connecting piping, and the size and location of any required openings.
- b. Specifications for all components.
- c. Details of the major fabricated components showing the arrangement of components and labeled with member sizes and materials of construction.
- d. Structural calculations for all components.
- e. Manufacturer's recommended procedures for jobsite storage of equipment, handling, and erection.

4.2. Design Calculations

As part of the shop drawings for all components, the fabricator must supply any and all analyses pertinent to the composite design. A complete laminate analysis will be submitted for the calculated loads identifying the various factors of safety for each lamina used in the proposed laminate schedule. Factors of safety will be evaluated using criteria such as Tsai-Hill or equivalent theories.

5. Quality Assurance

5.1. Qualifications

Manufacturer shall have a minimum of five (5) years of history of successful installations of similar design. Past job list with customer contact information will be supplied if required.

5.2. Manufacturer's Quality Control

All fabrication shall be carefully inspected at the factory by inspectors who shall use whatever means necessary to assure the proper fit of all field connections and compliance with all material and fabrication requirements of the specifications.

5.3. Warranty

Manufacturer shall warrant the Density Current Baffles to be free of defects in materials and workmanship for a minimum of one (1) year after installation with a maximum of eighteen (18) months from date of shipment.

5.4. The contractor shall be responsible for verifying all field dimensions to develop and approve shop drawings.

Manufacture

5.5. Materials, equipment, and components in this section shall be the products of:

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6. Installation, Storage, Handling, and Maintenance

6.1. The manufacturer shall provide detailed written instructions for the installation, long term storage, handling, and maintenance for the products provided.