

Orenco® Fiberglass Basins

For Applications Including Pump Basins, Lift Stations, and Wet Wells

1.0 SCOPE

These specifications describe applicable standards, materials, construction, configurations, and options for Orenco® Fiberglass Basins, as manufactured by Orenco Systems, Inc., 814 Airway Avenue, Sutherlin, Oregon 97479.

2.0 GENERAL

Orenco Fiberglass Basins are filament-wound fiberglass structures with a gelcoated external surface, manufactured in the following standard inside nominal diameters:

24" (600-mm)	60" (1500-mm)	108" (2740-mm)
30" (750-mm)	72" (1800-mm)	120" (3050-mm)
36" (900-mm)	84" (2130-mm)	144" (3660-mm)
48" (1200-mm)	96" (2440-mm)	

Orenco Fiberglass Basins are available to a maximum height of 35 feet (10.6 meters).

2.1 Standards

Basins manufactured to this specification shall conform to the standards below as applicable.

ASTM D 3753: Standard Specification for Glass-Fiber-Reinforced Polyester Manholes and Wetwells

ASTM C 581: Standard Practice for Determining Chemical Resistance of Thermosetting Resins Used in Glass-Fiber-Reinforced Structures Intended for Liquid Service

ASTM D 2584: Standard Test Method for Ignition Loss of Cured Reinforced Resins

ASTM D 790: Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials

ASTM D 2583: Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor

ASTM D 2563: Standard Practice for Classifying Visual Defects in Glass-Reinforced Plastic Laminate Parts

2.2 Drawings

Manufacturer shall provide detailed basin drawings, including nominal dimensions, volumes, and materials of construction.

3.0 MATERIALS AND FABRICATION

3.1 Materials

Basin shall be manufactured from fiberglass reinforced polyester resin, using grades of resin and fiberglass considered acceptable for use in water and wastewater environments. Resin fillers shall not be used. The reinforcing materials shall be commercial grade of E-type glass fibers in the form of mat, continuous roving, chopped roving, or roving fabric, having a coupling agent that will provide a suitable bond between the glass reinforcement and the resin.

3.2 Fabrication: Shell Wall

Vertical shell walls shall be manufactured using a helical winding process. The interior surface shall be a resin rich layer of fiberglass or organic surface veil. The surface shall be free of crazing, delamination, blisters larger in diameter than ½-inch (12.7-mm), and wrinkles of 1/8-inch (3.18-mm) or greater in depth. The exterior surface shall be free of blisters larger in diameter than ½-inch (12.7-mm) and any delamination. To provide the required strength, the shell wall thickness shall vary with the basin height.

3.3 Fabrication: Basin Bottom and Top Flange

The base and top flange shall be molded using RTM, vacuum-bagging, or other closed-molded process. Base and top flange shall be bonded to Basin with a suitable structural adhesive or with polyester resin and glass fiber reinforcement. The base shall be manufactured with an integrally molded anti-flotation flange whose outside diameter is a minimum of 6 inches (152 mm) larger than the diameter of the shell wall. The top flange shall be a minimum of 3 inches (76.2 mm) wide and include threaded inserts or through-holes to accept the attachment of a basin cover.

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3.4 Fabrication: Basin Covers

3.41: Fiberglass Cover

The fiberglass cover shall be closed-molded. The cover shall attach to the flange with minimum 3/8-inch (9.53-mm) diameter, 300-series stainless steel bolts and include an elastomeric gasket to provide a watertight joint.

3.42: Aluminum or Steel Cover

Commercially available hatch covers made of aluminum or steel may be specified in lieu of the fiberglass covers.

3.5 Penetrations

All penetrations shall be watertight and not jeopardize the structural integrity of the basin. Fastener penetrations below the waterline shall be permanently sealed using resin and fiberglass, structural adhesive, or other approved method. Fastener penetrations below the normal liquid level shall not rely on mastic, silicone, or similar sealant. Piping penetrations shall use one or more of the following sealing methods:

- Elastomeric joint seal designed for the application (e.g., Link-Seal, flexible entry boot, or similar)
- Flanged fiberglass coupling bonded with structural adhesive or resin/glass fiber
- PVC or ABS fitting bonded with structural adhesive
- Other approved penetration method

4.0 STRUCTURAL REQUIREMENTS

The basin shall be designed to withstand being buried to grade under completely saturated conditions, and without deformation that interferes with the operation of the basin, internal equipment, or penetrations.

A minimum safety factor of 2 shall be used.

Basin bottom shall be designed to have less than 3/8-inch (9.53-mm) deflection when buried in completely saturated conditions. Basin top shall be capable of supporting the basin cover as well as a 300 lb/ft² (1464kg/m²) live load.

5.0 INSTALLED OPTIONS

The basin manufacturer shall have capability to produce fully assembled pump systems and lift stations, including installation of all penetrations required, covers, slide rails, inlet sleeves, exit sleeves, pump slide rail systems, discharge elbows, float brackets, electrical junction boxes, ladders, and other equipment as necessary.

6.0 WARRANTY

Basins shall have a minimum warranty period of 5 years on materials and workmanship.