DESIGN TANKS

Full Line Catalog

1.0

We are the premier global producers of fiberglass reinforced plastic tanks.

Our superior-quality custom storage solutions serve Fortune 100 companies across six continents.

ENGINEERED AND BUILT IN SIOUX FALLS SINCE

1956

We pride ourselves on delivering custom designs, superior product longevity, and exceptional customer service.

Design
Our in-house design staff can take care of your most difficult design specifications and provide you with the answers you require.

Global
No destination is too far. We proudly serve customers in all 50 U.S. states, across North America, and across six continents.

Engineering
Our team relies on industry standard and superior technologies, not guesswork, to ensure your tank performs at its best.

Strength
Fiberglass reinforced plastic is 75% lighter than steel, providing a higher strength-to-weight ratio for more cost-effective shipping, handling, and installation.

Custom
Our team will identify your project needs and provide a detailed proposal, including pricing, estimated freight, submittal drawing, and manufacturing lead-time.

Technology
We utilize molding robotics, water jet robotics, and 3D printing for precise manufacturing to eliminate estimations and ensure top-notch tank performance.

Customer Service
In business since 1956, we prioritize customer communication with a top-tier, responsive service team.

Expertise
Our team brings decades of collective experience building fiberglass reinforced plastic tanks of all sizes and purpose.

READY TO BUILD

Your Tank?

HERE'S OUR PROCESS.

Resin Selection

Design Tanks will work with the customer to determine the proper resin selection based on the chemical contents of the tank as well as the environment the tank will be in.

Key pieces of information for resin selection include chemical composition of contents including concentrations, operating temperature of the contents, and special requirements (ex. food grade or fire retardant).

Design Tanks uses two bulk resin systems, an isophthalic polyester, and a vinyl ester. The isophthalic polyester is cost effective and covers a broad range of chemical environments while the vinyl ester can be used for an even broader range of chemicals at higher temperatures and more severe concentrations.

When one of our two bulk resin systems doesn't work with the chemical environment, we will use special-order resin systems. Design Tanks works closely with the resin manufacturers to choose the most suitable resin which will result in the longest service life for the tank.

Centrifugal Casting

Originally pioneered more than five decades ago as a method to construct high performance gondolas for atmospheric test balloons, the centrifugally cast process developed into and remains one of the most versatile and economical methods of producing high-quality fiberglass tanks. It provides all of the mechanical strength necessary for liquid storage plus the superior chemical resistance capability of a high resin-to-glass ratio wall construction.

By utilizing centrifugal force to combine resin and glass, the process provides tanks with a dense uniform wall laminate capable of a 70% resin content. For all practical purposes, the entire wall becomes a resin-rich, chemical-resistant barrier that can be custom designed for specific requirements ranging from the storage of corrosive chemicals such as hydrochloric acid and sodium hydroxide to food grade applications.

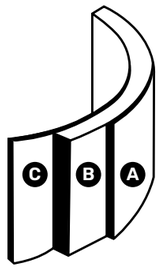
The centrifugally cast tank is produced inside a smooth metal cylinder. First the end section, which is sprayed up in a separate mold, is inserted into the cylinder at a point determined by tank capacity. This flexibility allows us to manufacture a variety of sizes without changing tooling.

The backbone of the tank, the structural wall and corrosion barrier, is constructed next by combining chemical resistant resin with chopped strand glass for strength. Chopped glass has been selected to minimize potential wicking problems sometimes associated with other reinforcements.

The resin saturated chopped strand reinforcement is sprayed into the mold in layers and then rolled to remove trapped air bubbles to insure a dense uniform laminate.

This process is then repeated with each additional resin/glass layer to meet the design wall thickness

- **A** A 10-15 mil layer of pure or pigmented resin is applied to the mold surface.
- **B** Chopped glass is added to meet design thickness.
- **C** 7-10 mils of pure resin is applied to the inside surface.



Centrifugally cast tanks manufactured by Design Tanks are designed to meet or exceed the strength requirements of ASTM D4097.

In tanks 24" through 48" diameter, the entire wall is constructed from a single resin system throughout. Larger diameter tanks feature the additional flexibility of manufacturing with a dual resin system to achieve a high-quality tank at an economical price.

Upon completion of the wall, the inside surface is coated with 7 to 10 mils of pure resin to give the interior of the tank a smooth corrosion-resistant barrier. In highly corrosive applications, such as the storage of caustic materials, a layer of synthetic veil is added before the final resin coat to provide further resistance to chemical attack.

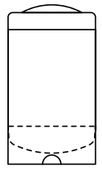
After curing in the mold, the tank is checked for quality and sent to the final assembly area for the installation of accessories. Centrifugally cast tanks are available in several sizes and styles. Each can be constructed from several resin systems to meet specific chemical and temperature requirements. Refer to resin selection guide to determine material compatibility.

Examples of Centrifugally Cast Fiberglass Reinforced Plastic Tank Design Options:

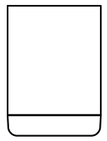
***Available Diameters: 24", 30", 32", 38", 42", 48", 60", 72", and 90"**

Flat Bottom, Domed Top

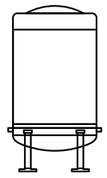
Dished Bottom, Annular Domed Top



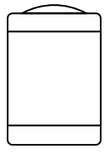
Flat Bottom, Open Top



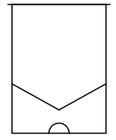
Dished Bottom, Annular Domed Top with Leg Ring



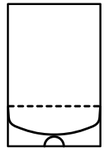
Flat Bottom, Annular Domed Top



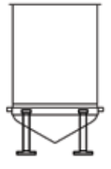
30° Cone Bottom with Skirt, Open Top



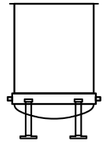
Dished Bottom, Open Top



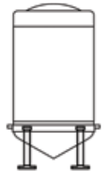
30° Cone Bottom with Leg Ring, Open Top



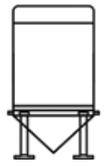
Dished Bottom, Open Top with Leg Ring



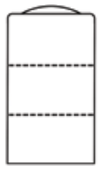
30° Cone Bottom with Leg Ring, Annular Domed Top



45° Cone Bottom, Flat Top

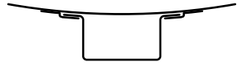


Sectionalized Tanks



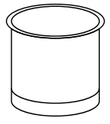
Baffles & Bulkheads

FRP Sumps

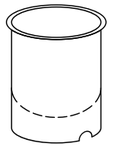


Mix Tanks

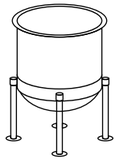
Flat Bottom, Flanged Lip Included



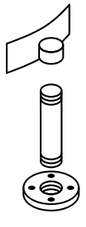
Dish Bottom with Skirt, Flanged Lip Included



Dish Bottom with Leg Ring, Flanged Lip Included



Steel Pipe Legs



Chop-Hoop Filament Winding

***Available Diameters: 8', 9', 10', 11', 12', and 14'**

Chop-Hoop Filament Winding is a unique blend of two proven fabrication techniques: chopped glass spray-up and continuous filament winding. This combination provides the benefits of maximum corrosion resistance plus the strength required for vertical storage.

The chop-hoop filament wound tank is produced over a smooth male mandrel in four automated steps:

1. The bottom head is produced in a separate spray-up process and affixed to the mandrel.
2. A resin rich inner surface is applied to the mandrel and reinforced either with a glass veil or a synthetic veil. This layer is a minimum of 10 mils thick with a glass/resinratio of approximately 20/80 and forms the inner surface of the tank. Multiple passes of chopped strand glass are then added until the total thickness is at least 100 mils with an approximate glass to resin ratio of 30/70. This is considered the corrosion barrier.
3. The structural wall is produced using a process of simultaneous glass chopping, resin spraying, and hoop filament winding. The glass/resin ratio is approximately 50/50 with the glass roving (filament) providing the required hoop strength. The thickness of the structural wall is varied according to tank height, application, and specific gravity of the contents.
4. Finally, a 5 mil resin coat or a 45 mil exterior corrosion barrier is added depending upon projected service. The exterior corrosion barrier consists of a layer of resin and chopped “E” glass strand applied in an approximate resin to glass ratio of 70/30.

Specifications

Using chop-hoop filament wound fabrication, fiberglass reinforced plastic tank walls manufactured by Design Tanks meet or exceed the design criteria of ASTM D 3299.

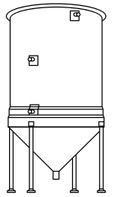
Our storage vessels are designed based on customer specifications.

Chop-hoop filament wound tanks can be manufactured for food grade applications depending on resin selection.

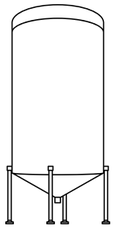
Examples of Chop-Hoop Filament Winding Fiberglass Reinforced Plastic Tank Design Options:

Flat Bottom, Domed Top

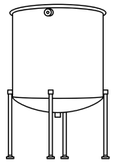
45° Cone Bottom



30° Cone Bottom



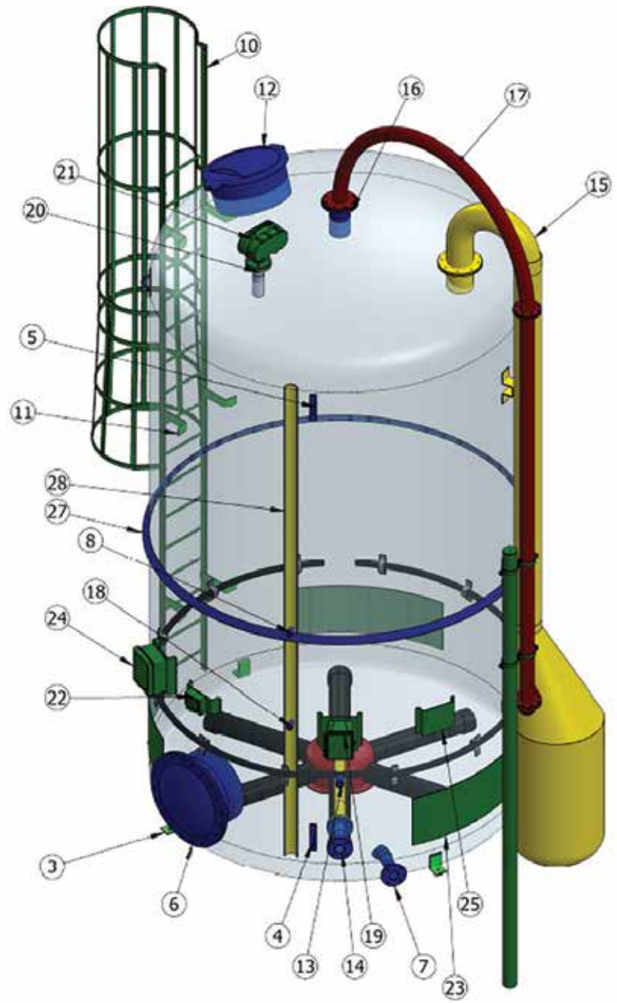
Dished Bottom



Chop-Hoop Filament Winding storage tank.

Brinemaker Tanks

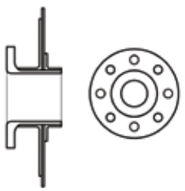
Brinemakers allow companies to leverage the benefits of saturated brine. In addition to the bulk salt advantage, consistency of product, and meeting “peak-demand” requirements, companies quickly recognize increased warehouse space and decreased work related injuries due to personnel handling individual salt bags.



ITEM	DESCRIPTION
1	Design Tanks Adhesive Label
2	FBDT 10’-0” Dia. X 18’-0” Ht. Iso/C-Veil/Mekp
3	Heavy Duty Hold Down 304 Ss With Hole
4	Heavy Duty Foam 304 Ss Lift Lug
5	Heavy Duty 304 Ss Lift Lug
6	24” 15# Side Manway/Epdm/Ve/Mekp/C-Veil, White
7	3” Conical Gusset Siphon Flange/Ve/Mekp
8	1” Modified Coupling For Tuning Fork Sensor Ve/Mekp
9	Contents Label
10	Top Access Ladder (Cage Optional)
11	Epoxy Carbon Steel Ladder Standoff Set (2)/Insulated
12	24” Quick Access Manway With Weighted Cover/Ve/Mekp/White
13	1 1/2” Water Inlet Spray Ring Assembly
14	3” Conical Gusset Brine Outlet Double Flange
15	8” Duct Flange U-Salt Dust Vent Assembly
16	6” Conical Gusset Flange Ve/Mekp
17	Curved Stainless Steel Salt Fill Pipe Assembly W/ Galvanized In-Ground Support Pipe
18	1” Modified Coupling For Tuning Fork Sensor Ve/Mekp
19	Water Level Control Box Assembly W/Frp Mounting Brack-ets
20	3” Conical Gusset Flange Ve/Mekp
21	Smartbob Salt Level Sensor W/Pvc Vanstone Flange
22	Salt Level System Display W/Frp Mounting Brackets
23	3 Panel Heat System
24	Heat Panel Control Box W/Frp Mounting Brackets`
25	Frp Name Plate W/Frp Mounting Bracket
26	Dry Heat Post Cure
27	2” Thick Polyurethane Insulation With White Overcoat
28	4” Stilling Well

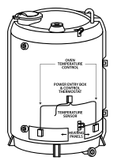
Accessory Examples

Flanged Connections



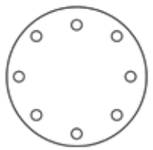
Manways

Heating Sytems



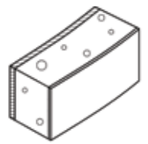
Threaded Couplings

Blind Flanges



Fillwells

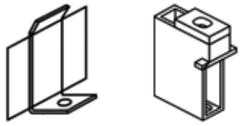
Spray Foam Insulation



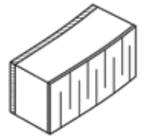
Sight Tubes

Mushroom Vent

Hold Downs



Overwrap Insulation

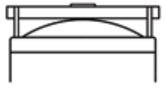


U-Vent

Lift Lugs

Gallonage Tapes

Mixer Supports



Ladders & Handrails

Bulkhead Fittings

THE

Quality & Expertise

YOU DESERVE.

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