

FIBERGLASS TANKS

CORROSION RESISTANT EQUIPMENT FOR INDUSTRIAL APPLICATIONS



- **BULK STORAGE**
- **WASTE TREATMENT**
- **PROCESS TANKS**
- **DESIGN/ENGINEERING**
- **CUSTOM FIBERGLASS/PVC/POLY PRO FABRICATIONS**

- **FIBERGLASS TANKS**
- **PIPING SYSTEMS**
- **SCRUBBERS**
- **MIST ELIMINATORS**



15' Diameter Vertical, Cylindrical, Open Top



Rectangular Pickle Tanks for Steel Strip Mill



Vertical, Elongated Cone Bottom



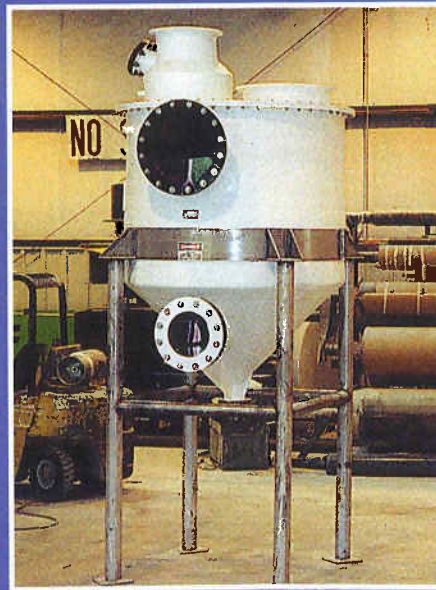
Emergency Chlorine Venturi Scrubber



Dished Bottom Tank, Steel Legs



Flat Bottom, Dished Head, WWTP Storage Tank



Cone Bottom Process Tank, Steel Legs

Vanaire serves the needs of industrial plants where corrosion is a major maintenance or production consideration. Our engineering staff will assist your personnel in the proper application of the many Fiberglass Reinforced Products available. The lasting success of the products we manufacture are paramount in our organization. We strive to offer you the best quality of materials, technology and workmanship.

Composites are generally known as reinforced plastics. Most composites feature a reinforcing fiber within a polymer matrix. The reinforcing fiber most commonly used is **fiberglass**, while the polymer matrix is a **thermoset resin** such as polyester, vinyl ester, and/or epoxy resins. Thermoset resins begin as liquid polymers and are irreversibly converted to solids during the molding process. This conversion process results in composite materials having increased heat, chemical and corrosion resistance, and a high degree of structural durability.

Vanaire brings these technologies and processes together in a **Total System QualitySM** fabrication environment, resulting in high-quality, durable fiberglass tanks, piping systems, and a full line of corrosion resistant industrial products custom-designed with the customer's intended application in mind.

FIBERGLASS (FRP) THE COMPOSITE SOLUTION



VANAIRE PEOPLE MAKE THE DIFFERENCE

Vanaire has assembled a team of more than 80 engineers, production technicians, and administrative staff who are at the top of their respective professions.

Vanaire's customer relationships are long-term because Vanaire customers are loyal. The reasons for this loyalty can be found in Vanaire associates' dedication to Total System QualitySM; their overriding belief in on-time delivery of quality products that **meet customer specifications** and **inspire customer satisfaction**; and, their personal pride in their industry and the work they do, which compels them to advance their knowledge of **new technologies** and techniques within an ever-changing competitive environment.

DESIGN AND FABRICATION: A CLOSER LOOK

The Vanaire production process begins and ends with the customer. Vanaire engineers will work with your requirements and specifications or provide custom engineering for your intended application. Using state of the art computer-aided design systems (Auto-CAD), the Vanaire engineering team designs and plans each step of the fabrication process, from resin system selection to manufacturing technique.

The **hands-on participation of the Vanaire engineering and project management team** in each phase of production helps ensure the product's design accuracy, structural strength, and suitability for long-term service.

Vanaire fabricates tanks to meet or exceed standards such as ASTM D3299 for filament winding, and ASTM D4097 and PS 15-69 for contact molding. Vanaire selects an appropriate resin system and corrosion barrier to suit the application of each tank to ensure long-term service.



TANK SIZES - VERTICAL CYLINDRICAL - CAPACITY IN GALLONS

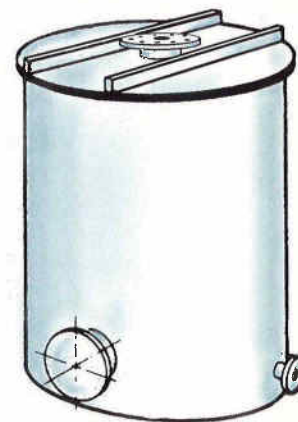
Diameter	Height	Capacity	Diameter	Height	Capacity	Diameter	Height	Capacity
1'-6"	2'	26	5'	10'	1,469	9'	19'	9,041
1'-6"	3'	39	5'	11'	1,616	9'	20'	9,517
1'-6"	4'	57	5'	12'	1,763	9'	21'	9,993
Dish Bottom		2	5'	13'	1,909	9'	22'	10,469
Cone Bottom		3	5'	14'	2,056	Dish Bottom		439
2'	2'	48	5'	15'	2,203	Cone Bottom		714
2'	3'	72	Dish Bottom		73	10'	10'	5,874
2'	4'	96	Cone Bottom		122	10'	11'	6,462
2'	5'	120	6'	6'	1,268	10'	12'	7,049
Dish Bottom		4	6'	7'	1,480	10'	13'	7,637
Cone Bottom		8	6'	8'	1,691	10'	14'	8,224
2'-6"	3'	111	6'	9'	1,903	10'	15'	8,812
2'-6"	4'	148	6'	10'	2,114	10'	16'	9,399
2'-6"	5'	185	6'	11'	2,326	10'	17'	9,987
2'-6"	6'	222	6'	12'	2,537	10'	18'	10,574
2'-6"	7'	259	6'	13'	2,749	10'	19'	11,162
Dish Bottom		9	6'	14'	2,960	10'	20'	11,749
Cone Bottom		15	6'	15'	3,172	10'	21'	12,337
3'	4'	211	6'	16'	3,383	10'	22'	12,924
3'	5'	264	Dish Bottom		127	10'	23'	13,512
3'	6'	317	Cone Bottom		211	10'	24'	14,099
3'	7'	370	7'	7'	2,014	Dish Bottom		604
3'	8'	423	7'	8'	2,302	Cone Bottom		979
3'	9'	475	7'	9'	2,590	11'	11'	7,819
Dish Bottom		16	7'	10'	2,878	11'	12'	8,529
Cone Bottom		26	7'	11'	3,166	11'	13'	9,240
3'-6"	4'	287	7'	12'	3,454	11'	14'	9,951
3'-6"	5'	360	7'	13'	3,742	11'	15'	10,662
3'-6"	6'	431	7'	14'	4,020	11'	16'	11,373
3'-6"	7'	503	7'	15'	4,317	11'	17'	12,083
3'-6"	8'	575	7'	16'	4,605	11'	18'	12,794
3'-6"	9'	647	7'	17'	4,893	11'	19'	13,505
3'-6"	10'	719	7'	18'	5,181	11'	20'	14,216
Dish Bottom		26	Dish Bottom		203	11'	21'	14,927
Cone Bottom		42	Cone Bottom		336	11'	22'	15,638
4'	5'	470	8'	8'	3,008	11'	23'	16,348
4'	6'	564	8'	9'	3,384	11'	24'	17,059
4'	7'	658	8'	10'	3,760	11'	25'	17,770
4'	8'	752	8'	11'	4,136	11'	26'	18,481
4'	9'	846	8'	12'	4,512	Dish Bottom		813
4'	10'	940	8'	13'	4,888	Cone Bottom		—
4'	11'	1,034	8'	14'	5,264	12'	12'	10,151
4'	12'	1,128	8'	15'	5,640	12'	13'	10,997
Dish Bottom		37	8'	16'	6,016	12'	14'	11,843
Cone Bottom		63	8'	17'	6,392	12'	15'	12,689
4'-6"	5'	594	8'	18'	6,768	12'	16'	13,535
4'-6"	6'	713	8'	19'	7,144	12'	17'	14,381
4'-6"	7'	832	8'	20'	7,520	12'	18'	15,227
4'-6"	8'	951	Dish Bottom		308	12'	19'	16,075
4'-6"	9'	1,070	Cone Bottom		501	12'	20'	16,919
4'-6"	10'	1,089	9'	9'	4,283	12'	21'	17,765
4'-6"	11'	1,308	9'	10'	4,758	12'	22'	18,611
4'-6"	12'	1,427	9'	11'	5,234	12'	23'	19,457
4'-6"	13'	1,546	9'	12'	5,710	12'	24'	20,303
Dish Bottom		53	9'	13'	6,186	12'	25'	21,149
Cone Bottom		89	9'	14'	6,662	12'	26'	21,995
5'	6'	881	9'	15'	7,138	Dish Bottom		1,026
5'	7'	1,028	9'	16'	7,614	Cone Bottom		—
5'	8'	1,175	9'	17'	8,090			
5'	9'	1,322	9'	18'	8,565			

Note: To determine the capacity of a tank with Dish or Cone Bottom add the gallon information. Cone Bottom capacity determined for a 45° angle Conical Bottom. Please consult Vanaire for other configurations.

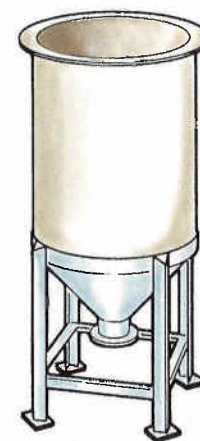
Tanks

Vanaire Filament Wound or Hand Lay-Up tanks offer the ultimate in corrosion protection. Our Filament Winding technique, based on the utilization of continuous strands of glass produce a fully laminated shell with no seams. The application of the glass is controlled to give the ideal helical angle and also the right proportion of glass to resin. Filament Wound tanks are fabricated according to ASTM D3299-74.

Vanaire Hand Lay-Up tanks are produced per standard PS 15-69 and ASTM D4097 following the highest practices of quality in materials and workmanship. These tanks are reinforced by the Spray-Up method with interlaying layers of woven roving glass. The homogeneous quality of the laminate is achieved by careful removal of all air entrapment and through wetting of the glass with the resin.



OPEN TOP WITH
REINFORCED COVER
FOR AGITATOR



OPEN TOP CONICAL
BOTTOM STEEL
SUPPORT STAND

Physical Properties

Density (lb./cu. in.)
Barcol hardness
Compressive strength (psi)
Flexural modulus (psi)

Hand Lay-Up

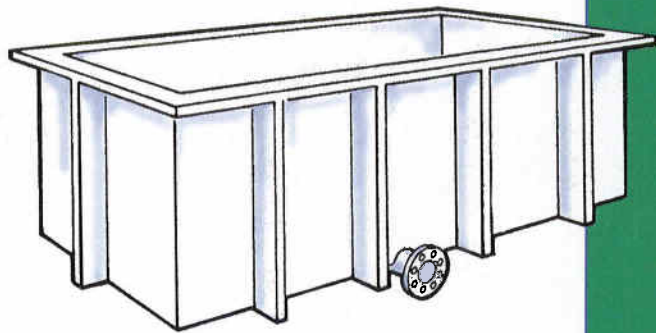
.067
25-45
 1.4×10^4
 1.0×10^6

Physical Properties

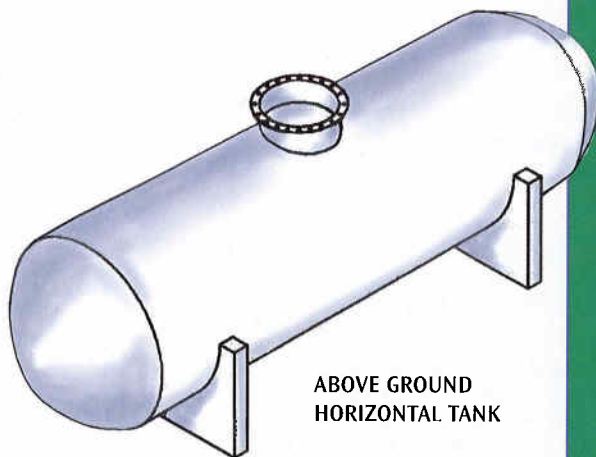
Specific gravity
Impact strength (ft.-lb. izod)
Hoop modulus (psi)
Ultimate tensile (psi)

Hand Lay-Up

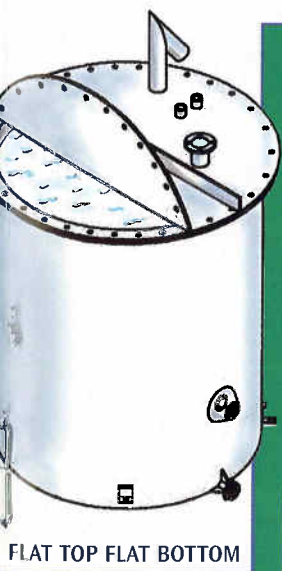
1.8
40-50
 $.95 \times 10^6$
 1.5×10^4



RECTANGULAR TANK



ABOVE GROUND
HORIZONTAL TANK



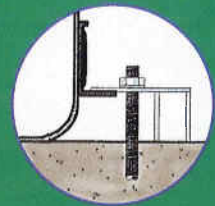
FLAT TOP FLAT BOTTOM

Accessories

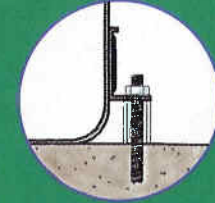
Vanaire tanks can be fitted with a wide variety of accessories tailored to meet the most demanding specifications. These accessories include:

- Threaded nozzles
- Flanged nozzles
- Top manways
- Side manways
- Lifting lugs
- Hold down lugs
- Ladders and cages
- Internal baffles
- Insulation
- Liquid level indicators
- Agitator supports
- Dip tubes
- Steam or electrical heat

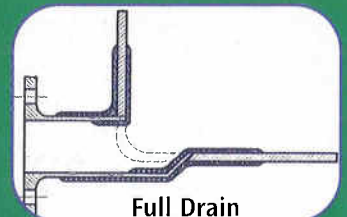
Hold Down Lugs



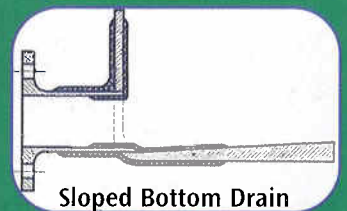
Clamping



Direct Bolting

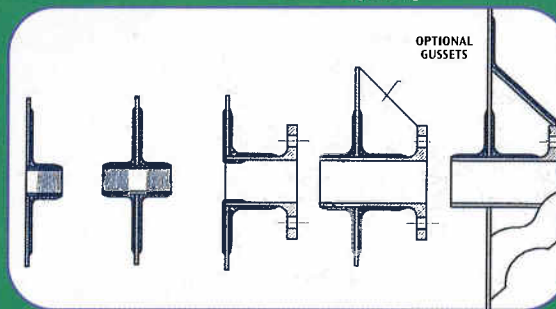


Full Drain



Sloped Bottom Drain

Nozzles and Couplings



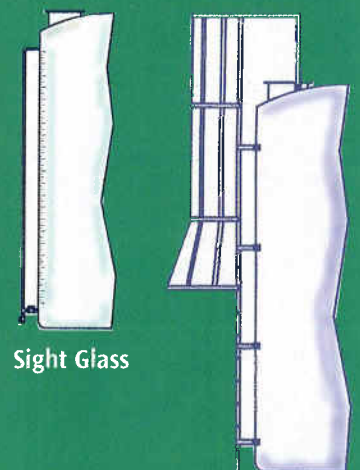
Half
Coupling

Full
Coupling

Flush
Flanged
Nozzle

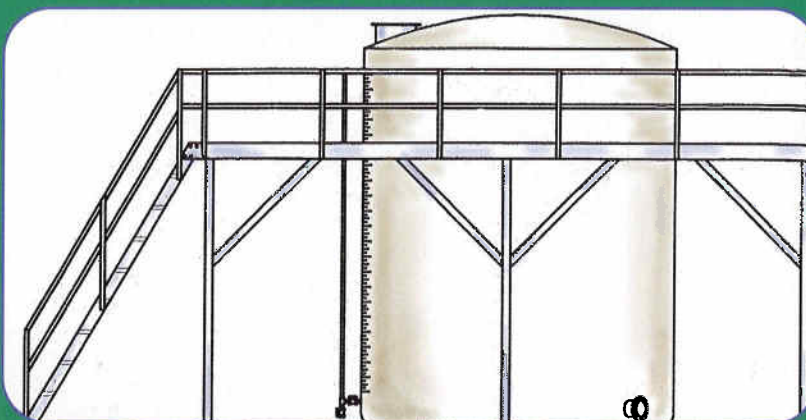
Gusseted,
Recessed
Flanged
Nozzle

Conical
Gusset
Flanged
Nozzle

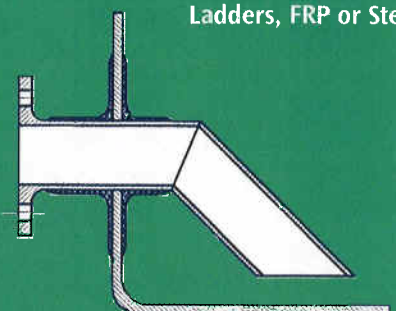


Sight Glass

Ladders, FRP or Steel



Dome Tank with Stand Alone & Integral Platforms



Siphon Drain

FILAMENT WINDING METHOD



Filament winding is the best method for fabrication of tanks and piping. The winding glass is pulled through a saturation bath of catalyzed resin, then helically wrapped around a cylindrical mandrel at a predetermined angle. This fabrication process produces tanks and piping that are **structurally superior**, and with **outstanding tensile properties**.

Vanaire has two state-of-the-art filament winders capable of winding from 4" diameter up to 156" diameter, in standard lengths of up to 20 feet unsegmented.

HAND LAY-UP METHOD

Any **complex geometric shape** can be fabricated using this method. A catalyzed resin is used to apply chopped strand mat and woven roving to the mold. The composite FRP is then compacted to the mold surface with brushes and rollers. The part is left to cure and then removed from the mold.

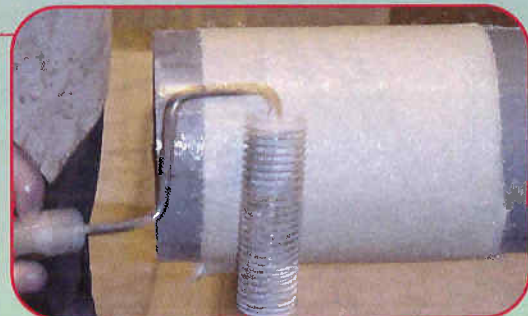


SPRAY-UP METHOD

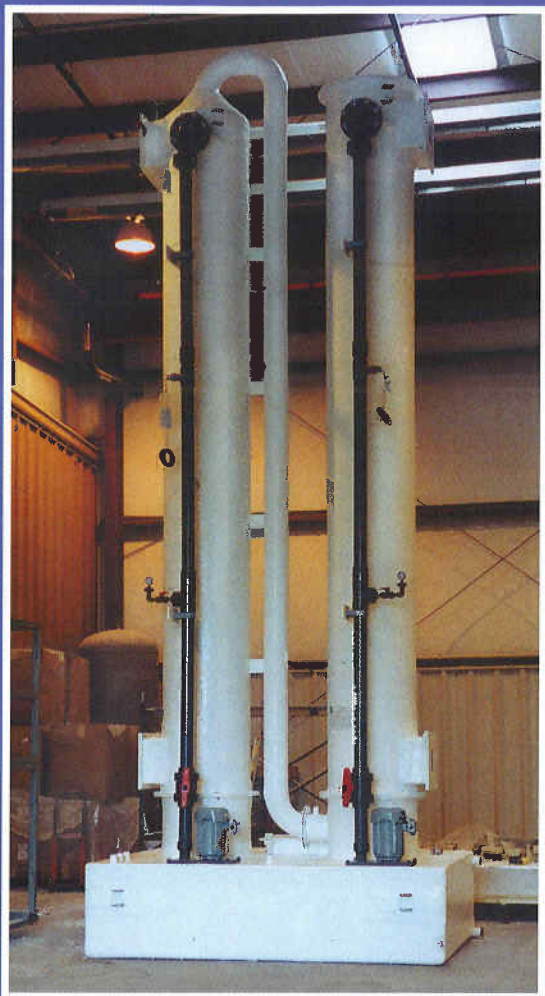
The application of glass and resin on this method is done by simultaneous feeding through a gun the proper mixture of resin and catalyst. This combines with the glass strands fed continuously through the gun and chopped inside the gun to predetermined lengths. This method affords the economies of fast building of wall thickness and the flexibility of applying glass to complicated geometrics.

DUAL LAMINATES

The combination of a thermoplastic liner such as PVC, CPVC, Polypro and PVDF combined with a strong FRP exterior jacket provides the corrosion resistance of thermoplastics and the structural integrity of fiberglass.



- **FANS**
- **HOODS**
- **STACKS**
- **DUCT**



Double Scrubber Tower in Series for NOX Gases



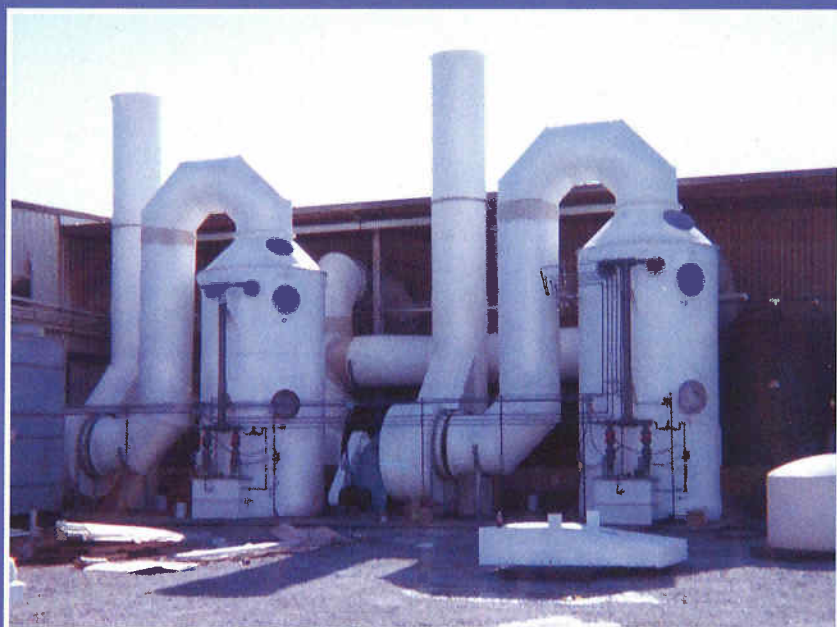
72" Diameter FRP Stack



FRP Centrifugal Fans



Dished Bottom Tanks



Twin Scrubber Towers 11' Diameter, Fans and Duct 44,000 CFM each

MEET THE TEAM, TOUR THE PLANT

Let Vanaire be your primary resource when it comes to design and fabrication of tanks, piping systems, scrubbers and complete ventilation systems.

Call to arrange a tour of the Vanaire facilities, and meet the members of its engineering and production teams, and the administrative staff.



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