

# Fiberglass Underground Potable Water Tanks



**XERXES**<sup>®</sup>  
CORPORATION

# XERXES<sup>®</sup> Potable Water Tanks

## The Fiberglass Tank That Provides Long-Term Storage of Potable Water

As communities, businesses and industries become increasingly accountable to meet environmental requirements for liquids that require safe, design-proven storage, Xerxes Corporation continues to be in the forefront with innovative answers. When considering the options in customized systems to store potable water, facility designers and owners look for a long-term, structurally strong, watertight and cost-effective option. That is exactly what the Xerxes fiberglass tank is. Well-known for decades as a major tank supplier to the petroleum industry, today Xerxes is also a major supplier of storage tanks for potable water, fire-protection water, irrigation water, gray water, septage, leachate and chemicals.

## The Underground Potable Water Tank That Conforms to NSF Requirements

Xerxes potable water tanks are custom manufactured so that each tank is designed and manufactured to meet a customer's specific requirements. A major benefit of ordering a Xerxes potable water tank is that it can be manufactured with materials that conform to the requirements of NSF<sup>®</sup> Standard 61 — Drinking Water System Components — Health Effects. The National Sanitation Foundation (NSF) is a leading international organization that develops standards, and tests and certifies products in the areas of

### Features of Potable Water Tanks

- Rustproof, long-lasting fiberglass
- Resin that conforms to the requirements of NSF Standard 61 — Drinking Water System Components — Health Effects
- Custom manufactured to meet customers' specific requirements
- Integral-rib design for added strength and robustness
- Easy to ship and easy to install
- Testable preinstallation and postinstallation
- Manufactured to applicable requirements of Underwriters Laboratories (UL) 1316
- Able to be reinstalled after recertification
- 600-gallon to 50,000-gallon sizes



public-health safety and environmental protection. Xerxes potable water tanks are manufactured with a resin that has recently been approved as conforming to NSF standards for drinking water system components, proving once again that Xerxes is a pioneer in its industry.

The process by which Xerxes manufactures potable water tanks with NSF-listed materials offers a significant advantage over steel and concrete tanks. The Xerxes fiberglass potable water tank is an integral structure incorporating an NSF-listed-resin interior with a polyester-resin-glass exterior. This is the most effective combination for a potable water tank. Steel and concrete storage systems typically use internal linings to meet industry standards for potable water. In order to be effective, these linings require a degree of adhesion that can be difficult to obtain in the manufacturing process and to maintain over the life of the system. When linings are constructed of materials different from the tank materials, the durability of the end product can be compromised. In short, a Xerxes fiberglass potable water tank offers many advantages over these systems.

## The Watertight Tank That Offers the Many Benefits of Fiberglass

A fiberglass potable water tank with an NSF-listed-resin interior, by virtue of its materials and its design, is inherently the superior choice for safe, long-term storage of drinking water. The best storage system for potable water is structurally strong, corrosion-resistant, watertight, easily installed and cost-effective. All these elements come together in the design and manufacture of a Xerxes fiberglass potable water tank.

Xerxes uses only the finest materials — combining high-quality resin and glass — in the manufacture of its fiberglass tanks. Like fluting in corrugated cardboard, the integral ribs in the tanks add strength to the structure. Because the integral ribs and tanks are made of the same materials and are manufactured simultaneously, the result is an extremely robust tank.

Since water by nature creates a corrosive environment, it is logical that corrosion can be the major weakness in certain underground storage systems. Unlike tanks made of other materials, Xerxes fiberglass tanks are constructed of materials that are inherently rustproof and corrosion-resistant. In contrast, to guard against corrosion, steel tanks may require



costly monitoring and maintenance or special internal and external coatings. Of the options available for potable water storage, a fiberglass tank offers the best long-term protection against leakage due to both internal and external rust and corrosion.

Not only is a Xerxes tank rustproof and corrosion-resistant, it is also impermeable and watertight. Easily equipped for on-site pressure testing before and after installation, Xerxes potable water tanks give owners the confidence that the tank is watertight from the time it is installed.

In addition, a Xerxes fiberglass tank is much lighter in weight than comparably sized steel and concrete tanks. That makes a fiberglass tank easy to ship and easy to install. This is especially important for potable water applications because many of these tanks are installed in remote or hard-to-reach locations, or are at sites with limited excavation space. Lightweight fiberglass tanks are ideally suited to a variety of potable water locations — ranging from sites far from well-traveled roads, such as parks or resorts, to sites in the middle of well-populated areas, such as schools or housing projects.

Xerxes has a proven record of innovative design and a quality-driven manufacturing process at its network of plants across the country. This results in a Xerxes tank that is high-quality and competitively priced. A Xerxes potable water tank has the added benefit that it can be removed, recertified and relocated. These features make a Xerxes tank a cost-effective option with expanded value for an initial investment.

For decades, Xerxes tanks have been the tanks chosen for tens of thousands of applications for underground storage of petroleum products, hazardous materials and chemicals. That same tank — a structurally strong, corrosion-resistant, watertight and easily installed tank — is a superior and cost-effective choice for the long-term storage of potable water.



## The Tank That is Designed and Manufactured by an Industry Leader

Xerxes Corporation is a leader in the design and manufacture of high-quality, cost-effective products that help protect the fragile relationship between humans and their environment. Each Xerxes potable water tank represents decades of innovation and proven experience developing and fabricating fiberglass reinforced plastic (FRP) storage tanks for underground storage of liquids.

At Xerxes, excellence in service is as highly valued as excellence in product design and manufacturing. Xerxes' manufacturing facilities, strategically located throughout the United States, provide customers with prompt, economical delivery and quality service. That gives Xerxes tanks one more advantage — they are readily available to customers wherever they are.



## Applications

Xerxes potable water tanks are suitable for a variety of applications. Typical applications include:

- National and state parks
- Schools
- Emergency water supplies
- Rural properties
- Campgrounds
- Resorts
- Large private properties
- Livestock feeding operations
- Residential cisterns

## Accessories

The following accessories are available for Xerxes potable water tanks:

- FRP manways (22-inch, 30-inch and 36-inch in diameter)
- FRP manway extensions (variable length)
- FRP or PVC drop/fill tubes
- FRP ladders
- Internal pump platforms
- FRP anti-vortex plates
- Flanged FRP nozzles
- Threaded FRP or steel fittings
- FRP hold-down straps
- Concrete deadmen

## The Xerxes Mission Statement

Xerxes Corporation is a leading developer and manufacturer of engineered fiberglass reinforced plastic (FRP) structural products, and marketer of these and other products for the petroleum, chemical, industrial and commercial marketplace. Our efforts are dedicated to providing high-quality, competitively priced products that satisfy the requirements of our customers. We are committed to a philosophy of growth and continual improvement of our products, services, processes and personnel in order to serve our stakeholders — customers, suppliers, employees and stockholders.

# Single-Wall Tank Chart

Nominal Capacity (gallons)	Actual Capacity (gallons)	Tank Length	Shipping Weight (pounds)	Number of Hold-down Straps Required
<b>4-Foot-Diameter Tanks</b>				
600	602	6'-11 7/8"	500	2
1,000	1,009	11'-3 7/8"	700	2
1,500	1,449	16'-0"	1,000	2
<b>6-Foot-Diameter Tanks</b>				
1,500	1,779	10'-7 1/4"	800	2
2,000	2,376	13'-5 3/4"	1,000	2
3,000	2,973	16'-4 1/4"	1,200	2
4,000	4,131	21'-11 1/8"	1,600	2
5,000	5,064	26'-5"	1,900	4
6,000	5,960	30'-8 3/4"	2,200	4
<b>8-Foot-Diameter Tanks</b>				
2,000	2,189	9'-1/2"	900	2
3,000	3,271	12'-3"	1,200	2
4,000	4,218	15'-1/2"	1,400	2
5,000	5,165	17'-8 1/2"	1,700	2
6,000	6,084	20'-6 1/2"	2,000	2
7,000	6,946	23'-1"	2,200	4
8,000	7,950	26'-1/2"	2,500	4
9,000	8,869	28'-9"	2,700	4
10,000	9,816	31'-6 1/2"	3,000	4
11,000	10,763	34'-4"	3,200	4
12,000	11,682	37'-1/2"	3,500	4
13,000	13,081	41'-2"	4,000	6
14,000	14,028	43'-11 1/2"	4,200	6
15,000	14,975	46'-9"	4,500	6
<b>10-Foot-Diameter Tanks</b>				
10,000	10,563	21'-5 1/4"	3,200	4
11,000	11,364	22'-9 3/4"	3,400	4
12,000	12,068	24'-1/4"	3,600	4
13,000	12,966	25'-6 3/4"	3,800	4
14,000	13,767	26'-11 1/4"	4,000	4
15,000	15,248	29'-5 3/4"	4,500	4
20,000	20,055	37'-8 3/4"	5,700	6
22,000	22,580	42'-3/4"	6,600	8
25,000	25,783	47'-6 3/4"	7,900	8
30,000	30,590	55'-9 3/4"	9,400	10
35,000	35,397	64'-3/4"	10,500	12
40,000	41,004	73'-8 1/4"	12,100	14
<b>12-Foot-Diameter Tanks</b>				
20,000	20,781	29'-4"	9,200	6
25,000	25,541	35'-7"	10,600	8
30,000	31,253	43'-1"	12,500	10
35,000	36,013	49'-4"	13,900	12
40,000	39,821	54'-4"	15,000	12
48,000	48,389	65'-7"	17,700	18
50,000	50,293	68'-1"	18,300	18

\*Note: Use of overflow protection such as flapper valves or ball-float valves will reduce the actual capacity of the tank.

# Guideline Specifications

## Single-Wall FRP Tank for Potable Water Use

### Short Form

The contractor shall provide a single-wall fiberglass reinforced plastic (FRP) underground storage tank as shown on tank drawing. Capacity, dimensions, fitting sizes and locations, and optional accessories shall be as shown on tank drawings. The tank shall be as manufactured by Xerxes Corporation. The tank shall be manufactured with materials conforming to the requirements of NSF Standard 61 - Drinking Water System Components - Health Effects.

Tank shall be tested and installed according to Xerxes' Installation Manual and Operating Guidelines for Single-Wall and Double-Wall Fiberglass Underground Storage Tanks in effect at time of installation.

### Long Form

#### Part I: General

##### 1.01 Quality Assurance

###### A. Acceptable Manufacturers:

Xerxes Corporation, Minneapolis, Minnesota

###### B. Manufacturing Standards:

1. Tank manufacturer shall be in the business of manufacturing tanks to UL 1316 standards.
2. Tank manufacturer shall be in the business of manufacturing tanks with materials conforming to the requirements of NSF Standard 61.

###### C. Materials:

1. Tank shall be manufactured of 100% resin and glass-fiber reinforcement, with no sand fillers. The laminate materials used in the internal coating system of the tank shall conform to the requirements of NSF Standard 61.

**1.02 Submittals: Contractor shall submit to engineer \_\_\_\_\_** copies of shop drawings for each tank and \_\_\_\_\_ copies of manufacturer's literature.

#### Part II: Products

##### 2.01 Single-Wall Fiberglass Underground Tanks

###### A. Product-Storage Requirements:

1. Tank shall be vented to atmospheric pressure, as the tank is not designed as a pressure vessel.
2. Tank shall be designed for maximum product-storage temperature of 150° F.

###### B. Loading Conditions: Tank shall meet the following design criteria:

1. Internal Load: Tank shall withstand a 5-psig air-pressure test with 5:1 safety factor. Installer shall test each tank for leakage prior to installation. Maximum test pressure is 5 psig (3 psig for a 12-foot tank).
2. Vacuum Test: To verify structural integrity, each tank up through 10-foot diameter shall withstand a vacuum test to 11.5 inches of mercury.
3. Surface Loads: Tank shall withstand surface H-20 axle loads when properly installed according to manufacturer's

Installation Manual and Operating Guidelines for Single-Wall and Double-Wall Fiberglass Underground Storage Tanks in effect at time of each installation.

###### 4. External Hydrostatic Pressure and Burial Depth:

Tank shall be capable of being buried in ground with 7 feet of overburden, the hole fully flooded and a safety factor of 5:1 against general buckling.

5. Tank shall support accessory equipment-such as internal pump platforms, drop/fill tubes, submersible pumps and ladders-as shown on tank drawings and when installed according to tank manufacturer's recommendations.

##### 2.02 Accessories

###### A. Manways:

1. All tanks for potable water use shall require at least one manway.
2. All manways shall be FRP, flanged and 22-inch-i.d., complete with gaskets, bolts and covers. (Optional 30-inch- and 36-inch-i.d. manways are also available on certain larger size tanks.)
3. Location(s) shall be shown on tank drawings.
4. Optional manway extensions shall be FRP.

###### B. Fittings:

1. All threaded fittings shall be constructed of carbon steel or FRP.
2. All threaded fittings shall be half-couplings, and 2-inch, 4-inch or 6-inch in diameter. Reducers are to be used for smaller sizes where shown and provided by contractor.
3. All FRP nozzles shall be flat-faced and flanged, and shall conform to ANSI B16.5 150# bolting pattern.

###### C. Optional Anchor Straps:

1. Straps shall be FRP anchor straps as supplied by tank manufacturer.
2. Number and location of straps shall be shown on tank drawings.

###### D. Optional Ladders:

1. Ladders shall be manufactured with materials conforming to the requirements of NSF Standard 61.

###### E. Optional Drop/Fill Tubes:

1. Drop/fill tubes shall be FRP and manufactured with materials conforming to the requirements of NSF Standard 61 or shall be NSF-listed PVC.
2. Drop/fill tubes shall be factory-installed.
3. Drop/fill tubes shall be 4-inch-diameter, with a 6-inch x 4-inch double-tapped reducer bushing, and include a 6-inch NPT fitting. Drop/fill tubes can be installed in manway cover or tank wall.
4. Drop/fill tubes shall terminate a minimum of 4 inches above the bottom of tank.

###### F. Optional Internal Pump Platforms:

1. Pump platforms shall be FRP and manufactured with materials conforming to the requirements of NSF Standard 61.
2. Contact tank manufacturer with pump details.

## Guideline Specifications (continued)

### Part III: Execution

#### A. Testing and Installation:

1. Tank shall be tested and installed according to Xerxes' Installation Manual and Operating Guidelines for Single-Wall and Double-Wall Fiberglass Underground Storage Tanks in effect at time of installation.

### Part IV: Limited Warranty

Warranty shall be manufacturer's standard limited warranty in effect at time of original purchase.

## Limited Warranty

### Underground Potable Water Tanks

Xerxes Corporation ("Xerxes") warrants to ("Owner") that our underground storage tanks for potable water, if used in accordance with Xerxes' published specifications, operating guidelines, and limited to the storage of potable water, and if installed, operated and maintained in the United States according to Xerxes' published installation instructions and all applicable laws and regulations:

- 1) Will not fail for a period of thirty (30) years from date of original delivery by Xerxes due to natural external corrosion.
- 2) Will not fail for a period of thirty (30) years from date of original delivery by Xerxes due to internal corrosion, provided the tank is used solely for potable water, the customer provides Xerxes with written notice of its intended use before the tank is manufactured, and the water is stored at temperatures not to exceed 150° F.
- 3) Will not fail for a period of thirty (30) years from date of original delivery by Xerxes due to structural failure, (defined as spontaneous breaking or collapse caused by material defects in materials or workmanship).
- 4) Will meet Xerxes' published specifications and will be free from material defects in materials and workmanship for a period of one (1) year following the date of original delivery by Xerxes.

If any tank is to be removed from an installation, moved to Owner's new location and is intended for active service at the new location, the tank must be recertified by Xerxes in order to maintain the warranty as originally extended. The foregoing warranty does not extend to tanks damaged due to acts of God or tank failures caused, in whole or in part, by misuse, improper installation, storage, servicing, maintenance, or operation in excess of their rated capacity or contrary to their recommended use, whether intentional or otherwise, or any other cause or damage of any kind not the fault of Xerxes. Xerxes only warrants repairs or alterations performed by Xerxes or its authorized contractors. Xerxes does not warrant any product, components or parts manufactured by others.

Owner's sole and exclusive remedy for breach of warranty is limited at Xerxes' option to: (a) repair of the defective tank, (b) delivery of a replacement tank to the point of original

delivery, or (c) refund of the original purchase price. A claimant must give Xerxes the opportunity to observe and inspect the tank prior to removal from the ground or the claim will be barred. All claims must be made in writing within one (1) year after tank failure or be forever barred.

THE FOREGOING WARRANTY CONSTITUTES XERXES' EXCLUSIVE OBLIGATION AND XERXES MAKES NO OTHER WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, WITH RESPECT TO THE TANK OR ANY SERVICE, ADVICE, OR CONSULTATION, IF ANY, FURNISHED TO OWNER BY XERXES OR ITS REPRESENTATIVES, WHETHER AS TO MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR OTHERWISE. THE REMEDIES SET FORTH IN THE ABOVE WARRANTY ARE THE ONLY REMEDIES AVAILABLE TO ANY PERSON OR ENTITY FOR BREACH OF WARRANTY OR FOR BREACH OF ANY OTHER COVENANT, DUTY, OR OBLIGATION ON THE PART OF XERXES. XERXES SHALL HAVE NO LIABILITY OR OBLIGATION TO ANY PERSON OR ENTITY FOR BREACH OF ANY OTHER COVENANT, DUTY OR OBLIGATION UNDER THIS WARRANTY EXCEPT AS EXPRESSLY SET FORTH HEREIN. IT IS EXPRESSLY AGREED THAT THIS WARRANTY DOES NOT FAIL OF ITS ESSENTIAL PURPOSE. XERXES SHALL HAVE NO LIABILITY FOR TANK INSTALLATION OR REMOVAL COSTS, ENVIRONMENTAL CONTAMINATION, FIRES, EXPLOSIONS OR ANY OTHER CONSEQUENCES ALLEGEDLY ATTRIBUTABLE TO A BREACH OF WARRANTY, OR INCIDENTAL, CONSEQUENTIAL OR PUNITIVE DAMAGES OF ANY DESCRIPTION, WHETHER ANY SUCH CLAIM OR DAMAGES BE BASED UPON WARRANTY, CONTRACT, NEGLIGENCE, STRICT LIABILITY OR OTHER TORT, OR OTHERWISE. IN NO EVENT SHALL XERXES' TOTAL LIABILITY HEREUNDER EXCEED THE ORIGINAL PURCHASE PRICE OF THE TANK WHICH GAVE RISE TO SUCH LIABILITY.

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# XERXES<sup>®</sup>

CORPORATION



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### Hagerstown, Maryland

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### Tipton, Iowa

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