

# AQUASTORE<sup>®</sup>

Glass-Fused-To-Steel Liquid Storage Tanks

CST<sup>™</sup>



Steel Gives You Strength  
Glass Gives You Protection

## A LEGACY OF INNOVATION

CST Industries, Inc. has a long and storied history of turning raw steel into the finest storage tanks available. Our unique glass-fused-to-steel technology was introduced more than 76 years ago, when it was put on the first Harvestore silo in 1949. Today, CST is dedicated to the design, fabrication and installation of glass-fused-to-steel storage tanks.

After more than 100,000 installations of field proven performance, Aquastore® tanks remain the markets preferred choice for potable water storage and liquid applications. With tens of thousands of satisfied customers, Aquastore tanks are engineered to be the very best.

CST has an ongoing research/product improvement program dedicated to constantly enhancing our manufacturing processes. As the leading innovator, CST ensures **Vitrium™ TiO<sub>2</sub>** and **Edgecoat II™** technology is utilized on every tank for maximum corrosion resistance and the longest life span available. When you purchase

*With Aquastore, you get the highest engineered quality, best service, longest product life and greatest value in liquid storage tanks.*

**Aquastore owners choose CST's glass-fused-to-steel technology over all other tank designs for several reasons:**

- Never EVER needs painting
- Aquastore tanks are manufactured using Vitrium coating technology enhanced with TiO<sub>2</sub>
- Edgecoat II technology, the ONLY process in the world that provides optimum glass encapsulation on all (4) four sides of the sheet
- Greater lifetime value compared to other tank designs
- Fastest construction time – Easy assembly without cranes or special equipment
- Expandable to accommodate future requirements
- Available in diameters from 11 feet (3.3 m) to 243 feet (74 m) and capacity from 20,000 gallons (75 cu m) to over 6 million gallons (22,700 cu m)
- Specific tank designs, options and accessories to meet every customers needs
- Lowest life cycle cost of all other available tank designs



*All Aquastore tanks are manufactured exclusively in the USA with only USA steel and supported by the world's most experienced Local Authorized Dealer Network*



*Age 20+*



*Age 24+*



*Age 31+*



*Age 35+*



*Age 37+*

## ENHANCED GLASS-FUSED-TO-STEEL TECHNOLOGY

Aquastore's glass-fused-to-steel is the premium technology in the tank market. Glass coating's physical properties are specially suited to municipal and industrial storage applications. The factory-applied silica glass coating on Aquastore tanks forms a hard, inert barrier for both the interior and exterior tank surfaces to guard against weather and corrosion. Glass-fused-to-steel is impermeable to liquids and vapors, controls undercutting caused by corrosion and offers excellent impact and abrasion resistance. The color won't fade or chalk and graffiti can easily be removed. *It never needs painting!*

A multi-step process is the heart of the glass-fused-to-steel technology system:

- Fabricated sheets are grit blasted to a uniform, near white surface
- Formulations of borosilicate, minerals, water and clays are blended into a sprayable slurry called "slip"
- After inspection, the slurry is fused to the steel sheets at temperatures above 1500° F (815° C) resulting in an ionic exchange of materials and forming a covalent bond producing the distinctive glossy Aquastore glass finish
- The molten glass reacts with the profiled steel surface to form an inert, inorganic chemical and mechanical bond

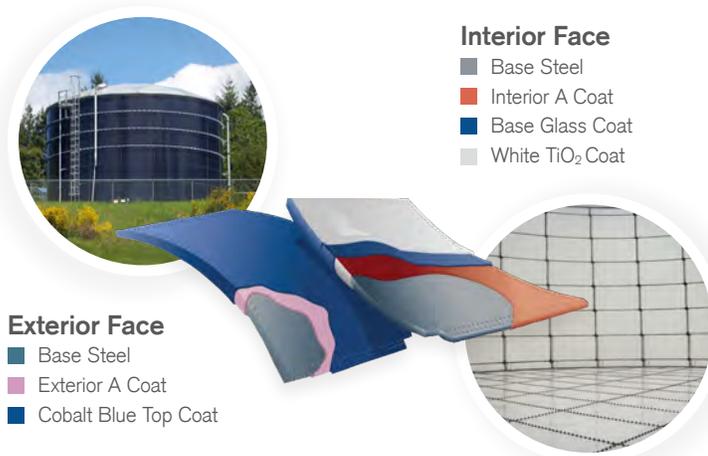


*State-of-the-art porcelain enameling furnace improves quality, saves energy, increases production and speeds delivery of glass-fused-to-steel products to customers.*

The interior of ALL Aquastore tanks feature Vitrium™ coating technology enhanced with titanium dioxide (TiO<sub>2</sub>) for the toughest glass available. This coating combines the outstanding chemical and physical resistant properties of titanium-enhanced glass with a highly engineered, ultra-fine glass bubble structure essential to flexibility, quality and longevity. This process results in high performance glass-fused-to-steel technology. Vitrium features and benefits include:

- Tough TiO<sub>2</sub> glass formulations provides longer life
- White interior is easier to inspect than darker coatings
- Factory certified holiday-free sheets
- Designed for use in both cold and hot climates
- Designed, fabricated, shipped and supported within the USA

*Guaranteeing the best quality available from our manufacturing facility to your jobsite.*



*Glass frit is specially formulated to produce the distinctive cobalt blue Aquastore glass coating.*

## ENGINEERED EDGECOAT TECHNOLOGY

Edgecoat II™ is a result of CST's commitment to an ongoing product development and improvement program. This continuous innovative *Edgecoat II technology is the ONLY process in the world that provides optimum glass encapsulation on all (4) four sides of the sheet edges*. CST took the best Edgecoat technology in the world and made it better with Edgecoat II.

Following Porcelain Enameling Institute guidelines (PEI-101), Edgecoat II sheets are mechanically rounded to specific radii that provides maximum glass adhesion to steel. The combination delivers the maximum corrosion resistance of Vitrium glass coating with the greatest protection on every sheet.

The Edgecoat II engineered approach involves stringent plant quality control procedures to ensure the Edgecoat II remains in place throughout the life of the tank.

Sheet edge corrosion on steel is aesthetically unpleasant and will significantly limit the life of your storage tank. Due to the manufacturing expense and professional engineering necessary to coat the steel edges, other glass tank providers will leave them uncoated and exposed; relying solely on the sealant fillet to prevent corrosion in this area. CST's improved process of mechanically rounding the sheet edges to exact radii ensures adherence of the glass for complete encapsulation on every sheet edge.

Aquastore glass-fused-to-steel tanks with Vitrium TiO<sub>2</sub> and enhanced Edgecoat II technology, offer complete encapsulation and corrosion protection. CST continues to lead innovative improvements in areas that are most susceptible to environmental attack.

The physical properties of all Aquastore tanks' glass coating are especially suited to municipal and industrial liquid storage applications. The tank designs incorporate recognized standards assuring high-quality long-lasting municipal and industrial liquid storage tanks.



*Engineered Edge*

### Benefits of Edgecoat II include:

- 5 mils of glass encapsulation on every sheet edge
- Glass is applied on all (4) four sides of the rectangular sheet edges providing the greatest protection
- Edges are engineered to ensure optimum radii for each individual gauge of steel providing the maximum and consistent glass edge
- No sharp edges on tank sheets, eliminating safety hazards
- Highest quality finish

## TANK ECONOMICS & LIFETIME VALUE

All tanks are not created equal! The glass-fused-to-steel technology in an Aquastore tank delivers greater lifetime value than any other tank provider. When you add up the tank benefits over its life cycle, the advantages of an Aquastore cannot be beat. It is simply the best quality, lowest maintenance and most flexible tank available.

### CONSIDERING CONCRETE OR WELDED?

- The biggest economic advantage is that an Aquastore tank never needs painting! The budgeted dollars that may be used to repair a concrete tank or repaint a welded tank every 8 – 15 years can be diverted to other municipal or industrial needs. The modular design allows for rapid installation and flexibility when compared to concrete and welded construction.
- Concrete tanks are expensive, involve long construction periods, need a lot of room to build and are not "maintenance free". AWWA allows for leaking, and some level of cracking is expected. Concrete tanks require a lengthy construction time compared to an Aquastore tank, especially when expensive concrete roofs are involved and must be field coated to meet NSF approval. To be NSF approved, the entire interior of the concrete tank must be coated by an NSF61 approved coating, or the customer/constructor has the option to send in concrete samples to NSF to be tested. A very lengthy process that takes months.
- Welded tanks have long lead and construction times. They are limited by external environmental factors when being erected and field painted. Welded tanks have high maintenance costs and must be painted multiple times over their life cycle. Plus, there are parts of the welded tanks that can never be coated because it is impossible to get paint to it after construction. For example, the bottom of a field welded tank can never be coated. This is why field welded tanks must have corrosion tolerances built into the steel thickness and required impressed current cathodic protection systems. In addition, it is impossible to coat the top of the roof rafters which usually start rusting day one of startup.

## Aquastore Features & Accessories

### Cathodic Protection

An Aquastore tank's progressive cathodic protection system uses sacrificial anodes to protect the reinforcing bars, mitigate corrosion and provide protection to internal submerged surfaces of the tank. It is incorporated into the Aquastore tank's warranty. Being a "passive" system it does not require any power and only kicks in when needed.

### Gravity Vent

Aquastore tank gravity vents are designed to allow for air exchange during filling and emptying. They are equipped with corrosion-resistant bird and insect screens.

### Ladder: Cage & Platform

Aquastore tank ladders are constructed of aluminum rails and rungs with hot-dip galvanized cages and step off platforms. Ladders with locking safety cage doors are available. They are fully OSHA 1910 compliant with three price tier options



# EXTERIOR COLOR OPTIONS

Aquastore glass coatings are available in standard cobalt blue and four other exterior colors. Inquire for custom colors.



Look for the white interior as a result of the TiO<sub>2</sub> coating formula and technology that ensure the maximum corrosion protection for your tank. The white interior provides an added benefit of full visual exposure of your tank during inspections.



## Sidewall Manways

Aquastore tank manways are designed in accordance with AWWA D103 Standards. They are 24 inches (61 cm), 30 inches (76 cm) or 36 inches (91 cm) in diameter and are manufactured with hot-dip galvanized or stainless steel. Manways are provided with a davit hinge connection for easy access.

## Hardware and Sealants

The hardware and sealants are specific to each application. Chlorine resistant sealants, hardware with protective sealers and heavy duty plastic bolt caps are also available for added protection. Structural bolts under the water line are completely encapsulated to prevent any corrosion.

## Accessories & More

A variety of accessories are available to meet specific needs. Accessories include:

- Roof walkways, railings & staircases
- Level indicators
- Nozzles
- And many more



## TANK APPLICATIONS

Aquastore storage tanks with Vitrium glass-fused-to-steel are ideal for the following designs and applications:



**Standpipe**



**Composite Elevated**



**Leachate**



**Ground Storage Tank**



**Fire Protection**



**Anaerobic Digestion**



**Municipal Wastewater  
Clarifier / Sludge /  
Storage / Mixing**

# FROM THE TOP DOWN - FASTER, SAFER CONSTRUCTION

Every Aquastore tank is factory engineered to customer specifications. Since all components are manufactured in the factory and easily assembled, Aquastore tanks can be installed in many types of weather conditions that field-welded steel or concrete tanks cannot. Tanks are assembled from the top down by factory-trained professional building crews using CST's Proof Load Tested and PE stamped jacking systems that safely and progressively elevate the structure without the need for expensive cranes, large staging areas or extensive scaffolding. Erection crews can stay safely on the ground. This construction method enables rapid, logical progress for timely completion.

- Small footprint
- Site work savings
- Year round construction
- Fast turnaround
- Quick erection
- Trained and certified crews

## Floors

Aquastore floors can be glass-fused-to-steel or reinforced concrete. Steel floors have the same superior glass coating as the Aquastore glass-fused-to-steel sheets. When using concrete, Aquastore walls are embedded in the foundation. Authorized Aquastore Dealers can provide site preparation and foundation installation.

## Sidewalls

Sidewall erection is completed using a series of specially engineered motorized jacks. Each glass-fused-to-steel panel is bolted and sealed into place. Upon completion, the motorized jacks raise the sidewall ring so subsequent rings can be erected. Erecting an Aquastore tank does not require heavy-load cranes or lifting equipment on-site. This unique installation process allows for construction in remote regions, as well as metropolitan areas.



## Roofs or Domes

The flush batten OptiDome® is a next generation aluminum geodesic dome. OptiDome aluminum domes incorporate a flush batten design that effectively sheds water and reduces ponding on the panels. With a Double Web I-Beam customers get the most efficient, functional, long lasting dome solution in the industry. OptiDome is easy to install and requires less sealant than typical geodesic domes. CST's OptiDome design efficiently complies with the latest requirements that have been adopted by 2010 Aluminum Design Manual, Eurocode, International Building Code 2012, and complies with AWWA D108. It is also the only aluminum dome in the industry that is NSF61 approved. Per NSF, any tank with a dome must have the dome be NSF approved for the tank to be NSF approved. Which means CST is the only company whose tanks are NSF approved with domes.



Every OptiDome is custom designed to meet the specific requirements of each project and can be engineered for any snow, wind or suspended load capacity, as well as span-to-rise-ratio. The all-aluminum free span OptiDome's are available for the complete range of Aquastore tanks.



Glass-fused-to-steel roofs are available up to 31' in diameter and aluminum geodesic domes are available in all sizes.

## Sealants

Aquastore tanks feature sealants specifically formulated for chemical resistance appropriate to the application. Each sealant is inspected on a batch-by-batch basis to ensure quality. The sealant is suitable for contact with potable water and is certified to meet ANSI/NSF Additives Standard 61 for indirect additives and is chlorine resistant. Sealants cure to a rubber-like consistency, have excellent adhesion to the glass coating, low shrinkage and are utilized for both interior and exterior use.

## Most Experienced Dealer Network

CST delivers Aquastore tanks through a network of Authorized Aquastore Dealers. These organizations and their sales representatives are available to discuss project requirements from inception to completion. Experience in your region and application knowledge are valuable during all stages, from project development to specification to erection to the completed and tested tank.

Pricing, budget estimates, foundation layouts, project scheduling, approval drawings and foundation construction are just a few of the areas where Authorized Aquastore Dealers can help. Our customers deal with one source from start to finish, including service after installation. Dealers provide excellent customer service, are local and knowledgeable of your area and building requirements.

Authorized Aquastore Dealers offer a turn-key package to customers providing service, support and expertise from start to finish. In addition to selling and erecting an Aquastore tank, dealer sales and service specialists provide the following:

- Value engineering – total cost analysis
- Tank configuration and layout data
- Budgeting
- Product engineering specifications
- Design criteria assistance
- Tank layout drawings
- Approval drawings
- Certified drawings
- Site preparation and layout
- Tank construction scheduling
- Structural calculations
- Tank testing and commissioning
- Tank inspection
- Maintenance services
- Relocation or expansion
- Concrete work
- Pipe work (inlet, outlet, overflow, decant, etc.)
- Insulation (spray foam, battens, etc.)
- Dome installations
- Turn-key tank construction
- After sale service

*Turnkey package from site preparation to completed and tested tank.*



# » Best in Industry Warranty

For more than 67 years, CST has offered the most comprehensive manufacturer's warranty in the industry. The field-proven performance history of Aquastore tanks is one more indication that our products are built to last.

An Aquastore tank requires minimal maintenance over its life cycle and CST's Authorized Aquastore Dealers will provide complete service packages tailored to your application needs. Most importantly, the glass-fused-to-steel technology provides protection from environmental impact and never needs painting, saving hundreds of thousands of dollars over time.

*Always there when you need us,  
just a phone call away...*

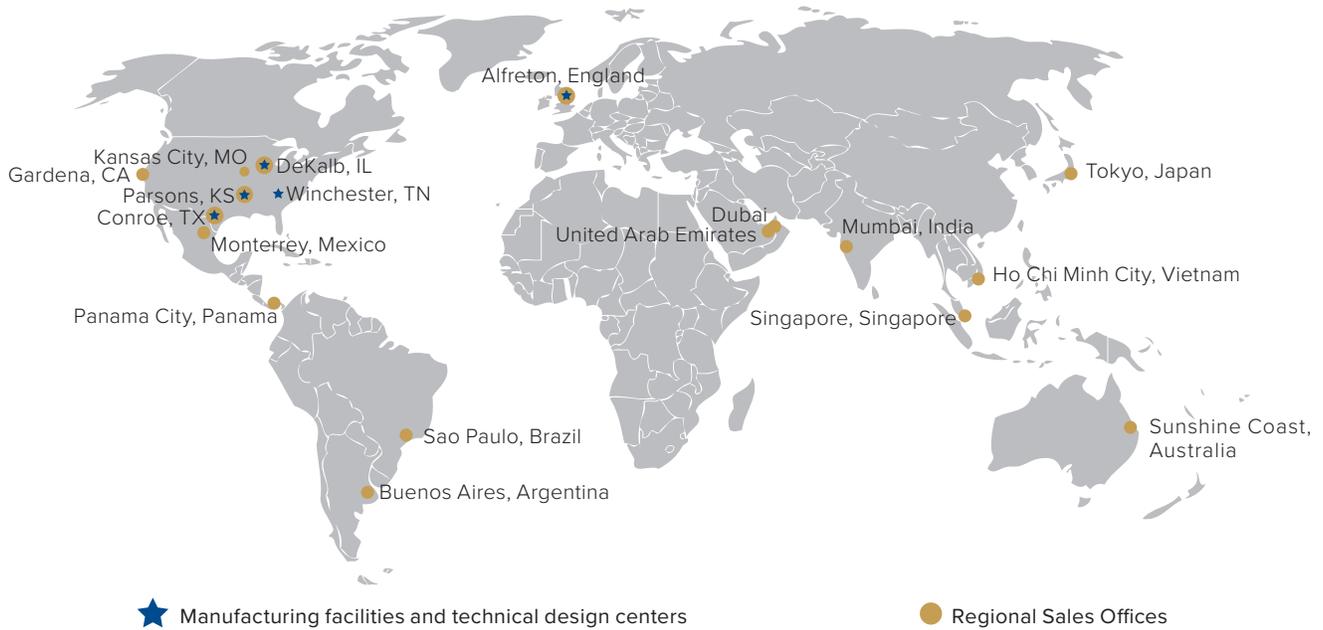
Find your nearest Aquastore Dealer in the dealer locator section at [aquastore.com](http://aquastore.com) or call **815-756-1551** today!



CST is committed to providing its customers with the highest engineered quality, best service, longest product life and greatest value for every storage solution we supply. Contact CST for all of your water, wastewater and liquid applications.

## Worldwide Availability

CST Global Manufacturing and Offices



### Certifications and Capabilities:

- ISO 9001:2015
- AISC
- IBC
- Individual State Building Codes
- ANSI/AWWA D103
- NBCC
- FM 4020/4021
- British Standard 7543:2003
- EN 15282/ISO 28765
- NFPA Standard 22
- ANSI/NSF 61



For more information, call **815-756-1551** or visit [aquastore.com](http://aquastore.com) to find an Authorized Aquastore Dealer nearest you.

Name: \_\_\_\_\_

Company: \_\_\_\_\_

Email: \_\_\_\_\_

Phone: \_\_\_\_\_

CST Industries, Inc. | 345 Harvestore Dr. | DeKalb, IL 60115 USA | Phone: 815-756-1551 | [www.aquastore.com](http://www.aquastore.com)  
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