

FLAT PANEL | CHIME PANEL | WELDED









> A Storage Legacy

The business roots for CST Industries run deep—all the way back to 1893 following our heritage as Columbian Steel Tank Company¹⁰, Peabody TecTank and Columbian TecTank¹⁰.

With a legacy of 127+ years and over 350,000 field proven installations in more than 125 countries, no other company can match CST's world-renowned brands, premium engineered designs, world-class manufacturing or construction experience.

Highest Quality – Promised and Delivered – in Tanks and Silos for Dry Bulk Applications

Our commitment to performance is delivered through time-proven design and engineering, our precision manufacturing technologies, and our commitment to excellence in installation.

TecTank" systems are custom engineered to our customer's exact specifications, designed using state-of-the-art CAD and stress modeling tools, and then manufactured in one of our ISO 9001:2015 Certified manufacturing facilities located in Persons, KS or Winchester, TN.





Proven Engineering Capabilities and Design Standards

Our experience spans into almost every dry bulk market and challenge, which gives us a unique perspective that we bring to every dient relationship. CST has been relied upon for over a century and is well-known as the Storage Industry experts.

Not only do we have decades of experience as a leading innovator, but CST also offers the most variety of engineering designs to create customized solutions for each project. Unlike our competitors, we do not make the application fit the design. We are uniquely positioned to offer designs specific to your application. Simply put, we are the only storage tank manufacturer to offer Application-Based-Solutions, allowing us to be the most competitive, efficiently designed and installed silo supplier to meet customers' exact needs.

Factors such as capacity, seismic conditions, specific gravity and wind loading vary widely from one job to the next. Our integrated project teams work to ensure every tank is designed to yield the best lifetiong value for the application it's intended for.

With more overall production capacity than the next (3) three competitors combined, you can rely on CST when quick and reliable delivery of a large volume project is necessary. Our benefits include:

- A proof load tested jacking system designed by licensed engineers to ensure construction safety
- > Hopper bottom silos ranging from 4 ft. (1.21 m) in diameter and 6 ft. (1.82 m) tall to nearly 50 ft. (15.24 m) in diameter and 150 ft. (45.72 m) tall, from 100 ft³ to 200,000 ft³ of storage capacity
- > First manufacturer to design, build and erect the flat panel silo and the chime panel silo
- > Third-party review of company construction methods
- Professionally Engineered stamped jack-built and scaffold-built construction processes
- CST pioneered jacking tanks on grain bins and silos in the 1940s
- > Apply build gaskets to bolted tanks
- > Drawings can be supplied with professional engineer seal from any state, territory or province

To accommodate various dry materials, all of our silos are custom designed and fabricated. CST offers solutions such as silos with drive-through skirts for truck or railcar loadout, tanks with unique hoppers and tanks designed with office space under the hopper bottom. Tanks can be installed on steel or concrete frames or footings. Cortact us today to learn more.



CST OptiBond™ **Epoxy Coating Process**

» Maximum Performance. Lasting Protection.

CST created its first-rate epoxy coating technology to provide excellent adhesion, maximum corrosion resistance and long tank life. Decades of experience has led to continuous technology and process improvements which have resulted in the finest epoxy coating available in the storage tank industry.

The OptiBond Epoxy Coating Process is derived from years of in-field experience and performance data. This process assures the proper application of CST's proprietary powder formulation, Trico Bond EP® and Trico Bond SD".

>> OptiBond Process Includes

- > Factory-applied coatings
- > Pre- and post-cleaning of the steel prior to application of powder coating
- > 100% coverage to eliminate areas of exposed
- Automated application of powder coating with laser-locating "eyes"
- > Electrostatic topcoat application more efficient and smooth finish
- > 100% holiday testing on all sheets
- > Unlimited exterior color potions















CST's high temperature resistant coatings for bolted and welded tanks are available up to 750°F (398°C) (application dependent)

color options on page 12.

OptiBond"







TecTank FP® and TecTank CP" tanks are available in seven standard epoxy exterior colors. Inquire for custom colors.

See TecTank™ Welded epoxy exterior

Trust the Coating and Manufacturing Experts

World-Class Coating

CST's coating portfolio was developed in partnership with Valspar, the world's most recognized industrial coating provider. A team of dedicated technical representatives is available 24/7 for 100% performance assurance guarantee. Used in a wide range of applications, CST's family of high performance coatings are well-equipped to keep your assets in service and provide long-term protection against their environments.

- > Trico Bond SD* A proven enhanced performance epoxy that provides additional protection and longer life for Severe Duty applications
- > Lab tested durability Third-party tested and verified over the #2 and #3 competitors in real world applications
- > CST OptiBond* proprietary coating process utilized on every sheet
- > Factory coated ensures the best quality

Setting Our Standards High

Standardized Salt Spray Test, also known as ASTM B117 or fog testing, is an accelerated corrosion test used to measure the comparative corrosion resistance of coated metals exposed to a salt spray or salt feg at high temperature. The higher the number of test hours without showing signs of corrosion, the more corrosion resistant the coating application.

Approximately 80 percent of manufacturers that specify minimum Salt Spray Test performance require only 200 to 400 hours. CST standards tests up to 6000 hours to ensure our coatings achieve maximum performance.

konic manufacturers
hite John Deere specify
only 250 - 400 hours
of saft spray testing,
of saft standards tests to
cost standards tests to 6000 hours!

Amount of Coating Loss After 50 Cycles

Falling Sand Test Results

Trico Bond test results show it is more than 2X better than Competitor A's factory-applied bolted powder coatings and more than 12X better than Competitor B's field-applied liquid coatings.



> Tank Comparison Chart

DESIGN FEATURES	TECTANK FP®	TECTANK CP	TECTANK" WELDED			
PANEL DESIGN	Flat Panel 105 in. (267 cm) wide by 55 in. (140 cm) tall premium grade cold rolled steel, convex-shaped/cut tapered panel.	Chime panel 56 in. (142 cm) to 58 in. (147 cm) wide by 96 in. (244 cm) tall with 2 in. (5 cm) external top and bottom flange, each chime is a stiffener	Panel design not applicable. Full welded construction from 4.ft. (221 m) to 15.ft. (4.57 m) in diameter and 35.ft. (25.50 m) for corbon steel and 90.ft. (2743 m) for stainless steel and aluminum in a single piece. Larger heights available with splice based on design requirements.			
SEAM BETWEEN PANELS	Industry leading leak-free gasket available in EPDM or Vitron tjemps to 450° F (232° C)). Only tank manufacturer to provide both gasket and external mastic joints between panel seals to keep moisture out.	Compression seal formed between chimes with EPDM/ NBR/Viton gasket depending on the application.	Seam between panels not applicable. Robotic, sub-arc welds produce exceptionally consistent "smooth/not flush" horizontal seams.			
PANEL COATING INTERIOR	Trico Bond EP* – 4 mil (100 µm) to 9 mil (225 µm) average dry film thickness precision-applied powder coating. Trico Bond 50" – 5 mil (130 µm) to 30 mil (250 µm) average dry film thickness precision-applied powder coating.	Trico Bond EP* – 4 mil (100 µm) to 9 mil (225 µm) average dry film thickness precision-applied powder coating. Trico Bond 50" – 5 mil (100 µm) to 10 mil (250 µm) average dry film thickness precision-applied powder coating	Welded coated interior is 1.5 mil (38 µm) to 5 mil (30 µm) average dry firm thickness standard epoxy coating (Special coatings available)			
PANEL COATING EXTERIOR	Trico Bond EP [®] precision-applied powder coating with high performance urethurse topcoat for additional protection and UV resistance at 3.5 ml (85 µm) to 5 ml (30 µm) average dry film thickness. (Unlimited topcoat color options)	Trico Bond EP ^a piecision-applied powder coating with high performance urethinne topcoat for additional protection and UV resistance at 3.5 mil (55 µm) to 5 µm (150 µm) average dry- film thickness. (Unlimited topcoat color options)	Welded coated exterior is 2 mil (50 µm) to 3 mil (75 µm) standard epoxy coating. 15 mil (35 µm) to 3 mil (75 µm) high performance urethane for additional protection and UV resistance.			
OPERATING TEMPERATURES FOR DRY APPLICATIONS	Trico Bond EP* up to 200° F (93° C) Trico Bond SD* up to 275° F (135° C) (Trico Bond EP & 50 are FDA Approved Coatings) High Temperature Inorganic Zinc up to 750° F (398° C)	Trico Band EP* up to 200° F (93° C) Trico Band SD* up to 275° F (135° C) (Trico Band EP & SD are FDA Approved Coatings) High Temperature Inorganic Zinc up to 750° F (398° C)	Standard coating up to 250° F (f21° C) (FDA Approved Coating) High Temperature Inorganic Zinc up to 750° F (398° C)			
FIELD INSTALLATION	18,000 ib (8164.66 kg) hydraulic actuated, synchronized jack system third-party proof load tested and PE stamped. Fastest bolted installation for tanks greater than 24 ft. (7.31 m) tall.	Third-party safety PE stamped scaffold system. Fastest bolted installation for tanks 24 ft. (7.31 m) tall or less.	Delivered in one piece on specialized equipment, ready for lift and placed on a prepared foundation (by others). Fastest installation.			
MODULARITY	Tanks can be modified – contact your local sales representative for more information.					
MAINTENANCE		Normally scheduled PM inspections by site maintenance group or CST provided maintenance.				
INTERNAL LEDGE	Horizontal and vertical carriage bolt heads are in product zone but secured flush to panel. Gap remaining from meeting of flanged points is minimal and compressed under load.	Horizontal 90" flanges meet external of product zone where they are securely bofted thus compressing the gasket for leak free connection. Entirety of horizontal botted connection is outside of product zone to not interfere with material flow.	No ledges. Welds ground smooth not flush. Special weld finishes available up to 150 grif for internal and external welds (additional cost may apply)			
LICENSED PROFESSIONAL ENGINEERING STAFF		Professional Engineers on staff that are capable of stamping n all states, territories and provinces. Includes voting member of NFPA 22. Committee chair for AWWA, ARI, NFPA and EN (Eurocode). Assisted with APH-2E and other AWWA standards:				
AGE OF COMPANY & "YEARS OF EXPERIENCE"		Established in 1893. More tank and employee experience than the next two competitors combined.				
FIELD CONSTRUCTION	CST employed or exclusive subcontract crews using third-party safety certified and PE stamped scaffold design. Most experienced crews.	CST employed or exclusive subcontract crews using third-party safety certified and FE stamped scaffold design. Most experienced crews. (minimatonal sites may vary)				
PLATE THICKNESS	Up to 1/2 in: (12.7 mm) thick. Available in carbon steet, aluminum: and 304/316 types of stainless steet.	Up to 5/16 in. (7.9 mm) thick. Available in carbon steel, aluminum and 304/316 types of stainless steel	Up to V2 in. (12.7 mm) thick. Available in carbon steel, aluminum and 30.4/316 types of stainless steel.			

Flat Panel Jack-Built Storage Tank Systems





>> TecTank FP®

TecTank FP is a result of numerous advances in bolted steel tank design and construction that have occurred over the past several decades.

TecTank FP tanks and silos offer an optimized bolt pattern, increased steel thickness, reduced hardware and fewer penetration points. The jackable flat panel bolted design of TecTank FP surpasses competitive designs in the dry bulk industry and is available in short lead time pre-configured models and fully customizable designs.

Design Benefits and Features Include

- > Arrives on jobsite as complete kit
- Fastest construction option for tanks greater than 24 ft, (7.31 m) in height
- Largest capacity, capable of storing up to 200,000 ft³ (5.663 m³) or more
- Available in 2 in. (5 cm) or 4 in. (10 cm) wide horizontal bolt spacing based on design requirements
- Leading design for bolted steel tanks around the
- Allows for greater steel thickness and larger taller tanks and capacities vs. chime
- > Improved structural integrity
- Pre-configured models are available in (4) four standard sizes and with

CST is the only tank manufacturer to provide both gasket and external mastic joints between seals to keep moisture out



» Flat Panel Design

- Reduces need for vertical and wind stiffen saving engineering time
- Industry leading leak-free gasket available in EPDM or Viton up to 450° F (232° C)
- Built with gaskets or sealant or both
- Versatility of assembly
- > Reduces interferences on non-standard models
- > Factory coated for highest quality of corrosion protection
- > Comprised of replacement panels for ease of repairs, relocation and expansion

50% lead time improvement vs. non-pre-configured chime models.

>> Flat Panel Tank Construction

TecTank's are typically erected from ground level using a hydraulic actuated, synchronized jacking system, improving safety at the construction site. Our heavy duty jacking system is the first ever jacking system designed and stamped by licensed professional engineers and third-party proof load tested per ASME Standard B30.1 - 2015.

- > Simplified and safer construction process with
- Largest percentage of work can be performed at ground level
- > Jacks are set up and down only once saving time and money
- > Tank is jacked up and successive rings are constructed
- The final ring is constructed and tank is lowered onto foundation ring
- Manufactured, erected and in operation up to three times faster than field welded or concrete applications
- Sheets can be 1/2 in. (1.27 cm) thick requiring less
- > 18 kip designed load per jack, largest in bolted tank

structural columns needed in design

- Easily constructed in remote locations minimum lay
- down required Tanks can be relocated and expanded, improving
- residual value > Lower erection cost due to economical shipping and elimination of field welding
- No on-site welding required during construction







Chime Panel Scaffold-Built Storage Tank Systems





>> TecTank CP™

TecTank CP tanks and silos offer the best expansion adaptability by adding capacity without full disassembly of your dry bulk tanks. CST's TecTank CP tanks and silos are field constructed by our expert crews utilizing a scaffold system that is third-party safety certified and stamped by licensed professional engineers.

TecTank CP tanks and silos provide additional hoop strength during crane lifts, either as part of the installation process or lifting and placing the entire system, whereas when using a flat panel style system a formed/rolled angle (chime) must be added to each ring to provide equivalent rigidity necessary for lifting by crane.

Design Benefits and Features Include:

- Arrive on jobsite as complete kit.
- Fastest construction option for tanks 24 ft. (7.31 m) or less in height
- Available in capacities from 1,000 ft³ (28 m³) to over 170,000 ft³ (4,814 m³).
- Available in diameters from 9 ft. (2.74 m) to 48 ft. (14.53 m) with hopper bottom
- > Factory coated for highest quality of corrosion protection
- Economical storage solution
- > Features factory formed flanges at horizontal seams for added structural strength









- > Constructed up to three times faster and with half the
- building crew than traditional field welded tank designs > Versatility for in-field modification and expansion
- Easily constructed in remote locations
- > No on-site welding required during construction
- Reduced need for heavy equipment on construction site





Factory Coated Welded Storage Tank Systems





>> TecTank™ Welded

CST's reputation as the world leader in factory coated tanks goes beyond bolted, field-assembled tanks, to include factory coated welded tanks. Our welded tanks are manufactured using a high performance and FDA approved coating process to guarantee the best quality coatings for longer life and better life cycle costs. Unlike field welded and painted tanks, CST welded tanks are fabricated in a modern, Indoor, controlled environment.

» Welded Design

CST's coatings feature a high solids epoxy with excellent resistance to corrosion and dramatically reduce life cycle maintenance costs. This makes our factory-applied coalings far superior to field welded tanks as well as other shop welded and field-boited tank suppliers.

Our fully staffed, in-house engineering department is capable of designing custom welded tanks to meet the most demanding needs and applications. CST offers standard tank designs up to 15 ft. (457 m) in diameter that can be fabricated in a matter of weeks for quick delivery. CST's welded tanks can be fabricated from aluminum, carbon steel and stalinless steel. Once fabricated the tank is cleaned, coated and force cured in our lock of the control of the 90 ft. (27.43 m) long oven on a specially designed, controlled processing line



Design Benefits and Features Include:

- > Shortest install time
- Available from 4 ft. (1.21 m) to 15 ft. (4.57 m) in diameter
- > Available heights up to 85 ft. (25.90 m) for carbon steel and 90 ft. (27.43 m) for stainless steel and aluminum in a single piece, larger heights available with splice based on design requirements
- > Available in capacities from 400 ft³ (11 m³) to over 14,000 ft³ (396 m³)
- > Tanks can be shipped as one unit or multi-piece unit
- Arrives on-site fully assembled and ready to stand
- Can be specified with internal and/or external factory
- Mass or funnel flow loads
- > Custom engineering and quick fabrication
- ASME-qualified welders can produce standard and specialty welds based on design requirements
- > Provides the most versatile type of support method (skirt, short skirt, leg, stub-leg, lug supports and material types (carbon steel, stainless steel and aluminum))
- Available in two standard exterior color options (white & tan), custom colors available upon request



>> Welded Tank Construction

CST's factory welded tanks are custom-fabricated in our state-of-the-art facility and shipped to the field as one-piece construction. When they arrive, they can be moved with a crane and immediately set into place or staged for installation at a later date.







>> Small Parts







>> Blast Room

» Paint Booth

>> Curing Room

>> Coating Options for Factory Welded Tank Systems

Interior & Exterior Coatings	Dry Bulk Applications	Conting Application Type	Average Dry Film Thickness	Maximum Temperature
Standard Interior • Epoxy Primer		Liquid /1 Cost	2 mils (50 µm)	250°F (121°C)
Upgrade Interior #1 • FDA Epoxy Primer	Chemicals, Plastic Pellets, Food and Other Commodities	Liquid /1 Coot	5 mils (130 µm)	250°F (121°C)
Upgrade Interior #2 • Ar-Lon 6101	Chemicals, Pastic Pellets, Food (FDA & USDA Acceptance). Excellent atrasion and Impact resistance	Liquid / 2 Coat	5 mils (130 μm)	250°F (121°C)
High Temperature Interior Coatings High Temperature Inorganic Zinc		Liquid /1 Coat	2 mile (50 µm)	
Standard Exterior Epoxy Primer High Performance Urethane		Liquid / 2 Cost	3.5 mils (85 µm)	200°F (93°C)
Upgrade Exterior - System 3 Inorganic Ziric FDA Epoxy Primer High Performance Urethane	For coastal or heavy industrial environments	Uquid / 3 Cost	7.5 mils (190 µm)	200" F (93" C)"
High Temperature Exterior Coatings High Temperature Inorganic Zinc Primer High Temperature Inorganic Zinc Silicate		Liquid / 2 Coeff	5 mils (130 µm)	

Blenders

CST provides a full range of services for your blender project. From initial consulting to final installation, we are there with professional and experienced staff and associates to take the guesswork out of your project. Services we provide include:

- Material Flow Testing To make sure your blender is designed for reliable flow
- > Blend Testing To make sure the proper blender configuration is designed to meet your process
- > Blender Layouts To facilitate your plant site design
- > Blender and Silo Design Our registered engineers certify each design
- Pricing Both budget and firm, including installation
- Installation and Commissioning Trained staff and specialist contractors complete your project on time and within budget

Why Blend?

- ☑ Achieve consistent color
- ✓ Achieve consistent Melt-Flow Index (MFI)

Advantages of Gravity In-Tank Blending

- Mon-mechanical blending
- ☑ Large batch sizes
- ☑ Low maintenance
- Storage 'plus' blending

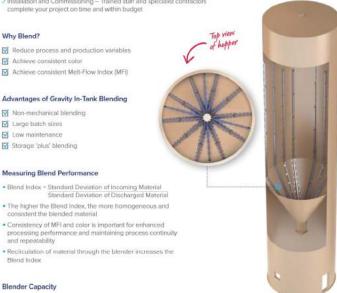
Measuring Blend Performance

- Blend Index = Standard Deviation of Incoming Material Standard Deviation of Discharged Material
- consistent the blended material . Consistency of MFI and color is important for enhanced processing performance and maintaining process continuity and repeatability
- Recirculation of material through the blender increases the

Blend Index

Blender Capacity

- Capacities range from 304 ft³ (8.61 m³) to over 40,000 ft³ (1,133 m³)
- Ideal ratio of height to diameter is 3.1
- TecTank's smallest blender (5 ft. (1.52 m) diameter by 15 ft. (4.57 m) height) will hold between (2) two and (5) five batches of most plastic processes



> Tank Applications

TecTank™ silos are designed to meet your specific application; each is engineered and fabricated to successfully store all types of dry bulk

ABS Pellets Bentonite Blood (Dried) Bone Meal Calcium Carbonate Calcium Chloride Carbon Black Cement Flour Fly Ash

Premium Tank Technology Provides Smooth Material Flow

The smooth-wall interior has no cracks or crevices that could suspend material flow. TecTank storage tank systems are designed and built to the exact requirements you need for material flow efficiency and reliability.

Standard Tank Diameters	Standard Designs	Standard Capacities	
Flat Panel (45 to 70-degree hopper bottom) • 11 ft. to 51 ft. (3.35 m to 15.54 m)	AISC, IBC, ASCE, NBCC, NFPA, FBC, CBC, Eurocode	1,000 ft ³ (28 m ³) to over 200,000 ft ² (5,663 m ³)	
Chime Panel (45 to 70-degree hopper bottom)			
• 12 ft. dia. by ht. 24 ft., 32 ft. or 64 ft. (3.65 m dia. by ht. 7.31 m, 975 m or 19.50 m)	4 ft. (3.65 m dia. by ht. 7.31 m, 9.75 m or 19.50 m)		
 T5 ft. dia. by ht. 24 ft., 48 ft., 56 ft. or 64 ft. (4.57 m dia. by ht. 731 m, 14.63 m, 17.06 m or 19.50 m) 18 ft. dia. by ht. 32 ft., 48 ft., 56 ft., 64 ft. or 88 ft. (5.48 m dia. by ht. 9.75 m, 14.63 m, 17.06 m, 19.50 m or 26.82 m) 	AISC, IBC, ASCE, NBCC, NFPA 68, Eurocode	1,000 tt ³ [28 m ³] to ove 170,000 ft ³ (4,814 m ³)	
 21 ft. dia. by ht. 48 ft., 56 ft., 64 ft. or 72 ft. (6.4 m dia. by ht. 14.63 m, 17.06 m, 19.50 m or 21.94 m) 	Eurocode		
32 ft. dia. by ht. 88 ft. (9.75 m dia. by ht. 26.82 m)			
 41 ft. die. by ht. 88 ft. (12.49 m die. by ht. 26.82 m) 			
Welded (45 to 70-degree hopper bottom)			
 8 ft. dia, by ht. 18 ft., 24 ft., 30 ft., 36 ft. or 60 ft. (2.43 m dia. by ht. 5.48 m, 7.31 m, 9.14 m, 10.97 m or 18.28 m) 		400 ft ³ (ft m³) to over 14,000 ft ³ (396 m³)	
 10 ft. dia. by ht. 24 ft, 30 ft., 36 ft., 48 ft., 60 ft. or 66 ft. (3.04 m dia. by ht. 7.31 m, 9.14 m, 10.97 m, 14.63 m, 18.28 m or 20.11 m) 	AISC, IBC, ASCE,		
 12 ft. dia. by ht. 24 ft., 30 ft., 36 ft., 42 ft., 48 ft., 60 ft. or 65 ft. (2.65 m dia. by ht. 7.31 m, 9.14 m, 10.97 m, 12.80 m, 14.63 m, 18.28 m or 20.11 m) 	NECC, NEPA 68		
 14 ft. dia. by ht. 30 ft., 42 ft., 48 ft., 54 ft., 60 ft., 66 ft., 72 ft. or 84 ft. (4.26 m dia. by ht. 914 m, 12.80 m, 14.63 m, 16.45 m, 18.28 m, 20.11 m, 21.94 m or 25.60 m) 			
 15 ft. dia, by ht. 30 ft., 42 ft., 54 ft., 60 ft., 78 ft., 84 ft. or 96 ft. (4.57 m dia, by ht. 9.14 m, 12.80 m, 16.45 m, 18.28 m, 23.77 m, 25.60 m or 29.26 m) 			



CST offers a variety of repairs, modification and turnkey services for dry bulk, liquid and welded storage tanks. CST also offers Master Service Agreements for Tank Repair and Inspection Services.



- Certifications and Capabilities:

 I ISO 9001:2015

 API ISO/TS 29601:2007

 API-12B (Parsons Facility License No. 12B-0004)

 UL 142 & ULC S601

- Certified Welding Inspectors (CWI)
 FM Certified Product Line (Parsons & DeKalb Facilities)
 All Facilities EPA Compliant
 NFPA-68/69

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 your bulk storage needs.

For more information, call +1 844-44-TANKS or visit us online at cstindustries.com.

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