



API Std 650 Storage Tank Data Sheet

Data Sheet Status:

\*For boxes marked with \*, if blank, Mfr. Shall determine and submit as per Appendix L. For all lines, see Appendix L for line-by-line instructions.

GENERAL Special Documentation Package Requirements:

Measurement Units to be used in API Std 650:  SI  US Customary

- 1. Manufacturer\* Contract No.\* TBD
Address\*
Mfg. Serial No.\* Year Built\* Edition & Addendum to API 650\*
2. Purchaser Contract No.
Address
Tank Designation
3. Owner Operator Location
4. Size Limitations\* Tank Diameter ft Shell Height ft
Capacity: Maximum\* bbl Net Working\* bbl Criteria:\*
5. Products Stored:
Liquid Max. S.G.: at deg
Blanketing Gas Vapor Pressure PSIA at Max. Operating Temp.
% Aromatic Suppl. Spec. H2S Service? Suppl. Spec.
Other Special Service Conditions? Suppl. Specs.

DESIGN AND TESTING

Purchaser to Review Design Prior to Ordering Material

- 6. Applicable API Standard 650 Appendices:\*
7. Max. Design Temp. deg Design Metal Temp.\* deg Design Liquid Level ft.
Design Pressure External Pressure Pressure Combination Factor
Maximum Fill Rate Maximum Emptying Rate
Floatation Considerations? Flot. Suppl. Spec.\* Applied Suppl. Load Spec.
8. Seismic Design? Appendix E Alt. Seismic Criteria Seismic Use Group
MBE Site Class Vertical Seismic Design? Vertical Ground Motion Accelerator Av:
Basis of Lat. Accel. (Select one):
Mapped Seismic Parameters Ss S1 So I
Site-Specific Procedures MCE Design Required?
Other (Non-ASCE) Methods
Freeboard Required for SUG 1 Design Roof Tie Rods at Outer Ring?
9. Wind Velocity for non-U.S. sites, 50-yr wind speed (3-sec Gust)\* mph
Top Windgirder Style\* Dimensions\* Use Top WG as a Walkway?
Intermediate Wind Girders?\* Intermediate Windgirder Style\* Dimensions\*
Check Buckling in Corroded Cond.?
10. Shell Design: 1-Ft Mthd?\* Variable-Des-Pt Mthd?\* Elastic Anal. Mthd?\*
Plate Stacking Criteria\* Centerline Stacked? Flush-Stacked?
Plate Widths (in.) (Shell course heights) and Thicknesses (in.)\* Numbers Below Indicate Course Number
1. x 2. x 3. x 4. x
5. x 6. x 7. x 8. x
9. x 10. x 11. x 12. x
13. x 14. x 15. x 16. x
Joint Efficiency\* % Shell-to-Bottom Weld Type\* Shell-to-Bottom Weld Insp Mthd\*

Approvals:

Table with 6 columns for Revisions (no./date) and 6 rows for revision entries.

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11. Open-Top and Fixed Roofs: (See Sheet 6 for Floating Roofs) Open Top?\*

Fixed Roof Type\* \_\_\_\_\_ Roof Support Columns\* \_\_\_\_\_

Cone Slope\* \_\_\_\_\_ : \_\_\_\_\_ Dome or Umbrella IS Radius\* \_\_\_\_\_ in Weld Joints\* \_\_\_\_\_

Seal Weld Underside of Lap Joints?  ; Seal Weld Underside of Windgirder Joints?

Gas Tight?  Joint Efficiency\* \_\_\_\_\_ % Roof Thickness\* \_\_\_\_\_ in

Minimum Roof Live Load \_\_\_\_\_ psf Balanced Snow Load \_\_\_\_\_ psf Unbalanced Snow Load \_\_\_\_\_ psf

App. Suppl. Load Spec.\* \_\_\_\_\_ Column Lateral Load \_\_\_\_\_

Normal Venting Devices\*: Qty \_\_\_\_\_ Type \_\_\_\_\_

Emergency Venting Devices\*: Qty \_\_\_\_\_ Type \_\_\_\_\_

For Non-Frangible Roofs: Seal Weld Roof Plates to Top Angle IS \_\_\_\_\_ ; Weld Rafters to Roof Plates \_\_\_\_\_

Roof-to-Shell Detail\* \_\_\_\_\_ Radial Projection of Horizontal Component\* \_\_\_\_\_

12. Bottom: Thickness\* \_\_\_\_\_ in Style\* \_\_\_\_\_ Slope\* \_\_\_\_\_ : \_\_\_\_\_ Weld Joint\* \_\_\_\_\_

Provide Drip Ring?  Alternate Spec. \_\_\_\_\_

SK/Ann. Ring?  Annular Ring: Minimum Radial Width\* \_\_\_\_\_ in. Thickness\* \_\_\_\_\_ in.

13. Foundation: Furnished By\* \_\_\_\_\_ Type\* \_\_\_\_\_

Soil Allow. Bearing Press.\* \_\_\_\_\_ psi Per Spec. \_\_\_\_\_ Anchor: Size \_\_\_\_\_ Dia Qty \_\_\_\_\_

Design Loads: Base Shear: Wind\* \_\_\_\_\_ Seis.\* \_\_\_\_\_ Moment: Wind\* \_\_\_\_\_ Seis.\* \_\_\_\_\_

Ring Forces: Shell+Roof Weight New\* \_\_\_\_\_ Corroded\* \_\_\_\_\_ Roof LL\* \_\_\_\_\_ Internal Pressure\* \_\_\_\_\_

Partial Vacuum\* \_\_\_\_\_ Wind\* \_\_\_\_\_ Siesmic\* \_\_\_\_\_

Btm Forces: Flr Wt. New\* \_\_\_\_\_ Corr.\* \_\_\_\_\_ Prod. Wt.\* \_\_\_\_\_ Water Wt.\* \_\_\_\_\_ Int. Press.\* \_\_\_\_\_

Partial Vacuum\* \_\_\_\_\_ Other Found. Loads\* \_\_\_\_\_ Min. Proj. of Found. Above Grade: \_\_\_\_\_

14. Responsibility for Heating Water, if Required? \_\_\_\_\_

Hydro-test Fill Height\* \_\_\_\_\_ Settlement Measure Req'd?  Extended Duration of Hydro-test: \_\_\_\_\_

Predicted Settlement Profile is Attached

Responsibility for Setting Water Quality \_\_\_\_\_ Suppl. Test Water Quality Spec. \_\_\_\_\_

Test Water Source & Disposal Tie-in Locations \_\_\_\_\_ Hydro-test Appendix J Tank

Post-Press.-Test Activities Req'd of Mfr: Broom Clean  Potable Water Rinse  Dry Interior  Other

List Other \_\_\_\_\_

15. Inspection by: Shop \_\_\_\_\_ Field \_\_\_\_\_

Supplemental NDE Responsibility \_\_\_\_\_ Supplemental NDE Spec. \_\_\_\_\_

Positive Material Identification?  PMI Requirements: \_\_\_\_\_

Max. Plate Thickness for Shearing \_\_\_\_\_

Must Welds not exceeding .25" be Multi-Pass?  Must Welds greater than .25" be Multi-Pass?

Leak Test Method: Roof\* \_\_\_\_\_ Shell\* \_\_\_\_\_ Shell Noz./MW Rein. PL\* \_\_\_\_\_

Bottom\* \_\_\_\_\_ Floating Roof Components\* \_\_\_\_\_

Modify or Waive API Dimensional Tolerances (see 7.5) \_\_\_\_\_ Specify: \_\_\_\_\_

Specify additional Tolerances, if any, and Circumferential and Vertical Measurement Locations:

Allowable Plumbness: \_\_\_\_\_ Measure and Record at a Min. of \_\_\_\_\_ Locations or Every \_\_\_\_\_ ft around the Tank, at the Following Heights: \_\_\_\_\_ Specify Other: \_\_\_\_\_

Allowable Roundness:\*\* \_\_\_\_\_ Measure Radius and Record at a Min. of \_\_\_\_\_ Locations or Every \_\_\_\_\_ ft around the Tank, at the Following Shell Heights: \_\_\_\_\_ Specify Other: \_\_\_\_\_

\*\* See Data Sheet Instructions for the Maximaum Allowable Additional Tolerance

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**Table 1 MATERIALS OF CONSTRUCTION**

Component		Material*	C.A. (in.)	Component	Material*	C.A. (in.)
Shell Course	to			Manhole Necks		
Shell Course	to			Nozzle Necks		
Shell Course	to			Manhole Flanges		
Shell Course	to			Nozzle Flanges		
Shell Course	to			Manhole Covers		
Roof				Nozzle Covers		
Bottom				Manhole Gaskets		
Annular Ring				Nozzle Gaskets		
Anchor Attachments				Internal Piping		
Reinforcing Pads				Wetted Structurals+		
				Non-Wetted Struct.+		

**Table 2 BOLTS and ANCHORS**

Flange Bolts	Head Type*	Material*	Nut Material*	Thread Series*	C.A. (in.)
Flange Bolting++					
Structural Bolting++					
Misc. Bolting++					
Anchor Bolts++					

Remarks:

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**OTHER TANK APPURTENANCES**

24. Platform: Top: \_\_\_ Roof: \_\_\_ Inter. \_\_\_ Other \_\_\_ Specify Other \_\_\_\_\_  
 Platform Material \_\_\_\_\_ Walk. Surface \_\_\_\_\_ Finish \_\_\_\_\_  
 Stairs: Type \_\_\_\_\_ Specify Other \_\_\_\_\_ Min. Width (in) \_\_\_\_\_  
 Min. Tread \_\_\_\_\_ Max. Rise \_\_\_\_\_ Tread Surface \_\_\_\_\_ Tread Nose \_\_\_\_\_  
 IS Rail \_\_\_\_\_ HR Height (in) \_\_\_\_\_ HR Type \_\_\_\_\_ Spec. Other \_\_\_\_\_ Finish \_\_\_\_\_  
 Handrail: Type \_\_\_\_\_ Spec. Other \_\_\_\_\_ HR Height (in) \_\_\_\_\_ Finish \_\_\_\_\_  
 Architectural/Structural Specs\* \_\_\_\_\_ National Safety Standards \_\_\_\_\_  
 Gauger's Platform Req'd? \_\_\_ Qty. Req'd\* \_\_\_\_\_ Per Spec.\* \_\_\_\_\_

25. Jacket Req'd?\* \_\_\_ Other Heaters/Coolers Req'd?\* \_\_\_  
 Suppl. Jacket, Heater or Cooler Specs.\* \_\_\_\_\_

26. Mixer/Agitator: Quantity \_\_\_\_\_ Size \_\_\_\_\_ Per Spec.\* \_\_\_\_\_

27. Insulation: Roof Req'd? \_\_\_ Thick \_\_\_\_\_ Mat'l \_\_\_\_\_ Per Spec. \_\_\_\_\_  
 Shell Req'd? \_\_\_ Thick \_\_\_\_\_ Mat'l \_\_\_\_\_ Per Spec. \_\_\_\_\_  
 Purchased By: \_\_\_\_\_ Installation By: \_\_\_\_\_

28. Struct. Attachments: Lifting Lugs?\* \_\_\_ Description\* \_\_\_\_\_  
 Shell Anchorage?\* \_\_\_ Type\* \_\_\_\_\_ Specify Other \_\_\_\_\_ Scaffold Cable Support? \_\_\_

29. Other Items: Flush Drain? \_\_\_ Type \_\_\_\_\_ Specify Other \_\_\_\_\_ Size \_\_\_\_\_  
 Flush Cleanout? \_\_\_ Size \_\_\_\_\_ Specify Other \_\_\_\_\_  
 Ground. Lugs? \_\_\_ Qty \_\_\_\_\_ Type \_\_\_\_\_ Mat'l \_\_\_\_\_  
 Waive Application of Appendix P? \_\_\_  
 Miscellany #1 \_\_\_\_\_ Miscellany #2 \_\_\_\_\_  
 Miscellany #3 \_\_\_\_\_ Miscellany #4 \_\_\_\_\_  
 Miscellany #5 \_\_\_\_\_ Miscellany #6 \_\_\_\_\_

Table 4 OTHER TANK APPURTENANCES\*

Mark	Qty	Service or Description	Size	Orientation	Elevation	Material	Remarks

Remarks:

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FLOATING ROOF DATA

30. Floating Roof Selection:

Design Basis: Appendix C \_\_\_ Appendix H \_\_\_  
Type of Roof: (External or Internal): Sgl. Deck Pontoon\* \_\_\_ Double Deck\* \_\_\_  
(Internal Only): Tubular Pontoon\* \_\_\_ Metallic Sandwich Panel\* \_\_\_ Other \_\_\_  
Specify Other \_\_\_\_\_ Suppl. Spec.: \_\_\_\_\_

31. Seals:

Primary Seal: Shoe \_\_\_ Envelope \_\_\_ Wiper/Comp Plate \_\_\_ Other \_\_\_ Specify Other \_\_\_  
Shoe Mechanism: Mfg. Std. \_\_\_ Other \_\_\_ Specify Other \_\_\_  
Electrically Isolate Mechanism from Shoes? \_\_\_ Wax Scrapers Required? \_\_\_  
Nominal Shoe Thick.\* \_\_\_ Carbon Steel Shoes to be Galv.? \_\_\_  
Secondary Seal: Shoe \_\_\_ Envelope \_\_\_ Wiper \_\_\_ None \_\_\_ Other \_\_\_ Specify Other \_\_\_

32. Data for All Floating Roofs:

Overflow Openings in Shell Acceptable? \_\_\_ Shell Extension \_\_\_ Roof Drain Check Valves Required? \_\_\_  
Roof Drain Isolation Valves Required? \_\_\_ Freeze Protection for Roof Drains Req'd? \_\_\_ Suppl. Req. \_\_\_  
Roof Drain to Ext. Noz.: Mfg. Std. \_\_\_ Arm. Flex Pipe \_\_\_ Swivel/Rig. Pipe \_\_\_ Other \_\_\_  
Foam Dam \_\_\_ Supplemental Spec. \_\_\_\_\_  
Nominal Deck Thick. (in) \_\_\_ Bulkhead Top Edges to be Liquid-Tight \_\_\_ Seal-weld Underside of Roof \_\_\_  
Electrical Bonding: Shunts \_\_\_ Cables \_\_\_ Supplemental Spec. \_\_\_\_\_  
Qty of Non-Guide Pole Gauge Wells \_\_\_ Qty of Sample Hatches \_\_\_  
Guide Pole for Gauging? \_\_\_ Slots in Guide Pole? \_\_\_ Datum Plates? \_\_\_ Striking Plates? \_\_\_  
GP Emmis.-Limit. Devices: \_\_\_ Sliding Cover \_\_\_ Pole Wiper \_\_\_ Float \_\_\_ Float Wiper \_\_\_ Pole Cap \_\_\_  
Qty of Roof Manholes\* \_\_\_ Minimum High Roof Clearance above Bottom \_\_\_  
Removable Leg Storage Racks? \_\_\_ ; Leg Sleeves \_\_\_ Fixed Low Legs \_\_\_

33. Additional Data for External Floating Roofs:

Weather Shield? \_\_\_ Suppl. Spec. \_\_\_\_\_  
Rolling Ladder Req'd? \_\_\_ Field Adjustable Legs? \_\_\_  
Design Rainfall Intensity \_\_\_ In/Hr Based on a \_\_\_ Minute Duration Associated with the \_\_\_ Storm  
Design Accumulated 24-Hour Rainfall \_\_\_ in Based on the \_\_\_ Storm  
Distortion and Stability Determinations Required? \_\_\_ Suppl. Spec. \_\_\_\_\_  
Landed Live Load\* \_\_\_ lbs

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34. Additional Data for Internal Floating Roofs:

Two Position Legs?  Cable Supported Roof?  Fixed Roof Inspection Hatches Required?   
 Internal Roof Drain Required?  Omit Distribution Pads Supporting Uniform Live Loads?   
 Corrosion Gauge Required?  Fixed Ladder required?  Type of Roof Vent:\*   
 Modified Minimum Point Load?  Supplemental Specification   
 Mfr To Leak Test\*  % of Compartments in Assembly Yard  in Erected Position  Unknown++   
 Roof Erector's Floatation Test: w/Tank Hydro  at completion of roof  at later date  Not Req'd   
 Floatation Test Media: Water  Product  Water Quality: Potable  Other  Specify Other   
 Floatation Test : Test Duration  Fill Height   
 Flotation Test Items provided by Purchaser (see H.6.7): None  List Attached   
 Responsible Party for Inspecting Roof during Initial Fill: Purchaser  Other

**Table 5 FLOATING ROOF MATERIALS**

Component	Mat'l/Thick.*	C.A./Coat.*	Component	Mat'l/Thick.*	C.A./Coat.*
Deck Plate			Datum Plate		
Inner Rim Plate			Tubular Pontoon		
Outer Rim Plate			Pontoon Bulkhead		
Foam Dam			Submerged Pipe		
Sandwich Panel Face Plate			Guide Pole		
Sandwich Panel Core			Secondary Seal		
Gauge Well			Secondary Seal Fabric		
Drain Sumps			Wiper Tip		
Opening Sleeves			Wax Scraper		
Floating Suction Lines			Weather Seal		
Primary Fabric Seal			Envelope Fabric		
Foam Log Core			Shoe Mechanisms		
Landing Legs			Primary Seal Shoe		
Landing Leg Bottom Pads			Removable Covers		
Manhole Necks			Rolling Ladder		
Vents			Inlet Diffusers		

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Tank Plan and Sketches:

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