

INCH-POUND

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SUPERSEDING
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FEDERAL SPECIFICATION

TANKS, POTABLE HOT WATER STORAGE

The General Services Administration has authorized the use of this specification by all Federal agencies.

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers potable hot water storage tanks.

1.2 Classification. The tanks shall be of the following type, classes, styles, sizes, and capacities, as specified (see 6.2):

Type IV – Glass-lined steel.

Class 1 - 85 pounds per square inch gage (psig) (5.9 kilograms force per square centimetre (kgf/cm²) working pressure.

Class 2 - 100 psig (7 kgf/cm²) working pressure.

Style A -Horizontal.

Style B -Vertical.

Size and capacity (see 3.9).

Comments, suggestions, or questions on this document should be addressed to Defense Supply Center Philadelphia (DSCP), ATTN: DSCP-ITAA, 700 Robbins Avenue., Philadelphia, PA 19111-5096 or e-mail to dscpg&inspeccomments@dla.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <http://assist.daps.dla.mil>.

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2. APPLICABLE DOCUMENTS

2.1 Government publications. The following documents, of the issue in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein:

Federal Standard

FED-STD-H28 - Screw-Thread Standards for Federal Services.

Military Standards

MIL-STD-130 - Identification Marking of US Military Property.

(Copies of these documents are available online at <http://assist.daps.dla.mil/quicksearch/> or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless a specific issue is identified, the issue in effect on date of invitation for bids or request for proposal shall apply.

AMERICAN IRON AND STEEL INSTITUTE (AISI)

Steel Products Manual - AISI Sheet Steel.

(Private sector and civil agencies may purchase copies of these voluntary standards from the American Iron and Steel Institute, 150 East 42nd Street, New York, NY 10017.)

AMERICAN SOCIETY FOR QUALITY CONTROL (ASQC)

ASQ - Z1.4 Sampling Procedures and Tables for Inspection by Attributes.

(Private sector and civil agencies may purchase copies of these voluntary standards from the American Society for Quality Control, 611 East Wisconsin Avenue, Milwaukee, WI 53202.)

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

Boiler and Pressure Vessel Code, Section IV - Rules for Construction of Heating Boilers.

Boiler and Pressure Vessel Code, Section IX - Welding Qualifications.

(Private sector and civil agencies may purchase copies of these voluntary standards from the American Society of Mechanical Engineers, 345 East 47th Street, New York, NY 10017.)

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ASTM

ASTM B107/B107M - Standard Specification for Magnesium-Alloy Extruded Bars, Rods, Shapes, Tubes, and Wire.

(Private sector and civil agencies may purchase copies of these voluntary standards from www.astm.org or the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.)

AMERICAN WELDING SOCIETY (AWS)

AWS D1.1 - Structural Welding Code, Section 5, Qualifications.

(Private sector and civil agencies may purchase copies of these voluntary standards from the American Welding Society, 550 N.W. LeJeune Rd, Miami, FL 33126.)

3. REQUIREMENTS

3.1 Description. The tanks shall be of the specified type, class, style and size (see 1.2, 3.1.1, 3.1.2, 3.9 and 6.2), and shall consist of welded cylindrical shells provided with heads, tappings and openings.

3.1.1 Style A, horizontal. Unless otherwise specified (see 6.2), the tank shall be fabricated with plus heads.

3.1.2 Style B, vertical. Unless otherwise specified (see 6.2), the tank shall be fabricated with a plus bottomhead.

3.2 Standard commercial product. The tanks shall, as a minimum, be in accordance with the requirements of this specification and shall be the manufacturer's standard commercial product. Additional or better features which are not specifically prohibited by this specification but which are a part of the manufacturer's standard commercial product shall be included in the tanks being furnished. A standard commercial product is a product which has been sold or is currently for sale on the commercial market through advertisements or manufacturer's catalogs, or brochures, and represents the latest production model.

3.3 First article (preproduction model(s)). When specified (see 6.2), a sample shall be subjected to first article inspection in accordance with 4.3.

3.4 Code compliance. The hot water storage tanks shall be constructed, tested, and marked in accordance with the applicable requirements of ASME Boiler and Pressure Vessel Code, Section IV, Rules for Construction of Heating Boilers, and as specified herein. The presence of the ASME Official Code HLW-symbol stamped or marked on the tank and the furnishing of a copy of the applicable ASME REQUIRED Manufacturers' Master Data Report will be accepted as evidence that the tanks conform to the ASME Rules for Construction of Heating Boilers.

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3.5 Materials. Materials used shall be free from defects which would adversely affect the performance or maintainability of individual components or of the overall assembly. Materials not specified herein shall be of the same quality used for the intended purpose in commercial practice. Unless otherwise specified herein, all equipment, material, and articles incorporated in the work covered by this specification are to be new and fabricated using materials produced from recovered materials to the maximum extent possible without jeopardizing the intended use. The term "recovered materials" means materials which have been collected or recovered from solid waste and reprocessed to become a source of raw materials, as opposed to virgin raw materials. Unless otherwise specified, none of the above shall be interpreted to mean that the use of used or rebuilt products are allowed under this specification.

3.5.1 Steel. Steel for fabrication of the water storage tank shall be of the type recommended in the ASME Boiler and Pressure Vessel Code or AISI Steel Products Manual as suitable for storage of service hot water of temperatures as high as 200 degrees Fahrenheit (°F) (93.33 degrees Celsius (°C)). The steel shall also be suitable for application of lining material. Tanks with glass linings shall be fabricated of commercial quality sheet or plate, chemically constituted and processed to adapt the steel for application of glass linings. Steel tanks shall be constructed of sheet steel with welded seams. Tanks constructed for U-tube insertion type heating elements using steam or hot water as a heating medium shall be equipped with a neck and a heating element support. The neck for U-tube insertion shall be constructed of the same material as the tank. The heating element supports shall be constructed of copper-silicon.

3.6 Safety. Nonfunctional sharp edges, projecting points, welding burrs, and protruding lengths more than two full threads of tappings, handhole or manhole yokes, or fastening devices shall be avoided. Materials in contact with potable water shall be nontoxic, and shall not impart odor, color, or taste to the contained water.

3.7 Tappings and openings. Unless otherwise specified (see 6.2), tappings and openings shall be provided in the tanks, except that the location of the tappings in the top of the horizontal glass-lined tanks may be located where necessary to eliminate interference with the magnesium anodic rod. The tappings shall have tapered pipe threads conforming to FED-STD-H28 and shall be equipped with plugs or caps of the same material alloy as the tapping itself. Manhole and handhole openings shall be equipped with pressure-type, yoked, covers and gasketed rims. Tappings and fittings for glass-lined tank shall be of the same base material as the tank, with all surfaces exposed to storage water protected with the same lining as the tank.

3.8 Tank supports. Tank supports shall be the manufacturer's standard supports. Angle legs and base rings shall be welded to the storage tank before shipment. Cradles for horizontal tanks shall be shipped loose. When specified (see 6.2), threaded bosses for pipe legs shall be provided on the supports.

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3.9 Sizes and capacities. The diameters, overall lengths, and rated capacities shall be as shown in table I. The storage capacity of each tank shall be within plus or minus 5 percent of rated capacity.

TABLE I. Sizes and capacities of type IV.

Capacity		Inside diameter (maximum)		Tank length (maximum)	
		<u>Inches</u>	<u>Metric</u>	<u>Inches</u>	<u>Metric</u>
<u>U. S. Gallons</u>	<u>Litre</u>				
80	303	20.0	508 mm	65.25	1 657 mm
140	530	24.5	622 mm	77.50	1 966 mm
200	757	30.0	762 mm	78.00	1 981 mm
350	1 325	36.0	9 144 mm	95.00	2 413 mm
500	1 893	42.0	1 066 mm	81.00	2 057 mm
750	2 839	48.0	1 219 mm	97.00	2 464 mm
1000	3 785	54.0	1 371 mm	99.00	2 515 mm

3.10 Identification marking. When specified (see 6.2) each tank shall be identified in accordance with MIL-STD-130. Normally the manufacturer's standard commercial marking are acceptable.

3.11 Cleaning, treatment, and painting. Surfaces normally painted in good commercial practice shall be cleaned, treated, and painted as specified herein. The color of the finish coat shall be as specified (see 6.2). Surfaces to be painted shall be cleaned and dried to ensure that they are free from contaminants such as oil, grease, welding slag and splatter, loose mil scale, water, dirt, corrosion product, or any other contaminating substances. As soon as practicable after cleaning and before any corrosion product or other contamination can result, the surfaces shall be prepared or treated to ensure the adhesion of the coating system. The painting shall consist of at least one coat of primer and one finish coat. The primer shall be applied to a clean, dry surface as soon as practicable after cleaning and treating. Painting shall be with manufacturer's current materials according to manufacturer's current processes and the total dry film thickness shall be not less than 2.5 mils over the entire surface. The paint shall be free from runs, sags, orange peel, or other defects.

3.12 Tank preparation. When a lined tank is specified (see 1.2 and 6.2), interior surfaces of tanks shall be cleaned prior to the application of the linings. The interior surfaces of tanks, including welds, manhole and handhole covers when applicable, shall be prepared for coating by sand blasting, grit blasting or by pickling in an acid bath.

3.13 Type IV, glass-lined steel tank. Glass lining formulation shall contain not less than 70 percent of refractory oxides such as silicon oxide, aluminum oxide, calcium oxide, magnesium oxide, titanium oxide, or zirconium oxide. The glass lining shall be fused to the steel base by firing at not less than 1500 °F (815.56 °C). The glass lining shall be continuous over the entire interior surface of the tank including handhole and manhole covers when applicable. The lining may be applied with a primer coat. The type IV tanks shall conform to the following requirements:

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a. **Thickness.** The thickness of the glass lining shall be not less than 0.006-inch (0.152 mm) and not greater than 0.020-inch (0.508 mm).

b. **Discontinuities.** Discontinuities shall be not more than 0.025 square inch per square foot (173 square centimetre per square metre) of internal surface, excluding edges, fittings and welded areas, after applying the glass lining. No single defect shall be greater than 0.125-inch (6 mm) in diameter.

c. **Edges and fittings.** All edges and fittings shall be coated with glass lining. Where sharp edges cannot be avoided, a slight "burn-off" of the lining that does not extend more than 0.062-inch (1.575 mm) back from the sharp edge will be allowed. All fittings that are welded to the tank shall be coated with the lining on those areas that are exposed to the water except for threads and small areas immediately adjacent to them.

d. **Welds.** Removal of the glass lining due to welding or mating of parts after glass lining shall not result in exposed base metal in excess of 0.025 square inch per gallon (4.2 square mm per litre) of storage capacity.

e. **Glass lining solubility.** The weight loss of the glass lining shall be not greater than 0.231 grains per square inch (0.023 milligrams per square mm).

3.14 **Cathodic protection.** Unless otherwise specified (see 6.2), type IV heater shall be provided with magnesium anodes for cathodic protection. The anode shall be located so as to ensure protection to all interior parts of the vessel. An electrical connection shall be established and maintained between the anode and the metal tank (heater) shell. Anode or anodes shall be located in a vertical position and shall extend to within 4 inches (100 mm) of the bottom of the tank.

3.14.1 **Magnesium anode.** The magnesium anode shall be fabricated from material conforming to ASTM B107. Shapes of anodes shall be as applicable, and anodes shall be reinforced with steel wire.

3.14.2 **Other anodes.** The tank (heater) wall potential for any anode used shall not be more positive than -0.85 volts.

3.15 **Workmanship.** The general construction and assembly of the hot water storage tank shall be of a neat and workman-like character with parts well fitted and bolts and other fasteners correctly torqued to give rigidity.

3.15.1 **Castings and forgings.** All parts, components, and assemblies of the tank which include castings and forgings shall be clean of harmful extraneous material such as sand, dirt, pits, spurs, scale, and flux. Rework shall be limited to procedures which do not reduce strength or affect function.

3.15.2 **Metal fabrication.** Flame cutting, using tips suitable for the thickness of the steel may be employed instead of shearing and sawing. All bends shall be made with controlled means to ensure uniformity of size and shape. Corners shall be square and true. Precaution shall be taken to avoid overheating. Heated steel shall be allowed to cool slowly. External surfaces shall be free of burrs, sharp edges and corners, except when sharp edges or corners are required or where they are not detrimental to safety.

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3.15.3 **Welding.** The surfaces of parts to be welded shall be free from rust, scale, paint, grease, mill scale and other foreign matter that can be removed by chipping and wire brushing. Welds shall transmit stress without permanent deformation or failure when the parts connected by the welds are subjected to proof and service loading. Parent materials, weld filler metals, and fabrication techniques shall be as required to enable the tank to conform to the examination and test requirements specified in section 4. Parts to be joined by fillet welds shall be brought into as close contact as possible and in no event shall be separated by more than 0.187-inch (4.750 mm), unless appropriate bridging techniques are used. Unless otherwise specified (see 6.2), the welding process used in fabrication of the tanks shall be at the option of the contractor.

3.15.3.1 **Welders.** Any welder assigned to manual welding work covered by this specification shall be certified by the contractor to the contracting officer that the welder has passed qualification tests as prescribed by either of the following listed codes for the type of welding operations to be performed and that such qualification is effective as defined by the particular code:

AWS D1.1 Structural Welding Code, Section 5, Qualification.

ASME Boiler and Pressure Vessel Code, Section IX, Welding Qualifications.

Contractors who only make horizontal welds need not qualify welders for “all position welding.” Subject to approval by the Government, contractor's standard welder qualification may be substituted in lieu of the above codes provided that the contractor procedure is equivalent to the above codes. The contractor shall be responsible for determining that automatic welder equipment operators are capable of producing quality welds.

4. QUALITY ASSURANCE PROVISIONS

4.1 **Responsibility for inspection.** Unless otherwise specified in the contract, the contractor is responsible for the performance of all inspection requirements (examinations and tests) as specified herein. Except as otherwise specified in the contract, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 **Responsibility for compliance.** All items shall meet all requirements of sections 3 and 5. The inspection set forth in this document shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in this document shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an acceptable practice to ascertain conformance to requirements, however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to accept defective material.

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4.1.2 Component and material inspection. Component and materials shall be inspected in accordance with all the requirements specified herein and in applicable referenced documents.

4.2 Classification of inspections. The inspection requirements specified herein are classified as follows:

- a. Preproduction inspection (see 4.3).
- b. Quality conformance inspection (see 4.4).
- c. Inspection of packaging (see 4.6).

4.3 Preproduction inspection.

4.3.1 Examination. The preproduction tank shall be examined as specified in 4.5. Presence of one or more defects shall be cause for rejection.

4.3.2 Tests. The tank shall be tested as specified in table II. Failure of any test shall be cause for rejection.

Table II. Test Schedule.

Preproduction Inspection		
Examination or test	Inspection paragraph	Requirement paragraph
Capacity test	4.6.1	3.9
Glass lining test	4.6.2	3.13
Cathodic protection test	4.6.4	3.14

4.4 Quality conformance inspection. The quality conformance inspection shall include the examination of 4.5, the tests of 4.6, and the packaging inspection of 4.7. This inspection shall be performed on the samples selected in accordance with 4.3.

4.5 Examination. Each tank shall be examined for compliance with the requirements specified in section 3 of this specification. Any redesign or modification of the contractor's standard product to comply with specified requirements, or any necessary redesign or modification following failure to meet specified requirements shall receive particular attention for adequacy and suitability. This element of inspection shall encompass all visual examinations and dimensional measurements. Noncompliance with any specified requirements or presence of one or more defects preventing or lessening maximum efficiency shall constitute cause for rejection.

4.6 Tests. Each distillation unit shall be tested as specified in 4.3.2. The first article unit shall be tested as specified in 4.3.2. Failure to pass any test shall be cause for rejection of a unit.

4.6.1 Capacity. If tank dimensions are different from those specified in tables I, determine the storage capacity of the tank by weighing the empty tank and then fill the tank with water and reweigh. Convert the liquid capacity of the tank to U.S. gallons or liters. Nonconformance to the capacity rating specified shall constitute failure of this test.

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4.6.2 Glass lining tests. Type IV glass (porcelain enamel) linings shall be inspected and tested as follows for coverage, thickness, and solubility. Upon approval of the contracting officer, the manufacturer may furnish a certification of compliance as part of the first article. The certification shall provide data necessary to evaluate compliance with the coverage, thickness, and solubility requirements of 3.13. Nonconformance with 3.13 shall constitute failure of this test.

4.6.2.1 Lining coverage. A glass lined tank that has not been subjected to test pressure greater than 150 pounds per square inch gage (psig) (10 kgf/cm^2) shall be cut into four or more segments using a band saw, bayonet saw, or other suitable mechanical cutting device. Each segment shall be visually inspected for the presence of areas of exposed metals except that cracked and spalled areas of lining caused by the cutting operation shall not be considered. Exposed areas of metal shall be measured with a low powered microscope with a calibrated eyepiece. Nonconformance to 3.13(b) and 3.13(c) shall constitute failure of this test.

4.6.2.2 Thickness of glass lining. Thickness measurements shall be taken at not less than 10 representative points on the shell and heads of the tank using a calibrated magnetic or similar thickness gauge. Nonconformance to 3.13(a) shall constitute failure of this test.

4.6.2.3 Solubility of glass lining.

a. Apparatus. The cylinder assembly shall be constructed of 16 gage, type 304 stainless steel; the ends shall be ground so as to conform with the curvature of the tank to be tested. The gaskets shall be made of neoprene rubber. The cell shall be heated with a small gas burner or a small electric heater placed immediately below the cylinder assembly midway between the ends.

b. Test specimens. The test specimens for this test shall consist of four 3.5-inch by 3.5-inch (88 mm by 88 mm) sections cut from the outer wall (not the center flue) of the tank approximately midway between the ends.

c. Preparation of specimens. The specimens shall be buffed with a rubbing stone or suitable abrasive paper around the entire perimeter of the panel to completely remove rough edges and glass lining fragments. The specimens shall then be scrubbed on both sides using a nylon brush and a mildly abrasive detergent cleaner powder, rinsed with distilled water, dried for 1 hour in a drying oven at 225 °F (107.22 °C) and placed in a desiccator while hot.

d. Initial weight measurements. The specimens, after cooling to room temperature, shall be weighed to the closest 0.002 grain (0.1 milligram).

e. Calibration of test cell. Because of small variations in cell dimensions and configuration, each test cell must be calibrated before it is used. The procedure is as follows:

(1) Assemble the cell as it is to be operated.

(2) Fill with water to just below where the condenser tube is welded into the cylinder.

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- (3) Adjust the input of the heat source to give a slow, rolling boil. If water rises in the condenser, remove small amounts of water until the boil will operate without surging.
 - (4) Remove from the heat and check to see if water level is completely covering the panels.
 - (5) Cool to room temperature, then measure the volume of water contained in the cell.
 - (6) Record this volume in the cell and use this amount of test solution in all subsequent tests.
- f. Test solution. The test solution used for each exposure cycle shall consist of 6.17 grains (400 milligrams) of reagent grade sodium bicarbonate dissolved in 0.264 gallons (1 L) of distilled water.
- g. Test procedure.
- (1) Assemble the test cell using weighed specimens from the same tank on each end of the test cell.
 - (2) Pour the correct volume of test solution into the cell.
 - (3) Adjust the input of the heater to give a consistent slow, rolling boil.
 - (4) After 18 hours boil time, dismantle the cell and discard the used test solution.
 - (5) Clean the specimens using a soft cloth wetted with a solution of 1 percent trisodium phosphate to remove loosely adhering deposits, wipe dry, and store in desiccator between solution treatment.
 - (6) After 8 cycles of 18 hours each, clean specimens as above, rinse with distilled water, and dry at 225 °F (107.22 °C) for 1 hour. Place the specimens in a desiccator while hot and after cooling to room temperature, weigh to the closest 0.002 grain (0.1 milligram).
- h. Calculation of results. The exposed areas of each specimen shall be calculated from the average diameter of the test spot, pressured to the closed 0.015-inch (0.381 mm) taken in three different locations. The solubility of the lining shall be calculated by dividing the weight loss in milligrams (grains) by the exposed area in square inches.
- i. Interpretation of results. Nonconformance with 3.13(e) shall constitute failure of this test.

4.6.3 Toxicity, odor, color and taste. A certification of compliance with the ASME Code, as required by 3.4, will be accepted as evidence that materials in contact with potable water are nontoxic and do not impart objectionable odor, color, or taste to the water.

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4.6.4 Cathodic protection. Measure the tank wall potential relative to a standard copper sulphate half cell before and after installation of the anode or anodes. Locate the copper sulphate half cell inside the tank adjacent to the tank shell at maximum distance from the anode or anodes. Use a portable potentiometer or high-resistance voltmeter to measure the potential. Nonconformance to 3.14 shall constitute failure of this test.

4.7 Inspection of packaging.

4.7.1 Preproduction pack inspection.

4.7.1.1 Examination. The preproduction pack shall be examined for the defects listed in table III. Presence of one or more defects shall be cause for rejection of the preproduction pack.

4.7.1.2 Tests. When specified (6.2), the preproduction pack shall be subjected to the rail-impact test (see 6.7). The test car shall strike a string of five empty cars with draft gear extended and brakes set, at a speed of not less than 10 miles per hour (mph) (16 kilometre/hr (km/h)) and not more than 11 mph (18 km/h).

4.7.1.3 Basis for rejection. Any shifting of contents, visible damage to the contents, or any loose, broken, or displaced anchoring, blocking, or bracing within the container shall be cause for rejection.

4.7.2 Quality conformance inspection of pack.

4.7.2.1 Unit of product. For the purpose of inspection, a completed pack prepared for shipment shall be considered a unit of product.

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TABLE III. CLASSIFICATION OF DEFECTS.

Classification	Defect	Requirement paragraph
Critical	None defined.	
Major		
101	ASME stamp not as specified.	3.4
102	Materials not as specified.	3.5
103	Tappings and openings not provided or not as specified.	3.7
104	Tank supports not as specified.	3.8
105	Components comprising of glass lining material not as specified.	3.13
106	Dimensions not as specified.	3.9
107	Tank lining not as specified.	3.7, 3.13
Minor		
201	Missing or incorrect identification markings.	3.10
202	Treatment and painting not as specified.	3.11
203	Area of no coating, coating not dry, evidence of rust or corrosion, and runs or sags.	3.11
204	Color of coating not as specified.	3.11
205	Sharp edges, points, or corners, welding burrs, excessively long tappings, yokes and fastening devices.	3.15.2, 3.15.3

4.7.2.2 Sampling. Sampling for examination shall be in accordance with ASQC Z1.4.

5. PACKAGING

5.1 Packaging requirements. The preservation, packing, and marking shall be as specified in the contract or order.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. The tanks are intended for storing potable service hot water.

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6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of this specification.
- b. Type, class, style, size, and capacity required (see 1.2, 3.1, 3.1.1, 3.1.2, and 3.12).
- c. Whether tank fabrication shall be other than as specified (see 3.1.1 and 3.1.2).
- d. When a first article is required, number of first article tanks required and time frame required for submission of first article tank(s) when required (see 3.3 and 4.3).
- e. Tappings and openings if other than as specified (see 3.7).
- f. When threaded pipe leg bosses are required in tank supports (see 3.8).
- g. When identification marking is to be other than manufacturer's standard commercial marking and in accordance with MIL-STD-130 (see 3.10).
- h. When color of finish coat is required (see 3.11).
- i. When cathodic protection shall be other than as specified (see 3.14).
- j. When rail-impact test is required (see 4.7.1.2)
- k. Packaging requirements (see 5.1).

6.3 First article tanks. When first article tanks are specified, any changes or deviations of production tanks from the first article tanks during production will be subject to the approval of the contracting officer. Approval of the first article tanks will not relieve the contractor of his obligation to furnish tanks conforming to this specification.

6.4 Tank construction. Minus heads are generally not available commercially from contractors and should only be specified when a particular need exists. Tank supports should be the contractor's commercial supports and should be used for economic reasons. A 4-inch by 6-inch (100 mm by 150 mm) handhole may be specified in tanks 36 inches (915 mm) or less in diameter when required.

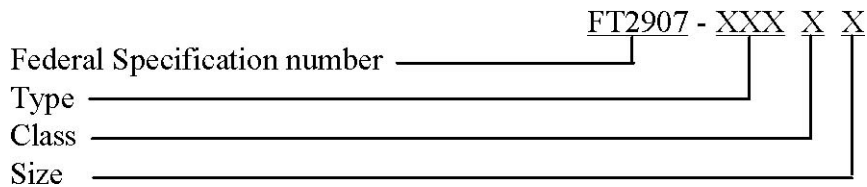
6.5 Preproduction packs. Any changes or deviations of production packs from the approved preproduction pack will be subject to the approval of the contracting officer. Approval of the preproduction pack will not relieve the contractor of his obligation to preserve, pack, and mark the tanks in accordance with this specification.

6.6 First article test. When first article tests are required, appropriate provisions should be included in the contract, to allow the contracting officer to waive completely or in part the first article tests and reduce the bid price accordingly if the successful bidder has previously performed any or all of the first article tests in recent procurements, or if quantities involved are less than 10. When the contract allows for waiver of first article tests, the contract should require that the successful bidder seeking such a waiver submit satisfactory evidence, including test and inspection reports that the tests have been performed successfully in the past and additional information such as the contract identification, the procuring activity, the date, and other pertinent data deemed necessary by the contracting officer. If the first article tests are desired, the contracting officer will normally elect to have these performed at the manufacturer's plant. He may also elect to have these tests performed at a Government laboratory, or at an independent private test organizations. Note that deletion of first article tests does not delete the tests required by Section IV of the ASME Code.

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6.7 Rail-impact test. The packed item, in its normal shipping configuration, shall be adequately blocked and secured to the floor of the test rail car to prevent any longitudinal, vertical or lateral movement. Loading and tie downs shall be in accordance with applicable practices of the Association of American Railroads. The test car shall be impacted into two to five buffer cars. The buffer cars shall be located on a level section of track with the air and hand brakes set and draft gear extended. The total weight of the buffer cars shall be 250,000 pounds minimum. All cars shall be equipped with standard draft gear and conventional under frame. Three impacts shall take place at 4, 6 and 8 miles per hour (MPH) in one direction and one impact at 8 mph in the opposite direction. The velocities given are minimum values and should not be exceeded by more than is necessary to insure that these values are met.

6.8 Part or Identifying Numbers (PINs). The specification number, type, class, and size are combined to form PINs for diesel-engine-driven water distillation units covered by this document (see 1.2). PINs for the diesel-engine-driven water distillation units are established as follows:



6.9 Subject term (key word) listing.

Glass-lined steel
 Plus bottomhead
 Plus heads
 Potable hot water storage tanks

6.10 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

Custodians:

Navy - YD
 Air Force - 99

Preparing Activity:

DLA-IS

Review Activities:

Army - CE, MD
 Navy - CG, MC

(Project 4520-2006-002)

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change. You should verify the currency of the information above using the ASSIST online database at <http://assist.daps.dla.mil>.