

COMMERCIAL STANDARD CS115-60

Supersedes CS115-44

**Porcelain Enameled (Glass Lined) Tanks
for Domestic Hot Water Service**

A recorded
voluntary standard of the
trade published by
the U.S. Department
of Commerce



For sale by the Superintendent of Documents
U.S. Government Printing Office, Washington 25, D.C. - Price 10 cents

U.S. DEPARTMENT OF COMMERCE
Frederick H. Mueller, Secretary

BUSINESS AND DEFENSE SERVICES ADMINISTRATION
OFFICE OF TECHNICAL SERVICES
Commodity Standards Division

With the cooperation of the
National Bureau of Standards

COMMERCIAL STANDARDS

Commercial Standards are developed by manufacturers, distributors, and users in cooperation with the Commodity Standards Division of the Office of Technical Services, Business and Defense Services Administration, and with the National Bureau of Standards. Their purpose is to establish quality criteria, standard methods of test, rating, certification, and labeling of manufactured commodities, and to provide uniform bases for fair competition.

The adoption and use of a Commercial Standard is voluntary. However, when reference to a Commercial Standard is made in contracts, labels, invoices, or advertising literature, the provisions of the standard are enforceable through usual legal channels as a part of the sales contract.

Commercial Standards originate with the proponent industry. The sponsors may be manufacturers, distributors, or users of the specific product. One of these three elements of industry submits to the Commodity Standards Division the necessary data to be used as the basis for developing a standard of practice. The division by means of assembled conferences or letter referenda, or both, assists the sponsor group in arriving at a tentative standard of practice and thereafter refers it to the other elements of the same industry for approval or for constructive criticism that will be helpful in making any necessary adjustments. The regular procedure of the division assures continuous servicing of each Commercial Standard through review and revision whenever, in the opinion of the industry, changing conditions warrant such action.

SIMPLIFIED PRACTICE RECOMMENDATIONS

Under a similar procedure the Commodity Standards Division cooperates with industries in the establishment of Simplified Practice Recommendations. Their purpose is to eliminate avoidable waste through the establishment of standards of practice for sizes, dimensions, varieties, or other characteristics of specific products; to simplify packaging practices; and to establish simplified methods of performing specific tasks.

The initial printing of CS115-60 was made possible through the cooperation of the Porcelain Enamel Institute, a trade association representing the porcelain enamel industry.

Porcelain Enameled (Glass Lined) Tanks for Domestic Hot Water Service

(Second edition)

[Effective March 15, 1960]

1. PURPOSE

1.1 The purpose of this Commercial Standard is to establish standard specifications for porcelain enameled tanks intended for general use in domestic hot water service. Its purpose is also to provide information for the guidance of manufacturers, distributors, retailers and purchasers; to promote understanding between suppliers and users regarding materials, construction and tests; to serve as a basis for fair competition; and to provide for identifying tanks that conform with this standard.

2. SCOPE

2.1 This standard applies to porcelain enameled (glass-lined)¹ tanks for domestic hot water service. Requirements are given for base metal, enamel lining, tank capacity, working pressure, cathodic protection, inspection, testing, marking and labeling.

3. REQUIREMENTS

3.1 *Base metal.*—The walls, ends, and other parts that are porcelain enameled, shall be of iron or steel of a quality that is suitable for porcelain enameling by the manufacturer's process or equipment, so that the tanks will consistently meet the requirements of this Commercial Standard. The walls, ends, and other parts shall be of sufficient thickness to enable the finished tanks to withstand the hydrostatic test specified in 3.4.2.2.

3.2 *Enamel.*—All surfaces of the tanks that are exposed to hot water shall have a continuous coating of porcelain enamel that meets the requirements of this standard. The composition of the enamel shall be such as to meet the solubility requirements of 3.2.3. In addition, the solution after the first 18-hour boiling treatment shall not contain more than trace amounts of lead, arsenic or antimony when analyzed by recognized chemical procedures (see 4.1).

3.2.1 *Thickness.*—The enamel coating shall be not less than 0.006 inch thick, except that in localized areas not in excess of a total of 6 square inches in any single tank, a thickness of 0.005 inch is allowable. There shall be no masses of glass or abnormal coating build-up exceeding 0.025 inch in thickness at isolated areas in the tank.

3.2.2 *Coverage.*—In order to be considered a continuous coating, the porcelain enamel shall have a minimum of defects or discontinuities. Any breaks in the coating that are sufficient to expose the surface of the steel base shall average not more than 0.10 square inch per square

¹The terms "glass lined" and "porcelain enameled" are used interchangeably.

foot of internal surface, excluding edges and fittings, and no single defect shall be larger than $\frac{1}{8}$ inch in diameter or greatest dimension, except that the enamel on tanks that are to be used without a magnesium anode (see 3.5.1) shall provide complete coverage of the steel.

3.2.2.1 *Edges and fittings.*—All edges and fittings shall be coated with porcelain enamel except that where sharp edges cannot be avoided a slight "burn off"² of the porcelain enamel that does not extend more than $\frac{1}{4}$ inch back from the sharp edge shall be allowable. All fittings that are welded to the tank shall be coated with enamel on those areas that are exposed to the contents of the tank, except for threads and small areas immediately adjacent to them.

3.2.2.2 *Welds.*—There shall be no fracture or removal of the porcelain enamel coating due to welding or mating of the parts after enameling.

3.2.3 *Solubility.*—When subjected to the test given in 4.11 the weight loss shall not exceed 25 milligrams per square inch for any one of the four test specimens cut from the tank wall.

3.3 *Fittings.*—All tank openings shall be reinforced with carbon steel fittings permanently welded to the tank. The fittings shall be so designed and attached to the tank that repeated tightening and loosening of the connecting parts by customary methods will not cause leakage or fracture of the porcelain enamel on the interior surfaces.

3.4 *Capacity and pressure ratings.*

3.4.1 *Storage capacity.*—The storage capacity of each tank shall be within 5 percent over or under the capacity rating marked on the tank.

3.4.2 *Working pressure.*—The rating for maximum working pressure for each tank shall be not greater than $42\frac{1}{2}$ percent of the hydrostatic test pressure marked on the tank.

3.4.2.1 *Performance under 50 percent rated pressure.*—All finished tanks shall withstand a pressure of 50 percent of the rated hydrostatic test pressure without showing leakage, and without failure of the porcelain enamel due to crazing or spalling of the coating, when tested in accordance with 4.7.

3.4.2.2 *Performance under full rated pressure.*—All finished tanks shall withstand the full rated hydrostatic test pressure without developing any leakage of water and without producing permanent deformation of the tank cylinder beyond 0.2 percent in circumference, nor permanent deformation of either top or bottom head beyond 0.5 percent of the tank diameter, when tested in accordance with 4.9.

3.5 *Cathodic protection.*—Except as otherwise provided in 3.5.1, each porcelain enameled tank shall be furnished with a cored magnesium anode having a weight of magnesium of not less than 25 grams for each square foot of inner tank area. The anode shall be electrically grounded to the tank and shall extend to within 4 inches of each end.

3.5.1. *Exceptions to cathodic protection.*—For use in areas where experience has shown that cathodic protection should not be used, porcelain enameled tanks may be furnished without anodes if (a) the tanks are so labeled and (b) the porcelain enamel is applied by manu-

² "Burn off" is a term used to designate a condition caused by saturation of the enamel layer by iron oxide during the firing operation. The condition usually occurs on areas where the enamel has been applied very thin. It can be recognized by (a) a complete lack of glossiness, and (b) a reddish brown or black appearance of the enamel over the affected area.

facturing methods that will insure complete coverage of the steel by the enamel.³

3.6 *Service requirements, general.*—Porcelain enameled tanks shall withstand the pressures, temperatures and other physical operating conditions, and shall effectively resist the chemical action of hot water, as generally encountered in the domestic hot water service designated by the label affixed to the tank.

4. INSPECTION AND TESTING

4.1 *Testing; general.*—The tests given herein are intended primarily for use as production tests in conjunction with manufacturing processes, inspection methods and with other tests if needed, according to 4.3, so as to insure the conformity of each tank with the requirements of this standard. However, the tests given may also be utilized as acceptance tests, in accordance with 4.2. Chemical tests on the enamel to determine conformity with 3.2 are not required when it is definitely known that no compounds of lead, arsenic or antimony were used in producing the enamel coating.

4.2 *Acceptance testing.*—If acceptance tests are desired by the purchaser, in addition to production tests certified to by the manufacturer, representative sample tanks may be taken from those furnished under each purchase order, and be tested independently by the purchaser at the purchaser's expense, or other arrangements for acceptance testing may be agreed upon between the purchaser and the supplier. Any or all of the tests given in 4.6 to 4.11 inclusive may be performed as acceptance tests, and samples shall be taken in accordance with 4.5.

4.3 *Production inspection and testing.*—During the process of manufacture, the manufacturer shall make such inspections and tests as are needed to maintain the quality of the product so as to be consistently in conformity with this standard. The inspections and tests given herein shall be made regularly during production for all tanks furnished as being in conformity with this standard.

4.4 *Visual inspection of each tank.*—The enamel on the inside of each tank shall be visually inspected for continuity after final firing and prior to welding in one or both heads (see 3.2.2 to 3.2.2.2).

4.5 *Samples for testing.*—Two sample tanks for testing shall be taken from each group of tanks to be represented by test samples. If either sample fails to meet any test, all tanks represented by the two samples shall be considered as not being in conformity with this standard.

4.5.1 One sample tank shall be used for the capacity test (see 4.6) and the hydrostatic pressure test (see 4.9). The other sample tank shall be used for the proof test (see 4.7), the test for thickness of enamel (see 4.8), the test for enamel coverage (see 4.10), and the test for solubility of enamel (see 4.11). The tests on each tank shall be made in the order given above.

4.6 *Test for rated capacity* (see 3.4.1).—The actual storage capacity shall be determined by weight. The tank shall be weighed empty and reweighed after being filled completely with water. Care shall be taken that the tank is in such a position that no air will be trapped in it. The capacity shall then be computed in U.S. Standard gallons for comparison with the manufacturer's rated capacity.

³ Local water supply authorities may be consulted regarding the desirability of cathodic protection.

4.7 *Proof test* (see 3.4.2.1).

4.7.1 The porcelain enameled tank shall be connected to a water supply through a suitable pump system, a calibrated Bourdon pressure gage graduated in increments of not more than 5 lb./sq. in. check valve, and shut off valves. The tank and system shall be filled with water at room temperature ($\pm 10^\circ$ F.) and at atmospheric pressure, care being exercised to avoid any pocketing of air. All tapped openings in the tank shall be closed by use of threaded fittings. If the tank is equipped with a pressure-relief device, the device shall be removed and the opening plugged.

4.7.2 Hydrostatic pressure in the system shall be gradually raised until 50 percent of the rated hydrostatic test pressure within ± 2 lb./sq. in. is reached. This pressure shall be maintained for $\frac{1}{2}$ hour. At the end of this time the pressure in the system shall be reduced to atmospheric. If, at any time during the application of this hydrostatic pressure test there is any leakage of water, the tanks fails.

4.7.3 A visual inspection of the porcelain enamel coating shall be made through the openings with the aid of internal illumination, and if the enamel has crazed or spalled, the tank fails to meet the test (see 4.5).

4.8 *Test for thickness of enamel* (see 3.2.1).—Thickness measurements shall be taken at not less than 20 representative points on the shell and heads of a sectioned tank with a calibrated magnetic thickness gage.

4.9 *Hydrostatic test to rated test pressure* (see 3.4.2.2).

4.9.1 The setup for the test is the same as that described in 4.7. Before starting the test, such measurements of the tank as are necessary to reveal permanent deformation resulting from the hydrostatic-pressure test shall be taken. These observations shall include circumferential measurements along the tank at intervals of not more than 12 inches by a method permitting readings of the changes to be made directly to 0.010 inch. Extensometers reading to 0.001 inch shall also be placed with the movable spindles against top and bottom heads at places most likely to deform.

4.9.2 Hydrostatic pressure in the system shall be gradually raised by means of the pump until the full rated hydrostatic test pressure is reached, within ± 5 lb./sq. in. This pressure shall be maintained for $\frac{1}{2}$ hour at which time the pressure in the system shall be reduced to atmospheric and the measurements originally taken repeated. Permanent set shown by any circumference measurements shall not exceed 0.2 percent of the corresponding measurement taken prior to the application of the test pressure. Permanent set of either top or bottom head as shown by the extensometers shall not exceed 0.5 percent of the tank diameter. If at any time during the application of this test there is any leakage of water, the tank fails to meet the test (see 4.5).

4.10 *Test for enamel coverage* (see 3.2.2).—After completing the hydrostatic proof test (see 4.7), the tank shall be cut into four or more segments using a metal band saw, bayonet saw or other suitable mechanical cutting device. Each segment shall then be visually inspected for the presence of areas of exposed metals except that the cracked and spalled areas of the enamel caused by the cutting operation shall not be considered. If any exposed area of metal shows a diameter or maximum dimension greater than $\frac{1}{8}$ inch the tank fails to meet the test. If numerous exposed areas of smaller size are noted, the average

diameters of these spots shall be measured with a low powered microscope with a calibrated eyepiece. (A Brinell Microscope, Bausch and Lomb #312946-16 or equivalent is suggested.) The circular area of each spot shall be computed from the average diameter and all of these areas added to give the total area of metal exposed. If this area should exceed 0.1 square inch per square foot of interior tank surface, the tank fails to meet the test (see 4.5).

4.10.1 Tanks that are intended for use without a magnesium anode shall be cut into four or more segments as specified in 4.10. If visual inspection reveals any discontinuity or breaks in the coating so as to expose the steel on the inside area of the tank, the tank fails to meet the coverage test for anode free service.

4.11 *Solubility of enamel.* (see 3.2.3).

4.11.1 *Apparatus.*—The apparatus illustrated in figure 1 shall be used for determining the solubility of the enamel. The cylinder assembly shall be constructed of 16 gage AISI 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 at its center point.

4.11.2 *Specimens.*—The specimens for the solubility test shall consist of four $3\frac{1}{2}$ x $3\frac{1}{2}$ inch sections cut from the outer wall (not the center flue) of the tank approximately midway between the ends.

4.11.3 *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 enamel fragments. The specimens shall then be scrubbed on both sides using a nylon brush and a mildly abrasive detergent cleanser powder, rinsed with distilled water, dried for 1 hour in a drying oven and placed in a desiccator while hot.

4.11.4 *Initial weight measurements.*—The specimens after cooling to room temperature shall be weighed to the closest $\frac{1}{10}$ milligram.

4.11.5 *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. (See fig. 1.)
3. Adjust the input to the heat source to give a slow, rolling boil. If the water rises in the condenser, remove small amounts of water until the cell 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.

4.11.6 *Test solution.*—The test solution used for each exposure cycle shall consist of 400 milligrams of reagent grade sodium bicarbonate dissolved in 1 liter of distilled water.

4.11.7 *Test procedure.*

1. Assemble the test cell using weighed panels of the same enamel 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 (see 3.2 and 4.1).
5. Clean the specimens using a soft cloth wetted with a solution of 1% trisodium phosphate to remove loosely-adhering deposits, wipe dry and store in desiccator between solution treatments.
6. After 8 cycles of 18 hours each, clean specimens as in step 5 above, rinse with distilled water and dry at 225° F. for 1 hour. Place the specimens in a desiccator while hot and after cooling to room temperature weigh to the closest $\frac{1}{10}$ milligram.

4.11.8 *Calculation of results.*—The exposed area of each specimen shall be calculated from the average diameter of the test spot, measured to the closest 64th inch taken in three different locations. Enamel solubility shall be calculated by dividing the weight loss in milligrams by the exposed area in square inches.

4.11.9 *Interpretation of results.*—Any enamel that has a weight loss of less than 25 milligrams per square inch shall be considered to have met the solubility requirements of this standard. The test procedure is intended as a screening test to distinguish tank enamels from compositions that have been found unsuitable for use in domestic hot water service. That test does not, however, indicate which of the enamels with weight losses below 25 milligrams per square inch will have the best durability in service.

5. MARKING AND LABELING

5.1 *Marking.*—The following information shall be marked permanently and plainly in a conspicuous place on the completed heater unit, or on the tank if separately supplied:

- (a) The manufacturer's name and/or a nationally registered trademark, or distributor's name.
- (b) Whether or not the tank is equipped with magnesium anode.
- (c) The rated capacity in U.S. gallons.
- (d) The maximum rated hydrostatic test pressure for which the tank is designed.
- (e) The maximum rated working pressure.
- (f) Month and year of manufacture, or serial number of the tank.

5.1.1 The above information may be given by means of a label of the following general form (see also 5.2):

	Anode
(Name or trademark)	
	Gal.
(With or without)	
	Lb.H.P.
(Rated capacity)	
	Lb.W.P.
(Hydrostatic test pressure)	
(Working pressure)	
(Serial no. or month and year)	

5.2 *Labeling.*—In order that the purchaser may be assured that he is obtaining porcelain enameled (glass lined) tanks conforming to this standard, it is recommended that tanks complying herewith be identified by a sticker or other label on the completed unit, or on the tank if separately supplied, which contains the following statement in conjunction with the manufacturer's name and address:

This porcelain enameled (glass lined) tank complies with all requirements of Commercial Standard CS115-60 as developed by the trade under the procedure of the Commodity Standards Division, and issued by the U.S. Department of Commerce.

5.2.1 The label may be accompanied by the manufacturer's recommendations on handling and installing.

EFFECTIVE DATE

Having met all procedural requirements of the Commodity Standards Division, including approval by the acceptors hereinafter listed, this Commercial Standard was issued by the U.S. Department of Commerce, effective March 15, 1960.

NOTE:
 MATERIAL TYPE 304
 STAINLESS STEEL
 THROUGHOUT.

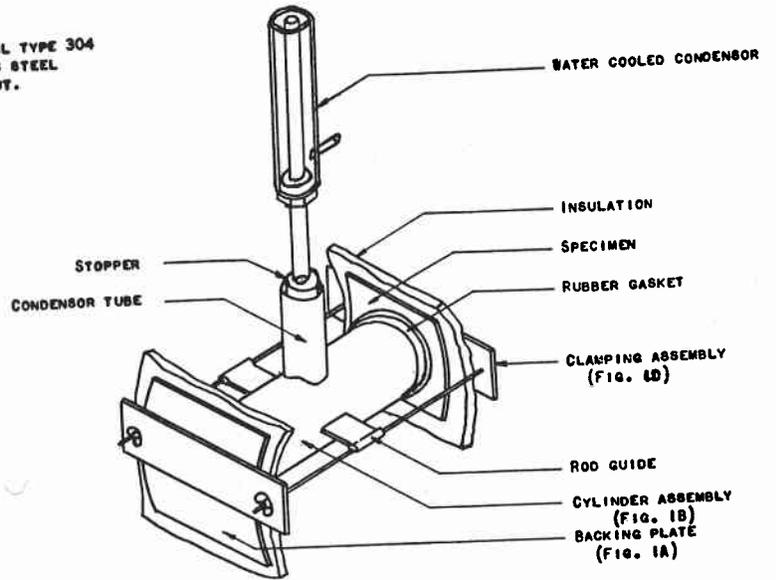


FIGURE 1. Test cell solubility of enamel.
 (See also figs. 1A to 1D)

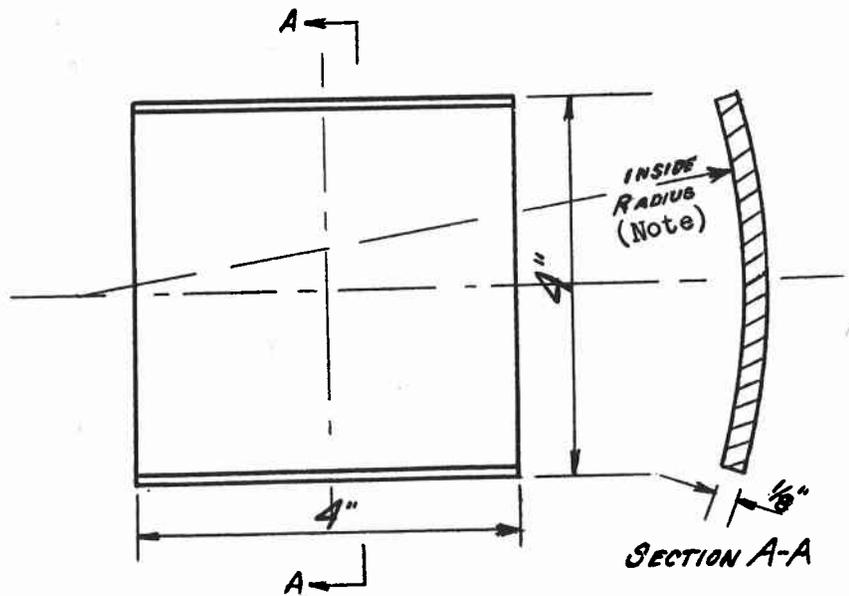


FIGURE 1A. Backing plate. (2 required)

Note: The radius shall be the same as the inside radius of the tank from which specimens are cut.

1 1/2" O.D. TYPE 304
16 GA. STAINLESS STEEL
TUBING.

3" O.D. TYPE 304
16 GA. STAINLESS
STEEL TUBING.

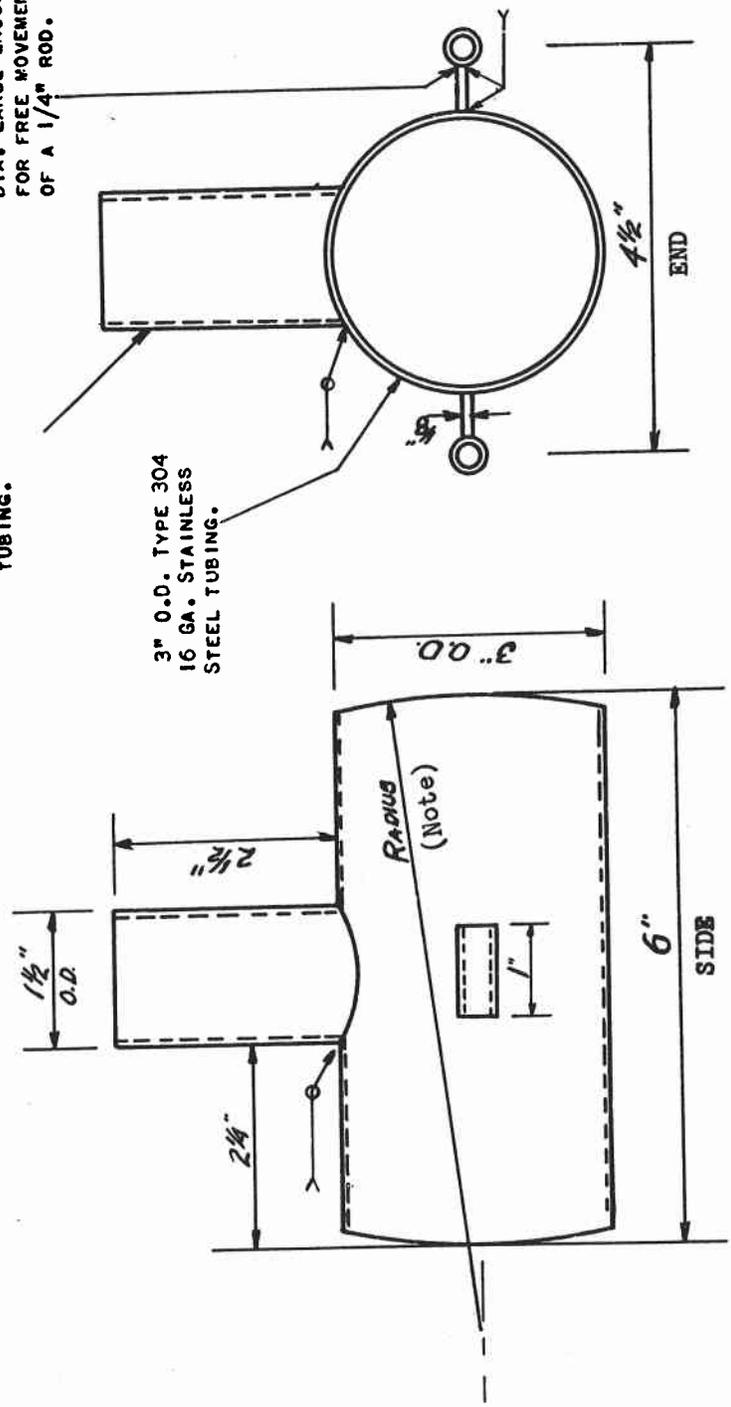


Figure 1B. Cylinder assembly. (1 required)

Note: The radius shall be the same as the inside radius of the tank from which specimens are cut.

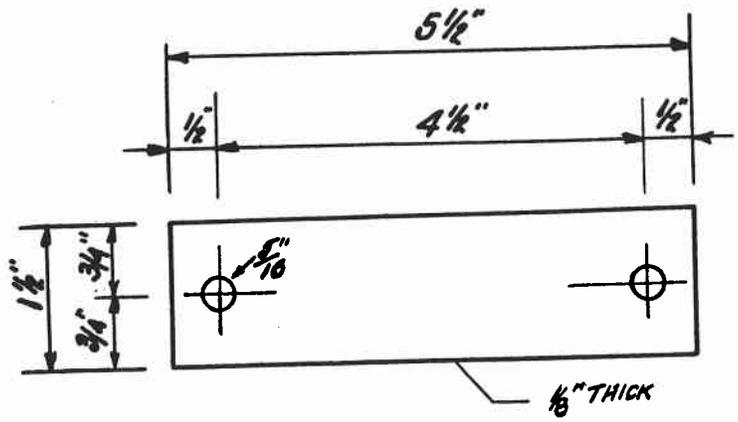


FIGURE 1C. Clamping strip. (2 required)

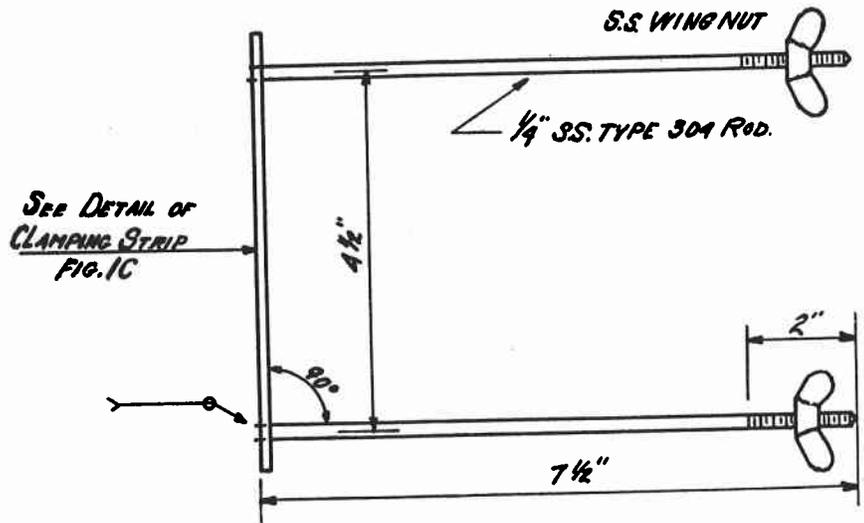


FIGURE 1D. Clamping assembly. (1 required)

HISTORY OF PROJECT

First edition.—In response to requests from manufacturers and other interests in the Porcelain Enameled Tank Industry, proposals for a Commercial Standard for this product were considered in a conference of interested testing laboratories and manufacturers on November 28, 1941. Under the guidance of a Subcommittee on Tests, a research study was conducted which provided information for the preparation of a draft standard. It was considered in a general industry conference on April 22, 1943, and adopted as a recommended standard for the industry. Following its general circulation on May 3, 1943, the standard was widely endorsed by individual manufacturers, distributors, users and others interested. On February 29, 1944, its promulgation as Commercial Standard CS115-44, effective July 1, 1944, was announced.

Publication of the standard was withheld for the completion of a testing program and labeling plan for certifying compliance with the standard, but completion of the plan became impracticable. General interest in the standard continued, however, and stencil copies were issued under the designation TS-3678.

Revised edition.—The desirability of revising the standard to conform with numerous improvements in materials and processes being utilized by the industry was considered in a conference of interested producers and others arranged by the Porcelain Enamel Institute and held at the Mayflower Hotel, Washington, D.C., on July 18, 1956. The group initiated the revision and appointed subcommittees to proceed with the development of suitable tests and provisions for enamel coverage.

A draft revision of the 1944 standard embodying proposals submitted by the Porcelain Enamel Institute was circulated on November 21, 1958 to manufacturers, distributors and users for criticism. Suggestions for further improvement were embodied in a recommended revision, TS-5452, which was circulated on July 24, 1959, for general consideration and approval. Representative industry organizations subsequently endorsed the standard in sufficient numbers to assure its general acceptance and use. On February 10, 1960 the revision was announced as Commercial Standard CS115-60, effective March 15, 1960.

Project Manager: A. S. Best, Commodity Standards Division,
Office of Technical Services.

Technical Adviser: Dwight G. Moore, Enameled Metals Section,
National Bureau of Standards.

STANDING COMMITTEE

The following individuals comprise the membership of the standing committee which is to review, prior to circulation for acceptance, revisions proposed to keep the standard abreast of progress. Comment concerning the standard and suggestions for revision may be addressed to any member of the committee or to the Commodity Standards Division, Office of Technical Services, U.S. Department of Commerce, which acts as secretary for the committee.

NOTE. The Standing Committee was in the process of formation when the standard was published. A list of the members will be available from the Commodity Standards Division.

ACCEPTANCE OF COMMERCIAL STANDARD

CS115-60 Porcelain Enameled (Glass Lined) Tanks for Domestic Hot Water Service

If acceptance has not previously been filed, this sheet properly filled in, signed, and returned will provide for the recording of your organization as an acceptor of this Commercial Standard.

Date _____

Commodity Standards Division
Office of Technical Services
Business and Defense Services Administration
U. S. Department of Commerce
Washington 25, D. C.

Gentlemen:

We believe that this Commercial Standard constitutes a useful standard of practice, and we individually plan to utilize it as far as practicable in the

production¹ distribution¹ purchase¹ testing¹
of this commodity.

We reserve the right to depart from the standard as we deem advisable.

We understand, of course, that only those articles which actually comply with the standard in all respects can be identified or labeled as conforming thereto.

Signature of authorized officer _____
(In ink)

(Kindly typewrite or print the following lines)

Name and title of above officer _____

Organization _____
(Fill in exactly as it should be listed)

Street address _____

City, zone, and State _____

¹ Underscore the applicable words. Please see that separate acceptances are filed for all subsidiary companies and affiliates which should be listed separately as acceptors. In the case of related interest, trade associations, trade papers, etc., desiring to record their general support, the words "General support" should be added after the signature.

(Cut on this line)

TO THE ACCEPTOR

The following statements answer the usual questions arising in connection with the acceptance and its significance:

1. *Enforcement.*—Commercial Standards are commodity specifications voluntarily established by mutual consent of those concerned. They present a common basis of understanding between the producer, distributor, and consumer and should not be confused with any plan of governmental regulation or control. The United States Department of Commerce has no regulatory power in the enforcement of their provisions, but since they represent the will of the interested groups as a whole, their provisions through usage soon become established as trade customs, and are made effective through incorporation into sales contracts by means of labels, invoices, and the like.

2. *The acceptor's responsibility.*—The purpose of Commercial Standards is to establish, for specific commodities, nationally recognized grades or consumer criteria, and the benefits therefrom will be measurable in direct proportion to their general recognition and actual use. Instances will occur when it may be necessary to deviate from the standard and the signing of an acceptance does not preclude such departures; however, such signature indicates an intention to follow the standard, where practicable, in the production, distribution, or consumption of the article in question.

3. *The Department's responsibility.*—The major function, performed by the Department of Commerce in the voluntary establishment of Commercial Standards on a nationwide basis is fourfold: First, to act as an unbiased coordinator to bring all interested parties together for the mutually satisfactory adjustment of trade standards; second, to supply such assistance and advice as past experience with similar programs may suggest; third, to canvass and record the extent of acceptance and adherence to the standard on the part of producers, distributors, and users; and fourth, after acceptance, to publish and promulgate the standard for the information and guidance of buyers and sellers of the commodity.

4. *Announcement and promulgation.*—When the standard has been endorsed by a satisfactory majority of production or consumption in the absence of active, valid opposition, the success of the project is announced. If, however, in the opinion of the standing committee or of the Department of Commerce, the support of any standard is inadequate, the right is reserved to withhold promulgation and publication.

ACCEPTORS

The manufacturers, distributors, users, and others listed below have individually indicated in writing their acceptance of this Commercial Standard prior to its publication. The acceptances indicate an intention to utilize the standard as far as practicable, but reserve the right to depart from it as may be deemed desirable. The list is published to show the extent of recorded public support for the standard, and should not be construed as indicating that all products made by the acceptors actually comply with its requirements.

Products that meet all requirements of the standard may be identified as such by a certificate, grade mark, or label. Purchasers are encouraged to require such specific evidence of compliance, which may be given by the manufacturer whether or not he is an acceptor.

ASSOCIATIONS

(General Support)

American Institute of Architects, Montana Chapter, Billings, Mont.
American Institute of Supply Associations, Inc., Washington, D.C.
Central Supply Association, Chicago, Ill.
Gas Heating & Air Conditioning Contractors Association, Birmingham, Ala.
Mechanical Contractors Association of America, Inc., New York, N.Y.
Western Plumbing Officials' Association, Los Angeles, Calif.

FIRMS AND OTHER INTERESTS

Alfred University, New York State College of Ceramics, Alfred, N.Y.
Aircraft Manufacturing Co., Inc., Cambridge, Mass.
American Plumbers Supply Co., Toledo, Ohio.
American Plumbing & Steam Supply Co., Tacoma, Wash.
American Radiator & Standard Sanitary Corp., New York, N.Y.
Anchor Sanitary Co., Pittsburgh, Pa.
Baltimore County Plumbing Division, Towson, Md.
Bastian-Morley Co., Inc., La Porte, Ind.
Bayonne, City of, Department of Health, Bayonne, N.J. (General Support).
Bellman, Gillett & Richards, Toledo, Ohio (General Support).
Bibey, E. A., Co., Pittsburgh, Pa.
Blooming Prairie, Village of, Blooming Prairie, Minn.
Bluefield Supply Co., Bluefield, W. Va.
Boston, City of, Building Department, Boston, Mass.
Brust & Brust, Milwaukee, Wis.
California Testing Laboratories, Inc., Los Angeles, Calif.
Cambridge, City of, Building Department, Cambridge, Mass.
Camlet, J. Thomas, Garfield, N.J.
Charlotte, City of, Charlotte, N.C.
Chicago Vitreous Corp., Division of the Eagle-Picher Co., Cicero, Ill. (General Support).
Coast to Coast Store, Central Organization, Inc., Minneapolis, Minn.
Conrad & Cummings, Associated Architects, Binghamton, N.Y.
Crippen Laboratories, Inc., Baltimore, Md.
Danser Hardware & Supply Co., Weston, W. Va.
Day & Night Manufacturing Co., La Puente, Calif.
Delray Beach, City of, Delray Beach, Fla. (General Support).

Detroit, City of, Department of Building & Safety Engineering, Detroit, Mich.
Detroit Edison Co., Detroit, Mich.
Detroit Testing Laboratory, Inc., Detroit, Mich.
Dubuque, City of, Dubuque, Iowa.

Flannagan, Eric G., & Sons, Henderson, N.C.
Faulkner Kingsbury & Stenhouse, Washington, D.C. (General Support).
Ferro Corp., Cleveland, Ohio.
Fletcher-Thompson, Inc., Bridgeport, Conn.
Florida, University of, College of Engineering, Gainesville, Fla.
Froehling & Robertson, Inc., Richmond, Va.

Garfield, City of, Board of Health, Garfield, N.J. (General Support).
Gerber Industries, Inc., Delphi, Ind.
Gerber Plumbing Fixtures Corp., Chicago, Ill.
Glick Supply Co., Marshalltown, Iowa.
Green Bay, City of, Green Bay, Wis.
Grellinger-Rose & Associates, Inc., Milwaukee, Wis. (General Support).

Hahn & Hayes, Toledo, Ohio.
Herron Testing Laboratories, Inc., Cleveland, Ohio.
Hinkle Supply Co., Inc., Birmingham, Ala. (General Support).
Hommel, O., Co., Pittsburgh, Pa.
Hughes Heating Co., Memphis, Tenn.
Hunt, Robert W., Co., Chicago, Ill. (General Support).

Ingram-Richardson, Inc., Frankfort, Ind.
James, W. T., Hardware & Plumbing Co., Warren, Ariz.

Keenan Pipe & Supply Co., Los Angeles, Calif.
Koeppel, Earl E., Fort Worth, Tex.

La Crosse Plumbing Supply Co., La Crosse, Wis.
Lake Worth, City of, Lake Worth, Fla. (General Support).
Landers, W. H., Co., Inc., Syracuse, N.Y.
Lansing Supply Co., Lansing, Mich.
Loeb, Laurance M., White Plains, N.Y.
Law, Law, Potter & Nystrom, Madison, Wis.
Lexington, Town of, Lexington, Mass.
Long Supply Co., Chicago, Ill.
Lubbock, City of, Lubbock, Tex.

Macon, City of, Bureau of Inspections & Fees, Macon, Ga. (General Support).
Malone Plumbing Supply Co., Pittsburgh, Pa.
Mann & Co., Hutchinson, Kans.
May Supply Co., Anderson, Ind.
McGowin-Lyons Hardware & Supply Co., Mobile, Ala.

McPherson Co., Greenville, S.C.
Michigan Supply Co., Lansing, Mich.
Mid-West Heating & Service Co., Indianapolis, Ind.
Miller, Vrydagh & Miller, Terre Haute, Ind.
Milwaukee Stove & Furnace Supply Co., Milwaukee, Wis.
Miner Supply Co., Red Bank, N.J.
Morrison Supply Co., Fort Worth, Tex.
Mott Bros. Co., Rockford, Ill.
New York Testing Laboratories, Inc., New York, N.Y.
Norris-Thermador Corp., Los Angeles, Calif.
Norton Hardware Co., Norton, Va.
Ohio Valley Hardware Co., Inc., Evansville, Ind.
Olympia, City of, Olympia, Wash. (General Support).
Paramount Supply Co., Lincoln, Nebr.
Patzig Testing Laboratories, Des Moines, Iowa.
Pemco Corp., Baltimore, Md.
Plumbers & Factory Supplies, Inc., Columbus, Ohio.
Plumbers Supply Co., New Bedford, Mass.
Rheem Manufacturing Co., Chicago, Ill.
Richmond Supply Corp., Richmond, Ind.
Robischung-Kiesling Contracting Corp., Houston, Tex.
Ruud Manufacturing Co., Kalamazoo, Mich.
San Bernardino, City of, San Bernardino, Calif.
Santa Rosa, City of, Santa Rosa, Calif.
Scaife Co., Oakmont, Pa.
Schoedinger, F. O., Inc., Columbus, Ohio.
Schoeller Plumbing, Trenton, N.J.
Sears, Roebuck & Co., Chicago, Ill.
Seattle-King County, Department of Public Health, Seattle, Wash.
Sioux Falls, City of, Plumbing Inspection Department, Sioux Falls, S. Dak.
Smith, A. O., Corp., Milwaukee, Wis.
Smith, A. O., Corp., Permaglas Division, Kankakee, Ill.
Spiegel, Inc., Chicago, Ill.
Springfield, City of, Springfield, Mass.

Square Supply Co., Knoxville, Tenn.
Stravs, Carl B., Twin Falls, Idaho.
Sullivan Plumbing & Heating Co., Fort Huron, Mich.
Tarapata & MacMahon, Bloomfield Hills, Mich.
Texas City, City of, Texas City (General Support).
Trumbull Plumbing & Supply Co., Inc., Warren, Ohio.
Twining Laboratories, Fresno, Calif.
United States Testing Co., Inc., Hoboken, N.J.
Urban Plumbing & Heating, Portland, Oreg.
Van Denberg Supply Co., Rockford, Ill.
Vitroglase Corp., Middleville, Mich.
Vitro Manufacturing Co., Division of Vitro Corp. of America, Pittsburgh, Pa.
Walker Supply Co., Trenton, N.J.
Walsh, Louis A., Waterbury, Conn.
Watson Engineers, Greensboro, N.C. (General Support).
West Warwick, City of, West Warwick, R.I.
White Products Corp., Middleville, Mich.
Wilberding Co., Inc., Washington, D.C.
Wilson Municipalities, City of, Wilson, N.C.
Wisconsin River Supply Co., Wausau, Wis.
Witmer, Maurice E., Portsmouth, N.H.
Wood, John, Co., Heater & Tank Division, Conshohocken, Pa.
Woolcock Plumbing & Heating Co., Inc., Niagara Falls, N.Y.
Wyeth Co., St. Joseph, Mo.

U.S. GOVERNMENT

Atomic Energy Commission.
General Services Administration.
Health, Education and Welfare, Department of.
Interior, Department of.
National Aeronautics & Space Administration, Goddard Space Flight Center.
National Bureau of Standards.
Public Housing Administration.
Veterans Administration.

Federal Register



**National Bureau of Standards
COMMERCIAL STANDARD
Notice of Intent To Withdraw**

In accordance with § 10.12 of the Department's "Procedures for the Development of Voluntary Product Standards" (15 CFR Part 10, as revised; 35 FR 8349 dated May 28, 1970), notice is hereby given of the intent to withdraw Commercial Standard CS 115-60, "Porcelain Enameled (Glass Lined) Tanks for Domestic Hot Water Service." It has been tentatively determined that this standard is no longer technically adequate and revision would serve no useful purpose due to the fact that the subject is adequately covered by a replacement document published by the General Services Administration titled Federal Specification W-H-196J, "Heater, Water, Electric and Gas Fired, Residential."

Any comments or objections concerning the intended withdrawal of this standard should be made in writing to the Office of Engineering Standards Services, National Bureau of Standards, Washington, D.C. 20234, on or before June 20, 1974. The effective date of withdrawal will be not less than 60 days after the final notice of withdrawal. Withdrawal action terminates the authority to refer to a published standard as a voluntary standard developed under the Department of Commerce procedures from the effective date of withdrawal.

Dated: May 15, 1974.

RICHARD W. ROBERTS,
Director.

[FR Doc.74-11560 Filed 5-20-74;8:45 am]

Reprinted from:

FEDERAL REGISTER, VOL. 39, NO. 99—TUESDAY, MAY 21, 1974