CS100–42
Utensils, porcelain-enameled steel, multiple-coated.

U. S. DEPARTMENT OF COMMERCE
JESSE H. JONES, Secretary
NATIONAL BUREAU OF STANDARDS
LYMAN J. BRIGGS, Director

MULTIPLE-COATED PORCELAIN-ENAMELED STEEL UTENSILS

COMMERCIAL STANDARD CS100–42

Effective Date for New Production from September 30, 1942

A RECORDED VOLUNTARY STANDARD OF THE TRADE

UNITED STATES
GOVERNMENT PRINTING OFFICE
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U. S. Department of Commerce National Bureau of Standards

PROMULGATION

of

COMMERCIAL STANDARD CS100–42

for

MULTIPLE-COATED, PORCELAIN-ENAMELED STEEL UTENSILS

On January 29, 1942, at the instance of the Enameled Utensil Manufacturers Council, a general conference of representative manufacturers, distributors, and users of multiple-coated, porcelain-enameled steel utensils adopted a recommended commercial standard for this commodity. Those concerned have since accepted and approved the standard as shown herein for promulgation by the United States Department of Commerce, through the National Bureau of Standards.

The standard is effective for new production from September 30, 1942.

Promulgation recommended.

I. J. Fairchild,
Chief, Division of Trade Standards.

Promulgated.

Lyman J. Briggs,
Director, National Bureau of Standards.

Promulgation approved.

Jesse H. Jones,
Secretary of Commerce.

MULTIPLE-COATED, PORCELAIN-ENAMELED STEEL UTENSILS

COMMERCIAL STANDARD CS100–42

PURPOSE

1. The purpose of this commercial standard is to establish standard specifications and methods of test for multiple-coated,[1] porcelain-enameled steel utensils for the guidance of manufacturers, distributors, and users of this product. By its general acceptance and use, and by means of labels on the utensils certifying conformity with this standard, it is the aim to maintain the quality and appearance of multiple-coated, porcelain-enameled steel utensils in accordance with approved standards.

SCOPE

2. This standard provides performance requirements for multiple-coated, porcelain-enameled steel utensils for cooking, household, food storage, and hospital use. The requirements include quality of base metal, appearance, thickness, enameling, solubility and resistance to thermal shock and impact, capacity, methods of test, and labeling.

GENERAL REQUIREMENTS

3. *Material of base.*—The metal base shall be a good grade of steel or iron which shall have the strength, rigidity, and quality necessary for the production of multiple-coated, porcelain-enameled steel utensils meeting all the requirements of this specification.

4. *Appearance.*—The surfaces shall be commercially smooth, commercially uniform in color, and commercially free of fracture. The bottom of a cooking utensil, when resting on a plane surface, shall not be such that the utensil can be spun about a single point.

5. *Solubility and acid resistance.*—The gross solubility of the enamel shall not exceed 0.025 gram per square inch of wetted surface area when tested as specified in paragraph 13.

6. *Resistance to thermal shock.*—When 10 standard 2-qt. pans (see fig. 1) are tested for resistance to thermal shock as specified in paragraph 14, the average rating of the 10 pans shall be not less than 60.

7. *Impact resistance.*—When 5 standard 2-qt. pans (see fig. 1) are tested for impact resistance as specified in paragraph 15, the average of the ratings attained by the 5 pans, the rating of each pan being the average of tests at 10 points, shall not be less than 11.

[1] Two or more coats on steel.

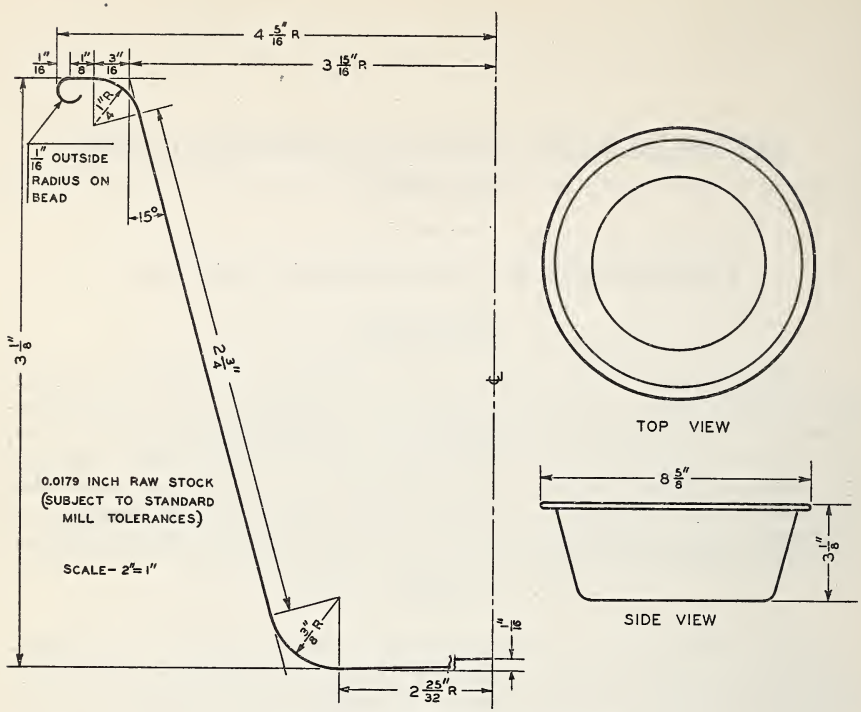

FIGURE 1.—*Standard 2-quart test pan.*

8. *Design.*—All ware shall be well formed; and seamless ware shall have a radius between sides and bottom suited to the shape and size of the particular utensil.

DETAIL REQUIREMENTS

9. *Capacity and dimensions.*—When the capacities or major dimensions of porcelain-enameled steel utensils are stated on labels, in catalogs, or in advertising matter, such capacities or dimensions shall be in accordance with the following rules:

(a) The actual liquid capacity of the ware when filled to the brim shall be stated in quarts (liquid measure) with tolerances as indicated below.

Capacity (quarts)	Tolerance (minus)	Percent (plus)
0 to 6	5	10. 0
Over 6 to 16	5	7. 5
Over 16	5	5. 0

(b) The capacity of such utensils as are equipped with a spout—namely, coffee pots, teapots, teakettles, coffee boilers,

etc.—shall be considered as the amount of liquid that can be put in up to the point of first overflow; percolators and drip-o-lators shall be rated on the amount of liquid that can be put in up to the bottom of the basket. Where the capacities of these items are expressed in cups, a 5-fluid-ounce beverage cup shall be considered standard for the industry.

(c) Where the capacities of utensils, other than those listed in paragraph 9 (b), are rated in cups, such capacities shall be expressed in 8-fluid-ounce measuring cups.

(d) For such items as are customarily designated by dimensions, the dimensions given shall be outside measurements, exclusive of handles unless otherwise stated, which shall be designated by inches within the tolerance of plus or minus 5 percent.

10. *Base metal.*—No utensils shall be made of steel lighter than 0.012 inch in thickness, with a tolerance according to steel-mill practice.

11. *Pouring lips.*—When the utensils have pouring lips, the lips shall be well-proportioned so that there will be a minimum of drip and a stable flow of the liquid.

12. *Handles.*—Handles, where used, shall be well formed of adequate size, of sturdy construction, and firmly and securely attached to the body of the utensil.

METHODS OF TEST

13. *Solubility and acid-resistance test.*

13a. Equipment:

(1) Heat-Flo SB–2000 hot plate; 115 to 120 volts, 2,000 watts.
E. L. Wiegand Co., Pittsburgh, Pa.

(2) Variac 100–Q transformer (115 volts, 18 amperes) or Variac 100–R transformer (230 volts, 9 amperes); 2,000 kilovolt-amperes, 60 cycles.
General Radio Co., Cambridge, Mass.

(3) Weston Model 432 wattmeter; 0 to 3 killowatts, 75 to 150 volts, 20 amperes, or similar equipment for 230 volts.
Weston Electrical Instrument Corp., Pittsburgh, Pa. (Or suitable equipment.)

(4) Adequate fuse protection.

(5) Chemical glass ware. 100-ml evaporating dishes (either, Pyrex, Vycor, or equivalent); necessary beakers, flasks, cover glasses, and glass hooks; 50-ml pipette; and a 500-ml graduated cylinder.

(6) Gas burners and wire gauzes. (Asbestos heating pads.)

(7) Boiling solution constant-level-device (either a hanging-hook, immersion gage or constant-level–water-bottle type).

(8) Acids:

(a) Citric acid (USP crystals).
Note: The 6-percent citric-acid solution is made up just before starting the test.

(b) 68-percent nitric acid.

(c) Oxidant mixture (GFS oxidant). The GFS oxidant may be obtained from the G. Frederick Smith Chemical Co., Columbus, Ohio. The other acids may be obtained from almost any chemical company.

(9) Distilled water.
(10) Three standard 2-qt pans. (See fig. 1.)

13b. Pretest procedure:
(1) Dilute and mix the acids to their desired strengths, using distilled water in all cases.
(2) The ware to be tested should be thoroughly washed, with soap and water if necessary, to remove any grease picked up in handling, rinsed with distilled water and placed in a draining position.
(3) The hot plate, after being leveled, should be heated with the high-heat switch on and drawing 600 watts, as indicated on the wattmeter, for a period of 15 minutes, to bring it to equilibrium before beginning the test. It is necessary to use the high-heat position of the switch in order to obtain uniform heat over the entire element.

13c. Test procedure:
(1) 500 ml of a freshly made 6-percent citric-acid solution is poured into a standard 2-qt pan and centered upon the preheated element. After the boiling point has been reached, the constant-level device (for maintaining the original level by the addition of distilled water) is set, the pan is covered with a cover glass or by other suitable means, and the solution is allowed to boil for 3 hours.
(2) At the end of the boiling period, the test pan is quickly emptied and rinsed (*it must not be scrubbed*) at least three times, and the rinsings are added to the original solution. This solution is diluted to a known volume, after which it is thoroughly shaken and the desired number of aliquot portions of 50 ml are immediately measured out by means of a pipette. The number of aliquot portions to be measured out is determined by the number of tests, check tests, and chemical analyses to be run on any one solution.
(3) For determining gross solubility, an aliquot is transferred directly into a weighed 100-ml glass evaporating dish and the required amounts of nitric acid and the oxidant mixture are added in a 1 to 1.5 ratio.[2] The evaporating dish is covered with a cover glass resting upon glass hooks to slow down the evaporation, which is carried out at a *low* heat over a laboratory gas burner. Upon continued evaporation, the solution becomes yellow in color and shortly afterwards brown nitrogen oxide fumes can be seen coming off. As the last of these nitrogen oxide fumes are leaving, silica gel, or silicic acid, can be seen forming on the side wall of the evaporating dish. At this point, the first rapid and distinct end point occurs, at which time all of the nitric acid has been utilized and the solution becomes clear or colorless.
(4) The cover glass and glass hooks are now removed to prevent spattering due to water dropping from the cover glass into the now highly concentrated solution of oxidant mixture, citric acid, and the residue from the enameled pan. Slowly the clear or colorless solution changes to a dark-brown

[2] The 1 to 1.5 ratio of nitric acid to the oxidant mixture is added in the amounts of 5 ml of the nitric acid and 7.5 ml of the oxidant mixture per gram of citric acid in the aliquot portion.

substance. During this color change, the solution begins to froth and a characteristic caramel odor may be detected. As this frothing begins, nitric acid is added, a drop or two at a time, until the frothing has subsided and until no further brown nitrogen oxide fumes can be seen coming off. At the end of this addition of nitric acid, there is a second rapid and distinct end point, evidenced by the return of the yellow color, which shortly changes to clear or colorless and which is immediately followed by the evolution of white fumes of sulfuric acid.

(5) Evaporation is continued until no further white fumes of sulfuric acid can be seen, after which time the evaporating dish is placed on a preheated hot plate, drawing 950 watts, for not less than 1 hour. During this last heating, which drives out the last traces of white fumes and also dries out the silica gel, or silicic acid, the evaporating dish is again covered with a cover glass resting upon glass hooks, to prevent foreign matter from dropping into the evaporating dish. At the end of the drying period, the evaporating dish is placed in a desiccator and allowed to reach room temperature before it is weighed. The dish must be weighed quickly, as the dry silica gel will pick up moisture.

13d. Calculation of results:

(1) Three standard pans shall be tested and an average of the results taken for the solubility resistance of a particular enamel.

(2) Wetted surface area is that surface below the liquid level when not boiling.

(3) If, however, any one of the three results does not agree within plus or minus 10 percent of the average, another set of three pans shall be tested.

(4) An average of these six results shall be taken as the solubility resistance of a particular enamel.

14. *Resistance to thermal shock.*

14a. Test equipment:

(1) Heat-Flo SB–2000 electric heating unit; 115 to 120 volts, 2,000 watts.
Edwin L. Wiegand Co., 7500 Thomas Boulevard, Pittsburgh, Pa.

(2) Variac 100–Q transformer (115 volts, 18 amperes) or Variac 100–R transformer (230 volts, 9 amperes), 2,000 kilovolt-amperes, 60 cycle.
General Radio Co., 30 State Street, Cambridge, Mass.

(3) Weston Model 432 wattmeter; scale 0 to 3 kilowatts, 75 to 150 volts, 20 amperes, or similar equipment for 230 volts.
Weston Electrical Instrument Corp., 810 Penn. Avenue, Pittsburgh, Pa. (Or suitable equipment.)

(4) Eastman Timer or other similar timing equipment.
Eastman Kodak Company, Rochester, N. Y.

(5) Adequate fuse protection.

(6) 10-to 15-liter bottle or another similar water container.

(7) 100-ml graduate cylinder.
(8) A good sponge.
(9) Either tap or distilled water.
(10) Ten standard 2-qt pans. (See fig. 1.)

14b. Pretest procedure:

(1) The heating unit, after being leveled, is heated with the high-heat switch on and the Variac adjusted so that the wattmeter indicates 1,400 watts, for a period of 15 minutes, to bring it to equilibrium before starting the test. It is necessary to use the high-heat switch in order to obtain uniform heat over the entire element.

14c. Test procedure:

(1) A standard 2-qt pan containing 60 ml of water is centered directly on the preheated element and brought to a good boil.
(2) Upon reaching a good boil, the water is quickly emptied, the pan is wiped out with a damp sponge, and *in a total period of exactly 10 seconds*, it is again centered on the hot plate. This period of 10 seconds extends from the time the pan is lifted from the hot plate until it is replaced thereon.
(3) Exactly 10 seconds are allowed to elapse after replacing the pan on the hot plate, and at the expiration of this time, 60 ml (14d, 1) of water is quickly poured on the hot bottom of the pan.
(4) This procedure is repeated until failure by chipping or through 10 cycles. Record all cycles, showing any evidence of chipping.[3]

14d. Important notes:

(1) In case any pan bottom does not remain covered with the addition of 60 ml of water, increase the amount to insure over-all coverage, and add a like total amount in each of the remaining cycles.
(2) The water and pans to be used must be at room temperature before starting the test.
(3) The sponge must be kept wrung out during the test in order to assure a dry or nearly dry pan for the dry-heating treatment.
(4) The wattmeter is placed between the Variac and load or the heating unit in order to obtain the correct wattage going into the heating unit. It is conveniently connected at the Variac terminals.
(5) Fuses are placed between the Variac and the supply outlet and not between the Variac and the heating unit. This is done to protect the Variac and in turn protects the wattmeter and the heating unit.

14e. Calculation of results:

(1) A rating of 10 is given to each cycle in which the pan does not chip.
Example: A pan chipping [3] in the seventh cycle would

[3] *Chipping.* Any enamel which comes off during the test is to be taken as chipping. In some cases, the chip may be large and will usually extend down to the ground coat. In other cases, however, the chip may be very small and will not extend beyond the first-cover coat. Chipping usually occurs in the dry-heating period.

have a rating of 60 percent for the six cycles in which it did not chip.

(2) An average of the results of testing 10 standard 2-qt. pans shall be taken as the thermal shock resistance of a particular enamel.

15. *Impact resistance:*

15a. Equipment:

(1) Impact test machine. (See fig. 2 for machine nomenclature.) H & W Manufacturing Co., 121 West Water Street, Urbana, Illinois.

(2) Five standard 2-qt. pans. (See fig. 1.)

15b. Leveling the machine:

(1) The impact machine should be placed on a firm foundation and, using the bubble level as a guide, leveled by means of the three leveling screws. Upon reaching a level position, the nuts on the leveling screws should then be tightened up to the machine base so as to lock the leveling screws in position.

15c. Adjustment of guide tube:

(1) The 3-ft. guide tube (after loosening the clamps) should be rotated until the two niches at the bottom of the tube are in a line parallel to the front of the machine. Simultaneously with this operation, the guide tube should also be raised or lowered so that the two clamps fall between perforations which are spaced 1 in. apart and with the lower clamp set at a point approximately 6 in. above the bottom of the tube. The clamps should then be tightened sufficiently to hold the guide tube in its desired position.

(2) The guide-tube assembly should be raised, by lifting the bottom clamp support above the guide key at its point of rotation on the guide-tube support rod, and swung to one side. This operation places the guide tube out of the way of the operator when clamping test pans into position and also in changing pans without readjustment of the falling-weight guide tube for every pan of any one set.

15d. Locating the falling-weight contact point:

(1) The larger hollow set-screw wrench is used to loosen the three set screws which are located on the right side of the guide-tube support-rod base. These set screws permit the movement of the guide-tube support rod to and away from the front of the machine.

(2) The guide tube should now be swung back into its normal or working position, using caution, as the lower clamp support settles down over its guide key, that it is not allowed to rest upon the pan under test. In case the guide tube does touch the pan under test before the normal or working position is reached, it may be raised by turning the top nut under the lower clamp support until sufficient clearance is obtained.

(3) As the machine is now leveled, there are only two adjustments to be made in obtaining the correct point of contact with the falling weight, and these are made simultaneously.

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The contact-point locator, which has an opening of 135°, is placed across the bottom of the test pan so that the short arm rests upon the bottom radius of the pan and directly beneath the guide tube. The guide tube is lowered, by turning the top nut under the lower clamp support, until it nearly touches the bottom radius of the test pan. Simultaneously with this operation, the guide tube is moved to or away from the front of the machine, as required, until the niches in the bottom of the guide tube are in line with the point of contact between the bottom radius of the test pan and the short arm of the contact-point locator.

(4) The set screws, on the right side of the guide-tube support-rod base, should now be tightened so as to lock the support rod in position. Simultaneously, the guide tube should be raised to a point one-eighth inch above the bottom radius of the test pan and locked in position by turning the lower nut beneath the bottom clamp support until it meets the top nut.

15e. Pretest procedure:

(1) One of the two falling-weight release pins is placed through the lowest set of perforations, and the falling weight is dropped into the tube. The second release pin is placed in the set of perforations directly above the now resting falling weight.

(2) The rotating disk should be moved until 1 of the 10 evenly-spaced grooves is directly beneath the pointer which is located at the top of the machine base and under the lower guide-tube clamp support.

15f. Test procedure:

(1) As a test pan is now in position, the test is begun by pulling the lower release pin, which allows the falling weight to strike the bottom radius of the pan at the correct point of contact. The falling weight, after striking the pan, is again dropped into the guide tube, and the previously pulled release pin is placed in the next set of perforations above the again-resting falling weight. This procedure is continued until the first chip visible to the normal eye at the distance of 18 in. occurs upon the enameled surface of the pan. At this point, the perforation directly below the release pin remaining in the guide tube is noted and recorded as the failure point, in inches, for this particular point on the pan.

(2) The rotating disk is now moved until the next groove lies beneath the pointer, and the above procedure is again carried out, always starting the test by releasing the falling weight from the lowest set of perforations. This procedure is repeated until 10 points on the bottom radius of the pan have been tested and have or have not failed at some set of perforations within the length of the 3-ft. guide tube.

(3) One complete impact test consists in testing 10 points on the bottom radius of 5 standard 2-qt. pans, or a total of 50 tested points.

15g. Important notes:

(1) Care should be taken in tightening both sets of set screws.

(2) When returning the guide tube to its normal or working position, do not force the lower clamp support down upon the guide key, but let it settle into position of its own accord.

(3) Also, when returning the guide tube to its normal position, take care to see that the bottom edge of the tube is never allowed to fall or rest upon the test pan.

15h. Calculations of results:

(1) Each pan shall be tested at 10 points on the bottom radius and an average taken for the impact resistance of a particular pan of any one set.

(2) Five standard 2-qt pan averages, of 10 points each, shall be averaged for the impact resistance evaluation for any one type of enamel.

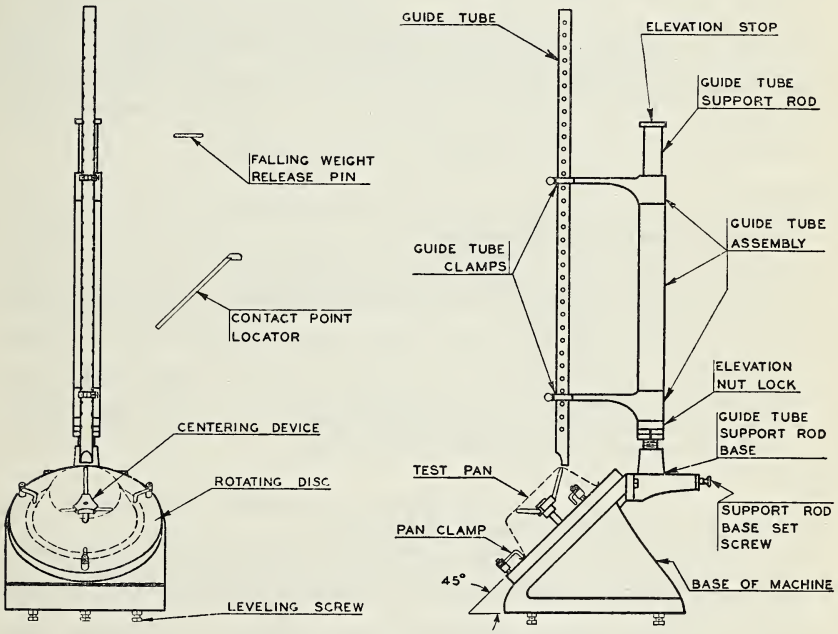

FIGURE 2.—*Impact-test machine.*

Available from H. & W. Manufacturing Co., 121 West Water St., Urbana, Ill.

LABELING

16. In order that the purchaser may be assured of obtaining porcelain-enameled steel utensils conforming to this standard, it is recommended that ware complying therewith bear a sticker or other label containing the following wording:

> The ----------[4] guarantees that this multiple-coated, porcelain-enameled steel utensil complies with Commercial Standard CS100–42 as issued by the National Bureau of Standards, United States Department of Commerce. This utensil will give satisfactory service if not subjected to sudden temperature changes or mechanical abuse.

[4] Insert name of manufacturer or distributor making guarantee.

EFFECTIVE DATE

The standard is effective for new production from September 30, 1942.

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. Each organization nominated its own representatives. Comment concerning the standard and suggestions for revision may be addressed to any member of the committee or to the Division of Trade Standards, National Bureau of Standards, which acts as secretary for the committee.

Manufacturers:

Earl H. Kelsey (chairman), Columbian Enameling & Stamping Co., Terre Haute, Ind.
E. C. Dexheimer, National Enameling & Stamping Co., Granite City, Ill.
Walter B. Moore, The Moore Enameling & Manufacturing Co., West Lafayette, Ohio.
H. C. Arnold, Federal Enameling & Stamping Co., Box 225, Pittsburgh, Pa.
Savory, Inc., 591 E. Ferry St., Newark, N. J. Invited to name a representative.
George M. Cornell, The Vollrath Co., Sheboygan, Wis.

Distributors:

National Retail Dry Goods Association, 101 W. 31st St., New York, N. Y. Invited to name a representative.
Thomas E. Maley, Sears, Roebuck & Co., 925 S. Homan Ave., Chicago, Ill. Representing Mail Order Association of America.
Rivers Peterson, National Retail Hardware Association, 333 North Pennsylvania St., Indianapolis, Ind.
Paul H. Nystrom, Limited Price Variety Stores Association, Inc., 25 West 43d St., New York, N. Y.
Herman Hartmann, Arkwright, Inc., 128 W. 31st St., New York, N. Y. Representing Association of Buying Offices, Inc.
P. Fitzgerald, Albert Pick Co., Inc., 2159 Pershing Rd., Chicago, Ill. Representing Food Service Equipment Industry, Inc.

Users:

Harold T. Prentzel, Friend's Hospital, Frankford, Philadelphia, Pa. Representing American Hospital Association.
Miss Lenore Sater, Household Equipment, Bureau of Home Economics, U. S. Department of Agriculture, Research Center, Beltsville, Md.
Dewey H. Palmer, Hospital Bureau of Standards & Supplies, Inc., 247 Park Ave., New York, N. Y.
Mrs. Charlotte Payne, National Council of Women, 501 Madison Ave., Room 1904, New York, N. Y.
Dr. Josephine L. Peirce, Ohio Federation of Women's Clubs, 1006 Cook Tower, Lima, Ohio.

Testing Laboratories:

A. I. Andrews, Department of Ceramic Engineering, University of Illinois, Urbana, Ill.
W. N. Harrison, Enameled Metals Section, National Bureau of Standards.
M. L. Carr, Pittsburgh Testing Laboratory, Pittsburgh, Pa. Representing American Council of Commercial Laboratories.
G. W. Alder, Good Housekeeping Institute, 57th St. at 8th Ave., New York, N. Y.

HISTORY OF PROJECT

Pursuant to a request from the General Federation of Women's Clubs under date of June 2, 1934, the National Bureau of Standards

conducted an investigation of the more important properties, and the methods of measuring and testing same, for enameled utensils.

Under the sponsorship of the Enameled Utensil Manufacturers' Council, research work was likewise done on this subject at the University of Illinois, under the direction of A. I. Andrews.

Under date of October 2, 1941, the Enameled Utensil Manufacturers' Council submitted a tentative draft of a proposed commercial standard for this ware, which was circulated by the National Bureau of Standards to a number of representative national organizations of consumers, distributors, testing laboratories and Federal agencies for advance consideration and recommendations. The draft was adjusted in line with these recommendations at a conference in Chicago, Ill., on December 11, 1941. A general conference was held in Chicago January 29, 1942, to which all interested users, distributors, producers, and testing laboratories were invited. The adjusted draft as adopted by the general conference was circulated to all concerned on February 20, 1942, for written acceptance.

Upon receipt of written acceptances from a preponderant majority, announcement was issued on March 30, 1942, that the standard would become effective for new production from September 30, 1942.

ACCEPTANCE OF COMMERCIAL STANDARD

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 _____

Division of Trade Standards,
National Bureau of Standards,
Washington, D. C.

Gentlemen:

Having considered the statements on the reverse side of this sheet, we accept the Commercial Standard CS100–42 as our standard of practice in the

Production [1] Distribution [1] Testing [1] Use [1]

of multiple-coated porcelain-enameled steel utensils.

We will assist in securing its general recognition and use, and will cooperate with the standing committee to effect revisions of the standard when necessary.

Signature of individual 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 and State _____

(Cut on this line)

[1] Please designate which group you represent by drawing lines through the other three. Please file separate acceptances for all subsidiary companies and affiliates which should be listed separately as acceptors. In the case of related interests, trade papers, colleges, etc., desiring to record their general approval, the words "in principle" should be added after the signature.

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 commercial 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 Nation-wide 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 the Department of Commerce, the support of any standard is inadequate, the right is reserved to withhold promulgation and publication.

ACCEPTORS

The organizations and individuals listed below have accepted these grading rules as their standard of practice in the production, distribution, and use of multiple-coated porcelain-enameled steel utensils. Such endorsement does not signify that they may not find it necessary to deviate from the standard, nor that producers so listed guarantee all of their products in this field to conform with the requirements of this standard. Therefore specific evidence of conformity should be obtained where required.

ASSOCIATIONS

American Association of University Women, Washington, D. C.
American Home Economics Association, Washington, D. C.
American Homemakers Association, Oak Park, Ill.
American Hospital Association, Committee on Simplification & Standardization, Philadelphia, Pa.
American Surgical Trade Association, Huntington, W. Va.
Enameled Utensil Manufacturers Council, Cleveland, Ohio.
Hospital Association of Philadelphia, Philadelphia, Pa.
Hospital Bureau of Standards & Supplies, Inc., New York, N. Y.
Limited Price Variety Stores Association, Inc., New York, N. Y.
Mail Order Association of America, Chicago, Ill. (In principle.)
National Council of Women of the U. S., New York, N. Y.
National Retail Dry Goods Association, New York, N. Y.
National Retail Furniture Association, Chicago, Ill.
National Retail Hardware Association, Indianapolis, Ind.
North Carolina Hospital Association, Rocky Mount, N. C.
Southern Hotel Association, Greensboro, N. C.

FIRMS

Albany Hospital, Albany, N. Y.
Albert Drug Co., Allentown, Pa.
Aloe Co., A. S., St. Louis, Mo.
American College of Surgeons, Chicago, Ill.
American Hospital Supply Corporation, Chicago, Ill.
Anderson Co., Inc., C. F., Minneapolis, Minn.
Ayres & Co., L. G., Indianapolis, Ind.
Ball Stores, Inc., Muncie, Ind.
Baltimore Enamel & Novelty Co., The, Baltimore, Md.
Bamberger & Co., L., Newark, N. J.
Bellaire Enamel Co., The, Bellaire, Ohio.
Belmont Stamping & Enameling Co., The, New Philadelphia, Ohio.
Benjamin & Rackerby, Sacramento, Calif.
Birmingham, City of, Birmingham, Ala.
Block & Kuhl Co., Peoria, Ill.
Bon-Ton Department Store, The, York, Pa.
Bradenton Woman's Club, Bradenton, Fla.
Broadway Department Store, Inc., Los Angeles, Calif.
Burdines, Inc., Miami, Fla.
Bush-Bull-Corporation, Bethlehem, Pa.
Caldwell & Bloor Co., The, Mansfield, Ohio.
California Metal Enameling Co., Los Angeles, Calif.
Canton Stamping & Enameling Co., The, Canton, Ohio.
Chicago Mail Order Co., Chicago, Ill.
Chicago, The University of, Chicago, Ill.
Children's Country Home, Westfield, N. J.
Cincinnati, City of, Department of Purchasing, Cincinnati, Ohio.
Claflin Co., The, Providence, R. I.
Cleveland Hospital Council, Cleveland, Ohio.
Cleveland, University Hospitals of, Cleveland, Ohio.
Columbia Hospital of Richland County, Columbia, S. C.
Columbian Enameling & Stamping Co., Inc., Terre Haute, Ind.
Consolidated Dry Goods Co., Springfield, Mass.
Crunden Martin Manufacturing Co., St. Louis, Mo.
Denver Dry Goods Co., The, Denver, Colo.
Doerflinger Co., William, La Crosse, Wis.

Dohrmann Commercial Co., San Francisco, Calif.
Dohrmann Hotel Supply Co., San Francisco, Calif.
Donley-Stahl Co., Lincoln, Nebr.
Dougherty & Sons, Inc., W. F., Philadelphia, Pa.
Duke Manufacturing Co., St. Louis, Mo.
Eastern-Columbia, Los Angeles, Calif.
Edison General Electric Appliance Co., Inc., Chicago, Ill.
Elder & Johnston Co., The, Dayton, Ohio.
Electrical Testing Laboratories, New York, N. Y.
Enamel Products Co., The, Cleveland, Ohio.
Everhart Surgical Supply Co., Atlanta, Ga.
Famous-Barr Co., St. Louis, Mo.
Federal Enameling & Stamping Co., Pittsburgh, Pa.
Feick Brothers Co., Pittsburgh, Pa.
Ferro Enamel Corporation, Cleveland, Ohio.
Fletcher Enamel Co., The Dunbar, W. Va.
Flint Medical & Surgical Supply Co., Flint, Mich.
Fowler, Dick & Walker, Wilkes-Barre, Pa.
Frederick & Nelson, Seattle, Wash.
Friends Hospital, Philadelphia, Pa.
Frye Co., George C., Portland, Maine.
Gable Co., William F., Altoona, Pa.
General Porcelain Enameling & Manufacturing Co., Chicago, Ill.
Genesee Hospital, The, Rochester, N. Y.
Gertz, Inc., B., Jamaica, New York, N. Y.
Geuder, Paeschke & Frey Co., Milwaukee, Wis.
Gibson Co., The, Washington, D. C.
Grant Hospital, Columbus, Ohio.
Halle Brothers Co., The, Cleveland, Ohio.
Hard Manufacturing Co., Buffalo, N. Y.
Harold Surgical Corporation, New York, N. Y.
Harris Department Store, San Bernardino, Calif.
Hecht Co., The, Washington, D. C.
Holmes Co., Ltd., D. H., New Orleans, La.
Hospital Bureau of Standards & Supplies, Inc., New York, N. Y.
Hospital of the P. E. Church in Philadelphia, The, Philadelphia, Pa.
Hospital Supply Co., The, & Watters Laboratories, Consolidated, The, New York, N. Y.
Hutzler Brothers Co., Baltimore, Md.
Illinois, University of, Department of Ceramics Engineering, Urbana, Ill.
Interstate Stores Buying Corporation, New York, N. Y.
Iowa State University, Hospitals of, Iowa City, Iowa.
Jamison Semple Co., New York, N. Y.
Johnston Shelton Co. (The Home Store), Dayton, Ohio.
Jones Metal Products Co., The, West Lafayette, Ohio.
Jones Surgical Supply Co., The, Cleveland, Ohio.
Karrer Co., E. H., Milwaukee, Wis.
Kaufman-Straus Co., Inc., Louisville, Ky.
Kiefer Co., A. L., Milwaukee, Wis.
Kilpatrick & Co., Thomas, Omaha, Nebr.
Kloman Instrument Co., Washington, D. C.
Knauth Brothers, New York, N. Y. (In principle.)
Kuhlman & Co., A., Detroit, Mich.
Lansburgh & Brother, Washington, D. C.
Lasalle & Koch Co., The, Toledo, Ohio.
Laubach & Sons, William, Easton, Pa.
Leader, Inc., The, Minneapolis, Minn.
Lewis & Co., W., Champaign, Ill.
Lilienthal & Co., Inc., Felix, New York, N. Y.
Lipman Wolfe & Co., Portland, Oreg.
Lisk Manufacturing Co., Ltd., Canandaigua, N. Y.
Livezey Surgical Supply, Inc., Newark, N. J.
Low & Co., Inc., N. S., New York, N. Y.
Mahady Co., E. F., Boston, Mass.
Manhattan Housewares, Inc., New York, N. Y.
Massachusetts, Commonwealth of, Purchasing Bureau, Boston, Mass.
Matthay Hospital Supply Co., Los Angeles, Calif.
May Co., The, Cleveland, Ohio.
McCreery & Co., James, New York, N. Y.
McKesson & Robbins, Inc., (Doster-Northington Division), Birmingham, Ala.
Menninger Sanitarium, The, Topeka, Kans.
Mercer Hospital, The, Trenton, N. J.
Michael Reese Hospital, Chicago, Ill.
Millner Co., Inc., J. R., Lynchburg, Va.
Milwaukee Boston Store, Inc., Milwaukee, Wis.
Minnesota Hospitals, University of, Minneapolis, Minn.
Missoula Mercantile Co., Missoula, Mont.
Montgomery Ward & Co., Chicago, Ill.
Moore Enameling & Manufacturing Co., The, West Lafayette, Ohio.
Mueller & Co., V., Chicago, Ill.
Murphy Co., G. C., McKeesport, Pa.
Nash & Co., F. C., Pasadena, Calif.
National Enameling & Stamping Co., Milwaukee, Wis.
National Hospital Supply Co., Philadelphia, Pa.
Newman Dry Goods Co., The, Arkansas City, Kans.

Niss Furniture Store, The, Milwaukee, Wis.
Norton Memorial Infirmary, Louisville, Ky.
O'Connor, Moffatt & Co., San Francisco, Calif.
Omaha Hospital Council, Omaha, Nebr.
Oneonta Department Store, Inc., Oneonta, N. Y.
Paine Drug Co., The, Rochester, N. Y.
Paterson General Hospital, Paterson, N. J.
Patzig Testing Laboratories, Des Moines, Iowa.
Peacock Surgical Co., Inc., Shreveport, La.
Penn Traffic Co., Johnstown, Pa.
Phillips & Buttorff Manufacturing Co., Nashville, Tenn.
Physicians' Supply Co., Inc., San Diego, Calif.
Physicians' Supply Co. of Philadelphia, The, Philadelphia, Pa.
Pick, Inc., Albert, Co., Chicago, Ill.
Pizitz Dry Goods Co., Louis, Birmingham, Ala.
Polar Ware Co., Sheboygan, Wis.
Pollard Co., A. G., Lowell, Mass.
Porcelain Enamel & Manufacturing Co., The, Baltimore, Md.
Quarry, Inc., The, Ann Arbor, Mich.
Read Co., The D. M., Pridgeport, Conn.
Reed Manufacturing Co., Division Lisk Manufacturing Co., Ltd., Newark, N. Y.
Reeve, James W., Salt Lake City, Utah.
Republic Stamping & Enameling Co., The, Canton, Ohio.
Rhodes Department Store, Seattle, Wash.
Rich's, Inc., Atlanta, Ga.
Rider Co., P. L., Worcester, Mass.
Rike-Kumler Co., The, Dayton, Ohio.
Roberts Brothers, Portland, Oreg.
Roemer Drug Co., Milwaukee, Wis.
Rorabaugh-Buck Dry Goods Co., Wichita, Kans.
Rosenbaum Co., Pittsburgh, Pa.
Roth, Inc., Simon, Morristown, N. J.
Saint John's Hospital, Brooklyn, N. Y.
Saint Luke's Hospital, Cleveland, Ohio.
Saint Luke's Hospital, St. Louis, Mo.
Sanger Brothers, Inc., Dallas, Tex.
Scanlan-Morris Co., Madison, Wis.
Schmidt Instrument Co., Charles A., St. Louis, Mo.
Sears, Roebuck & Co., Chicago, Ill.
Seiler Surgical Co., Inc., Omaha, Nebr.
Seller Co., M., San Francisco, Calif.
Shaw Supply Co., Inc., Tacoma, Wash.
Shillito Co., The John, Cincinnati, Ohio.
Smoot & Holman Co., Inglewood, Calif.
South Carolina Home Demonstration Extension Service, Rock Hill, S. C.
Southwestern Surgical Supply Co., El Paso, Tex.
Stanley Supply Co., New York, N. Y.
Stern Brothers, New York, N. Y.
Storz Instrument Co., St. Louis, Mo.
Strasenburgh Co., R. J., Rochester, N. Y.
Strawbridge & Clothier, Philadelphia, Pa.
Strong Manufacturing Co., The, Sebring, Ohio.
Surgeons & Physicians Supply Co., Boston, Mass.
Surgical Supply Co., Jacksonville, Fla.
Syndicate Alliance Trading Co., Inc., New York, N. Y.
Tafel, Theodore, Louisville, Ky.
Terrell Supply Co., Fort Worth, Tex.
Titanium Alloy Manufacturing Co., The, Niagara Falls, N. Y.
Titche-Goettinger Co., Dallas, Tex.
United States Stamping Co., Moundsville, W. Va.
United States Testing Co., Inc., Hoboken, N. J.
Vollrath Co., The, Sheboygan, Wis.
Wallace Co., The, Schenectady, N. Y.
Weed Stark Co., Syracuse, N. Y.
Weill & Co., Raphael (The White House), San Francisco, Calif.
Weiss & Sons, Inc., Max, New York, N. Y.
Wendt Bristol Co., The, Columbus, Ohio.
Western Surgical Supply Co., Ltd., Los Angeles, Calif.
Wolf & Dessauer Co., Fort Wayne, Ind.
Woman's Hospital, New York, N. Y.

U. S. GOVERNMENT

Office of Price Administration, Washington, D. C. (In principle.)
Treasury Department, Washington, D. C.

COMMERCIAL STANDARDS

CS No.	Item
0–40.	Commercial standards and their value to business (third edition).
1–42.	Clinical thermometers (third edition).
2–30.	Mopsticks.
3–40.	Stoddard solvent (third edition).
4–29.	Staple porcelain (all-clay) plumbing fixtures.
5–40.	Pipe nipples; brass, copper, steel, and wrought iron.
6–31.	Wrought-iron pipe nipples (second edition). Superseded by CS5–40.
7–29.	Standard weight malleable iron or steel screwed unions.
8–41.	Gage blanks (third edition).
9–33.	Builders' template hardware (second edition).
10–29.	Brass pipe nipples. Superseded by CS5–40.
11–41.	Moisture regains of cotton yarns (second edition).
12–40.	Fuel oils (fifth edition).
13–39.	Dress patterns (second edition).
14–39.	Boys' button-on waists, shirts, junior and polo shirts (made from woven fabrics) (second edition).
15–29.	Men's pajamas.
16–29.	Wall paper.
17–42.	Diamond core drill fittings (third edition).
18–29.	Hickory golf shafts.
19–32.	Foundry patterns of wood (second edition).
20–36.	Staple vitreous china plumbing fixtures (second edition).
21–39.	Interchangeable ground-glass joints, stopcocks, and stoppers (fourth edition).
22–40.	Builders' hardware (nontemplate) (second edition).
23–30.	Feldspar.
24–30.	Standard screw threads.
25–30.	Special screw threads.
26–30.	Aromatic red cedar closet lining.
27–36.	Mirrors (second edition).
28–32.	Cotton fabric tents, tarpaulins, and covers.
29–31.	Staple seats for water-closet bowls.
30–31.	Colors for sanitary ware.
31–38.	Wood shingles (fourth edition).
32–31.	Cotton cloth for rubber and pyroxylin coating.
33–32.	Knit underwear (exclusive of rayon).
34–31.	Bag, case, and strap leather.
35–31.	Plywood (hardwood and eastern red cedar).
36–33.	Fourdrinier wire cloth (second edition).
37–31.	Steel bone plates and screws.
38–32.	Hospital rubber sheeting.
39–37.	Wool and part wool blankets (second edition) (Withdrawn as commercial standard, July 14, 1941).
40–32.	Surgeons' rubber gloves.
41–32.	Surgeons' latex gloves.
42–35.	Fiber insulating board (second edition).
43–32.	Grading of sulphonated oils.
44–32.	Apple wraps.
45–40.	Douglas fir plywood (domestic grades) (fourth edition).
46–40.	Hosiery lengths and sizes (third edition).
47–34.	Marking of gold-filled and rolled-gold-plate articles other than watch cases.
48–40.	Domestic burners for Pennsylvania anthracite (underfeed type) (second edition).
49–34.	Chip board, laminated chip board, and miscellaneous boards for bookbinding purposes.
50–34.	Binders board for bookbinding and other purposes.
51–35.	Marking articles made of silver in combination with gold.
52–35.	Mohair pile fabrics (100-percent mohair plain velvet, 100-percent mohair plain frieze, and 50-percent mohair plain frieze).
53–35.	Colors and finishes for cast stone.
54–35.	Mattresses for hospitals.
55–35.	Mattresses for institutions.
56–41.	Oak flooring (second edition).
57–40.	Book cloths, buckrams, and impregnated fabrics for bookbinding purposes except library bindings (second edition).
58–36.	Woven elastic fabrics for use in overalls (overall elastic webbing).
59–41.	Woven textile fabrics—testing and reporting (third edition).
60–36.	Hardwood dimension lumber.
61–37.	Wood-slat venetian blinds.
62–38.	Colors for kitchen accessories.
63–38.	Colors for bathroom accessories.
64–37.	Walnut veneers.
65–38.	Wool and part-wool fabrics.
66–38.	Marking of articles made wholly or in part of platinum.
67–38.	Marking articles made of karat gold.
68–38.	Liquid hypochlorite disinfectant, deodorant, and germicide.
69–38.	Pine oil disinfectant.
70–41.	Phenolic disinfectant (emulsifying type) (second edition) (published with CS71–41).
71–41.	Phenolic disinfectant (soluble type) (second edition) (published with CS70–41).
72–38.	Household insecticide (liquid spray type).
73–38.	Old growth Douglas fir standard stock doors.
74–39.	Solid hardwood wall paneling.
75–42.	Automatic mechanical draft oil burners designed for domestic installations (second edition).
76–39.	Hardwood interior trim and molding.
77–40.	Sanitary cast-iron enameled ware.
78–40.	Ground-and-polished lenses for sun glasses (second edition) (published with CS79–40).
79–40.	Blown, drawn, and dropped lenses for sun glasses (second edition) (published with CS78–40).
80–41.	Electric direction signal systems other than semaphore type for commercial and other vehicles subject to special motor vehicle laws (after market).
81–41.	Adverse-weather lamps for vehicles (after market).
82–41.	Inner-controlled spotlamps for vehicles (after market).
83–41.	Clearance, marker, and identification lamps for vehicles (after market).
84–41.	Electric tail lamps for vehicles (after market).
85–41.	Electric license-plate lamps for vehicles (after market).
86–41.	Electric stop lamps for vehicles (after market).
87–41.	Red electric warning lanterns.
88–41.	Liquid-burning flares.
89–40.	Hardwood stair treads and risers.
90– .	(reserved for power shovels and cranes).
91–41.	Factory-fitted Douglas fir entrance doors.
92–41.	Cedar, cypress, and redwood tank stock lumber.
93–41.	Portable electric drills (exclusive of high frequency).
94–41.	Calking lead.
95–41.	Lead pipe.
96–41.	Lead traps and bends.
97–42.	Electric supplementary driving and passing lamps for vehicles (after market).
98–42.	Artists' oil paints.
99–42.	Gas floor furnaces—gravity circulating type.
100–42.	Multiple-coated, porcelain-enameled steel utensils.
101–43.	Flue-connected oil-burning space heaters equipped with vaporizing pot type burners

NOTICE.—Those interested in commercial standards with a view toward accepting them as a basis of everyday practice may secure copies of the above standards, while the supply lasts, by addressing the Division of Trade Standards, National Bureau of Standards, Washington, D. C.

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