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

PORCELAIN-ENAMELED STEEL UTENSILS

(SECOND EDITION)

COMMERCIAL STANDARD CS100–44

(Supersedes CS100–42)

Effective Date for New Production from October 25, 1944

A RECORDED VOLUNTARY STANDARD OF THE TRADE

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1944

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

PROMULGATION

of

COMMERCIAL STANDARD CS100–44

for

PORCELAIN-ENAMELED STEEL UTENSILS

(Second Edition)

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, which was subsequently accepted by the industry and promulgated as Multiple-Coated, Porcelain-Enameled Steel Utensils, Commercial Standard CS100–42.

On July 18, 1944, a revision submitted by the Enameled Utensil Manufacturers Council, and approved by the standing committee, was circulated for acceptance. Those concerned have since accepted and approved the revised standard as shown herein, for promulgation by the United States Department of Commerce, through the National Bureau of Standards.

The revised standard is effective for new production from October 25, 1944.

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.

PORCELAIN-ENAMELED STEEL UTENSILS

(Second Edition)

COMMERCIAL STANDARD CS100–44

PURPOSE

1. The purpose of this commercial standard is to establish standard specifications and methods of test for 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 porcelain-enameled steel utensils in accordance with approved standards.

SCOPE

2. This standard provides performance requirements for porcelain-enameled steel utensils, both multiple-coated [1] and single-coated, for cooking, and household, food storage, and hospital use. The requirements include quality of base metal, appearance, thickness, enameling; resistance to boiling acid, 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 having the strength, rigidity, and quality necessary for the production of multiple-coated or single-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 be such that the utensil cannot be spun about a single point.

5. *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

6. *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:

[1] Two or more coats on steel.

(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	Tolerance	
	Minus	Plus
Quarts	*Percent*	*Percent*
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 6 (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.

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

8. *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.

9. *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.

MULTIPLE-COATED, PORCELAIN-ENAMELED STEEL UTENSILS

10. *Boiling-acid resistance.*—The loss in weight of the enamel on multiple-coated, porcelain-enameled steel utensils, shall not exceed 0.0125 gram per square inch of wetted surface area when tested as specified in paragraph 16.

11. *Thermal shock resistance.*—When five standard 2-qt pans (see fig. 1) of multiple-coated, porcelain-enameled steel are tested for thermal shock resistance as specified in paragraph 17, the average rating of the five pans shall be not less than 3 cycles.

12. *Impact resistance.*—When 5 standard 2-qt pans (see fig. 1) of multiple-coated, porcelain-enameled steel are tested for impact resistance as specified in paragraph 18, the average of the ratings attained by the 5 pans, the rating of each pan being the average of tests at 10 points, shall be not less than 11 inches.

SINGLE-COATED, PORCELAIN-ENAMELED STEEL UTENSILS

13. *Boiling-acid resistance.*—The loss in weight of the enamel on single-coated, porcelain-enameled steel utensils shall not exceed

0.0180 gram per square inch of wetted surface area when tested as specified in paragraph 16.

14. *Thermal shock resistance.*—When five standard 2-qt pans (see fig. 1) of single-coated, porcelain-enameled steel are tested for thermal shock resistance as specified in paragraph 17, the average rating of the five pans shall be not less than 9 cycles.

15. *Impact resistance.*—When five standard 2-qt pans (see fig. 1) of single-coated, porcelain-enameled steel are tested for impact resistance as specified in paragraph 18, the average of the ratings attained by the 5 pans, the rating of each pan being the average of tests at 10 points, shall be not less than 7 inches.

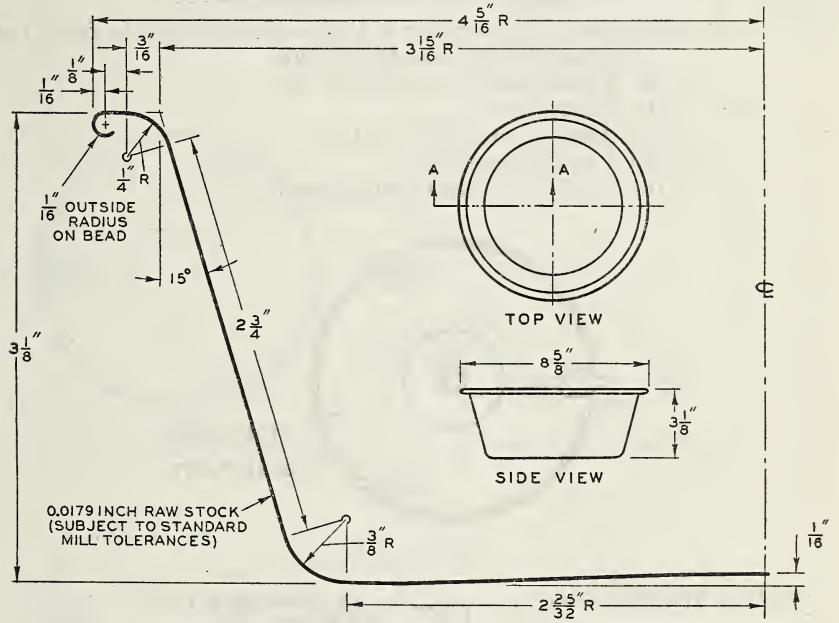


FIGURE 1.—*Standard 2-quart test pan.*

METHODS OF TEST

16. *Boiling-acid resistance test.*

16a. 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.

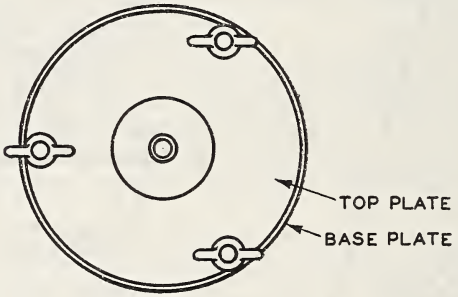
(2) Variac 100–Q transformer (115 volts, 18 amperes) or Variac 100–R transformer (230 volts, 9 amperes); 2,000 kilovolt-amperes, 60 cycles. General Radio Co., 30 State St., Cambridge, Mass.

(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 Corporation, 810 Penn Ave., Pittsburgh, Pa. (Or suitable equipment.)

(4) Adequate fuse protection.
(5) Chemical glassware. Necessary beakers, flasks, cover glasses, and glass hooks; a desiccator; and a 500-ml graduated cylinder.
(6) A drier capable of attaining and holding a temperature of at least 220° F.
(7) Boiling acid resistance apparatus (see fig. 2 and 2A). Three sets required.
(8) Acid
  (a) Citric acid (USP crystals).

NOTE.—The 6-percent citric-acid solution is made up just before starting the test.

(9) Equipment for cutting a 3¼-in.-diameter plate from the bottom of a standard 2-qt. pan.
  (a) Punch and die (see fig. 3); or
  (b) Shears; or
  (c) Abrasive cut-off wheel; or
  (d) Cutting torch; or
  (e) Any other suitable equipment.



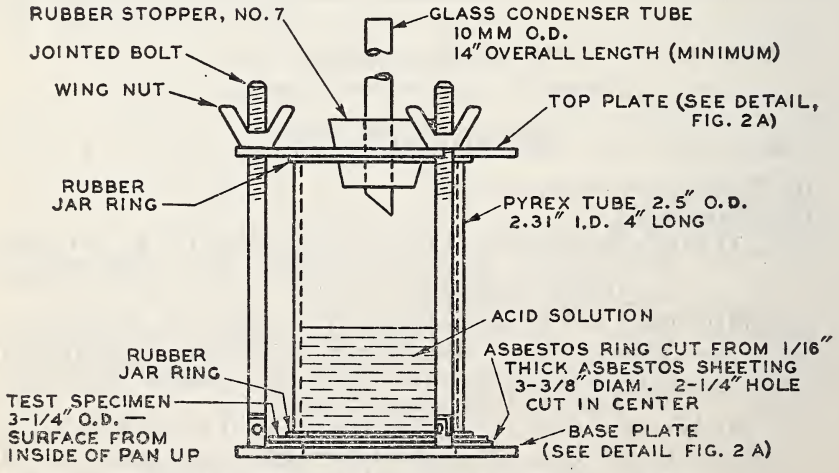


FIGURE 2.—*Boiling-acid resistance apparatus—assembly.*

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

(10) Three 3¼-in.-diameter plates cut from the bottoms of three standard 2-qt. pans.

NOTE: Boiling acid resistance apparatus and punch and die for cutting out specimens may be obtained from H & W Manufacturing Co., 121 West Water St., Urbana, Ill.

(11) Distilled water.

16b. Pretest procedure:

(1) The heating unit, after being leveled, should be heated with the high-heat switch on and drawing 500 watts, as indicated on the wattmeter, for a period of at least 1 hour, 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.

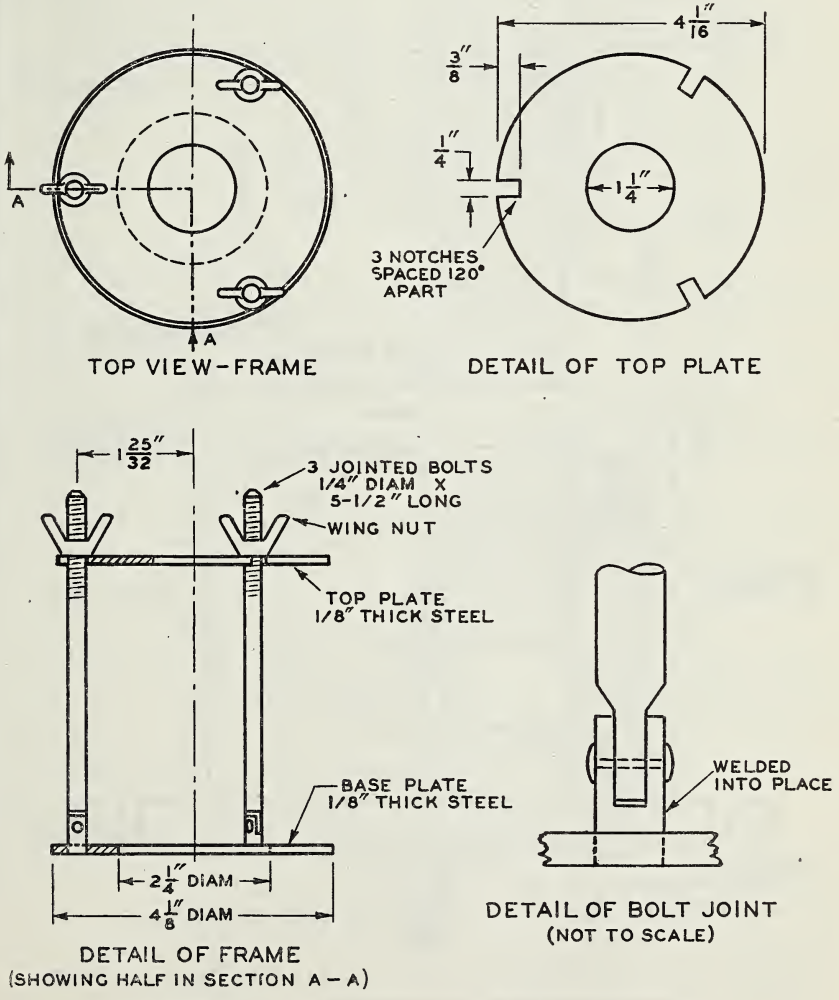


FIGURE 2, A.—*Boiling-acid resistance apparatus—detail.*

(2) Prepare a 6-percent (by weight) solution of citric acid in distilled water and bring to boiling. Prepare this solution fresh for each test.

(3) After the test plates have been cut from the pan, the edges of the plates are filed with a triangular file to remove any loose enamel chips.

(4) The enameled plates 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 drier at 220° F. After 10 minutes the

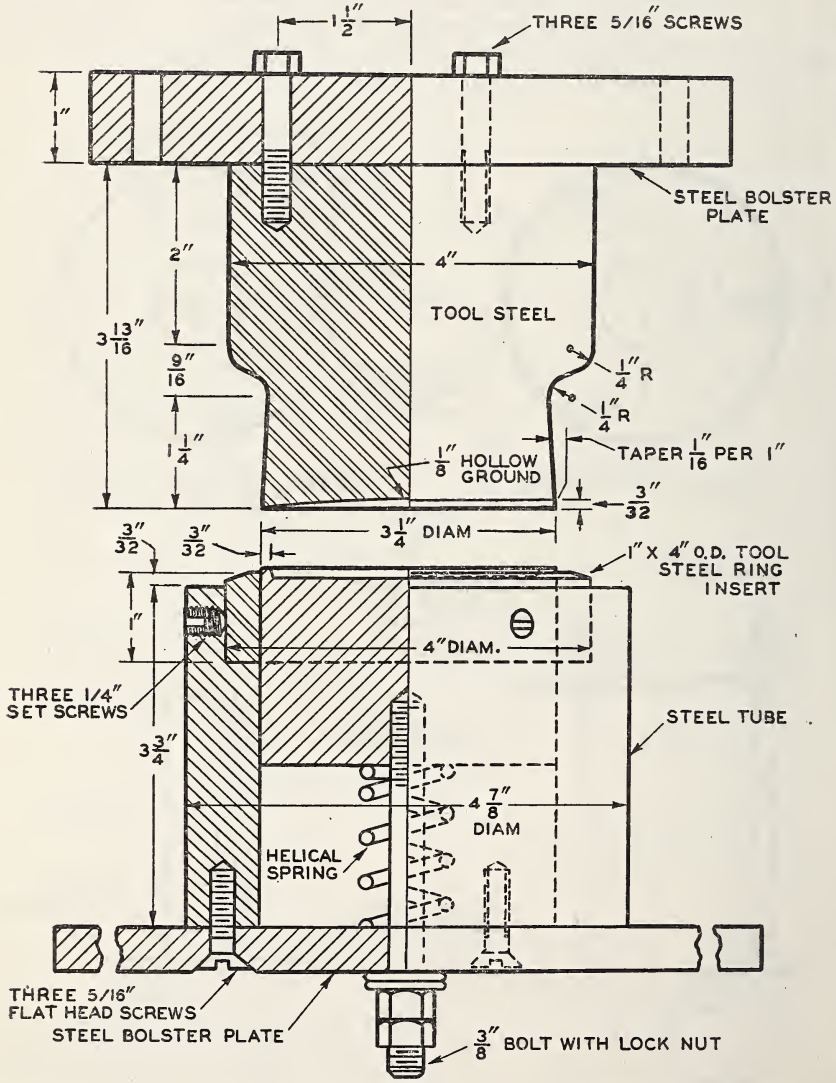


FIGURE 3.—*Punch and die for cutting out boiling-acid resistance test specimens.*

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

test plates are removed and placed in a desiccator containing calcium chloride.

16c. Test procedure:

(1) The plates are removed, one at a time, from the desiccator and held at the edges and the edges inspected for loose chips. Any chips found shall be removed before the initial weighing.

(2) The plate is then weighed on an analytical balance, recording the weight of the plate to the fourth decimal place.

(3) The asbestos gasket (see fig. 2 for detail) is placed above the hole in the base plate of the boiling acid resistance apparatus, and the test plate placed over the gasket, with the surface from the inside of the pan up. A rubber jar ring is next placed on the test plate. This serves as a seal between the test plate and the Pyrex tube which is placed over it. Another rubber jar ring is placed on the top of the Pyrex tube and the cover plate is set on it and clamped in place by tightening the wing nuts. The wing nuts are tightened until a seal is obtained between the Pyrex tube and the test plate. This can be determined by inspecting the seal ring; when the nuts are tight enough, the outside edges of the rubber jar rings are raised from the test plate. The bottom jar rings are used twice, once on each side, then discarded for new ones.

(4) 150 ml of the boiling citric acid solution is poured into each Pyrex tube, and the glass condensing tubes are set in position.

(5) The three test units are then centered on the heating unit as shown in figure 4.

(6) The test units remain in place for a period of 2½ hours.

(7) After the solutions begin to boil, the watt input is decreased so that the solutions remain at a rolling boil for the remainder of the test period.

(8) At the end of the test period the units are removed from the heating unit, the condenser tubes removed, and the solutions poured out. The inside of the tube and test plate are then rinsed with distilled water and the apparatus is dismantled.

(9) The test plates are removed, rinsed with distilled water, *but the attacked areas are not scrubbed*, and dried in the drier at 220° F. for 10 minutes. After this period they are placed in a desiccator and cooled to room temperature.

(10) After the plates are cool they are again weighed separately on the analytical balance.

16d. Calculation of results:

(1) The difference between the initial and the final weight of each plate, divided by 4 gives the loss in weight per square inch of exposed area. The average loss per square inch for three specimens from three pans shall be taken for the boiling acid resistance of a particular enamel.

613514—44——2

(2) Wetted surface area is that surface attacked by the test solution.

(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 plates shall be tested.

(4) An average of the values within plus or minus 10 percent of the average shall be taken as the boiling acid resistance of a particular enamel.

17. *Thermal shock resistance.*

17a. Test equipment:

(1) Heat-Flo SB-2000 electric heating unit; 115 to 120 volts; 2,000 watts, calibrated with similar units for uniform heat outputs at inputs (adjusted) of 300, 350 and at successive increments of 50 watts each through 1,000 watts. Calibrated (adjusted) inputs are used through-

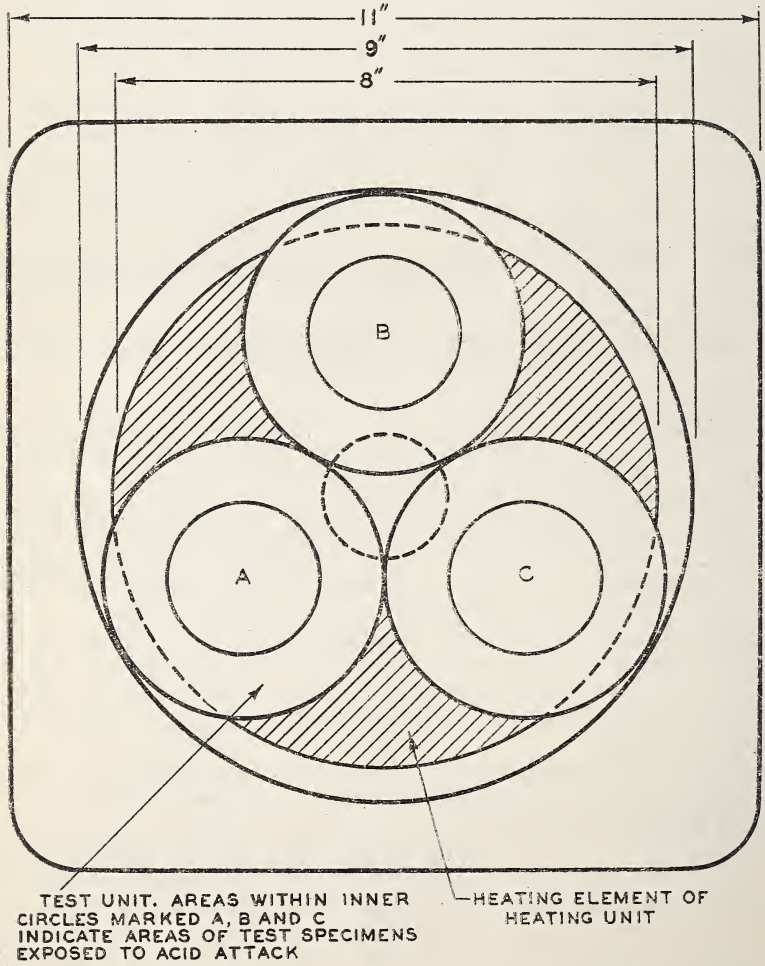


FIGURE 4.—*Position of test units of boiling-acid resistance apparatus on heating unit during boiling-acid resistance test.*

out the test. 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 cycles. General Radio Co., 30 State St., 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 Corporation, 810 Penn Avenue, Pittsburgh, Pa. (Or suitable equipment.)

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

(5) Adequate fuse protection.

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

(7) 100-ml graduated cylinder.

(8) A good sponge.

(9) Either tap or distilled water.

(10) Five standard 2-qt pans (see fig. 1).

17b. 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 300 watts, for a period of at least 1 hour, 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.

(2) The quenching water shall be placed in a large receptacle and the temperature of the water adjusted to $70° \pm 2°$ F.

17c. Test procedure:

(1) A dry standard 2-qt pan shall be centered directly on the preheated element.

(2) After 3 minutes the pan is removed from the heating unit and immediately filled to a depth of 1 inch with quenching water.

(3) After 5 seconds the water is poured out and the pan is wiped out with a damp sponge; after a total nonheating period of 15 seconds the dried pan is again centered on the heating element.

(4) Immediately after replacing the pan on the heating unit, the watt input is increased 50 watts and the pan is heated dry for 8 minutes.

(5) The pan is then removed and quenched as before. This procedure is repeated until a watt input of 600 watts is reached, after which the watt input is increased 100 watts each cycle until the pan fails [2] or 1,000 watts is reached.

17d. Important notes:

(1) The pans to be tested must be at room temperature.

(2) The quenching water must be at $70° \pm 2°$ F.

(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 period.

---

[2] *Definition of failure.* A failure is the removal of enamel from the pan, generally accompanied by a cracking noise. Fish-scaling and crazing are not a thermal shock failure unless the enamel is removed from the pan.

(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.

17e. Calculation of results:

(1) A rating of one is given to each quenching cycle in which the pan does not fail, beginning with the first quenching as described in paragraph 17c (2).

Example: A pan failing in the seventh cycle would have a rating of six for the 6 cycles in which it passed the test successfully.

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

18. *Impact resistance:*

18a. Equipment:

(1) Impact-test machine (see fig. 5 for machine nomenclature). H & W Manufacturing Co., 121 West Water St., Urbana, Ill.

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

18b. 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

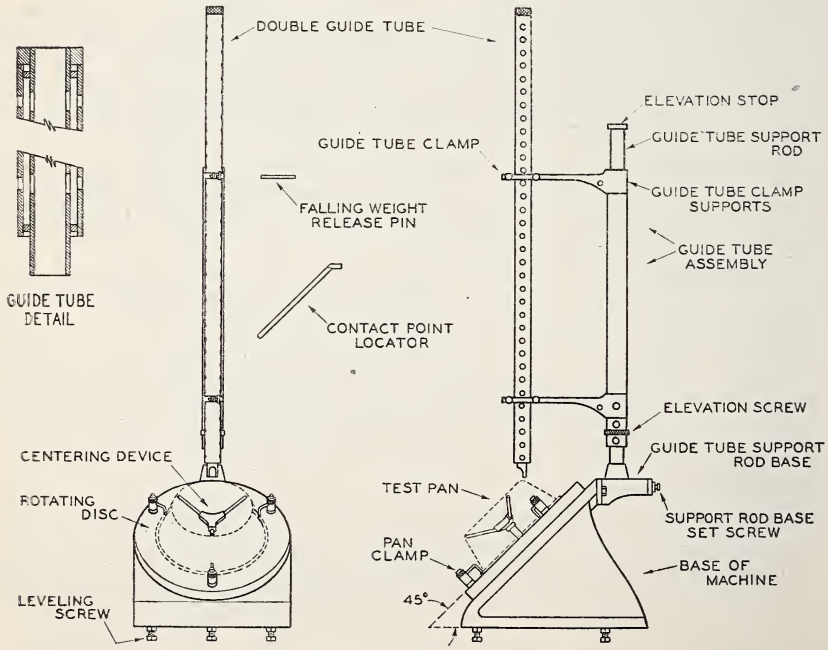


FIGURE 5.—*Impact-test machine.*

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

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.

18c. 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 spaced 1 inch apart and with the lower clamp set at a point approximately 6 inches 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.

18d. Locating the falling-weight contact point:

(1) The larger hollow setscrew wrench is used to loosen the three setscrews which are located on the right side of the guide-tube support-rod base. These setscrews 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 elevation screw (see fig. 5) 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. 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 elevation screw (see fig. 5), 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 setscrews, 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.

18e. Pretest procedure:

(1) One of the two falling-weight release pins is placed through the set of perforations at a level of 5 inches below the specified minimum height of impact the pan must pass, 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.

18f. 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 inches 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 set of perforations at a level of 5 inches below the specified minimum height of impact the pan must pass. 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.

18g. Important notes:

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

(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.

18h. 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.

LABELING

19. 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:

> This article is finished in multiple-coated [3], single-coated [3], porcelain enamel, which is *glass fused onto steel.* This utensil is guaranteed to comply with Commercial Standard CS100–44, as issued by the National Bureau of Standards, United States Department of Commerce. With proper care this article will give years of satisfactory service.

20. In order to fix responsibility for the guarantee, it is recommended that the label incorporate or be accompanied by a second label which incorporates the name of the manufacturer or distributor.

EFFECTIVE DATE

21. The standard is effective for new production from October 25, 1944.

STANDING COMMITTEE

22. 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.
Jean C. Vollrath, The Vollrath Co., 1236 N. 18th St. Sheboygan, Wis.

Distributors:

T. L. Blanke, National Retail Dry Goods Association, 101 W. 31st St., New York 1, N. Y.
Thomas E. Maley, Sears, Roebuck & Co., 925 S. Homan Ave., Chicago 7, Ill. Representing Mail Order Association of America.
Rivers Peterson, National Retail Hardware Association, 333 North Pennsylvania St., Indianapolis 4, Ind.
Paul H. Nystrom, Limited Price Variety Stores Association, Inc., 25 West 43d St., New York 17, 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 9, Ill. Representing Food Service Equipment Industry, Inc.

[3] Use the description which applies.

Users:

Harold T. Prentzel, Friend's Hospital, Frankford, Philadelphia 24, Pa. Representing American Hospital Association.

Miss Lenore Sater, Household Equipment, Bureau of Human Nutrition and 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 17, N. Y.

Mrs. Charlotte Payne, National Council of Women of the U. S., 501 Madison Ave., Room 1904, New York 22, 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, Washington 25, D. C.

L. K. Jones, Pittsburgh Testing Laboratory, Stevenson and Locust Sts., 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

23. Pursuant to a request from the General Federation of Women's Clubs under date of June 2, 1943, the National Bureau of Standards conducted an investigation of the more important properties, and the methods of measuring and testing enameled utensils.

24. 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.

25. 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 NBS to a number of representatives of 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.

26. Upon receipt of written acceptances from a preponderant majority, announcement was issued on March 30, 1942, that the standard, CS100–42, would become effective for new production from September 30, 1942.

27. On December 16, 1943, the Enameled Utensil Manufacturers Council proposed changes to broaden the scope so as to cover single-coated as well as multiple-coated utensils, and to recognize improvements in quality by increasing the severity of requirements for boiling-acid resistance and thermal shock. Following review, adjustment and approval by the standing committee, the recommended revision was circulated on July 18, 1944, to the entire trade for written acceptance. Written acceptances having been received from a preponderant majority, an announcement was issued on September 25, 1944, that the revised standard would become effective for new production from October 25, 1944.

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 25, D. C.

Gentlemen:

Having considered the statements on the reverse side of this sheet, we accept the Commercial Standard CS100–44 as our standard of practice in the

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

of 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_____

[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

28. The organizations and individuals listed below have accepted this specification as their standard of practice in the production, distribution, and use of 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 College of Surgeons, Chicago, Ill.
American Council of Commerical Laboratories, New York, N. Y.
American Home Economics Association, Washington, D. C.
American Hospital Association, Chicago, Ill.
American Surgical Trade Association, Chicago, Ill.
Enameled Utensil Manufacturers Council, Cleveland, Ohio.
Hospital Association of Philadelphia, Philadelphia, Pa.
Limited Price Variety Stores Association, New York, N. Y. (In principle.)
National Council of Women of the U. S., Inc., New York, N. Y.
National Restaurant Institute, New York, N. Y.
National Retail Dry Goods Association, New York, N. Y. (In principle.)
National Retail Hardware Association, Indianapolis, Ind.

FIRMS

Albert Drug Co., Allentown, Pa.
Aloe Co., A. S., St. Louis, Mo., and Los Angeles, Calif.
American Hospital Supply Corporation, Chicago, Ill.
American Rolling Mill Co., The, Middletown, Ohio.
Anderson Co., Inc., C. F., Minneapolis, Minn.
Anderson-Newcomb Co., Huntington, W. Va.
Arkwright Merchandise Corporation, New York, N. Y.
Ball Stores, Inc., Muncie, Ind.
Bellaire Enamel Co., The, Bellaire, Ohio.
Belmont Stamping & Enameling Co., New Philadelphia, Ohio.
Bischoff's Surgical House, San Jose, Calif.
Blickman, Inc., S., Weehawken, N. J.
Blodgett Memorial Hospital, Grand Rapids, Mich.
Bradenton Woman's Club, Bradenton, Fla.
Broadway Department Store, Inc., Los Angeles, Calif.
Brucken Co., Inc., J. A., Evansville, Ind.
Bryson Co., Inc., A., Ware, Mass.
Bush & Bull Corporation, Bethlehem, Pa.
Caldwell & Bloor Co., The, Mansfield, Ohio.
California Testing Laboratories, Inc., Los Angeles, Calif.
Canton Stamping & Enameling Co., The, Canton, Ohio.
Chicago Mail Order Co., Chicago, Ill.
Cincinnati, City of, Cincinnati, Ohio.
Cleveland Hospital Council, The, Cleveland, Ohio.
Cleveland, University Hospitals of, Cleveland, Ohio.
Columbian Enameling & Stamping Co., Inc., Terre Haute, Ind.
Combined Kitchen Equipment Co., Inc., Newark, N. J.
Connecticut, State of, Hartford, Conn.
Crunden Martin Manufacturing Co., St. Louis, Mo.
Davis & Sons, F. A., Baltimore, Md.
Debs Hospital Supplies, Chicago, Ill.
Detroit Testing Laboratory, The, Detroit, Mich. (In principle.)
Donley-Stahl Co., Lincoln, Nebr.
Dougherty & Sons, W. F., Philadelphia, Pa.
Duke University, Durham, N. C.
Eastern-Columbia, Inc., Los Angeles, Calif.
Ekroth Laboratories, Inc., Brooklyn, N. Y.
Elder & Johnston Co., The, Dayton, Ohio.
Electrical Testing Laboratories, Inc., New York, N. Y.
Elmira Drug & Chemical Co., Elmira, N. Y.
Erlanger Dry Goods Co., Canton, Ohio.
Ezekiel & Weilman Co., Inc., Richmond, Va.
Federal Enameling & Stamping Co., McKees Rocks, Pa.
Ferro Enamel Corporation, Cleveland, Ohio.
Fletcher Enamel Co., The, Dunbar, W. Va.
Flint Medical & Surgical Supply Co., Flint, Mich.
Freedlander Co., H., Wooster, Ohio.
Friends Hospital, Philadelphia, Pa.
Frye Co., Geo. C., Portland, Maine.
Fulton Co., The Robert A., Pittsburgh, Pa. (In principle.)
Genesee Hospital, The, Rochester, N. Y.
Grace Hospital, The, Detroit, Mich.
Grant Hospital, Columbus, Ohio.
Hahnemann Hospital, Scranton, Pa.
Halle Bros. Co., The, Cleveland, Ohio.
Hanks, Inc., Abbot A., San Francisco, Calif.
Hard Manufacturing Co., The, Buffalo, N. Y.
Hearn Department Stores, New York, N. Y.
Henderson Hart Co., The, Manitowoc, Wis., and Oshkosh, Wis.
Herron Co., The James H., Cleveland, Ohio.
Hospital Bureau of Standards & Supplies, Inc., New York, N. Y.
Hospital of the Protestant Episcopal Church in Philadelphia, The, Philadelphia, Pa.
Hospital Supply Co., The, and The Watters Laboratories, Consolidated, New York, N. Y.
Illinois, University of, Department of Ceramic Engineering, Urbana, Ill.
Intermountain Consumers' Service, Inc., Denver, Colo.
Iowa Methodist Hospital, Des Moines, Iowa.
Iowa State University Hospitals, Iowa City, Iowa.
Jamison Laboratories, Brooklyn, N. Y.
Jamison Semple Co., New York, N. Y.
Jones, McDuffee & Stratton Corporation, Boston, Mass.
Jones Metal Products Co., The, West Lafayette, Ohio.
Karrer Co., E. H., Milwaukee, Wis.
Kiefer Co., A. L., Milwaukee, Wis.
Kilpatrick & Co., Thomas, Omaha, Nebr.
Kings Indiana Billiard Co., Indianapolis, Ind.
Kirby, Block & Fischer, Inc., New York, N. Y.
Kress & Co., S. H., New York, N. Y.
Kreiser Surgical Supply Co., Sioux Falls, S. Dak.
Kyle Co., W. A., Houston, Tex.
Lamston, Inc., M. H., New York, N. Y.
Lilienthal & Co., Inc., Felix, New York, N. Y.

Lindsay Laboratories, Brooklyn, N. Y.
Lisk Manufacturing Co., Ltd., Canandaigua, N. Y.
Livezey Surgical Supply, Inc., Newark, N. J.
Los Angeles, City of, Los Angeles, Calif.
Marting Bros. Co., The, Portsmouth, Ohio.
Matthay Hospital Supply Co., Los Angeles, Calif.
McGean Chemical Co., The, Cleveland, Ohio.
McGonigle & Co., John D. (Andrew E. Mai-Successor), Baltimore, Md.
McGreevey, Werring & Howell Co., New York, N. Y.
Medcalf & Thomas, Fort Worth, Tex.
Medical Arts Supply Co., Huntington, W. Va.
Meier & Frank Co., Inc., Portland, Oreg.
Menninger Sanitarium, The, Topeka, Kans.
Mercer Hospital, The, Trenton, N. J.
Michael Reese Hospital, Chicago, Ill.
Michigan State Board of Water & Electric Light Commissioners, Lansing, Mich.
Michigan University Hospital, Ann Arbor ,Mich.
Miller & Paine, Lincoln, Nebr.
Minnesota Testing Laboratories, Inc., Duluth, Minn.
Minnesota University Hospitals, Minneapolis, Minn.
Missoula Mercantile Co., Missoula, Mont.
Moore Enameling & Manufacturing Co., The, West Lafayette, Ohio.
Mount Sinai Hospital, Philadelphia, Pa.
Mueller & Co., V., Chicago, Ill.
Nachman's Department Store ,Inc. ,Newport News, Va.
National Enameling & Stamping Co., Granite City Ill., and Milwaukee, Wis.
Newman Dry Goods Co., The Arkansas City, Kans.
North Carolina, State of, Division of Purchase and Contract, Raleigh, N. C.
Norton Memorial Infirmary, Louisville, Ky.
Nusbaum, Herbert F., New York, N. Y.
Ohio Federation of Women's Clubs, Lima, Ohio.
Omaha Fixture & Supply Co., Omaha, Nebr.
Paine Drug Co., The, Rochester, N. Y.
Palais Royal, The, Washington, D. C.
Paterson General Hospital, Paterson, N. J.
Patzig Testing Laboratories, Des Moines, Iowa.
Pemco Corporation, Baltimore, Md. (In principle.)
Penniman & Browne, Baltimore, Md.
Physicians Supply Co. of Philadelphia, The, Philadelphia, Pa.
Pick Co., Inc., Albert, Chicago, Ill.
Pittsburgh Testing Laboratory, Pittsburgh, Pa.
Pizitz Dry Goods Co., Louis, Birmingham, Ala.
Polar Ware Co., Sheboygan, Wis.
Popular Dry Goods Co., El Paso, Tex.
Porcelain Metals Corporation, Louisville, Ky.
Quarry, Inc., The, Ann Arbor, Mich.
Read Co., The D. M., Bridgeport, Conn.
Republic Stamping & Enameling Co., The, Canton, Ohio.
Rhode Island State Infirmary, Howard, R. I.
Rich's, Inc., Atlanta, Ga.
Rike-Kumler Co., The, Dayton, Ohio.
Riverside Hospital, Paducah, Ky.
Rosenbaum Co., The, Pittsburgh, Pa.
Rupp & Bowman Co., The, Toledo, Ohio.
Saint Luke's Hospital, Cleveland, Ohio, Fargo, N Dak. and St. Louis, Mo.
Sattler's Inc., Buffalo, N. Y.
Schear Co., Inc., Leo, Evansville, Ind.
Schuster & Co., Inc., Ed., Milwaukee, Wis.
Scranton Better Business Bureau, Scranton, Pa (In principle.)
Sears, Roebuck & Co., Chicago, Ill.
Seller-Lowengart Co., San Francisco, Calif.
Shepard Co., Providence, R. I.
Smith Co., Timothy, Roxbury, Mass.
Smoot-Holman Co., Inglewood, Calif.
Spokane Dry Goods Co., Spokane, Wash.
Sprouse-Reitz Co., Inc., Portland, Oreg.
Stillman & Van Siclen, Inc., New York, N. Y
Storz Instrument Co., St. Louis, Mo.
Strong Manufacturing Co., The, Sebring, Ohio.
Strouss-Hirshberg Co., The, Youngstown, Ohio.
Surgeons' & Physicians' Supply Co., Boston, Mass.
Surgical Business, Inc., New York, N. Y. (In principle.)
Syndicate Alliance Trading Co., Inc., New York, N. Y.
Tafel, Theo., Louisville, Ky.
Titche-Goettinger Co., Dallas, Tex.
Twining Laboratories, The, Fresno, Calif.
United States Stamping Co., Moundsville, W. Va
United States Testing Co., Inc., Hoboken, N. J (In principle.)
Virginia Polytechnic Institute, Blacksburg, Va.
Wallace Co., The, Schenectady, N. Y.
Weed-Stark Co., Syracuse, N. Y.
Wendt-Bristol Co., The, Columbus, Ohio.
Western Surgical Supply Co., Ltd., Los Angeles Calif.
White Haven Sanatorium, White Haven, Pa.
Williams Surgical Supply Co., Iowa City, Iowa.
Wilson & Son, W. B., Cape Charles, Va.
Wisco Hardware Co., Madison, Wis.
Wisconsin, State of, Bureau of Purchases, Madison, Wis.
Wolf & Dessauer, Fort Wayne, Ind.
Woman's Hospital, New York, N. Y.
Women's & Children's Hospital, Toledo, Ohio

U. S. GOVERNMENT

Agriculture, U. S. Department of, Washington, D. C
Public Health Service, Washington, D. C.
War Production Board, Washington, D. C. (In principle.)