

Commercial Standard 99-52

SUPERSEDES CS99-42

Gas Floor Furnaces—Gravity Circulating Type

A RECORDED VOLUNTARY STANDARD OF THE TRADE

COMMODITY STANDARDS

Simplified Practice Recommendations and Commercial Standards are developed by manufacturers, distributors, and users in cooperation with the Commodity Standards Division of the Office of Industry and Commerce, Bureau of Foreign and Domestic Commerce, and with the National Bureau of Standards.

The purpose of Simplified Practice Recommendations is to eliminate avoidable waste through the establishment of standards of practice for stock sizes and varieties of specific commodities that currently are in general production and demand. The purpose of Commercial Standards is to establish standard methods of test, rating, certification, and labeling of commodities, and to provide uniform bases for fair competition.

The adoption and use of a Simplified Practice Recommendation or 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.

A Simplified Practice Recommendation or a Commercial Standard originates 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 effective Simplified Practice Recommendation and Commercial Standard, through review and revision, whenever, in the opinion of the industry, changing conditions warrant such action. Simplified Practice Recommendations and Commercial Standards are printed and made available by the Department of Commerce through the Government Printing Office and the Department of Commerce field offices.

UNITED STATES DEPARTMENT OF COMMERCE

Charles Sawyer, Secretary

WITHDRAWN



U. S. DEPARTMENT OF COMMERCE

CHARLES SAWYER, Secretary

**BUREAU OF FOREIGN AND DOMESTIC
COMMERCE**

Office of Industry and Commerce

H. B. McCoy, Director

**IN COOPERATION WITH
NATIONAL BUREAU OF STANDARDS**

A. V. ASTIN, DIRECTOR

Gas Floor Furnaces—Gravity Circulating Type

(SECOND EDITION)

[Effective From December 30, 1952]

1. PURPOSE

1.1 The purpose of this standard is (1) to establish minimum specifications for the guidance of manufacturers, distributors, and users of gravity circulating-type, natural-draft gas floor furnaces; (2) to avoid delays and misunderstandings; and (3) to provide a uniform basis for guaranteeing compliance through the use of labels or certification.

2. SCOPE

2.1 With the American Standard Z21.13, Approval Requirements for Central Heating Gas Appliances, published by the American Gas Association, as basic prerequisites, and in conformity with the American Standard Z21.30, Installation of Gas Piping and Gas Appliances in Buildings, published by the American Gas Association, this standard covers construction and installation requirements for gravity circulating-type gas floor furnaces, including those having single- or dual-wall-register outlets, for use with natural, manufactured, mixed, liquefied-petroleum, and liquefied-petroleum-air gases. It includes definitions, sizing, placement, general installation requirements, venting, gas connections, and methods of certifying compliance with the standard.

3. DEFINITIONS

3.1 The following definitions apply for the purposes of this standard:

Automatic pilot.—Consists of an automatic pilot device and pilot burner securely assembled in fixed relationship.

Automatic pilot device.—A device employed with gas-burning equipment, which will automatically shut off the gas supply to the burner being served by either direct or indirect means when the pilot flame is extinguished. The pilot burner may or may not be constructed integrally with the device.

Automatic pilot, complete shut-off type.—An automatic pilot for shutting off, automatically, the gas supply to the main burner and pilot in the event of pilot or gas failure, and also for preventing the gas from being turned into the main burner unless the pilot is lighted.

Chimney.—A vertical masonry or reinforced-concrete shaft containing one or more flues or vents.

Crossover or offset.—Any deviation from the vertical rise of the flue or vent, necessitating one or more fittings.

Draft hood.—A device built into an appliance or made a part of the flue or vent connector from an appliance, which is designed to (1)

insure the ready escape of the products of combustion in the event of no draft, back draft, or stoppage beyond the draft hood; (2) prevent a back draft from entering the appliance; and (3) neutralize the effect of stack action of the flue or vent upon the operation of the appliance.

Floor furnace.—A completely self-contained unit furnace suspended from the floor of the space to be heated, taking air for combustion from outside this space, and with means for observing flames and lighting the appliance from such space.

Flue collar.—That portion of an appliance designed for the attachment of the draft hood or flue or vent connector.

Flue or vent.—A conduit or passageway, vertical or nearly so, for conveying flue gases to the outer air.

Flue or vent connector.—The pipe connecting an appliance with the flue or vent. This corresponds to the smoke pipe used with solid or liquid fuels.

Regulator, gas pressure.—A device for controlling and maintaining a uniform gas supply pressure.

Vent.—See definition of "Flue or vent."

4. APPLIANCE CONSTRUCTION REQUIREMENTS

4.1 *General.*—All gravity-type gas floor furnaces shall be manufactured so as to comply with the requirements for performance, safe operation, and substantial and durable construction set forth in the applicable American Standard (Z21.13), Approval Requirements for Central Heating Gas Appliances, published by the American Gas Association. Such compliance shall be determined from laboratory tests on one or more sample furnaces by a nationally recognized testing agency adequately equipped and competent to perform such services, and shall be evidenced by the attachment of its seal or label to such furnaces. Such agency shall be one which maintains a program of national inspection of production models of all such floor furnaces at least once each year on the manufacturers' premises. Approval by the American Gas Association Laboratories, as evidenced by the attachment of their Approval Seal to such floor furnaces, and a certificate or letter certifying approval under the above-mentioned requirements, shall be considered as constituting compliance with the provisions of this section.

5. SIZING

5.1 *Heat loss.*—It is recommended that for *residences* at least one gas floor furnace be used for each 45,000 Btu per hour of "total heat loss." It is recommended that the total heat loss be based on a formula established by the American Society of Heating and Ventilating Engineers, using 70° F as the inside temperature of all rooms to be heated, when the outside temperature is 15° F above the lowest recorded temperature of the locality. For buildings of other types, the inside temperatures to be maintained shall be as recommended by the ASHVE Guide. When simplified formulas are used for computing heat loss, they should be such as are known to give greater, rather than smaller, computed losses than are given by the current method of the American Society of Heating and Ventilating Engineers.

5.2 *Size.*—After determining the correct heat loss, a pick-up factor of not less than 10 percent shall be added. The minimum size furnace or furnaces can then be selected. Under the marking rules of the

American Gas Association, the input and output ratings of a gravity-type gas floor furnace are required on the nameplate. When selecting the proper size furnace, the minimum-output rating of a furnace, or the combined output ratings of the furnaces, shall be not less than the computed maximum hourly heat loss, including the pick-up factor. (Also see par. 7.11 for input adjustments for high altitudes.)

5.2.1 The popular sizes of gas floor furnaces range from 15,000 to 80,000 Btu per hour input.

6. PLACEMENT

6.1 *General.*—After selecting the proper size of furnace or furnaces, the next important consideration is their placement. The following are requirements that will serve in properly placing the furnace or furnaces to serve one story.

6.2 *Distance.*—To meet varying conditions of climate and usage, it is recommended that the furnace be so located that for residences the maximum distance, center to center, between the furnace and any room to be heated by it, measured through intervening openings, should be as short as possible, preferably not to exceed 15 feet.

6.3 *Doorways.*—The furnace or furnaces shall be so placed that any single path of air circulating to and from the furnace does not pass through more than one doorway and one arch.

6.4 *Walls and corners.*—With the exception of wall-register models, a floor furnace shall not be placed closer than 6 inches to the nearest wall, and wall-register models shall not be placed closer than 6 inches to a corner.

6.5 *Draperies.*—The furnace or furnaces shall be so placed that a door, drapery, or similar object cannot be nearer than 12 inches to any portion of the register of the furnace.

6.6 *Bathroom.*—Any dual-wall-register furnace installed between the bathroom and adjoining rooms shall not recirculate air from the bathroom.

6.7 *Exposure.*—In case there is a choice of locations, the furnace shall favor or be nearer the sides of the house exposed to the prevailing winter winds.

6.8 *Central location.*—Generally speaking, the more central the location the better, favoring slightly the sides exposed to the prevailing winter winds.

7. GENERAL INSTALLATION REQUIREMENTS

7.1 The following requirements should be considered in the installation of gas floor furnaces.

7.2 *Upper-floor installations.*—Gas floor furnaces may be installed in an upper floor, provided the furnace assembly projects below into a utility room, closet, garage, or similar nonhabitable space. In such installations, the furnace shall be enclosed completely (entirely separated from the nonhabitable space), with means for air intake to meet the provisions of paragraph 7.6, with access facilities for servicing on the control side, with minimum furnace clearances of 6 inches on all sides and bottom, and with the enclosure constructed of portland cement plaster on metal lath or material of equal fire resistance.

7.3 *Floor levels.*—The floor immediately surrounding the floor furnace shall be reasonably level. When heating two rooms having dif-

ferent floor levels, the furnace shall be installed in the room having the lower floor. It is also well to locate the furnace near the steps if possible. Where a dual-wall-register furnace is installed between rooms having different floor levels, the furnace shall be installed at the lower floor level with an approved vertical extension to the upper floor level.

7.4 Bracing.—The floor around the furnace shall be braced and headed with a framework of material not lighter than the joists. The inside dimensions of the framework shall be not more than $\frac{3}{8}$ inch longer and wider than the furnace to be installed.

7.5 Support.—Means shall be provided to support the furnace when the floor grille is removed.

7.6 Combustion air.—Fixed ventilation, by means of a duct or grille arranged to supply air from a permanently ventilated attic or under-floor space, shall be provided to any confined space which encloses the floor furnace. The duct or grille shall be screened and have a free area of at least twice the free area of the vent collar of the floor furnace, or 1 square inch per 1,000 Btu per hour of gas input, whichever is the greater, and shall be installed in such a manner as to insure proper combustion.

7.7 Clearance.—The lowest portion of the floor furnace shall have at least a 6-inch clearance from the general ground level, except that where the lower 6-inch portion of the floor furnace is sealed by the manufacturer to prevent entrance of water, the clearance may be reduced to not less than 2 inches. When these clearances are not present, the ground below and to the sides shall be excavated to form a basin-like pit under the furnace so that the required clearance is provided beneath the lowest portion of the furnace. A 12-inch clearance shall be provided on all sides except the control side, which shall have an 18-inch clearance.

7.8 Seepage pan or pit.—Whenever the excavation exceeds 12 inches or water seepage is likely, a watertight pit or pan shall be used.

7.8.1 Seepage pan.—If a pan is used, it shall be made of copper or other suitable material and be so fabricated that it is watertight. The bottom of the pan shall be at least 2 inches below the lowest point of the furnace. The walls shall extend at least 4 inches above the ground level at the point of installation with a 6-inch clearance on all sides except the control side, which shall have an 18-inch clearance. The pan shall be anchored in place to prevent floating.

7.8.2 Seepage pit.—If a concrete pit is used, the bottom shall be at least 6 inches below the lowest point of the furnace. The walls of the pit shall extend at least 4 inches above the ground level at point of installation with a 6-inch clearance on all sides except the control side, which shall have an 18-inch clearance.

7.8.3 Exception.—When the equipment is sealed by the manufacturer to prevent the entry of water, the pit or pan may be omitted, if not required for maintaining a dry condition for service access.

7.9 Access.—Provision shall be made for access to the floor furnace by means of an opening in the foundation wall of at least 18 by 24 inches, or through a trap door of at least 24 by 24 inches, located at some convenient point, and a clear and unobstructed passageway to the floor furnace at least 18 inches high by 24 inches wide. The local gas company should be consulted with reference to the access facilities for servicing where it provides service.

7.10 *Appliance alterations.*—All gas floor furnaces, including those having single- or dual-wall-register outlets, shall be installed as approved under this standard without alterations, extensions, or changes of any kind in the furnace.

7.11 *Adjustment.*—All gas floor furnaces except those using liquefied-petroleum gases shall be equipped with a gas-pressure regulator. The floor furnace shall be adjusted so that the gas input does not exceed the approved input rating shown on the nameplate. Floor furnaces approved for high-altitude operation shall be adjusted at the high-altitude input rating shown on the nameplate when installed at elevations between 2,000 and 5,000 feet above sea level. When installed at elevations above 5,000 feet, the approved high-altitude rating shall be reduced at the rate of 4 percent for each additional 1,000 feet. Floor furnaces not approved for high-altitude operation and installed at elevations above 2,000 feet shall have their ratings reduced at the rate of 4 percent for each 1,000 feet above sea level.

8. VENTING

8.1 *General.*—Each gas floor furnace shall be properly vented to the outer air.¹ The following are requirements covering the proper venting of a floor furnace.

8.1.1 *Draft hood.*—A draft hood approved as an integral part of the furnace and supplied with it by the manufacturer shall be in place when making the flue connection to the vertical vent, flue, or chimney, unless the construction of the floor furnace serves the purpose of a draft hood.

8.1.2 *Damper.*—A damper or similar device shall never be installed in the flue connector from a gas floor furnace.

8.1.3 *Size of vent.*—All gas floor furnaces shall be vented into a vertical flue or chimney of a size not less than that of the flue collar of the floor furnace, and in no case less than 12 square inches in area.

8.1.4 *Height of vent.*—The vertical vent, flue, or chimney shall extend at least 2 feet above the highest elevation of a building within 10 feet of the termination of the vertical vent, flue, or chimney. A shorter vertical flue may be used with an approved flue cap, provided adequate venting is assured.

8.1.5 *Venting material.*—In case venting material (not a chimney) is used for the vertical vent, the material used shall conform to and be installed according to the local building code. In the absence of a local building code, the venting material shall comply with the listing requirements of the Underwriters' Laboratories, Inc. Masonry chimneys, constructed for the purpose of venting gas floor furnaces, shall be lined with terra-cotta or comparable flue lining. Whenever a gas floor furnace is vented into an existing unlined masonry chimney, the chimney shall be clean. The horizontal flue connection in all cases shall enter the chimney at least 1 foot above the bottom of the chimney. Means shall be provided for cleaning out the base of the chimney.

¹ Where mechanical venting is used, the unit shall have been tested for performance and safe operation by a nationally recognized testing agency. The capacity of the unit installed shall be adequate to vent properly the input of the appliance to which it is attached, and any means provided for adjusting the draft shall be permanently sealed after proper setting by the installer. The unit and furnace controls shall be so interlocked that the gas cannot flow to the appliance unless the draft unit is in operation.

8.1.6 *Flue connector*.—The flue connector shall be as short as practicable and shall not be longer than 75 percent of the height of the vertical flue or chimney, and have an incline of not less than $\frac{1}{4}$ inch per foot of length. The flue connector, when in contact with the soil, shall be insulated with waterproof insulation, and protected against corrosion. The flue connector shall not project into the free area of the flue or chimney, and shall be adequately supported and securely attached.

8.1.7 *Crossover or offset*.—No crossover or offset shall be permitted at an angle of less than 30° to the horizontal.

8.1.8 *Holes*.—Flue or vent connectors shall be clear and free from any stoppage, and free from any holes that would restrict draft.

8.1.9 *Area*.—When the floor furnace is connected to a vertical flue or chimney into which other appliances are connected, or when two or more furnaces are connected to a single vertical flue, the vertical flue or chimney shall have a cross-sectional area at least equal to the cross-sectional area of the largest flue collar plus 50 percent of the area of each additional appliance flue collar connected thereto.

9. GAS CONNECTIONS

9.1 *Testing*.—All gas connections shall be tested to be sure they are gas-tight.

9.2 *Manual main shut-off valve*.—A separate manual main shut-off valve shall be provided ahead of all controls and a union connection shall be provided downstream from this valve to permit removal of the controls or the floor furnace.

9.3 *Gas-pressure regulator*.—All gas floor furnaces (excepting those using liquefied-petroleum gases) shall be installed with the gas-pressure regulator approved for use with the unit and furnished with it by the manufacturer.

9.4 *Automatic pilot*.—If automatic operation of floor furnaces is desired, care must be taken that a model approved and equipped for use with an automatic pilot is employed. No automatic pilot shall be installed in the field on a floor furnace that has not been approved with such equipment. Automatic pilots are recommended for all floor furnaces.

9.4.1 When the furnace is to be used with liquefied-petroleum gas, an automatic pilot of the complete shut-off type must be used.

10. GUARANTY

10.1 All furnaces shall carry the manufacturer's specific guaranty against defects in material and workmanship for a minimum period of 1 year.

11. CERTIFICATION AND LABELS

11.1 *Manufacturer's guaranty*.—In addition to the permanently attached label or seal of the laboratory or testing agency determining compliance with the specifications as set forth in paragraph 4.1, each individual furnace shall also bear the manufacturer's label or seal, permanently attached and visible, embodying the following wording:

The manufacturer declares that this GAS FLOOR FURNACE complies with Commercial Standard CS99-52.

11.2 *Installer's certificate.*—The following certificate supplied by the manufacturer shall be placed with each individual installation by the installer :

This _____ GAS FLOOR FURNACE has been installed
(Brand or company name)
in strict compliance with the requirements of Commercial Standard
CS99-52, as developed by the trade under the procedure of the
Commodity Standards Division, and issued by the U. S. Department
of Commerce.

Date

Signature

12. EFFECTIVE DATE

12.1 Having been passed through the regular procedure of the Commodity Standards Division, and approved by the acceptors herein-after listed, this commercial standard was issued by the United States Department of Commerce, effective from December 30, 1952.

EDWIN W. ELY,

Chief, Commodity Standards Division.

HISTORY OF PROJECT

First edition.—Pursuant to a request dated December 12, 1940, from the Association of Gas Appliance & Equipment Manufacturers, there was developed by the interested manufacturers, in cooperation with the National Bureau of Standards, a proposed commercial standard for gas floor furnaces. This draft was adjusted at manufacturers' conferences in Los Angeles, Calif., and Washington, D. C., and again revised, after circulation to leading distributors, testing laboratories, Government agencies, and other users, at a conference in Atlantic City, N. J. A general conference was then held in Washington to which all interested producers, distributors, users, and representatives of testing laboratories were invited.

On December 29, 1941, the recommended commercial standard, as adopted by the general conference, was circulated to the entire trade for written acceptance. Following acceptance by a satisfactory majority, and in the absence of active opposition, an announcement was issued on February 25, 1942, that the standard, designated CS99-42, would become effective for new production from May 25, 1942.

First revision.—On February 27, 1948, at the instance of a manufacturer of gas floor furnaces, work was begun on a proposed revision of CS99-42. After adjustment in accordance with comments, the proposal was approved by the standing committee and circulated, as a recommended revision, to the industry for acceptance on June 15, 1949. A considerable number of comments were received on the recommendation, as a result of which the chairman of a subcommittee of the Gas Floor Furnace Division of the Gas Appliance Manufacturers Association requested that the recommended revision be held in abeyance pending a review by this committee.

On October 10, 1951, a revised draft, incorporating suggestions to bring the commercial standard in agreement with American Standard Z21.30, Installation of Gas Piping and Gas Appliances in Buildings, and approved by the standing committee, was submitted to the industry for written acceptance.

Following acceptance by a satisfactory majority, and in the absence of active, valid opposition, an announcement was issued on September

30, 1952, that the revised standard, designated CS99-52, had been accepted as the recorded voluntary standard of the trade, effective for new production from December 30, 1952.

Project Manager: H. A. Bonnet, Commodity Standards Division, Office of Industry and Commerce.

Technical Adviser: J. H. Eiseman, Gas Chemistry 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. Comments concerning the standard and suggestions for revision may be addressed to any member of the committee or to the Commodity Standards Division, Office of Industry and Commerce, U. S. Department of Commerce, which acts as secretary for the committee.

Testing laboratories:

J. H. EISEMAN (chairman), Gas Chemistry Section, National Bureau of Standards, Washington 25, D. C.

R. M. CONNER, AGA Testing Laboratories, 1032 East Sixty-second Street, Cleveland 3, Ohio.

R. S. DILL, Heating and Air Conditioning Section, National Bureau of Standards, Washington 25, D. C.

Manufacturers:

CLARENCE W. COLEMAN, Coleman Co., Inc., St. Francis and Second Streets, Wichita 1, Kans.

R. E. JAMES, Rheem Manufacturing Co., Research Building 4, 4361 Firestone Boulevard, South Gate, Calif.

R. O. MONTREEF, Ward Heater Co., 1800 West Washington Boulevard, Los Angeles 7, Calif.

FRANK C. PACKER, Payne Furnace Division of Affiliated Gas Equipment, Inc., Monrovia, Calif.

CARL F. SCHLENK, Estate Heatrola, Division of Noma Electric Corp., East Avenue, Hamilton, Ohio.

Distributors:

HARRY L. WARREN, Gas Appliance Laboratory of Southern California and Southern Counties Gas Company of California, 1700 Santa Fe Avenue, Los Angeles, Calif.

JAMES P. DRESEN, Public Service Co., Denver, Colo.

C. A. KOOKE, Gas & Steam Distribution, Consolidated Gas, Electric Light & Power Company of Baltimore, Baltimore 3, Md.

G. A. BAEHR, Sears, Roebuck & Co., 925 South Homan Avenue, Chicago 7, Ill.

Consumers:

R. K. THULMAN, Housing and Home Finance Agency, 1626 K Street NW., Washington 25, D. C.

MRS. CHARLOTTE LEYDEN, % American Cancer Society, 47 Beaver Street, New York, N. Y. (representing National Council of Women of the U. S., Inc.).

FELIX A. PECKHAM, Office of Chief of Engineers, Department of the Army, Washington 25, D. C.

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 -----

Commodity Standards Division,
Office of Industry and Commerce,
U. S. Department of Commerce,
Washington 25, D. C.

Gentlemen:

We believe that the Commercial Standard 99-52 constitutes a useful standard of practice, and we individually plan to utilize it as far as practicable in the

production¹ distribution¹ purchase¹ testing¹
of gas floor furnaces—gravity circulating type.

We reserve the right to depart from it 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.

(Cut on this line)

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 which one. 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 interests, trade associations, trade papers, etc., desiring to record their general support, the words "General support" 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 of the Department of Commerce, the support of any standard is inadequate, the right is reserved to withhold promulgation and publication.

ACCEPTORS

The organizations listed below have individually accepted this standard for use as far as practicable in the production, distribution, testing, or purchase of gravity circulating-type gas floor furnaces. In accepting the standard they reserved the right to depart from it as they individually deem advisable. It is expected that gas floor furnaces which actually comply with the requirements of this standard in all respects will be regularly identified or labeled as conforming thereto, and that purchasers will require such specific evidence of conformity.

FIRMS AND OTHER INTERESTS

Advance Furnace Co., Wichita, Kans.
 Affiliated Gas Equipment, Inc., Payne Furnace Division, Monrovia, Calif.
 Airlene Gas Co., Inc., Paducah, Ky.
 Allison-Erwin Co., Charlotte, N. C.
 Amere Gas Utilities Co., Beckley, W. Va.
 American Association of Engineers, Chicago, Ill. (General support.)
 American Radiator & Standard Sanitary Corp., Pittsburgh, Pa.
 American Warming & Ventilating Co., Elmira, N. Y.
 Andrews Heater Co., Los Angeles, Calif.
 Battelle Memorial Institute, Columbus, Ohio.
 Borg-Warner Corp., Ingersoll Products Division, Kalamazoo, Mich.
 California Institute of Technology, Pasadena, Calif. (General support.)
 California-Pacific Utilities Co., San Francisco, Calif.
 Coleman Co., Inc., Wichita, Kans.
 Empire Stove Co., Belleville, Ill.
 Evans Products Co., Plymouth, Mich.
 Foster-Thornburg Hardware Co., Huntington, W. Va.
 Harer Furnace & Supply Co., Oakland, Calif.
 Harris, Jay, New York, N. Y.
 Heating Equipment Manufacturing Co., San Francisco, Calif.
 Heating Service Co., Winnetka, Ill.
 Holland Furnace Co., Holland, Mich.
 Holly Manufacturing Co., Pasadena, Calif.
 Huey & Philp Hardware Co., Dallas, Tex.
 Ideal Heating Corp., Los Angeles, Calif.
 International Sales Co., San Francisco, Calif.
 Lee Hardware Co., Salina, Kans.
 Mastercraft Homes, Schenectady, N. Y.
 McDonald, A. Y., Manufacturing Co., Kansas City, Mo.
 McGowin-Lyons Hardware & Supply Co., Mobile, Ala.
 McMahill Heating Service, Omaha, Nebr.
 Michigan Gas & Electric Co., Three Rivers, Mich.
 Mission Appliance Corp., Hawthorne, Calif.
 Missouri Natural Gas Co., Farmington, Mo.
 Mount Vernon Furnace & Manufacturing Co., Mount Vernon, Ill.
 Noma Electric Corp., Estate Heatrola Division, Hamilton, Ohio.
 Northern Oklahoma Gas Co., Ponca City, Okla.

FIRMS AND OTHER INTERESTS—Con.

Ohio Fuel Gas Co., Columbus, Ohio.
 Palmer, Gerald L., Chicago, Ill.
 Patzig Testing Laboratories, Des Moines, Iowa.
 Payne, E. L., Heating Co., Beverly Hills, Calif.
 Pennsylvania Furnace & Iron Co., Warren, Pa.
 Peoples Natural Gas Co., Omaha, Nebr.
 Peoples Natural Gas Co., Pittsburgh, Pa.
 Plumb Supply-Omaha, Inc., Omaha, Nebr.
 Rheem Manufacturing Co., Whittier, Calif.
 Richmond Hardware Co., Richmond, Va.
 Rulane Gas Co., Charlotte, N. C.
 St. Louis Sampling & Testing Works, St. Louis, Mo.
 Samuel Stamping & Enameling Co., Chattanooga, Tenn.
 San Diego Gas & Electric Co., San Diego, Calif.
 Sears, Roebuck & Co., Chicago, Ill.
 Southern Heater Co., Inc., New Orleans, La.
 Stewart, W. H., Co., Oklahoma City, Okla.
 Sunshine Mantle Co., Chanute, Kans.
 Temco, Inc., Nashville, Tenn.
 Twining Laboratories, Fresno, Calif.
 Unimatic Heating Systems, Inc., Los Angeles, Calif.
 United Fuel Gas Co., Charleston, W. Va.
 United States Testing Co., Hoboken, N. J.
 Utility Appliance Corp., Los Angeles, Calif.
 Virginia Polytechnic Institute, Blacksburg, Va.
 Vorys Bros., Inc., Columbus, Ohio.
 Wallace, William, Co., Belmont, Calif. (General support.)
 Warne Appliances & Heating, Downey, Calif.
 Western Kentucky Gas Co., Owensboro, Ky.
 York County Gas Co., York, Pa.

U. S. GOVERNMENT

Agriculture, U. S. Department of, Division of Procurement and Property Management, Washington, D. C.
 Army, Department of the, Office of the Assistant Chief of Staff, Washington, D. C.
 General Services Administration, Public Buildings Service, Washington, D. C.
 Veterans Administration, Procurement Division, Washington, D. C.

COMMERCIAL STANDARDS

CS No.

0. Commercial standards and their value to business.
1. Clinical thermometers.
2. Mopsticks.
3. Stoddard solvent.
4. Staple porcelain (all-clay) plumbing fixtures.
5. Pipe nipples; brass, copper, steel and wrought-iron.
6. Wrought-iron pipe nipples. Superseded by CS5.
7. Standard weight malleable iron or steel screwed unions.
8. Gage blanks.
9. Builders' template hardware.
10. Brass pipe nipples. Superseded by CS5.
11. Moisture regains of cotton yarns.
12. Fuel oils.
13. Dress patterns.
14. Boys' sport and dress shirt (woven fabrics) size measurements.
15. Men's pajama sizes (made from woven fabrics).
16. Wallpaper.
17. Diamond core drill fittings.
18. Hickory golf shafts.
19. Foundry patterns of wood.
20. Vitreous china plumbing fixtures.
21. Interchangeable ground-glass joints, stopcocks, and stoppers.
22. Builders' hardware (nontemplate).
23. Feldspar.
24. Screw threads and tap-drill sizes.
25. Special screw threads. Superseded by CS24.
26. Aromatic red cedar closet lining.
27. Mirrors.
28. Cotton fabric tents, tarpaulins and covers.
29. Staple seats for water-closet bowls.
30. (Withdrawn.)
31. Wood shingles.
32. Cotton cloth for rubber and pyroxylin coating.
33. Knit underwear (exclusive of rayon).
34. Bag, case, and strap leather.
35. Hardwood plywood.
36. Fourdrinier wire cloth.
37. Steel bone plates and screws.
38. Hospital rubber sheeting.
39. (Withdrawn.)
40. Surgeons' rubber gloves.
41. Surgeons' latex gloves.
42. Structural fiber insulating board.
43. Grading of sulphonated oils.
44. Apple wraps.
45. Douglas fir plywood.
46. Hosiery lengths and sizes.
47. Marking of gold-filled and rolled-gold-plate articles other than watchcases.
48. Domestic burners for Pennsylvania anthracite (underfeed type).
49. Chip board, laminated chip board, and miscellaneous boards for bookbinding purposes.
50. Binders board for bookbinding and other purposes.
51. Marking articles made of silver in combination with gold.
52. Mohair pile fabrics (100-percent mohair plain velvet, 100-percent mohair plain frieze, and 50-percent mohair plain frieze).
53. Colors and finishes for cast stone.

CS No.

54. Mattresses for hospitals.
55. Mattresses for institutions.
56. Oak flooring.
57. Book cloths, buckrams, and impregnated fabrics for bookbinding purposes except library bindings.
58. Woven elastic fabrics for use in overalls (overall elastic webbing).
59. Textiles—testing and reporting.
60. Hardwood dimension lumber.
61. Venetian blinds (grade A, custom-made).
62. Colors for kitchen accessories.
63. Colors for bathroom accessories.
64. Walnut veneers.
65. Methods of analysis and of reporting fiber composition of textile products.
66. Marking of articles made wholly or in part of platinum.
67. Marking articles made of karat gold.
68. Liquid hypochlorite disinfectant, deodorant, and germicide.
69. Pine oil disinfectant.
70. Phenolic disinfectant (emulsifying type) (published with CS71).
71. Phenolic disinfectant (soluble type) (published with CS70).
72. Household insecticide (liquid spray type).
73. Old growth Douglas fir, Sitka spruce, and western hemlock standard stock doors.
74. Solid hardwood wall paneling.
75. Automatic mechanical draft oil burners designed for domestic installations.
76. Hardwood interior trim and molding.
77. Enameled cast-iron plumbing fixtures.
78. Ground-and-polished lenses for sun glasses (published with CS79).
79. Blown, drawn, and dropped lenses for sun glasses (published with CS78).
80. Electric direction signal systems other than semaphore type for commercial and other vehicles subject to special motor vehicle laws (after market).
81. Adverse-weather lamps for vehicles (after market).
82. Inner-controlled spotlamps for vehicles (after market).
83. Clearance, marker, and identification lamps for vehicles (after market).
84. Electric tail lamps for vehicles (after market).
85. Electric license-plate lamps for vehicles (after market).
86. Electric stop lamps for vehicles (after market).
87. Red electric warning lanterns.
88. Liquid burning flares.
89. Hardwood stair treads and risers.
90. Power cranes and shovels.
91. Factory-fitted Douglas fir entrance doors.
92. Cedar, cypress, and redwood tank stock lumber.
93. Portable electric drills (exclusive of high frequency).
94. Calking lead.
95. Lead pipe.
96. Lead traps and bends.
97. Electric supplementary driving and passing lamps for vehicles (after market).
98. Artists' oil paints.

- CS No.
99. Gas floor furnaces—gravity circulating type.
 100. Porcelain-enameled steel utensils.
 101. Flue-connected oil-burning space heaters equipped with vaporizing pot-type burners.
 102. (Reserved for "Diesel and fuel-oil engines.")
 103. Rayon jacquard velour (with or without other decorative yarn).
 104. Warm-air furnaces equipped with vaporizing-type oil burners.
 105. Mineral wool insulation (for low temperatures).
 106. Boys' pajama sizes (woven fabrics).
 107. (Withdrawn.)
 108. Treading automobile and truck tires.
 109. Solid-fuel-burning forced-air furnaces.
 110. Tire repairs—vulcanized (passenger, truck, and bus tires).
 111. Earthenware (vitreous-glazed) plumbing fixtures.
 112. Homogeneous fiber wallboard.
 113. Oil-burning floor furnaces equipped with vaporizing pot-type burners.
 114. Hospital sheeting for mattress protection.
 115. Porcelain-enameled tanks for domestic use.
 116. Bituminized-fibre drain and sewer pipe.
 117. Mineral wool insulation for heated industrial equipment.
 118. Marking of jewelry and novelties of silver.
 - (E) 119.¹ Dial indicators (for linear measurements).
 120. Standard stock ponderosa pine doors.
 121. Women's slip sizes (woven fabrics).
 122. Western softwood plywood.
 123. Grading of diamond powder.
 - (E) 124.¹ Master disks.
 125. Prefabricated homes.
 126. Tank-mounted air compressors.
 127. Self-contained mechanically refrigerated drinking water coolers.
 128. Men's sport shirt sizes—woven fabrics (other than those marked with regular neckband sizes).
 129. Materials for safety wearing apparel.
 130. Color materials for art education in schools.
 131. Industrial mineral wool products, all types—testing and reporting.
 132. Hardware cloth.
 133. Woven wire netting.
 134. Cast aluminum cooking utensils (metal composition).
 135. Men's shirt sizes (exclusive of work shirts).
 136. Blankets for hospitals (wool, and wool and cotton).
 137. Size measurements for men's and boys' shorts (woven fabrics).
 138. Insect wire screening.
 139. Work gloves.
 140. Testing and rating convectors.
 141. Sine bars, blocks, plates, and fixtures.
 142. Automotive lifts.
 143. Standard strength and extra strength perforated clay pipe.
 144. Formed metal porcelain enameled sanitary ware.
 145. Testing and rating hand-fired hot-water supply boilers.

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146. Gowns for hospital patients.
 147. Colors for molded urea plastics.
 148. Men's circular flat- and rib-knit rayon underwear.
 149. Utility type house dress sizes.
 150. Hot-rolled rail steel bars (produced from tee-section rails).
 151. Body measurements for the sizing of apparel for infants, babies, toddlers, and children (for the knit underwear industry).
 152. Copper naphthenate wood-preservative (spray, brush, dip application).
 153. Body measurements for the sizing of apparel for girls (for the knit underwear industry).
 154. (Reserved for "Wire rope.")
 155. Body measurements for the sizing of boys' apparel (knit underwear, shirts, trousers).
 156. Colors for polystyrene plastics.
 157. Ponderosa pine and sugar pine plywood.
 158. Model forms for girls' apparel.
 159. Sun-glass lenses made of ground and polished plate glass, thereafter thermally curved.
 160. Wood-fiber blanket insulation (for building construction).
 161. "Standard grade" hot-dipped galvanized ware (coated after fabrication).
 162. Tufted bedspreads.
 163. Standard stock ponderosa pine windows, sash, and screens.
 164. (Reserved for "Concrete mixers.")
 165. Zinc naphthenate wood-preservative (spray, brush, dip application).
 166. Size measurements for men's work trousers.
 167. Automotive and general service copper tube.
 168. Polystyrene plastic wall tiles, and adhesives for their application.
 169. Galvanized ware fabricated from *pre-galvanized* steel sheets.
 170. Cotton flour-bag (sack) towels.
 171. Hardwood veneered doors.
 172. Brass trim for water-closet bowls, tanks, and urinals (dimensional standards).
 173. Heavy-duty alpha-cellulose-filled melamine tableware.
 174. 140-F dry-cleaning solvent.
 175. Circular-knitted gloves and mittens.
 176. Prefinished wall panels.
 177. Bituminous-coated metal septic tanks (single compartment, residential).
 178. Testing and rating ventilating fans (axial and propeller types).
 179. Installation of attic ventilation fans in residences.
 180. Model forms for boys' apparel.
 181. Water-resistant organic adhesives for installation of clay tile.
 182. Latex foam mattresses for hospitals.
 183. Boys' trouser size measurements.
 184. Steel fence posts—field and line type (produced from hot-rolled steel sections).
 185. Wool felt.
 186. Boys' sports outerwear size measurements.
 187. Men's work shirt sizes.

¹ Where "(E)" precedes the CS number, it indicates an emergency commercial standard, drafted under war conditions.

U. S. DEPARTMENT OF COMMERCE

Field Service

Albuquerque, N. Mex. 204 S. Tenth St.	Memphis 3, Tenn. 229 Federal Bldg.
Atlanta 3, Ga. 86 Forsyth St. NW.	Miami 32, Fla. 36 NE. First St.
Baltimore 2, Md. 200 E. Lexington St.	Milwaukee 2, Wis. 207 E. Michigan St.
Boston 9, Mass. 40 Broad St.	Minneapolis 2, Minn. 607 Marquette Ave.
Buffalo 3, N. Y. 117 Ellicott St.	Mobile 10, Ala. 109-13 St. Joseph St.
Butte, Mont. 306 Federal Bldg.	New Orleans 12, La. 333 St. Charles Ave.
Charleston 4, S. C. Area 2, Sergeant Jasper Bldg.	New York 36, N. Y. 2 W. Forty-third St.
Cheyenne, Wyo. 308 Federal Office Bldg.	Oklahoma City 2, Okla. 114 N. Broadway
Chicago 1, Ill. 221 N. La Salle St.	Omaha 2, Nebr. 403 S. Fifteenth St.
Cincinnati 2, Ohio 105 W. Fourth St.	Philadelphia 7, Pa. 1015 Chestnut St.
Cleveland 14, Ohio 925 Euclid Ave.	Phoenix, Ariz. 311 N. Central Ave.
Dallas 2, Tex. 1114 Commerce St.	Pittsburgh 22, Pa. 717 Liberty Ave.
Denver 2, Colo. 142 New Custom House	Portland 4, Oreg. 520 SW. Morrison St.
Detroit 26, Mich. 1214 Griswold St.	Providence 3, R. I. 327 Post Office Annex
El Paso, Tex. 310 San Francisco St.	Reno, Nev. 1479 Wells Ave.
Hartford 1, Conn. 135 High St.	Richmond, Va. 400 E. Main St.
Houston, Tex. 430 Lamar St.	St. Louis 1, Mo. 1114 Market St.
Jacksonville 1, Fla. 311 W. Monroe St.	Salt Lake City 1, Utah 109 W. Second St. South
Kansas City 6, Mo. 903 McGee St.	San Francisco 2, Calif. 870 Market St.
Los Angeles 15, Calif. 112 W. Ninth St.	Savannah, Ga. 125-29 Bull St.
Louisville 2, Ky. 631 Federal Bldg.	Seattle 4, Wash. 123 U. S. Court House

*For local telephone listing, consult section devoted
to U. S. Government*