

COMMERCIAL STANDARD **CS211-57**

**Flush-Type Interior Steel Doors
and Frames**

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



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U. S. DEPARTMENT OF COMMERCE

SINCLAIR WEEKS, Secretary

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OFFICE OF TECHNICAL SERVICES

Commodity Standards Division

With the cooperation of

NATIONAL BUREAU OF STANDARDS

COMMERCIAL STANDARDS

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

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

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

SIMPLIFIED PRACTICE RECOMMENDATIONS

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

Flush-Type Interior Steel Doors and Frames

[Effective August 15, 1957]

1. PURPOSE

1.1 The purpose of this Commercial Standard is to establish standard sizes and construction requirements for flush-type interior steel doors and frames for the guidance of producers, distributors, architects, builders, and the public; to provide the building industry with standard flush-type interior steel doors and frames; to avoid delays and misunderstandings; and to effect economies from the producer to the ultimate user through a wider utilization of these items.

2. SCOPE

2.1 This standard provides minimum requirements for flush-type doors and frames that are to be considered as manufacturers' stock items not subject to variation. These stock items are intended for use in interior applications where low-cost flush doors are generally required. The standard covers kind and thickness of material, sizes and types of doors and frames, general requirements, methods of preparing doors and frames for hardware and hinges, and labeling. It does not apply to hollow-metal and kalamein doors of either flush or panel construction.

2.2 The standard covers the furnishing of doors and frames but does not include provisions for their erection.

2.3 It is believed that manufacturers' published details and this standard will provide all the essential information, and that approval drawings will not be required for these stock items.

3. MATERIAL

3.1 Steel shall be cold-rolled or hot-rolled, pickled and oiled, in the minimum United States standard gages (with decimal equivalents) given in table 1.

TABLE 1. *Steel gages*

Item	Gage	Equivalent thickness
	No.	Inch
Frames, 1 $\frac{3}{8}$ in. thick.....	18	0. 0478
Frames, 1 $\frac{1}{4}$ in. thick.....	16	. 0598
Stiles for doors.....	20	. 0359
Panels for doors.....	20	. 0359
Lock and strike reinforcements.....	16	. 0598
Hinge reinforcements.....	11	. 1196
Closer reinforcements.....	14	. 0747

4. DIMENSIONS

4.1 *Method of measuring.*

4.1.1 Width shall be measured from inside to inside of frame jamb rabbets. The width shall be 24 inches for a 2-foot opening, 28 inches for a 2-foot 4-inch opening, etc.

4.1.2 Height shall be taken from the lower end of the jamb to the head rabbet on the frame. The height shall be 80 inches for a 6-foot 8-inch frame, and 84 inches for a 7-foot frame.

4.1.3 Door sizes shall be less than the dimensions for width and height given above, to an extent sufficient to provide a nominal $\frac{1}{8}$ -inch clearance at jambs and head of frame.

4.1.4 Standard clearance between the bottom of the door and the lower end of the jamb shall be $\frac{3}{4}$ inch.

4.2 *Opening sizes.*—Doors and frames furnished in accordance with this standard are available in the following opening sizes:

1 $\frac{3}{8}$ -in.-thick doors

2'0'' x 6'8''
2'4'' x 6'8''
2'6'' x 6'8''
2'8'' x 6'8''
3'0'' x 6'8''

1 $\frac{3}{4}$ -in.-thick doors

2'6'' x 6'8''
2'8'' x 6'8''
3'0'' x 6'8''
2'6'' x 7'0''
2'8'' x 7'0''
3'0'' x 7'0''

5. TYPES

5.1 Doors may be of the flush or semiflush type. These doors may also be provided with integrally pierced louvers at the bottom and/or top. A single unit of louvers at top or bottom will provide a minimum of 16 square inches of free area in doors up to and including 2 feet in width, and 32 square inches in doors over 2 feet up to 3 feet in width. Design and pattern of the louvers are to be in accordance with manufacturers' standards. These doors may also be provided with vision lights of 100 square inches maximum area, and their design and location are to be in accordance with manufacturers' standards. The upper half of these doors may also be arranged for glazing in accordance with manufacturers' standards.

5.2 Frames may be of the fully welded or knockdown type, with corners either mitered or coped, in accordance with manufacturers' standards.

6. GENERAL REQUIREMENTS

6.1 All shapes shall be formed in accordance with manufacturers' standard contours.

6.2 Frame joints may be continuously welded or secured with spot- or projection-welded splice plates, and all joints shall present a neat appearance.

6.3 Knockdown frames shall have an interlocking joint to produce a square corner, securely locked in place during erection, so as to maintain alinement of parts and provide functionally satisfactory operation of completed frames.

6.4 Strike jamb stops shall be pierced for at least two rubber or plastic bumpers, which are to be furnished loose with the frame.

6.5 All doors and frames shall be neat in appearance and functionally satisfactory.

6.6 Knockdown-type frames shall be shipped bundled. Fully assembled frames shall be banded together in pairs for support in shipment. Spreaders are not required.

6.7 Strike and hinge reinforcements prepared for screws shall be protected by welded mortar guards inside the frame.

6.8 Doors and frames shall be mortised, drilled, and tapped for locks and strikes.

6.9 Drilling and tapping for surface-applied hardware shall be done in the field by others.

6.10 Mortise reinforcements shall be concealed and extended beyond the cutout for a distance sufficient to develop the necessary strength to support the attached units in a functionally satisfactory manner.

6.11 Location of hinges shall be as established by the various manufacturers. Location of lock knobs shall be on the horizontal centerline of the 6-foot 8-inch door to permit its use either as a right- or a left-hand door.

6.12 Locks on 7-foot doors shall be at the same distance from the floor as those on the 6-foot 8-inch doors.

6.13 Frames shall be provided with anchors as required for the adjoining wall structure, which shall consist of 3 T-shaped adjustable anchors per jamb for masonry, and 3 welded anchors per jamb for stud construction. The design of anchors shall be in accordance with manufacturers' standards, and they shall be of not less than 18-gage steel.

6.14 Frames for solid-plaster partitions with rock-lath or steel-lath cores shall be provided with three welded anchors per jamb, and a means of securing an adjustable-top strut for attaching to the ceiling during erection. Details of anchors and struts furnished with frame are to be in accordance with manufacturers' established standards; and the anchors and struts shall be of not less than 18-gage steel.

6.15 All frames shall be provided with a bottom anchor for fastening at the floor.

6.16 Doors shall be provided with insulating or sound-absorbing material to deaden metallic sound.

6.17 Doors shall be thoroughly cleaned and all visible surfaces finished with high-quality, baked-on primer.

6.18 Frames shall be thoroughly cleaned and shop-primed.

7. HARDWARE

7.1 *Cylindrical or bore-in type locks for 1 $\frac{3}{8}$ -inch-thick doors and frames.*

(a) All 1 $\frac{3}{8}$ -inch doors shall be prepared for locksets with 1-inch by 2 $\frac{1}{4}$ -inch fronts with 2 mounting holes for No. 8-32 machine screws spaced at 1 $\frac{5}{8}$ inches, divided equally on each side of center. Panel piercing for locks shall be backset 2 $\frac{3}{8}$ inches, and be 2 $\frac{1}{8}$ inches in diameter, the circumference of which shall be interrupted, at 2 diametrically opposite points, by 2 cuts with an overall width of 2 $\frac{3}{8}$ inches.

(b) Frames shall be prepared to fit strikes 2 $\frac{3}{4}$ by 1 $\frac{1}{8}$ inches, with a 1 $\frac{1}{2}$ -inch-wide lip in the center of the plate. Holes for mounting the strikes shall be on 2 $\frac{1}{8}$ -inch centers and shall be tapped for No. 8-32 machine screws. Strike reinforcements shall be

recessed to accommodate strike plates $\frac{3}{32}$ inch thick, with or without dust boxes.

7.2 *Cylindrical or bore-in type locks for $1\frac{3}{4}$ -inch-thick doors and frames.*

- (a) All $1\frac{3}{4}$ -inch doors shall be provided with cylindrical lock preparations for $2\frac{3}{4}$ -inch backset cylindrical locks with $1\frac{1}{8}$ - by $2\frac{1}{4}$ -inch fronts. All other requirements are to be similar to those for the $1\frac{3}{8}$ -inch cutout.

7.3 *Hinges for $1\frac{3}{8}$ -inch-thick doors and frames.*

- (a) All $1\frac{3}{8}$ -inch doors and frames shall be prepared for one pair of $3\frac{1}{2}$ - by $3\frac{1}{2}$ -inch hinges, which shall be screwed to doors, and may be either welded or screwed to frames.

7.4 *Hinges for $1\frac{3}{4}$ -inch-thick doors and frames.*

- (a) All $1\frac{3}{4}$ -inch doors and frames shall be prepared for two $4\frac{1}{2}$ - by $4\frac{1}{2}$ -inch hinges, which shall be screwed to both doors and frames.

8. LABELING

8.1 In order to assure the purchaser that he is getting a flush-type interior steel door and frame of the quality specified, fabricators may individually or in concert with their trade associations issue certificates, or mark each door unit by stamp or label as conforming to this standard. The following wording is recommended for the label:

This flush-type interior steel door and frame conforms with all requirements of Commercial Standard CS211-57, as developed by the trade under the procedure of the Commodity Standards Division, and issued by the U. S. Department of Commerce.

(Name of fabricator)

8.2 *Underwriters' labeled doors and frames.*—Labeled doors and frames shall be in accordance with the foregoing standards, except where gages, insulation, and number of hinges may vary as specified by underwriters' requirements.

9. STORAGE AND ERECTION

9.1 The following practices are recommended for the protection of all concerned:

9.1.1 Store doors and frames at the site on wood sills or on floors in a manner that will prevent rust and damage.

9.1.2 Install frames plumb, rigid, and in true alinement, and fasten to retain position and clearance during construction of partitions. Frames in masonry walls should be filled with mortar as the wall is laid up. Frames in solid-plaster walls should be completely filled with plaster.

10. EFFECTIVE DATE

10.1 Having met all procedural requirements of the Commodity Standards Division, including approval by the acceptors hereinafter listed, this Commercial Standard was issued by the United States Department of Commerce, effective from August 15, 1957.

EDWIN W. ELY,
Chief, Commodity Standards Division.

HISTORY OF PROJECT

This standard was proposed by the Steel Door Institute, representing manufacturers of interior steel doors and frames. On July 7, 1954, the Institute requested the Commodity Standards Division, Office of Technical Services, to assist the industry in establishing a Commercial Standard for flush-type interior steel doors and frames, and submitted specifications as a basis for the proposed standard.¹

On March 4, 1955, the Commodity Standards Division circulated the recommended standard to manufacturers, distributors, and users for acceptance.

A number of comments and suggestions for changes were received, which were reviewed and considered by the Institute's technical committee, and discussed at their meetings. As a result, some of the suggested changes were approved, after which copies of the standard with the changes indicated were submitted to the acceptors for approval.

Firms and others concerned submitted written acceptances, estimated to represent a satisfactory majority of the production volume and a sufficient cross section of the industry to insure successful application of the standard. Accordingly, the Commodity Standards Division announced on July 15, 1957, that the standard had been approved for promulgation as CS211-57, Flush-Type Interior Steel Doors and Frames, and would be effective from August 15, 1957.

Project Manager: George E. Umhau, Commodity Standards Division, Office of Technical Services.

Technical Adviser: John L. Swinnerton, Plant Division, 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 Technical Services, U. S. Department of Commerce, which acts as secretary for the committee.

A. L. MUNSELL, Truscon Steel Division, Republic Steel Corp., 1315 Albert St., Youngstown 1, Ohio. (Acting Chairman.)

E. J. BOUGHTON, United Steel Fabricators, Inc., Wooster, Ohio.

W. F. SCOTT, Virginia Metal Products Corp., Orange, Va.

NOTE.—The committee was in the process of formation when the standard was published. The above list gives only the names of those who accepted membership prior to printing. A complete list of the members will be available from the Commodity Standards Division.

¹ See note on page 12.

ACCEPTANCE OF COMMERCIAL STANDARD

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

Date-----

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

Gentlemen :

We believe that Commercial Standard CS211-57 constitutes a useful standard of practice, and we individually plan to utilize it as far as practicable in the

production¹ distribution¹ purchase¹ use¹

of flush-type interior steel doors and frames. We reserve the right to depart from it as we deem advisable.

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

Signature of authorized officer-----

(In ink)

(Kindly typewrite or print the following lines)

Name and title of above officer-----

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

Street address-----

City, zone, and State-----

¹ Underscore the one that applies. 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.

(Cut on this line)

TO THE ACCEPTOR

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

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

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

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

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

ACCEPTORS

The organizations listed below have individually accepted this standard for use as far as practicable in the production, distribution, purchase, or use of flush-type interior steel doors and frames. In accepting this standard they reserved the right to depart from it as they individually deem advisable. It is expected that products 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.

ASSOCIATIONS (General Support)

American Institute of Architects, New York Chapter, New York, N. Y.
Steel Door Institute, Cleveland, Ohio.

FIRMS AND OTHER INTERESTS

Amarillo Hardware Co., Amarillo, Tex.
American Welding & Manufacturing Co., Warren, Ohio.
Brust & Brust, Milwaukee, Wis.
Ceco Steel Products Corp., Chicago, Ill.
Central of Georgia Railway Co., Savannah, Ga.
Charlottesville Lumber Co., Charlottesville, Va.
Cohagen, Chandler C., Billings, Mont.
Conrad & Cummings, Binghamton, N. Y.
Crenshaw & Jost, Pekin, Ill.
Danser Hardware & Supply Co., Weston, W. Va.
Detroit, City of, Office of City Engineer, Detroit, Mich.
Eastman, A. Reyner, Rockford, Ill.
Flannagan, Eric G., & Sons, Henderson, N. C.
Florida, University of, Department of Architecture, Board of Control, Gainesville, Fla.
Geren, Preston M., Fort Worth, Tex.
Getty, H. S., & Co., Inc., Philadelphia, Pa.
Hager, C., & Sons, Hinge Manufacturing Co., St. Louis, Mo.
Haralson & Mott, Fort Smith, Ark.
Hastings, A. W., & Co., Inc., Somerville, Mass.
Hirzel, Charles K., New York, N. Y.
Kneeland-Bigelow Distributing Co., Bay City, Mich.
Larson Hardware Co., Sioux Falls, S. Dak.

Latenser, John, & Sons, Omaha, Nebr.
Law, Law, Potter & Nystrom, Madison, Wis.
Maklelski, Stanislaw, J., Charlottesville, Va.
Merritt Lumber Yards, Inc., Reading, Pa.
Mesker Bros. Iron Co., Robertson, Mo.
Morse Hardware Co., Bellingham, Wash.
Parshelsky Bros., Inc., Brooklyn, N. Y.
Post, Geo. B., & Sons, New York, N. Y.
Post Iron Works, Inc., Brooklyn, N. Y.
Price, Beryl, Committee on Education & Research, American Institute of Architects, Philadelphia, Pa.
Rockwell Bros. & Co., Houston, Tex.
Russell & Erwin Division, American Hardware Corp., New Britain, Conn.
Schaeffer & Wilson, Bloomington, Ill.
Shelby Spring Hinge Co., Shelby, Ohio
Shenk, Henry, Co., Erie, Pa.
Spicola Hardware Co., Tampa, Fla.
Spiegel, Inc., Chicago, Ill.
Standard Equipment Supply, Ltd., Windsor, Ontario, Canada
Steelcraft Manufacturing Co., Rossmoynne (Greater Cincinnati), Ohio
Stoetzel, Ralph, Chicago, Ill.
Thorne, Henry Calder, Ithaca, N. Y.
Truscott Steel Division, Republic Steel Corp., Youngstown, Ohio
United Steel Fabricators, Inc., Wooster, Ohio
Virginia Metal Products, Inc., Orange, Va.
Weirton Steel Co., Division of National Steel Corp., Weirton, W. Va.
Welch, Carroll E., Huntington, N. Y.
Westcott & Mapes, Inc., New Haven, Conn.
Willson, Fred F., Bozeman, Mont.
Wittenberg, Delony & Davidson, Little Rock, Ark.
Wuehrmann, Wm. G., El Paso, Tex.
Yale & Towne Manufacturing Co., Stamford, Conn.
Zimmerman, A. C., Los Angeles, Calif.
Department of the Army, Washington, D. C.

OTHER COMMERCIAL STANDARDS

A list of Commercial Standards may be obtained from the Commodity Standards Division, Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. These publications may be purchased at the prices indicated on the list, which also includes directions for ordering copies.