



Standard Specification for Domestic Use Doors and Frames, Steel, Interior, Marine¹

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1. Scope

1.1 This specification covers the construction of standard and custom-built interior steel doors and frames for ships including U.S. Coast Guard certificated vessels with domestic routes.

1.2 Doors and frames are to be hollow metal construction with the door insulated for sound or fire.

1.3 The doors are intended for use in staterooms, lavatories, passageways, and other areas protected from weather.

1.4 The values stated in either inch-pound units or SI units are to be regarded separately as standard. Within the text, the SI units are shown in brackets. The values stated in each system are not exact equivalents; therefore, each system must be used independently of the other.

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

- 2.1 *ASTM Standards*:²
- [A240/A240M Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications](#)
 - [A582/A582M Specification for Free-Machining Stainless Steel Bars](#)
 - [A1008/A1008M Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable](#)
 - [E136 Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750 °C](#)
- 2.2 *Code of Federal Regulations (CFR) Title 46—Shipping*:³
- [Subchapter D—Tank Vessels Subpart 32.57—Structural Fire Protection](#)
 - [Subchapter H—Passenger Vessels Subpart 72.05—Structural Fire Protection](#)
 - [Subchapter I—Cargo and Miscellaneous Vessels Subpart 92.07—Structural Fire Protection](#)
 - [Subchapter T—Small Passenger Vessels Subpart 177.300—Hull Structure](#)
 - [Subchapter U—Oceanographic Vessels Subpart 190.07—Structural Fire Protection](#)
 - [Structural Insulations Subpart 164.007](#)

¹ This specification is under the jurisdiction of ASTM Committee F25 on Ships and Marine Technology and is the direct responsibility of Subcommittee F25.03 on Outfitting and Deck Machinery.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from U.S. Government Printing Office, Superintendent of Documents, 732 N. Capitol St., NW, Washington, DC 20401-0001, <http://www.access.gpo.gov>.

Structural Insulations Subpart 164.107

Noncombustible Materials for Merchant Vessels Subpart 164.009

Noncombustible Materials Subpart 164.109

2.3 Builders Hardware Manufacturers Association (BHMA):⁴

A 156.18 Materials and Finishes

2.4 U.S. Public Health Service:⁵

Publication No. 393 Handbook on Sanitation of Vessel Construction

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

- 3.1.1 *hands of doors*—a term used to describe a door from the outside or key side of the door.
- 3.1.2 *right-hand regular door*—a door having hinges on the right side when swinging door away from the individual opening it.
- 3.1.3 *left-hand regular door*—a door having hinges on the left side when swinging door away from the individual opening it.
- 3.1.4 *right-hand reverse bevel door*—a door having hinges on right side when swinging door towards the individual opening it.
- 3.1.5 *left-hand reverse bevel door*—a door having hinges on left side when swinging door towards the individual opening it.
- 3.1.6 *face plates*—the exterior metal skins that enclose the internal supporting structure of the door.
- 3.1.7 *latch*—a device normally installed in the vertical edge of door, opposite hinge edge, that when latched retains door in closed position.
- 3.1.8 *throw*—the extension, or reach, of the latch bolt. This throw is measured from latch face plate to extreme outer edge of latch bolt with latch bolt in fully extended position.
- 3.1.9 *padlock eye*—a means for securing door in closed position by the use of a padlock.

4. Classification

[ASTM F821/F821M-23](https://standards.iteh.ai/catalog/standards/sist/86151695-587e-41bb-9f08-a5a3fd30e565/astm-f821-f821m-23)

<https://standards.iteh.ai/catalog/standards/sist/86151695-587e-41bb-9f08-a5a3fd30e565/astm-f821-f821m-23>

4.1 Classes of doors and frames shall be as indicated in the ordering information. (See **Annex A1** for definition of various class divisions.)

- 4.1.1 Class A-O for installation in Class A-O divisions.
- 4.1.2 Class A for installation in Class A-15, A-30, and A-60 divisions.
- 4.1.3 Class B for installation in Class B divisions.
- 4.1.4 Class C for installation in Class C divisions.

4.2 Doors and frames shall be of the following types as indicated in ordering information.

4.2.1 Type I standard doors are of the following widths. Height and details shall conform to **Tables 1-6** and **Figs. 1-3**.

Size 1—22-in. (559-mm) clear jamb width

Size 2—24-in. (610-mm) clear jamb width

Size 3—26-in. (660-mm) clear jamb width

Size 4—30-in. (762-mm) clear jamb width

Size 5—36-in. (914-mm) clear jamb width

⁴ Available from Builders Hardware Manufacturers Association (BHMA), 355 Lexington Ave., 15th Floor, New York, NY 10017, <https://www.buildershardware.com>.

⁵ Available from U.S. Public Health Services, Division of Engineering Services, Parklawn Library, Room 1315, 5600 Fishers Lane, Rockville, MD 20857, <https://www.usphs.gov>.

**TABLE 1 Class A-O and Class A Door Dimension
Table of Dimensions—Door**

| Designation | in. | | mm | |
|---|----------|------------------|----|--------------------|
| | | | | |
| Thickness | <i>A</i> | 1¾ | | 45 |
| Clear height from structural deck | <i>B</i> | 78½ | | 1994 |
| Clear height from finished deck | <i>C</i> | approximately 78 | | approximately 1981 |
| Height from structural deck to center line of vision light | <i>D</i> | 64 | | 1626 |
| Height from structural deck to center line of cutout for switch | <i>E</i> | 48 | | 1219 |
| Height from structural deck to center line of knob | <i>F</i> | 38 | | 965 |
| Undercut | <i>G</i> | see Table 2 | | see Table 2 |
| Sill height | <i>H</i> | see Table 2 | | see Table 2 |

TABLE 2 Class A-O and A Sill Details

| Sill Height (<i>H</i>) | | Maximum Door Undercut (<i>G</i>) | |
|--------------------------|-----|------------------------------------|-----------------------------|
| in. | mm | in. | mm |
| 0 | 0 | ½ max above finished floor | 13 max above finished floor |
| 1½ | 38 | ½ | 13 |
| 6 ^A | 152 | ½ | 13 |

^AMax coaming height under sill is 5 in. (127 mm).

**TABLE 3 Class B Door and Frame Dimensions
Table of Dimensions—Door**

| Designation | in. | | mm | |
|---|----------|------------------|----|--------------------|
| | | | | |
| Thickness | <i>A</i> | 1¾ | | 45 |
| Clear height from structural deck | <i>B</i> | 78½ | | 1994 |
| Clear height from finished deck | <i>C</i> | Approximately 78 | | Approximately 1981 |
| Height from structural deck to center line of cutout for switch | <i>D</i> | 48 | | 1219 |
| Height from structural deck to center line of knob | <i>E</i> | 38 | | 965 |
| Undercut | <i>F</i> | See Table 4 | | See Table 4 |
| Sill height | <i>G</i> | See Table 4 | | See Table 4 |

TABLE 4 Class B Sill Details

| Sill Height (<i>G</i>) | | Maximum Door Undercut (<i>F</i>) ^A | |
|--------------------------|-----|---|-----------------------------|
| in. | mm | in. | mm |
| 0 | 0 | 1 max above finished floor | 25 max above finished floor |
| 1½ | 38 | 1 | 25 |
| 6 ^B | 152 | 1 | 25 |

^AIn passageways and areas in which ratproofing requirements are invoked, the height of the door undercut shall not exceed ½ in. (13 mm).

^BMax coaming height under sill is 5 in. (127 mm).

4.2.2 Type II doors conforming generally to specifications but requiring special requirements as indicated in the ordering information (see also 6.7.9).

4.2.3 Type III double doors using two of Type I doors.

4.2.4 Type IV double doors using two of Type II doors.

NOTE 1—Door widths are *approximately* 1¼ in. (approximately 32 mm) greater than clear jamb width.

5. Ordering Information

5.1 Orders for items under this specification shall include the following information by the purchaser:

5.1.1 Class A-O, A, B, or C.

5.1.2 Type, hand, clear jamb width, and sill height.

TABLE 5 Class C Door Dimensions

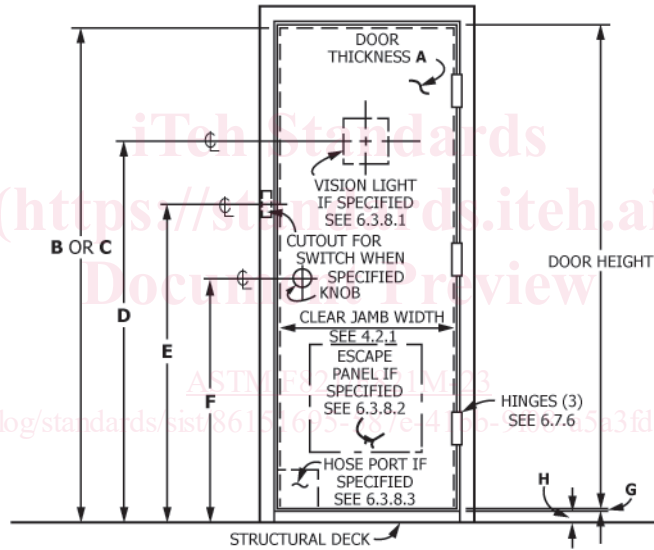
| Designation | | in. | | mm | |
|-------------|---|-----|------------------|--------------------|--|
| 1 | Thickness | A | 1¾ | 45 | |
| | Clear height from structural deck | B | 78½ | 1994 | |
| | Clear height from finished deck | C | Approximately 78 | Approximately 1981 | |
| | Height from structural deck to center line of cutout for switch | D | 48 | 1219 | |
| | Height from structural deck to center line of padlock eye | E | 46 | 1168 | |
| | Height from structural deck to center line of knob | F | 38 | 965 | |
| | Undercut | G | See Table 6 | See Table 6 | |
| | Sill height | H | See Table 6 | See Table 6 | |

TABLE 6 Class C Sill Details

| Sill Height (H) | | Maximum Door Undercut (G) ^A | |
|-----------------|-----|--|-----------------------------|
| in. | mm | in. | mm |
| 0 | 0 | 1 max above finished floor | 25 max above finished floor |
| 1½ | 38 | 1 | 25 |
| 6 ^B | 152 | 1 | 25 |

^AIn passageways and areas in which ratproofing requirements are invoked, the height of the door undercut shall not exceed ½ in. (13 mm).

^BMax coaming height under sill is 5 in. (127 mm).



NOTE 1—For Class A-O and Class A door requirements, see 6.3 and 6.4, respectively.

FIG. 1 Class A-O and Class A Door and Frame

5.1.3 Options such as vent grills, louvers, vision lights, and hose ports.

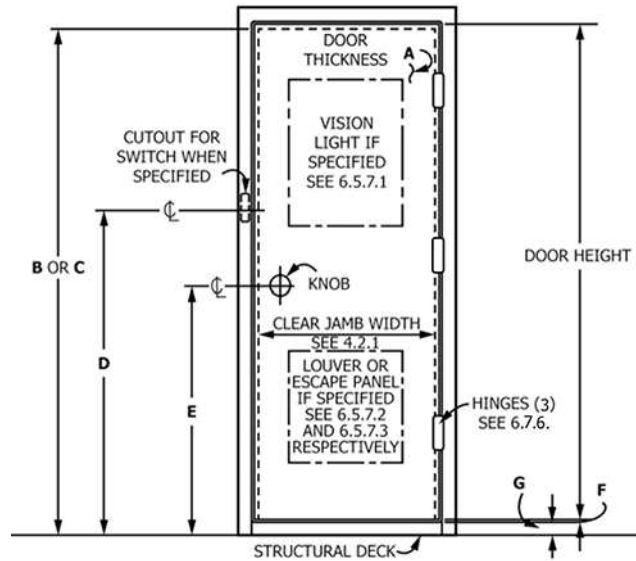
5.1.4 Hardware, sill caps, lock sets, latches, door closers, and hold backs if other than manufacturer’s standard. Master keying of door locks will not be provided unless required and defined by ordering documents. Instead, each door lock will be keyed differently.

5.1.5 Color chip and desired painting specifications or other commercial designation for final finish. If not specified, doors will have manufacturer’s prime coat applied.

5.1.6 For Type II and III doors, sizes and any other supplementary requirements.

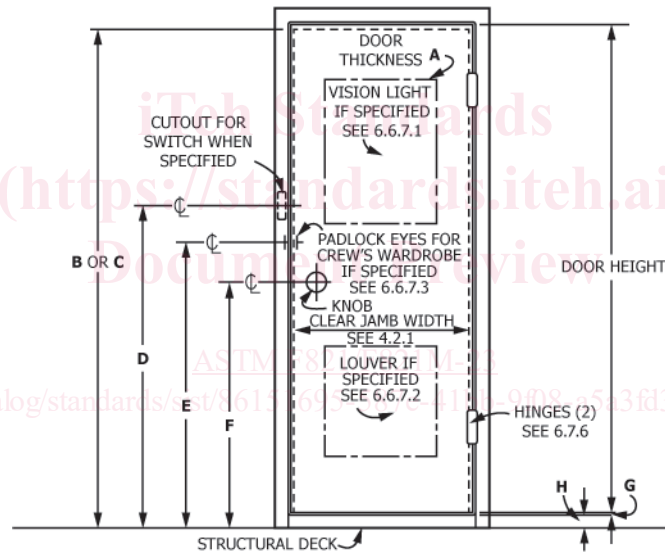
5.1.7 *Sill Heights*—0 in. (0 mm), 1½ in. (38 mm), or 6 in. (152 mm). See Figs. 1-3.

5.1.8 Cut out for light switch; if not requested in ordering data, no provisions will be made.



NOTE 1—For Class B door requirements, see 6.5.

FIG. 2 Class “B” Door and Frame



NOTE 1—For Class C door requirements, see 6.6.

FIG. 3 Class C Door and Frame

6. Materials and Manufacture

6.1 For typical design, see Figs. 1-3.

6.2 Steel for doors and frames shall be cold-rolled sheet, commercial quality in accordance with Specification A1008/A1008M. Other materials shall be as indicated.

6.3 Class A-O Doors (See Fig. 1 and Table 1 and Table 2):

6.3.1 Door shall be 1¾-in. (45-mm) thick hollow steel with 0.055-in. (1.4-mm) minimum face plates or equivalent metal construction.

6.3.2 Doors shall have a latch with a minimum throw of ¾ in. (19 mm).

6.3.3 Door frames shall be of steel with a nominal thickness of 0.055 in. (1.4 mm) and shall be installed so that any flame penetration would be through at least two thicknesses of 0.055 in. (1.4 mm) or equivalent.

6.3.4 Door frames shall provide a stop of $\frac{5}{8}$ in. (16 mm) minimum at the sides and top.

6.3.5 For undercut at bottom of door, see [Fig. 1](#) and [Table 2](#).

6.3.6 Doors other than those that are normally locked shall be self closing and capable of closing against a $3\frac{1}{2}^\circ$ list.

6.3.7 Doors shall be insulated with sufficient noncombustible fibrous insulation to sound dampen the door adequately. This insulation shall be selected from those listed under Section 164.007, Structural Insulations, or Section 164.009, Noncombustible Materials.

6.3.8 *Options for Class A-O and A Doors:*

6.3.8.1 Vision lights may be installed using wire-inserted glass of not more than 100 in.² (645 cm²) in size.

6.3.8.2 An escape panel of 16- by 18-in. (406- by 457-mm) minimum size in lower half of door.

6.3.8.3 Where hose ports are required, they shall be cut in the lower corner of the door on the side opposite the hinges so that when hose is passed through the door when the door is open, it may be closed over the hose. The cut for the host port should be approximately 8 by 8 in. (200 by 200 mm). A hinged or pivoted steel metal cover shall be fitted in the cut, equipped with a method of holding it in a closed position yet will permit easy and automatic operation of the hinged cover. See [Fig. 1](#) for location.

6.4 *Class A Doors* (see [Fig. 1](#) and [Table 1](#) and [Table 2](#)):

6.4.1 Doors and frames shall follow the requirements of [6.3.1](#) – [6.3.6](#) and [6.3.8](#).

6.4.2 Doors shall be filled solidly with one half the thickness of structural insulation with USCG Approval Number 164.007. Insulation with USCG Approval Number 164.107 (A-15 rating) may also be used.

6.5 *Class B doors* (see [Fig. 2](#) and [Table 3](#) and [Table 4](#)):

6.5.1 Doors shall be $1\frac{3}{4}$ -in. (45-mm) thick hollow steel and constructed of a minimum of 0.044-in. (1.1-mm) face plates.

6.5.2 Doors shall have a latch with a minimum throw of $\frac{1}{2}$ in. (13 mm).

6.5.3 Door frames shall be steel with a minimum 0.055-in. (1.4-mm) thickness if they are an open channel design and a minimum 0.044 in. (1.1 mm) if they are a tubular design.

6.5.4 Door frames shall provide a stop of $\frac{5}{8}$ in. (16 mm) minimum at the sides and top.

6.5.5 For undercut at bottom of door, see [Fig. 2](#) and [Table 4](#).

6.5.6 Doors shall be insulated with sufficient noncombustible insulation to sound damp the door adequately. This insulation shall be selected from one of the following USCG approval categories: 164.007, 164.009, 164.107, or 164.109.

6.5.7 *Options for Class B Doors:*

6.5.7.1 Doors may be fitted with any amount of wire inserted glass, as door construction permits.

6.5.7.2 The lower half of such doors may have a louver. The total net area of louver plus any door undercut shall not exceed 78 in.² (0.05 m²).

6.5.7.3 An escape panel of 16- by 18-in. (406- by 457-mm) minimum size.

6.6 *Class C Doors* (see [Fig. 3](#) and [Table 5](#) and [Table 6](#)):

6.6.1 Doors shall be 1¾-in. (45-mm) thick hollow steel and constructed of 0.044-in. (1.1-mm) face plates. Aluminum construction is acceptable and other noncombustible materials will also be considered.

6.6.2 Doors shall have a latch with a minimum throw of ½ in. (13 mm).

6.6.3 Door frames shall be steel with a minimum 0.055 in. (1.4 mm) if they are an open channel design and a minimum 0.044 in. (1.1 mm) if they are a tubular design. Aluminum construction is acceptable and other noncombustible materials will also be considered.

6.6.4 Door frames shall provide a stop of ⅝ in. (16 mm) minimum at the sides and top.

6.6.5 For undercut at bottom of door, see [Fig. 3](#) and [Table 6](#).

6.6.6 Doors shall be insulated with sufficient noncombustible fibrous insulation to sound damp the door adequately. This insulation shall be selected from those listed in the Section 164.007, Structural Insulations, or Section 164.009, Noncombustible Materials.

6.6.7 *Options for Class C Doors:*

6.6.7.1 Doors may be fitted with any amount of clear safety glass (laminated or heat treated) as door construction permits.

6.6.7.2 There are no restrictions on louver size, except that dictated by door size and construction.

6.6.7.3 Padlock eyes for crew wardrobes may be furnished if specified in ordering information, see [Fig. 3](#) for location.

6.7 *Other Requirements for All Doors:*

6.7.1 Doors and frames shall be made square and parallel to vessel baseline, without sheer or camber.

6.7.2 Sills or sill caps shall be Type 300 stainless steel in accordance with Specification [A240/A240M](#) with a mill finish.

6.7.3 Where glass is required in doors, it shall be at least ¼ in. (6 mm) thick.

6.7.4 Double doors capable of independent operation and latching shall have a clearance between doors not to exceed ⅛ in. (3 mm). Double doors incapable of independent operation shall have a ½ (13-mm) stop or astragal between doors.

6.7.5 Doors that require door closers shall be reinforced in way of attachments to door and frame. Doors that require hold open hooks and bumpers shall be reinforced in way of attachment to the door.

6.7.6 Hinges shall be Series 300 stainless steel in accordance with Specification [A240/A240M](#) with a Series 300 stainless steel pin in accordance with Specification [A582/A582M](#). ~~Where fire performance requirements permit, brass or bronze hinges and fasteners may be used.~~ The hinges shall be mortise type 4½ in. (114 mm) high with ⅛-in. (3-mm) thick leaves with Series 300 stainless steel fasteners.

6.7.6.1 All doors shall be equipped with three hinges, equally spaced. Suitable reinforcements shall be installed in doors and frames to support all hinges properly.

6.7.7 Locksets shall be heavy-duty design, key in knob type, with Series 300 stainless steel mechanism. Knob roses and other exposed parts may be brass or bronze, chrome plated per BHMA A 156.18, finish code number 626 or equivalent brushed finish Series 300 stainless steel.

6.7.8 Where construction of door and frame is of steel, it shall be of welded construction with spot welds spaced 6 in. (152 mm) on centers or equivalent arc welds.

6.7.9 *Special Construction*—The following special construction will be furnished only if specified in ordering information.