

Chapter 13 Fire Windows

13-1 Windows.

13-1.1 General. This chapter shall cover the installation of fire windows.

13-1.2 Testing. Fire windows shall be tested in accordance with NFPA 257, *Standard Research Test Method for Determining Smoke Generation of Solid Materials*, for the required fire protection rating of the window opening. Fire windows shall be labeled.

13-1.3 Labels.

13-1.3.1 Fire window frames shall be labeled for such use.

13-1.3.2 The label reading "Fire Window Frame" shall include the design and construction of the frame, ventilator, glazing material retaining members, and hardware. (See Appendix D for types of fire window ventilators.)

13-1.3.3 The label on hot-rolled or extruded steel section fire window frames shall include hot-rolled or extruded steel mullions.

13-1.3.4 The label on hollow metal and hollow metal plate steel combination section fire windows shall include hollow metal mullions.

13-1.4 Bearing Mullions. Bearing mullions shall be protected from fire with materials acceptable to the authority having jurisdiction.

13-2 Glazing Material.

13-2.1 Labeled. Only labeled fire protection-rated glazing material shall be used in fire windows.

13-2.2\* Size. Glazing material installed in fire windows shall be limited to the size and area in accordance with Table 13-2.2.

Table 13-2.2 Fire Window Rating<sup>1</sup>

Fire Window Rating (hr)	Maximum Area of Glazing Material per Light
1/3, 1/2	Limited to maximum area tested
3/4	Limited to maximum area tested <sup>2</sup>
1, 1 1/2, or 3	No rating available

<sup>1</sup>See also Appendix J for interior applications.

<sup>2</sup>Individual glazing material exposed area shall not exceed 1296 in.<sup>2</sup> (0.84 m<sup>2</sup>) with no dimension exceeding 54 in. (1.37 m) unless otherwise tested.

13-2.3 Identification. Each individual glazing unit shall be identified with a label. The label shall be visible after installation.

13-2.4 Safety. Glazing material installed in fire windows and borrowed lights that are subject to human impact shall meet applicable safety standards as determined by the authority having jurisdiction unless exempted. (See A-1-4 Glazing Material.)

13-3 Types of Windows.

13-3.1 Fire Window Applications.

13-3.1.1 Fire windows shall be used to protect openings in interior and exterior partitions required to be protected by the authority having jurisdiction. Borrowed lights shall be used to protect window openings in interior partitions.

13-3.1.2 Glass block assemblies shall be installed in accordance with Chapter 14.

13-3.1.3 In exterior walls, the maximum size openings shall be limited to those specified in 13-3.2.2, 13-3.3.5, and 13-3.4.2.

13-3.2 Hollow Metal Windows.

13-3.2.1 Hollow metal windows shall consist of formed steel sheet, reinforced as required, and shall be of the double hung, casement, pivoted, stationary, tilting, hinged, or projected types.

13-3.2.2 Maximum size openings for hollow metal windows shall be as follows:

- (a) Single window, other than casement: 5 ft x 5 ft (1.52 m x 1.52 m)
- (b) Multiple windows, other than casement: 7 ft x 10 ft (2.13 m x 3.05 m)
- (c) Single casement window: 3 1/2 ft x 10 ft (1.07 m x 3.05 m)
- (d) Multiple casement window: 7 ft x 10 ft (2.13 m x 3.05 m)

13-3.3 Hot-Rolled or Extruded Steel Section Windows.

13-3.3.1 The heavy intermediate window frame and ventilator sections shall be a minimum depth of 1 5/16 in. (33 mm) with integrally rolled weathering contacts.

13-3.3.2 The standard intermediate window frame and ventilator sections shall be a minimum depth of 1 1/4 in. (32 mm) with integrally rolled weathering contacts.

13-3.3.3 The residential-type window frame and ventilator sections shall be a minimum depth of 1 in. (24.5 mm) with integrally rolled weathering contacts.

13-3.3.4 The industrial-type window frame and ventilator sections shall be a minimum depth of 1 1/4 in. (32 mm) with applied weathering contacts.

13-3.3.5 Maximum openings for hot-rolled or extruded steel section windows are as follows:

- (a) The heavy intermediate and industrial types shall be used for openings not exceeding 84 ft<sup>2</sup> (7.8 m<sup>2</sup>), with neither dimension exceeding 12 ft (3.66 m). Where multiple units are installed, the distance between unprotected vertical steel mullions shall not exceed 7 ft (2.13 m).
- (b) The standard intermediate types shall be used for openings not exceeding 60 ft<sup>2</sup> (5.57 m<sup>2</sup>), with neither dimension exceeding 10 ft (3.05 m). Where multiple units are installed, the distance between unprotected vertical steel mullions shall not exceed 6 1/2 ft (1.98 m).
- (c) Residential-type windows shall be used for openings not exceeding 6 1/2 ft (1.98 m) for either dimension. Where multiple units are installed, the distance between unprotected vertical steel mullions shall not exceed 3 1/2 ft (1.07 m).

13-3.4 Hollow Metal Plate Steel (Combination) Windows.

13-3.4.1 Hollow metal plate steel windows shall consist of formed sheet steel frame sections at the head, jambs, and sill, and a plate steel window. They shall be of the double hung, counterbalanced, or stationary type.

13-3.4.2 Maximum size openings for hollow metal plate steel windows are as follows:

- (a) Single window: 5 ft x 5 ft (1.52 m x 1.52 m)
- (b) Multiple windows: 7 ft x 10 ft (2.13 m x 3.05 m)

**13-3.5 Borrowed Lights.** Borrowed lights shall be limited to the maximum size openings indicated in their individual listings.

#### 13-4 Installation.

**13-4.1 Frames.** Frames shall be fastened securely to the wall and shall be capable of resisting all wind stresses and any other stresses for which the window was designed.

#### 13-4.2 Fire Lock Angles.

**13-4.2.1** Fire lock angles shall be designed to hold the ventilator in the frame as the assembly expands under exposure to fire.

**13-4.2.2** Where the window is provided with fire lock angles, the fire lock angles shall be adjusted so that they pass one another with a minimum of clearance.

#### 13-4.3 Glazing Material.

**13-4.3.1** Wire clips, glazing angle clips, continuous glazing channels, or continuous glazing angles shall be used to retain the glazing material. Where wire clips or glazing angle clips are used for glazing the window, one wire clip or glazing angle clip shall be installed in each mounting hole. Where continuous glazing angles or channels are used, a screw or bolt and nut shall be installed in each mounting hole.

**13-4.3.2** Glazing materials shall be installed in accordance with their individual listing.

**13-5 Closing Devices.** All fire windows shall be of a fixed type or shall be automatic closing. The automatic-closing device can be an integral part of the assembly or a separate system, such as weights suspended by ropes, wire cables, or chains over pulleys, arranged so that operation of the automatic fire detector shall cause the ventilator to close.

## Chapter 14 Glass Block

**14-1 General.** This chapter covers the installation of glass block.

**14-1.1 Labeled.** Only labeled glass block shall be used.

**14-1.2 Size.** Glass block shall be permitted for the protection of openings not exceeding 120 ft<sup>2</sup> (11.15 m<sup>2</sup>) with neither the width nor height exceeding 12 ft (3.66 m).

**14-2 Installation.** Glass block shall be installed in accordance with its individual listing.

## Chapter 15 Care and Maintenance

**15-1\* General.** This chapter covers the care and maintenance of fire doors and fire windows.

**15-1.1 Removal of Window.** Where a door or window opening is no longer in use, the opening shall be filled with construction equivalent to that of the wall.

**15-1.2 Operability.** Doors, shutters, and windows shall be operable at all times. They shall be kept closed and latched or arranged for automatic closing.

**15-1.3 Replacement.** Where it is necessary to replace fire doors, shutters, windows or their frames, hardware, and closing mechanisms, replacements shall meet the requirements

for fire protection and shall be installed as required by this standard for new installations.

**15-1.4 Repairs.** Repairs shall be made and defects that could interfere with operation shall be corrected immediately.

#### 15-2 Specific Requirements.

##### 15-2.1\* Inspections.

**15-2.1.1\*** Hardware shall be examined frequently and any parts found to be inoperative shall be replaced immediately.

**15-2.1.2** Tin clad and Kalamein doors shall be inspected regularly for dry rot.

**15-2.1.3** Chains or cables employed on suspended doors shall be inspected frequently for excessive wear and stretching.

##### 15-2.2 Lubrication and Adjustments.

**15-2.2.1** Guides and bearings shall be kept well lubricated to facilitate operation.

**15-2.2.2** Chains or cables on biparting, counterbalanced doors shall be checked frequently and adjustments shall be made to ensure proper latching and to keep the doors in proper relation to the opening.

##### 15-2.3 Prevention of Door Blockage.

**15-2.3.1** Door openings and the surrounding areas shall be kept clear of anything that could obstruct or interfere with the free operation of the door.

**15-2.3.2** Where necessary, a barrier shall be built to prevent the piling of material against sliding doors.

**15-2.3.3** Blocking or wedging of doors in the open position shall be prohibited.

##### 15-2.4 Maintenance of Closing Mechanisms.

**15-2.4.1** Self-closing devices shall be kept in proper working condition at all times.

**15-2.4.2** Swinging doors normally held in the open position and equipped with automatic-closing devices shall be operated at frequent intervals to ensure proper operation.

**15-2.4.3** All horizontal or vertical sliding and rolling fire doors shall be inspected and tested annually to check for proper operation and full closure. Resetting of the release mechanism shall be done in accordance with the manufacturer's instructions. A written record shall be maintained and shall be made available to the authority having jurisdiction.

**15-2.4.4** Fusible links or other heat-actuated devices and release devices shall not be painted.

**15-2.4.5** Care shall be taken to prevent paint accumulation on any movable part such as, but not limited to, stay rolls, gears, and closing mechanisms.

##### 15-2.5 Repair of Fire Doors and Windows.

**15-2.5.1** Broken or damaged glazing material shall be replaced with labeled glazing. Wire glass shall be well embedded in putty and all exposed joints between the frame and the glass shall be struck and pointed. Other glazing materials shall be installed in accordance with their individual listing.

**15-2.5.2** Any breaks in the face covering of doors shall be repaired immediately.