



ICC-ES Evaluation Report

ESR-1394

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This report is subject to renewal December 2023.

DIVISION: 08 00 00—OPENINGS
Section: 08 30 00—Specialty Doors and Frames
Section: 08 35 13.23—Accordion Folding Fire Doors

REPORT HOLDER:

WON-DOOR CORPORATION

EVALUATION SUBJECT:

WON-DOOR FIREGUARD SERIES SINGLE-SIDE AND CENTER BI-PARTING HORIZONTAL FOLDING FIRE DOOR ASSEMBLIES

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2021, 2018, 2015, 2012 and 2009 *International Building Code*® (IBC)
- 2021, 2018, 2015, 2012 and 2009 *International Fire Code*® (IFC)
- 2013 *Abu Dhabi International Building Code* (ADIBC)[†]

[†]The ADIBC is based on the 2009 IBC. 2009 IBC code sections referenced in this report are the same sections in the ADIBC.

Properties evaluated:

- Fire resistance
- Smoke and draft control
- Means of egress
- Access control

2.0 USES

The Won-Door FireGuard series single-side and center bi-parting horizontal folding fire door assemblies are used as opening protection in fire-resistance-rated wall assemblies, as smoke- and draft-control door assemblies, as means of egress doors and as access control doors.

Won-Door FireGuard smoke- and draft-control door assemblies identified with an “E” suffix are for use at elevator hoistway openings in accordance with 2021, 2018 and 2015 IBC Section 713.14, item 3 of 2021, 2018 and 2015 IBC Section 3006.3, Exception 3 of 2012 IBC Section 713.14.1 and 2009 IBC Section 708.14.1.

Won-Door FireGuard smoke- and draft-control door assemblies identified with an “A” prefix are for use as access control door assemblies.

3.0 DESCRIPTION

3.1 Won-Door FireGuard Series Horizontal Folding Fire Door Assemblies:

Won-Door FireGuard FG20, 60, 90, 120 and 180 series single-side and center bi-parting horizontal folding fire door assemblies consist of two independently suspended and parallel steel curtains separated by a cavity. A formed metal post with a polyvinyl chloride (PVC) or thermoplastic vulcanizate (TPV) gasket connects to and closes off the movable end of the door. A gasket of polyvinyl chloride (PVC) or thermoplastic vulcanizate (TPV) material, with fiberglass or ceramic fiber and a liner of foil-scrim-foil liner or foil-scrim-Kraft, is riveted along the top and bottom sweeps of the door for smoke and draft control. Door construction is similar for all models, except that the cavity of doors with the suffix TR is filled with an 8 pcf (64 kg/m³) ceramic fiber liner. The construction of the surrounding assembly, including the pockets, header, and strike wall, is such as to meet the hourly fire-resistance rating requirements. See Table 1 for models, descriptions, ratings and overall sizes.

3.2 Operation:

The power operating system includes a controller, emergency battery power supply and drive motor assembly. The controller is programmed to automatically move the door to a closed and sealed position upon sensing a fire condition. The door assemblies include a manually activated operating device that allows the doors to open to a predesignated minimum opening width within 10 seconds for egress, after which the doors automatically close and seal. The predesignated minimum opening width must be sized in accordance with IBC Section 1005 and be approved by the code official. The power operating system includes limit controls and sensors that detect and control the door position at all times. Logic circuitry in the control unit prevents the door from opening when heat sensors detect a high-temperature (fire) condition on the other side of the door. Low-voltage battery emergency conditions of the integrated standby power supply cause the fire door to close and seal and signal a low voltage (or low current) alarm

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condition. Controllers are UL 864 listed releasing devices and, when used with access control doors, UL 294 listed.

3.3 Fire-protection Rating and Fire-resistance-Rating:

The numerical designation of the Won-Door FireGuard Series door assembly corresponds to the fire-protection rating in minutes as determined in accordance with UL 10B, and NFPA 252. The Won-Door FireGuard FG20S or FG20CS has a 20-minute fire-protection rating; the Won-Door FireGuard FG60S, FG60CS and FG60TR have one-hour fire-protection ratings; the Won-Door FireGuard FG90S, FG90CS and FG90TR have 1½-hour fire-protection ratings; the Won-Door FireGuard FG120S, FG120CS and FG120TR have 2-hour fire-protection ratings; and the Won-Door FireGuard FG180S, FG180CS and FG180TR have three-hour fire-protection ratings. Doors identified with a "CS" suffix are compressed stack designs. Doors identified with a "TR" suffix are temperature rise rated where Won-Door FireGuard FG60TR has a 1-hour fire-resistance-rating, Won-Door FireGuard FG90TR has a 1½-hour fire-resistance-rating, and Won-Door FireGuard FG120TR has a 2-hour fire-resistance-rating.

3.4 Smoke and Draft Control Assemblies:

The Won-Door FireGuard single-side and center bi-parting horizontal folding fire door assemblies comply as smoke- and draft-control assemblies in accordance with 2021 and 2018 IBC Section 716.2.1.4 and 716.2.2.1.1, 2015 and 2012 IBC Section 716.5.3.1 or 2009 IBC Section 715.4.3.1, as applicable. Where no fire-protection rating is required, the models are Won-Door FireGuard FG and Won-Door FireGuard FGS. Doors with an "E" suffix are for use at elevator hoistway openings in accordance with 2021, 2018 and 2015 IBC Section 713.14, item 3 of 2018 and 2015 IBC Section 3006.3, Exception 3 of 2012 IBC Section 713.14.1 and 2009 IBC Section 708.14.1. See Table 1 for models, descriptions, ratings and overall sizes.

3.5 Opening Protection:

The Won-Door FireGuard FG-60, Won-Door FireGuard FG-90, Won-Door FireGuard FG-120 and Won-Door FireGuard FG-180 door assemblies are evaluated for use in fire walls in accordance with 2021, 2018, 2015, 2012 and 2009 IBC Section 706.8, for use in fire barrier walls in accordance with 2021, 2018, 2015, 2012 and 2009 IBC Section 707.6, for use in fire partition walls in accordance with 2021, 2018, 2015 and 2012 IBC Section 708.6 (2009 IBC Section 709.6), for use in smoke barrier walls in accordance with 2021, 2018, 2015 and 2012 IBC Section 709.5 (2009 IBC Section 710.5), and for use in smoke partition walls in accordance with 2021, 2018, 2015 and 2012 IBC Section 710.5 (2009 IBC Section 711.5). The Won-Door FireGuard FG-60TR, Won-Door FireGuard FG-90TR, Won-Door FireGuard FG-120TR and Won-Door FireGuard FG-180TR may be used in accordance with 2021 and 2018 Section 716.2.2.3, 2015 and 2012 IBC Section 716.5.5 or 2009 IBC Section 715.4.4, as applicable, where maximum transmitted temperature is required.

3.6 Means of Egress:

IBC: The Won-Door FireGuard door systems are recognized for use in a means of egress system in accordance with 2021 IBC Section 1010.3.3, 2018 and 2015 IBC Section 1010.1.4.3 and 2012 and 2009 IBC Section 1008.1.4.3 in any occupancy other than Group H.

4.0 INSTALLATION

4.1 General:

The Won-Door FireGuard Series horizontal folding fire door assemblies must be installed in accordance with applicable

code requirements for the character and location of the wall in which they are situated. The Won-Door FireGuard door assemblies are designed to be installed in openings having a finished width of 13.1 feet (3993 mm) and a finished height of 12 feet (3658 mm), unless installed under oversized door provisions. The Won-Door FireGuard doors and frames must be installed in accordance with the manufacturer's published instructions and this evaluation report. Where there is a conflict between the two, this report governs.

Installation of the door systems, including the frame, closing and release devices, and anchorage must be in accordance with NFPA 80, as noted in 2021 IBC Sections 716 and 1010.3.3, 2018 IBC Sections 716 and 1010.1.4.3 and in 2015 IBC Sections 716.5, 716.5.9.2 and 1010.1.4.3, 2012 IBC Sections 716.5, 716.5.9.2 and 1008.1.4.3 (2009 Sections 715.4, 715.4.8.2, and 1008.1.4.3), as applicable.

4.2 Oversized Doors:

Where a fire-resistance rating is required, oversized doors with a length exceeding 13.1 feet (3993 mm) and a finished height of 12 feet (3658 mm), may be installed in accordance with 2021 IBC Section 716.2.9.2, 2018, 2015 and 2012 IBC Section 716.5.7.2 or 2009 IBC Section 715.4.6.2, as applicable.

4.3 Smoke- and Draft-control Door Assembly:

Installation instructions indicating the proper method of installing the Won-Door FireGuard smoke- and draft-control door assembly must be attached to, or packaged with, each assembly. The installation instructions will cover the size, design, and construction of the door and frame assembly for specific air leakage rates.

5.0 CONDITIONS OF USE

The Won-Door FireGuard FG20, Won-Door FireGuard FG 60, Won-Door FireGuard FG 90, Won-Door FireGuard FG 120 and Won-Door FireGuard FG 180 series single-side and center bi-parting horizontal folding fire door assemblies described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

- 5.1 The door assemblies must be installed in accordance with the manufacturer's published installation instructions, the fire door listing, and this report. Where a conflict exists, this report governs.
- 5.2 Openings protected with fire-protection-rated door assemblies or fire-resistance-rated door assemblies must be inspected, maintained and tested in accordance with 2021 IFC Sections 108, 109 and 705, 2018 IFC Sections 107, 108 and 705, or 2015, 2012 and 2009 IFC Sections 106, 107 and 703 and Chapter 5 of NFPA 80. Annual inspection and testing must be in accordance with Section 5.2 of NFPA 80.
- 5.3 Openings protected with smoke and draft control assemblies must be inspected, maintained and tested in accordance with 2021 IFC Sections 108, 109 and 705, 2018 IFC Sections 107, 108 and 705, or 2015, 2012 and 2009 IFC Sections 106, 107 and 703 and Chapter 5 of NFPA 105. Annual inspection and testing must be in accordance with Section 5.2 of NFPA 105.
- 5.4 When used in a means of egress system in accordance with Section 3.6 of this report, the door systems must be openable from the egress side without special knowledge or effort.
- 5.5 Won-Door FireGuard Door Assemblies are fabricated in Salt Lake City, Utah, under a quality control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

- 6.1 Reports of tests in accordance with NFPA 252; NFPA 80; UL 10B; UL 1784, UL 864 and UL 294.
- 6.2 A quality control manual.

7.0 IDENTIFICATION

- 7.1 The Won-Door FireGuard door assemblies and automatic closing devices bear a permanently affixed label with the Won-Door Corporation name, and the fire-resistance ratings. The labels for the Won-Door FireGuard TR Series doors also include the temperature rise developed on the unexposed surface of the door after the first 30 minutes of fire exposure [450°F (232°C)]. The labels for the Won-Door FireGuard doors must also specify the evaluation report number (ESR-1394), and must comply with NFPA 80. All labels must be applied at the factory or other location where fabrication and assembly are performed.

Won-Door FireGuard smoke-and draft-control door assemblies complying with UL 1784 must be labeled as such, and must show the letter “S” on the fire rating label of the door. This marking must indicate that the door and frame assembly are in compliance when listed or labeled gasketing is also installed.

- 7.2 The report holder’s contact information is the following:

WON-DOOR CORPORATION
1865 SOUTH 3480 WEST
SALT LAKE CITY, UTAH 84104
(801) 973-7500
www.wondoors.com

TABLE 1—FIRE-PROTECTION RATED ASSEMBLIES, FIRE-RESISTANCE-RATED ASSEMBLIES AND AIR LEAKAGE RATED ASSEMBLIES

WON-DOOR FIREGUARD MODEL	DESCRIPTION	MAXIMUM OVERALL SIZE ¹	FIRE-PROTECTION RATING (MINUTES), FIRE-RESISTANCE RATING (MINUTES) AND/OR AIR LEAKAGE RATED
FG20S, FG60S, FG90S, FG180S, FG20SE, FG60SE, FG90SE, FG120SE, FG180SE	Single or center parting straight or curved fire doors.	13.1 ft wide by 12 ft high	20, 60, 90, 120, 180 fire-protection rating. Also air leakage rated.
FG60TR, FG90TR, FG120TR, FG180TR, FG60TRE, FG90TRE, FG120TRE, FG180TRE	Insulated doors with a temperature rise rating in addition to a fire rating that can be single or center parting straight or curved doors.	13.1 ft wide by 12 ft high	60, 90, 120, 180 fire-resistance rating. Also air leakage rated.
FG20CS, FG60CS, FG90CS, FG120CS, FG180CS, FG20CSE, FG60CSE, FG90CSE, FG120CSE, FG180CSE.	Cross-corridor single parting straight doors and Compressed Stack single or center parting straight doors.	13.1 ft wide by 12 ft high	20, 60, 90, 120, 180 fire-protection rating. Also air leakage rated.
FGS, FGSE, FGCS, FGCSE	Air leakage rated doors.	13.1 ft wide by 12 ft high	Air leakage rated. Not fire-resistance rated or fire-protection rated.
AFG20S, AFG60S, AFG90S, AFG120S, AFG180S, AFG20SE, AFG60SE, AFG90SE, AFG120SE, AFG180SE	Single or center parting straight or curved fire and access control doors.	13.1 ft wide by 12ft high	20, 60, 90, 120, 180 fire-protection rating. Also air leakage rated.
AFG60TR, AFG90TR, AFG120TR, AFG180TR, AFG60TRE, AFG90TRE, AFG120TRE, AFG180TRE	Insulated doors with a temperature rise rating in addition to a fire rating that can be single or center parting straight or curved access control doors.	13.1 ft wide by 12ft high	60, 90, 120, 180 fire-resistance rating. Also air leakage rated.
AFG20CS, AFG60CS, AFG90CS, AFG120CS, AFG180CS, AFG20CSE, AFG60CSE, AFG90CSE, AFG120CSE, AFG180CSE	Cross-corridor single parting straight doors and Compressed Stack single or center parting straight access control doors.	13.1 ft wide by 12ft high	20, 60, 90, 120, 180 fire-protection rating. Also air leakage rated.
AFGS, AFGSE, AFGCS, AFGCSE	Air leakage rated access control doors	13.1 ft wide by 12ft high	Air leakage rated. Not fire-resistance rated or fire-protection rated.
AFG	Access control doors	13.1 ft wide by 12 ft high	Access control door only. Not air leakage rated. Not fire-resistance rated or fire-protection rated.

For **SI**: 1 ft = 0.305 m.

¹Unless installed under oversized door provisions.

DIVISION: 08 00 00—OPENINGS**Section: 08 30 00—Specialty Doors and Frames****Section: 08 35 13.23—Accordion Folding Fire Doors****REPORT HOLDER:****WON-DOOR CORPORATION****EVALUATION SUBJECT:****WON-DOOR FIREGUARD SERIES SINGLE-SIDE AND CENTER BI-PARTING HORIZONTAL FOLDING FIRE DOOR ASSEMBLIES****1.0 REPORT PURPOSE AND SCOPE****Purpose:**

The purpose of this evaluation report supplement is to indicate that Won-Door FireGuard Series Single-side and Center Bi-parting Horizontal Folding Fire Door Assemblies, described in ICC-ES evaluation report ESR-1394, have also been evaluated for compliance with CBC Chapters 7, 10 and 30 and CFC Chapters 1 and 7 of the code editions noted below.

Applicable code editions:

- 2019 *California Building Code* (CBC)

For evaluation of applicable chapters adopted by the California Office of Statewide Health Planning and Development (OSHPD) and Division of State Architect (DSA), see Sections 2.1.1 and 2.1.2 below.

- 2019 *California Fire Code* (CFC)

2.0 CONCLUSIONS**2.1 CBC:**

The Won-Door Fireguard series door assemblies, described in Sections 2.0 through 7.0 of the evaluation report ESR-1394, comply with CBC Sections 706.8, 707.6, 708.6, 709.5 and 710.5 (as opening protection), CBC Sections 713.14 and 3006.3 (Item 3 for smoke- and draft-control door assembly models with an “E” suffix), CBC Section 710.5.2.2 (for smoke- and draft-control door assembly models), CBC Sections 716.2.1.4 and 716.2.2.1.1 (for fire-protection-rated, smoke- and draft-control door assembly models for use in corridors and smoke barriers), CBC Section 716.2.2.3 (for temperature transmission fire-resistance-rated door assembly models), and CBC Section 1010.1.4.3 in any occupancy other than Group H (for special purpose horizontal sliding, accordion or folding doors), provided the design, installation, inspection and maintenance are in accordance with the 2018 *International Building Code*® (IBC) provisions noted in the evaluation report and the additional requirements of the CBC, as applicable.

2.1.1 OSHPD:

The applicable OSHPD Sections of the CBC are beyond the scope of this supplement.

2.1.2 DSA:

The applicable DSA Sections of the CBC are beyond the scope of this supplement.

2.2 CFC:

The Won-Door Fireguard series door assemblies, described in Sections 2.0 through 7.0 of the evaluation report ESR-1394, comply with 2019 CFC Sections 107, 108 and 705.2, provided the design, installation, inspection and maintenance are in accordance with the 2018 *International Fire Code*® (IFC) provisions noted in the evaluation report and the additional requirements of the CFC, as applicable.

This supplement expires concurrently with the evaluation report, reissued December 2021 and revised May 2022.