

Hollow Metal Doors & Framing Product Alert

Hollow metal is probably the most known and widely used fire rated framing around. It is tested to NFPA 80/252/257 up to 90 minutes and used in fire rated doors, sidelites, transoms and openings.

However, just because hollow metal is fire rated from 20-90 minutes does not mean that it is code-approved for all 20-90 minute applications. Below is a summary of the fire rated framing requirements in the IBC.

◆ Where are the fire rated framing code requirements stated in the IBC?

In the 2012 and 2015 IBC, designers can turn to **Table 716.5: Opening Fire Protection Assemblies, Ratings and Markings** and **Table 716.6: Fire Window Assembly Fire Protection Ratings**. These tables outline the fire rated assembly requirements based on the application.

Because the code refers to fire doors, sidelites, transoms, openings and walls as assemblies, the fire rated framing requirements must match the glazing requirements in order for the assembly to fully meet the requirements of the code.

All fire rated glazing assemblies installed in the field must be permanently marked per **Table 716.3: Marking Fire Rated Glazing Assemblies** to show the fire test standard to which the product was tested:

Fire Test Standard	Marking	Definition of Marking
ASTM E-119 or UL 263	W	Meets wall assembly criteria
NFPA 257 or UL 9	OH	Meets fire window assembly criteria including the hose stream test
NFPA 252 or UL 10B or UL 10 C	D	Meets fire door assembly criteria
	H	Meets fire door assembly hose stream test
	T	Meets 450°F temperature rise criteria for 30 minutes
	XXX	Time in minutes of the fire resistance or fire protection rating of the glazing assembly

It's important to note that these are not new code requirements in the 2012 and 2015 IBC, but rather a clarification of the 2006 and 2009 editions of the IBC. The requirements contained in the IBC Table 716.5 and 716.6 have been in effect since the 2006 IBC and conform to what NFPA 80 provided in the 1999 and 2007 NFPA 80 editions.

Framing Code Requirements for All 2 Hour Wall Applications

Walls, Openings, Sidelites and Transoms:

Fire resistive glass and framing assemblies used as walls, openings, sidelites and transoms in 2 hour walls are marked as 'W-120' to indicate that it meets the required ASTM E-119/UL 263 standard up to 2 hours.

In some 2 hour exterior walls, 90 minute fire protective openings may be allowed depending on fire separation distance (refer to Table 705.8 in the 2012 and 2015 IBC). Where allowed, fire protective openings marked as 'OH-90' can be used to show that it meets NFPA 257/UL 9 up to 90 minutes – in which case, standard hollow metal frames can be used. However, it is still subject to application and area limitations because it does not meet the wall criteria. If the designer wants to incorporate glass where openings are not permitted or limited, ASTM E-119/UL 263 fire resistive glass and framing assemblies marked 'W-120' can be used.

Doors:

2 hour wall applications allow doors to have a 90 minute rating. When used in exit stairways, ramps and exit passageways, the door must also limit the temperature rise to less than 450°F above ambient at the of end of 30 minutes of standard fire test exposure (see Section 716.5.5). **In these applications, standard hollow metal doors cannot be used because it does not meet the temperature rise criteria.**

The temperature rise criteria for the door may be waived if the building is equipped throughout (and not just the area where doors are located) with an automatic sprinkler system installed in strict accordance with Section 903.3.1.1 or 903.3.1.2. Simply having a building that is 'fully sprinklered' is not enough to evoke the exception.

Note that the exemption only applies to the door material – not the glazing in the door. Table 716.5 limits fire protective glazing marked 'D-H-90' to 100 sq. inches in the door vision panel. To exceed 100 sq. inches in the door vision panel, fire resistive glazing marked 'D-H-T-W-90' or 'D-H-W-90' must be used. Ceramics, wired glass and specialty fire protective glass do not have a "W" marking because they cannot limit the passage of radiant heat. **Therefore, ceramics, wired glass and specialty fire protective glass will always be limited to 100 sq. inches regardless if the building is fully sprinklered.**



TGP's Designer Series Doors DO NOT meet temperature rise requirements per IBC Sec. 716.5.5.

[Click here](#) for more information and to avoid costly mistakes.

Framing Code Requirements for 1 Hour Fire Walls, Fire Barriers and Exit Enclosures

Walls, Openings, Sidelites and Transoms:

Fire resistive glass and framing assemblies used as walls, openings, sidelites and transoms in 1 hour fire walls, fire barriers and exit enclosures are marked as 'W-60' to indicate that it meets the required ASTM E-119/UL 263 standard up to 1 hour.

Standard hollow metal framing, although rated up to 90 minutes, cannot be used in 1 hour fire walls, fire barriers and exit enclosures where fire resistive glazing is required by code or used to overcome size limitations because it does not meet ASTM E-119/UL 263. Using fire resistive glazing that meets ASTM E-119/UL 263 in standard hollow metal frames lowers the entire assembly rating to fire protective, which is non-compliant.

In some 1 hour exterior walls, 45 minute fire protective openings may be allowed depending on fire separation distance (refer to Table 705.8 in the 2012 and 2015 IBC). Where allowed, fire protective openings marked as 'OH-45' can be used to show that it meets NFPA 257/UL 9 up to 45 minutes – in which case, standard hollow metal frames can be used. However, it is still subject to application and area limitations because it does not meet the wall criteria. If the designer wants to incorporate glass where openings are not permitted or limited, ASTM E-119/UL 263 fire resistive glass and framing assemblies marked 'W-60' can be used.

Doors:

In 1 hour fire walls, fire barriers and exit enclosures, the door must be rated for 1 hour as well. When used in exit stairways, ramps and exit passageways, the door must also limit the temperature rise to less than 450°F above ambient at the of end of 30 minutes of standard fire test exposure (see Section 716.5.5). **In these applications, standard hollow metal doors cannot be used because it does not meet the temperature rise criteria.**

The temperature rise criteria for the door may be waived if the building is equipped throughout (and not just the area where doors are located) with an automatic sprinkler system installed in strict accordance with Section 903.3.1.1 or 903.3.1.2. Simply having a building that is 'fully sprinklered' is not enough to evoke the exception.

Note that the exemption only applies to the door – not the glazing in the door. Table 716.5 limits fire protective glazing marked 'D-H-60' to 100 sq. inches in the door vision panel. To exceed 100 sq. inches in the door vision panel, fire resistive glazing marked 'D-H-T-W-60' or 'D-H-W-60' must be used. Ceramics, wired glass and specialty fire protective glass do not have a 'W' marking because they cannot limit the passage of radiant heat. **Therefore, ceramics, wired glass and specialty fire protective glass will always be limited to 100 sq. inches regardless if the building is fully sprinklered.**



TGP's Designer Series Doors DO NOT meet temperature rise requirements per IBC Sec. 716.5.5.

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Framing Code Requirements for 1 Hour Fire Partitions (Corridors) and Smoke Barriers

Sidelites and Transoms:

45 minute fire protective glass and framing assemblies marked as 'D-H-OH-45' can be used. Because this application does not require ASTM E-119/UL 263, standard hollow metal framing and fire protective glazing that meets the hose stream test can be used.

Openings (other than sidelites and transoms):

45 minute fire protective glass and framing assemblies marked as 'OH-45' can be used. Because this application does not require ASTM E-119/UL 263, standard hollow metal framing and fire protective glazing that meets the hose stream test can be used.

However, these fire protective assemblies are limited to 25% of the wall area per Sec.

716.6.7.2. The code limits the amount of fire protective assemblies used because it doesn't protect building occupants from radiant heat. To exceed the 25% area limitation, architects can use fire resistive glass and framing assemblies marked 'W-60' must be used.

◆ What about when sprinklers are present?

This seems to be a confusing issue for most designers. For new construction projects, Table 1018.1 of the 2012 and 2015 IBC shows where the corridor's fire resistance rating is eliminated if the building is fully sprinklered. However, this depends on the occupancy type. **In all H occupancy groups and in I-1 and I-3 occupancy groups, the 60-minute rating is still required even when sprinklers are present.**

Note that this trade-off applies to 60-minute corridors in new construction only, and no other 60-minute application.

Doors

Doors are allowed to be rated to 20 minutes, with the glazing in the door vision panel marked as 'D-20'. There is no 'H' marking because the glazing is not required to meet the hose stream test. Standard hollow metal doors with fire protective glazing up to the maximum size tested can be used in this application.

◆ What about 45 minute doors?

Table 716.5 shows that 45 minute doors are required in 1 hour walls used as 'other fire barriers', 'other fire partitions' and exterior walls. The glazing in the door vision panel is marked D-H-45 to show that it meets the hose stream test. If there are sidelites and transoms, the minimum fire protection requirement is 45 minutes and the glazing will be marked D-H-45 to show that it meets the hose steam test.

Standard hollow metal doors and framing with fire protective glazing up to the maximum size tested can be used in these applications.

The GPX framing series by SAFTI**FIRST** can meet any performance or design requirement:

Framing System	Features	Applications
GPX <small>ARCHITECTURAL</small> S E R I E S	Fire protective and resistive, aluminum framing system available in multiple profiles. Offered in standard and custom finishes, including high performance fluoropolymer finishes by PPG, clear anodized, bronze anodized, Decoral®, any species of wood veneer, ornamental metal, and more.	20 Min. Fire Protective Doors 45-90 Min. Fire Resistive Doors 45-120 Min. Fire Resistive Window/Walls
GPX <small>BUILDERS</small> S E R I E S FIRE PROTECTIVE	Fire protective framing system available in multiple profiles. Offered in standard and custom finishes including high performance fluoropolymer finishes by PPG, stainless steel and more.	20-45 Min. Fire Protective Doors 20-45 Min. Fire Protective Openings
GPX <small>BUILDERS</small> S E R I E S TEMPERATURE RISE	Temperature rise door framing system available in multiple profiles. Offered in standard and custom finishes including high performance fluoropolymer finishes by PPG, stainless steel and more.	60-90 Min. Temperature Rise Doors
GPX <small>CURTAIN WALL</small> S E R I E S	Fire resistive aluminum framing system available in multiple profiles for multi-story spans of glass. Fully vetted for exterior performance with static & dynamic water pressure testing, air infiltration testing, thermal cycling & condensation evaluation, and structural, seismic and interstory displacement testing.	60-120 Min. Fire Resistive Curtain Walls
GPX <small>HURRICANE</small> S E R I E S	Fire resistive, hurricane rated, aluminum framing system. Offered in standard and custom finishes including high performance fluoropolymer finishes by PPG, clear anodized, bronze anodized, black anodized, Decoral®, any species of wood veneer, ornamental metal, and more. Available with FL Product Approval, TX Department of Insurance Approval and UL Certifications.	45-90 Min. Fire Resistive, Hurricane Rated Doors 45-120 Min. Fire Resistive, Hurricane Rated Window/Walls
GPX <small>BALLISTIC</small> S E R I E S	Fire resistive, ballistic rated aluminum framing system. Offered in standard and custom finishes including high performance fluoropolymer finishes by PPG, clear anodized, bronze anodized, black anodized, Decoral®, any species of wood veneer, ornamental metal, and more.	45-90 Min. Fire Resistive, Ballistic Rated Doors 45-120 Min. Fire Resistive, Ballistic Rated Window/Walls
GPX <small>BLAST</small> S E R I E S	Fire resistive, blast rated, aluminum framing system. Offered in standard and custom finishes including high performance fluoropolymer finishes by PPG, clear anodized, bronze anodized, black anodized, Decoral®, any species of wood veneer, ornamental metal and more.	45-120 Min. Fire Resistive, Blast Rated Window/Walls
GPX <small>FIREFLOOR</small> S Y S T E M	Fire resistive glass floor system with the largest tested & listed individual glass panel sizes for fully supported and butt-glazed assemblies.	60-120 Fire Resistive Floors

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SAFTI **FIRST** offers a variety of USA-made fire resistive and protective framing options to meet every code application. [Click here](#) to locate the SAFTI **FIRST** architectural representative near you, or visit us online at www.safti.com or call us toll-free at 888.653.3333. We are happy to help!