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CODE CONSIDERATIONS IN FIRE RATED GLASS

Objectives

- To review updated IBC and fire test requirements when designing for life safety.
- To understand the relationship of fire safety and human impact safety.
- To clarify the difference between fire protective vs. fire resistive glazing products as it relates to protecting people and property.
- To provide you with the latest fire rated glazing product information.

3

CODE CONSIDERATIONS IN FIRE RATED GLASS

Fire-rated glazing: New solutions for fire-rated applications

Old solution



VS.

New solution



4




Does Fire Rated Mean Safety Rated?

CODE CONSIDERATIONS IN FIRE RATED GLASS

Does a fire rating ensure that a product meets human impact safety standards?


- No, a fire rating only indicates that the glass has been tested to a fire standard, not an impact safety standard.



7

CODE CONSIDERATIONS IN FIRE RATED GLASS

Why is non safety-rated glass dangerous?



8


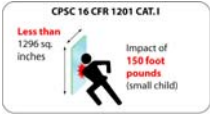
CODE CONSIDERATIONS IN FIRE RATED GLASS

What is Consumer Product Safety Commission 16 CFR 1201?

- A federal safety glazing minimum standard established in 1977 to protect people from injuries due to accidental impact with glazing.
- Two categories were established:

Cat. I = for small glazing areas (less than 1296 square inches) to survive impact of 150 foot pounds - a small child.

Cat. II = for large glazing areas (more than 1296 square inches) to survive an impact of 400 foot pounds - an adult.



9

CODE CONSIDERATIONS IN FIRE RATED GLASS

Why is safety-rated glass important?



10

CODE CONSIDERATIONS IN FIRE RATED GLASS

Hazards of Wired Glass



11

CODE CONSIDERATIONS IN FIRE RATED GLASS

Revised IBC Glazing Code Requirements

- In the 2003 IBC, traditional wired glass lost its exemption from safety glazing standards when used in educational and athletic facilities
- In the 2004 IBC Supplement and the 2006 IBC, wired glass was no longer exempt when located in any hazardous location for all new construction in all occupancies.
- Replacement glazing must also meet this standard.
- Glass in any potentially hazardous location in athletic facilities must comply with impact standard.

12

CODE CONSIDERATIONS IN FIRE RATED GLASS

Safety Glazing is Required in Hazardous Locations (IBC Sec. 2406.3)

- Glazing in doors
- Glazing in panels adjacent to door within 24" arc and where bottom edge less than 60" above walking surface
- Glazing meeting ALL three conditions:
 - Exposed area greater than 9 sq. ft., exposed bottom edge less than 18" above floor, AND one or more walking surface(s) within 36" horizontally
 - Exception:
1-1/2" or more protective bar (50-lb.load) on accessible sides 34-38" above floor
- Glazing adjacent to stairways, landings w/in 36" horizontal walking surface when exposed surface less than 60" above walking surface

13

CODE CONSIDERATIONS IN FIRE RATED GLASS

Hazardous Locations (Illustration)

14

CODE CONSIDERATIONS IN FIRE RATED GLASS

Replacement Glazing Code Issues

- IBC 2006 Section 2401.2
 - Must meet new installation requirements
- Field Modification of fire rated and listed assemblies
 - Requires third party certification

15



CODE CONSIDERATIONS IN FIRE RATED GLASS

Two things you should know before selecting a fire-rated glass product

- Glazing fire test standards fall into two basic categories: fire protective standards or fire resistive standards.
- Fire-rated glazing applications such as windows, doors, and walls, are rated to these fire test standards (fire protective and fire resistive).

<p>Windows and Doors</p>  <p>Fire Protective</p>	<p>≠</p>	<p>Walls</p>  <p>Fire Resistive</p>
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17

CODE CONSIDERATIONS IN FIRE RATED GLASS


Fire-rated tests are created for specific applications depending upon the level of protection required by code

<p>Window / Door Test FIRE PROTECTIVE NFPA 257/252</p>  <p>Contains flame and smoke 45 minutes and under</p>	<p>Wall Test FIRE RESISTIVE ASTM E119/NFPA 251</p>  <p>Contains flame and smoke AND blocks radiant heat for applications over 45 minutes</p>
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18

CODE CONSIDERATIONS IN FIRE RATED GLASS


Fire Endurance Test



19

CODE CONSIDERATIONS IN FIRE RATED GLASS

Hose Stream Test



20

CODE CONSIDERATIONS IN FIRE RATED GLASS

The 2006 IBC Sec. 703.3, 2003 IBC Sec.104.11 and 2000 IFC Sec. 104.9 allow for alternative materials and methods:

“The provisions of this code are not intended to prevent the installation of any material or to prohibit any method of construction not specifically prescribed by this code, provided that any such alternative has been approved. The code official is authorized to approve an alternative material or method of construction where the code official finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code in **quality, strength, effectiveness, fire resistance, durability and safety.**”

21

CODE CONSIDERATIONS IN FIRE RATED GLASS

A few reasons why AHJ's approve alternative 45-minute fire-rated glazing materials that don't pass the hose stream test:

- The test does not realistically simulate the potential threat of thermal shock from sprinklers. The glazed assembly isn't subjected to streaming water until after being exposed to over 1,600 degrees Fahrenheit.
- The hose stream test was removed from international test methods years ago and the British test method has not contained a hose stream test for over 40 years.
- NFPA 251, UBC Sec. 7.108, and ASTM E119 all specifically exclude fire-rated constructions of less than one hour from the hose stream requirement.
- Given that the hose stream is applied 20 feet away at 30 psi and typical corridors protected by fire rated glazing are 6 to 8 feet wide, the impact doesn't replicate the water-jet force from a fire hose in close quarters. No manufacturer of fire rated glazing has ever demonstrated their product's ability to withstand the hose stream's impact within such close proximity.

22

CODE CONSIDERATIONS IN FIRE RATED GLASS

What is radiant heat?



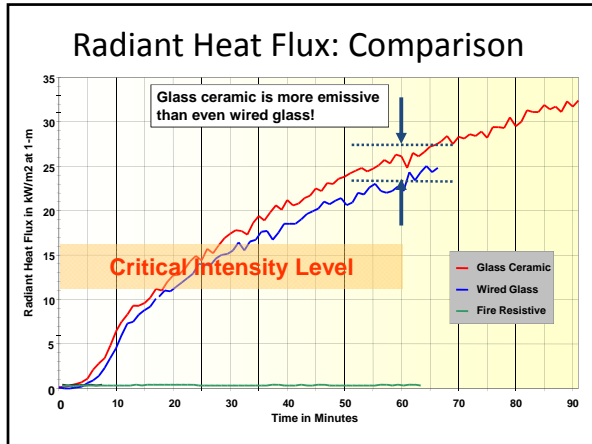
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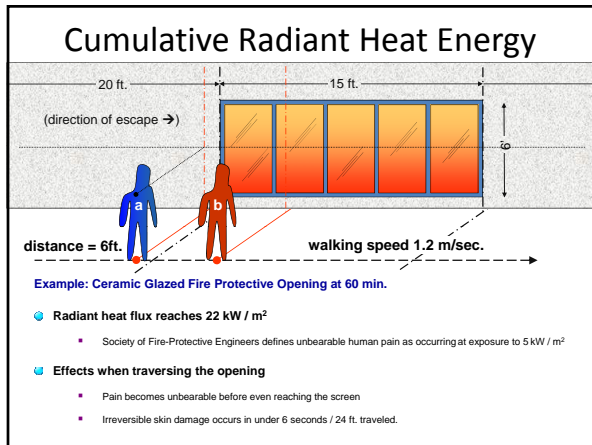
CODE CONSIDERATIONS IN FIRE RATED GLASS

Fire Resistant vs. Fire Protective Glazing



24







CODE CONSIDERATIONS IN FIRE RATED GLASS

What Listings Do and Do Not Mean

- **DO: Confirm testing to specified test standard**
Doors, sidelites, transoms, walls, and windows
- **DO NOT: Confirm approved for specific code application**
The installation of glazing materials is intended to be in accordance with the local building code as determined by the Authority Having Jurisdiction.
- **DO NOT: Tell the whole story.**
There are many other aspects to consider, such as type of glass, type of structure and occupancy, square footage limitations, and location.

28



CODE CONSIDERATIONS IN FIRE RATED GLASS

Where Can Fire-Rated Glass Be Found?

- **Fire Doors**
 - Vision Panels
 - Sidelites & transoms
- **Fire Windows**
 - Exterior windows
 - Borrowed lites
- **Fire Resistive Barriers**
 - Non load-bearing walls
 - Load-bearing walls

CODE CONSIDERATIONS IN FIRE RATED GLASS

Glazing Marking Requirements

2012 IBC Table 716.3 (New)
Marking Fire-Rated Glazing Assemblies

Fire Test Standard	Marking	Definition of Marking
ASTM E119 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 10C	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	The time in minutes of the fire resistance or fire protection rating of the glazing assembly

31

CODE CONSIDERATIONS IN FIRE RATED GLASS

Fire Doors: Conventional Fire Protective "Vision Areas"

Applicable Fire Test Methods:
 NFPA 252, UL 10b and 10c

IBC 714.6.1 vision panel limits do not apply to fire resistive glazing.

NFPA 101 may allow 3-hr doors with 180 min. glazing limited to 100 sq. in.

32

CODE CONSIDERATIONS IN FIRE RATED GLASS

Sidelite and Transom Requirements

- 20-minute door assemblies
 - 20-minute doors and vision panels tested without hose stream
 - 45-minute sidelites and transoms tested with hose stream
- 45-minute door assemblies
 - 45-minute vision panels and sidelites and transoms tested to NFPA 252
- 60-Minute door assemblies
 - Only 60-minute fire resistance glazing allowed in sidelites and transoms
- 90-minute door assemblies
 - 90-minute door vision panels
 - 120-minute fire resistance glazing in transoms and sidelites

33

CODE CONSIDERATIONS IN FIRE RATED GLASS



20 min. door with 45 min. sidelites

60 min. doors, sidelites and transoms

45 min. door with 45 min. sidelites

90 min. door with 120 min. sidelites/transoms

CODE CONSIDERATIONS IN FIRE RATED GLASS


Fire Doors in Exit Enclosures

- **716.5.5 Doors in interior exit stairways and exit passageways.** *Fire door assemblies* in interior exit stairways and ramps and exit passageways shall have a maximum transmitted temperature rise of not more than 450 degrees F (250 degrees C) above ambient at the end of 30 minutes of standard fire test exposure.
- **716.5.5.1 Glazing in doors.** Fire-protection-rated glazing in excess of 100 sq. in. (0.065 m²) is not permitted. Fire-resistance-rated glazing in excess of 100 sq. in. (0.065 m²) shall be permitted in fire door assemblies when tested as components of the door assemblies, not as glass lights, and shall have a maximum transmitted temperature rise of 450 degrees F (250 degrees C) in accordance with Section 716.5.5.

35

CODE CONSIDERATIONS IN FIRE RATED GLASS

Stairwell Enclosures



2 hour Stairwells with 90 min. full vision door and 120 min. wall glazing

36

CODE CONSIDERATIONS IN FIRE RATED GLASS

IBC 2006 Table 715.4 -Fire Door & Shutter Ratings

Type of Assembly	Required Assembly Rating (Hours)	Minimum Fire Door Assembly Rating
Fire walls/barriers rated greater than 1 hour	4	3
	3	3
	2	1-1/2
	1-1/2	1-1/2
Fire barriers rated 1-hour: Shaft, exit enclosure, exit passageway walls Other fire barriers	1	1
	1	3/4
Fire partitions: Corridor walls Other fire partitions	1	1/3
	1/2	1/3
	1	3/4
	1/2	1/3
Exterior walls	3	1-1/2
	2	1-1/2
	1	3/4
Smoke barriers	1	1/3

CODE CONSIDERATIONS IN FIRE RATED GLASS

**EXCERPT from 2012 IBC Table 716.5 (rev. 715.4)
Opening Fire Protection Assemblies, Ratings and Markings**

TYPE OF ASSEMBLY	REQUIRED WALL ASSEMBLY RATING (HRS.)	MINIMUM FIRE DOOR AND FIRE SHUTTER ASSEMBLY RATING (HRS.)	DOOR VISION PANEL SIZE	FIRE RATED GLAZING MARKING DOOR VISION PANEL*	MINIMUM SIDELITE/TRANSOM ASSEMBLY RATING (HRS.)		FIRE RATED GLAZING MARKING SIDELITE/TRANSOM PANEL	
					Fire Protection	Fire Resistance	Fire Protection	Fire Resistance
Shaft, exit enclosures and exit passageway walls	2	1-1/2	100 sq. in.+4	≤100 sq. in. = D-H-60 >100 sq. in. = D-H-T-60 or D-H-T-W-60	Not Permitted	2	Not Permitted	W-120
Fire Barriers having a required rating of 1 hour: enclosures for shafts, exit access stairways, etc.	1	1	100 sq. in.+4	≤100 sq. in. = D-H-60 >100 sq. in. = D-H-T-60 or D-H-T-W-60	Not Permitted	1	Not Permitted	W-60
					Fire Protection			
Fire Partitions / Corridor Walls	1	1/3*	Maximum Size Tested	D-20	3/4*			D-H-OH-45
	0.5	1/3*	Maximum Size Tested	D-20	1/3			D-H-OH-20
Other Fire Partitions	1	3/4	Maximum Size Tested	D-H-45	3/4			D-H-45
	0.5	1/3	Maximum Size Tested	D-H-20	1/3			D-H-20

CODE CONSIDERATIONS IN FIRE RATED GLASS

Fire Window Applications

- **Interior Fire Windows (716.6.7):**
 - 45-minute fire windows permitted in 1-hour fire partitions, smoke barriers and **some** 1-hour fire barriers.
 - Prohibited in 1-hour exit enclosures and passageways
 - Limited to 25% of the area of the wall
 - 90 min. windows NOT permitted in 2-hour wall
- **Exterior Fire Windows**
 - 45-minute windows where permitted in 1-hour fire barrier
 - 90-minute windows where permitted in 2-hour fire barrier
 - Limited to 25% width of length of wall

39


CODE CONSIDERATIONS IN FIRE RATED GLASS

1 Hour Fire Barriers
(Exit enclosures, exit passageways)

Up to 100 sq. in:
Safety wired glass
Specialty Protective
Safety ceramic

Up to Maximum size tested:
60-Minute Fire
resistive

Fire Resistive 60



Fire Resistive 60

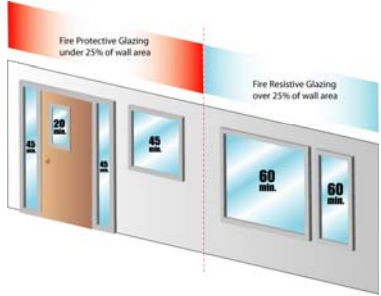
Sidelites and transoms can only be 1 hour Fire Resistance rated!
IBC 2006, 715.2, 715.4.4, NFPA 80 (1999) 2-3.3.2

CODE CONSIDERATIONS IN FIRE RATED GLASS

FIRE PARTITIONS FOR 1 HOUR CORRIDOR WALLS

Product Options:

- 20-Minute Tempered
- 45-Minute (safety) wired
- 45-Minute (safety) ceramic
- 45-Minute tempered*
- 45-Minute fire resistive *w/o hose stream with AHJ approval
- 60-Minute fire resistive



Fire Protective Glazing under 25% of wall area


Fire Resistive Glazing over 25% of wall area



CODE CONSIDERATIONS IN FIRE RATED GLASS

Fire protective glazing is defined as:

Window / Door / Sidelite
FIRE PROTECTIVE



Compartmentalize smoke and flames

Glazing tested as part of a fire protection rated assembly in accordance with NFPA 252, the Standard Method of Test of Fire Door Assemblies, or NFPA 257, the Standard on Fire Test for Window and Glass Block Assemblies.

46

CODE CONSIDERATIONS IN FIRE RATED GLASS

Types of Fire Protective Glazing Materials

- Specialty tempered
- Heat reflective specialty tempered
- 45 Min. Fire Resistive
- Safety wired and Traditional wired*
- Safety ceramics and ceramics*
- Specialty fire protective

** Can be used in windows only in non-safety applications*

47

CODE CONSIDERATIONS IN FIRE RATED GLASS

Performance features of SPECIALTY TEMPERED

- 20 minute fire protective ratings
- Sizes greater than 9 sq. ft. up to maximum size tested
- Impact safety rated to Cat. II
- Tempered glass – 6 times stronger than annealed or wired glass



48

CODE CONSIDERATIONS IN FIRE RATED GLASS

Performance features for HEAT REFLECTIVE SPECIALTY TEMPERED

- Substantially reduces the dangers of radiant heat by reflecting heat back towards the fire source
- Survives thermal shock from sprinklers
- Impact safety rated to Cat. II
- Sizes greater than 9 sq. ft. up to maximum size tested
- USA – Low cost – Readily available
- Tempered glass – 6 times stronger than annealed or wired glass



49

CODE CONSIDERATIONS IN FIRE RATED GLASS

Performance features for HEAT REFLECTIVE SPECIALTY TEMPERED

- Can be used in 20 minute doors without limitations
- AHJ approval is required for 45 and 60 minute applications
- Performance and testing information needed for AHJ approval can be obtained from the manufacturer and submitted to the building official for review



50

CODE CONSIDERATIONS IN FIRE RATED GLASS

Performance Features of 45-min. Fire Resistive

- Made in USA
- Low cost
- Meets Category I and II
- Meets hose stream
- Superior optical clarity
- Value added benefit of radiant heat protection
- Costs less than laminated safety ceramics




51

CODE CONSIDERATIONS IN FIRE RATED GLASS

Performance Features of Wired and Safety Wired Glass

- Traditional wired glass is weaker than annealed
- Safety wired glass meets CPSC impact safety requirements
- Filmed version meets Cat. II (exceeds 9 sq. ft. up to max. size tested)



52

CODE CONSIDERATIONS IN FIRE RATED GLASS

Performance Features of Ceramics and Safety Ceramics

- Slightly tinted, some distortion
- Thin/lightweight
- Size limitations – 25% of wall area
- Cannot be used in doors or sidelites
- No radiant heat protection
- Expensive
- Not safety-rated unless laminated or filmed
- Half as strong as annealed
- Significantly weaker than tempered products
- Unable to temper

CODE CONSIDERATIONS IN FIRE RATED GLASS



45 min. safety ceramic door lite and 45 min. non-safety ceramic in transom



90 min. safety ceramic door lites limited to 100 sq. in. in 90 min. pair doors

CODE CONSIDERATIONS IN FIRE RATED GLASS

Performance Features of Specialty Fire Protective

- Clear appearance
- No wires or amber tints
- Meets all the fire and safety impart requirements for 90 min. temperature rise doors
- Affordable
- Made in the USA

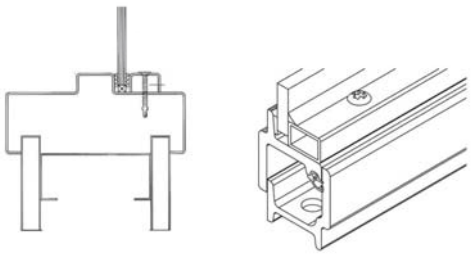


Vision lites in 90 min. temperature rise doors up to 100 sq. in.

CODE CONSIDERATIONS IN FIRE RATED GLASS

Fire Protective Framing

Hollow metal section Hot rolled steel section



56




Types of Fire Resistive Glazing

CODE CONSIDERATIONS IN FIRE RATED GLASS

Fire resistive glazing is defined as:

Glazing tested as part of a fire resistance-rated assembly in accordance with ASTM E119 or NFPA 251 (Standard Method of Tests of Fire Endurance of Building Construction and Materials).

ASTM E119



Fire Endurance Test Radiant Heat Test Hose Stream Test

58

CODE CONSIDERATIONS IN FIRE RATED GLASS

Fire-rated glass products that meet fire resistive (wall) requirements



Fire Retardant Filled Glass Multi-Laminate Fire Retardant Glass


Semi-Solid Fire Retardant Tempered Glass Annealed Glass Intumescent Fire Retardant Layers

59

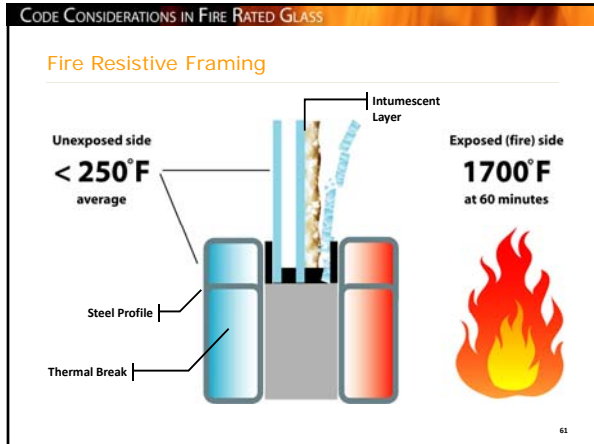
CODE CONSIDERATIONS IN FIRE RATED GLASS

Fire Resistive Glazing – Test example

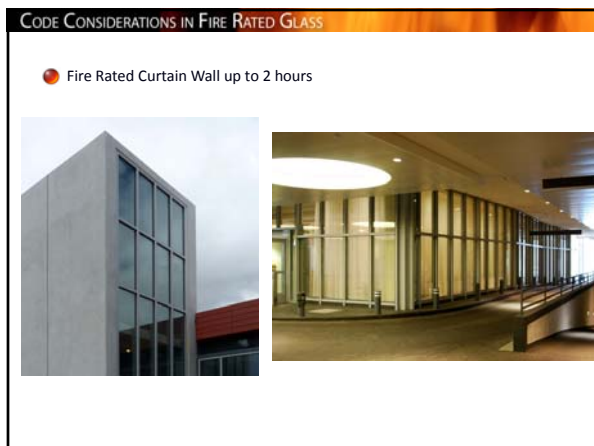
- Glass exposed to fire
- Fire retardant forms into heat absorbing char
- Glass temperature remains low, radiant heat is blocked



60








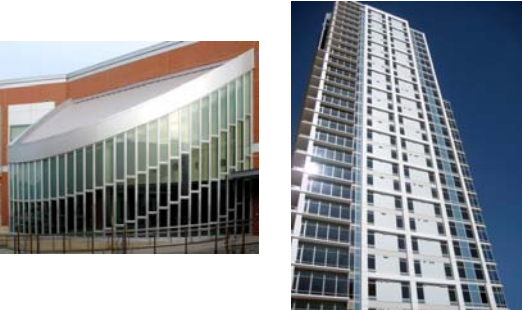
CODE CONSIDERATIONS IN FIRE RATED GLASS

- Full Vision 60 and 90 minute Temperature Rise Doors



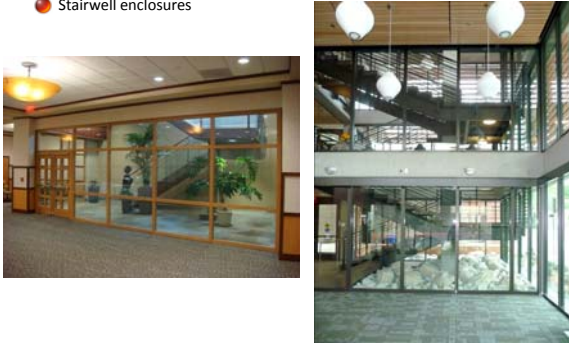
CODE CONSIDERATIONS IN FIRE RATED GLASS

- Property Line Applications (with energy efficient and sound reducing make-ups)




CODE CONSIDERATIONS IN FIRE RATED GLASS

- Stairwell enclosures




CODE CONSIDERATIONS IN FIRE RATED GLASS

● Specialty Functions




Fire and Hurricane Rated





Fire and Ballistic Rated

CODE CONSIDERATIONS IN FIRE RATED GLASS

● Fire Rated Decorative Art Glass



68

CODE CONSIDERATIONS IN FIRE RATED GLASS

Fire Rated Door, Sidelite/Transom Guidelines

Application	Rating	Product	Limits
Door vision panel	20	20-Minute Tempered	Max. size tested
Door, Sidelite/transom	45	45-Minute Fire Resistive Safety wired Safety ceramic Specialty tempered ¹	Max. size tested
Door vision panel	60/90	60/90 Specialty Fire Protective Safety Wired Safety Ceramic	100 sq. ins. ²
Door vision panel	60/90	60 or 90-Minute Fire Resistive	Max. size tested
Sidelite/transom	60	60-Minute Fire Resistive	Max. size tested
Sidelite/transom	120	120-Minute Fire Resistive	Max. size tested

¹ AHJ approval needed.
² Some AHJs may allow larger sizes. Consult with the local AHJ for clarification.

69

CODE CONSIDERATIONS IN FIRE RATED GLASS

True or false?

All fire endurance testing for glazing comes from the same test standard.

False.

There are different standards used for different applications:

Windows & Doors are tested to NFPA 257/NFPA 252. Test is primarily for products listed **45 minutes or less** and therefore **the protection from radiant heat transfer is not measured or required**

Walls are tested to ASTM E119 and **require the blocking of radiant heat.**

73

CODE CONSIDERATIONS IN FIRE RATED GLASS

True or false?

Q. Fire protective glazing that is listed for use in 60-and 90-minute sidelites/transoms are permitted in door openings requiring 60 and 90-minute opening protection?

False.

Fire protective glazing listed for use in 60-and 90-minute sidelite/transom assemblies are not permitted in door openings requiring greater than 45-minute protection.

90 minute ceramic glazing listed for use in 90-minute sidelites and transoms are not permitted where door rating requirement is 90-minute	120 minute fire resistance rated glazing is permitted in 2-hour wall.
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74

CODE CONSIDERATIONS IN FIRE RATED GLASS

True or false?

Q. Do current building codes allow local jurisdictions to approve of alternative fire protection methods and materials?

True.


ICC model building and fire codes adopted throughout the United States include provisions for the approval of alternative materials and methods meeting equivalent characteristics of quality, strength, effectiveness, fire resistance, durability and safety.

75

CODE CONSIDERATIONS IN FIRE RATED GLASS

Questions

Presented by:



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76



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2012 IBC 716 TABLES

716.3 Marking Fire Rated Glazing Assemblies

716.5 Opening Fire Protection Assemblies, Ratings and Markings (previously 715.4)

716.6 Fire Window Assembly Fire Protection Ratings (previously 715.5)

These tables represent the code changes approved by ICC at the 2012 IBC code hearings. The final published version of 2012 IBC is now available.

The SAFTI FIRST recommended product found in these tables are not part of the 2012 IBC, but provided by SAFTI FIRST as guide for choosing and specifying the correct code approved product. If you have any questions regarding these tables, contact SAFTI FIRST at 888.653.3333 or send an email to info@safi.com.

2012 IBC Table 716.3 (New)

Marking Fire-Rated Glazing Assemblies

Fire Test Standard	Marking	Definition of Marking	Recommended SAFTI FIRST Product (not in IBC – added for easy reference)
ASTM E119 or UL 263	W	Meets wall assembly criteria.	SuperLite II-XL 60-120
NFPA 257 or UL 9	OH	Meets fire window assembly criteria including the hose stream test.	SuperLite II-XL 45 SuperLite I-W PYRAN Platinum by SAFTI FIRST PYRAN Platinum F by SAFTI FIRST PYRAN Platinum L by SAFTI FIRST
NFPA 252 or UL 10B or UL 10C	D	Meets fire door assembly criteria.	SuperLite I & I-XL SuperLite II-XL 45-120 SuperLite I-W SuperLite X-90 PYRAN Platinum F by SAFTI FIRST PYRAN Platinum L by SAFTI FIRST
	H	Meets fire door assembly “Hose Stream” test.	SuperLite II-XL 45-120 SuperLite I-W SuperLite X-90 PYRAN Platinum F by SAFTI FIRST PYRAN Platinum L by SAFTI FIRST
	T	Meets 450° F temperature rise criteria for 30 minutes	SuperLite II-XL 45-120
	XXX	The time in minutes of the fire resistance or fire protection rating of the glazing assembly	

For SI: °C = [(°F) – 32]/1.8.

2012 IBC Table 716.5 (previously 715.4)

Opening Fire Protection Assemblies, Ratings and Markings

TYPE OF ASSEMBLY	REQUIRED WALL ASSEMBLY RATING (HRS.)	MINIMUM FIRE DOOR AND FIRE SHUTTER ASSEMBLY RATING (HRS.)	DOOR VISION PANEL SIZE	FIRE RATED GLAZING MARKING DOOR VISION PANEL ^e	Recommended SAFTI FIRST Product for Door Vision Panel (not in IBC – added for easy reference)	MINIMUM SIDELITE/TRANSOM ASSEMBLY RATING (HRS.)		FIRE RATED GLAZING MARKING SIDELITE/TRANSOM PANEL		Recommended SAFTI FIRST Product for Sidelite/Transom (not in IBC – added for easy reference)
						Fire Protection	Fire Resistance	Fire Protection	Fire Resistance	
Fire walls and fire barriers having a required fire resistance rating greater than 1 hour	4	3	Not Permitted	Not Permitted		Not Permitted	4	Not Permitted	W-240	
	3	3 ^a	Not Permitted	Not Permitted		Not Permitted	3	Not Permitted	W-180	
	2	1-1/2	100 sq. in ^c	≤100 sq. in. = D-H-90 >100 sq. in. =D-H-W-90	SuperLite X-90 SuperLite I-W PYRAN Platinum F and L by SAFTI FIRST SuperLite II-XL 90	Not Permitted	2	Not Permitted	W-120	SuperLite II-XL 120
	1-1/2	1-1/2	100 sq. in ^c	≤100 sq. in. = D-H-90 >100 sq. in. =D-H-W-90	SuperLite X-90 SuperLite I-W PYRAN Platinum F and L by SAFTI FIRST SuperLite II-XL 90	Not Permitted	1-1/2	Not Permitted	W-90	SuperLite II-XL 90
Shaft, exit enclosures and exit passageway walls	2	1-1/2	100 sq. in ^{c,d}	≤100 sq. in. = D-H-90 >100 sq. in. = D-H-T-90 or D-H-T-W-90	SuperLite X-90 SuperLite I-W PYRAN Platinum F and L by SAFTI FIRST SuperLite II-XL 90	Not Permitted	2	Not Permitted	W-120	SuperLite II-XL 120

(continued on next page)

TYPE OF ASSEMBLY	REQUIRED WALL ASSEMBLY RATING (HRS.)	MINIMUM FIRE DOOR AND FIRE SHUTTER ASSEMBLY RATING (HRS.)	DOOR VISION PANEL SIZE	FIRE RATED GLAZING MARKING DOOR VISION PANEL ^e	Recommended SAFTI FIRST Product for Door Vision Panel (not in IBC – added for easy reference)	MINIMUM SIDELITE/TRANSOM ASSEMBLY RATING (HRS.)		FIRE RATED GLAZING MARKING SIDELITE/TRANSOM PANEL		Recommended SAFTI FIRST Product for Sidelite/Transom (not in IBC – added for easy reference)	
						Fire Protection	Fire Resistance	Fire Protection	Fire Resistance		
Fire barriers having a required fire-resistance rating of 1 hour: Enclosures for shafts, exit access stairways, exit access ramp, interior exit stairways, interior exit ramps and exit passageway walls.	1	1	100 sq. in. ^{c, d}	≤100 sq. in. = D-H-60 >100 sq. in. = D-H-T-60 or D-H-T-W-60	SuperLite I-W SuperLite X-90 PYRAN Platinum F and L by SAFTI FIRST SuperLite II-XL 60	Not Permitted	1	Not Permitted	W-60	SuperLite II-XL 60	
						Fire Protection					
Other Fire Barriers	1	3/4	Maximum Size Tested	D-H-NT-45	SuperLite II-XL 45 SuperLite I-W PYRAN Platinum F and L by SAFTI FIRST	3/4		D-H-NT-45		SuperLite II-XL 45 SuperLite I-W PYRAN Platinum F and L by SAFTI FIRST	
Fire Partitions / Corridor Walls	1	1/3 ^b	Maximum Size Tested	D-20	SuperLite I & I-XL SuperLite I-W PYRAN Platinum F and L by SAFTI FIRST	3/4 ^b		D-H-OH-45		SuperLite II-XL 45 SuperLite I-W PYRAN Platinum F and L by SAFTI FIRST	
	0.5	1/3 ^b	Maximum Size Tested	D-20	SuperLite I & I-XL SuperLite I-W PYRAN Platinum F and L by SAFTI FIRST	1/3		D-H-OH-20		SuperLite II-XL 45 SuperLite I-W PYRAN Platinum F and L by SAFTI FIRST	
Other Fire Partitions	1	3/4	Maximum Size Tested	D-H-45	SuperLite II-XL 45 SuperLite I-W PYRAN Platinum F and L by SAFTI FIRST	3/4		D-H-45		SuperLite II-XL 45 SuperLite I-W PYRAN Platinum F and L by SAFTI FIRST	
	0.5	1/3	Maximum Size Tested	D-H-20	SuperLite II-XL 45 SuperLite I-W PYRAN Platinum F and L by SAFTI FIRST	1/3		D-H-20		SuperLite II-XL 45 SuperLite I-W PYRAN Platinum F and L by SAFTI FIRST	

(continued on next page)

TYPE OF ASSEMBLY	REQUIRED WALL ASSEMBLY RATING (HRS.)	MINIMUM FIRE DOOR AND FIRE SHUTTER ASSEMBLY RATING (HRS.)	DOOR VISION PANEL SIZE	FIRE RATED GLAZING MARKING DOOR VISION PANEL ^e	Recommended SAFTI FIRST Product for Door Vision Panel (not in IBC – added for easy reference)	MINIMUM SIDELITE/TRANSOM ASSEMBLY RATING (HRS.)		FIRE RATED GLAZING MARKING SIDELITE/TRANSOM PANEL		Recommended SAFTI FIRST Product for Sidelite/Transom (not in IBC – added for easy reference)	
						Fire Protection	Fire Resistance	Fire Protection	Fire Resistance		
Exterior Walls	3	1-1/2	100 sq. in. ^c	≤100 sq. in. = D-H-90 >100 sq. in. =D-H-W-90	SuperLite X-90 SuperLite I-W PYRAN Platinum F and L by SAFTI FIRST SuperLite II-XL 90	Not Permitted	3	Not Permitted	W-180		
	2	1-1/2	100 sq. in. ^c	≤100 sq. in. = D-H-90 >100 sq. in. =D-H-W-90	SuperLite X-90 SuperLite I-W PYRAN Platinum F and L by SAFTI FIRST SuperLite II-XL 90	Not Permitted	2	Not Permitted	W-120	SuperLite II-XL 120	
							Fire Protection				
	1	3/4	Maximum Size Tested	D-H-45	SuperLite II-XL 45 SuperLite I-W PYRAN Platinum F and L by SAFTI FIRST	3/4		D-H-45		SuperLite II-XL 45 SuperLite I-W PYRAN Platinum F and L by SAFTI FIRST	
Smoke Barriers							Fire Protection				
	1	1/3 ^b	Maximum Size Tested	D-20	SuperLite I & I-XL SuperLite I-W PYRAN Platinum F and L by SAFTI FIRST	3/4		D-H-OH-45		SuperLite II-XL 45 SuperLite I-W PYRAN Platinum F and L by SAFTI FIRST	

For SI: 1 square inch – 645.2 mm

- a. Two doors, each with a fire protection rating of 1-1/2 hours, installed on opposite sides of the same opening in a fire wall, shall be deemed equivalent in fire protection rating to one 3-hour fire door.
- b. For testing requirements, see Section 716.6.3
- c. Fire resistance rated glazing tested to ASTM E119 in accordance with Section 716.2 shall be permitted, in the maximum size tested.
- d. Except where the building is equipped throughout with an automatic sprinkler and the fire-rated glazing meets the criteria established in Section 716.5.5.
- e. Under the column heading “Fire rated glazing marking door vision panel”, W refers to the fire-resistance rating of the glazing, not the frame.

2012 IBC Table 716.6 (previously 715.5)

Fire Window Assembly Fire Protection Ratings

TYPE OF WALL ASSEMBLY	REQUIRED WALL ASSEMBLY RATING (hours)	MINIMUM FIRE WINDOW ASSEMBLY RATING (hours)	FIRE RATED GLAZING MARKING	Recommended SAFTI FIRST Product (not in IBC – added for easy reference)
Interior walls				
Fire walls	All	NP ^a	W-xxx ^b	SuperLite II-XL 60-120
Fire barriers	>1 1	NP ^a NP ^a	W-xxx ^b W-xxx ^b	
Incidental use areas (707.3.6), Mixed occupancy separations(707.3.8)	1	¾	OH-45 or W-60	SuperLite II-XL 60 If less than 25% of the wall area: SuperLite II-XL 45, SuperLite I-W, PYRAN Platinum, PYRAN Platinum F or L by SAFTI FIRST
Fire Partitions	1 0.5	¾ 1/3	OH-45 or W-60 OH-20 or W-30	SuperLite II-XL 60 If less than 25% of the wall area: SuperLite II-XL 45, SuperLite I-W, PYRAN Platinum, PYRAN Platinum F or L by SAFTI FIRST
Smoke Barrier	1	¾	OH-45 or W-60	SuperLite II-XL 60 If less than 25% of the wall area: SuperLite II-XL 45, SuperLite I-W, PYRAN Platinum, PYRAN Platinum F or L by SAFTI FIRST
Exterior walls	>1 1 0.5	1-1/2 ¾ 1/3	OH-90 or W-XXX ^b OH-45 or W-60 OH-20 or W-30	SuperLite II-XL 90-120 SuperLite II-XL 60 If less than 25% of the wall area: SuperLite II-XL 45, SuperLite I-W, PYRAN Platinum, PYRAN Platinum F or L by SAFTI FIRST
Party wall	All	NP	Not Applicable	

NP – Not Permitted

a. Not permitted except fire resistance rated glazing assemblies tested to ASTM E119 or UL 263, as specified in Section 716.2.

b. xxx = The fire rating duration period in minutes, which shall be equal to the fire resistance rating required for the wall assembly.