

Fire Rated Glazing in Schools FAQs

Q. Why can't I use one type of fire rated glass for all my applications, especially since the print ad says from 20 minutes to 3 hours?

Architects and designers should be wary about products that are marketed using the fire endurance rating (20 minutes to 3 hours) without any reference to its overall performance or limitations. Why? Because having a one-size-fits-all approach to fire rated glass not only leads to faulty specifications, but also significant expense when fire marshals and building officials order the glass to be changed because the wrong product is installed.

The current IBC recognizes 2 categories of fire rated glass "fire protective and fire resistive". These two types of fire rated glass are based on the testing criteria that the product has met, not just the duration rating. Fire protective glass products are tested to NFPA 252/257 and blocks smoke and flames. They are typically used in 20-45 minute applications and subject to size limitations dictated by code. Fire resistive glass products are tested to ASTM E-119/NFPA 251/UL263 and blocks smoke, flames and radiant heat. They are typically used in 60-120 minute applications and are only subject to tested size limitations.

Q. What are my product options for 1 hour exit corridors?

Generally speaking, exit corridors have a fire resistance rating of 1 hour. Table 716.5 in the 2012 IBC outlines the requirements for door, sidelite and transom assemblies:

Doors: 20 minute fire protective glass tested without hose stream. Products include [specialty tempered](#), [safety wired glass](#), [filmed ceramics](#) and [laminated ceramics](#). All these options meet CPSC Cat. I and II impact safety.

Sidelites: 45 minute fire protective glass tested with hose stream. Products include [45-minute fire resistive intumescent tempered units](#), [specialty tempered](#), [safety wired glass](#), [filmed ceramics](#) and [laminated ceramics](#). All these options meet CPSC Cat. I and II impact safety.

Transoms: 45 minute fire protective glass tested with hose stream. Products include [45-minute fire resistive intumescent tempered units](#), [safety wired glass](#), traditional wired glass, [plain ceramics](#), [filmed ceramics](#) and [laminated ceramics](#). This application does not require meeting CPSC impact safety requirements.

Table 716.6 in the 2012 IBC outlines the requirements for openings in 1 hour exit corridors:

Openings not exceeding 25% of the wall area: 45 minute fire protective glass tested with hose stream. Products include [45-minute fire resistive intumescent tempered units](#), [specialty tempered](#), [safety wired glass](#), [filmed ceramics](#) and [laminated ceramics](#). All these options meet CPSC Cat. I and II impact safety.

Openings exceeding 25% of the wall area: 60 minute fire resistive glass tested with hose stream. Products include [60 minute fire resistive intumescent tempered units](#). This product also meets CPSC Cat. I and II impact safety.

The GSA and AHJs have allowed the use of a fire protective [heat-reflective specialty tempered](#) product tested without hose stream in 45 minute sidelites, transoms and openings for the cost benefits and added safety that it provides. Click [here](#) for a technical bulletin with information on obtaining AHJ approval.

Q. What are my product options for 1 and 2 hour exit enclosures/stairwells?

The IBC requires interior exit stairways be enclosed to protect building occupants from smoke, flames and radiant heat as they are exiting the building. Exit enclosures/stairwells four stories or more must be 2 hour fire resistance rated; exit enclosures/stairwells less than four stories must be 1 hour fire resistance rated.

Table 716.5 in the 2012 IBC spells out the door assembly requirements for 1 and 2 hour exit enclosure/stairwells:

Doors: 60 or 90 minute fire protective glass limited to 100 square inches. Products include [specialty fire protective](#), [safety wired glass](#), [filmed ceramics](#) and laminated. To exceed 100 square inches in the door vision panel, either [60 minute fire resistive intumescent tempered units](#) must be used in 1 hour stairwells, and [90 minute fire resistive intumescent tempered units](#) must be used in 2 hour stairwells.

Sidelites and Transoms: 60 or 120 min. fire resistive glass rated equal to the wall. Products include [60 minute fire resistive intumescent tempered units](#) for 1 hour stairwells, and [120 minute fire resistive intumescent tempered units](#) for 2 hour stairwells. Note that fire protective glazing like wired glass or ceramics are not allowed in this application.

Q. for 1 and 2 hour exit enclosures/stairwells, can I use fire protective glass in large sizes if the building is fully sprinklered?

Under the 2012 IBC, door vision panels glazed with fire protective glazing, such as ceramics and wired glass, are limited to 100 sq. inches, whether the building is fully sprinklered or not. To exceed 100 sq. inches in the door vision panel, fire resistive glazing must be used.

Under the 2009 and 2006 IBC, larger fire protective glazing in door vision panels may be used in 1-hour exit enclosure and exit passageway doors only where the building – not just the door assembly – is fully sprinklered.

Under the 2012, 2009 and 2006 IBC, fire protective glazing is not allowed in the sidelites, transoms and openings surrounding the 60 minute door, whether the building is fully sprinklered or not. The glazing must be fire resistive and rated equal to the wall.

Q. What type of framing should I use?

The framing should match the performance of the glass since the code treats them as assemblies, not separate components. In other words, if fire protective glass is specified, fire protective framing tested to NFPA 252/257 can be used. Likewise, if fire resistive glass is specified, fire resistive framing tested to ASTM E-119 should be used.

If fire protective framing is used with fire resistive glass, the whole assembly rating is lowered to fire protective. This mismatched assembly will not meet the code requirements for applications that require ASTM E-119, which are typically wall and door assemblies rated 60-120 minutes.

Q. We find that most of the glass breakage occurs in doors and sidelites, and when it breaks, we have to replace it. How can we save money on glass replacement over time?

Glazing in doors, sidelites and hazardous locations (as outlined in Chapter 24 of the IBC) must be able to meet CPSC Cat. I or II impact safety. However, not all fire protective, safety rated products perform the same way.

Safety wired glass, filmed ceramics and laminated ceramics achieve their CPSC Cat. II impact safety rating by incorporating a safety film that holds the pieces of glass together when impacted. The glass will break, but there will be no through penetration.

Specialty tempered glass achieve their CPSC Cat. II impact safety rating through the material itself “tempered glass” without the need of adding safety films or laminates. In this [video](#), the tempered glass not only passed the CPSC Cat. II requirement, but survived the impact without damage. This means less likelihood of breakage and replacement compared to safety wired glass, filmed ceramics and laminated ceramics.

Not only that, [specialty tempered](#) glass is the most affordable option considering upfront costs. It is typically a third of the cost of filmed ceramic and about 20% of the cost of laminated ceramic when used in the same 20-minute door application (primarily found in 1 hour corridors). For the 45 minute sidelites and transoms in the same 1 hour corridor, [45-minute fire resistive units](#) cost less than filmed or laminated ceramics used in the same application, while providing better impact safety, clarity and protection from dangerous radiant heat.

Q. What about other security considerations, such as added protection against ballistic attack or forced entry?

After tragic events at Sandy Hook, there has been more emphasis on keeping students and staff safe in case of an attack. School districts nationwide have considered upgrading windows and doors to meet ballistic or forced entry.

In areas where fire rating requirements exist, there are products available today that can meet these additional security requirements. SAFTI FIRST has [fire and ballistic rated systems](#) that can meet up to

level 8 ballistic and level 1 attack resistance, while also meeting ASTM E-119 up to 2 hours. SAFTI FIRST also offers [fire resistive glass products that provide the highest level of protection](#) required by the rigorous standards established by the California Department of Corrections.

Q. Are any of these fire rated glass and framing products made in the USA?

Yes. SAFTI FIRST manufactures the SuperLite glass products and SAFTIfire Framing products in their 50,000 square foot facility in Merced, CA. SAFTI FIRST is also the first and only single-source, USA-manufacturer of fire resistive glass and framing products. This means faster lead times and competitive pricing, with savings passed to our customers.

Click [here](#) to view our comprehensive line of fire rated glass products.

Click [here](#) to view our comprehensive line of fire rated framing products.

Have more questions on fire rated glass and framing? Send them to codesupport@safti.com and our technical representative will be happy to assist you.