

New Forms & Functions

In an industry where designers constantly push the envelope, one thing is for sure—safety is always in style.



Biltmore Hotel, Los Angeles



Westin Casuarina Hotel



Disney Art Glass,
Captain Cook's Restaurant

GLASS IS INCREASINGLY ONE OF THE MOST preferred building products because it allows us to enjoy clear, unobstructed views along with the benefits of natural light. Perhaps no segment of the building industry emphasizes these types of design and aesthetic elements more than the hospitality market. "Openness is really a trend," says hospitality architect Pim Robberechts, RIBA, RAIA, AIA. "People want to see what's happening, and transparency puts people at ease." However, their designs must conform to the prevailing life and safety standards. So architects designing spaces for hotels and restaurants must meet their aesthetic goals while still satisfying the requirements of local building codes. To achieve this, more and more architects are incorporating fire-rated glazing into their designs.

Although they may look and provide the same benefits of clear, ordinary glass, new fire-rated glazing products are different in their ability to protect us from flames, smoke and radiant heat. Regular float glass has only a fraction of the resistance to the temperatures fire-rated glazing must endure, making it unsafe for use exit corridors, occupancy separations, stairwells or other areas designated for safe egress. Fire-rated glazing is tested to withstand at least just over 1,600 F for a significant amount of time.

However, standard endurance ratings (20, 45, 60, 90, 120 and 180 minutes) do not necessarily reflect a product's overall performance, nor do they always indicate the appropriate, code-approved use. Instead

of Fire-rated Glazing

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of endurance ratings, it is better to think about fire-rated glazing according to the various applications. More specifically, is the glass required to do more than just confine smoke and flames by also providing a barrier to radiant heat?

Fire Protective vs. Fire Resistive Glazing: Testing, Limitations and Choices

Fire protective glazing is designed to contain smoke and flames up to 45 minutes and is limited to 25% of the total wall area. It is tested to NFPA 252, Standard Methods of Fire Tests of Door Assemblies, and NFPA 257, Standard on Fire Test for Window and Glass Block Assemblies. If the glass is used in doors, sidelites or any locations where potential impact with the glazing is a concern, prevailing codes require it to meet CPSC Cat. I or II impact safety standards. There are fire protective glazing products that are rated from 60 to 180 minutes, but their use is, for the most part, limited to 100 sq. inches in temperature-rise doors due to radiant heat concerns.

The glazing choices in the fire protective arena include non-safety-rated traditional polished wired glass and monolithic ceramics, safety-rated filmed or laminated wired glass, safety-rated filmed or laminated ceramics, plus specialty tempered and heat-reflective specialty tempered. Since fire-rated glazing is often used in conjunction with regular float glass in a building, achieving a uniform look and aesthetic continuity becomes very important in hotels and restaurants. With the introduction of specialty tempered and heat-reflective specialty tempered glazing, architects now have optically clear alternatives to the institutional look of wired glass and the typical amber tint of many fire-rated ceramic products.

Fire resistive glazing is designed to block smoke, flame and radiant heat up to 2 hours and does not have the size limitations affecting fire protective glazing. They are tested to NFPA 251, Standard Methods of Tests of Fire Endurance of Building Construction and Materials and meet ASTM E-119, which limits the rise in temperature on the non-fire

side to 250° F above ambient. Since they can be used in floor-to-ceiling and wall-to-wall application with an appropriately rated door and framing system, it allows for unlimited design flexibility and maximum fire protection. This type of glazing also meets CPSC Cat. I and II impact safety standards.

The glazing choices in the fire resistive arena include fire retardant-filled units and multi-laminates. They can be further customized to protect against hurricanes, bullets, blast, noise, UV rays and available in any architectural make-up, including decorative art glass.

Case Studies in the Hospitality Industry

Biltmore Hotel in Los Angeles, CA

The Biltmore Hotel is a true Los Angeles landmark, and has been home to presidents, dignitaries, Hollywood celebrities and has hosted eight Academy Award ceremonies since it first opened in 1923. When the hotel underwent a renovation in the early 1980s, they wanted to incorporate an underground entrance that matched its European

design and old-world elegance. Since this entrance opens up to a driveway leading into a parking garage, it had to be fire-rated because vehicles are potential fire hazards.

SAFTI FIRST supplied a fire resistive door assembly incorporating SuperLite II-XL 90 minute in GPX framing. Since the glazing met

ASTM E-119, they were able to use large sizes and maximize the clear views into the lobby. To provide a polished look to these entrances, the fire resistive GPX framing was clad in brass. This enhanced aesthetic on the door assembly matched the hotel's décor beautifully while meeting all the requirements of the codes.

Westin Casuarina Hotel & Spa in Las Vegas, NV

The Westin Casuarina Hotel & Spa is a Las Vegas retreat one block away from the famous strip. The style is very contemporary and helps put guests at ease by surrounding them with large, transparent open spaces. They wanted to communicate the same open feeling in the hotel's gift shop, so glazing was incorporated in the walls to allow full view of the merchandise. Since one side of the shop faced an exit corridor, the entire wall had to be fire-rated.

SAFTI FIRST supplied a fire resistive wall/window assembly using SuperLite II-XL 60 minute in GPX framing. Like the Biltmore Hotel, the glazing and framing assemblies used here met ASTM E-119, and with it, the designer was able to cover the entire wall area with glass. The frames were powder-coated to match the color and look of the adjoining areas. By using this system, the designer was able to offer maximum clear views and provide a safe route of egress in the event of a fire.

Captain Cook's Restaurant at the Walt Disney World Resorts in Orlando, FL

One of focal points in this restaurant's design is custom art glass panels designed by Meltdown Glass in Arizona. The designer wanted to use these panels throughout the restaurant, however, there was one area that needed to maintain a one hour fire rating. Not wanting to deviate from their original design, SAFTI FIRST was asked to provide a solution that incorporated SuperLite II-XL 60 minutes and the decorative art glass. The result was both beau-



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tiful and seamless, and the code requirements were easily met.

Looking Ahead: Balanced Fire Protection is Key

Advances in sprinkler technology and other "active" fire protection systems have posed a question as to whether or not fire-rated glazing and other "passive" fire protection systems are still needed. To answer this question, one must first understand how these two systems work best.

Active fire protection systems such as sprinklers are triggered at lower temperatures in order to diffuse and control a fire before firefighters arrive on the scene. While they do perform a very important function and could help save lives when they work properly, there is still a chance for mechanical or human error. Variables such as painting over sprinkler heads or accidentally shutting off the main water supply jeopardize the performance of sprinklers and endanger the lives of building occupants. After studying disasters like those that occurred on 9/11, building owners and architects are realizing that entire active systems can be disabled as a result of sabotage or natural causes.

This is why having passive fire protection systems such as fire-rated glazing is important. The concept of having "balanced fire protection," where active and passive systems are both present is good, sound practice. Unlike sprinklers, fire-rated glazing does not need a mechanical trigger in order to work. These products perform their life and safety function 24 hours a day, seven days a week. In the event of a fire, they can

successfully contain flames, smoke and even dangerous radiant heat to give building occupants a chance to exit the building even before the firefighters arrive to extinguish it.

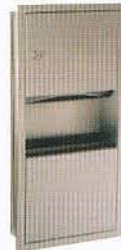
Fire-rated glazing has truly carved its own niche in the construction market over the last two decades. As architects continue

to demand more from the building products available to them, manufacturers of fire-rated glazing will continue to provide better performing products that improve life safety, property protection and aesthetic design. **TH**

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