Fire-Rated Glazing
Protective - Resistive

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Rich Walke, UL, LLC
Presentation Outline - Fire Rated Glazing

• Code Info
• Testing
• Fire Protective & Fire Resistive Glazing
• Labeling – Labeling for Fire-Rated Glass
• Non-Code Compliant Products
Fire-Rated Glazing Suitability for Use Determined by…

Test Standard UL 9, UL 263

• Fire Protective – UL 9
• Fire Resistive – UL 263
• Fire-rated glazing for door and window assemblies – UL 10B, UL 10C
• Ratings –
  • Time, remain in place, stop the spread of fire
  • Hose Stream Test
  • Impact for Safety
Two Key Purposes of Fire-Rated Glass

- Allows visibility into a space
- Prevents fire from spreading
- Compartmentation
Key Testing Components for Fire and Human Impact Safety

**Fire Test** - Measures the amount of time, in minutes or hours, that fire rated glazing and framing can withstand fire exposure in a furnace.

**Hose Stream Test** - Heated glass and frames are subjected to water from a fire hose. The cooling, impact and erosion created by the hose stream tests the integrity of the glass and frames and eliminates inadequate materials.

**Impact Safety Test** - Measures the ability of glass to withstand impact. Ratings are given in levels based on the amount of force the glass can resist. Typically defined by CPSC Category 1 or 2 rating.
Safety Glazing Classifications...in addition to Fire Restance

CPSC 16 CFR 1201 (Category II)
- 400 ft. lbs. pressure
- Tempered Glass, typical laminated glass, filmed glass

CPSC 16 CFR 1201 (Category I)
- 150 ft. lbs. pressure
- Permitted up to 1,296 in²

ANSI Z97.1 (Traditional Wired Glass Only – Removed, IBC 2009)
- 100 ft. lbs. Pressure
- Permitted up to 1,296 in²
FIRE PROTECTIVE

- Fire Rated, Thin Glazing
- Traditional fire-rated material (wired glass, glass ceramic, hollow metal steel frames, etc.)
  - No Human Impact - Wired
- Used as Opening Protectives
  - Fire Windows: 45-90 Minutes
  - Fire Doors: 20 minutes – 3 hrs
  - May not exceed 25% of the area of a Fire Resistance Rated Wall
  - May not exceed 156ft²
- May not exceed manufacturers tested sizes
- Frames must be Listed
**FIRE RESISTIVE**

- Stop fire **AND** radiant heat
- Both glass and frames
- “Thick” glazing
- Classified as a “wall” rather than an opening (window)
- Both glass and frames must block passage of radiant heat
- Classified as Wall Construction, and may be used in multi story spans or floor to ceiling sizes
Why is Fire-Rated Glazing Labeled?

- Code Required Since – 2006
- Easy inspection
- Product verification in Building for All…
Label Standards

- **“W”** indicates that the glass passes ASTM E119
  - This is the wall standard which includes temperature rise and hose stream

- **“D”** indicates that the glass passed NFPA 252
  - Door standard

- **“O”** indicates that the glass passed NFPA 257
  - Opening standard

<table>
<thead>
<tr>
<th>FIRE TEST STANDARD</th>
<th>MARKING</th>
<th>DEFINITION OF MARKING</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASTM E 119 or UL 263</td>
<td>W</td>
<td>Meets wall assembly criteria.</td>
</tr>
<tr>
<td>NFPA 257 or UL 9</td>
<td>OH</td>
<td>Meets fire window assembly criteria including the hose stream test.</td>
</tr>
<tr>
<td>NFPA 252 or UL 10B or UL 10C</td>
<td>D, H, T</td>
<td>Meets fire door assembly criteria. Meets fire door assembly “Hose Stream” test. Meets 450°F temperature rise criteria for 30 minutes</td>
</tr>
<tr>
<td></td>
<td>XXX</td>
<td>The time in minutes of the fire resistance or fire protection rating of the glazing assembly</td>
</tr>
</tbody>
</table>

For SI: °C = [(°F) - 32]/1.8.
Fire-Rated Glass Manufacturer Label

FireLite

D-H-20
OH-20

2” wide x .75” tall

TGP Slide, Image
Labeling Requirements

Fire-Rated Frame Manufacturer Label

Installers should not remove or paint over frame labels
UL Online Certifications Directory

- Available online at database.ul.com
- Search for UL File Number found on label for more information on listing
- www.UL.com/Database

TGP Slide, Image
Labeling Requirements

BEGIN A BASIC SEARCH

To begin a search, please enter one or more search criteria in the parameters below.

- **Company Name** (options)
- **City**
- **US State** (Select a state)
- **US Zip Code**
- **Country** (Select a country)
- **Region** (Select a region)
- **Postal Code** (non-US)
- **UL Category Code** (options)
- **UL File Number** (help)

**Keyword**

SEARCH  CLEAR

TIPS FOR EFFECTIVE SEARCHES

Select a search method
- Match all words - type AND between words (i.e., display and nwgq)
- Match any word - type OR between words (i.e., hair dryer or blow dryer)
- Match phrase(s) - type exact phrase

ABOUT THE ONLINE CERTIFICATIONS DIRECTORY

You can use the UL Online Certification Directory to:
- Verify a UL Listing, Classification, or Recognition
- Verify a UL Listed product use
- Verify a UL Recognized component use
- Verify a product safety standard

Learn more with the Quick Guide to the Online Certifications Directory

SPECIFIC SEARCHES

(NEW! UL Evaluation Reports)

Select a specific search:

FEATURED LINKS

- UL Alarm Services Search
- UL Code Correlation Database

UL Anytime

We are ready to assist you at any time!

LINKS OF INTEREST

UL Environment Database
Labeling Requirements

Search results

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Category Name</th>
<th>Link to File</th>
</tr>
</thead>
<tbody>
<tr>
<td>TECHNICAL GLASS PRODUCTS</td>
<td>Fire-protection-rated Glazing Materials</td>
<td>KCMZ.R13377</td>
</tr>
<tr>
<td>TECHNICAL GLASS PRODUCTS</td>
<td>Fire-protection-rated Glazing Materials Certified for Canada</td>
<td>KCMZ7.R13377</td>
</tr>
</tbody>
</table>

Model number information is not published for all product categories. If you require information about a specific model number, please contact Customer Service for further assistance.

Search Tips  Print this page  Terms of Use  iQ Family of Databases

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Installation of Fire-rated assemblies

- Framing similar to typical storefront systems
- Any qualified glazing sub contractor can install
- Must follow UL Listing and manufacturer’s installation guidelines
Selecting Fire-Rated Glazing

Questions:

• What is the required fire-rating for the application?
  • Fire Resistance?
  • Fire Protection?
• Does the glazing system need to block the transfer of radiant heat?
• Does the glazing meet impact safety standards?
• Should I select performance films or laminates?
  • Factory? Field?
• Are there any acoustic or thermal performance needs?
• Is the glazing being installed into the proper framing assembly (Rated?)
• Once the glazing has been selected, did you confirm the material has been tested by a testing agency such as UL and can be validated through that testing agency?
• How does the frame attach to the wall? Door? Transom?
Case Studies

Project: University Hospitals, Seidman Cancer Center
Location: Cleveland, OH
Architect: Cannon Design
Products: Fireframes® Designer Series steel doors and frames with FireLite Plus® glass ceramic

TGP Slide, Image
Case Studies

Project: MultiCare Good Samaritan Hospital, Dally Tower
Location: Puyallup, WA
Architect: Good Sam Design Collaborative, in conjunction with Clark/Kjos Architects and GBJ Architecture
Products: Fireframes® Curtainwall Series with Pilkington Pyrostop® glass firewall
Thank you!
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