GLASS and GLAZING: Frequently Asked Questions

Wire Glass

IBC Code Changes

Category I and II

ANSI Z97.1

Hose Stream

Thermal Shock

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Frequently Asked Questions about Glazing

Teach me about Glazing:

Glazing can be categorized into three major groupings:

■ Fire-Rated Only (walls, transoms, borrowed lights)
■ Safety/Impact Rated Only (non-fire rated doors and other hazardous or security applications)
■ Fire and Safety Rated (fire rated doors or any application deemed a hazardous location)

What does the Code say?

Does the fire rated glazing used in doors also have to be safety rated?

Yes, according to N.F.P.A – 80 section 1-7.1, “Only labeled fire resistance-rated glazing material meeting applicable safety standards shall be used in fire door assemblies (ie Category I and Category II Impact/Safety Rating)”. The International Building Code of 2006 also requires a fire and safety rated glazing for use in doors.

What is all the talk I’m hearing about Fire AND Safety Rated Glazing?

■ Until recently there have been 3 recognized levels of safety glazing in North America
  - ANSI Z97.1 = 100 ft/lbs - lesser standard (no longer recognized under IBC 2006)
  - CPSC Cat I = 150 ft/lbs - per CPSC (Consumer Product Safety Commission) section 2406
  - CPSC Cat II = 400 ft/lbs - per CPSC (Consumer Product Safety Commission) section 2406

**CATEGORY I:** Impact safety level designated by “code of federal regulations” part 16. (16 CFR). “Category I” glazing materials are subjected to impact of 100 lb. bag swung from 18” drop height (approx. 150 ft/lb impact), with no single piece of glazing material greater than 9 square feet in surface area. Cat I resembles an 85 lb. child running into the glazing material.

**ANSI Z97.1:** “Class C” impact test is a voluntary safety and performance specification and test method with a 12” drop height. Applicable only to fire-resistant glazing, specifically wire glass.

**CATEGORY II:** Impact safety level designated by “code of federal regulations” part 16. (16 CFR). “Category II” glazing materials are subjected to impact of 100 lb. bag swung from 48” drop height (approx. 400 ft/lb impact), with any piece of glazing material greater than 9 square feet in surface area. Cat II resembles a full-grown adult running into the glazing material.

[Diagram of Category I and Category II]
# IBC Code Changes

## Frequently Asked Questions about Glazing

### IBC Code Changes

<table>
<thead>
<tr>
<th>Consumer Product Safety Commission (CPSC)</th>
<th>SECTION 2406 SAFETY GLAZING</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CATEGORY I</strong> - under 9 sq. ft. glazing area</td>
<td><strong>CATEGORY II</strong> - up to and over 9 sq. ft. glazing area</td>
</tr>
<tr>
<td>Wire Glass - was 100% exempt from applicable Safety Standards in Fire Doors.</td>
<td>Wire Glass - a portion of exemption was withdrawn for areas in schools, day care, etc. where children are present.</td>
</tr>
</tbody>
</table>

### What does it mean?

For over 25 years CPSC granted Wire Glass an exemption from complying with higher standards (Category I and II) of impact / safety in hazardous locations. Why, because Wire Glass was the primary, low cost, and readily available product that would comply with fire rated door requirements. It will not however pass Category I or II Safety testing, per section 2406. It will only pass ANSI Z97.1, therefore it was given an exemption from safety compliance for use in fire doors only.

Lawsuits involving injured children caused IBC to withdraw a percentage of the exemption. IBC 2003 says basically, if children are predominantly present, (i.e. school, day care etc.) glazing in fire doors must be fire AND safety rated per section 2406. Exemption for Wire Glass in these areas only was withdrawn.

Now, other more expensive fire rated glazing products are available that also comply with category I and/or II safety requirements.

Plenty of Fire and Safety rated glazing products are now available. Wire Glass exemption is completely withdrawn. Now, all glazing in fire doors must also be safety rated per section 2406 in hazardous locations, as originally intended per Category I and II.

### What about Labels?

My area of the country is now requiring fire-rated glazing materials to have a permanent label. That seems like a bother. Is it important?

Yes, according to the, NFPA – 80, section 1-7.5 (fire doors), section 13-2.3 and (fire windows) "Each individual glazing unit shall be visible after installation." And section 13-2.1 says, "Only labeled fire protection-rated glazing material shall be used in fire windows."

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**Glass Etching (Permanent, per NFPA 80)**

#### New Version Coming
(per clause 715.4.6.3 of IBC 2006)

![SAFE-Wire™ from Anemostat](image1)

**D:** Door  
**NT:** Not Temperature Rise  
**H:** Hose Stream Tested  
**CAT II** Safety Rating  
Up to 90 min.

#### Current Version

![FireLite Plus® from Anemostat](image2)

**Product Name**  
**Listing Agency Logos**  
**UL File Number**  
**Minutes of Rating**

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Hose Stream, Thermal Shock and Sprinklers

Why is the "fire hose stream" (thermal shock) test so important?
- Proves the durability and integrity of the door opening and glass system if nearby sprinklers activate after fire has started
- Products listed at 45 minutes or more are required to pass the fire hose stream test in the United States

Is fire-rated glass really necessary if I use sprinklers? Can't I just use tempered or heat strengthened glass with a water "deluge" system?
- Sprinkler System must be working properly
- Must bathe every inch of exposed glass
- Drapes, blinds, shutters etc., are not allowed in front of the glass
- Relies on the perfect operation of the sprinkler system and water source

When it comes to fire protection and life safety, too much is at stake to rely exclusively on a single method of sprinklers only.
- The best way to provide the proper fire protection is to use sprinklers in conjunction with listed fire-rated glazing materials that have passed the hose stream test.

Are there size restrictions for fire rated glass products per NFPA-80?
- Yes, size limitations (in Visible Lite Sizes) depend on the product and the application. They will also be dictated by the total assembly (ie door, vision frame, glass and glazing tape).

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<table>
<thead>
<tr>
<th>Glazing Products</th>
<th>Impact Safety Rating</th>
<th>Vision Frame Model</th>
<th>20 Minute</th>
<th>45 Minute</th>
<th>60 Minute</th>
<th>90 Minute</th>
<th>3 Hour</th>
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</thead>
<tbody>
<tr>
<td>SAFE-Wire®</td>
<td>Cat II</td>
<td>LoPro™</td>
<td>2994 sq. in.</td>
<td>2994 sq. in.</td>
<td>1296 sq. in.</td>
<td>1296 sq. in.</td>
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<td>Pyrodur®</td>
<td>Cat I</td>
<td>LoPro™</td>
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<td>FireGlass®</td>
<td>Cat II</td>
<td>LoPro™</td>
<td>3024 sq. in.</td>
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<td>3325 sq. in.</td>
<td>2772 sq. in.</td>
<td>3325 sq. in.</td>
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<td>FireLite® IGU</td>
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<td>LoPro™ IS</td>
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<td>Pyrostop®</td>
<td>Cat II</td>
<td>LoPro™ IS</td>
<td>1080 sq. in.</td>
<td>4500 sq. in.</td>
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<td>Tempered Safety</td>
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