

Marking and Labeling of Architectural Glass

Modern architectural designs require installation of glazing materials that are capable of mitigating multi-threat situations. These applications typically require levels of protection well beyond those of basic safety glazing. As such, there has been unprecedented advancement in the types, configurations and complexities of glazing materials currently utilized in architectural applications.

Because of the tremendous increase in the recognized performance of glass and other glazing, the concern over properly identified components of a fenestration assembly has also increased. Currently, there are several industry guidelines that assist the frame manufacturer to properly label framing systems, but very little guidance is available for the glazing that is placed inside the frame, referenced as the “infill”. The purpose of this technical paper is to provide guidance and clarity to the various permanent marks or manufacturer’s designations currently being applied and/or required for the laminated glass infill of a fenestration assembly.

Definitions

Historically, the glass and glazing industry has used the term “label” to describe both temporary and permanent identification placed on different types of architectural glass. The following definitions are taken from the International Building Code (IBC):¹

Label – (3rd Party Certification) An identification applied on a product by the manufacturer that contains the name of the manufacturer, the function and performance characteristics of the product or material, and the name and identification of an “approved agency” and that indicates that the representative sample of the product or material has been tested and evaluated by an “approved agency” (see Section 1703.5 and “Inspection certificate”, “Manufacturer’s Designation” and “Mark.”) The glazing industry also uses the terms logo, bug or stencil. Approved agencies are not defined in the IBC but are understood to be third-party certification agencies such as, but not limited to, the Insulating Glazing Certification Council (IGCC) and the Safety Glazing Certification Council (SGCC).

Manufacturer’s Designation (Self Certification) – An identification applied on a product by the manufacturer indicating that a product or material complies with a specific standard or set of rules (see also “Inspection certificate”, “Label” and “Mark”.)

Mark – (Product identification) An identification applied on a product by the manufacturer indicating the name of the manufacturer and the function of a product or material (see also “Inspection certificate”, “Label”, and “Manufacturer’s Designation”.)

Approved Agency – An established and recognized agency regularly engaged in conducting tests or furnishing inspection services, when such agency has been “approved”.

International Building Code® Requirements

The model building code widely used in the United States is the International Building Code (IBC). The guidelines for identification of glazing are outlined in Chapter 24 of the 2021 IBC. Section 2403.1 requires each lite to be marked with the manufacturer's label² designating the type and thickness of glazing installed. The identification may not be omitted unless approved by the local official. This approval must be accompanied by an affidavit provided by the glazing contractor stating that the correct glazing was installed based upon the approved construction documents.

The International Code Committee (ICC) and its members do not have the power or authority to police or enforce compliance with the contents of the model code. Only the government body that enacts the code into law has such authority. As listed in Section 104 of the IBC, "The building officials who are responsible for enforcing the building code have the authority to render interpretations of this code and to adopt policies and procedures in order to clarify the application of its provisions." The building officials have the authority to grant modifications or code variances for individual cases.

Safety Glazing and Tempered Glass

The model building codes and most state and local building codes have two sets of labeling requirements. One is for glass installed in defined hazardous locations and another one is for glass products installed in non-hazardous locations. Safety glazing materials installed in hazardous locations must comply with both of these sets. The fire codes require additional labeling of fire-rated glazing materials and frames installed in fire-rated openings must be labeled.

Glass and glazing materials not intended for installation in hazardous locations must bear a label identifying the manufacturer and designating the type and thickness of the glass or glazing material, and, if it is tempered glass, the label must be either acid etched, sand blasted, ceramic fired, laser etched, embossed, or of a type that cannot be removed without destroying it. Tempered spandrel glass labels may be removable paper applied by the manufacturer.

The IBC does not have special requirements for laminated glass but does have the special requirement for the identification of safety glazing, which is specified in Section 2406.3. Laminated glass that is safety glazing must comply with ANSI Z97.1 or CPSC 16 CFR, Part 1201 criteria as indicated in Table 2406.2, with some exceptions.

Laminated Glass in Safety Glazing Applications

U.S. Consumer Product Safety Commission

Currently, the only Federal requirement that may lead to a permanent labeling of glazing is found in the Consumer Product Safety Act, 15 U.S.C §2063, and applies only to glass used in hazardous locations as defined in U.S. Consumer Product Safety Commission (CPSC) regulations, 16 CFR Part 1201-*Safety Standard for Architectural Glazing Materials*.³ These CPSC defined hazardous locations generally are all types of doors and shower and bathtub enclosures.

This statute requires the manufacturer to self-certify that the glass complies with the requirements of the CPSC standard – in this case, 16 CFR 1201, either Category I or Category II – based upon a reasonable testing program. CPSC has chosen not to define what constitutes a reasonable testing program, therefore it is the responsibility of the fabricator to do so.

The certification must, according to CPSC regulations, 16 CFR §1110.11, include the manufacturer's name, mailing address, telephone number, the contact information (name, email address, mailing address, and telephone number) for the individual maintaining records of test results, the date (month and year) and place (city and state) of manufacture, the date and place where CPSC testing was conducted, and it must identify the product and the federal safety standard with which it complies. When certification of compliance depends upon testing by a third-party laboratory, the certification must also identify that laboratory by name, mailing address, and telephone number.

This certification must either: accompany the product as a separate piece of paper, take the form of a permanent label on the safety glazing material, or be accessible on the company or third-party website. The certification also may rely on a combination of two or all three forms. For example, the manufacturer/fabricator could provide part of the information on the permanent label (enough to satisfy local building code labeling requirements), and the accompanying paperwork could state, “see [\[insert website\]](#) for glass certification.” When the certification takes the label form, the required information on the permanent label is often coded or abbreviated. (For fabricators participating in the voluntary SGCC safety glazing certification program, this information is provided on the SGCC website at www.sgcc.org.)

American National Standard ANSI Z97.1⁴

The American National Standards Institute standard, ANSI Z97.1-2015 (R2020) *American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications Method of Test*, is a voluntary standard that establishes the specifications and methods of test for the safety properties of safety glazing materials used for all building and architectural purposes. This standard is referenced by some building codes and is often included in specifications for glazing contained within elevators, hoist-ways, furniture, fixtures, and appliances. The 2015 version of the ANSI Z97.1 is intended to supersede all earlier versions of the standard, and no technical content or methods of test were changed between the 2015 and 2020 versions.

The requirements of the label and who should apply it are detailed in Section 6, *Marking of Safety Glazing Material*, of ANSI Z97.1. The permanent label must contain the supplier’s name, distinctive mark or designation, “American National Standard Z97. 1-2015” or the characters “ANSI Z97.1-2015”, classification of the test size (L or U), drop height class (A or B), and place of fabrication. Additional details and information, such as thickness and date of manufacture, are permitted. Laminated glass must be labeled by the laminated glass manufacturer. The Canadian General Standards Board CAN/CGSB 12.1-2022 mirrors the requirements of ANSI Z97.1-2015 (R2020).

Note: By labeling or marking a product with a standard reference or designation, the party applying the label or mark is representing that product as being in compliance with the referenced standard. No manufacturer should mark, label or advertise any product for which proof of compliance is not available.

Certification of Safety Glazing Materials

Some companies choose to use third-party certification to test their laminated products to the safety glazing requirements listed in CPSC 16 CFR 1201 and/or ANSI Z97.1 and/or CAN/CGSB 12.1 (to meet Canadian requirements). The Safety Glazing Certification Council (SGCC®) is the sponsor of a third-party certification program for safety glazing and has labeling requirements listed in the SGCC® Certified Products Directory⁵.

After successfully meeting the SGCC certification requirements, each product is assigned its own unique SGCC number. The listing in the SGCC Certified Products Directory provides a complete product description including licensee’s name, location, etc. The required permanent label on the glazing must contain the SGCC number, ANSI Z97.1-2015 and/or 16 CFR 1201 (and category), nominal thickness and the letter U or L indicating certified size. In all cases except labeling of laminated glass cut from stock sheets, the permanent label must be applied to the certified product at the time and place of manufacture.

Some companies may choose to self-certify safety glazing products by relying upon in-house testing in accordance with ANSI and CPSC standards. They too must mark, and in the case of CPSC compliance, must certify their products are in accordance with the requirements of those standards.

Application Specific Labeling

In addition to the use of laminated products in safety glazing applications, there are many other applications which have additional labeling requirements, such as impact resistant glass for hurricanes, fire-rated glazing, and glass for security applications.

Laminated Glass Used in Hurricane - Impact Resistant Applications

Windborne debris can damage glazing upon impact. There are several test methods used today to qualify the performance of a glazing system against windborne debris and subsequent cyclical pressure loads. The labeling requirements for glazing under these standards and test protocols vary significantly and are usually prescribed in the local building codes.

The High Velocity Hurricane Zone (HVHZ; formerly Miami-Dade County) requirements are most commonly referenced. These requirements state that, not only do the components of the fenestration need to be permanently identified with a Miami-Dade County approved label or code, but the entire fenestration needs to carry an individual label or code.

The Miami-Dade Building Code Compliance Office (BCCO)⁶ issues a Notice of Approval (NOA) for tested fenestration systems. These NOAs detail how the complete system is fabricated and installed, include the components that were tested as part of that system, and indicate maximum sizes and design pressure used. All glazing components used in the system NOA must have their own component NOAs and that component NOA must be referenced in the system NOA. The component NOA does not indicate any impact performance. The Florida Building Code requires that every lite of glass be marked to indicate which type of glazing has been installed. The details of this permanent mark are included in each component NOA. These marks usually include the letters "MDCA for Miami-Dade County Approved" followed by an abbreviation or trade-name of the laminated glazing interlayer.

Fire-Rated Glazing

The International Building Code (IBC) requires all fire-rated glazing to be permanently labeled to identify the test standard met and approved applications of the glazing. The label is typically etched or sandblasted into the glass or applied using a ceramic ink. When fire-rated glazing is installed in hazardous locations, it must also meet safety glazing standards and be labeled as such.

2021 IBC Table 716.1(1) defines fire-rated glazing marking as follows:

Fire Test Standard	Marking	Definition of Marking
ASTM E119 or UL 263	W	Meets wall assembly criteria.
ASTM E119 or UL 263	FC	Meets floor/ceiling criteria. ^a
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 H T	Meets fire door assembly criteria. Meets fire door assembly hose stream test. 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.

For SI: °C = [(°F) - 32]/1.8.

a. See Section 2409.1 (Glass installed as a part of a floor/ceiling assembly as a walking surface and constructed with laminated glass shall comply with ASTM E2751 or with the load requirements specified in Chapter 16. Such assemblies shall comply with the fire-resistance rating and marking requirements of this code where applicable.)

Laminated Glass Used in Security Applications

The security category is traditionally divided into three segments: forced entry/exit, ballistic, and bomb blast. Each of these segments utilizes common glazing materials in the construction of the configuration. There is a need to ensure compliance with specified configurations and performance levels, which leads to permanent label requests. However, there is also a desire for anonymity of materials and their performance characteristics for secrecy and protection purposes.

In many applications, the security performance of the overall glazing system (frame, glass and caulking) is tested to a particular standard. In this case, test reports have become the means for communication of protection levels provided by the glazing system. The company responsible for assembling the glazing system may require specific information to be permanently marked on the laminated glass by the fabricator.

The Underwriters Laboratory standards⁷ UL 752 [*Bullet Resisting Equipment*] and UL 972 [*Burglary Resisting Glazing Material*], have marking requirements.

The general marking requirements for glazing that meets UL 752 are outlined in Section 57. According to Section 57, the permanent mark must be visible after installation. The mark must include the manufacturer's or private labeler's name or identifying symbol, the date of manufacture, a model number, the correct mounting position (e.g. surface orientation for asymmetrical laminates), and the bullet-resisting rating. If a company manufactures the product at more than one factory, each product must have a distinctive marking to identify the location of fabrication.

The general marking requirements are listed in Section 7 of UL 972. The finished glazing must be marked with the manufacturers' or private labeler's identification or distinctive catalog number. The marking may be applied to the protective film or the package the glazing material is shipped in from the factory. If the manufacturer produces the laminate at more than one factory, the manufacturer must have a distinctive marking to identify the location of fabrication.

Labeling of Glass After Cutting Stock Sheets

Special consideration is required for laminated glass that is provided in stock sheets and cut to the required size on site or at the shop. Stock sheets of laminated glass may carry up to four labels, one on each corner. Even with the four-corner labels, it is conceivable that sections of the glass may be cut during the optimization process that does not contain a labeled corner. In such an instance, the glass may have to be re-labeled prior to installation. Unless authorized by the original fabricator of the labeled glass, the party cutting the glass should not re-label the glass with the fabricator's mark. Currently, there are no universally accepted or agreed upon requirements for second-party labeling of laminated glass cut from stock sheets, but using the "cut-from" practice of SGCC® is an option (see labelling requirements at www.sgcc.org).

When supplying laminated stock sheets to hurricane-prone regions with the marking requirements of High Velocity Hurricane Zone (HVHZ), local building codes must also be referenced. Typically, the fabricator's name or logo, and "Miami-Dade County product approved" must appear on the marking. Refer to the NOAs for proper labeling of individual products.

Types of Marking

Permanent Marking

Permanent marks and/or labels are applied to glazing materials in order for building code officials to ensure code compliance and for product identification in the event of a performance or replacement concern. In order to meet these objectives, all permanent marks and/or labels should be placed where the label is not obscured by the glass bite, gasket, sealant or other anchoring/glazing material.

Non-Permanent Marking

Many laminates are not symmetrical. In this case, the manufacturer or fabricator will often apply a removable label to indicate which face is to be glazed to the inside of the building. The glazing contractor should leave these labels on until the job is finished and signed off as complete so that the owner and/or architect can verify the glass has been glazed correctly. If specified, the configuration of a security glazing may be included in the non-permanent marking.

Most fabricators will apply a non-permanent label indicating many attributes of the glazing including, but not limited to, size, make up, weight, customer name and customer purchase order number. Labels should remain in place until final inspections are complete or as otherwise specified.

Examples of Permanent Marks Applied to Laminated Glass

Below are minimum logo requirements; additional details may be provided

CPSC

ABC Glass
16 CFR 1201 Cat II
Date Code (i.e. 0112)

ANSI

ABC Glass – “Location ID” (if multiple sites)
ANSI Z97.1-2015 U A

Hurricane Applications (Dade County)

ABC Glass – “Location ID” (if multiple sites)
MDCA – XXXX

SGCC®

ABC Glass – “Location ID” (if multiple sites)
16 CFR 1201 II
ANSI Z97.1 -2015
CAN/CGSB 12.1-2017
6 mm UA SGCC® ##### (S or H - Should be used in place of thickness for laminated glass.)



XXXX – UL Control Number
Manufacturer’s Name or Identifying Symbol
Date Code
Model Number or equivalent
Mounting position (as needed)

The product identity is: “BULLET-RESISTING GLASS,” “BULLET-RESISTANT GLASS,” “BULLET-RESISTING GLAZING MATERIAL” or “BULLET-RESISTANT GLAZING MATERIAL”

The appropriate rating is: “Level X” (X being 1-10, as indicated in the individual listing).

For products that qualify for supplementary shotgun rating, the suffix “-SG” is included in the Level marking.

Fire-Rated Applications



XXXX – UL Control Number

Manufacturer’s Name

Model Number or Product Name

Fire rating as indicated in IBC Table 716.3 (for example D-H-NT-90 / OH-90)

Applicable test standards (for example UL 9, UL 10C)

Safety standard, if applicable (for example CPSC 16 CFR1201 CAT II)

The product identity is: “FIRE-PROTECTION-RATED GLAZING MATERIAL” or “FIRE-RESISTANCE-RATED GLAZING MATERIAL.”

Footnotes:

¹ International Code Council, Inc., www.iccsafe.org

² Manufacturer’s label is known as manufacturer’s mark in the IBC.

³ <https://www.federalregister.gov/documents/2016/03/23/2016-06523/safety-standard-for-architectural-glazing-materials>

⁴ American National Standards Institute, www.ansi.org

⁵ Safety Glazing Certification Council (SGCC), www.sgcc.org

⁶ Building Code Compliance Office, <https://www.miamidade.gov/building/enforcement.asp>

⁷ Underwriters Laboratory Inc., www.ul.com

Visit www.glass.org/store for a complete list of Glass Technical Papers, as well as other glazing and glass building products industry reference materials. Most Glass Technical Papers are available free of charge to NGA members and for a small fee to nonmembers.

The Technical Services Division of the National Glass Association (NGA) has produced this Glass Technical Paper solely for informational purposes. NGA makes no representations or warranties, express or implied, with respect to the information provided in this Paper or to its use. This Paper makes no attempt to provide all information or considerations for the topic area covered within this Paper. NGA disclaims any responsibility for any specific results related to the use of this Paper, for any errors or omissions contained in the Paper, and for any liability for injury, loss or damage of any kind arising out of the use of this Paper. This Paper is a “living document,” and NGA reserves the right, in its sole discretion, to update, revise, and amend the Paper from time to time as it sees fit and to do so without notice to prior recipients or current users of this Paper.

This Paper was developed by dedicated member volunteers and subject matter experts. The original version of this document was approved and published in 2006. This version of the paper was updated and published in September 2022.