Glass Informational Bulletin **GANA LD 05-1006**

Marking and Labeling of Architectural Laminated Glass

Modern architectural designs are requiring the installation of glazing materials that are capable of performing in multi-peril 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 in the proper labeling of 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 informational bulletin is to provide guidance and hopefully some clarity to the various permanent marks or manufacturers designations currently being applied and/or required for the glazing 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 industry is striving to adopt the following definitions used by the International Code Council (ICC) and published in the International Building Code (IBC):[1]

Label – An identification applied on a product by the manufacturer that contains the name of the manufacturer, the function and performance of the product or material, and the name and identification of an approved agency that indicates that the representative sample of the product or material has been tested and evaluated by an approved agency.

Manufacturer's Designation – An identification applied on the product by the manufacturer indicating that a product or material complies with a specific standard or set of rules.

Mark – An identification applied on a product by the manufacturer including the name of the manufacturer and the function of a product or material.

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2003 International Building Code® Requirements

The model building code which is widely used in the United States is the International Building Code. Chapter 24 of the International Building Code deals with Glass and Glazing. The guidelines for identification are outlined in section 2403.1 of the building code. The code calls for each pane to be marked with the manufacturer's label[2] designating the type and thickness of glazing installed. The identification shall not be omitted unless approved by the local official and an affidavit is provided by the glazing contractor that the correct glazing was installed based upon the approved construction documents. This is commonly done with non-permanent labels.

The International Building Code does not have special requirements for laminated glass, but does have the special requirement for the identification of safety glazing, which is outlined in Section 2406.2. Laminated glass can be safety glazing and thereby must comply with CPSC 16 CFR, Part 1201 criteria, for Category I or II as indicated in Table 2406.1, with some exceptions.

Laminated Glass in Safety Glazing Applications

Consumer Product Safety Commission[3]

Currently, the only Federal requirement that may lead to a permanent labeling of glazings, 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) 16 CFR 1201 - *Safety Standard for Architectural Glazing Materials*. That statute requires that the glass be certified with the certified manufacturer's name, date, place of manufacture and the federal safety standard with which it complies—in this case, 16 CFR 1201, either Category I or Category II. This certification must accompany the product as a separate piece of paper or otherwise be furnished to the glass distributor or retailer. However, the CPSC also permits the certification to take the form of a permanent label on the safety glazing material. When the certification takes this form, the required information on the permanent label is often coded or abbreviated.

American National Standard ANSI Z97.1-2004[4]

There is a voluntary American National Standards Institute standard, ANSI Z97.1-2004 *American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications Method of Test.* This standard establishes the specifications and methods of test for the safety properties of safety glazing materials as used for all building and architectural purposes. This standard is referenced by some building codes and is often in specifications for glazings contained within elevators, hoist-ways, furniture, fixtures, and appliances. The 2004 version of the ANSI Z97.1 was published in early 2005 and is intended to supercede all earlier versions of the standard.

The requirements of the label and who should apply it are detailed in Section 6, *Marking of Safety Glazing Material*, of this standard. The permanent label shall contain Supplier's name, distinctive mark or designation, "American National Standard Z97.1-2004" or the characters "ANSI Z97.1-2004", Classification of the test size (L or U), drop height class (A, B or C), and

place of fabrication. Additional details and information, such as thickness and date of manufacture are permitted. Laminated glass and stock sheets shall be labeled by the manufacturer.

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 shall 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. 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 Directory[5]. After successfully meeting the SGCC certification requirements each product is assigned its own unique SGCC number. The listing in the 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 Z97.1-2004 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 through in-house testing and quality assurance programs in accordance with the ANSI and CPSC standards. They mark their products in accordance with the requirements of those standards.

Application Specific Labeling

In addition to the use of laminated products in safety glazing application there are many other applications which have additional labeling requirements.

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 most commonly referred to are the Miami-Dade County (Florida) requirements. 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 code.

Miami-Dade Building Code Compliance Office (BCCO)[6] issues a Notice of Approval (NOA) for tested fenestration systems. These NOA's comprehensively detail how the complete system is fabricated and installed and includes all the components that were tested as part of that system. Maximum sizes and maximum design pressure are also included. All glazing components which

are used in system NOA's must have their own component NOA and that component NOA must be referenced in the system NOA. The component NOA does not indicate any impact performance. Miami-Dade County requires that every lite of glass is marked to indicate which type of glazing has been installed and to confirm to the building inspector that the correct type of glass has been used. The details of this permanent mark are included in each component NOA. These marks usually include the letters MDCA for Miami-Dade County Approval followed by an abbreviation or trade-name of the interlayer.

Laminated Glass Used in Security Applications

The security category is traditionally broken down into three different segments: Forced Entry/Exit, Ballistic, and Bomb Blast. Each of these segments utilizes common glazing materials in the construction of the configuration; however, the labeling of this glazing category is one of the most controversial in the current marketplace. There is, on the one hand, a need to ensure compliance with specified configurations and performance levels which leads to permanent label requests and, on the other hand, the need 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 Underwriter Laboratory Standards[7], UL 752 *Standard for Bullet Resisting Equipment* and UL 972 *Standard for Burglary Resisting Glazing Material*, have marking requirements.

The general marking requirements for glazing that meets UL 752 *Standard for Safety for Bullet-Resisting Equipment* are outlined in Section 57. The permanent mark shall be visible after installation. The mark shall include; the Manufacturer's or private labeler's name or identifying symbol, the date of manufacture, a model number , the correct mounting position and the bullet-resisting rating. If a company manufactures the product at more than one factory, each product should have a distinctive marking to identify it as the product of a particular factory.

The general marking requirements are listed in Section 9 of UL 972. The finished glazing shall be marked with the manufacturer's 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 shall have a distinctive marking to identify which factory it was produced at.

Labeling of Glass After Cutting Stock Sheets

Laminated glass that is provided in stock sheets and cut to the required size on site or at the shop requires special consideration. Stock sheets of laminated glass typically can carry up to four labels, one on each corner. Even with the four 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 manufacturer's identification and safety qualification numbers.

Currently, there are no accepted or agreed upon requirements for second party labeling of laminated glass cut from stock sheets. One solution, of marking smaller lites of laminated glass cut from stock sheets is outlined in the SGCC® guidelines.

When faced with supplying laminated stock sheets into hurricane prone regions which need to meet the marking requirements of Miami-Dade County, attention must be paid to determining what is needed to meet the local building codes as interpreted by the building officials.

The ICC and its members do not have the power or authority to police or enforce compliance with the contents of the code. Only the government body that enacts the code into law has such authority. As listed in Section 104 of the International Building Code[8], "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, code variances, for individual cases.

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 in the vicinity of the glass where the label is not obscured by the glass bite, gasket, sealant or other anchoring/glazing material. It is suggested that the label be placed so that the text end at least 3 mm from all site lines of the fenestration glazing to allow for readability.

Non–Permanent Marking

Many glazing materials 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 architect can verify that the glass has been glazed correctly.

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, customer purchase order number. These should be left on the glass as long as possible during the construction phase.

Examples of Permanent Marks Applied to Laminated Glass

CPSC
ABC Glass
16 CFR 1201 Cat II
0106

ANSI
ABC Glass – "Location"
ANSI Z97.1-2004 U A

Hurricane Applications (Dade County)
ABC Glass
MDCA - XXXXX

SGCC®
Company ABC Glass – Plant A (optional)
16 CFR 1201 II
ANSI Z97.1-2004
6mm U A SGCC® 9999

UL
ABC Glass
BULLET RESISTING
GLAZING MATERIAL
Level I
0106

The Glass Association of North America (GANA) has produced this Glass Informational Bulletin solely to provide general information as to the marking and labeling of architectural laminated glass. The Bulletin does not purport to address all consideration in marking and labeling. The user of this Bulletin has the responsibility to ensure that all marking and labeling requirements are met. GANA disclaims any responsibility for any specific results related to the use of this Bulletin, for any errors or omissions contained in the Bulletin, and for any liability for loss or damage of any kind arising out of the use of this Bulletin.

This bulletin was developed by the Glass Association of North America - Laminating Division and approved by the Laminating Division Technical Committee, and the GANA Board of Directors. This is the original version of the document as approved and published in October 2006.

[1] International Code Council, Inc., 5203 Leesburg Pike, Suite 600, Falls Church, VA 22041, www.iccsafe.org
[2] Manufacturer's label is known as manufacturer's mark in the 2006 IBC.
[3] Superintendent of Documents, PO Box 371954, Pittsburgh, PA 15250-7954, www.gpoaccess.gov
[4] American National Standards Institute, 1430 Broadway, New York, New York 10018, www.ansi.org
[5] Safety Glazing Certification Council, PO Box 9, Henderson Harbor, NY 13651, www.sgcc.org
[6] Building Code Compliance Office, 140 West Flagler St., Suite 1603, Miami, FL 33130, www.miamidade.gov/buildingcode/
[7] Underwriters Laboratory Inc., 333 Phingsten Road, Northbrook, IL, 60062-2096, www.ul.com
[8] International Code Council, Inc., 5203 Leesburg Pike, Suite 600, Falls Church, VA 22041, www.iccsafe.org