

MATERIAL APPROVAL SUBMITTAL <i>(See Instructions on Reverse)</i>						
TO: <i>(Contracting Officer)</i>			FROM: <i>(Contractor)</i>		DATE (YYYYMMDD)	
CONTRACT NUMBER			SUBMISSION NUMBER		SUBMITTAL <input type="checkbox"/> NEW <input type="checkbox"/> RESUBMITTAL	
PREVIOUS SUBMISSION NUMBER			PROJECT NUMBER			
TO BE COMPLETED BY CONTRACTOR				FOR GOVERNMENT USE ONLY		
ITEM NO.	SPECIFICATION SECTION/ PARA NO./DRAWING NO.	DESCRIPTION OF MATERIAL <i>(Include Type, Model Number, Catalog Number, Mfg., etc.)</i>		AP- PROVED	DISAP- PROVED	SEE REVERSE
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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BY COMPLETING THIS FORM, THE UNDERSIGNED CONTRACTOR CERTIFIES THAT THE MATERIAL COMPLIES WITH ALL SPECIFICATIONS OF SUBJECT CONTRACT.						
DATE (YYYYMMDD)		TYPE OR PRINT NAME AND TITLE		SIGNATURE		
FOR GOVERNMENT USE ONLY						
TO: (A/E)						
For Evaluation and Action						
DATE (YYYYMMDD)		TYPE OR PRINT NAME AND GRADE		SIGNATURE		
TO: (Project Engineer/COR)						
RECOMMEND		<input type="checkbox"/> APPROVAL <input type="checkbox"/> DISAPPROVAL AS INDICATED ABOVE AND SUBJECT TO ANY APPLICABLE COMMENTS ON THE REVERSE				
DATE (YYYYMMDD)		TYPE OR PRINT NAME AND GRADE		SIGNATURE		
TO: (VA Contracting Officer)						
<input type="checkbox"/> APPROVED <input type="checkbox"/> DISAPPROVED AS INDICATED ABOVE AND SUBJECT TO ANY APPLICABLE COMMENTS ON THE REVERSE SIDE. REQUEST RESUBMITTAL ON DISAPPROVED ITEMS WITHIN _____ DAYS OF DATE SHOWN BELOW.						
DATE (YYYYMMDD)		TYPE OR PRINT NAME AND GRADE		SIGNATURE		

***(Number to correspond with applicable Item Number on reverse)***

DATE 05/26/2015

5. This Material Approval Submittal is not valid unless it is signed by the contracting officer. This approval is required as called for by the contracting officer under the terms of this contract.



# GUARDIAN SUNGUARD®

ADVANCED ARCHITECTURAL GLASS

## Limited Warranty

During a period of ten (10) years from date of manufacture, SUNGUARD Coated Glass ("SUNGUARD") manufactured by Guardian Industries Corp. or its subsidiaries ("Guardian") is warranted, to its immediate customer only, subject to the terms and conditions of this Limited Warranty ("Warranty"), not to develop peeling, cracking or deterioration in the metallic film. When the SUNGUARD glass is laminated with the coating facing the PVB, the warranty is five (5) years from date of manufacture.

In the event that the SUNGUARD product fails to conform to the Warranty as described above, Guardian must be notified in writing at the plant from which the purchase was made. Liability under this Warranty is limited, at Guardian's exclusive option, to Guardian replacing the product without charge (at original point of delivery) or, in the alternative, a refund of 100% of Guardian's original selling price. **Labor and other replacement or reglazing costs are not covered by this Warranty.** The warranty period for any replacement SUNGUARD product supplied under this Warranty extends only to the remaining warranty period on the original product. Guardian reserves the right to inspect any SUNGUARD product that is alleged to be defective prior to its removal from the glazing system, installation, or fabrication location.

## CONDITIONS THAT WILL VOID THE WARRANTY

This Warranty is void under any of the following conditions:

- The glass is broken or fractured.
- The SUNGUARD product is stored, processed, installed, cleaned, or otherwise handled contrary to Guardian's written instructions and published guidelines, which are incorporated by reference, or to industry standards promulgated by GANA- Glass Association of North America, which includes these former independent associations: FGMA, LSGA, and GTA; IGMA- Insulating Glass Manufacturers Alliance; and AAMA- American Architectural Manufacturers Association, or equivalent.
- The SUNGUARD product is discarded or destroyed before inspection by Guardian.
- The seal on an insulated glass unit incorporating the SUNGUARD product has failed.
- Delamination of a laminated glass unit incorporating SUNGUARD product.

In addition, Guardian assumes no responsibility for glass breakage or failure of the product due to abnormal weather conditions; faulty installation, building construction, or design; or failure due to exposure to acids, alkalis, or other chemicals used to clean surrounding building materials or surfaces around the glass.

**EXCEPT FOR THE EXPRESS WARRANTY DESCRIBED ABOVE, THERE ARE NO EXPRESS OR IMPLIED WARRANTIES OF ANY KIND AND THERE ARE NO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE SUNGUARD PRODUCT OR ANY PART OR COMPONENT THEREOF AND NO WARRANTY SHALL BE IMPLIED BY OPERATION OF LAW OR OTHERWISE. IN NO EVENT WILL GUARDIAN BE LIABLE TO ANY PERSON OR ENTITY FOR INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES OR CHARGES FOR ANY REASON, EVEN IF SUCH DAMAGES ARE FORESEEABLE OR GUARDIAN HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.**

No variation or change from this Warranty will be binding upon Guardian unless made in writing and signed by an officer of Guardian.

### Acknowledgement:

Authorized Customer Representative

Signature

Company

Date

☒ No Exceptions Taken

☐ Rejected

☐ Submit Specified Item

☐ For Record Only

☐ Make Corrections Noted

☐ Revise and Resubmit

☐ Reviewed

Printed Name: \_\_\_\_\_  
Review is only for general conformance with the design concept of the Project and general compliance with information given in the Contract Documents. Any actions shown or corrections or comments made on submittals do not relieve Contractor from compliance with Contract Documents. Contractor is responsible for confirming and correlating quantities and dimensions, fabrication processes and techniques of construction, coordinating contractors work with that of other trades, and the performance of Contractor's work in a safe and satisfactory manner.

**CBLH DESIGN, INC.**

BY Scott Weaver

DATE 05/26/2015

**Customer: Celina****Project Name: VA Columbus**

## **CERTIFICATIONS FOR GLASS THICKNESS, QUALITY AND TYPES**

- ☒ **Primary Float** annealed glass as supplied by Oldcastle BuildingEnvelope (OBE) meets the quality requirements of ASTM C1036 Standard Specification for Flat Glass, for Type 1, Class 1-clear, Class 2-tints Quality Q3; Type II for Pattern and Wire Glass, Class 1-clear, Quality Q5 Glazing. Coated products meet or exceed the requirements of ASTM C 1376 Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Flat Glass. Suppliers to OBE include PPG, Pilkington, AFG and Guardian.
- ☒ **Tempered** glass at the time of sale by OBE, meets the quality and strength requirements of ASTM C 1036 and ASTM C 1048 for Condition A and C, Quality q3 and Kind FT (fully tempered). Oldcastle Glass tempered glass also meets the safety criteria of CPSC 16 CFR 1201 Categories 1 & 2 and ANSI Z97.1 and qualifies as the glazing material for use in hazardous locations. Tempered glass will have a permanent logo affixed in a corner indicating its compliance with the safety glazing codes.
- ☒ **Heat-strengthened** glass at the time of sale by OBE meets the quality and strength requirements of ASTM C 1036 and ASTM C 1048 Specifications for Condition A and C, Type 1, Class 1 for clear, Class 2 & 3 for tints, Quality q3 and Kind HS (heat-strengthened).
- ☒ **Laminated** glass, (0.030" PVB, SentryGlas Ionoplast interlayer) or thicker interlayer with two or more lites of glass) as supplied by OBE also meets the safety criteria of CPSC 16 CFR 1201 Categories 1 & 2 and ANSI Z97.1. Laminated glass also complies with ASTM C 1036, ASTM C 1048 when heat-treated, and ASTM C 1172 Standard Specification for Laminated Architectural Flat Glass.
- ☒ **Ceramic enamel spandrel/silkscreen** glass as supplied by OBE meets the ASTM C 1048 Specification for Condition B, Kind FT (fully tempered) or Kind HS (heat strengthened). The specified color is fused onto and made an integral part of the glass surface.
- ☒ **Insulating glass** units supplied by OBEs are listed as Certified Products by the IGCC (Insulating Glass Certification Council), as tested in accordance with ASTM E 2188, E 2189, and E 2190 Standard Specification for Insulating Glass Unit Performance and Evaluation Standards. Insulating glass units as supplied by OBE will consist of two lites of glass separated by a dehydrated airspace and dual-sealed with a polyisobutylene primary sealant, and a two-part silicone secondary sealant.
- ☐ **Heat Soaked** Oldcastle BuildingEnvelope Perrysburg certifies that it has performed a 100% heat soak test of the glass for the specific order processed. Each panel has been subjected to a carefully controlled 3 step process (heating phase, dwell phase, cooling phase) to insure an effective reduction in the risk of spontaneous breakage due to Nickel Sulfide inclusions.
- ☐ **EnduroShield Coating** Oldcastle BuildingEnvelope certifies that it has applied EnduroShield Professional a permanent\* protective coating that is applied in factory by Certified Applicators. EnduroShield Certified Applicators are fully trained to apply the Professional strength product and are able to provide a 10 year limited warranty for new or fully restored glass surfaces.
- ☒ **Warranty:** OBE offers five (5) years for sloped glazing and ten (10) year vertical, limited warranty insulating glass units. Oldcastle BE offers five (5) year limited warranties for laminated with PVB, and ten (10) year warranties with SGP. Spandrel and silkscreened ceramic-frit glass, OBE offers (10) year limited warranty.

# Glass Cleaning Procedures



# Glass Cleaning Procedures

## Introduction

The documents included in this section are designed to help avoid problems when cleaning glass. They should be included with every project to avoid serious damage to glass that may result from improper cleaning procedures.

- Best time of day for cleaning glass
  - Avoid glass to metal contact
  - What type of detergent to use
  - Razor scraping is quicker, but it causes other headaches
  - A quick reference list of Dos and Do Nots for cleaning glass.
1. *Proper Procedures for Cleaning Architectural Glass Products*, a Glass Informational Bulletin published by the Glass Association of North America (GANA). This document highlights important information on proper glass cleaning procedures, including the following:
    - Start cleaning from bottom-up or top-down.
    - Advice for cleaning stucco and concrete slurry spots from glass.
  2. *Heat-Treated Glass Surfaces Are Different*, a Glass Informational Bulletin published by the Glass Association of North America. This document highlights important information on the differences, between annealed and heat-treated glass surfaces, that relate to proper cleaning procedures.

## Additional Glass Cleaning Tips

The following important glass cleaning tips highlight areas not covered in the above two GANA Glass Information Bulletins:

- Commence cleaning as soon as the glass is visibly dirty.
  - Avoid cleaning tinted and reflective glasses in direct sunlight as the glass will be excessively hot for optimum cleaning.
  - Washing of the glass should be preceded by a thorough cold-water flushing to remove all surface grit.
  - Glass should be washed using a soft, clean, grit-free cloth and a mild soap, detergent, or slightly acidic cleaning solution. Glass should be rinsed immediately with clean water, and the excess water should be removed with a clean squeegee, or a clean, lint-free cloth.
- Do not allow metal squeegee holders to touch the glass surface.
- If paint or glazing compounds have to be removed from the surface, conventional cleaners and solvents should be used. Do not use razor blades or broad knife blades to remove these contaminants.
  - Solutions that are strongly alkaline or acidic, fluoride salts or hydrogen fluoride producing compounds, must not be used.
  - Fingerprints, grease stains, smears, dirt, scum, sealant residue, scratches and abrasions are more noticeable on coated glass than on uncoated glass. Extra care should be exercised in handling and cleaning to keep such markings off of the glass.
  - Abrasive cleaners must not be used on first-surface reflective glass products.



# Glass Cleaning Procedures

## Proper Procedures for Cleaning Architectural Glass Products

Architectural glass products play a major role in the comfort of living and working environment of today's homes and commercial office spaces. By providing natural daylight, views of the surroundings, thermal comfort and design aesthetics, glass usage and condition often affect our selection of where we live, work, shop, play and seek education.

Architectural glass products must be properly cleaned during construction activities and as a part of routine maintenance in order to maintain visual and aesthetic clarity. Since glass products can be permanently damaged if improperly cleaned, glass producers and fabricators recommend strict compliance with the following procedures for properly cleaning glass surfaces.

As dirt and residue appear, interior and exterior glass surfaces should be thoroughly cleaned. Concrete or mortar slurry that runs down (or is splashed on) glass can be especially damaging and should be washed off as soon as possible. Before proceeding with cleaning, determine whether the glass is clear, tinted or reflective. Surface damage is more noticeable on reflective glass as compared with the other glass products. If the reflective surface is exposed, either on the exterior or interior, special care must be taken when cleaning, as scratches to the reflective glass surface can result in coating removal and a visible change in light transmittance. Cleaning tinted and reflective glass surfaces in direct sunlight should be avoided, as the surface temperature may be excessively hot for optimum cleaning. Cleaning should begin at the top of the building and continue to the lower levels to reduce the risk of leaving residue and cleaning solutions on glass at the lower levels. Cleaning procedures should also ensure that the wind is not blowing the cleaning solution and residue onto already cleaned glass.

Cleaning during construction activities should begin with soaking the glass surfaces with clean

water and soap solution to loosen dirt or debris. Using a mild, nonabrasive commercial window-washing solution, uniformly apply the solution to the glass surfaces with a brush, strip washer or other nonabrasive applicator. Immediately following the application of the cleaning solution, a squeegee should be used to remove all of the cleaning solution from the glass surface. Care should be taken to ensure that no metal parts of the cleaning equipment touch the glass surface and that no abrasive particles are trapped between the glass and the cleaning materials. All water and cleaning solution residue should be dried from window gaskets, sealants and frames to avoid the potential for deterioration of these materials as the result of the cleaning process.

It is strongly recommended that window washers clean a small area or one window, then stop and examine the surface for any damage to the glass and/or reflective coating. The ability to detect certain surface damage, i.e., light scratches, may vary greatly with the lighting conditions. Direct sunlight is needed to properly evaluate a glass surface for damage. Scratches that are not easily seen with a dark or gray sky may be very noticeable when the sun is at a certain angle in the sky or when the sun is low in the sky.

The glass industry takes extreme care to avoid glass scratches by protecting all glass surfaces during glass manufacturing and fabrication, as well as during all shipping and handling required to deliver the glass to the end user. A large percentage of damaged glass results from non-glass trades working near glass. These will include painters, spacklers, ironworkers, landscapers, carpenters and others who are part of the construction process. They may inadvertently lean tools against the glass, splash materials onto the glass and/or clean the glass incorrectly, any of which can permanently damage glass.





# Glass Cleaning Procedures

## Proper Procedures for Cleaning Architectural Glass Products

One of the common mistakes made by non-glass trades people, including glass cleaning contractors, is their use of razor blades or other scrapers on a large portion of the glass surface. Using 2, 3, 4, 5 inch and larger blades to scrape a window clean carries a large probability of causing irreparable damage to glass. The entire industry of glass manufacturers, fabricators, distributors and installers neither condones nor recommends widespread scraping of glass surfaces with metal blades or knives. Such scraping will often permanently damage or scratch the glass surfaces. When paint or other construction materials cannot be removed with normal cleaning procedures, a new 1" razor blade may need to be used only on noncoated glass surfaces. The razor blade should be used on small spots only. Scraping should be done in one direction only. Never scrape in a back-and-forth motion as this could trap particles under the blade that could scratch the glass. This practice may cause hairline concentrated scratches, which are not normally visible when looking through the glass, but may be visible under certain lighting conditions.

Job site storage and construction conditions can lead to stains on the glass surface. Cleaning and removal of such stains may require the use of a more aggressive cleaning solution and procedure.

If conditions are found that cannot be cleaned using the above procedures, contact the glass supplier for guidelines on stain removal.

Members of the Glass Association of North America (GANA) publish information relating to job site protection and cleaning of architectural glass products. In order to ensure long-term performance of the glass in a building, GANA encourages glazing contractors, general contractors, building management and owners to be aware of conditions that can damage glass, and to follow the handling and cleaning guidelines provided by their glass producer and fabricator.

*The Glass Association of North America (GANA) has produced this Glass Informational Bulletin solely to provide general information as to basic proper procedures for cleaning architectural glass products. The Bulletin does not purport to state that any one particular type of glass cleaning process or procedure should be used in all applications or even in any specific application. The user of this Bulletin has the responsibility to ensure the cleaning instructions from the glass supplier are followed. GANA disclaims any responsibility for any specific results relating 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.*

Reprinted, with permission, from GANA, Glass Informational Bulletin, GANA TD-01-0300, *Proper Procedures for Cleaning Architectural Glass Products.*





# Glass Cleaning Procedures

## Quick Reference Guide to Cleaning Architectural Glass Products

The following "Dos" and "Do Nots" are offered as a supplement to the Glass Association of North America (GANA) Glass Informational Bulletin—*Proper Procedures for Cleaning Architectural Glass Products*:

### The following are things to DO:

- DO** Clean glass as soon as dirt and residue appear visibly
- DO** Determine if coated glass surfaces are exposed
- DO** Exercise special care when cleaning coated glass surfaces
- DO** Avoid cleaning tinted and coated glass surfaces in direct sunlight
- DO** Start cleaning at the top of the building and continue to lower levels
- DO** Soak the glass surface with clean water and soap solution to loosen dirt and debris
- DO** Use a mild, nonabrasive commercial window cleaning solution
- DO** use a squeegee to remove all of the cleaning solution
- DO** dry all cleaning solution from window gaskets, sealants and frames
- DO** Clean one small windows area and check to see if procedures have caused any damage
- DO** Be aware of and follow the glass supplier's specific cleaning recommendations
- DO** Caution other trades against allowing other material to contact the glass
- DO** Watch for and prevent condition that can damage the glass
- DO** Read the entire GANA Bulletin on glass cleaning before starting to clean glass

### The following are things to NOT do:

- DO NOT** Start cleaning without reading the entire GANA Bulletin on glass cleaning
- DO NOT** Use scrapers of any size or type for cleaning glass
- DO NOT** Allow dirt and residue to remain on the glass for an extended period of time
- DO NOT** Being cleaning glass without knowing if a coated surface is exposed
- DO NOT** Clean tinted or coated glass in direct sunlight
- DO NOT** Allow water of cleaning residue to remain on the glass or adjacent material's
- DO NOT** Being cleaning without rinsing excessive dirt and debris
- DO NOT** Use abrasive cleaning solutions or materials
- DO NOT** Allow metal parts of cleaning equipment to contact the glass
- DO NOT** Trap abrasive particles between the cleaning material and the glass surface
- DO NOT** Allow other trades to lean tools or materials against the glass surface
- DO NOT** Allow splashed materials to dry on the glass surface



# Glass Cleaning Procedures

## Heat-Treated Glass Surfaces Are Different

### Industry Cleaning Procedures Must be Followed to Avoid Glass Damage

As the use of glass increased over recent years, issues of strength, safety and thermal performance became increasingly important design considerations. The availability of tinted and coated glasses had a dramatic impact on glass use in building projects. The vastly expanded aesthetic options, combined with the improved energy-conserving and comfort capabilities of tinted and coated glasses, allowed architects to use more glass, as well as larger sizes in their designs. A consequence of this trend was a corresponding increase in the use of tempered and heat-strengthened glass in order to meet both thermal and wind load design requirements. The demand for tempered glass increased further with the passing of safety-glazing legislation in 1977, which mandated its use in certain locations.

Currently, there are two types of heat-treated glass as defined in the American Society for Testing and Materials (ASTM) C1048 - Standard Specification for Heat-Treated Flat Glass – Kind HS, Kind FT Coated and Uncoated Glass. The two types are heat-strengthened (Kind HS) and fully tempered (Kind FT). Both types of glass are produced using the same equipment. A majority of the heat-treated glass produced over the last 30 years has been fabricated in horizontal roller hearth furnaces. The preparation stage for the heat-treatment process requires annealed float glass to be cut to the required final size, the edges to be treated according to the specified finish (commonly seamed or polished) and the glass to be washed. The process then requires the glass to be transported on horizontal rollers through an oven and heated to approximately 1,150°F (621°C). Upon exiting the furnace, the glass is rapidly cooled (quenched) by blowing air uniformly onto both surfaces simultaneously. The cooling process leaves the surfaces of the glass in a state of compression and the central core in compensating tension.

The color, clarity, chemical composition and light transmission characteristics of glass remain essentially unchanged after heat-treating. Likewise, hardness, specific gravity, expansion coefficient, softening point, thermal conductivity, solar optical properties and stiffness remain unchanged by the heat-treating process. The only physical properties that change are improved flexural and tensile strength, and improved resistance to thermal stresses and thermal shock. Under uniform loading, heat-treated glass is stronger than annealed glass of the same size and thickness. The heat-treating process does change the break pattern of the glass—i.e., fully tempered glass disintegrates into relatively small pieces, meeting the safety-glazing requirements and thereby greatly reducing the likelihood of serious cutting or piercing injuries.

As mentioned, the heat-treating process typically involves the transport of very hot glass on rollers. As a result of this soft glass-to-roller contact, some glass surface changes will occur. Minute glass particles (fines) from the glass cutting and edging process, typical manufacturing plant airborne debris or dust, refractory particles from the tempering oven roof, as well as external airborne dirt and grit carried into the plant by the large volumes of quench air used in the process, may adhere to one or both glass surfaces. Also, the physical contact of the soft glass surface with the rollers may result in a marking or dimpling of the glass surface. Current glass quality specifications contained in ASTM C1036-Standard Specification for Flat Glass—establish the size and number of glass imperfections allowed based on specific visual inspection criteria. The glass surface conditions listed above are not usually visible to the eye under normal visual circumstances. These surface do not threaten the visual or structural integrity of the product, and are not reason for rejection of glass under the ASTM consensus standards.



# Glass Cleaning Procedures

## Heat-Treated Glass Surfaces Are Different

However, despite being invisible, such surface conditions can be detectable to the touch. This difference in “feel,” between annealed and heat-treated glass, can lead to issues during cleaning of the glass, as glass cleaning workers attempt to remove microscopic particles. With the best of intentions, they may attempt to scrape particles that can be felt, but not seen, and very often end up scratching and chipping the glass surface.

Additionally, once the glass is delivered to the construction site, construction materials and debris may be deposited on the glass. Paint, stucco, concrete, adhesives and other materials may be splattered on the glass and left there for long periods of time. These materials and the methods for removing them may also damage the glass surface.

It is important to note that the recommended cleaning procedures for heat-treated glass are the same as for annealed glass. The use of scrapers, abrasives, and harsh chemical cleaning agents is not recommended for any glass product because they can cause irreparable damage. With the best of intentions, window cleaners, and other tradesmen, may attempt to remove construction

dirt and debris from the glass surface by scraping the surface. This can lead to glass damage, such as scratching and chipping if any microscopic particles have adhered to the surface and are dislodged and transported across the glass in the scraping process.

Acceptable cleaning procedures are available from glass manufacturers and fabricators. In addition, the Glass Association of North America has published a Glass Informational Bulletin entitled, Proper Procedures for Cleaning Architectural Glass Products, which includes industry-recommended cleaning procedures, as well as a list of Dos and Do Nots.

Heat-treated glass products are critical components of today's high-performance coated, insulating, laminated, spandrel, safety glazing, bullet-resistant, blast-resistant, and hurricane-resistant fenestration products. Millions upon millions of square feet of heat-treated glass have been installed and have provided trouble-free performance for almost 50 years. Continued use of acceptable cleaning practices, combined with good judgment, will prevent glass damage and enable the glass to maintain its original attractive appearance for years to come.

Reprinted, with permission, from GANA, Glass Informational Bulletin, GANA TD-02-0402, *Heat-Treated Glass Surfaces Are Different*.





## GLAZING INSTRUCTIONS

### OLDCASTLE BUILDINGENVELOPE™ INSULATING GLASS UNIT WARRANTY IS DEPENDENT UPON STRICT ADHERENCE TO THESE GLAZING INSTRUCTIONS

#### CAUTIONS

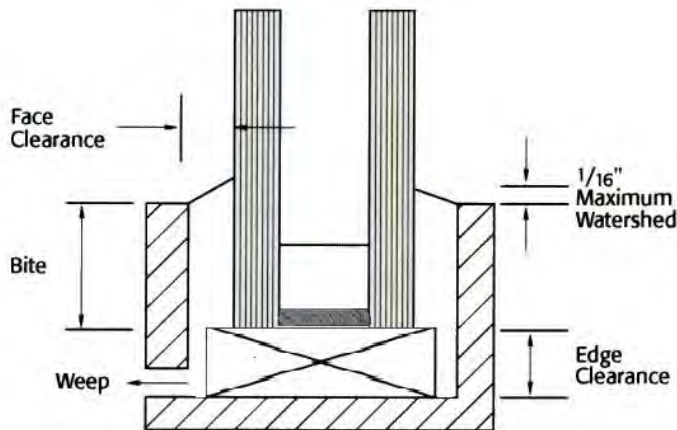
1. The Oldcastle BuildingEnvelope™ Insulating Glass Unit (IGU) warranty will be void under any of the following circumstances: if IGU is installed in a glazing system that retains any liquid near, or in contact with, the IGU edge sealant; if the IGU has not been stored and/or installed according to Oldcastle BuildingEnvelope™ Glazing Instructions; if the IGU is installed in high humidity environments (including, but not limited to, swimming pool enclosures and greenhouses) or high vibration environments unless Oldcastle BuildingEnvelope™ Technical Services has pre-approved the system details. The warranty is also void under any of the following conditions: if solar-absorbing film, shades, blinds, or any foreign material are used on or near the surface of the IGU that causes higher thermal or mechanical stresses; if non-silicone IGU is used in sloped glazing; if glass breakage occurs; or if there is any chemical or physical damage to the IGU primary and/or secondary sealants.
2. Oldcastle BuildingEnvelope™ products cannot be used in 4-sided structural silicone glazing unless Oldcastle BuildingEnvelope™ has provided written review of the glazing details. Failure to obtain written review voids all Oldcastle BuildingEnvelope™ warranties.
3. A determination of the compatibility between Oldcastle BuildingEnvelope™ products and any other glazing system component not supplied by Oldcastle BuildingEnvelope™ (i.e. sealants, gaskets, tapes, setting blocks, metal finishes, etc.) is not the responsibility of Oldcastle BuildingEnvelope™. Failure of any Oldcastle BuildingEnvelope™ product due to incompatibility with any other product not supplied by Oldcastle BuildingEnvelope™ voids all Oldcastle BuildingEnvelope™ warranties and exonerates Oldcastle BuildingEnvelope™ from any liabilities. Acetoxy silicone used with neutral-cure silicone IGU voids all Oldcastle BuildingEnvelope™ warranties unless Oldcastle BuildingEnvelope™ Technical Services pre-approved the glazing details and use of acetoxy silicone in writing.
4. Silicone setting blocks must be used in 4-sided silicone structural glazing (SSG), sloped glazing and applications using gray silicone secondary sealant. Anti-walk blocks must be silicone in all SSG, sloped glazing and gray silicone applications. Two-sided vertical SSG, conventional 4-sides captured glazing and storefront glazing systems having silicone secondary seal IGUs can use silicone compatible setting blocks.
5. Installation of units without all sides supported (i.e. butt-glazed without interior mullion support) voids all warranties unless Oldcastle BuildingEnvelope™ has given prior written review of the glazing details.
6. Do NOT use razor blades or broadknife blades of any kind to clean glass. Oldcastle BuildingEnvelope™ is not responsible for scratches and/or damage caused by window cleaners, construction tradesmen and/or any others. Follow GANA *Proper Procedures for Cleaning Architectural Glass Products* available free at <http://www.glasswebsite.com/techcenter/default.asp>.
7. Use of all abrasives, chemicals, or other surface treatments should be spot tested and evaluated under actual use conditions and under various lighting extremes before proceeding with use.

**The following glazing instructions are intended to assist the design professional and installer. Additional glazing recommendations and guidelines provided by GANA, AAMA and IGMA must also be followed. If there is any variation in glazing recommendations, the more stringent guideline will apply.**

1. **Glass Handling** - Care must be exercised in the handling and the glazing of glass to prevent damage to the glass edge. The glass must not contact the framing members during glazing. During installation, glass should not come in contact with framing members or any item that protrudes from the framing member such as screws or any metallic component. A rolling block should always be used when rotating glass to avoid corner damage. Glass must be protected from weld splatter, blasting and other impact damage. Alkali or fluorinated materials released from concrete or masonry during rainstorms can stain or etch glass. Weathering steel releases oxides while aging which can result in stained glass if proper periodic cleaning is not done. Solutions used to restore or neutralize masonry surfaces can attack first surface pyrolytic reflective coated glass.
2. **Glass Storage** - Glass should be kept on a lean of 5-7° from vertical using broad, sturdy uprights. Never store glass in sunlight without using an opaque cover to protect it. Glass should be stored in a dry, clean and cool location where the temperature is above the dew point. Circulation of dry, cool air is required especially after periods of high humidity and cyclic temperatures. If glass must be stored outdoors, use tarps or plastic coverings to protect it from getting wet, and vent periodically to prevent moisture accumulation. Repeated wetting and drying of glass surfaces can result in staining or etching of the glass.
3. **Glazing Frames** - Frames must be square, in plane, free of any internal obstructions and structurally adequate.
  - a. Squareness: 1/8" maximum diagonal difference  
Bow: 1/16" maximum per any 4' length  
Plumbness: 1/16" per 6' length  
Corner Joint Offset: must not exceed 1/32" of adjoining members
  - b. Horizontal Framing Member Deflection: 1/8" max. GANA suggest positioning blocks at 1/8th points when necessary.
  - c. Framing shall be rigid & provide full support so glass will not deflect more than the unit's long dimension in inches divided by 175, or 3/4", whichever is less.
  - d. Twisting: Limit rotation to prevent undue pressure on the glass.
  - e. **Edge and Face Clearance, and Bite** - The glazing system must have adequate edge and face clearance to cushion the glass, thermally isolate the glass and framing members, and prevent glass-to-metal contact. A minimum bite of 1/2" is essential. An adequate bite is required to provide a proper seal against air and water infiltration; however, excessive bite (twice the typical bite or more) will increase thermal breakage. Refer to the chart for proper clearance and bite values.
4. **Setting, Antiwalk & Edge Blocks** - Glass should be set on 2 identical setting blocks with a Shore A durometer hardness of 85 ± 5. Setting blocks should be at the sill quarter points or eighth points, but not less than 6" from the edge when the sill dimension is >36". Antiwalk & edge blocks must be silicone or EPDM when used in dry gasket glazing. There should be one per jamb, and they should have a 50 to 70 Shore A durometer hardness. These blocks should be sized to provide 0.1" length per square foot of glass, but not less than 4" long. The blocks should be wider than the unit width but less than full channel width to allow water to exit quickly. Setting blocks for SSG can be held back to allow for horizontal weatherseal, but must support a minimum of half of the outer lite thickness. Antiwalk blocks must be of a thickness to allow a minimum 1/8" clearance between the block and the IGU edge. The thickness for the setting block should provide the recommended nominal bite and minimum edge clearance for the glass. When a lock strip gasket glazing system is used, each setting block should be sized to provide 0.4" of length per square foot of glass area, but not less than 6" long. The lock strip gasket manufacturer should recommend the height of the blocks. Silicone units require setting and antiwalk blocks based on Cautions 4 requirements above. Non-silicone units require setting and antiwalk blocks that are compatible with the specific IG sealants used.
5. **Weep Systems** - The weep system must be adequate to drain liquid from the glazing channel quickly. This applies to dry, wet and lock strip glazing. The setting blocks must not hinder the flow of liquid from the glazing channel. For a door and window wraparound gasket, provide sufficient holes to prevent retention of liquid at the unit edges. A glazing detail review must occur for non-compliant weep systems.
6. **Structural Gasket Glazing (Lock Strip Glazing)** - This system must have a continuous wet sealant applied as a cap bead to the exterior glazing leg.
7. **Wedge Gasket Glazing** - The wedge must be inserted starting at the mid-point of the unit's width and height. Wedging should never be started at the unit corners.
8. **Pressure Wall Gaskets** - These gaskets must apply pressure onto the glass uniformly 1/8" to 9/16" from the unit edge. The sealing pressure should be not more than 10 pounds per linear inch and not less than 4 pounds per linear inch. Torque controlled wrenches are required to achieve uniform bolt tightening. Tighten bolts at quarter points of sill, then quarter points of head, then quarter points of jambs, and then the remaining bolts. Excessive torque on the pressure plate may cause harmful stress on the glass edge.
9. **Glazing Gaskets** - All gaskets must remain crack-free and pliable for the IGU warranty period.
10. **Glazing Sealants** - Because glazing sealants may contain plasticizing oils or solvents, their compatibility with the IGU sealants must be verified with the manufacturer by the end user.
11. **High-risk installations** - Applications such as those listed in Cautions 1 above requires design review by an engineer familiar with the structural properties of glass.
12. **Capillary breather tubes** - Recommended for use with IGUs that experience an elevation difference of 2,500 ft. or more in transportation or installation location from the IGU manufacturing elevation. The IGUs must stabilize for a minimum of 72 hours at final destination prior to sealing the tubes. The capillary tube must be installed on the vertical dimension of the unit with the crimped end pointed downward along the vertical edge. Oldcastle BuildingEnvelope™ Closing Procedure for Capillary Tubes is available on request from any Oldcastle BuildingEnvelope™ plant. Failure to follow the Oldcastle BuildingEnvelope™ closing procedure will void the IGU warranty. Storage instructions in # 2. Glass Storage must also be followed.



## TYPICAL FACE & EDGE CLEARANCE & BITE



GLASS TYPE	GLASS THICKNESS		MINIMUM FACE CLEARANCE	MINIMUM EDGE CLEARANCE	BITE
	inches	mm	inches	inches	inches
Single Glazing	3/32	2.5	1/16	1/8	1/4
	1/8 (1)	3	1/8	1/8	1/4
	1/8 (2)	3	1/8	1/4	3/8
	5/32	4	1/8	3/16	5/16
	3/16 (1)	5	1/8	3/16	5/16
	3/16 (2)	5	1/8	1/4	3/8
	1/4	6	1/8	1/4	3/8
	3/8	10	3/16	5/16	7/16
	1/2	12	1/4	3/8	7/16
	5/8	16	1/4	3/8	1/2
	3/4	19	1/4	1/2	5/8
	1	25	1/4	1/2	3/4
Spandrel	1/4	6	3/16	1/4	1/2
Insulating Glass	1/2	12	1/8	1/8	1/2
	5/8	16	1/8	1/8	1/2
	3/4	19	3/16	1/4	1/2
	1	25	3/16	1/4	1/2
	1-1/8	28	3/16	1/4	1/2

(1) Annealed glass

(2) Fully tempered and heat-strengthened glass

## Thermal Stress

Thermally induced edge stresses are usually the result of the warmer center portion of a glass lite being exposed to solar energy and wanting to expand more than the cooler edges. The amount of thermal stress is dependent on the glass type, size, thickness, and shape, and how it is isolated from the framing system. Other factors are building orientation, interior shading devices, exterior shading patterns, heating register location, etc. Heat-strengthening and tempering increase glass edge strength and decrease the chances for thermal breakage. The following conditions must be taken into account when considering the effects of thermal stress:

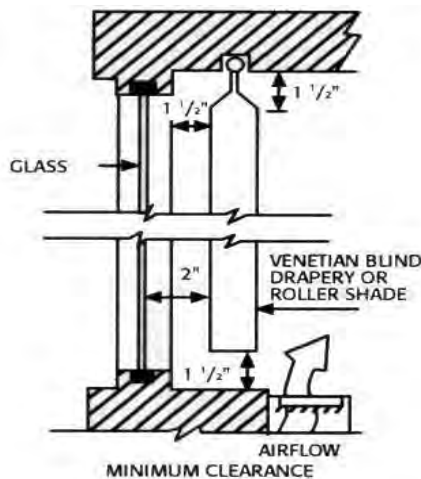
**1. Interior Heat Traps** — These situations occur when there is inadequate air circulation to properly remove heat from behind the glass. Spandrel areas are a good example of where glass must be heat-strengthened or tempered to avoid thermal stress breakage. Insulation must be held back from the surface of heat-strengthened spandrel glass a minimum of 1". Placing insulation against the back of spandrel glass is not permitted without a thermal stress review and written approval. In vision areas, air movement must not be restricted. Suspended ceilings must be well to the room side to allow natural convection. Or the head area should include vents that provide a minimum one square inch of ventilation for each inch of glass width. Or the glass should be heat-strengthened or tempered. The addition of light boxes used in display applications may require heat-treated glass since added heat is generated.

**2. Interior Shading** — Draperies, venetian blinds or other interior shading devices must be hung with space to permit natural air movement over the room side of the glass. The following criteria must be met to avoid formation of a heat trap:

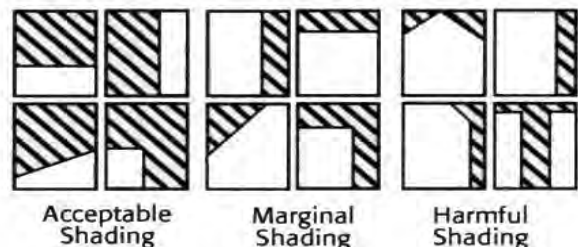
- Minimum 1-1/2" clearance required top and bottom, or one side and bottom, between the shading device and the surrounding construction.
- Minimum 2" clearance between glass and shading device.
- Heating/cooling outlets must be to the room side of the shading device with airflow directed away from the glass.
- Use mechanical stops to prevent complete closure of blinds to 60% of closed position.

Heat-strengthening or tempering of the glass may be necessary to offset the effects of a lack of adequate ventilation.

**3. Exterior Shading** — Shadows cast by overhangs, light shelves, sunshades, surrounding structures, trees and shrubbery can create shading patterns on the glass, creating thermal edge stress. Maximum stress occurs when 25% or less area of a lite is shaded and the shade includes more than 25% of the perimeter. Generally, horizontal, vertical, and diagonal shading patterns are not as critical as shading that combines several patterns. Double diagonal shading is generally the most critical pattern. See the sketches of typical shading patterns that are labeled "Acceptable", "Marginal", and "Harmful". Oldcastle BuildingEnvelope™ Technical Services will offer suggestions on the need to heat-treat the IGU when requested.



## EXTERIOR SHADING PATTERNS



Submit requests to: Oldcastle BuildingEnvelope™  
Technical Services Department  
1507 Lancer Drive  
Moorestown, NJ 08057



**Oldcastle BuildingEnvelope™**

### **CERAMIC FRIT SPANDREL LIMITED WARRANTY**

Customer: \_\_\_\_\_

Plant Location: \_\_\_\_\_

Address: \_\_\_\_\_

Project Name: \_\_\_\_\_

\_\_\_\_\_

Project Location: \_\_\_\_\_

Invoice Date(s): \_\_\_\_\_

Invoice Number(s): \_\_\_\_\_

The Ceramic Frit Spandrel Glass product (the "Product") sold by the company named above (the "Company") under the invoice referenced above is warranted (1) to meet, in the United States the quality and strength requirements of ASTM C 1048, and, in Canada, the coating durability standards of CAN/CGSB-12.9-M and (2) for five (5) years from the date of manufacture, under normal conditions of use, to suffer no material peeling, cracking, chipping or blistering of the ceramic.

**The express limited warranty stated herein is exclusive and is in lieu of and replaces any and all other warranties, representations or conditions of any kind, whether written, oral or implied (including, without limitation, any implied warranties, representations or condition of merchantability or fitness for a particular purpose, statutory or otherwise), and supersedes any oral or written warranties, representations or conditions made, asserted or implied by any distributor, agent, representative or employee or contained in any manual, brochure, literature, advertising or other materials. No distributor, agent, representative or employee has the authority to change, alter, amend or otherwise modify this limited warranty.**

**SEE OTHER LIMITATIONS, EXCLUSIONS AND EXCEPTIONS ON REVERSE.**

#### LIMITATIONS, EXCLUSIONS AND EXCEPTIONS/CERAMIC FRIT SPANDREL LIMITED WARRANTY

All claims pursuant to this Limited Warranty must be presented in writing by the Purchaser of the Product (the "Purchaser") to the plant referenced on the reverse (the "Plant") within thirty (30) days of the Purchaser learning the facts upon which the claim is based. No warranty claim may be made after the passage of the applicable warranty period. Any legal action in respect of any claim under this Limited Warranty shall accrue on the date the Purchaser discovers or should have discovered with reasonable diligence the facts forming the basis for such claim. Notice of any claim under this Limited Warranty shall not be considered given unless it includes a copy of the Invoice referenced on the reverse; the date and place of purchase of the Product; the name, address and telephone number of the installer of the Product; and the name, address and telephone number of the Purchaser. **No claim under this limited warranty shall be available without proof of purchase of the applicable product by the Purchaser making the claim. Limited warranty claims made prior to payment in full by Purchaser for the Product shall not be honored. Failure to make payment in full for the Product on or prior to the date payment is due therefore shall void this limited warranty.** Upon validation by the Company of any Limited Warranty claim, the Company, at its sole option, shall either (a) furnish the Purchaser with a replacement Product or, if the Product is no longer made, a substitute product which, in the sole discretion of the Company, is comparable to the original Product, F.O.B. the Plant, freight collect, or (b) refund the original purchase price which the Purchaser paid for the failed portion of the Product (less freight and other charges). **A comparable substitute product, whether fabricated by the Company or by a party chosen by the Company in its sole discretion, may have characteristics including, but not limited to, color, shading coefficient, U-value and/or surface appearance which vary from the original Product but shall nonetheless satisfy the Company's obligation to replace the Product.** If the Company elects to supply a replacement or substitute product, the Limited Warranty on the replacement or substitute product shall extend only for the balance of the original Limited Warranty period of the failed Product. In no event shall the Company be responsible for any costs attendant to replacing nonconforming or defective Products (including, but not limited to, labor costs), other than as specified in this paragraph. At the Company's request, all defective Product which is replaced or substituted for pursuant to this Limited Warranty shall be returned to the Company, at the Purchaser's expense, within thirty (30) days after such replacement or substitution.

**The Product must not be modified or fabricated (e.g., ground, drilled, sand blasted or otherwise) as this can weaken the glass and/or impair its safety characteristics, any modification or fabrication of the Product voids this limited warranty.**

The Company specifically disclaims responsibility for any damage to any product caused by, or which results from, improper installation, including any installation not performed in a good and workmanlike manner in accordance with industry standards and applicable shop drawings, ordinances and safety codes; provided that, in addition, such installation shall be performed at any higher standards as shall be set forth in any glazing or installation instructions provided by the Company; improper maintenance; storage in other than a good and workmanlike manner; abuse; damage or breakage caused by persons other than employees or agents of the Company while being handled, installed, shipped, glazed or used; damage or breakage caused by improper building design or construction; thermal breakage; building foundation movement; use upon the Product of any cleansing or treating agents; atmospheric pollutants or contaminants, or runoff; leachate from building components; use of the product with incompatible glazing or other materials; placing insulation or any material in direct contact with the glass creating cyclic wetting & drying; or use of the Product for purposes not considered suitable therefore by the glass industry or, in its sole discretion, by the Company. No warranty is provided in respect of any damage to or failure caused by any of the foregoing. Any product shipped outside the United States and Canada is not warranted by Oldcastle BuildingEnvelope™, Inc.

The remedies provided herein and in the Company's invoice for the products constitute the Purchaser's sole and exclusive remedy under any claim or theory of liability in respect of the Company's manufacture, sale or provision of the Product or any warranty in connection therewith, including, without limitation, claims based upon failure of, or defect in, the Product, whether a claim, however instituted, is based upon contract, indemnity, breach of warranty, tort (including negligence and/or strict liability) or otherwise. The Company shall not be liable for consequential, indirect, incidental, punitive, exemplary or special damages, claims or costs of any nature including, without limitation, labor costs of any kind relating to the removal of failed products and/or reinstallation of replacement products therefore, or damages, claims or costs otherwise arising from, or in connection with, alleged breach of any limited warranty or negligence on the part of the Company.

If Purchaser is sued by any third party for Product failure under warranty or any other theory, Purchaser shall provide the Company at its Plant with written notice thereof with a copy of any and all pleadings served upon Purchaser within ten (10) days of such service and provide the Company with an opportunity to inspect the allegedly defective Product. Failure to comply with the foregoing shall void this Limited Warranty.

**Products not expressly warranted by the Company are sold "as is, with all faults" and Product failures expressly excluded from this Limited Warranty (including for example, but not limited to, glass breakage) are not covered by any other warranty, representation or condition, express or implied, statutory or otherwise. The Company offers no warranty, express, implied or otherwise for annealed glass, products containing a film opacifier, or any coated glass provided as part of its products. For the sole convenience of the customer, the Company will facilitate resolution of warranty issues which may occur between the customer and the coater.** To the extent assignable, the Company assigns to the Purchaser any warranty on the Product provided by third parties, including any warranty by a third party glass coater. These assigned warranties will generally be limited and subject to exclusions and exceptions. The Purchaser is advised to apprise itself of such limitations, exclusions and exceptions, and the Company shall have no obligation to so apprise the Purchaser. (In general the limited warranty provided by glass coaters may be void if the coated glass is installed contrary to the Company's or the respective coater's instructions, damaged by improper handling or installation, or if damaged because of scratches or abrasions which may be caused by abrasive cleaners used on the coated surface.)

Any waiver by the Company of a deviation from any of the terms or conditions in this Limited Warranty shall only be for the specific deviation so waived and shall not be construed as a waiver of any other term or condition nor a continuing waiver of the term or condition so waived.

The Company reserves the absolute right to inspect, in the field or at the Plant, any Product that is alleged by the Purchaser to be defective. Failure to afford the Company the right to inspect allegedly defective Product promptly upon the Purchaser becoming aware of any defect therein voids this Limited Warranty.

The Purchaser is solely responsible for all determinations of the compatibility of any glazing or other materials (e.g., sealants, gaskets, tapes, setting blocks, metal or finishes) with the Product. The Purchaser is advised that annealed, heat strengthened or wired glass does not meet the requirements of CPSC 16 CFR 1201 for safety glazing and should not be glazed in hazardous locations, including those defined by applicable codes and law. Hazardous locations should be glazed with approved safety glass.

**It is the express wish of the parties that this limited warranty and any related documents be drawn up and executed in English only. Il est la volonté expresse des parties que cette garantie limitée et tous les documents s'y rattachant soient rédigés et signés en Anglais seulement. This limited warranty and any related documents are in the English language and shall be interpreted in accordance with the meanings of the words and phrases used herein as understood in the state or province of seller's plant indicated in the face of this limited warranty. This limited warranty shall be governed by, and construed and interpreted in accordance with, the laws of the state or province in which the Plant is located, without regard to principles of conflicts of laws, any suit, action or proceeding arising out of or relating to this limited warranty shall be instituted in any court sitting in such province or, in the case of a state, in the county of the location of the Plant and any objection which may now or hereafter exist to the laying of the venue or to the jurisdiction of any such suit, action or proceeding in such province or county is waived. The bringing of any suit, action or proceeding by the Purchaser which is not in compliance with the foregoing shall void this limited warranty.**

This limited warranty; the credit application, if any, completed by Purchaser; the Company's glazing instructions, if any; and the invoice for the purchase of the Product constitute the complete and exclusive statement of the terms of the agreement between the Company and Purchaser with respect to the subject matter hereof and supersede any other writing, document or agreement. This limited warranty may not be modified, including pursuant to any order made by Purchaser or in any other document, unless such modification is made in writing and executed on behalf of seller by its president.

This limited warranty is extended to the Purchaser of the Product and any claim hereunder must be made solely by the purchase. This limited warranty is not transferable without the prior written consent of the Company, which may be withheld entirely in its discretion, and any attempted assignment without such prior written consent shall void this warranty.





**Oldcastle BuildingEnvelope™**

**DUAL SEAL INSULATING GLASS UNIT 10 YEAR LIMITED WARRANTY**

Customer: \_\_\_\_\_

Plant Location: \_\_\_\_\_

Address: \_\_\_\_\_

Project Name: \_\_\_\_\_

\_\_\_\_\_

Project Location: \_\_\_\_\_

Invoice Date(s): \_\_\_\_\_

Invoice Number(s): \_\_\_\_\_

The Dual Seal Insulating Glass Unit product (the “Product”) sold by the company named above (the “Company”) under the invoice referenced above is warranted (1) for ten (10) years from the date of manufacture, under normal conditions of use, to suffer no material obstruction of vision due to accumulation of dust, moisture or film on the internal surface of the glass caused by failure of the Product’s edge seal which is caused by defects in materials or workmanship and (2) in Canada, to meet the quality and durability standard of CAN/CGSB-12.8-M.

**The express limited warranty stated herein is exclusive and is in lieu of and replaces any and all other warranties, representations or conditions of any kind, whether written, oral or implied (including, without limitation, any implied warranties, representations or conditions of merchantability or fitness for a particular purpose, statutory or otherwise), and supersedes any oral or written warranties, representations or conditions made, asserted or implied by any distributor, agent, representative or employee or contained in any manual, brochure, literature, advertising or other materials. No distributor, agent, representative or employee has the authority to change, alter, amend or otherwise modify this limited warranty.**

**SEE OTHER LIMITATIONS, EXCLUSIONS AND EXCEPTIONS ON REVERSE**

## LIMITATIONS, EXCLUSIONS AND EXCEPTIONS/DUAL SEAL INSULATING GLASS UNIT LIMITED WARRANTY

All claims pursuant to this Limited Warranty must be presented in writing by the Purchaser of the Product (the "Purchaser") to the plant referenced on the reverse (the "Plant") within thirty (30) days of the Purchaser learning the facts upon which the claim is based. No warranty claim may be made after the passage of the applicable warranty period. Any legal action in respect of any claim under this Limited Warranty shall accrue on the date the Purchaser discovers or should have discovered with reasonable diligence the facts forming the basis for such claim. Notice of any claim under this Limited Warranty shall not be considered given unless it includes a copy of the invoice referenced on the reverse; the date and place of purchase of the Product; the name, address and telephone number of the installer of the Product; and the name, address and telephone number of the Purchaser. **No claim under this limited warranty shall be available without proof of purchase of the applicable product by the purchaser making the claim. Limited warranty claims made prior to payment in full by Purchaser for the Product shall not be honored. Failure to make payment in full for the Product on or prior to the date payment is due therefore shall void this limited warranty.** Upon validation by the Company of any Limited Warranty claim, the Company, at its sole option, shall either (a) furnish the Purchaser with a replacement Product or, if the Product is no longer made, a substitute product which, in the sole discretion of the Company, is comparable to the original Product, F.O.B. the Plant, freight collect, or (b) refund the original purchase price which the Purchaser paid for the failed portion of the Product (less freight and other charges). **A comparable substitute product, whether fabricated by the company or by a party chosen by the company in its sole discretion, may have characteristics including, but not limited to, color, shading coefficient, U-value and/or surface appearance which vary from the original product but shall nonetheless satisfy the Company's obligation to replace the Product.** If the Company elects to supply a replacement or substitute product, the Limited Warranty on the replacement or substitute product shall extend only for the balance of the original Limited Warranty period of the failed Product. In no event shall the Company be responsible for any costs attendant to replacing nonconforming or defective Products (including, but not limited to, labor costs), other than as specified in this paragraph. At the Company's request, all defective Product which is replaced or substituted for pursuant to this Limited Warranty shall be returned to the Company, at the Purchaser's expense, within thirty (30) days after such replacement or substitution.

The Company specifically disclaims responsibility for any damage to any product caused by, or which results from, improper installation, including any installation not performed in a good and workmanlike manner in accordance with industry standards and applicable shop drawings, ordinances and safety codes; provided that, in addition, such installation shall be performed at any higher standards as shall be set forth in any glazing or installation instructions provided by the Company; improper maintenance; storage in other than a good and workmanlike manner; abuse; damage or breakage caused by persons other than employees or agents of the Company while being handled, installed, shipped, glazed or used; damage or breakage caused by improper building design or construction; thermal breakage; building or foundation movement; use upon the Product of any cleansing or treating agents; atmospheric pollutants or contaminants, or runoff; leachate from building components; use of the product with incompatible glazing or other materials; or use of the Product for purposes not considered suitable therefore by the glass industry or, in its sole discretion, by the Company. No warranty is provided in respect of any damage to or failure caused by any of the foregoing.

In addition, this limited warranty shall be void if the Product is used in any mullionless butt-glazed system or in any silicone glazing system if not installed in accordance with GANA and IGMA recommendations using glazing materials compatible with the Product and that have a warranted life of at least as long as that of the Product; if used in any sloped glazing (defined as tilted inward or outward by more than fifteen (15) degrees from vertical); if installed in any high moisture, heat, vibration or other unusual stress environment (including, without limitation, in any watercraft, motor vehicle, trailer, aquarium, swimming pool enclosure, zoo, greenhouse, solar collector, refrigeration unit or skylight); if films other than clear, non solar absorbing and reflecting films are used, shades, blinds or any foreign materials are used on or near the surface of the product; if any acetoxysilicone sealant is used with any product built with two component silicone; or if any breather and/or capillary tubes have not been completely closed and sealed per Company guidelines within ten (10) days after arrival of the product on the job site. Any product shipped outside the United States and Canada is not warranted by Oldcastle BuildingEnvelope™, Inc.

The remedies provided herein and in the Company's invoice for the Products constitute the purchaser's sole and exclusive remedy under any claim or theory of liability in respect of the company's manufacture, sale or provision of the Product or any warranty in connection therewith, including, without limitation, claims based upon failure of, or defect in, the Product, whether a claim, however instituted, is based upon contract, indemnity, breach of warranty, tort (including negligence and/or strict liability) or otherwise, the Company shall not be liable for consequential, indirect, incidental, punitive, exemplary or special damages, claims or costs of any nature including, without limitation, labor costs of any kind relating to the removal of failed products and/or reinstallation of replacement products therefore, or damages, claims or costs otherwise arising from, or in connection with, alleged breach of any limited warranty or negligence on the part of the Company.

If Purchaser is sued by any third party for Product failure under warranty or any other theory, Purchaser shall provide the Company at its Plant with written notice thereof with a copy of any and all pleadings served upon Purchaser within ten (10) days of such service and provide the Company with an opportunity to inspect the allegedly defective Product. Failure to comply with the foregoing shall void this Limited Warranty.

Products not expressly warranted by the Company are sold "as is, with all faults" and product failures expressly excluded from this Limited Warranty (including for example, but not limited to, glass breakage) are not covered by any other warranty, representation or condition, express or implied, statutory or otherwise. The Company offers no warranty, express, implied or otherwise for annealed glass, products containing a film opacifier, or any coated glass provided as part of its products. For the sole convenience of the Customer, the Company will facilitate resolution of warranty issues which may occur between the customer and the coater. To the extent assignable, the Company assigns to the Purchaser any warranty on the Product provided by third parties, including any warranty by a third party glass coater. These assigned warranties will generally be limited and subject to exclusions and exceptions. The Purchaser is advised to apprise itself of such limitations, exclusions and exceptions, and the Company shall have no obligation to so apprise the Purchaser. (In general the limited warranty provided by glass coaters may be void if the coated glass is installed contrary to the Company's or the respective coater's instructions, damaged by improper handling or installation, or if damaged because of scratches or abrasions which may be caused by abrasive cleaners used on the coated surface.)

Any waiver by the Company of a deviation from any of the terms or conditions in this Limited Warranty shall only be for the specific deviation so waived and shall not be construed as a waiver of any other term or condition nor a continuing waiver of the term or condition so waived.

The Company reserves the absolute right to inspect, in the field or at the Plant, any Product that is alleged by the Purchaser to be defective. Failure to afford the Company the right to inspect allegedly defective Product promptly upon the Purchaser becoming aware of any defect therein voids this Limited Warranty.

The Purchaser is solely responsible for all determinations of the compatibility of any glazing or other materials (e.g., sealants, gaskets, tapes, setting blocks, metal or finishes) with the Product. The Purchaser is advised that annealed, heat strengthened or wired glass does not meet the requirements of CPSC 16 CFR 1201 for safety glazing and should not be glazed in hazardous locations, including those defined by applicable codes and law. Hazardous locations should be glazed with approved safety glass.

It is the express wish of the parties that this limited warranty and any related documents be drawn up and executed in English only. Il est la volonté expresse des parties que cette garantie limitée et tous les documents s'y rattachant soient rédigés et signés en Anglais seulement. This limited warranty and any related documents are in the English language and shall be interpreted in accordance with the meaning of the words and phrases used herein as understood in the state or province of seller's plant indicated on the face of this limited warranty. This limited warranty shall be governed by, and construed and interpreted in accordance with, the laws of the state or province in which the plant is located, without regard to principles of conflicts of laws, any suit, action or proceeding arising out of or relating to this limited warranty shall be instituted in any court sitting in such province or, in the case of a state, in the county of the location of the plant and any objection which may now or hereafter exist to the laying of the venue or to the jurisdiction of any such suit, action or proceeding in such province or county is waived. The bringing of any suit, action or proceeding by the Purchaser which is not in compliance with the foregoing shall void this limited warranty.

This limited warranty; the credit application, if any, completed by Purchaser; the Company's glazing instructions, if any; and the invoice for the purchase of the product constitute the complete and exclusive statement of the terms of the agreement between the Company and Purchaser with respect to the subject matter hereof and supersede any other writing, document or agreement. This limited warranty may not be modified, including pursuant to any order made by purchaser or in any other document, unless such modification is made in writing and executed on behalf of seller by its president.

This limited warranty is extended to the Purchaser of the Product only and any claim hereunder must be made solely by the Purchaser. This limited warranty is not transferable without the prior written consent of the Company, which may withheld entirely in its discretion, and any attempted assignment without such prior written consent shall void this limited warranty.

OBE Dual Seal IG 10 yr Warr 2010-10-11.doc



**Oldcastle BuildingEnvelope™**

**LAMINATED GLASS LIMITED WARRANTY  
MADE WITH POLYVINYL BUTYRAL (PVB)**

Customer: \_\_\_\_\_

Plant Location: \_\_\_\_\_

Address: \_\_\_\_\_

Project Name: \_\_\_\_\_

\_\_\_\_\_

Project Location: \_\_\_\_\_

Invoice Date(s): \_\_\_\_\_

Invoice Number(s): \_\_\_\_\_

The one quarter inch (1/4") or thicker Laminated Glass product containing polyvinyl butyral (PVB) (the "Product") sold by the company named above (the "Company") under the invoice referenced above is warranted (1) to meet, in the United States, the quality and strength requirements of ASTM C 1172 and the safety criteria of CPSC 16 CFR 1201, (categories I and II), and, in Canada, the quality and strength requirements and the safety criteria of CAN/CGSB-12.1-M and (2) for five (5) years from the date of manufacture, under normal conditions of use, to suffer no material edge separation or obstruction of vision through the product as a result of delamination which is caused by defects in materials or workmanship.

**The express limited warranty stated herein is exclusive and is in lieu of and replaces any and all other warranties, representations or conditions of any kind, whether written, oral or implied (including, without limitation, any implied warranties, representations or conditions of merchantability or fitness for a particular purpose, statutory or otherwise), and supersedes any oral or written warranties, representations or conditions made, asserted or implied by any distributor, agent, representative or employee or contained in any manual, brochure, literature, advertising or other materials. No distributor, agent, representative or employee has the authority to change, alter, amend or otherwise modify this limited warranty.**

**SEE OTHER LIMITATIONS, EXCLUSIONS AND EXCEPTIONS ON REVERSE.**

#### LIMITATIONS, EXCLUSIONS AND EXCEPTIONS/LAMINATED GLASS LIMITED WARRANTY

All claims pursuant to this Limited Warranty must be presented in writing by the Purchaser of the Product (the "Purchaser") to the plant referenced on the reverse (the "Plant") within thirty (30) days of the Purchaser learning the facts upon which the claim is based. No warranty claim may be made after the passage of the applicable warranty period. Any legal action in respect of any claim under this Limited Warranty shall accrue on the date the Purchaser discovers or should have discovered with reasonable diligence the facts forming the basis for such claim. Notice of any claim under this Limited Warranty shall not be considered given unless it includes a copy of the Invoice referenced on the reverse; the date and place of purchase of the Product; the name, address and telephone number of the installer of the Product; and the name, address and telephone number of the Purchaser. **No claim under this limited warranty shall be available without proof of purchase of the applicable product by the Purchaser making the claim. Limited warranty claims made prior to payment in full by purchaser for the Product shall not be honored. Failure to make payment in full for the Product on or prior to the date payment is due therefore shall void this limited warranty.** Upon validation by the Company of any Limited Warranty claim, the Company, at its sole option, shall either (a) furnish the Purchaser with a replacement Product or, if the Product is no longer made, a substitute product which, in the sole discretion of the Company, is comparable to the original Product, F.O.B. the Plant, freight collect, or (b) refund the original purchase price which the Purchaser paid for the failed portion of the Product (less freight and other charges). **A comparable substitute product, whether fabricated by the Company or by a party chosen by the Company in its sole discretion, may have characteristics including, but not limited to, color, shading coefficient, U-value and/or surface appearance which vary from the original product but shall nonetheless satisfy the Company's obligation to replace the Product.** If the Company elects to supply a replacement or substitute product, the Limited Warranty on the replacement or substitute product shall extend only for the balance of the original Limited Warranty period of the failed Product. In no event shall the Company be responsible for any costs attendant to replacing nonconforming or defective Products (including, but not limited to, labor costs), other than as specified in this paragraph. At the Company's request, all defective Product which is replaced or substituted for pursuant to this Limited Warranty shall be returned to the Company, at the Purchaser's expense, within thirty (30) days after such replacement or substitution.

**This limited warranty is not applicable to security glass (glass and polycarbonate laminates).**

**The heat treated laminated product must not be modified or fabricated (e.g., ground, drilled, sand blasted or otherwise) as this can weaken the glass and/or impair its safety characteristics. Any modification or fabrication of the Product voids this limited warranty.**

The Company specifically disclaims responsibility for any damage to any product caused by, or which results from improper installation, including any installation not performed in a good and workmanlike manner in accordance with industry standards, including guidelines issued by the Laminating Division of GANA and applicable shop drawings, ordinances and safety codes; provided that, in addition, such installation shall be performed at any higher standards as shall be set forth in any glazing or installation instructions provided by the Company; improper maintenance; storage in other than a good and workmanlike manner; abuse; damage or breakage caused by person other than employees or agents of the Company while being handled, installed, shipped, glazed or used; damage or breakage caused by improper building design or construction; thermal breakage; building or foundation movement; use upon the Product of any cleansing or treating agents; atmospheric pollutants or contaminants, or runoff; leachate from building component, use of the Product with incompatible glazing or other materials; installed in any high moisture, heat, vibration or other unusual stress environment; if films other than clear, non solar absorbing and reflecting films are used on the surface of the product; or use of the Product for purposes not considered suitable therefore by the glass industry or, in its sole discretion, by the Company. No warranty is provided in respect of any damage to or failure caused by any of the foregoing. Any product shipped outside the United States and Canada is not warranted by Oldcastle BuildingEnvelope™, Inc.

For the purposes of this limited warranty, de-lamination shall be defined as any edge defect in the form of clear bubble shaped areas emanating from the edge that extend beyond a 5mm (3/16") perimeter of the laminate. No warranty shall be provided on any installation using non-standard glazing methods including but not limited to bolted connections, inserts and clips and other minimally supported systems unless written approval has been given by the company following a detailed project review.

The remedies provided herein and in the Company's invoice for the Products constitute the Purchaser's sole and exclusive remedy under any claim or theory of liability in respect of the Company's manufacture, sale or provision of the Product or any warranty in connection therewith, including, without limitation, claims based upon failure of, or defect in, the Product, whether a claim, however instituted, is based upon contract, indemnity, breach of warranty, tort (including negligence and/or strict liability) or otherwise. The Company shall not be liable for consequential, indirect, incidental, punitive, exemplary or special damages, claims or costs of any nature including, without limitation, labor costs of any kind relating to the removal of failed products and/or reinstallation of replacement products therefore, or damages, claims or costs otherwise arising from, or in connection with, alleged breach of any limited warranty or negligence on the part of the Company.

If Purchaser is sued by any third party for Product failure under warranty or any other theory, Purchaser shall provide the Company at its Plant at its address above with written notice thereof with a copy of any and all pleadings served upon Purchaser within ten (10) days of such service and provide the Company with an opportunity to inspect the allegedly defective Product. Failure to comply with the foregoing shall void this Limited Warranty.

**Products not expressly warranted by the Company are sold "as is, with all faults" and product failures expressly excluded from this Limited Warranty (including for example, but not limited to, glass breakage) are not covered by any other warranty, representation or condition, express or implied, statutory or otherwise. The Company offers no warranty, express, implied or otherwise for annealed glass, products containing a film opacifier, or any coated glass provided as part of its products. For the sole convenience of the Customer, the Company will facilitate resolution of warranty issues which may occur between the customer and the coater** To the extent assignable, the Company assigns to the Purchaser any warranty on the Product provided by third parties, including any warranty by a third party glass coater. These assigned warranties will generally be limited and subject to exclusions and exceptions. The Purchaser is advised to apprise itself of such limitations, exclusions and exceptions, and the Company shall have no obligation to so apprise the Purchaser. (In general the limited warranty provided by glass coaters may be void if the coated glass is installed contrary to the Company's or the respective coater's instructions, damaged by improper handling or installation, or if damaged because of scratches or abrasions which may be caused by abrasive cleaners used on the coated surface.)

Any waiver by the Company of a deviation from any of the terms or conditions in this Limited Warranty shall only be for the specific deviation so waived and shall not be construed as a waiver of any other term or condition nor a continuing waiver of the term or condition so waived.

The Company reserves the absolute right to inspect in the field or at the Plant, any Product that is alleged by the Purchaser to be defective. Failure to afford the Company the right to inspect allegedly defective Product promptly upon the Purchaser becoming aware of any defect therein voids this Limited Warranty.

The Purchaser is solely responsible for all determinations of the compatibility of any glazing or other materials (e.g., sealants, gaskets, tapes, setting blocks, metal or finishes) with the Product. The Purchaser is advised that annealed, heat strengthened or wired glass does not meet the requirements of CPSC 16 CFR 1201 for safety glazing and should not be glazed in hazardous locations, including those defined by applicable codes and law. Hazardous locations should be glazed with approved safety glass.

**It is the express wish of the parties that this limited warranty and any related documents be drawing up and executed in English only. Il est la volonté expresse des parties que cette garantie limitée et tous les documents s'y rattachant soient rédigés et signés en Anglais seulement. This limited warranty and any related documents are in the English language and shall be interpreted in accordance with the meanings or the words and phrases used herein as understood in the state or province of seller's plant indicated on the face of this limited warranty. This limited warranty shall be governed by, and construed and interpreted in accordance with, the laws of the state or province in which the Plant is located, without regard to principles of conflicts of laws. Any suit, action or proceeding arising out of or relating to this limited warranty shall be instituted in any court sitting in such province or, in the case of a state, in the county of the location of the Plant and any objection which may now or hereafter exist to the laying of the venue or to the jurisdiction of any such suit, action or proceeding in such province or county is waived. The bringing of any suit, action or proceeding by the Purchaser which is not in compliance with the foregoing shall void this limited warranty.**

**This limited warranty; the credit application, if any, completed by Purchaser; the Company's glazing instructions, if any; and the invoice for the purchase of the Product constitute the complete and exclusive statement of the terms of the agreement between the Company and Purchaser with respect to the subject matter hereof and supersede any other writing, document or agreement. This limited warranty may not be modified, including pursuant to any order made by Purchaser or in any other document, unless such modification is made in writing and executed on behalf of seller by its President.**

**This limited warranty is extended to the Purchaser of the Product only and any claim hereunder must be made solely by the Purchaser. This limited warranty is not transferable without the prior written consent of the Company, which may be withheld entirely in its discretion, and any attempted assignment without such prior written consent shall void this limited warranty.**