

This specification is intended as a *Guide* toward the preparation of a CSI 3-Part specification. It is only a guide. It must be reviewed and modified for specific architectural projects by a qualified specifications preparer. This specification uses Liquidoranges STUDIO, LLC as the basis of design for laminated decorative art glazing. Liquidoranges STUDIO, LLC makes no claim to the accuracy or completeness of this guide specification and shall not be held liable for any errors or omissions.

## SECTION 08 81 13 LAMINATED ART DECORATIVE GLAZING

### PART 1 - GENERAL

#### 1.1 SUMMARY

Edit the following paragraphs to include only those items specified in this section.

- A. Section Includes:
1. Architectural decorative laminated glass for interior installation with other sections referencing this Section.

Coordinate the following paragraphs with other sections in the project manual.

- B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.
  2. Division 07: Joint Sealers
  3. Division 08: Glazing accessories, installation.

#### 1.2 REFERENCES

In the following paragraphs, retain only those reference standards that are used elsewhere in this section.

- A. American Architectural Manufacturers Association (AAMA)800 - Voluntary Specifications and Test Methods for Sealants.
- B. American National Standards Institute (ANSI)Z97.1 - Safety Performance Specifications and Methods of Test for Safety Glazing Material Used in Buildings.
- C. ASTM International (ASTM):
1. C509 - Standard Specification for Elastomeric Cellular Preformed Gasket and Sealing Material.
  2. C794 - Standard Test Method for Adhesion-In-Peel of Elastomeric Joint Sealants.
  3. C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers.
  4. C920 - Standard Specification for Elastomeric Joint Sealants.
  5. C1036 - Standard Specification for Flat Glass.
  6. C1048 - Standard Specification for Heat-Treated Flat Glass-Kind HS, Kind FT, Coated and Uncoated Glass.
  7. C1115 - Standard Specification for Dense Elastomeric Silicone Rubber Gaskets and Accessories.
  8. C1172 - Standard Specification for Laminated Architectural Flat Glass.
  9. C1184 - Standard Specification for Structural Silicone Sealants.
  10. C1281 - Standard Specification for Preformed Tape Sealants for Glazing Applications.
  11. C1294 - Standard Test Method for Compatibility of Insulating Glass Edge Sealants with Liquid-Applied Glazing Materials.
  12. C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants.
  13. E119 - Standard Test Method for Fire Tests of Building Construction and Materials.
  14. E152 - Standard Test Method for Fire Test of Door Assemblies.
  15. E163 - Standard Test Method for Fire Tests of Window Assemblies.
  16. E330 - Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors By Uniform Static Air Pressure Difference.
  17. E1300 - Standard Practice for Determining Load Resistance of Glass in Buildings.

18. E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation.
  19. F1233 - Standard Specification for Security Glazing Materials and Systems.
- D. Glass Association of North America (GANA)
1. Engineering Standards Manual.
  2. Glazing Manual.
  3. Laminated Glass Design Guide.

Include the following only if glass thicknesses are not included in the contract documents, and are to be determined by the contractor.

### 1.3 SYSTEM DESCRIPTION

- A. Laminated Decorative Art Glass For Interiors:
1. Minimum of two layers of low-iron [annealed] [tempered] clear glass bonded together with integral ultraviolet filtration to 380 nanometers, [polyvinyl-butylal (PVB)] [urethane] encapsulating a high-resolution RGB laser exposed 7mil polyethylene terephthalate film (PET) base and light-sensitive layers made from gelatin, silver halide, and other proprietary additives equaling a finished encapsulated transparent artwork.
- B. Glass Thicknesses:
1. Indicated thicknesses are minimums; select actual glass thicknesses by analyzing loads and conditions.

### 1.4 SUBMITTALS

Limiting submittals to only those actually required helps to minimize liability arising from the review of submittals. Minimize submittals on smaller, less complex projects.

Include the following for submission of shop drawings, product data, and samples for the Architect's review. NOTE: Complete shop drawings from installer are required to properly size laminated art glass and must be specified in Section 08 00 00 as to be provided to Liquidoranges STUDIO, LLC for completion of this Section.

- A. Submittals for Review:
1. Product Data: Descriptive data and performance attributes for laminated glass.
  2. Samples:
    - a. 12 x 12 inch glass samples including sample art interlayer(s).
    - b. Schedule of Samples for approval: [LAG-01], [LAG-02], [LAG-03].
    - c. Color shop drawing of all glass pieces, dimensions, fabrication requirements, and locations.

Include the following for submission of sustainable design submittals.

- B. Sustainable Design Submittals:
1. Recycled Content.
  2. Regional Materials.
  3. Low-Emitting Materials.

### 1.5 QUALITY ASSURANCE

The following paragraph specifies a minimum level of experience required of the parties performing the work of this section. Retain if required, and edit to suit project requirements.

- A. Installer Qualifications: Minimum 10 years documented experience in work of this Section.
- B. Regulatory Requirements: Provide laminated safety glass for locations subject to human impact as required by [Building Code.] [\_\_\_\_.]

- C. Perform Work in accordance with GANA Laminated Glass Design Guide.
- D. Glazing Sealers and Accessories: Neutral cure, medium modulus, 100% Silicone, acid-free, Non-Acetic cure formula.
- E. Interior Glazing Sealers and Accessories: Maximum volatile organic compound (VOC) content as follows:
  1. Structural glazing sealant: [100] [ ] grams per liter.
  2. Glazing sealant: [250] [ ] grams per liter.
  3. 100% Silicone, acid-free, Non-Acetic cure formula.
  4. Primers for non-porous substrates: [250] [ ] grams per liter.
  5. Primers for porous substrates: [775] [ ] grams per liter.

## 1.6 PROJECT CONDITIONS

- A. Perform glazing when ambient temperature is above 40 degrees F.
- B. Perform glazing on dry surfaces.

## 1.7 WARRANTIES

Include the following paragraph for an extended warranty covering the products specified in this section. A one year "correction after completion" period is included in AIA Document A201, hence a one year warranty is not necessary. Note also that specifying extended warranties may limit the Owner's ability to collect under state and federal statutes including the Uniform Commercial Code.

- A. Laminated Glass Units: Provide manufacturer's 1 year warranty against manufacturing defects resulting in edge separation, delamination, or material obstruction of vision through glass surface. Provide manufacturer's 1 year warranty against art interlayer fade for interior installations.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

Edit the following as required. Liquidoranges STUDIO, LLC, is the basis of specification manufacturer to produce the products specified in this section. Other manufacturers should be able to produce "or equal" and that have websites available to assist in product research.

- A. Approved Manufacturer – Laminated Decorative Art Glass with high-resolution art interlayer:
  1. Liquidoranges STUDIO, LLC, 16 Paradise Lane, Kingston, MA 02364-1123 (781) 248-4096.
    - a. liquidoranges website: [www.liquidoranges.com](http://www.liquidoranges.com)
- B. Substitutions: [Under provisions of Division 01.] [Not permitted.]

### 2.2 MATERIALS - GLASS

- A. Clear Glass: ASTM C1036, Type 1 transparent flat, Class 1 clear, Low-Iron PPG "Sapphire".
- B. Clear Tempered Glass: ASTM C1048, Type 1 transparent flat, Class 1 clear, Quality [q3 glazing select,] [ ], Kind FT fully tempered.
- C. Clear Heat Strengthened Glass: ASTM C1048, Type 1 transparent flat, Class 1 clear, Quality [q3 glazing select,] [ ], Kind HS heat strengthened.
- D. Recycled Content: Minimum [20] [ ] percent recycled glass content, classified as post-industrial.
- E. Cradle to Cradle Silver Certified

## 2.3 MATERIALS – ADHESION INTERLAYER

- A. KrystalFlex® PE399 Thermoplastic Polyurethane Film 0.030, as manufactured by Huntsman, 52 Kendall Pond Road, Derry, NH 03038. Clear.
- B. Solutia Inc., Saflex 0.030 UV polyvinyl-butylal (PVB) Clear.
- C. Solutia Inc., Vanceva™ 0.030 Design polyvinyl-butylal (PVB); [Cool White 81% Visible Light Transmittance] [Artic Snow 68% Visible Light Transmittance] [Polar White 8% Visible Light Transmittance].

## 2.4 FABRICATION

- A. Laminated Glass:
  - 1. Comply with ASTM C1172 and ANSI Z97.1.
  - 2. Laminate glass with laminating film by manufacturer's standard heat and pressure process.
  - 3. Original art work interlayer, artist signature. Artwork [flush to edge][trimmed 1/16" from edge].
  - 4. Cut glass to required size at factory.
  - 5. Clean edges of all excess interlayer. [Seamed edges.] [Grind edges smooth.] [Polish edges].[Polish edges as noted on drawings.]
  - 6. Discard glass with voids, delamination, or entrapped dirt or foreign matter.
- B. Fabrication Tolerances: ASTM C1036 and ASTM C1048.
- C. Glass Identification:
  - 1. Apply manufacturer's label indicating type and thickness to each light of glass. Show position of exterior face when installed, where applicable.
  - 2. [Etch manufacturer's label on each light of tempered glass.] [Provide temper certificate of compliance.]

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Clean glazing rabbets, holes; remove loose and foreign matter.
- B. Remove protective coatings on metal surfaces.
- C. Clean glass just prior to installation.

### 3.2 INSTALLATION - GENERAL

- A. Install glass in accordance with glass manufacturer's instructions and artist layout.
- B. Place setting blocks at locations recommended by glass installer, generally between 1/4 points and 6 inches from corner, except at glazed doors.
- C. Maintain manufacturer's recommended edge and face clearances between glass and frame members.
- D. Thoroughly clean all surfaces using manufacturer's recommended cleaning agents and methods.
- E. Use only approved sealants as listed by laminated glass manufacturer.

### 3.3 PROTECTION

- A. Protect installed products until completion of project.

### 3.4 SCHEDULE

Include the following for a schedule listing the products in this section, or delete. Coordinate with Part 2 - Products.

- A. Type LAG-01:
  - 1. Description: [ ] inch thick clear laminated glass with art interlayer, [heat strengthened] [tempered] where required.
  - 2. Total unit thickness: [ ] inch.
  - 3. Locations: [Aluminum-framed interior entrances and interior storefront.] [[Aluminum] [Wood] [ ]].
  
- B. Type [LAG-02]:
  - 1. Description: [ ] inch thick clear laminated glass with art interlayer, [heat strengthened] [tempered] where required.
  - 2. Locations: Interior glazed openings at locations not subject to human impact [, excluding fire-rated assemblies.]
  
- C. Type [LAG-03]:
  - 1. Description: [ ] inch thick clear laminated glass with art interlayer [bullet-resisting] [security] glass.
  - 2. Locations: [ ]].

END OF SECTION