

# Inspection Criteria and Standards

---

## Insulating Glass Units

Viracon's insulating glass units are Insulating Glass Certification Council (IGCC) certified to ASTM E2190 Standard Specification for Insulating Glass Unit Performance and Evaluation.

## Laminated Glass Units

Viracon's laminated glass units with a minimum .030" pvb interlayer comply with ANSI Z97.1 and CPSC 16 CFR 1201, which are the industry safety standards for glazing materials. In addition, Viracon's laminated glass units comply with ASTM 1172 Standard Specification for Laminated Architectural Flat Glass.

**Edge Blushing** - In both structural and butt glazed applications, silicone sealants may come in contact with the polyvinyl butyral (pvb) interlayer used in laminated glass. When silicone contacts the laminated glass edge, a cosmetic blushing of the pvb interlayer will occur over time. It generally begins as a small bubble formation at the contacted edge, which then grows to form a limited unbonded area at the glass edge. This reaction is limited and generally does not exceed more than 3/8" (9.5 mm). Edge blushing may be visible however does not affect the structural integrity of the laminated glass with respect to its ability to resist uniform loads.

## Coated Glass - Low-E or Reflective

Viracon's coated glass products comply with ASTM Standard C1376 Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Flat Glass.

## Inspection Guidelines

- **Pinholes** - Inspect glass from a distance of 10 ft. (3 m) in transmission, at a viewing angle of 90° to the specimen, against a bright uniform background. If a pinhole is readily apparent, the following criteria apply: Pinholes larger than 1/16" (1.6 mm) in diameter are not allowed in 80 percent of the central glass area. Pinholes larger than 3/32" (2.4 mm) are not allowed in the outer 20 percent of the glass area. No more than two readily apparent blemishes are allowed in a 3" (75 mm) diameter circle and no more than five readily apparent blemishes are allowed in a 12" (300 mm) diameter circle.
- **Uniformity** - When viewing coated glass from a minimum distance of 10 ft. (3 m), color variation may occur from one unit to another. This can be caused by variations within the float glass substrate and normal production variations, and this is not considered a defect. All Viracon commercial glass products conform to industry color standards.
- **Distortion** - Various factors involved in heat processing, insulating air spacers and frame binding may distort reflected objects viewed on the glass surface. These are not considered defects of the coated glass or the final fabricated product.

- **Scratches** - Inspect glass from a distance of 10 ft. (3 m). Scratches up to 2" (50 mm) are allowed in 80 percent central glass area, and scratches up to 3" (75 mm) are allowed in the outer area. Concentrated scratches or abraded areas are not allowed.

## DigitalDistinctions™ Glass

### Technical Requirements

- Maximum dimensions (Insulated and Monolithic Products): 84" x 165" (2134mm x 4191mm) or 96" x 144" (2438mm x 3658mm)
- Maximum dimensions (Laminated Products): 84" x 165" (2134mm x 4191mm)
- Minimum dimensions: 12" x 12" (305 mm x 305 mm)

Sample charges are based on the complexity of the project (if sample is required)

**ALL DIGITAL PRINTS MUST BE APPROVED BY THE ARCHITECT OR BY THE BUILDING OWNER AFTER VIEWING A FULL SIZE MOCK-UP. A WAIVER LETTER MUST BE SIGNED IF NO MOCK-UP IS APPROVED.**

### Additional Information

- Digitally printed glass is to be viewed from a distance of 15 feet under natural daylight conditions. Color and reflectance may vary when viewed under a uniform, opaque background. This is not considered a defect.
- Variations in perceived color may occur with any ceramic ink. Those variations will be more apparent with white or light colors than darker colors because of unavoidable light transmission. Furthermore, due to the inherent variations in ceramic ink thickness, light colors are more readily influenced by the colors of the materials installed behind the glass.
- While Viracon will take every precaution to control color uniformity, Viracon takes no responsibility for variations in color or thickness that are within quality standards.
- Pinholes, fisheyes, color concentrations, streaks from the printing process, and paint particles are allowed, undetectable from 15 feet.
- An indefinite border of up to 1/32" (0.8mm) is acceptable. An indefinite border refers to the sharpness of the print pattern and is dependent on the image printed. An indefinite border is characterized as 'ghosting', halo or saw-tooth print.
- A maximum of 1/32" (0.8mm) variation in dot, hole or line location is allowed.
- There will be a 2mm nominal clear edge (paint free) around all edges.
- There will be a 3/8" (9.525mm) clear edge (paint free) border required around all edges where coating deletion is required. Additional restrictions may apply.
- Images or patterns may be located up to 1/16" (1.6mm) off parallel from locating glass edge. Images or patterns may be up located up to 1/8" (3mm) off parallel from edges other than locating glass edge due to glass tolerances.
- All fabrication, such as cutting to overall dimensions, edgework, drilled holes, notching, and grinding shall be performed prior to applying the digital print.

## Images/Files

A signed document declaring that the Buyer has rights to any images or patterns that will be printed will be required. High resolution electronic design files must be supplied by the Buyer. Vector based files are highly preferred. Acceptable file types are EPS, PDF, JPEG, TIFF, AI, CDR, PSD, DWG, and DXF. Original file format preferred. Design files should be:

- Drawn to scale
- Show glass sizes or depict glass edges
- "As viewed from exterior."

Buyer shall be responsible for the accuracy of all documents, data, glass takeoffs, shop drawings, specifications, architectural drawings, and electronic design files furnished by Buyer to Viracon. Viracon shall not be liable for any errors or omissions in documents, data, glass takeoffs, shop drawings, specifications, architectural drawings, and electronic design files furnished by Buyer, including but not limited to drawings not drawn to scale, not accurately depicted glass sizes, not depicting glass edges, or that do not depict proper orientation of the glass.

## Silk-screened Glass

Viracon's silk-screened glass products comply with ASTM C 1048 Standard Specification for Heat Strengthened and Fully Tempered Flat Glass – Kind HS, Kind FT Coated and Uncoated, Condition B.

## Inspection Guidelines

- View silk-screened glass from a distance of 10 feet (3m) under natural daylight conditions. Pinholes larger than 1/16" (1.6mm) are not allowed if noticeable from a distance of 10 feet or greater. Color as well as opacity of the ceramic frit pattern may vary slightly due to paint thickness variations.
- **Pattern Orientation:** Patterns may be located up to 1/16" (1.6mm) off parallel from the locating glass edge. Due to glass dimensions and squareness tolerances, patterns may be up to 1/8" (3mm) off parallel from edges other than the locating glass edge.
- **Pattern Definition:** a print definition of 1/32" (0.8mm) indefinite border is acceptable.
- **Pattern Registry:** Maximum variation of +/- 1/32" (0.8mm) in dot, line or hole location is acceptable. Full coverage translucent frit is available with the following criteria:
  - Pinholes to 1/16" diameter, fisheyes, streaks from screening process and paint particles are allowed. Large clusters of close spacing of pinholes or other defects are not allowed in the central 80% of the glass area.
  - Color and uniformity may vary slightly due to variations in ceramic frit thickness.
  - Approval of a full-size mock-up at an 11 foot inspection distance and a 90-degree angle to glass surface against a bright uniform background is required.

- Not for use in interior applications

## **Spandrel Glass**

Viracon's spandrel glass products comply with ASTM C 1048 Standard Specification for Heat Strengthened and Fully Tempered Flat Glass – Kind HS, Kind FT Coated and Uncoated, Condition B

### **Inspection Guidelines**

View spandrel glass from a distance of 15 ft. (4.6 m) under natural daylight conditions. Color and reflectance may vary when viewed under a uniform, opaque background. This is not considered a defect.

When viewing spandrel glass under similar conditions, reflected pinholes and scratches are not considered defects if they are unobtrusive.

In structurally glazed applications, a clear edge may be visible. Contact Viracon's Architectural Inside Sales Department for more information.

Viracon reserves the right to change substrate glass suppliers. As a result, this may affect perceived colors of our Viraspan samples. Approval of all glass colors is based on 12" x 12" (305 mm x 305 mm) samples, which are ordered for each project.