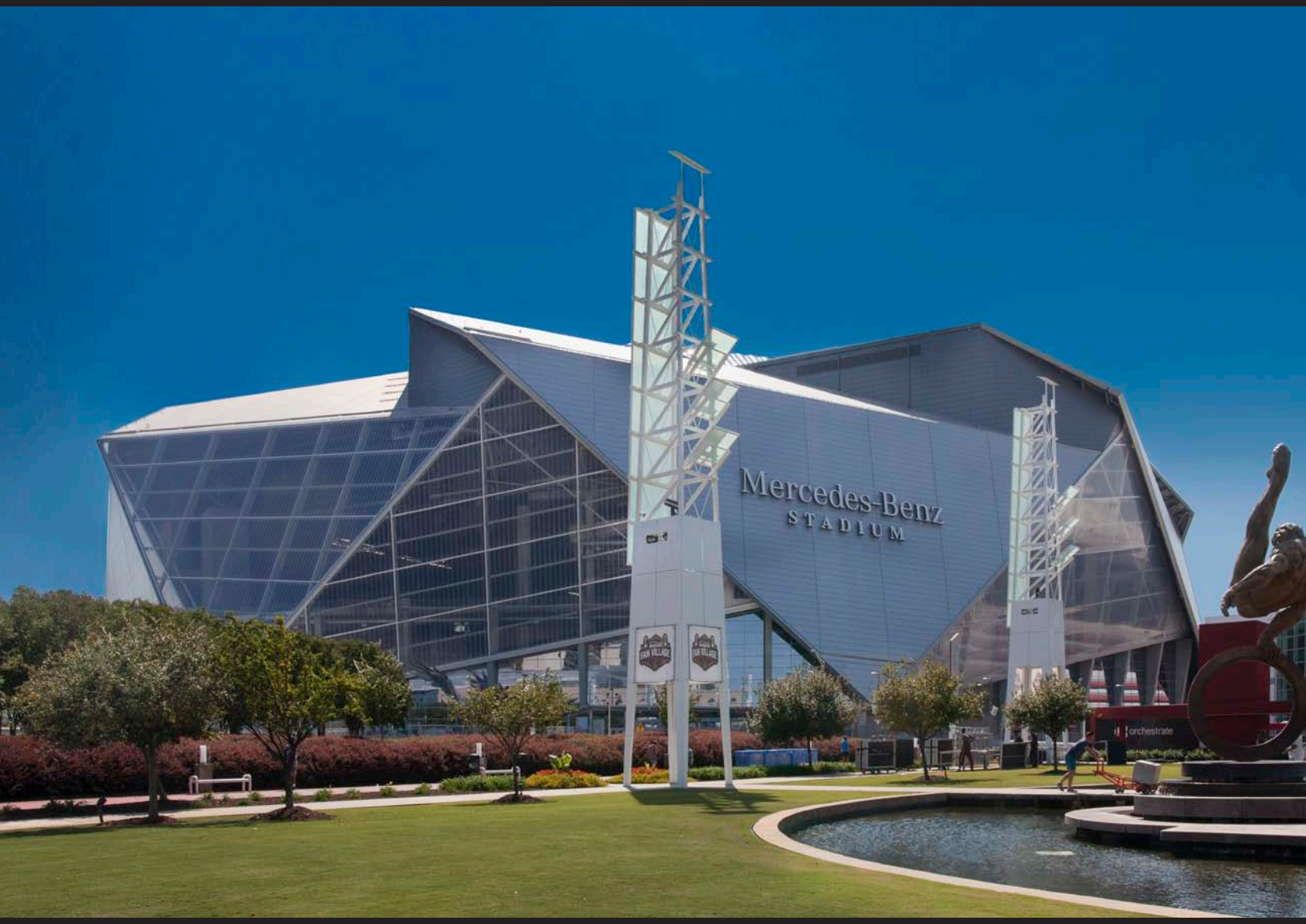
VIRACON®

GLASS IS EVERYTHING™

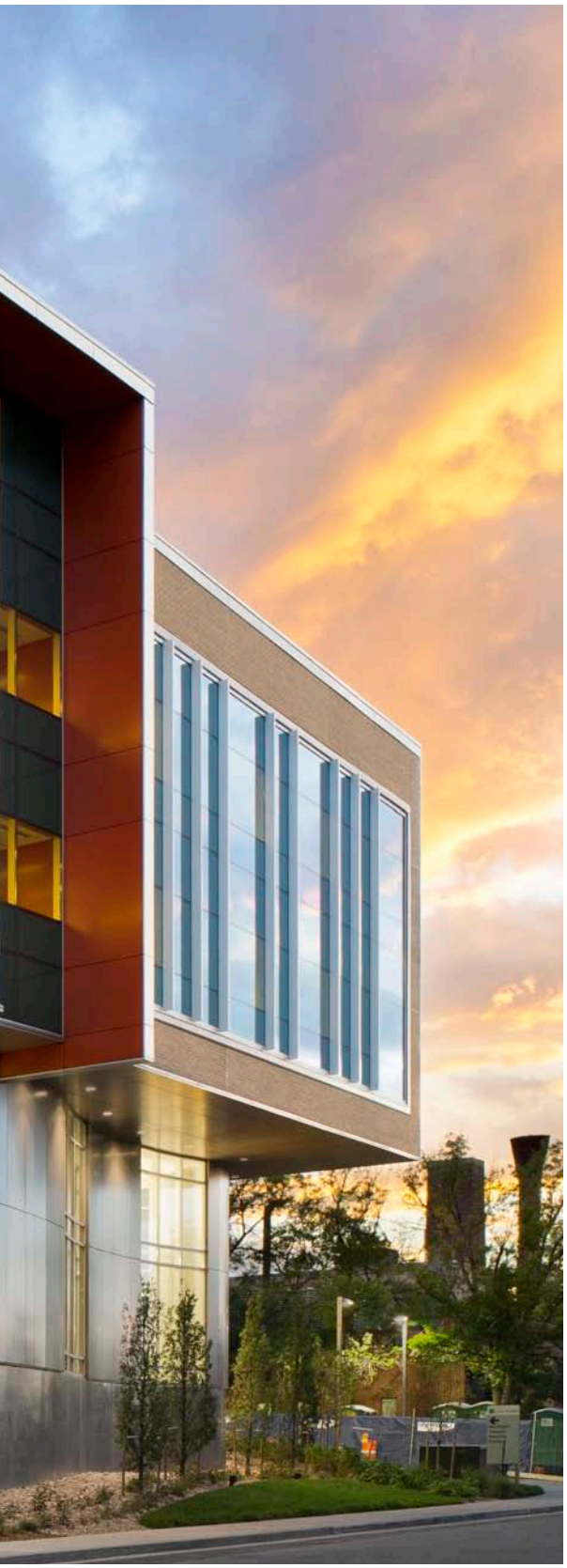


PRODUCT PORTFOLIO

CRAIG HOSPITAL (RENOVATION & EXPANSION)

LOCATION: ENGLEWOOD COLORADO // **GLASS TYPE:** VUE1-40, VE4-2M, VE1-2M // **ARCHITECT:** SMITHGROUPJJR, RTA ARCHITECTS

GLAZING CONTRACTOR: HARMON, INC // **PHOTOGRAPHER:** © COOPERTHWAITE PRODUCTIONS



MERCEDES-BENZ STADIUM (COVER)

LOCATION: ATLANTA GEORGIA

GLASS TYPE: VRE1-46

ARCHITECT: HELLMUTH OBATA & KASSABAUM, GOODE VANSLYKE ARCHITECTS
STANLEY BEAMAN & SEARS ARCHITECTS, TVSDESIGN

GLAZING CONTRACTOR: CROWN CORR, INC

PHOTOGRAPHER: © MIAMI IN FOCUS, INC

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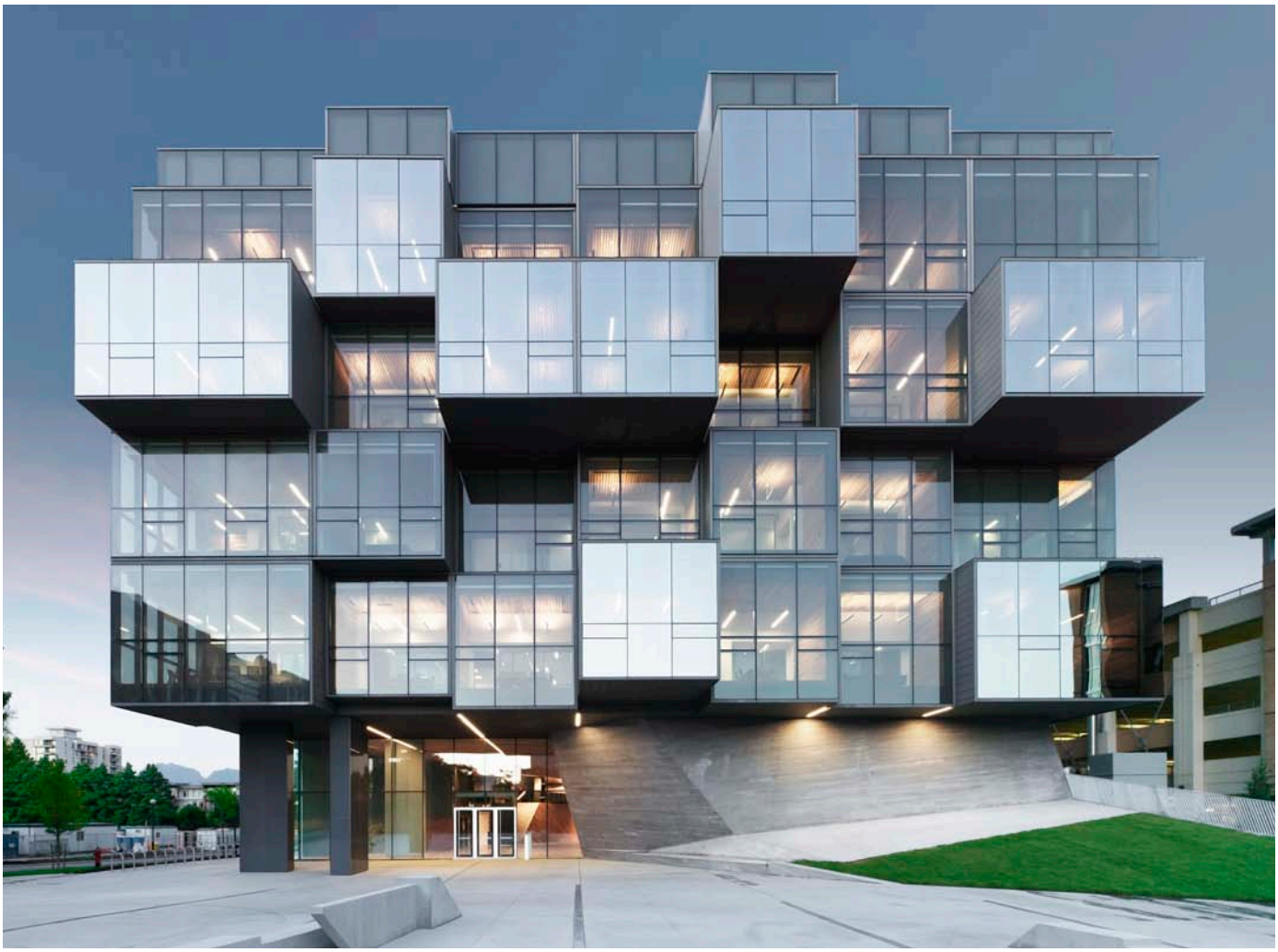


PHARMACEUTICAL SCIENCES BUILDING, UNIVERSITY OF BRITISH COLUMBIA

LOCATION: VANCOUVER BRITISH COLUMBIA // **GLASS TYPE:** VE1-2M, VE3-2M, VWP1-13 // **ARCHITECT:** SAUCIER + PERROTTE ARCHITECTES, HCMA ARCHITECTURE + DESIGN // **GLAZING CONTRACTOR:** ALUMINUM CURTAINWALL SYSTEMS // **PHOTOGRAPHER:** © MARC CRAMER

OUR MISSION

To deliver the highest quality, widest variety of customized architectural glass solutions for the creation of distinctive commercial buildings around the world.

Architectural glass fabricators may start out the same but that's where any similarity ends. It's what each fabricator brings to your project that makes all the difference.

From aesthetics, to strict environmental and energy specifications, to critical budget and delivery requirements, our sales and support teams will make a difference. The fact is, our wide selection of innovative architectural glazing options combined with specification assistance and technical expertise can help make your vision a reality. Challenge us, you'll see.

NEW FROM VIRACON

Viracon Thermal Spacer (VTS™)

Viracon's most superior warm edge spacer. VTS™ is a proprietary formulation consisting of black thermoplastic with integrated desiccant and primary seal that is chemically bonded directly to the glass and secondary sealant.

VTS's superior seal integrity supported with a Special 12 Year Limited Warranty

Enhanced VRE and Enhanced VE (VZE-SC)

VZRE1-65
SHGC 0.32
VLT 52%

VZRE1-59
SHGC 0.29
VLT 47%

VZRE1-54
SHGC 0.26
VLT 42%

VZRE1-46
SHGC 0.24
VLT 38%

VZE-48
SHGC 0.29
VLT 42%

By integrating innovative coatings development and manufacturing processes Viracon has enhanced the performance of some of its bestselling coatings.

VRE-43

VNE24-53
SHGC 0.23
VLT 52%

VRE-43 delivers a Visible Light Transmission (VLT) of 43%, Solar Heat Gain Coefficient (SHGC) of 0.22 and Exterior Reflectivity of 25% on clear glass combined with a neutral appearance, it's a coating that meets all of your aesthetic and performance requirements.

VNE-53

VRE1-43
SHGC 0.22
VLT 43%

VRE-53 features a silver-neutral exterior appearance with an impressive balance of visible light transmission and solar heat gain coefficient. With a Visible Light Transmission (VLT) of 52% and a Solar Heat Gain Coefficient (SHGC) of 0.23 on low-iron glass, you don't have to sacrifice light for performance.

TIME SQUARE CENTER PANAMA (WIP)

LOCATION: PANAMA CITY PANAMA // **GLASS TYPE:** VRE26-38 // **ARCHITECT:** A&Z DEVELOPERS

GLAZING CONTRACTOR: INVERSIONES PARQUE DEL ESTE K36 // **PHOTOGRAPHER:** © VIRACON, JUAN SCHNITZLER

Viracon offers multiple configurations of insulating, laminated and combinations of insulating laminated glass units. When specifying glass, it is important to select and clearly outline the configuration as well as each individual component of the glass unit. Viracon has a vast selection of coatings, glass substrates and other components. You will want to select the most appropriate options for your application before developing a glass specification.

In addition to the components needed to fabricate a glass type, there are a variety of enhancements available to further customize your glass selection. These options can enhance the performance, appearance or a combination of both.

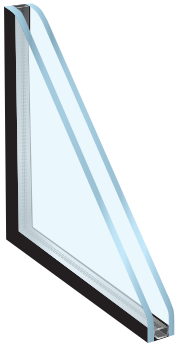
MONOLITHIC GLASS

http://viracon.com/page/monolithic

Monolithic glass is a single lite of glass that is typically used in the construction of the final Viracon fabricated product. A monolithic glass product is enhanced for strength, design and aesthetics. Additionally, monolithic glass is used to fabricate Viracon insulating and laminated glass products.

INSULATING GLASS

http://viracon.com/page/insulating-glass

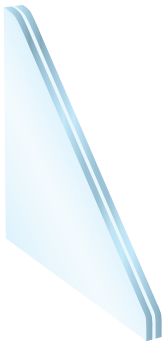


Insulating glass consists of two or more plies of glass enclosed by a spacer. Inherently, insulating glass increases a window's thermal performance by reducing the heat gain or loss.

At Viracon, insulating glass units are sealed with a primary seal and a secondary seal of silicone. Insulating units are designed to absorb stress on the unit caused by thermal expansion and pressure, provide a barrier to water and moisture infiltration, provide a gas-tight seal to prevent loss of any specialty gas fill and create a barrier that reduces condensation.

LAMINATED GLASS

http://viracon.com/page/laminated-glass



Viracon laminated glass features an interlayer bonded between two or more glass plies using heat and pressure. The glass plies may be of equal or unequal thickness. Laminated glass is a durable, high-performance glazing product, designed to remain integral in the opening should glass damage occur.

Often laminated glass is required to provide protection against man-made threats or natural disasters such as hurricanes, bomb blasts or forcible-entry.

SINGLE SOURCE

Offering over a million innovative products supported by a single-source warranty, reliable service, valuable advice and technical expertise.

PHILLIPS 66 CORPORATE OFFICE

LOCATION: HOUSTON TEXAS // **GLASS TYPE:** VNE19-63 // **ARCHITECT:** HOK

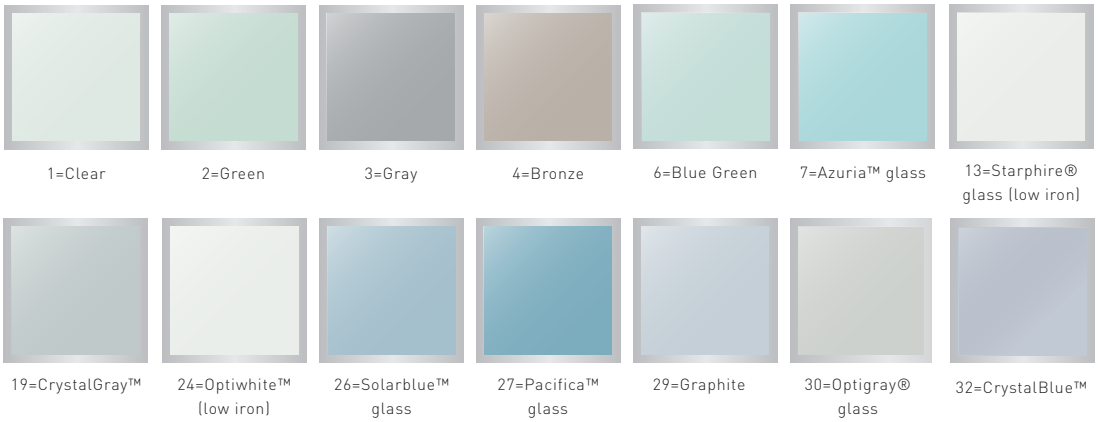
GLAZING CONTRACTOR: ARROWALL COMPANY // **PHOTOGRAPHER:** © LYON PHOTOGRAPHY, INC

GLASS SUBSTRATES

http://www.viracon.com/page/substrates

Glass substrates are the individual plies of glass used to fabricate glass units and may also be referred to as float glass, raw glass or glass lites. Glass substrate options include clear, tinted and low iron. Each substrate is available in a variety of thicknesses and can have Viracon's reflective or Low-E coatings, as well as digital or silk-screen print applied. Viracon sources glass substrates from a variety of float glass manufacturers and has access to their primary and unique substrates, providing the broadest offering to select from.

Available Colors



For details regarding the substrate numbering system and how it applies to Viracon Nomenclature, see page 22.

Glass Substrate Thickness

All glass substrates are available 1/4" (6mm) thick. Clear and each of the low iron substrates are also available in thicknesses of 3/16" (5mm), 5/16" (8mm), 3/8" (10mm) and 1/2" (12mm). For tinted substrates, specialty substrates or other thicknesses of clear or low iron glass substrates, please check with Viracon for availability.

Optiwhite is trademarks of Pilkington. CrystalBlue and CrystalGray are trademarks of Guardian Industries. Azuria, Solarblue, Pacifica, Starphire and Optigray are registered trademarks of Vitro.

COATINGS

http://www.viracon.com/page/coatings

Coatings are thin layers of metal applied to glass to improve solar performance. Viracon offers a broad selection of both reflective and Low-E coatings. Our coatings can be applied to clear or tinted glass substrates. In addition, a digital print or silk-screen pattern can be applied to the same surface as the coating for excellent solar performance and appearance.

Appearance and Performance

The specific glass coating or substrate needed for a given project is typically dictated by a required solar performance or a desired appearance. Viracon's "Search By Appearance" and "Search By Performance" tools simplify the process of selecting specific glass substrate and coating combinations.

http://viracon.com/search-by-appearance

http://viracon.com/search-by-performance

COATING AVAILABILITY BY PRODUCT CONFIGURATION

	Configurations								
Coatings	1/4" Monolithic	9/16" Laminated	1" Insulating	1-5/16" Insulating Laminated	1-5/16" Laminated Insulating (coating #2)	1-5/16" Laminated Insulating (coating #4)	1-3/4" Triple Insulating	1-5/8" Double Laminated Insulating (coating #2)	1-5/8" Double Laminated Insulating (coating #4)
VE-42		YES	YES	YES	YES	YES	YES	YES	YES
VE-45			YES	YES			YES		
VE-48		YES	YES	YES	YES	YES	YES	YES	YES
VE-2M			YES	YES		YES	YES		YES
VE-85		YES	YES	YES	YES	YES	YES	YES	YES
VLE-39		YES			YES			YES	
VLE-47		YES			YES			YES	
VLE-51		YES			YES			YES	
VLE-57		YES			YES			YES	
VLE-70		YES			YES			YES	
VNE-53			YES	YES		YES	YES		YES
VNE-63			YES	YES		YES	YES		YES
VRE-38			YES	YES		YES	YES		YES
VRE-43			YES	YES		YES	YES		YES
VRE-46			YES	YES		YES	YES		YES
VRE-54			YES	YES		YES	YES		YES
VRE-59			YES	YES		YES	YES		YES
VRE-65			YES	YES		YES	YES		YES
VP-13	YES	YES	YES	YES	YES	YES	YES	YES	YES
VP-18	YES	YES	YES	YES	YES	YES	YES	YES	YES
VP-22	YES	YES	YES	YES	YES	YES	YES	YES	YES
VS-08	YES	YES	YES	YES	YES	YES	YES	YES	YES
VS-14	YES	YES	YES	YES	YES	YES	YES	YES	YES
VS-20	YES	YES	YES	YES	YES	YES	YES	YES	YES
VUE-30			YES	YES		YES	YES		YES
VUE-40			YES	YES		YES	YES		YES
VUE-50			YES	YES		YES	YES		YES
VZE-42			YES	YES	YES	YES		YES	YES
VZE-48			YES	YES	YES	YES		YES	YES
VZRE-38			YES	YES		YES			YES
VZRE-46			YES	YES		YES			YES
VZRE-54			YES	YES		YES			YES
VZRE-59			YES	YES		YES			YES
VZRE-65			YES	YES		YES			YES

▶ *All laminated glass shown above uses a PVB interlayer, see Coating Availability for Laminated Configuration for interlayers other than PVB, http://www.viracon.com/page/coatings. Refer to page 22 for Viracon Nomenclature information.*

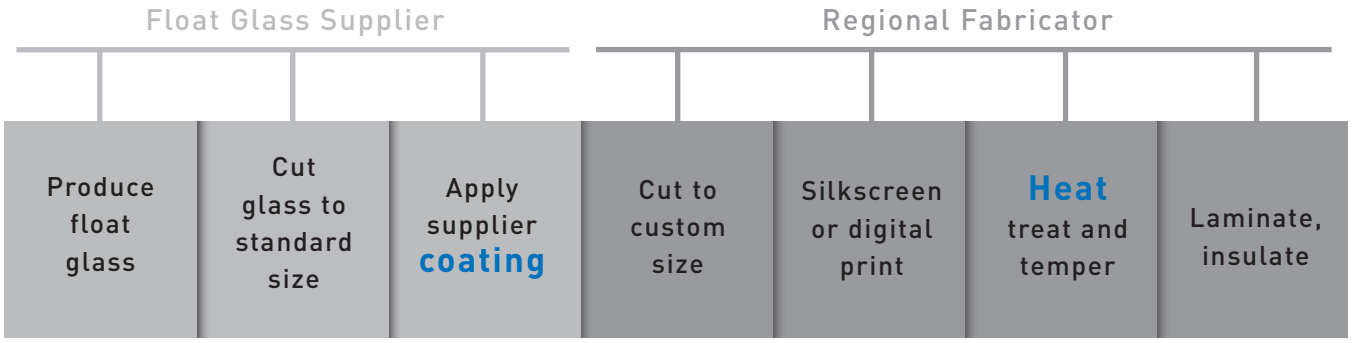
COATING AVAILABILITY FOR LAMINATED CONFIGURATION

Laminated Configuration with an Interlayer other than PVB					
Coatings	Saflex® SilentGlass Acoustic	SentryGlas®	StormGuard®	Saflex® Storm	Vanceva® Color*
VE-42		YES	YES	YES	YES
VE-45					
VE-48		YES	YES	YES	YES
VE-2M					
VE-85			YES	YES	YES
VLE-39			YES	YES	YES
VLE-47			YES	YES	YES
VLE-51			YES	YES	YES
VLE-57			YES	YES	YES
VLE-70			YES	YES	YES
VNE-53					
VNE-63					
VRE-38					
VRE-43					
VRE-46					
VRE-54					
VRE-59					
VRE-65					
VP-13		YES	YES	YES	YES
VP-18		YES	YES	YES	YES
VP-22		YES	YES	YES	YES
VS-08		YES	YES	YES	YES
VS-14		YES	YES	YES	YES
VS-20		YES	YES	YES	YES
VUE-30					
VUE-40					
VUE-50					
VZE-42					
VZE-48					
VZRE-38					
VZRE-46					
VZRE-54					
VZRE-59					
VZRE-65					

**Due to coating and Vanceva Color base interlayer properties, a clear PVB interlayer must be placed between the coating and the colored interlayer.*

HEATING AND COATING - THE VIRACON DIFFERENCE

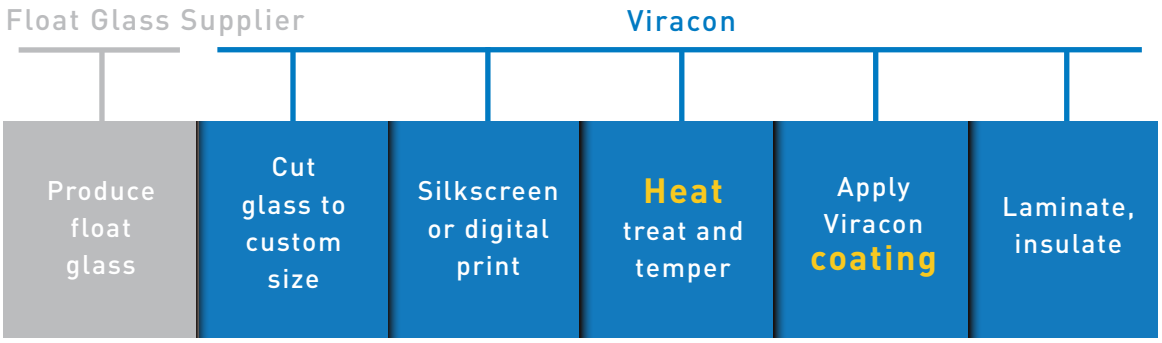
The conventional fabrication model for regional fabricators is illustrated in the first image below. A float glass manufacturer produces the raw glass, cuts it and applies one of their standard coatings. The manufacturer supplies this pre-coated glass to regional fabricators, who then execute the various fabrication processes required to fill customer orders. In this conventional model the glass is coated prior to heat treatment. The inherent attribute of a glass coating is to deflect heat. Coating glass before heat treating it can cause more variance in the glass' absorption of the heat, resulting in less control of the glass flatness.



Conventional Post-Temperable Model

Pre-Temperable Coating Process

Viracon's fabrication model, illustrated below, is different and the final results are different. Viracon invests in glass coating equipment and internal research and development of proprietary glass coatings. Because of these investments, Viracon is able to purchase uncoated raw glass from the float glass manufacturer. Viracon executes the fabrication processes as specified by customer orders: cutting the glass to the custom sizes, applying print then heat treating the glass prior to applying a high performance coating. Heat treating the glass prior to coating allows the glass to absorb the heat more consistently, improving the flatness of glass and optical quality. Viracon's unique ability to apply solar coatings after the heat treatment process also improves color consistency.



Viracon Pre-Temperable Model

THE ONLY **Architectural glass fabricator in North America that develops and produces its own high performance glass coatings.**

HEAT TREATMENT

http://www.viracon.com/page/heat-treatment

Heat-treated glass is a term used to describe glass that has been processed through a tempering furnace to alter its strength characteristics, to provide greater resistance to thermal and mechanical stresses and achieve specific break patterns for safety glazing applications as compared to annealed glass.

- **Annealed (AN)**
  Raw glass that has not been heat treated is annealed glass.
- **Heat Strengthened (HS)**
  Heat-strengthened glass is twice as strong as annealed glass of the same thickness, size and type. If broken, heat-strengthened glass will break into large shards similar to annealed glass. Because of this, the tendency for the glass to vacate the opening is reduced.
- **Fully Tempered (FT)**
  Glass with fully tempered surfaces is typically four times stronger than annealed glass and two times as strong as heat-strengthened glass of the same thickness, size and type. In the event that fully tempered glass is broken, it will break into fairly small pieces, reducing the chance for injury. The small glass shards make it more likely that the glass will become separated from the opening.
- **Heat Soaking**
  Fully tempered glass may break without warning due to the expansion of nickel sulfide inclusions (NiS) present within float glass. To avoid the risk of spontaneous breakage in fully tempered glass Viracon can perform a heat soak test. For more information go to http://www.viracon.com/pdf/TTHeatSoak.pdf

CENTRUM INTELLIGENCE COMMUNITY CAMPUS

LOCATION: BETHESDA MARYLAND // **GLASS TYPE:** VRE1-38 // **ARCHITECT:** LEO A DALY
GLAZING CONTRACTOR: TSI EXTERIOR WALL SYSTEMS // **PHOTOGRAPHER:** © LEO A DALY

BIG GLASS

http://www.viracon.com/page/bigglass

Viracon offers BIG Glass in multiple configurations along with a wide selection of components and enhancements. This flexibility will allow your design aesthetic to be realized while still meeting or exceeding the performance requirements that your project demands. Viracon's BIG Glass offering meets or exceeds all applicable ASTM standards with the quality that you've come to expect from Viracon.

Not Only Looks Great, It Also Pays For Itself

Besides providing more access to natural light, building owners and developers should consider BIG Glass from a cost perspective. While BIG Glass is relatively competitive to standard size glass from an initial installation perspective, over time, it earns high marks for reducing energy and maintenance costs.

For example, if the façade of a new building requires 100,000 square feet of glass:

- With standard size glass, the cost of the glass will be approximately 1.7% of the entire project cost.
- If the building owner elects to use BIG Glass for 5,000 square foot of the facade, such as for an atrium, the total cost of the standard and BIG Glass will be 1.8% of the entire project cost.
- If the owner decides to do all 100,000 square feet with BIG Glass, the cost will be approximately 3.2% of a building's total cost.

Warranty

- **Ten-Year Warranty**
  Aluminum, Stainless Steel and ExtremEdge™ Spacers
- **Twelve-Year Warranty**
  VTS

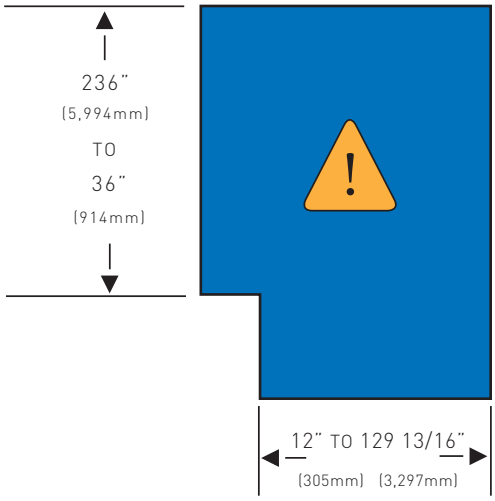
236"
(5994mm)

130"
(3302mm)

MIN - MAX SIZE GUIDELINES

http://www.viracon.com/page/sizes

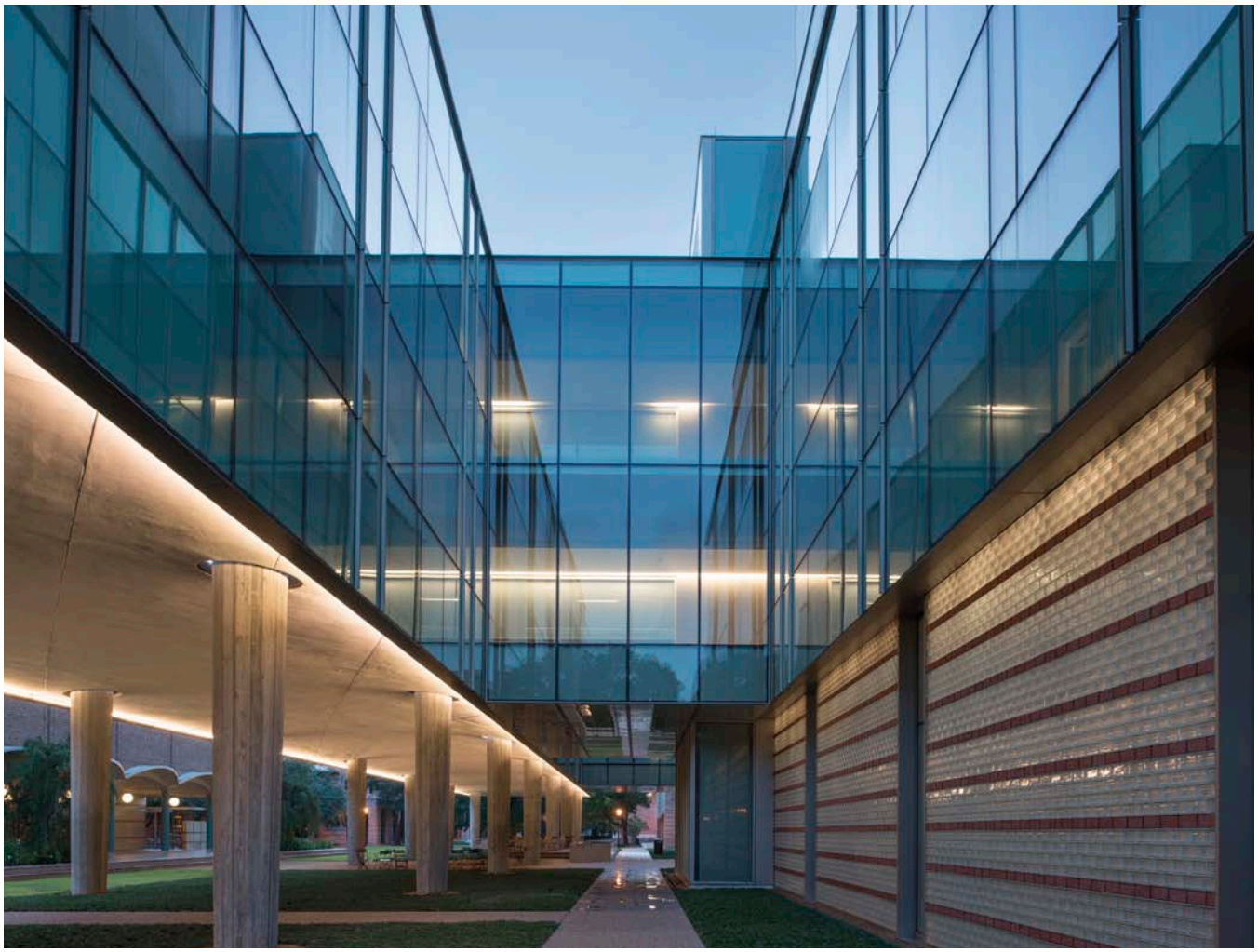
Glass Sizes



Units >70 sqft should be reviewed for appropriate glass strength and deflection analysis.

Configurations: >50 square foot units must be heat treated.

Components & Enhancements:
go to http://www.viracon.com/page/sizes for restrictions.



BROCKMAN HALL FOR PHYSICS, RICE UNIVERSITY

LOCATION: HOUSTON, TEXAS // **GLASS TYPE:** VE-2M // **ARCHITECT:** KIERANTIMBERLAKE

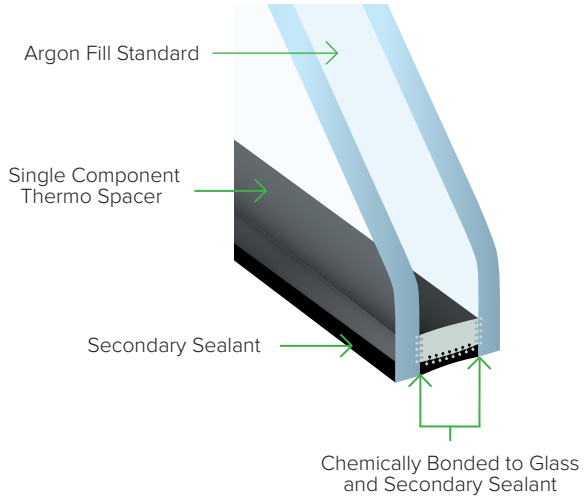
GLAZING CONTRACTOR: ADMIRAL GLASS CO. // **PHOTOGRAPHER:** © MARK SCHEYER

SPACER

http://www.viracon.com/page/spacer

An insulating glass spacer is placed within the unit to separate the plies of glass. Aluminum, Stainless Steel, ExtremEdge™ and VTS™ are the spacer material options available from Viracon.

- **Aluminum** has historically been the most-used spacer because of its malleability and availability.
- **Stainless steel** is one warm edge spacer option offered by Viracon. Stainless steel is less conductive than aluminum and has one-tenth the thermal conductivity of aluminum.
- **ExtremEdge™** is a warm edge spacer that consists of a biopolymer in the cross section area which is encapsulated in stainless steel. This combination further reduces the edge conductivity and thus reduces heat transfer into the building.
- **Viracon Thermal Spacer VTS™**



VTS is an exclusive formulation of a black thermoplastic with integrated desiccant and polyisobutylene (PIB) that is chemically bonded to the glass and the secondary silicone sealant. This exclusive technology has been engineered to outperform other spacers and edge seal systems.

VTS delivers:

- Superior Seal Integrity
- Superior Thermal Performance
- Superior Aesthetics

Availability

Please use this chart as a guideline when selecting spacer color, material and thickness.

		Aluminum		Stainless Steel		ExtremEdge™		VTS™
Nominal Thickness		Black	Mill Finish	Black	Mill Finish	Black	Mill Finish	Black
5/16″	7.5mm	YES						YES
3/8″	9mm	YES	YES		YES			YES
7/16″	11mm	YES						YES
15/32″	12mm	YES	YES		YES			YES
1/2″	13.2mm	YES	YES	YES	YES			YES
17/32″	13.5mm					YES	YES	
9/16″	14mm	YES						YES
5/8″	15.5mm	YES	YES		YES			YES
3/4″	18.5mm	YES	YES	YES	YES			YES
7/8″	22mm	YES	YES					
1″	25.4mm	YES	YES		YES			

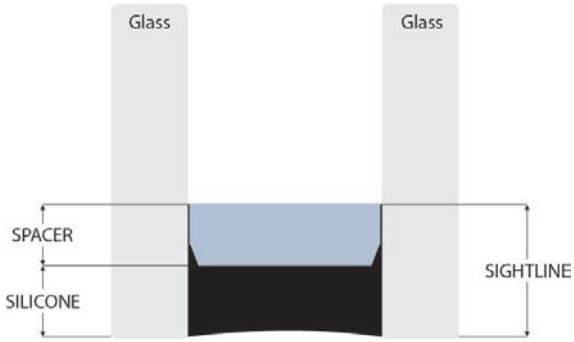
SILICONE

http://www.viracon.com/page/silicone

Viracon's insulating glass units configured with aluminum, stainless steel or the ExtremEdge spacers are constructed with a dual seal configuration where polyisobutylene (PIB) is the primary seal and structural silicone is the secondary seal. Viracon's insulating glass units configured with VTS are constructed with a single component spacer that is chemically bonded to the glass and secondary sealant, eliminating the need for added vapor barriers, acrylic adhesives, additional desiccant or PIB.

Sightline

All insulating units have a sightline. The sightline is the edge dimension of the insulating glass unit covered by the spacer. Viracon offers a Deflection and Sightline Reference Guide, to assist in identifying the appropriate sightline based on glass size and load. Contact Viracon for sightline requirements specific to your project.
https://www.viracon.com/images/pdf/Deflection+SightlineChart-May2016.pdf



Color

Black is Viracon's standard sealant color for insulating glass. When black is specified, both the PIB and silicone will be black as is the case when gray is specified. Gray is available for an additional charge. Both colors of sealant provide the same structural performance and long-term durability expected of the primary and secondary seal of our insulating glass.

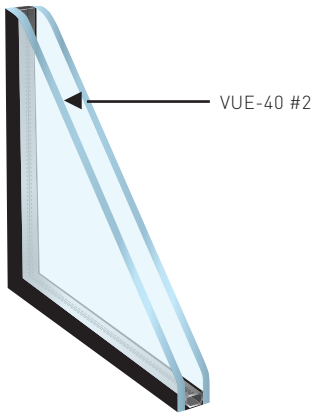
ARGON

http://www.viracon.com/page/argon

Argon is an invisible, nontoxic gas with lower thermal conductivity than air. It can be used in place of air within an insulating unit to improve thermal performance (u-value). Argon gas alone is not enough to meet energy requirements. It should be specified in conjunction with a low-e coating in order to provide optimal thermal performance.

1" VUE1-40 INSULATING

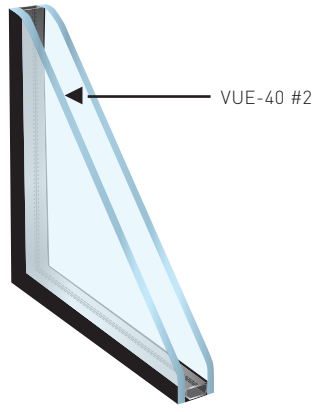
1/4" (6mm) clear with VUE-40 #2
1/2" (13.2mm) airspace
1/4" (6mm) clear



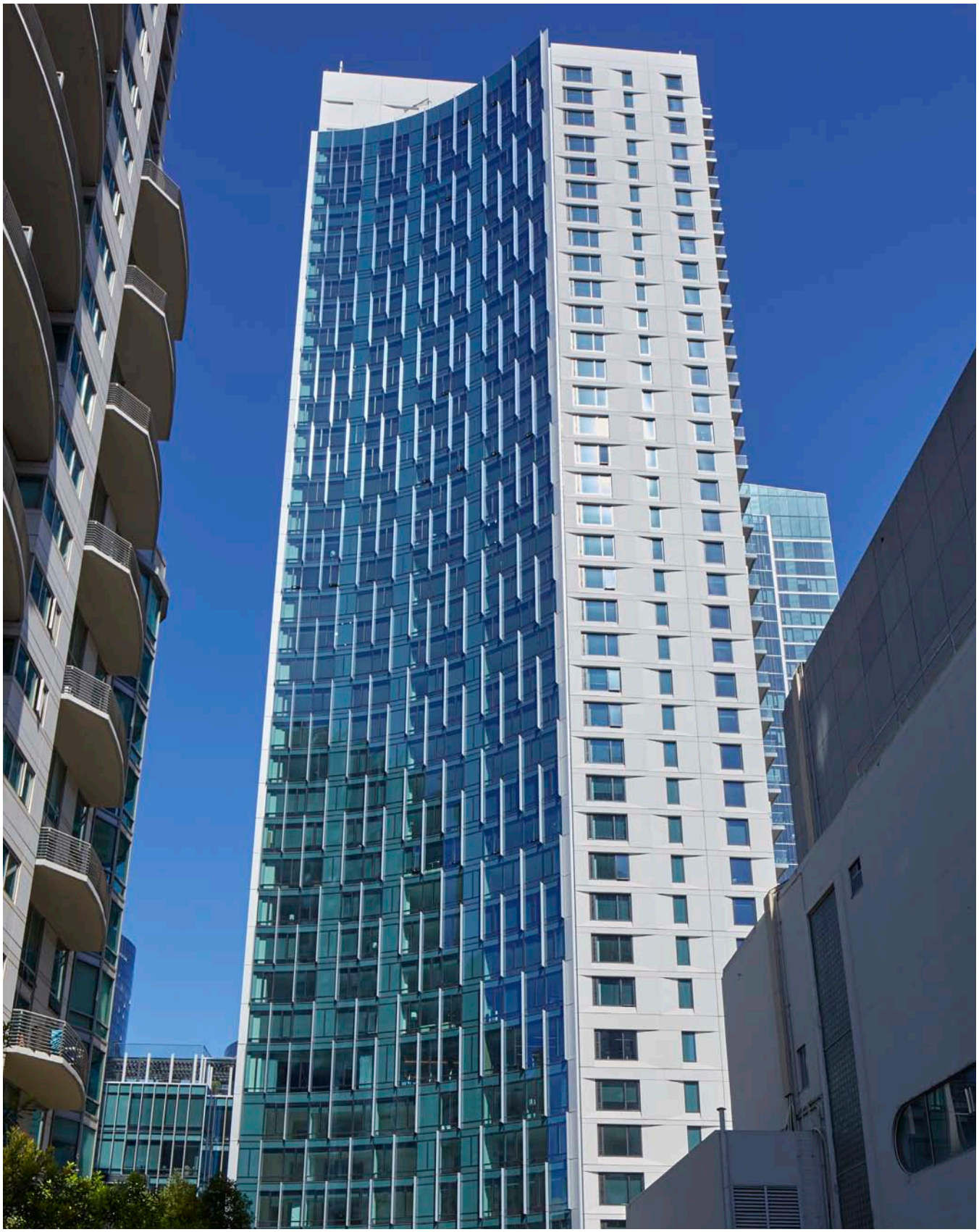
VLT	40%
Winter u-value	0.29
Summer u-value	0.26
SHGC	0.22

1" VUE1-40 INSULATING

1/4" (6mm) clear with VUE-40 #2
1/2" (13.2mm) **argon** filled space
1/4" (6mm) clear



VLT	40%
Winter u-value	0.25
Summer u-value	0.21
SHGC	0.21



340 FREMONT

LOCATION: SAN FRANCISCO CALIFORNIA // **GLASS TYPE:** VUE1-50 // **ARCHITECT:** HANDEL ARCHITECTS

GLAZING CONTRACTOR: ARCHITECTURAL GLASS & ALUMINUM CO. // **PHOTOGRAPHER:** © GREG WEST

INTERLAYER

http://www.viracon.com/page/interlayer

Interlayers are used to permanently bond two plies of glass in a laminated configuration.

Laminated Glass Applications

Acoustic – provide sound damping.

Aesthetic – selection of color and opacity not achievable with coatings, substrates, printed or spandrel.

Electronic Eavesdropping – protect private conversation or boardroom discussions.

Blast-Mitigating – help mitigate the effects of air-blast attacks.

Hurricane-Resistant – meet building code requirements of Florida and other coastal regions.

Safety – architectural glass to meet industry safety standards for glazing materials.

Ultraviolet Protection – provides up to 99% UV light blockage at wavelengths of 300-380 nanometers.

Interlayer Options

Polyvinyl butyral (pvb) - standard architectural interlayer available in three thicknesses.

Saflex® SilentGlass Acoustic – a three layer system designed to decouple and disseminate sound waves for superior sound damping performance.

SentryGlas® - an ionoplast interlayer bonded directly between two layers of glass for superior protection. The rigid interlayer minimizes deflection.

Level E - SentryGlas® - a specialized interlayer combination that is used for Level E hurricane applications.

StormGuard® - an enhanced polyvinyl butyral (pvb) interlayer which provides excellent adhesion to glass and optimum performance for large missile hurricane-resistant applications.

Level E - StormGuard® - a specialized interlayer combination that is used for Level E hurricane applications.

Saflex® Storm - a pvb / pet film / pvb composite laminated between two plies of glass. The composition provides the impact resistance of pvb and the tear resistance of a polyethylene terephthalate (pet) film.

Vanceva® Color – interlayer system made up of base colors and a range of white interlayers that can be combined to achieve varying layers of translucency and color.

Solar Performance

The solar performance of a glass unit results from the configuration of the unit along with the thickness of the glass used. Altering the thickness of an interlayer in a laminated glass unit, will have an insignificant effect on performance data.

Interlayers and Coatings

Each interlayer has different availability with each of Viracon's coatings. For additional information regarding coating and interlayer compatibility, see the coatings component page 10.

DESIGN FLEXIBILITY

The widest range of custom glass products, offering design flexibility and optimum performance.

BROOKLYN HEALTH CENTER

LOCATION: BROOKLYN NEW YORK // **GLASS TYPE:** VRE13-59 // **ARCHITECT:** FRANCIS CAUFFMAN

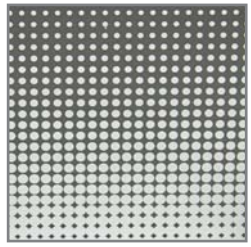
GLAZING CONTRACTOR: EFCO CORPORATION // **PHOTOGRAPHER:** © TERRY WIECKERT

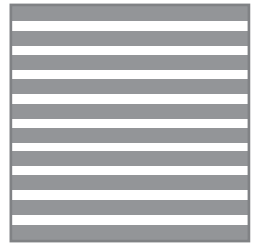
DIGITALDISTINCTIONS™

http://www.viracon.com/page/digitaldistinctions

DigitalDistinctions™ by Viracon combines the durability of ceramic inks with the versatility of digital printing into one proven solution for all glass-printing applications. You can design and print a vast number of colors on glass with complete predictability, repeatability and ceramic ink durability. Plus, you'll enjoy the benefits of UV resistance, transparency, and scratch resistance, while applying Viracon's solar control coatings directly over the digital image.

In addition, digital in-glass printing enhances the functionality of glass and the energy performance of your building by optimizing light diffusion and transmission, energy efficiency, solar control and the support of carbon emission reduction.



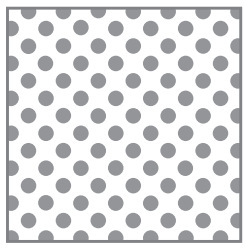
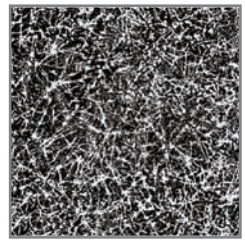
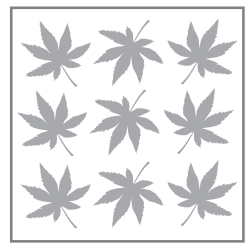
Standard and custom patterns can be digitally printed in a vast array of colors by mixing the six basic ink colors: black, white, green, blue, red and orange-yellow.

SILK-SCREEN

http://www.viracon.com/page/silkscreen

Silk-screening ceramic frit onto glass lets a designer create a subtle or bold look for a building using patterns and color. Silk-screened glass improves solar control performance and can be combined with clear or tinted glass substrates, as well as with high-performance coatings to reduce glare and decrease solar transmission.

Viracon offers a variety of standard Viraspan™ Design patterns as well as the ability to customize patterns for your design.

SPANDREL

http://www.viracon.com/page/spandrel

Spandrel is the panel(s) of a wall located between vision areas of windows, which conceal structural columns floors and shear walls. For spandrel applications Viracon offers Viraspan, a factory-applied, fire-fused ceramic frit paint for use with monolithic or insulating glass and in some laminated glass configurations. A high performance coating on the #2 surface of the laminate is required for units composed with full coverage Viraspan on the #4 surface.

EDGEWORK, HOLES AND NOTCHES

http://www.viracon.com/page/edgework
http://www.viracon.com/page/holes
http://www.viracon.com/page/notches

Viracon gives you options when it comes to glass edgework, holes and notches.

- Edgework types include: Seamed, Flat Belt Ground or Flat Belt Seamed, Flat Ground, Flat Polished or Mitered Edges.
- Hole drilling capabilities start at 1/4 inch and can include up to ten holes in a single lite of glass.

SHAPES AND PATTERN CUTS

http://www.viracon.com/pdf/CustomerPatternRefGuide.pdf

Pattern Reference Guide - This document includes examples of all patterns / shapes to use as reference when ordering glass. Viracon has the capability to cut glass lites to a specific pattern or shape. Please contact Viracon to discuss the capability of incorporating pattern glass lites into the final glass unit you desire; special approval may be required.

WARRANTIES

http://www.viracon.com/page/warranties

Viracon's Standard Ten-Year Limited Warranty ("Limited Warranty") applies to the Viracon products listed below:

- Tempered and Heat Strengthened Glass
- Viraspan™ Ceramic Frit Silkscreened and Spandrel Glass
- High-Performance Coated Glass
- Insulating Glass Unit (Dual Seal Unit)
- Insulating Glass Structural Glazing
- Structural Glazing of Metal Extrusions
- Laminated Glass and Laminated Glass Sloped Glazing

A Special Twelve-Year Limited Warranty applies to Viracon Thermal Spacer (VTS).

A Heat Soaked Tempered Glass Standard Limited Warranty applies to glass that has been heat soaked.

WEBSITE

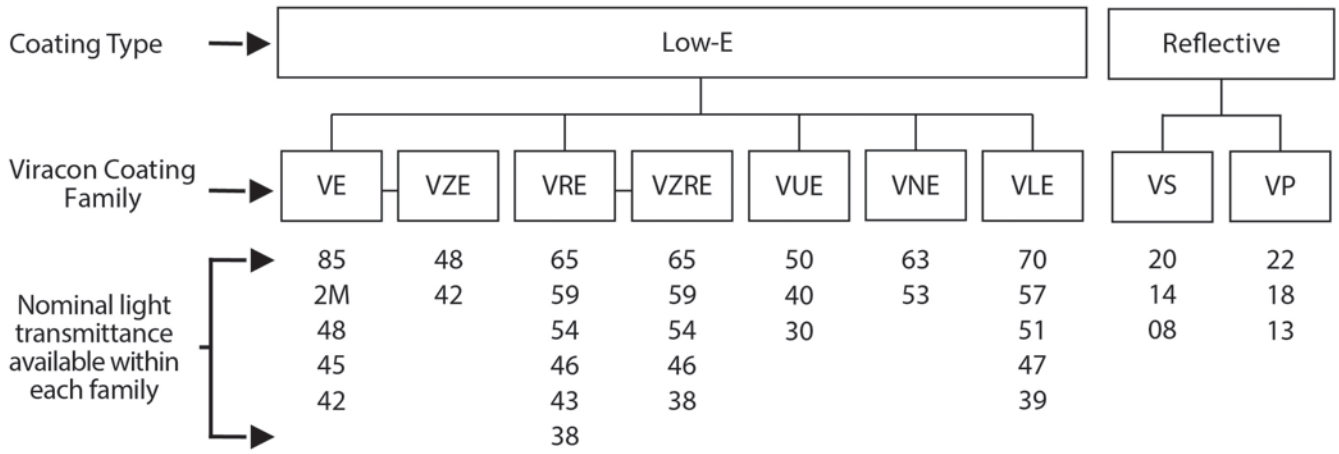
Visit www.viracon.com for expanded content about our products, resources, performance data, company, careers and more. The project gallery showcases numerous examples of products, including these featured in this product guide.

VIRACON NOMENCLATURE

Viracon utilizes an alphanumeric code to identify a specific coated glass product. Glass coatings and substrates are options to be selected during the specification of the glass configuration. Coatings and substrates have independent codes: coatings are identified by alpha codes i.e. VE, VRE, VNE, etc. and glass substrates are identified by numeric codes i.e. 1, 2, 3, 11, 26, etc. To specify a desired glass product the alpha and numeric codes are strung together.

For example VE1-85 is a glass product part number that is comprised of the following:

- **VE1-85:** The alpha portion of the code represents the coating family, in this example the VE coating family.
  Go to http://www.viracon.com/page/coatings to see coating family options.
- **VE1-85:** The number immediately following the alpha code identifies the glass substrate that the selected coating is applied to.
  Go to http://www.viracon.com/page/substrates to see substrate options and their respective numeric codes.
- **VE1-85:** The final numeric series after the hyphen is a manufacturing part number assigned to an individual coating within the coating family selected. Historically this number represented the visible light transmittance of that specific coating. As Viracon's coating portfolio continues to grow, this last set of numeric code is becoming a generic part number that doesn't necessarily correlate to a performance attribute.
  Go to http://www.viracon.com/page/coatings to see coating options and specific product numbers corresponding to coating families.



This nomenclature is meant to aid in specifying our fabricated glass products. In a glass product specification, it is important to also include an outline including each component of the glass unit.

EXAMPLE SPECIFICATION

1. 1" VE1-85 Insulating Coated Glass as manufactured by Viracon.
   a. Exterior Glass Ply: 1/4" Clear Heat Strengthened
   b. Coating: VE-85 on #2 Surface
   c. Space: 1/2" aluminum, black, air filled
   d. Silicone: black
   e. Interior Glass Ply: 1/4" Clear Heat Strengthened
2. Performance Requirements
   a. Visible Light Transmittance: 76%
   b. Exterior (Vis-Out) Reflectance: 12%
   c. Winter U-Value: 0.31
   d. Summer U-Value: 0.29
   e. Shading Coefficient: 0.63
   f. Solar Heat Gain Coefficient: 0.54

VIRACON®

Architectural Glass Solutions for Your Next Landmark Project
Start By Visiting viracon.com or By Calling 800.533.2080.

The information contained in this publication is presented in good faith. It is believed to be accurate at the time of publication. Viracon reserves the right to change product specifications without notice and without incurring obligation.

viracon.com

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