



ADVANCED SMART GLASS TINTS AND CLEARS ON DEMAND

Viracon PLUS Smart Glass powered by Halio is a remarkable leap forward in architectural glass technology, enabling glass to tint automatically or on demand with significantly improved aesthetics and transition speeds compared to legacy tinting glass technologies in the market. By responding to the changing external environment, this façade glass maximizes the amount of natural light transmitted into a building while keeping out excessive heat and glare.

VIRACON PLUS
AND **HALIO**
A PARTNERSHIP IN INNOVATION



VIRACON[®]
GLASS IS EVERYTHING[®]

GREAT BUILDINGS DESERVE GREAT GLASS™

VIRACON PLUS

Viracon PLUS is a strategic partnership program designed to fuel innovative, next generation architectural glass technologies and bring those technologies to market. Viracon is partnering with innovative technology companies to introduce game-changing new products that will shatter the status quo of high performing architectural glass. With its industry-leading glass fabrication expertise, trusted supply chain integrity, and an unrivaled industry network, Viracon provides the platform to deliver state-of-the-art glass technology at scale.

VIRACON PLUS SMART GLASS ADVANTAGE

Best aesthetics from clear through full tint.

Tints through a full spectrum of neutral gray options to block solar heat and glare. No more of the blues or yellows featured in other legacy smart glass products.

Fastest-tinting electrochromic glass.

Full tint change in less than 3 Minutes; 10 times faster than other legacy smart glass options.

Most uniform tinting through transition.

No more splotchy, halo or wavy effects.

Windows in-sync with technology.

Tinting can be fully automated or manually controlled with a mobile app, desktop app, wall-mounted tint selectors, and voice assistants.

Better for you, better for occupants, better for the environment.

With Viracon PLUS Smart Glass buildings are more energy efficient and healthier for occupants and the environment.

PRODUCT SPECIFICATION OUTBOARD LITE

Glass Unit

Size: MAX: 58-3/4" x 119-1/2"

MIN: 24-1/8" x 24-1/8"

Unit Thickness: 1-3/16" or 1-3/8" or 1-9/16"

Sight Lines: Conventional: 7/8"

Structural: 1-1/4"

Rectangles Only



LAMINATED ELECTROCHROMIC DEVICE

Outboard (EC Laminate)

Lami Thickness: 1/2", 5/8" or 3/4"

Substrate: 2 Plies Optiwhite™ 3/16", 1/4" or 5/16";

Crystal Gray™ 1/4" or 5/16"

Interlayer: 0.060" PVB Clear Only

Heat treatment: Heat Strengthened, Fully Tempered; Heat Soak Option

Optional Coating: VLO-66 (Vibrant Gray) surface #2



SPACER AND FILL

Spacer: 1/2" Black Stainless Steel (Cap Tube Option) or 1/2" VTS

Fill: Argon

INBOARD LITE

Inboard

Substrate: 1 Ply Optiwhite™ 3/16", 1/4" or 5/16"

Coatings: VE-85 or VZE-SC on the #5 surface

Spandrel: No #5 Coating if spandrel



PRINT

Bird Friendly

2 Patterns: 51205 and 51767 Surface #2

Not available with VLO-66

Optiwhite is a trademark of Pilkington. Crystal Gray is trademark of Guardian Industries.

VIRACON
Insulated Unit

HALIO
Electrochromic Device (EC)



Tint Drivers
The tint level of each window is controlled by a corresponding Halio Tint Driver, located in component cabinets and can tint the full range in under 3 minutes.

Cloud Gateway
The Halio Gateway securely manages communication between the all on-site Halio components and the Halio Cloud.

Rooftop Sensor
Every 15 seconds, a Halio Rooftop Sky Sensor reports changes in daylight and reflected glare.

Halio Cloud
Advanced algorithms and AI in the Halio Cloud control the automation of the system by determining real-time tint levels, monitor system operation, report performance, and suggest adjustments to tint scenarios

VIRACON PLUS SMART GLASS AND HALIO AUTONOMOUS SYSTEM CONFIGURATION

Viracon PLUS smart glass units are designed to be powered by Halio's autonomous tinting system. The smart glass units are individually wired for autonomous operation and controlled through the iCloud based Halio System.

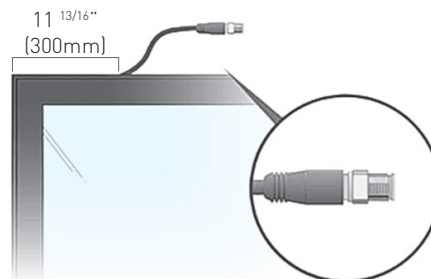


MANUAL TINTING OPTIONS

Halio autonomous and manual tinting options and components are provided and supported by Halio, Inc. To discuss tint system options and controls and system options contact your local Halio sales representative at halioinc.com/contact/.

The pigtail, shown below, is the waterproof cable that runs from the IGU (where it attaches to the EC Device's Flex Connector) and connects to the Halio Driver Cable (and out to Control cabinet in the building Utility area).

- Possible pigtail exit locations shown below. The IGU orientation can be rotated 90 degrees from that shown.
- Standard pigtail length is 15 3/4" (400 mm): optional lengths available. Precise pigtail location and size may vary based on the orientation and size of the IGU, and according to considerations of cable routing through the framing system.



PIGTAIL INFORMATION

Viracon PLUS Smart Glass - IGU Performance Data (1-3/16" IGU with VE-85/#5)										
Tint Level	Transmittance (%)			Reflectance (%)			Solar Performance			Thermal
	Visible	Solar	UV	Visible Ref-Out	Visible Ref-In	Solar Ref-Out	SC	SHGC	RHG	U-Value
0 - Full Clear	61	39	< 1	15	17	19	0.52	0.46	108	Summer 0.23 Winter 0.26
17	42	23		14	17	16	0.35	0.31	74	
33	27	13		8	13	11	0.24	0.21	52	
45	17	8		8	13	11	0.18	0.16	40	
58	11	4		7	12	10	0.15	0.13	33	
67	7	3		6	12	10	0.13	0.11	30	
77	5	2		6	12	10	0.12	0.11	28	
86	4	1		6	13	10	0.12	0.10	26	
100 - Full Tint	2	1		6	13	10	0.11	0.09	25	

Product Make-up:

1-3/16" laminated insulating IGU, Viracon PLUS Smart Glass powered by Halio
 Outboard Lite: 1/2" Electrochromic (EC) Laminate
 [3/16" (5mm) Optiwhite; 0.060" (1.52mm) Clear PVB; 0.048" (1.23mm) Halio EC Device; 0.060" (1.52mm) Clear PVB;
 3/16" (5mm) Optiwhite]
 Cavity: 1/2" airspace - Argon filled
 Inboard Lite: 3/16" (5mm) Optiwhite with VE-85 on #5 surface

Note: For performance data for other smart glass configurations, contact your Viracon Sales representative at viracon.com/contact/.

Viracon PLUS Smart Glass - IGU Performance Data (1-3/16" IGU with VLO-66/#2 and VE-85/#5)										
Tint Level	Transmittance (%)			Reflectance (%)			Solar Performance			Thermal
	Visible	Solar	UV	Visible Ref-Out	Visible Ref-In	Solar Ref-Out	SC	SHGC	RHG	U-Value
0 - Full Clear	51	33	< 1	28	23	26	0.45	0.40	94	Summer 0.23 Winter 0.26
17	36	20		24	18	21	0.31	0.27	65	
33	22	11		22	14	19	0.21	0.18	45	
45	14	6		21	13	19	0.16	0.14	35	
58	9	4		21	12	19	0.13	0.11	29	
67	6	2		21	12	19	0.11	0.10	26	
77	4	2		21	12	19	0.11	0.09	24	
86	3	1		21	12	19	0.10	0.09	23	
100 - Full Tint	2	1		21	12	19	0.09	0.08	22	

Product Make-up:

1-3/16" laminated insulating IGU, Viracon PLUS Smart Glass powered by Halio, with VLO-66 *Vibrant Gray*
 Outboard Lite: 1/2" Electrochromic (EC) Laminate
 [3/16" (5mm) Optiwhite with VLO-66 *Vibrant Gray* on #2 surface; 0.060" (1.52mm) Clear PVB; 0.048" (1.23mm) Halio EC Device; 0.060" (1.52mm) Clear PVB; 3/16" (5mm) Optiwhite]
 Cavity: 1/2" airspace - Argon filled
 Inboard Lite: 3/16" (5mm) Optiwhite with VE-85 on #5 surface

Note: For performance data for other smart glass configurations, contact your Viracon Sales representative at viracon.com/contact/.

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