SageGlass®

Dynamic glass for a changing world.

SAGEGLASS® PRODUCT GUIDE

ULTRA-EFFICIENT SAGEGLASS PROVIDES UNMATCHED PERFORMANCE AND PROVEN RELIABILITY IN COMMERCIAL AND INSTITUTIONAL BUILDINGS

SAINT-GOBAIN

WHY SAGEGLASS® MAKES PERFECT SENSE FOR BUILDING OWNERS, ARCHITECTS AND GLAZING CONTRACTORS

Static glass is one of the most enduring challenges in building design and operation. Windows, skylights and curtain walls bring in natural light, along with unwanted heat and glare. Yet traditional sun controls obscure the view, undermining the purpose of the glass. SageGlass solves this problem—and delivers a long list of cost- and energy-saving advantages.

Dynamic, electronically tintable SageGlass enables building owners and operators to actively control daylight and solar heat, improving occupant comfort and significantly reducing energy consumption and costs. As a result, SageGlass allows architects to design sustainable, visually compelling buildings with exceptional flexibility and energy efficient solutions.

DURABLE INNOVATION

SageGlass is manufactured to ensure ease of installation and long-lasting reliability. After they're coated, the SageGlass panes are fabricated into industry-standard insulating glass units (IGUs), which are installed into specified window, skylight and curtain wall frames.
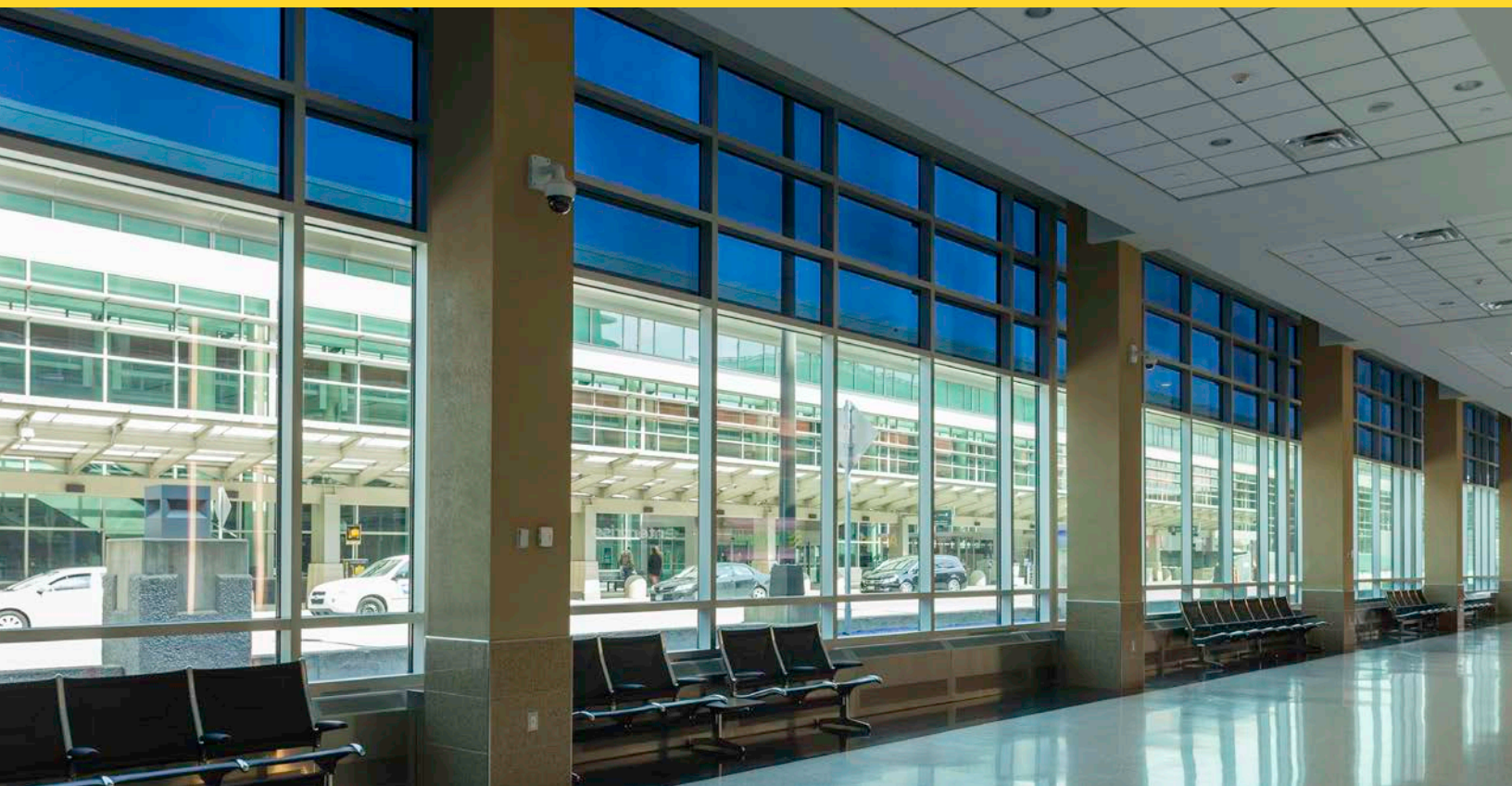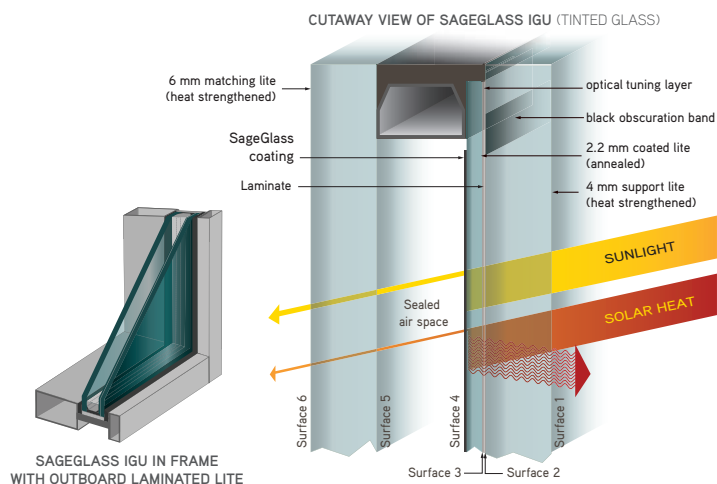
SAGEGLASS PRODUCT

We understand that no project is ever the same, therefore, our SageGlass portfolio is as dynamic as the glass itself.

SPECIFYING YOUR PRODUCT

The SageGlass portfolio includes standard double- and triple-pane configurations in a range of sizes, shapes and colors. SageGlass IGUs can be integrated into most framing systems. Our IGUs are fabricated in-house using the highest quality sealing and component materials and are certified by the Insulating Glass Certification Council (IGCC).

DOUBLE-PANE GLAZING

This diagram shows our standard dual-pane product, and highlights some of the features of its best-practice construction methods. Our standard product is a 1" (25 mm) igu, but the outermost and inner lites can be of custom thicknesses to meet specific requirements.

CUTAWAY VIEW OF SAGEGLASS IGU (TINTED GLASS)

6 mm matching lite (heat strengthened)
optical tuning layer
black obscuration band
SageGlass coating
2.2 mm coated lite (annealed)
Laminate
4 mm support lite (heat strengthened)
SUNLIGHT
SOLAR HEAT
Sealed air space
Surface 6
Surface 5
Surface 4
Surface 1
Surface 3
Surface 2

SAGEGLASS IGU IN FRAME WITH OUTBOARD LAMINATED LITE

CLEAR INNOVATION

The SageGlass coating is on the inside (air gap facing) surface of the outboard laminated lite where, when tinted, it absorbs and reradiates the sun's energy, preventing it from transmitting through the inner lite.

TRIPLE-PANE GLAZING

For even greater energy efficiency, our SageGlass glazing is also available in triple-pane configurations. Our triple-pane product is the most energy-efficient glazing on the market today. `

SWITCHING SPEED

A medium or large-sized pane of SageGlass transitions across 90% of its dynamic range (from clear to tinted or from tinted to clear) in 15-20 minutes. The switching speed depends on a number of factors, including the ambient temperature, glass size and distance between bus bars: The warmer it is outside, the faster the glass transitions. Larger panes take longer than smaller panes to fully transition. Also, keep in mind that in day-to-day use the glass often changes in smaller increments (e.g., from one intermediate state to the next lighter or darker state) rather than from fully clear to fully tinted, so the transition will take less time.

COLORS

SageGlass is available in a variety of tinted or coated substrates to coordinate with the exterior aesthetics of your building.

SageGlass is available in select straight-sided shapes.

SIZES AND SHAPES

SageGlass is available in rectangular panes as large as 5' x 10' (1524 x 3048 mm), suitable for installation in new construction and retrofit projects. We also offer select shapes, including parallelograms, trapezoids and triangles, for more distinctive designs.

FRAMES

SageGlass can be integrated into virtually all frames. We maintain strong relationships with leading window, skylight and curtain wall manufacturers, and have prepared integration details for many of their framing systems.

SAGEGLASS® : HAVE IT YOUR WAY

SageGlass® is available with several options, so it us very flexible based on the specific requirements of your project.

SageGlass® is available without a center bus bar in any size up to 5 x 10 feet (1524 x 3048mm). This option provides all the benefits of SageGlass® with the aesthetic elegance of a clear glass look.
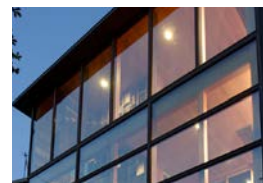
SageGlass curtain wall with no center bus bar.

Another option to having SageGlass your way is a feature called LightZone® - allowing you to choose in-pane zoning. With Lightzone® your window can have 2 or 3 sub-zones within the pane – enabling flexibility, optimized daylighting, glare control and an additional "wow" factor.

If faster tinting speed is critical to your project, SageGlass® can switch up to 50% faster by using a "visible" center bus bar. This bus bar, 1/8 of an inch wide (3mm), runs through the middle of the window. The glass on either side of this bus bar can be controlled independently giving two different and faster switching zones. For IGU's with a length over 40 inches (1016mm), two bus bars would run in parallel to maximize tinting speed.

Skylights with center bus bars.

Our team will work closely with you to determine which option is best for your requirements. With SageGlass® you have options – you can always have it your way!

SAGEGLASS PRODUCT HIGHLIGHTS

Continuous innovation delivers powerful new advantages for architects, building owners and glazing contractors.

LightZone™

Only SageGlass provides you with the ability to create up to three tint zones within a single pane of electrochromic glass. We call this product LightZone™. LightZone transforms a single pane of SageGlass into any combination of clear or tinted zones. This product can be zoned using standard bus bars or our sleek laser-cut lines. Now any zoning strategy is possible so you can find the ideal balance of comfort, aesthetics and energy-efficiency. Lightzone is essential for large floor to ceiling, vertical applications.


SageGlass Mobile App

Use the SageGlass mobile app for unprecedented daylighting control. Available for iOS and Android devices, this convenient app provides users with an easy way to control the tint level of their glass from wherever they may be in a building. Precision technology allows you to adjust the tint of any zone, or recall predefined "scene" settings to achieve specific tinting effects.
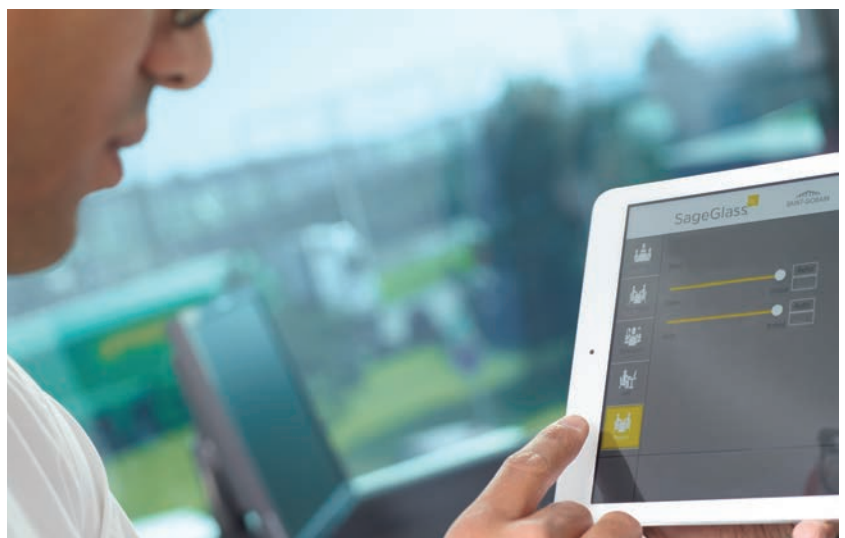
UNPRECEDENTED PERFORMANCE

SageGlass lets you control visible light transmission and solar heat gain over a wide range. When designing a building, you never have to compromise between SHGC and visible light transmission. No matter what the weather or available light, SageGlass provides an ideal balance of light and heat to reduce energy costs and keep occupants comfortable.

SageGlass® Dynamic Solar Performance vs. Traditional Glazings
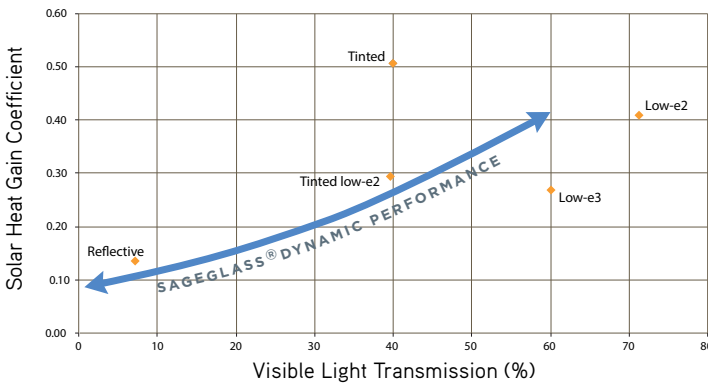
SAGEGLASS PERFORMANCE SPECIFICATIONS

SageGlass® Clear w/SR2.0	%Tvis	%Rf Ext.	%Rb Int.	%Tsol	SHGC	U-factor	%Tuv	Tdw-K
Clear State	60	16	14	33	0.41	0.28	0	15
Intermediate State 1	18	10	9	7	0.15	0.28	0	5
Intermediate State 2	6	10	9	2	0.10	0.28	0	2
Fully Tinted	1	11	9	0.4	0.09	0.28	0	0.6

Modeled with Window 6.3; 1" argon-filled IGU

INCOMPARABLE GLARE CONTROL

SageGlass can darken to 1% visible light transmission. This level of tinting blocks out 99% of glare-producing light, giving you the ability to effectively darken the space while still maintaining a view to the outdoors. For applications where room darkening conditions are sometimes desired—such as spaces where A/V presentations are held—SageGlass is the ideal solution.

SUSTAINABLE SAGEGLASS

SageGlass IGUs create comfortable, sustainable, energy-conserving environments that maintain clear exterior views at all times. According to the U.S. Department of Energy's Lawrence Berkeley National Laboratory, electrochromic glass can help reduce cooling loads by as much as 20% and peak power demand by as much as 30%. In addition, because of the energy efficiency of SageGlass, HVAC systems can be up to 25% smaller than those in buildings where static glass is used. If you're striving for a LEED® rating for your building, SageGlass can help you earn credits.

SAGEGLASS AT A GLANCE

	Visible Light Transmission (Tvis)	Solar Heat Gain Coefficient (SHGC)	UV Transmission	Tdw-k
SageGlass Performance (clear – fully tinted)	60% – 1%	0.41 – 0.09	0.4% – 0%	15% – 0.6%
The SageGlass Difference	SageGlass provides control over a wide range of solar conditions, while static glazing is optimal for only one.	SageGlass offers the ability to tint or clear, harvesting or rejecting the sun's heat as needed.	SageGlass has a maximum UV transmission that is lower than the minimum UV transmission of static clear low-e glass.	SageGlass enables nearly 100% fading protection, with a low end that far exceeds the maximum of conventional glass products.

*KDF measures the amount of the sun's radiation transmitted through the glazing that causes fading. Fading protection is 1 – KDF.
The above data is based on 1" (25 mm) argon-filled IGU, calculated using Window 6.3.

SAGEGLASS TOTAL CONTROL

SageGlass tints or clears when it receives commands from the control system. Our control system uses proprietary algorithms to achieve a variety of tint levels over the full performance range of the glazing. The system also includes advanced tools to manage daylighting, glare, energy use and color rendering based on occupancy, light levels, or integration with building management systems. Control can be automated with the option of manual overrides or fully manual. What ever your primary goal in daylight design may be, we can design a system that meets your needs.

Standard zoning
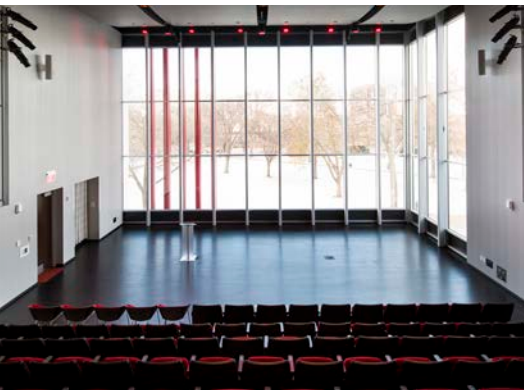
LIGHTZONE

To manage daylight the most effectively, our glass can be programmed to operate in customized zones. Zoning design depends on many factors: building orientation, occupant location and needs, interior space design, and the primary purpose of the glazing (glare or heat control). We offer two types of zoning: (1) standard zoning, where groups of panes are controlled together, and (2) in-pane zoning, known as LightZone™, where a pane of glass is partitioned into two or three discrete sections, each of which can be controlled separately from the other.

Zoning strategies are highly important in ensuring the optimized balance of glare content with light color quality, daylight admission and energy performance in a space. On a facade with standard zoning, one row, for example, can be fully tinted to control directional glare, and one row can be left clear to provide a more neutral color quality, while the remaining panes can be tinted to an intermediate level, as needed, to optimize the appropriate amount of daylight and solar control in the space. With floor-to-ceiling glass, zoning is essential to occupant comfort. When panes are very large, and glare control is needed, the space would feel uncomfortably dark if all of the glass was tinted. With in-pane zoning, only the portions of the glass that have direct sun on them would be tinted to 1% VLT; the remaining areas could be set to tint levels that optimize the daylight, energy and light color quality. In this way the building occupant would experience a feeling of natural light in the space while enjoying superior glare control.

INTERMEDIATE STATES

Intermediate states allow you to further fine-tune your control over daylight. When it's not extremely bright or hot, but some shading is needed, you can partially tint the glass, allowing in ample—but not too much—daylight. Whatever your daylighting design needs, our system is fully customizable and can be programmed to your specifications.

Here the glass on the right is zoned to transmit at (in rows from top to bottom) 6%, 18% and 60% visible light, which provides abundant daylight but mitigates the sun's most direct rays.

BEAUTIFUL BUILDINGS FILLED WITH NATURAL LIGHT

SageGlass has been installed in commercial buildings since 2003. We have hundreds of SageGlass installations in offices, schools, museums, government and healthcare facilities, airports and restaurants around the world. Visit **sageglass.com/portfolio** to view more SageGlass transformations.

1101 BRICKELL AVE MIAMI, FL

This two-story, glass cube design provides customers and employees with plenty of daylight and a clear view of bustling Brickell Avenue. SageGlass helps regulate the extreme heat and glare and provides relief from the Miami sun while reducing the building's overall energy consumption.
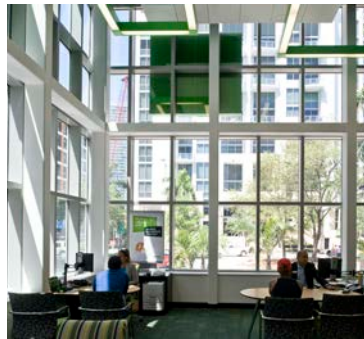

KIMMEL CENTER FOR THE PERFORMING ARTS PHILADELPHIA, PA

The 150-ft soaring vaulted glass roof created a monumental solar control problem (indoor temperatures soaring to 100 degrees or more) for the Garden Terrace at Kimmel Center. SageGlass was installed in the Garden Terrace skylight to help maintain a comfortable temperature for occupants without impeding the breathtaking views.

MERCY ORTHOPEDIC HOSPITAL FORT SMITH, AR

SageGlass provides patients and staff members at Mercy Orthopedic with an energy-efficient way to tame the sun without compromising the serene views of the outdoor gardens.
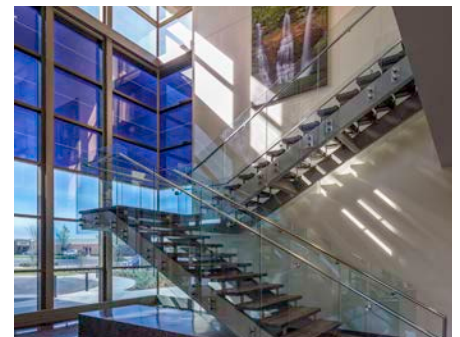
SageGlass®

SPECIFYING SAGEGLASS

When you're ready to specify SageGlass, we are here to assist you. SAGE's services include:

• Modeling glass performance

• Identifying optimum glazings and zone design

• Reviewing installation details with window, skylight, and curtain wall manufacturers

• Helping design and specify wire routing through framing systems

• Assisting with selection and evaluation of framing systems

• Developing control system wiring diagrams and schematics

• Supporting the integration of SageGlass controls with building automation systems

• Assisting with the specification and design of control system configurations

• On-site training and telephone support for glazing and low-voltage contractors

Complimentary SageGlass literature:

Controls Brochure	MKT-061
Shapes Catalog	PRD-025
Design Guide	MKT-064
Performance Data	MKT-043

Additional product and technical literature is available at **sageglass.com.**

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sageglass.com

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SageGlass® is the pioneer of the world's smartest dynamic glass and is transforming the indoor experience for people by connecting the built and natural environments. Electronically tintable SageGlass tints or clears on demand to control sunlight and prevent heat and glare without the need for blinds or shades. SageGlass dramatically reduces energy demand and the need for HVAC by blocking up to 91 percent of solar heat. As part of Saint-Gobain, SageGlass is backed by more than 350 years of building science expertise that only the world leader in sustainable environments can provide.

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