



## Proven Reliability

*SageGlass® delivers the dependable performance that building owners, architects and glazing contractors demand*

- Tested for more than 15 years by the U.S. Department of Energy, glass fabricators and window manufacturers
- Met industry performance and durability standards for insulating glass (ASTM E2190, EN1279 parts 2 and 3)
- Exceeded industry EC and coating durability standards (ASTM E2141, EN1096)
- Surpassed the ASTM E2141 50,000 tint/clear cycle standard by reaching 100,000 cycles under thermal (85°C) and solar exposure without loss of performance
- Survived 24 months of exposure in the Arizona desert (DSET)
- Outperformed in the P1 test—arguably the most stringent IGU evaluation in the industry
- Certified by the Insulating Glass Manufacturers' Alliance (IGMA) and the Insulating Glass Certification Council (IGCC), and is CE Mark compliant for Europe

SageGlass is as tough as it is beautiful. It has proven its mettle in testing across a range of harsh environmental conditions for more than 15 years.

### Simple, reliable construction

SageGlass panes are made by sputter coating float glass with layers of metal oxides in a proprietary process similar to that used in the manufacture of low-e glass. Coated panes are fabricated into industry-standard insulating glass units (IGUs), which are installed into window, skylight and curtain wall frames specified by architects.

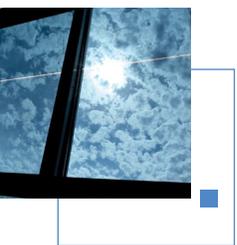
### Durable ceramic coatings

SageGlass' all-ceramic coatings are extremely durable against the highly stressful elements (sunlight, UV exposure, and extreme hot and freezing temperatures) that windows, skylights and curtain walls experience over a lifetime. SageGlass has outperformed in durability tests by independent third-party organizations including the U.S. Department of Energy (DOE) and major industry glass companies. We also test SageGlass continuously in-house, cycling product under solar exposure at high temperature, and subjecting it to natural weathering and thermal shock.

### Long-lasting IGUs

We manufacture our IGUs with the highest-quality sealing materials, components and construction methods. The dual-seal polyisobutylene (PIB)/silicone system with stainless steel spacer and in-line key IGU construction offers excellent reliability and longevity. This world-class system is used by leading fabricators and has been tested extensively for durability.

Our high quality manufacturing process and IGU construction have also achieved certification by the Insulating Glass Manufacturers' Alliance (IGMA) and the Insulating Glass Certification Council (IGCC), and are certified for gas retention as well as seal weathering. In addition, SageGlass is CE Mark compliant for the European market.



# Validated Performance

The following charts summarize results of evaluations that have been performed by third parties and in-house on both the electrochromic technology in the glass, and the durability of the IGUs.

## Test results for SageGlass coatings

TEST	RESULT
The DOE's National Renewable Energy Laboratory, conducted a 9,440-hour test of SageGlass coatings according to ASTM E2141-06 for high-temperature cycling and intense solar exposure during continuous cycling between clear and tinted states.	SageGlass samples surpassed the test standard of 50,000 cycles by reaching 100,000 cycles without degradation of tinted- or untinted-state transmission. NREL reported that this result was approximately equivalent to switching the window nine times daily for 30 years. Both small and full size SageGlass IGUs have undergone the ASTM E2141 test many times with the same excellent results.
DSET Laboratory, a division of Atlas Weathering Services Group, mounted SageGlass samples on rotatable racks in the Arizona desert, which tracked the sun for two years, maximizing solar exposure to the samples to test for degradation in visible light transmittance.	SageGlass samples outlasted the two-year evaluation, exhibiting no loss of visible light transmission.
An independent testing lab subjected SageGlass product to the European standard EN 1096 test, which is used to measure the impact of UV radiation on glass coatings.	SageGlass coatings maintained their performance, surpassing this test standard.

## Test results for SageGlass IGUs

TEST	RESULT
ATI Testing (independent labs) performed 15-week tests based on the ASTM E2190 Standard Specification for IGU Performance and Evaluation, involving test methods E2188 for IGU weathering (UV, humidity and temperature cycling) and E2189 for resistance to fogging.	SageGlass IGUs met the E2190 specification for seal durability and gas retention and achieved certification through the joint program of the Insulating Glass Manufacturers' Alliance (IGMA) and Insulating Glass Certification Council (IGCC).
IFT Rosenheim GMBH performed tests for weathering (EN1279 part 2) and argon retention (EN1279 part 3).	SageGlass IGUs successfully passed both of these tests.
An industry-leading IGU fabricator performed the "P1" — the most stringent seal test in the industry. IGUs are held at 140°F in a chamber where the seals are subjected to continuous UV exposure and water spray.	SageGlass samples exceeded the 40-week test standard by 10 weeks, reaching 50 weeks. One week in this test is regarded as equivalent to approximately one year of actual use.

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