GUARDIAN® GLASS

See what's possible™



Corporate Brochure

Africa & Middle East

Version v1.0 AME 2023



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When you believe barriers can be broken, anything is possible

We live in a time of unimaginable potential. The challenge is living up to the unending needs of the fast-paced world in which we live. At Guardian Glass, our goal is to push the boundaries of glass like never before, with new technology, collaboration and discovery. We are boldly challenging the status quo, creating beautiful environments and providing safe, durable, inspiring solutions in today's global glass industry. We call this effort See what's possible, and we invite our employees and customers to be part of it.



Our footprint helps you make your mark

As one of the world's largest producers of magnetron sputter coated glass and one of the largest float-glass producers, Guardian has access to state-of-the-art products all over the world. We work with clients on global, regional and local levels - exploring new design trends, protecting the environment and building structures that enhance people's lives.

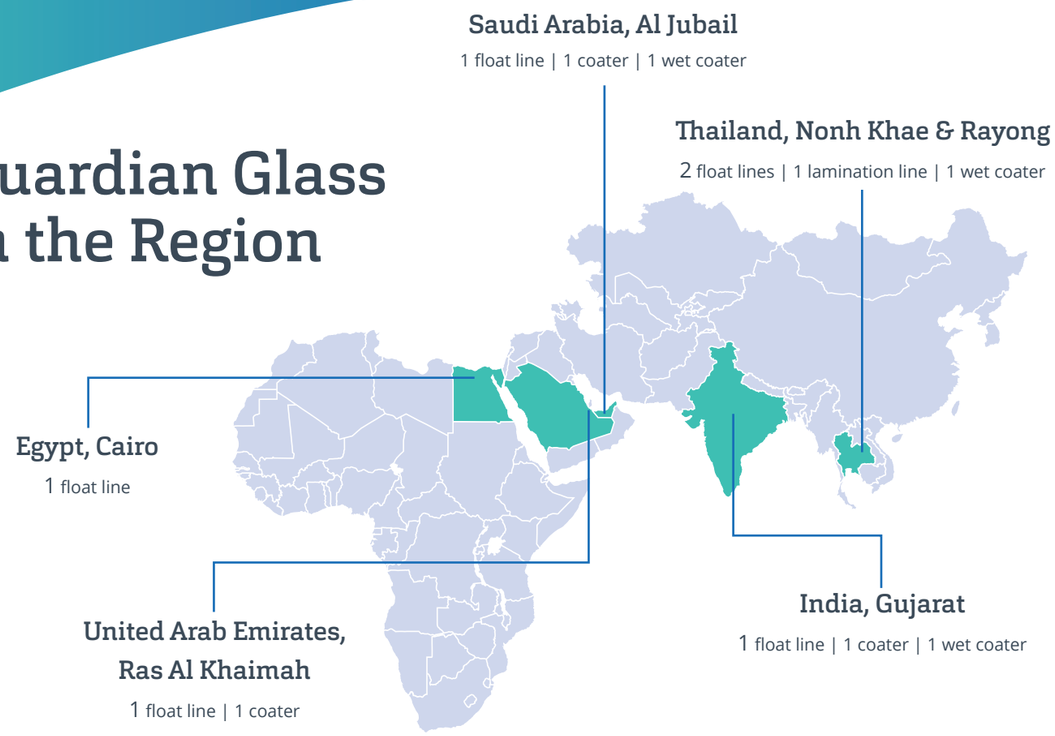
160
countries served
with projects on 5 continents

500
km of float glass
produced every day

24
float glass lines
worldwide

Find out more on guardianglass.com

Guardian Glass in the Region



Guardian Glass produces float, high-performance glass and fabricated glass products for use in exterior (both commercial and residential) and interior architectural applications, as well as transportation and technical products. You'll find Guardian glass in homes, offices, cars and some of the world's most iconic architectural landmarks. We continuously work to create new glass products and solutions using the most advanced technology to help customers See what's possible ™

Guardian Glass is the largest business of Guardian Industries. Guardian Industries and its family of companies employ 18,000 people around the world devoted to bringing new ideas to life. We constantly strive to innovate in everything we do, to create more value for our customers and communities. One team with one ultimate goal: One World. Made Better. ™

As an industry, the future is ours to build. Our glass enables new structures that push toward the sky and inspire those who see their designs. It lets in more light - enriching spaces and the lives of the people who occupy them. At the same time, our glass can help reduce the heating and cooling required to keep buildings comfortable. Simply put, Guardian Glass makes life around the world better.

2
Science & Technology centers

300+
expert design managers & specialists

8
Principle Based Management™

18000+
employees

800
patents awarded

116000
glass panels on the Burj Khalife

Find out more on guardianglass.com

Science & Technology Centre

Our latest advances come from a long tradition

At the heart of our research and development is the Guardian Science & Technology Center (STC), where scientists and engineers work together to push the boundaries of light. Developing new glass coatings, processes, formulas and technologies, the team is committed to creating products that achieve our customer's goals and improve quality of life. STC features a full-size vacuum coater to accelerate product design and development.

Our breakthroughs get put to use

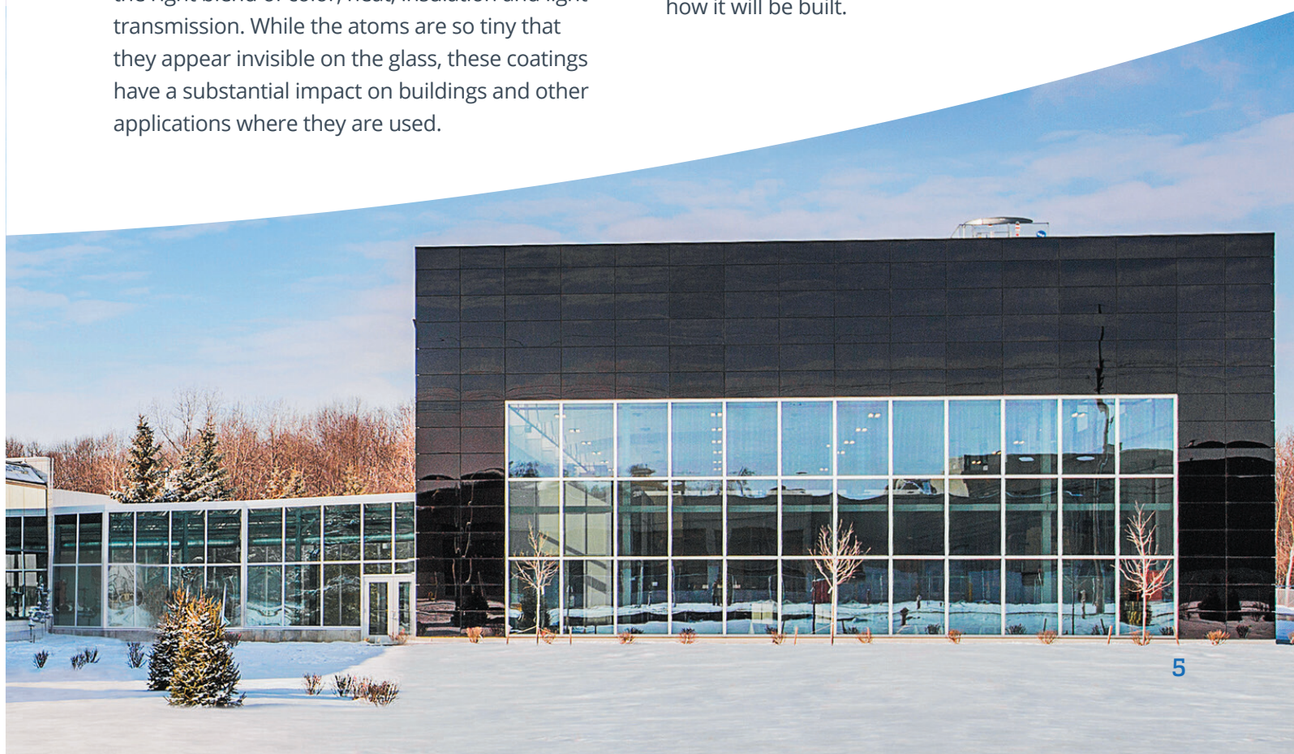
Success in the laboratory doesn't mean much unless the breakthrough can be properly deployed in the field. Our team of engineers turns great formulas into superior products that can be manufactured around the world. With an undying focus on doing more with fewer resources, we are constantly looking to increase the efficiencies of our processes - benefiting ourselves, our customers and society at large.

Giant progress is measured in nanometers

Since 1983, Guardian has developed and applied glass coatings using the magnetron sputter coating process. Our researchers determine which combination of individual atoms will optimize the performance and aesthetics of the glass - impacting the right blend of color, heat, insulation and light transmission. While the atoms are so tiny that they appear invisible on the glass, these coatings have a substantial impact on buildings and other applications where they are used.

The possibilities are endless

Glass is so critical to our daily life that we are constantly thinking about additional and better ways to use it. Drawing inspiration from other industries and using design thinking, we are envisioning how glass can make the way we work, play, learn and live better. While we do not know the future, we can bet that glass will play an ever more significant role in how it will be built.



Product Range

SunGuard® eXtra Selective (SNX)

By delivering world-class selectivity, eXtra Selective (SNX) helps reduce costs by lowering the demand for artificial lighting, air conditioning and heating. With a transparent appearance, low reflection ad consistent colour, it delivers optimum thermal insulation when used in a standard double-glazed unit.

SunGuard® SuperNeutral

SunGuard® SuperNeutral product range offers he highest selectivity available within the region. It comes in a neutral colour with a wide range of light transmission to fit any architectural design, no matter how iconic.

SunGuard® SuperNeutral Grey

Guardian SunGuard® SuperNeutral (SN) Grey products are highly selective double silver coated solar control glass with a distinctive neutral grey appearance.

SunGuard® Double Silver

Guardian® SunGuard® Double Silver range provides a wide range of colours with high selective performance. For commercial projects that want to stand out from the rest.

SunGuard® High Performance

Guardian® High Performance® range of products provide industry leading solar protection as well as thermal protection for all season protection. It is available in a range of distinctive colour and light transmission choices to suit any project.

SunGuard® Solar

Guardian® SunGuard® Solar® range is the versatile product range for any project. With a flexible colour and light transmission range, the Solar products provide industry leading solar protection and aesthetic quality.

SunGuard® Solar Plus

SunGuard® Solar Plus glass not only offers high solar protection and natural light transmission, but also very low emissivity and the ability to be applied monolithically. Meaning it can be adapted to many different applications.

SunGuard® High Durable Plus

Guardian® SunGuard® HD Plus® is the modern standard for residential products. With a wide range of vibrant colours and excellent solar protection it meets the required standards for residential building codes.

Guardian® High Durable Colours

Guardian® introduces the High Durable Colors series with enhanced coating resistance, coupled with vivid and clear colour reproduction. SunGuard® HD Colors® not only looks fantastic from the outside, but also enables you to see clearly and without any distortions from the interiors.

ClimaGuard®

Guardian® Climaguard® range of products provide all season thermal protection with very high light transmission. Can be used on surface #2 or on surface #3, in combination with a Solar or HD product or alone.

Speciality Glass

Free yourself from the limitations of ordinary glass. Our Speciality Glass solutions redefines technology-driven performance with a breadth of choices, all in one place. From light control to shower protection, Guardian Speciality Glass expands the creative possibilities of glass and allows you to experience the great outdoors.

Projects Overview

Guardian Glass products are used on buildings and homes around the world. Nagivate through numerous projects illustrating how our glass has helped teams push the barriers of their own imaginations.



Address Sky View Hotel

SunGuard® Solar® Silver 20

Luxury Hotel Apartment, Dubai

The selection of Guardian SunGuard® Solar Silver 20 was inspired by the reflection appearance theme present in Emaar Square Area, Downtown Dubai.



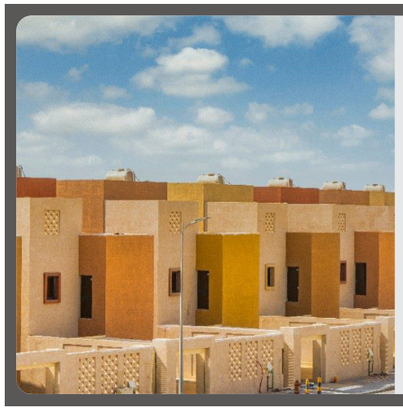
The Exchange Tower

ClimaGuard® HP Neutral 70

SunGuard® HD Blue

Luxury Commercial Tower, Dubai

Guardian SunGuard® HD Colors Blue provides great solar insulation for your project, as well as vibrant colour. Solar insulation will help reduce electricity costs as well as increase occupant comfort. The stunning blue colour will add character to your project.



Diar Al Hasa

SunGuard® Double Silver (DS) Bronze T

Residential, Saudi Arabia

The Diar Al Hasa residential complex in Saudi Arabia is a unique place to live. The houses benefit from Guardian's distinctive bronze coloured Guardian SunGuard® DS Bronze T glass. The glass helps provide high thermal insulation, optimal inside temperatures, and the high external reflection provides some privacy to the building's occupants, while the low internal reflection allows clear views to the outside.

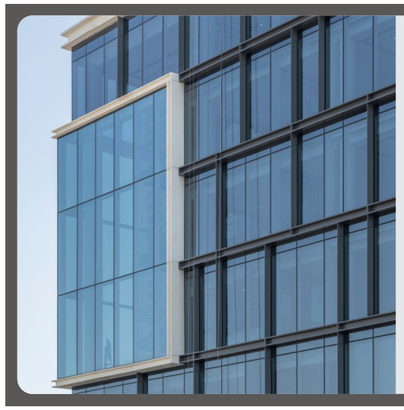


Dubai Opera House

Iconic Landmark, Dubai

The performance tuned SN multi-functional coatings offer high selectivity solar protection on a neutral-looking glass for a wide range of applications such as fully glazed facades, roof glazing and large framed windows.

SunGuard® SuperNeutral (SN) 70 T



New VISA Headquarters building

SunGuard® Double Silver (DS) Steel Grey T

SunGuard® SuperNeutral (SN) 30 T

Office Building, Dubai

The architect used two different aesthetics, Guardian SunGuard® Double Silver (DS) Steel Grey T and SunGuard® SuperNeutral (SN) 30T, to create a complementary contrast on one façade preserving thermal insulation and the performance of the glass.

Dubai Frame

Iconic Landmark, Dubai

If you can imagine it, you can build it with SunGuard® HP Neutral Plus 50. This high performance, Low-e glass allows architects the freedom to explore interior and exterior light. Typically, high transparency means high heat and ultraviolet light. With HP Neutral Plus 50, buildings minimise solar energy gain while allowing maximum visible light transmission for virtually any application.

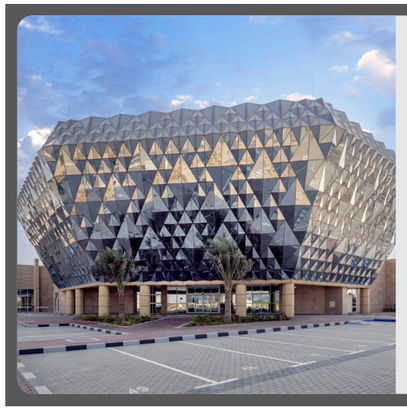
SunGuard®
High Performance
(HP) Neutral Plus 50

The Address Boulevard

Luxury Hotel, Dubai

SunGuard® High Performance (HP) Neutral 40 combines excellent solar control, thermal insulation, and a variety of manufacturing options into one glass product. With a neutral gray appearance on clear glass, HP Neutral 40 offers archhitects flexibility to create unique designs without compromising performance.

SunGuard®
High Performance
(HP) Neutral 40



Bascom Palmer Eye Clinic Abu Dhabi

SunGuard®
High Performance
(HP) Silver 35

Healthcare, Abu Dhabi

The stunning 70,000-square-foot Bascom Palmer Eye Clinic in Abu Dhabi broadcasts daily multiple reflections! Gresham Smith designed this unique building using Guardian SunGuard® High Performance glass solution. The chosen HP Silver 35 offers a superior thermal insulation and its silver colour makes the clinic shine all day long.



Burj Khalifa

Iconic Landmark, Dubai

Almost everyone on earth has seen SunGuard® Solar Silver 20. Guardian supplied 167,000 square metres of it for the Burj Kalifa, the world's tallest building. This reflective glass not only helps architects achieve futuristic designs, it immediately delivers energy savings. The glass reflects heat and solar radiation, making it a great product for hot environments and super-tall buildings.

SunGuard® Solar
Silver 20

Selected Project List

Project	Country	City	SQM
The Address Residence Sky View in Downtown Dubai	UAE	Dubai	153,000+
King Khalid International Airport Terminal 5	Saudi Arabia	Riyadh	24,000+
The Address Boulevard	UAE	Dubai	103,000+
Burj Marina, Doha	Qatar	Doha	24,000+
Damac Towers by Paramount in Downtown Dubai	UAE	Dubai	99,000+
King Fahed Medical City	Saudi Arabia	Riyadh	24,000+
Cultural Center- The Museum	Kuwait	Kuwait	61,000+
King Faisal Hospital	Saudi Arabia	Riyadh	24,000+
King Abdullah Specialized Children Hospital (KAMC-WR-Jeddah)	Saudi Arabia	Jeddah	52,000+
BAKO CONVERTION	UAE	Dubai	24,000+
Al Jouf University	Saudi Arabia	Jouf	47,000+
Old Mutual Building	South Africa	Johannesburg	10,000+
Al Taif University	Saudi Arabia	Taif	45,000+
Caspian Waterfront	Azerbaijan	Baku	23,000+
Kingdom Tower at Jeddah	Saudi Arabia	Jeddah	42,000+
ROP Residential- Qurum Muscat	Oman	Muscat	22,000+
Al Majdoul Tower	Saudi Arabia	Riyadh	41,000+
Distinction Tower	UAE	Dubai	21,000+
Kuwait International Airport	Kuwait	Kuwait	39,000+
AL THURAYA College	Saudi Arabia	Jeddah	21,000+
RTCC in Al Khobar	Saudi Arabia	Khobar	35,000+
Mixed Use Development in Al Qiyadah- Plot No.1337974	UAE	Dubai	20,000+
Sceco Head Office	Saudi Arabia	Riyadh	33,000+
Technical college for Males in Jouf	Saudi Arabia	Riyadh	20,000+
Madinah Airport	Saudi Arabia	Madinah	33,000+
C1 & C2 Hotel Project in Abu Dhabi	UAE	Abu Dhabi	20,000+
Al Rajhi Bank H.Q	Saudi Arabia	Riaydh	32,000+
King Abdulaziz University - Faculty Housing	Saudi Arabia	Jeddah	33,000+
Palm Jumeirah Crescent	UAE	Dubai	29,000+
Jeddah Airport KAIA	Saudi Arabia	Jeddah	29,000+

Selected Project List

Project	Country	City	SQM
Zhejiang Broadcasting & TV Tower	China	Hangzhou	20,000+
Jingumae Project	Japan	Tokyo	19,000+
Damac Beirut	Lebanon	Beirut	19,000+
SYM	Thailand	Bankok	19,000+
Al Raha Beach	UAE	Abu Dhabi	29,000+
New Sabah Hospital	Kuwait	Kuwait	19,000+
AZIZIA Towers	Saudi Arabia	Makkah	28,000+
Abraj Quartier Gateway Tower - AQ01	Qatar	Doha	28,000+
Trillium	Lebanon	Beirut	19,000+
Le Meridien Hotel in Riyadh	Saudi Arabia	Jeddah	19,000+
140 West Street	South Africa	Johannesburg	8,000+
ADIA	UAE	Abu Dhabi	165,000+
Galleria Commercial Center in Tahlia Street	Saudi Arabia	Jeddah	26,000+
Re-Opened Kempinski Tower (Al Sail Tower)	Saudi Arabia	Jeddah	43,000+
California Compound - KSA	Saudi Arabia	Riyadh	26,000+
Jeddah Airport	Saudi Arabia	Jeddah	41,000+
Al Hammadi Hospital	Saudi Arabia	Riyadh	26,000+
Opera House Dubai	UAE	Dubai	40,000+
Sukoon Tower	Bahrain	Juffair	26,000+
ADNOC HQ	UAE	Abu Dhabi	50,000
AL BALEED HOTEL PROJECT	Oman	Salalah	25,000+
3 Beirut	Lebanon	Beirut	19,000+
FARSI Tower	Saudi Arabia	Jeddah	25,000+
Moveable Skylights - Mecca - Mekka	Saudi Arabia	Makkah	17,000+
King Faisal Specialist Hospital and Research Center	Saudi Arabia	Jeddah	25,000+
Quasar Project Lebanon	Lebanon	Beirut	11,000+
Al Mana Towers	Qatar	Doha	24,000+
Mashreq Bank Headquarters in Dubai	UAE	Dubai	10,000+
Ministry Of Water and Electricity	Saudi Arabia	Riyadh	24,000+
Cintocare Pretoria Head and neck	South Africa	Pretoria	3,000
Pullman Hotels	Ethiopia	Addis Ababa	3,000

Project	Country	City	SQM
Hikma Headquarters	Jordan	Amman	10,000+
Ritz Carlton Amman Hotel and Residence Towers	Jordan	Amman	10,000+
ABDALI Gate Tower (Campbell Gray Living)	Jordan	Amman	12,000+
Gold's Gym Jordan	Jordan	Amman	10,000+
Al Murabaa Towers	Saudi Arabia	Riyadh	45,000
SABB HQ	Saudi Arabia	Riyadh	40,000
Security Forces Medical Hospital	Saudi Arabia	Riyadh	50,000
Security Forces Medical City Housing	Saudi Arabia	Riyadh	20,000
STC Administration Building	Saudi Arabia	Riyadh	45,000
Chamber of Commerce	Saudi Arabia	Khobar	30,000
Ajdan Rise	Saudi Arabia	Riyadh	45,000
King Faisal Air Academy in Majma'a	Saudi Arabia	Riyadh	60,000
V Tower	Lebanon	Beirut	10,000+
Boubyan second Tower	Saudi Arabia	Al Khobar	8000
Diyar AlHasa	Saudi Arabia	Al Hofuf	50,000
Farwaniya Hospital Expansion	Kuwait	Kuwait	30,000
Al Kout Mall - Extension	Kuwait	Kuwait	30,000
Ministries District	Egypt	Cairo	500,000
Administrative Control Authority	Egypt	Cairo	80,000
Arab Contractors Towers	Egypt	New City Al-Alamein	110,000
ZED Towers	Egypt	6th of October	40,000
5A / Water Way	Egypt	Cairo	22,000
Mazareen	Egypt	New City Al-Alamein	120,000
Banque De Caire	Egypt	Cairo	15,000
National Bank of Kuwait	Egypt	Cairo	11,000
Arab African International Bank / 1-Ninety	Egypt	Cairo	14,000
Al-Salam Towers	Egypt	Alexandria	22,000
Uhuru Gardens Museums	Kenya	Nairobi	4,900
Trade development Bank	Kenya	Nairobi	4,500
CRDB Bank Headquarters	Tanzania	Dar es Salaam	6,000
National Petroleum Corporation Ghana	Ghana	Tema	1,800
The Dubai Mall Expansion	UAE	Dubai	10,000+

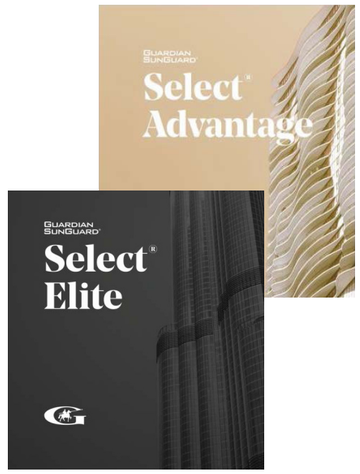
Technical Services and Support

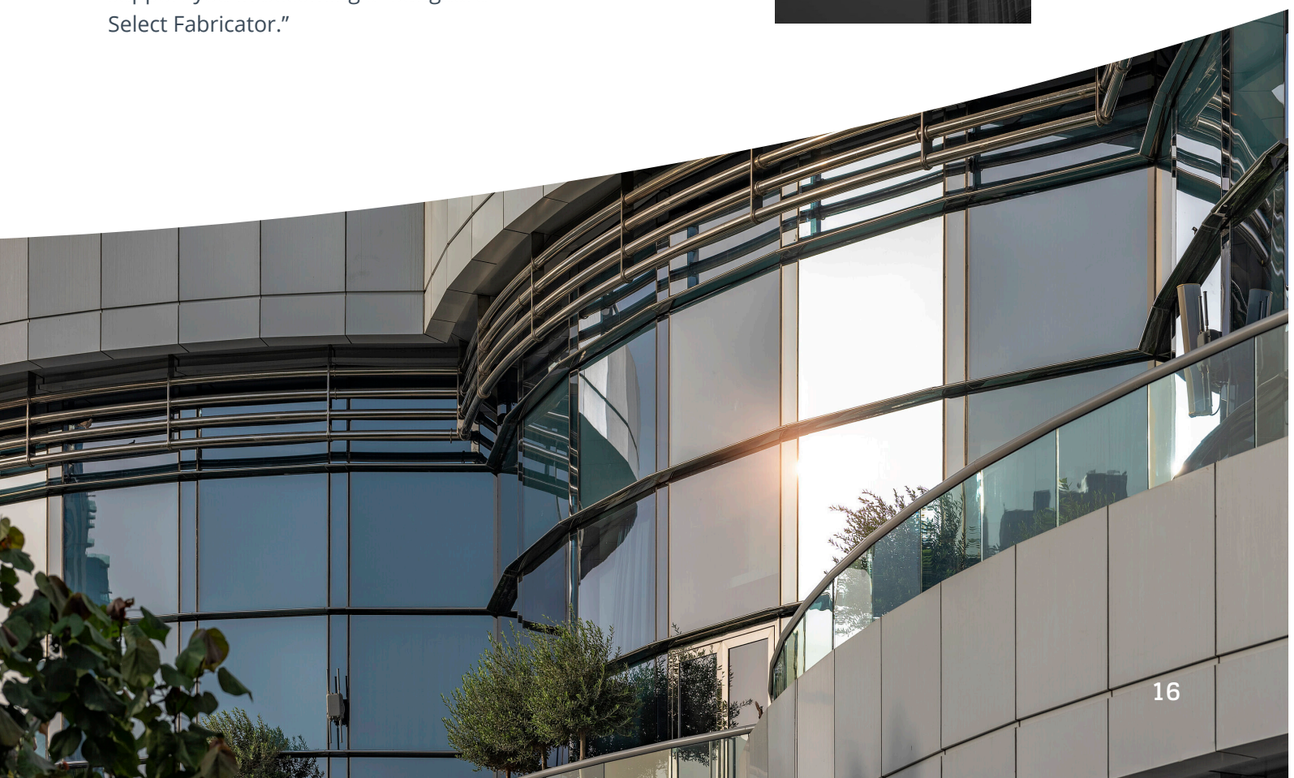
SunGuard Select Fabricator Program

Become a SunGuard Select Fabricator

As SunGuard® has grown, the Guardian Select Fabricator network has also grown. To provide resources, service and support more specifically aligned with the business needs of each fabricator, Guardian is introducing tiers within the Select program; Select Advantage and Select Elite.

We offer a program of certification for our most advanced coated products, our team of experienced "Field Certification Engineers" can support you in becoming a "Sunguard Select Fabricator."





Guardian Select Elite Fabricator

The Elite program goes a few steps further. Open to all Select fabricators who commit to the program parameters and meet the certification criteria and have the capacity to meet and maintain capability and quality standards, the Guardian Select Elite Fabricator program is an option for Select Fabricators who possess world class fabrication capabilities.

Guardian Select Optical Quality (SOQ).

A new specification has been developed, Select Optical Quality (SOQ), that mirrors Elite fabrication quality requirements.

Roll Wave - Automated	Spec Requirement: ≤ 0.08mm (0.003") Max (central area) and +/-100 milidiopter over 95% of glass surface. Equipment Requirement: Osprey by LiteSentry or Similar.
Leading and Trailing Edge	Spec Requirement: <= 0.20mm (0.008") lead and trail edge. Edges-305 (12") of glass surface, <- 0.15mm (0.006") for glass that is to be laminated. Equipment Requirement: Automated online system required Osprey by Lite Sentry or Similar. Zebra Board as back-up only.
Center kink	Spec Requirement: 0.025mm (0.001") Measured perpendicular to direction of travel, +/-70X milidiopter. Equipment Requirement: Automated/On-line - Osprey by Lite Sentry version 7 or similar.
Bow and Warp	Maximum localized and overall bow (warp) per lite shall be 0.031 inch (0.79 mm) per 305mm length. Measured once per hour or at any product change.
Anisotropy	Anisotropy detecting device recommended.
Enhanced IGU Testing	Required - butterfly testing. PIB weights, snap/adhesion testing, documented visual checks for PIB press out and continuity and verifying that there are no gaps between the primary and secondary sealants.
Color	Guardian and Elite level fabricators will monitor color to ensure adherence to EN 1096.

SunGuard Select Fabricator Program



Active support during Glass Processing

Real time technical assistance during glass processing at your facility. This can be conducted either at your facility or by remote operation.



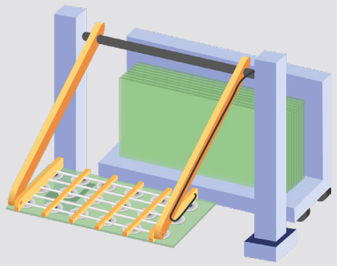
Setup trials for certification purposes

Technical assistance for the initial adjustments of your equipment to reach the best quality for finished products.



Trainings and Seminars by our glass experts

From glass basics to very specific glass applications, our experts share their knowledge with you to help you see what's possible with glass and make your project happen.



Recommendations for new equipment purchasing/ MROs

Guardian Glass can assist you in choosing optimal equipment for your factory, and advise on the most efficient factory layout to maximize productivity.

Glass Makes It Possible

Guardian Glass has developed a set of analytical tools to help educate architects and specifiers, as well as students, on the energy implications of various glass coatings.



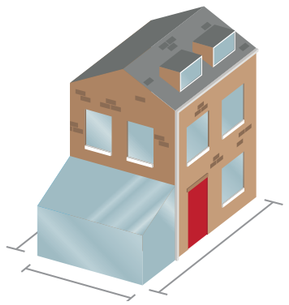
Product recommendations based on our customer requirements

Whether you need glass for façades or any architectural application Guardian Glass can help you find the right glass to suite your need.

Access to Guardian Glass Analytics Software Tools

As a Guardian Glass client, you gain access to the Guardian Glass Analytics tool, helping you visualize and accurately calculate the performance of your Guardian Glass product.



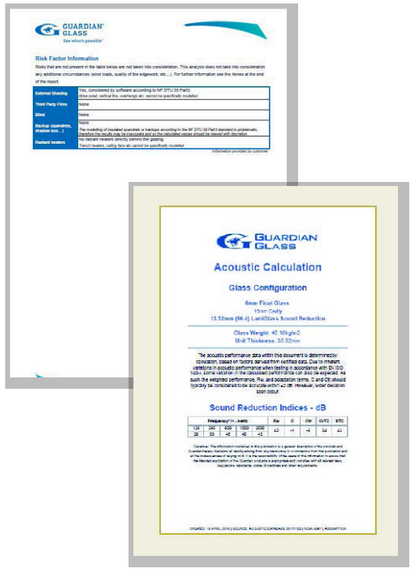


Building Energy Calculator

The building energy calculator uses the makeups created in the performance calculator to compare energy cost, consumption and financial payback information. This schematic design tool makes calculations based on hourly simulations of glazing options, building parameters and project location. The Building Energy Calculator can be used to compare annual energy costs for a variety of climate zones.

Our world renowned TAC support goes above and beyond your expectations

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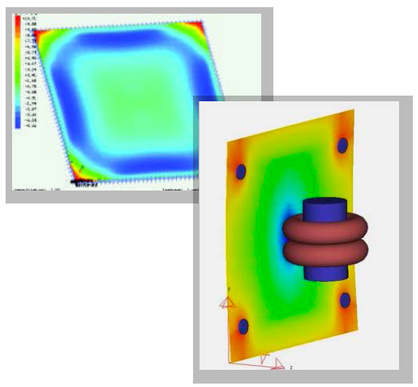


Assessment of the risk of thermally induced breakage

Recommendations regarding the necessity of glass heat treatment and its edge quality based on a specific facade design.

Acoustic Assistant

The Guardian acoustic assistant is a tool to estimate acoustic performance of different types of glazing. User's have the option to estimate the acoustic performance of glazing, find glazing solutions for an acoustic performance, or directly access/view the acoustic performance table.



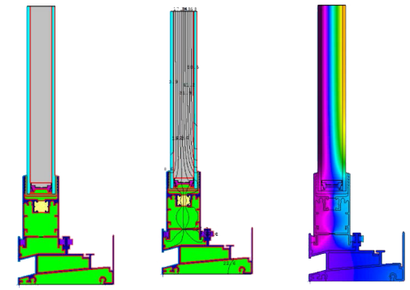
Determination of static requirements

Recommendations of glass compositions and thickness based on specific conditions. Checking the deflection and stress of a certain glass size and thickness.

Discover The Latest Trends in Energy Consumption Analysis Tools

Analyzing Two-Dimensional Heat Transfer Through Building Products

Our Guardian Team of experts are able to model two-dimensional heat-transfer effects in the whole glazing element and other products where thermal bridges are of concern. Guardian's heat-transfer analysis allows you to evaluate a product's energy efficiency and local temperature and patterns. Calculating the whole window system U-value and SHGC supports in the ever changing building codes across Africa and Middle East.

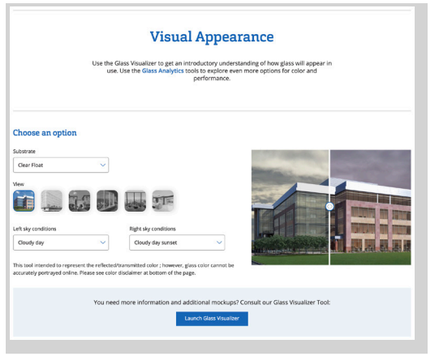




Visualize Glass Possibilities

How about a tool, that let's you exactly see what's possible?

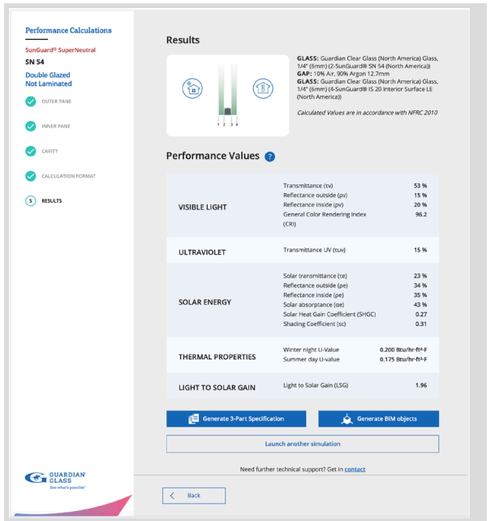
Guardian Glass Visualizer allows you to evaluate the aesthetic properties of virtually any glass application in different climatic conditions, both with external and internal views.





Guardian Glass for BIM

Powered by FenestraPro, is a plug-in that functions within AutoDesk Revit workflow to demonstrate the energy performance implications of glazing design options.



LEED

Guardian supports the Leadership in Energy and Environmental Design (LEED) rating system and the U.S. Green Building Council (USGBC), a coalition of building industry leaders who promote and create environmentally responsible structures. We are also part of the federal ENERGY STAR® program, aimed at increasing energy efficiency and reducing greenhouse gas emissions.

Supporting your LEED strategy

LEED for New Construction is a voluntary standard for developing high performance sustainable buildings. Using SunGuard glass can boost your LEED score in up to six categories. Guardian SunGuard® line offers the largest selection of post-temperable, sputter-coated glass. These advanced coatings only offer enhanced indoor environments while protecting the natural environment.

We now have a dedicated team of certified LEED Green Associates who can support you in all aspects of the LEED rating system.



Photo credit: ©SABIC Home Of Innovation™

GUARDIAN® GLASS

See what's possible™



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guardianglassme

Guardian Glass Middle East

Find out more on guardianglass.com

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