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WHTB ARCHITECTURAL GLASS PRODUCTS YOUR PROJECT DEMANDS

ENERGYSAVING APPLICATION

LOW-E COATING GLASS SOLAR REFLECTIVE GLASS INSULATED GLASS LAMINATED GLASS SENTRYGLAS PLUS SOUND CONTROL GLASS

WHTB MAKES GLASS BETTER

FABRICATION

HEAT-TREATED GLASS CURVED TEMPERED GLASS HEAT SOAKED GLASS SILK-SCREEN GLASS
DIGITAL PRINTED GLASS PRECISION DRILLING & MILLING POINT SUPPORTED GLASS SYSTEM

SERVICE



THE ARCHITECTURAL GLASS PRODUCTS YOUR PROJECT DEMANDS WHO WE ARE

Beijing Wuhua Tianbao Glass Co., Ltd (WHTB Glass) was founded in early 2002 with a total investment of USD 46 million, is a leading provider of processed glass products. It covers an area of 80,000 m² with 110,000 m² floor space of building and have an annual processing capacity of 1,500,000 m².

The main equipments of our company were imported from world-famous processed equipment manufacturers. Such as Tamglass, Lisee, Bystronic, Intermac and Bottero etc, As it imports the world grand glass process software—A+W (ERP) management software from Finland Glaston Group, WHTB has become the first large-scale enterprise of the China glass Industry which install and use the most professional management software.

The main products includes solar reflective glass, Post-temperable Low-E, insulated glass units, laminated glass, tempered glass& heat-strengthened glass, curved tempered glass, fire-resistant glass, digital printer ceramic frit glass, silk-screen glass, as well as composite glass products. The quality of our products are strictly in accordance with the standard of BS/EN, AS/NZS, ASTM, ANSI standards etc.

With the largest production facility in China, specialized CNC machinery and oversized glass manufacturing capabilities, WHTB Glass Group is ideally set up to produce both high-volume and one-off specialty glass products cost effectively and quickly. Whatever your project demands — from exterior high-rise windows to large-capacity glass for storefronts or showrooms — WHTB Industries can manufacture and fabricate the glass products you need to your exacting design and technical specifications.

With our large-capacity glass manufacturing capabilities, WHTB can accommodate short lead times, offer oversized capabilities and large quantity glass units that exceed current building codes and provide decades of performance.

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JOB REFERENCE

COBO DETROIT CONVENTION CENTER, DETROIT CITY, USA

Project name: COBO Detroit Convention Center
 Glass makeup: 10mm Low-iron tempered+2.28mm
 SGP+10mm Low-iron tempered glass
 Glass area: 5000 m²
 Year of completion: 2015



SAINT-GOBAIN AMERICAN R&D RESEARCH CENTER, USA

Project name: Saint-Gobain American R&D Research Center
 Glass makeup: 6mm COOL-LITE SKN163 II (#2) HS
 +16Ar+ 6mm clear tempered glass
 Glass area: 4,500 m²
 Year of completion: 2009



AL HAMRA TOWER, KUWAIT CITY, KUWAIT

Project name: Al Hamra Tower
 Architect: SOM, USA
 Glass makeup: Laminated Curved IGU8mm Sunguard Silver
 20(#2) Curved + 1.52mm PVB + 8mm Clear
 Curved + 16A + 6mm YBE0180 (#3) Curved
 Glass area: 16,000 m²
 Year of completion: 2009

COSTANERA CENTRE TOWER, SAN DIEGO CITY, CHILE

Project name: Costanera Centre Tower
 Architect: Pelli Clarke Pelli Architects
 Glass makeup: 6mm clear HS glass with Cool-Lite
 SKN163II (#2)+12A+6mm clear HS
 8mm Clear Low-E CL184 (#2)+12A+6mm
 clear HS
 Glass area: 20,000 m²
 Year of completion: 2010



KV NIAGARA , MALMO, SWEDEN

Project name: KV Niagara
 Glass makeup: 6mm Clear Curved Tempered +12Ar+ 6mm SDF174II on Clear(#3) Curved Tempered + 12Ar+ 5mm
 Clear Curved Tempered + 1.52mm Clear PVB + 5mm Clear Curved Tempered
 Glass area: 1,200 m²
 Year of completion: 2013

SANBANO COOLANGATTA, GOLD COAST, AUSTRALIA

Project name: Sanbano Coolangatta
 Glass makeup: 6mm Euro gray tinted HS + 12A
 + 6mm SDF176 (#3) HS
 6mm Crystal gray tinted
 curved toughened+2.28mm
 PVB+6mm clear curved
 toughened
 Glass area: 6,000 m²





TAMWORTH HOSPITAL, AUSTRALIA

Project name: Tamworth Hospital
 Glass makeup: 6mm SDF163 Tgh and Heat Soaked + 12mm Aluminum black spacer+ 6mm Clear Tgh and Heat Soaked
 4mm clear HS+1.14mm clear PVB+4mm clear HS, 6mm Clear with RAL 9016 black grey frit HS
 Glass area: 2,200 m²
 Year of completion: 2014



WOLLONGONG UNIVERSITY, AUSTRALIA

Project name: Wollongong University, Australia
 Architect: Bates Smart Architecture
 Glass makeup: 8mm clear Tgh and HST+1.52mm clear PVB+8mm clear Tgh and HST
 6mm Clear with ceramic frit color RAL 7005(#2) toughened and HST+1.52mm Clear PVB+6mm clear toughened and HST
 6mm Sunergy Clear Heat Strengthened + 12mm Air Black Spacer + 6mm Clear HS
 6mm Low Iron with RAL7011 on #2 HS
 Glass area: 3,050 m²
 Year of completion: 2014



999 HAY STREET, PERTH, AUSTRALIA

Project name: 999 Hay Street, Perth
Glass makeup: 6mm DF764 coating on Ford Blue tinted(#2) HS+12A+5mm clear HS/0.76mm Clear PVB/5mm clear HS
10mm CL784 coating on Blue tinted(#2) HS+12A+5mm clear HS/0.76mm Clear PVB/5mm clear HS
8mm Ford blue heat strengthened glass
8mm Ford blue with vertical striped ceramic frit(#2) Heat strengthened
Glass area: 3,900 m²
Year of completion: 2014



ONE CENTRAL MEGAWORLD, MANILA, PHILIPPINES

Project name: One Central Megaworld
Glass makeup: 10mm Solar Reflective CS136 HS
Glass area: 11,000 m²
Year of completion: 2012

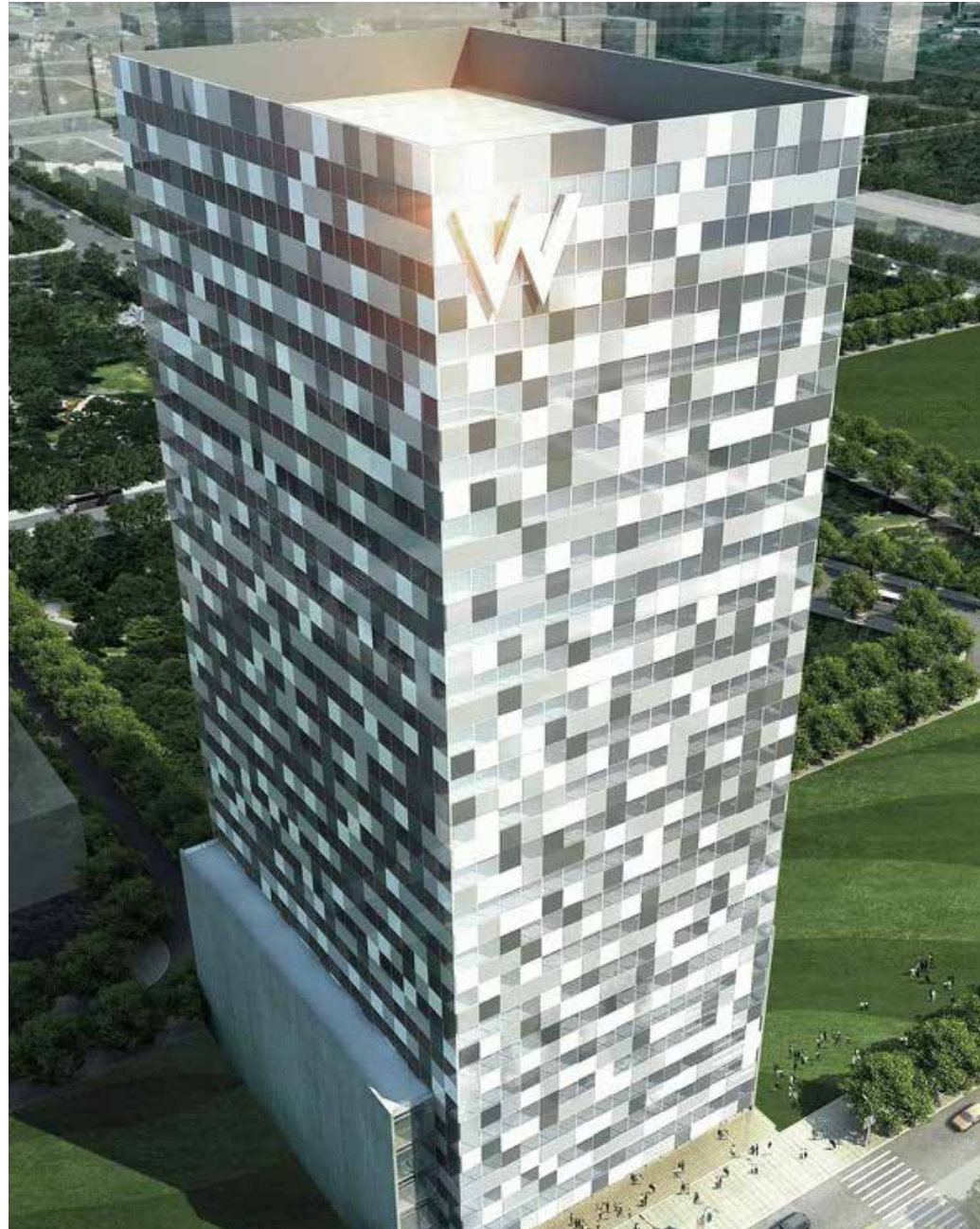
ONE SHENTON WAY, SINGAPORE

Project name: One Shenton Way
Architect: Ott & Associates Architects, USA
Glass makeup: 6mm CS150 (#2) + 1.52PVB + 6mm Clear
Tempered glass
6mm CS124 (#2) + 1.52PVB + 6mm Clear
Tempered glass
Glass area: 5,500 m²
Year of completion: 2010



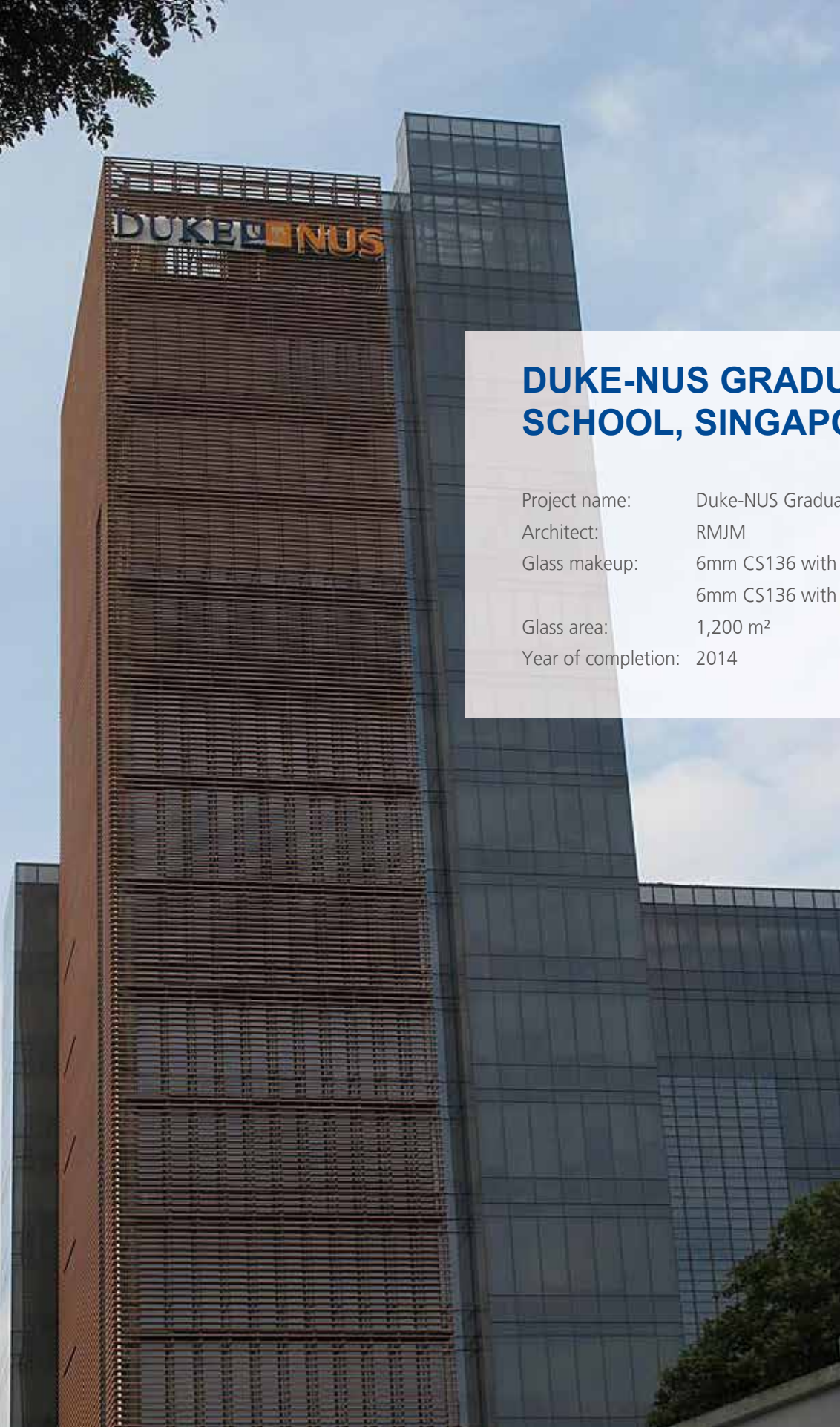
W-FIFTH BUILDING, MANILA, PHILIPPINES

Project name: W-FIFTH Building, Manila
Glass makeup: 10mm White RAL1152(#2) HS + 12A + 6mm clear HS
10mm Blue Solar Reflective CS736(#2)HS + 12A + 6mm Clear HS
10mm Dark Grey Pantone 426PC(#2) HS + 12A + 6mm Clear HS
10mm Light Grey Pantone 424PC(#2) HS + 12A + 6mm Clear HS
Glass area: 16,000 m²
Year of completion: 2012



MARINA BAY SANDS, SINGAPORE

Project name: Marina Bay Sands
Glass makeup: 6mm Clear Float HS + 1.52mm PVB + 6mm PPG
Solarban 70XL HS + 12A + 8mm Clear float FT with HST
8mm PPG Solarban 70XL HS + 12A + 8mm Clear Float FT with HST
Glass area: 5,000m²
Year of completion: 2010



DUKE-NUS GRADUATE MEDICAL SCHOOL, SINGAPORE

Project name: Duke-NUS Graduate Medical School
Architect: RMJM
Glass makeup: 6mm CS136 with ceramic frit HS + 12A + 6mm Clear HS
6mm CS136 with ceramic frit HS
Glass area: 1,200 m²
Year of completion: 2014



STOCK EXCHANGE TOWER, HANOI, VIETNAM

Project name: Stock Exchange Tower
Glass makeup: 5mm Clear HS + 1.14mm Clear PVB + 6mm Blue tinted glass with Low-E DF740(#4) HS
+12A + 6mm Clear Tempered
Glass area: 6,000m²
Year of completion: 2013



CITY OF LIGHTS, ABU DHABI CITY, UAE

Project name: City of Lights
 Glass makeup: 8mm DF530 (#2) HS + 12A + 6mm Tempered HST
 6mm DF1530 (#2) HS + 12A + 6mm Tempered HST
 8mm Clear HS + 1.52mm PVB + 6mm Clear HS
 Glass area: 80,000m²
 Year of completion: 2014



MAFRAQ HOSPITAL, ABU DHABI CITY, UAE

Project name: Mafraq Hospital
 Glass makeup: 8mm CS136 HS
 Glass area: 42,000m²
 Year of completion: 2012





DUBAI METRO STATION, DUBAI, UAE

Project name: Dubai Metro Station
 Glass makeup: 8mm Green tinted Tempered + 12A + 6mm Clear Low-E Planitherm 1.16T (#3) + 1.14mm PVB + 6mm Clear Tempered
 Glass area: 6,000 m²
 Year of completion: 2008



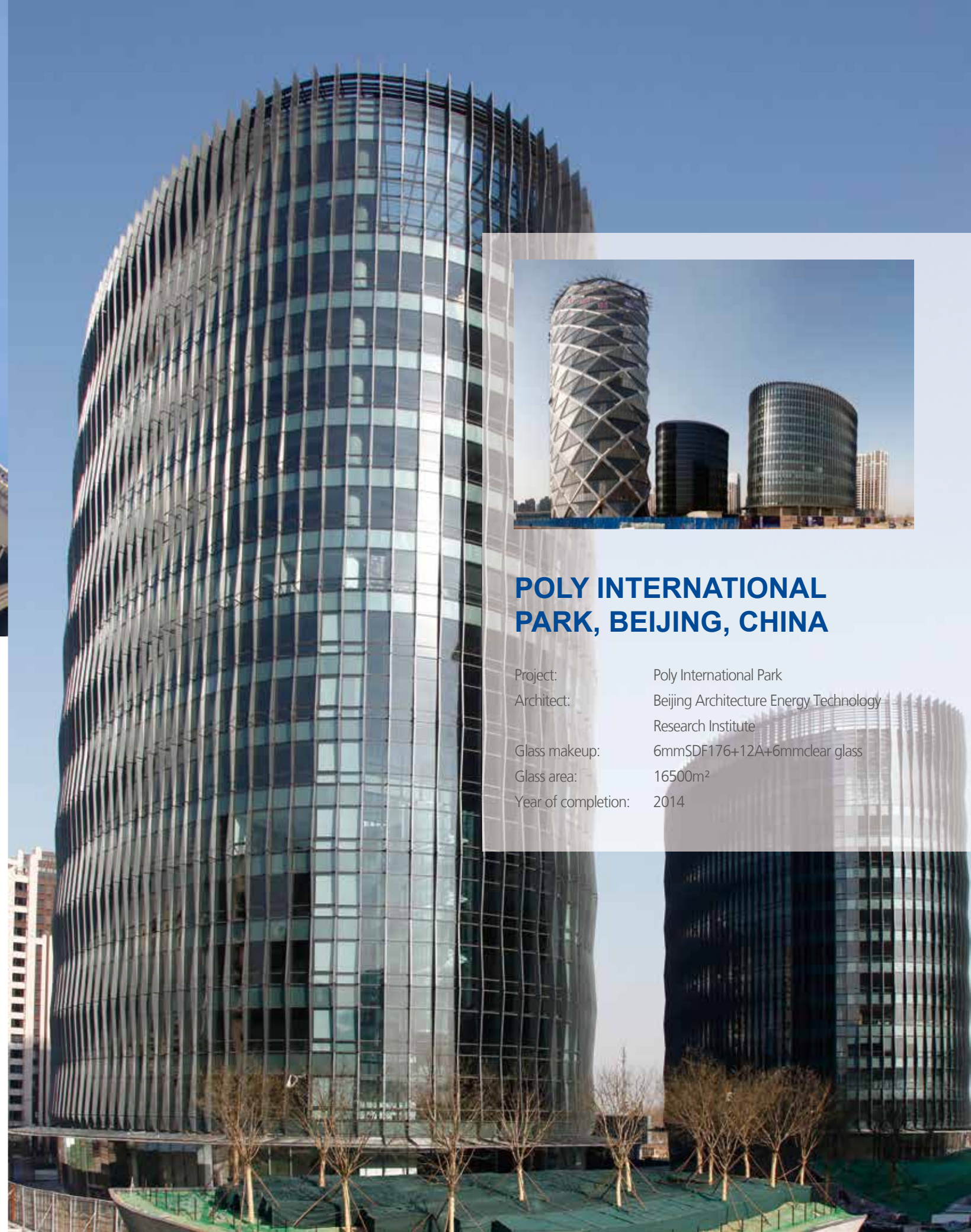
T3 OF BEIJING CAPITAL INTERNATIONAL AIRPORT, CHINA

Project name: T3 of Beijing Capital International Airport
 Glass makeup: Laminated glass with ceramic fritted Ceramic Frit Glass
 Glass area: 25000 m²
 Year of completion: 2007



LOOKOUT TOWER OF OLYMPIC PARK, BEIJING, CHINA

Project: Lookout Tower of Olympic Park
Architect: China Architecture Design Institute & Land-Based Rationalism D.R.C
Glass makeup: 8mmCL184 coating on low-iron glass+12A+8mm low-iron glass
10mmCL184 coating on low-iron glass+12A+10mm low-iron glass
Glass area: 7100m²
Year of completion: 2014



POLY INTERNATIONAL PARK, BEIJING, CHINA

Project: Poly International Park
Architect: Beijing Architecture Energy Technology Research Institute
Glass makeup: 6mmSDF176+12A+6mmclear glass
Glass area: 16500m²
Year of completion: 2014



BEIJING HILTON CONRAD HOTEL, BEIJING, CHINA

Project: Beijing Hilton Conrad Hotel
 Architect: MAD Architectural Firm
 Glass makeup: 6mmclear glass+1.52+6mmSDF163+12A+6mmclear glass+1.52+6mmclear glass
 Glass area: 10600m²
 Year of completion: 2013



NEW ENERGY TECHNOLOGY RESEARCH INSTITUTE OF STATE GRID, BEIJING, CHINA

Project: New Energy Technology Research Institute of State Grid
 Architect: Beijing Architecture Energy Technology Research Institute
 Glass makeup: 6mmDF352+12A+6mmclear glass
 6mmDF340+12A+5mmclear glass+1.14PVB+5mmclear glass
 Glass area: 57000m²
 Year of completion: 2013

PANGU PLAZA, BEIJING, CHINA

Project name: Pangu Plaza
Glass makeup: 8mm DF530 (#2) HS + 12A + 6mm Tempered HST
6mm DF1530 (#2) HS + 12A + 6mm Tempered HST
8mm Clear HS + 1.52mm PVB + 6mm Clear HS
Glass area: 80,000m²
Year of completion: 2014



MOMA PLAZA, BEIJING, CHINA

Project name: Moma Plaza
Glass makeup: 5mmPLT1.3T+16A+4+0.38PVB+4
6T+16A+5PLT1.3
6T+16A+6PLT1.3T
Glass area: 35000m²
Year of completion: 2007





YIZHUANG LIBAO PLAZA, BEIJING , CHINA

Project name: Yizhuang libao plaza

Architect: Pacific Architects & Contractors Co., Ltd

Glass makeup: 6mmFrench greenDF560+12A+6mmclear glass
8mmDF363+12A+6mmclear glass

Glass area: 21000m²

Year of completion: 2014

GLASS PRODUCTS

LOW-E COATING GLASS

SOLAR REFLECTIVE GLASS

INSULATED GLASS

HEAT-TREATED GLASS

CURVED TEMPERED GLASS

HEAT SOAKED GLASS

LAMINATED GLASS

SENTRYGLAS PLUS

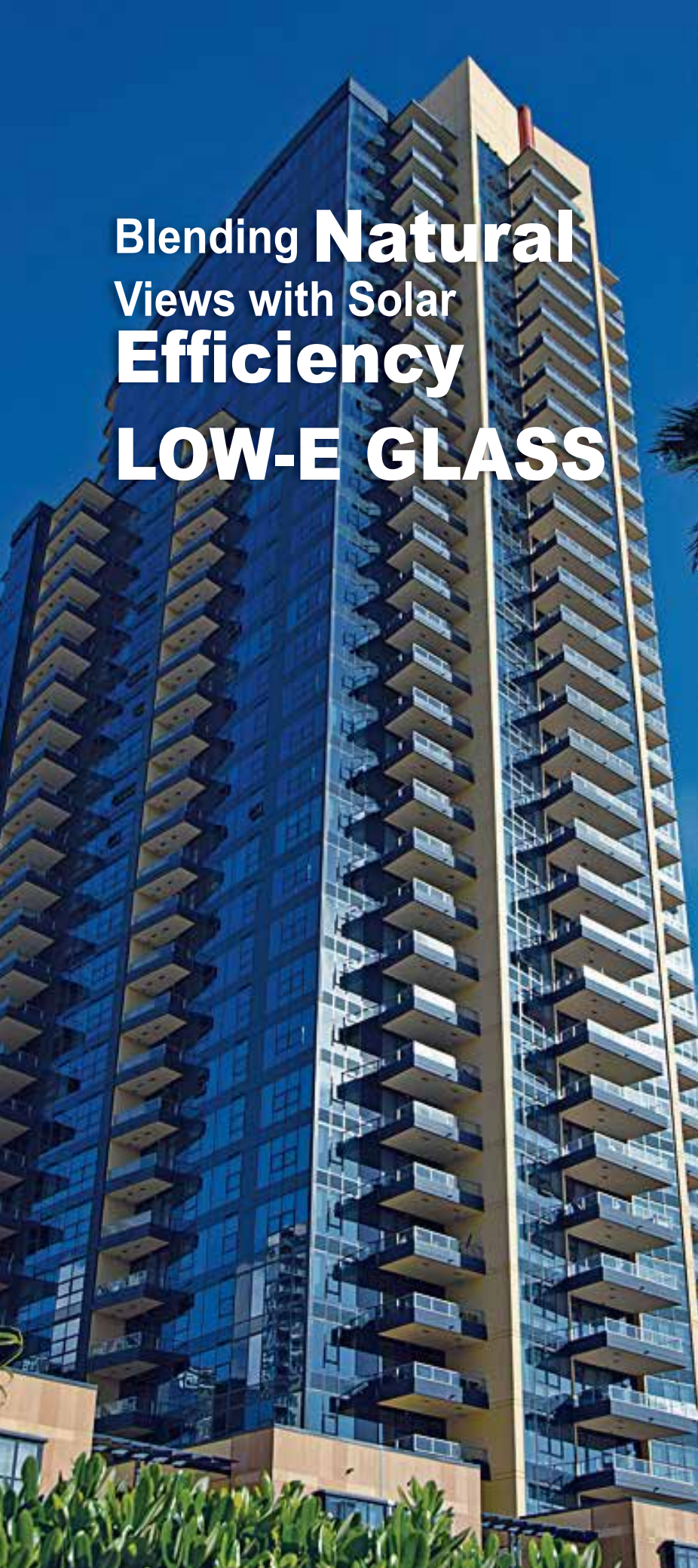
SOUND CONTROL GLASS

SILK-SCREEN GLASS

DIGITAL PRINTED GLASS

PRECISION DRILLING & MILLING

POINT SUPPORTED GLASS SYSTEM



Blending Natural Views with Solar Efficiency LOW-E GLASS

Glass is one of the most popular and versatile building materials used today, and it provides a dramatic aesthetic. But the beauty of glass is pointless if the people inside the building are uncomfortable or if energy inefficiency makes the building too expensive to operate.

Low-emissivity (low-e) glass coatings were developed to minimize the amount of ultraviolet and infrared light that can pass through glass without compromising the amount of visible light that is transmitted. A microscopically thin transparent coating allows Low-E glass to reflect exterior heat in warm temperatures and hold in heat during cold temperatures, making buildings light, bright and energy-efficient. WHTB offers two types of low-e coated glasses: Single silver Low-E and Double silver Low-E.

Single Silver Low-E Glass

Within the coating structure of single silver Low-E glass, there is one silver layer. Single Silver Low-E glass has been widely used in various buildings at different locations worldwide.

Features

- Visible light transmittance— adequate indoor natural daylighting.
- Solar energy transmittance — a wide range of shading coefficient SC available, for different geological locations.
- High far infrared reflectance — low U-value, reduced thermal transfer due to temperature difference.

Double Silver Low-E Glass

Within the coating structure of double silver Low-E glass, there are two silver layers. While maintaining the same visible light transmittance, it has lower shading coefficient, SC, than single silver Low-E glass. In other words, it filters the sunshine as a cool lighting source to a larger extent and provides a solution to energy efficiency in design of high transparency architectures.

Features

- Higher visible light transmittance — ensuring better natural lighting
- Extremely low solar heat transmittance — effectively impeding solar heat radiation.

Low-E Glass Capabilities

Dimensions of standard sheet	2440 mm x 3660 mm (96"x144") 2540 mm x 4800 mm (100"x189") 2540 mm x 3300 mm (100"x130") 2440 mm x 3300 mm (96"x130")
Maximum dimension	2540 mm x 4800 mm (100"x189")
Minimum dimension	300 mm x 800 mm (12"x31")
Thickness	3 mm -19 mm (1/8" to 3/4")
Code Compliance	GB/T18915.2 EN1096 ASTM C1376

The other thicknesses and sizes may be available upon request.



Reflecting BEAUTY and PERFORMANCE SOLAR REFLECTIVE GLASS

WHTB solar reflective glass range is an offline coated glass manufactured by magnetron sputtering deposition under vacuum conditions onto float glass. The manufacturing process and type of materials with which the glass is coated ensure that this coating offers excellent resistance and stability over time.

These qualities enable this coated glass to be processed (e.g. tempered, laminated, bent, enameled etc.), while still retaining its aesthetic and technical benefits.

Solar Reflective Glass Application

The improved durability and post coating processing flexibility makes WHTB solar reflective glass for all types of constructions, whether for major architectural projects or smaller buildings:

- commercial office buildings
- verandas and skylights
- residential high-rises

Solar Reflective Glass Advantage

- Energy savings for air conditioning
- Large range from transparent to darkest on clear, green or blue glass
- Easy to store, handle and process coated glass
- Temperable and bendable glass
- Possible combination with WHTB CL on face 3 for a more efficient thermal insulation
- Can be used as single glass

Solar Reflective Glass Capabilities

Dimensions of standard sheet	2440mm x3660mm(96"x144") 2540mm x4800mm (100"x189") 2540mm x3300mm (100"x130") 2440mm x3300mm (96"x130")
Thickness	3 mm -19 mm (1/8"to 3/4")
Code compliance	GB/T18915.2 EN1096 ASTM C1376

The other thicknesses and sizes may be available upon request.

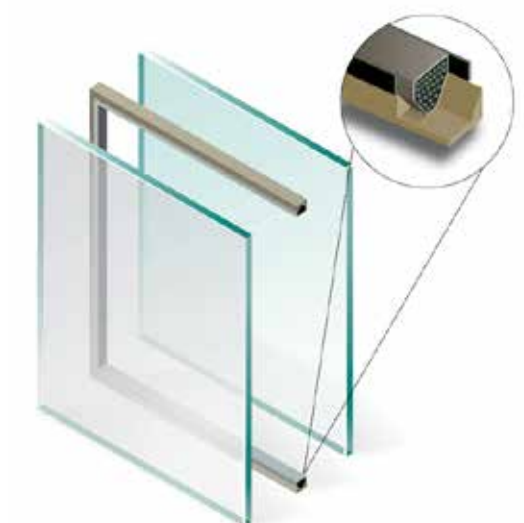


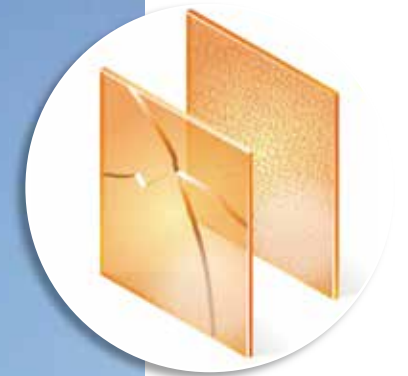
Create COMFORT in any environment INSULATED GLASS

By combining Low-E coatings, standard and high performance tinted glass, reflective coatings, silk-screened patterns, laminated glass products and more, a wide variety of insulating Glass makeups are available to satisfy a wide range of performance and aesthetic requirements. IG units can be fabricated to meet state energy and safety codes, sound control and seismic requirements, impact, bullet, hurricane and blast resistance requirements. IG units can be designed to reduce heat loss and solar heat gain entering the building, with a minimal reduction of visible light transmittance.

Insulating glass units are fabricated according to project specifications. IG units can be constructed using a large variety of glass products to achieve desired aesthetics, meet design criteria, safety codes and/or to improve solar control and thermal performance.

Glass options include clear, low iron, Low-E's, standard or high performance (spectrally selective) tints, reflective, silk-screened, spandrel, laminated, decorative and wired glass. The glass lites of an IG unit can be annealed, heat-strengthened, tempered or laminated.





HEAT TREATED GLASS

Insulating Glass Application

Insulating Glass (IG) units are used in essentially all exterior building applications, including vertical glazing, sloped glazing, overhead glazing and skylights, and also in both vision and spandrel (nonvision) areas. Depending on the glass type used, IG units can be designed for: light and solar control, sound control, ultraviolet screening (to reduce fading), hurricane, earthquake and blast resistance, security, bullet resistance, and decorative applications.

Insulating Glass Capabilities

Create a more comfortable environment while working within these Insulated Glass Unit specs. If you have any questions about our architectural glass products, contact us.

Maximum dimension	12000mm x 2500mm (472" x 98")
Minimum dimension	100mm x 100mm (4" x 4")
Spacer Thickness	6mm (1/4") 9mm (3/8") 12mm (1/2") 14mm (0.55") 15mm (0.59") 16mm (5/8") 18mm (0.7") 20mm (3/4")
Glass Thickness	3mm-19mm (1/8" to 3/4")
Code Compliance	GB/T 11944 ASTM C1172 EN1279 JIS R3205 AS/NZS4666

Heat-treated glass is a general term used in the glass fabrication industry to describe glass that has been processed through a tempering oven to change its strength and breakage characteristics (i.e., the size and/or shape of the glass pieces after breakage). There are two distinct heat-treated products, heat-strengthened glass and fully tempered glass, as defined in ASTM C1048 Standard Specification for Heat-treated Flat Glass—Kind HS, Kind FT Coated and Uncoated Glass. Compared to annealed glass (non-heat-treated glass), both have increased strength to resist higher levels of impact, mechanical load and thermal stress. Heat-strengthening adds strength to the glass while limiting the change in its breakage characteristics. Tempered glass is stronger than heat-strengthened glass and significantly reduces the broken piece size to meet the safety glazing standards.

Fully Tempered Glass

Fully tempered glass, normally referred to as just tempered glass, is approximately four times stronger than annealed glass of the same thickness and configuration. When it is broken, tempered glass fractures into small fragments that reduce the probability of serious injury as compared to annealed glass. Tempered glass meets all safety glazing standards. Because tempered glass fractures into many small pieces, it tends to vacate the opening, when broken, more than heat-strengthened and annealed glass does.

Heat-Strengthened Glass

Heat-strengthened glass is approximately twice as strong as annealed glass of similar thickness and configuration. Heat-strengthened glass generally fractures in a manner similar to annealed glass and tends to remain in the opening when broken. It is intended for general glazing where additional strength and/or resistance to mechanical and/or thermal stress are desired. Heat-strengthened glass is NOT a safety-glazing product and therefore should not be used where safety glazing is required.

Heat Treated Glass Application

Fully Tempered Glass

Tempered glass is used when the strength requirements exceed the capabilities of heat-strengthened glass, and for all safety glazing applications. Tempered glass is commonly used in sliding doors, storm doors, atriums, partitions, windows, storefronts, display cases, bath and shower enclosures and all-glass doors and entrances. Tempered glass should not be installed in areas where it is exposed to temperatures greater than approximately 400°F because it will begin to lose its degree of temper (reverting back to annealed glass).

Heat-Strengthened

Due to its superior glass retention properties, heat-strengthened glass is the preferred heat-treated glass product for applications where additional strength is needed to meet mechanical loads (wind or snow) or thermal loads caused by certain tinted or coated glasses.

Heat-strengthened glass is widely used in laminated glass for additional strength, such as in overhead and sloped glazing. Heat-strengthened glass cannot be used in any safety glazing applications.

Heat Treated Capabilities

Our strongest glass with virtually undetectable distortion.

For optimal performance in terms of wind-load resistance, thermal stress and impact choose from WHTB's line of heat-treated architectural glass products.

Maximum dimension	2440 mm x 8100 mm (96"x319")
Minimum dimension	200 mm x 300 mm (8"x12")
Thickness (mm)	
Tempered glass	3 mm - 19 mm (1/8" x 3/4")
Heat-strengthened glass	3 mm - 12 mm (1/8" - 7/8")
Code Compliance	ASTM C 1048 ANSI Z 97.1 EN12150 BS6206 JIS R 3206 JIS R 3206 JIS R 3222



MINIMIZE THE HEAT WAVE ON HEAT-TREATED GLASS

WHTB Tempered glass provides architects and building owners with a perfect reflection of their work. With our computerized Osprey distortion monitoring system, WHTB can measure and correct roll wave, pocket distortion and end-kink in real-time. This allows us to provide you with heat-treated glass that is virtually free of distortion.

HOW IT WORKS

As the glass exits the tempering furnace a system mounted over the conveyor provides highly-precise online measurements. The leading edge, central area and trailing edge of every lite of glass is measured. Roll wave peak-to-valley values are calculated for the entire surface area of the glass lite and are displayed to the operator in real-time and also stored in a quality database for later review and analysis. The operator immediately observes and removes product that fails to meet these tight tolerances, ensuring you receive glass that is virtually free of optical distortion.

- Every piece of glass is measured
- Entire surface of the glass is measured
- Data is recorded and available on request

A PERFECT REFLECTION EVERY TIME

WHTB produces tempered glass to have a maximum of +/- 100 millidiopters of distortion over 95% of the glass surface. Upon request, WHTB can provide detailed documentation of distortion levels for each lite of glass ordered, ensuring you a perfect reflection.

CURVED TEMPERED GLASS

Curved tempered glass or curved heat-strengthened glass, is achieved by heating glass to softening temperature and then bending by weight or external force, followed by fast cooling with air blowing. WHTB adopts advanced synchronized roller way formation technology, being able to produce various curved tempered glass products, such as round-shaped, J-shaped etc., with high formation precision and quality. If required by application, curved insulating glass, curved laminated glass, or curved tempered laminated coated insulating glass by use of bendable coated glass, can also be manufactured.

Curved Tempered Glass Application

Round glass curtain wall, lighting ceiling, sight viewing elevator channel, indoor round shaped partition, glass guard-rail, decoration glass, furniture etc.

Curved Tempered Glass Capabilities

Thickness	5 mm -19 mm (1/5" -3/4")
Maximum dimension	2440 mm x 4200 mm (96"x165")
Minimum dimension	600 mm x 400 mm (24"x16")
Code Compliance	GB 15763.2 ASTM 1464 AS/NZS 2208 BS/EN 1215



CUT LOSS DUE TO ON-SITE BREAKAGE HEAT SOAKED GLASS

Reduce the possibility of spontaneous tempered glass on-site breakage by specifying Heat Soaked Glass from WHTB. This exclusive process provides an increased level of security by reducing site breakage of tempered glass.

Utilizing the latest in digital recording equipment, WHTB is able to automatically record the batch data of the heat soaked glass, guaranteeing customers that the stringent EN 14179 Standard.

Oversized Heat Soaked Glass

With the largest capacity heat soak in China, WHTB is capacity of producing oversize glass to a maximum of 2540mmx8000mm (100"-315").

Heat Soaked Glass Capabilities

If you have any questions about our heat soaked glass products, contact us.

Maximum dimension	2540mmx8000mm (100"x 315")
Minimum dimension	300mmx300mm (12"x12")

LAMINATED GLASS



Add unsurpassed safety, security and performance to your glazing applications with WHTB's line of Laminated Glass products. Choosing the safety, security and serenity of laminated glass no longer means limiting yourself in regards to glass type, colour or size.

WHTB Laminated Glass is available in all glass types, including, clear, tinted, reflective, Low-E, spandrel, ceramic frit and silk-screened. All the while offering unmatched quality, advanced features and oversized capabilities to match WHTB's heat treated, heat soaked and insulated glass offerings.

A wide variety of interlayer thickness, opacities and colors are available in:

- PVB Laminated Glass
- Polycarbonate Laminated Glass
- SentryGlas® Plus Laminated Glass

The most common laminated glass units are constructed with two plies of glass permanently bonded together with one or more interlayers. The most important characteristics of laminated glass are fall-out protection due to the ability of the interlayer to support and hold the glass when broken as well as the reduced ability to penetrate the opening. The ability to resist various kinds of penetration is dependent upon a number of factors including thickness of the glass and the type of interlayer selected.

Laminated glass also offers a greater availability of coatings than monolithic glass. Low-E coatings which cannot be exposed, and therefore cannot be used with monolithic glass, can be used inside a laminated unit where they are protected.

Laminated glass units also have more aesthetic possibilities than monolithic glass. The interlayers used in laminated glass are available in a variety of colors and opacities. In addition, the Low-E coating and silk-screen pattern, if desired, are

applied to the exterior ply of glass leaving the interior ply available for additional treatment. For a spandrel location, a full coverage opaque ceramic frit can be applied to the inner face (surface #4). For vision areas where daylight is desired but view through needs to be minimized, a translucent ceramic frit can be applied to surface #3.

Laminated Glass Application

- Acoustic

Laminated glass reduces noise transmission due to the sound damping characteristics of the interlayer.

- Aesthetic

Laminated glass interlayers offer a selection of color and opacity not achievable with other glass products such as coatings, glass substrates, silk-screen or spandrel glass. This is especially true with bright, vivid colors as well as opaque or translucent / frosted aesthetic requirements.

- Blast Mitigating

WHTB provides a variety of laminated glass options that help mitigate the effects of air-blast attacks. Important note: Laminated glass is considered a component of the overall glazing system, therefore; the blast mitigating performance is also dependent upon being installed into an adequately designed frame which is then anchored appropriately to the wall structure. WHTB recommends the involvement of a blast consultant to verify the performance of the glass and framing system combination.

- Hurricane Resistant

Hurricane resistant laminates offered by WHTB meet or exceed stringent building code requirements of coastal regions. The laminated glass is a component of the overall glazing system and every WHTB hurricane resistant glass product has passed the impact and cyclic wind pressure test as part of a complete glazing system.

Laminated Glass Capabilities

Laminated glass specs for creating unsurpassed safety, sound control and performance. If you have any questions about our architectural glass products, contact us.

Maximum dimension	3300mm x 12000mm (130" x 472")
Thickness of PVB membrane	0.38mm - 3.04mm (0.015" to 0.2")
Code Compliance	GB/T 11944 ASTM E2190 EN1279 JIS R3205 AS/NZS2208

Architectural safety glass interlayer

SENTRYGLAS® PLUS

For glass that's more than glass

DuPont™ SentryGlas® Plus creates new glazing opportunities by changing the way glass performs and providing new design options for architects and building designers. Tests have proven that SentryGlas® Plus has exceptional residual strength, even when both lites of glass are broken (above photo). This brings greater peace of mind to building owners and occupants in locations that experience typhoons or hurricanes and makes it possible to specify safer laminated glass for point-supported glazing systems, canopies, skylights and railings.

SentryGlas® Plus is an ideal product for complex glazing projects that require increased strength and enhanced appearance. The benefits of SentryGlas® Plus are not only confined to complex projects. Glazing systems that utilize SGP are typically lighter than their PVB counterparts. This can result in larger panels, reduced number of support fittings and a lighter weight support structure that enhance the visual impact. There are significant performance benefits that can be achieved when specifying SentryGlas® Plus laminated products from WHTB.



12mm Laminated Glass with 0.060 SGP Interlayer



12mm Laminated Glass with 0.060 PVB Interlayer

12mm Tempered Glass



SENTRYGLAS® PLUS

LAMINATED GLASS



Exposed Edges - SentryGlas® outperforms conventional PVB in edge stability testing, making it the ideal choice for exposed exterior edges (canopies, railing glass and point supported walls). With SentryGlas® Plus, edge stability numbers (ESNs) continue to be zero at all known installations, including 7-year test panels exposed to severe heat and humidity.



SentryGlas® Plus is 100 times stiffer and 5 times stronger than traditional interlayers, allowing for thinner make ups with equal or greater strength. In stairs, flooring and overhead glazing, laminated glass made with SentryGlas® Plus performs like engineering materials, with outstanding post-breakage resistance to creep and collapse (far left photo).



Security - SentryGlas® Plus provides prolonged physical attack and burglary resistance with 5 times the tear strength and 100 times the rigidity of conventional PVB Interlayer's. SGP provides greater security from a range of threats than any other traditional laminated glass.



Hurricane-Resistance – Because SentryGlas® Plus is stiffer and harder to tear than conventional laminate interlayer's it can withstand greater impacts. In post-breakage wind cycle testing, hurricane glass made with SentryGlas® Plus lasts longer and maintains building protection long after alternative laminated safety glass has failed.



SentryGlas® Plus is available in both a UV transmitting option and as a traditional UV blocking interlayer. Unlike most laminate interlayer technologies, DuPont™ SentryGlas® requires no UV protection for lasting strength and clarity. Therefore, SentryGlas® can be made in a specialty, high-UV transmittance sheet, extremely useful when designing controlled environments for many life species (plants, insects, fish, and reptiles).



Clarity - SentryGlas® Plus structural interlayers are significantly clearer than traditional PVB interlayer's. By combining low-iron glass and SentryGlas® Plus interlayers architects and designers can achieve a laminated glass product with near invisibility. SentryGlas® Plus not only starts clear, it stays clear with a yellowness Index (YI) starting at 1.5 (versus 6 to 12 for conventional interlayer's) and SentryGlas® Plus keeps its clarity after years of service.



SAFETY & SECURITY WITH SUPERIOR SOUND CONTROL GLASS

Shielding a building's environment from increasing noise levels, especially near airports and busy highways, is a critical factor in the specification of glazing materials for both new and renovated structures. Laminated glass is a proven, effective solution for acoustical protection. Sound Control Glass is a perfect solution for insuring exceptional levels of sound insulation. It not only provides insulation for impact and airborne noise but also maintains the safety and security properties of laminated glass.

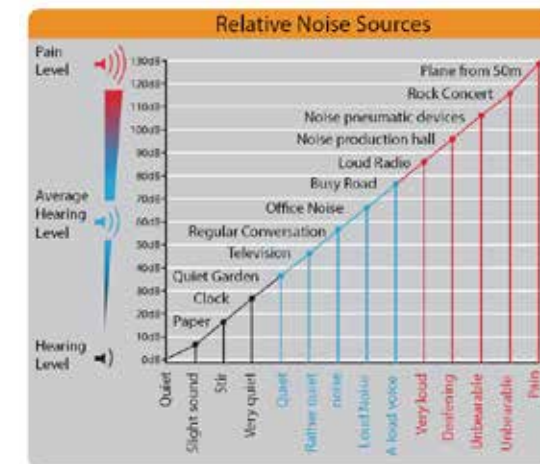
WHTB Sound Control Glass is the ultimate solution, it is an excellent combination of Safety and Acoustic performance with all of the benefit of laminated glass, and can be combined with solar absorbing laminated glass and any of our tinted interlayers for added desirable effects.

Sound is a wave phenomenon characterized in frequencies (Hz), speed (approximately 340m/sec through air) and amplitude (amount of energy in the sound wave).

WHTB Sound Control Glass is designed to decouple and disseminate sounds waves for superior sound damping performance. This system targets sounds in the 1000 – 3000 Hz range which is the “noise transparency” range that allows the most irritating of sounds to penetrate windows.

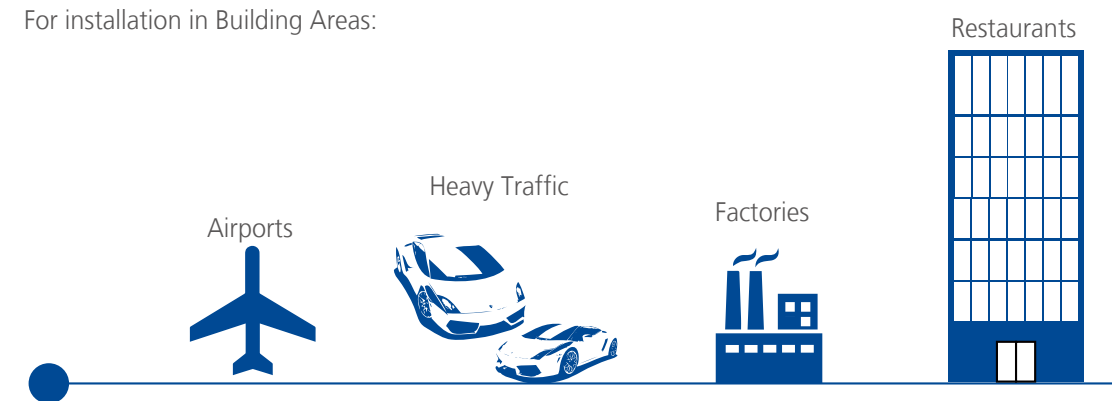
Monolithic glass is a relatively light substance and is also hard, therefore allows sound to pass

quite easily, whereas the Sound Control interlayer is a soft and flexible substance that is not inclined to allow sound to pass through it eliminating noise by approximately 50%.



A SOUND SOLUTION FOR ALL APPLICATION

For installation in Building Areas:



Maximum dimension	3300mm x 12000mm (130" x 472")
Thickness of PVB membrane	0.38mm - 3.04mm (0.015" to 0.2")
Code Compliance	GB/T 11944 ASTM E2190 EN1279 JIS R3205 AS/NZS2208



the **POSSIBILITIES** are **ENDLESS**
SILK-SCREENED
GLASS

WHTB silk-screened ceramic enamel frit products offer building designers exciting and different ways to customize exterior and interior glass, by using standard and custom screened patterns in a variety of colors. Silk-Screened glass is offered monolithically, in insulating glass units, or as laminated glass, providing beauty, safety and functionality.

Available in one-piece orders or high-volume runs, silk-screened decorative glass is custom-made by transferring a silk-screen image to the glass and then processing it through a horizontal tempering furnace. Each individual lite is screen-printed with the desired pattern and ceramic enamel frit color. The ceramic frit can be silk-screened onto the glass substrate in one of three standard patterns, dots, lines, holes, or in a full-coverage application. In addition, custom patterns can be easily duplicated on the glass. Depending on the pattern and the color, the glass lite can be made transparent, translucent or opaque.

WHTB offers a variety of silk-screened decorative glass products to satisfy a wide range of applications. Light frit colors and certain pattern designs can cause enhanced brightness when viewed from indoors under certain daylight and background sky conditions, while dark frit colors will tend to reduce glare. Applications include transparent and translucent silk-screened glass for interior applications, including glass doors, partitions, handrails, glass ceilings, floors, bathrooms, elevator walls, shower enclosures, court walls for racket sports and sneeze guards for food service.

Silk-Screened Capabilities

WHTB silk-screened glass is available in the following size configurations:

Thickness	3.5mm-25mm (0.14" x 0.98")
Maximum dimension	2540mm x 6000mm (100" x 236")
Minimum dimension	300mm x 300mm (12" x 12")
Code Compliance	ASTM C 1048

The maximum glass size will vary with glass thickness and equipment capabilities.



Do More With Glass
DIGITAL
PRINTED
GLASS

From the initial design stage, through the value engineering process, we can assist architects designers and engineers with calculating the long-term savings enabled by digital ceramic printed glass. Digital ceramic in-glass printing meets complex functional performance requirements.

It enables control of all special elements of architectural and designed glass

- TRANSLUCENCY/OPACITY
- LIGHT DIFFUSION AND TRANSMISSION
- SOLAR HEAT GAIN COEFFICIENCY
- ENERGY EFFICIENCY
- PRIVACY LEVELS
- ELECTRICAL CONDUCTIVITY
- SLIP RESISTANCE
- ANTI-BIRD COLLISION

ANYWHERE- Exterior and interior durability. Ceramic ink resistance after tempering is equal to glass resistance.

ANYDESIGN- Personalized, opaque, transparent and textured-look effects. Micro-drop precision enables highly detailed, accurate photorealistic and graphic designs and gradients.

ANYNEED- Any aesthetic requirements and a wide range of functional applications. Micro-drop precision supports light diffusion, light transmission, energy efficiency, sun control, temperature control, privacy levels and other functional requirement.

ANYCOLOR- Multi-color printing in a single glass. Digital in-glass printing technology enables truly limitless multi-color designs with ceramic ink durability.

ANYSIZE- From small panes to building facades, with perfect-registration multi-pane printing. Modular printer hardware and advanced printing software enable simple and flexible printing on glass panes.

ANYCONDITIONS- Full resistance to weather and chemicals. Ceramic inks fused into the glass stand up to harsh weather conditions and are scratch and acid-resistant, ideal for exposed, high-traffic and graffiti-prone installations.

Digital Printed Glass Capabilities

Print resolution	720dpi (real)
Maximum dimension	3300 mm x 6000 mm (130"x236")
Minimum dimension	200 mm x 300 mm (8"x12")
Thickness	2 mm -19mm (0.08" -0.75")
Code Compliance	GB 15763.2 ASTM C1048 AS/NZS 2208 BS/EN 1215

Image format All popular graphic formats including PDF, PS, EPS, Tiff, BMP and JPEG



Glass entrances, shower doors, railing and furniture glass need a special degree of attention. WHTB uses a precision Computerized Numeric Control (CNC) fabrication machine to drill, mill, polish and cut holes and notches with the exact precision and quality required for these jobs.

Polishing and Edgework

WHTB has the edge when it comes to polished edges, offering four standard edge types: flat polish, flat grind, mitered polish and mitered grind. Flat and mitered edges are available on all glass thicknesses, with miters ranging from 0 to 45 degrees.

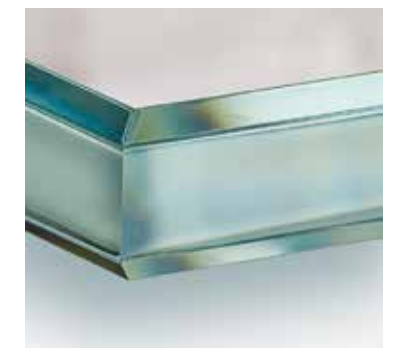
Drilling & Milling Capabilities

CNC Cutting & Polishing

Minimum Width	300mm (12")
Minimum Length	300mm (12")
Maximum With Holes Only, No CNC Polish	4500mm x 2540mm (177" x 100")
Maximum With CNC Polish	4500mm x 2540mm (177" x 100")

Drilling

Minimum Diameter	5mm (3/16")
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Almost UNSEEN engineering support

POINT SUPPORTED GLASS SYSTEM

Create a statement on your next glazing project with Point-Supported System. This striking all-glass glazing option is ideally suited for vertical walls, entrances and canopies, providing architects the greatest level of transparency in today's facades and eliminating the need for metal mullions.

Point supported systems can incorporate insulating glass with or without Low-E, laminated glass or monolithic tempered glass.

Benefits

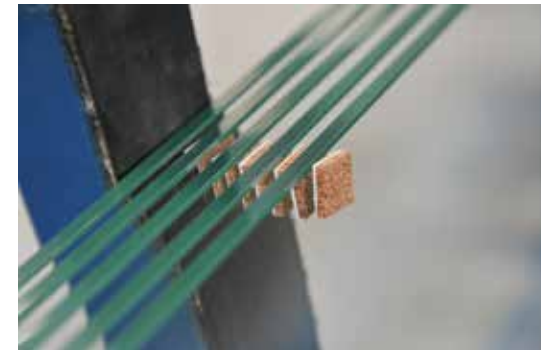
- Sole Source - from engineering to in-house precision fabrication
- Precision Tempering Ovens - producing highest quality glass
- Laser Guided CNC Fabrication
- Complete Project Package - glass, hardware, shop drawings and engineering
- Technical Support - design assistance, specifications and estimating

Point Supported Glass Options

- Available in Monolithic Glass, Laminated Glass and Insulating Glass Units
- Clear, Low Iron, Low E and Tinted Glass
- Ceramic Silk-Screened Patterns
- Laminated Glass with PVB Interlayer
- Laminated Glass with SentryGlas® Plus Structural Interlayer
- Insulating Glass Units
- Heat Soak Testing to EN 14179-1:2005 standard

WHTB FABRICATION CAPABILITIES

Manufacturing	Lines	Max Size				Production Capability (ths m ² / Y)
		mm	mm	inch	inch	
Leybold Low-E Coating Production Line	2	2540	9600	100	377	18000
Insulated Glass Units Production Line	7	2700	5000	106	196	2000
Flat Tempered Furnace Production Line	8	2400	8000	95	315	6500
Curved Tempered Furnace Production Line	2	4200	2400(Arc)	165	95	600
Silk-Screen Printer Production Line	1	2440	3660	96	144	200
Digital Printer Ceramic Frit Production Line	1	3000	6000	118	6000	90
Laminated Glass Production Line	2	2440	12000	96	473	500
Heat Soak Tested Furnace	2	2440	8000	96	315	500

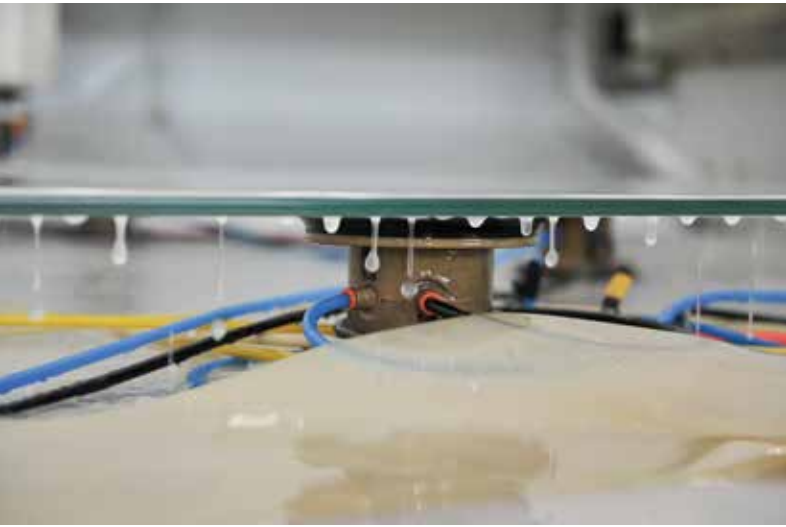


High Performance Tempered Coating Line

Max Size 2540*9600mm

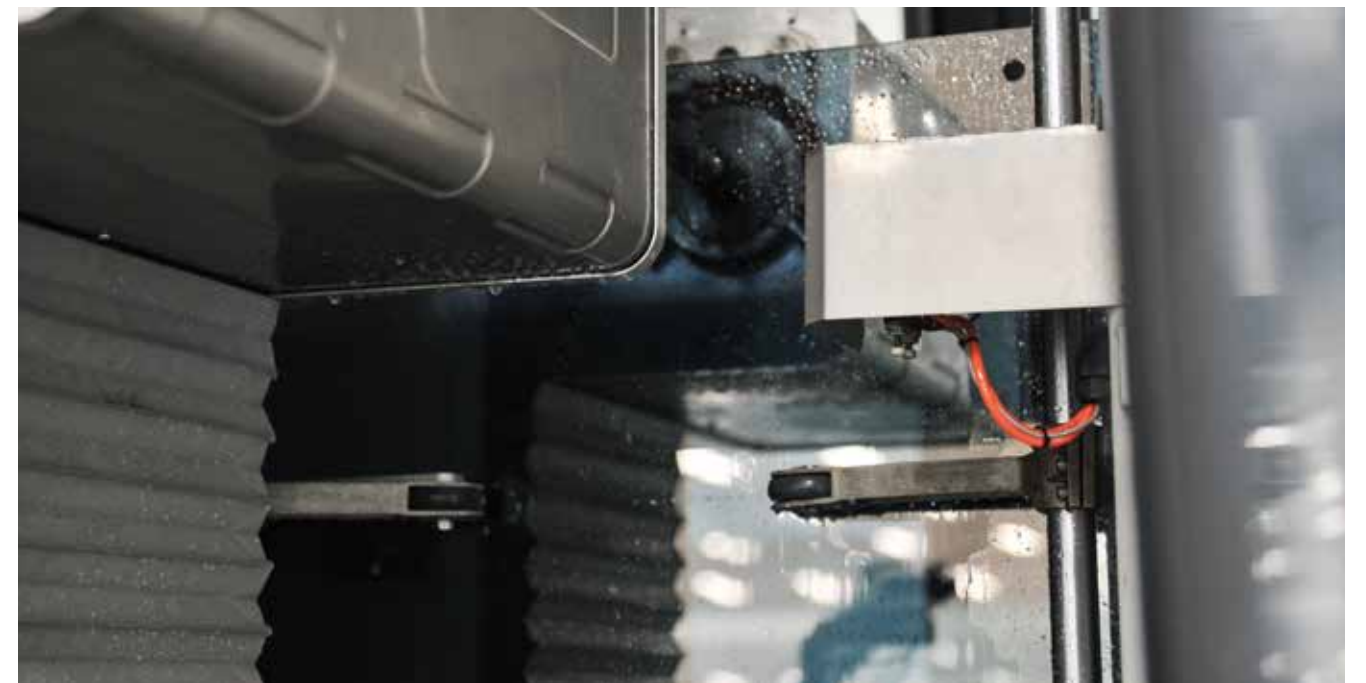
Bottero Automatic Shuttle Stock Cutting System

Cutting Thickness	2-19mm	0.08" -0.75"
Cutting Accuracy	±0.15mm	±0.006"
Max Cutting Size	3300x6100 mm	130" x240"



INTERMAC Digital Control Process Center From Italy

Thickness	3-19mm	0.12" - 0.75"
Accuracy	±0.1mm	±0.004"
Max Size	2000x4500mm	79" x177"



Digital Drilling Machine

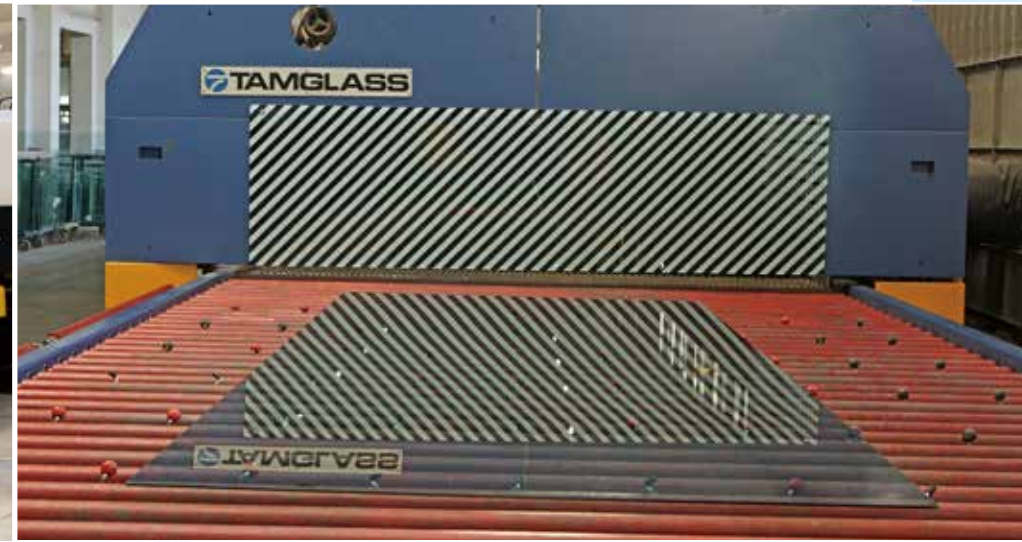
Thickness	5-30mm	0.19" - 1.18"
Max Size	3000x6000mm	118" x236"

Convection Continuous Tempered Furnace

Thickness 2.85-8mm 0.11" - 0.31"

Max Size 1500x3000mm 59" - 118"

Min. Size 200x400mm 8" - 16"



Submarine Convection Tempered Furnace

Thickness 5-25mm 0.19" - 0.98"

Max Size 2440x8000mm 96" x 315"

Min. Size 200x300mm 8" x 12"

Tamglass GHF Convection Furnace

Thickness 4-25mm 0.16" - 0.98"

Max. Size 2440x4800mm 96" x 189"

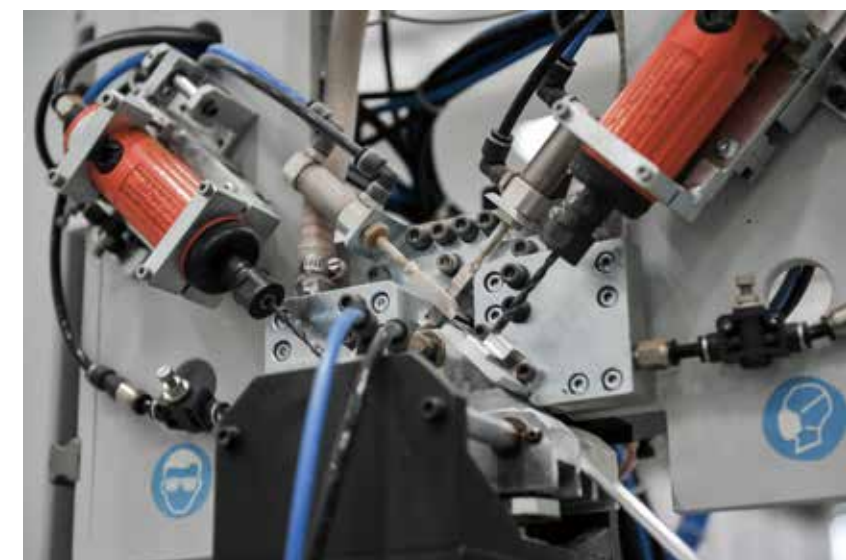
Min. Size 300x300mm 12" x 12"





Bystronic Automatic Assembly Gasfill Press Insulation Line

Max Size 2700x5000mm 106" x 197"





Automatic Intelligent Laminated Glass Line

Max. Size 2440x12000mm 96" × 472"

Digital Ceramic In-Glass Printer

Thickness 2-19mm 0.08" - 0.75"

Max. Size 3300x6000mm 130" × 236"



PERFORMANCE DATA

Monolithic Float Glass

Glass makeup	Reflective colour	Visible Light(%)			Solar Energy(%)		U-Value (W/m ² .K)		SC	SHGC
		Trans	Refl.		Trans	Refl.	Summer	Winter		
			Outer	Inner						
3mm Clear Float	Clear	91	8	9	88	8	5.34	5.92	1.03	0.90
4mm Clear Float	Clear	90	9	8	87	8	5.30	5.88	1.02	0.89
5mm Clear Float	Clear	90	8	8	85	8	5.27	5.85	1.01	0.88
6mm Clear Float	Clear	90	8	8	84	8	5.25	5.81	0.99	0.86
8mm Clear Float	Clear	89	8	8	82	8	5.19	5.75	0.97	0.84
10mm Clear Float	Clear	89	8	8	80	7	5.13	5.67	0.96	0.84
12mm Clear Float	Clear	88	8	8	77	7	5.08	5.61	0.94	0.82
15mm Clear Float	Clear	87	8	8	75	7	4.99	5.51	0.93	0.81
19mm Clear Float	Clear	86	8	8	72	7	4.89	5.39	0.90	0.78
5mm Euro Grey	Light grey	49	5	5	47	5	5.27	5.84	0.71	0.62
6mm Euro Grey	Light grey	44	5	5	43	5	5.25	5.82	0.68	0.59
8mm Euro Grey	Grey	34	5	5	33	5	5.19	5.75	0.61	0.53
10mm Euro Grey	Grey	28	5	5	28	5	5.13	5.68	0.56	0.49
5mm French Green	Green	77	7	7	48	6	5.27	5.84	0.72	0.63
6mm French Green	Green	75	7	7	44	5	5.25	5.81	0.69	0.60
8mm French Green	Green	70	7	7	36	5	5.19	5.74	0.63	0.55
10mm French Green	Green	65	6	6	30	5	5.13	5.68	0.59	0.51
5mm Crystal Grey	Light Grey	67	7	7	60	6	5.27	5.84	0.81	0.70
6mm Crystal Grey	Light Grey	64	6	7	56	6	5.25	5.81	0.77	0.67
8mm Crystal Grey	Light Grey	56	6	6	47	6	5.19	5.74	0.71	0.61
10mm Crystal Grey	Light Grey	49	6	6	40	5	5.13	5.67	0.65	0.56
5mm Ocean Blue	Blue	63	6	6	47	6	5.27	5.84	0.78	0.68

6mm Ocean Blue	Blue	65	6	6	51	6	5.24	5.81	0.74	0.64
8mm Ocean Blue	Blue	58	6	6	42	5	5.18	5.74	0.67	0.59
10mm Ocean Blue	Blue	52	6	6	36	5	5.13	5.68	0.63	0.55

Low-iron Glass

Glass makeup	Reflective colour	Visible Light(%)			Solar Energy(%)		U-Value (W/m ² .K)		SC	SHGC
		Trans	Refl.		Trans	Refl.	Summer	Winter		
			Outer	Inner						
5mm Low-iron	Clear	91	8	8	90	8	5.27	5.84	1.04	0.90
6mm Low-iron	Clear	91	8	8	90	8	5.25	5.81	1.04	0.90
8mm Low-iron	Clear	91	8	8	90	8	5.19	5.75	1.04	0.90
10mm Low-iron	Clear	91	8	8	89	8	5.13	5.67	1.04	0.90
12mm Low-iron	Clear	91	8	8	89	8	5.07	5.61	1.03	0.90
15mm Low-iron	Clear	90	8	8	89	8	4.99	5.51	1.03	0.90
19mm Low-iron	Clear	90	8	8	87	8	4.89	5.39	1.02	0.89

Hard Coated Low-E Monolithic Glass

Glass makeup	Reflective colour	Visible Light(%)			Solar Energy(%)		U-Value (W/m ² .K)		SC	SHGC
		Trans	Refl.		Trans	Refl.	Summer	Winter		
			Outer	Inner						
4mm Planibel	Clear	82	11	10	69	12	3.08	3.89	0.84	0.73
5mm Planibel	Clear	83	10	11	68	10	3.07	3.88	0.83	0.72
6mm Planibel	Clear	80	9	9	62	8	3.06	3.87	0.78	0.67
8mm Planibel	Clear	81	10	11	64	10	2.95	3.76	0.80	0.69
10mm Planibel	Clear	79	10	11	61	10	2.90	3.70	0.77	0.67
5mm Sunergy Clear	Light Grey	69	8	10	52	9	3.43	4.19	0.69	0.60
6mm Sunergy Clear	Light Grey	69	9	10	51	9	3.42	4.17	0.68	0.59
8mm Sunergy Clear	Light Grey	68	8	10	50	9	4.13	4.39	0.68	0.58
10mm Sunergy Clear	Light Grey	66	8	10	48	9	4.09	4.32	0.66	0.57
5mm SY-48	Light Grey	52	7	8	39	8	3.73	4.49	0.56	0.49
6mm SY-48	Light Grey	51	7	8	38	8	3.72	4.39	0.56	0.49

8mm SY-48	Light Grey	51	6	7	37	8	3.71	4.38	0.55	0.48
3mm Pilkington Energy Advantage	Clear	82	11	12	69	11	2.78	3.69	0.83	0.72
4mm Pilkington Energy Advantage	Clear	82	10	11	68	10	2.77	3.68	0.82	0.71
5mm Pilkington Energy Advantage	Clear	83	11	12	38	11	2.76	3.67	0.82	0.71
6mm Pilkington Energy Advantage	Clear	82	10	11	66	10	2.75	3.66	0.81	0.70
8mm Pilkington Energy Advantage	Clear	81	10	11	62	9	2.73	3.64	0.77	0.67
5mm Pilkington Solar-E 47	Blue Grey	54	7	8	51	8	2.77	2.87	0.56	0.49
6mm Pilkington Solar-E 47	Blue Grey	53	7	8	50	8	2.76	2.86	0.56	0.49
8mm Pilkington Solar-E 47	Blue Grey	52	6	7	49	8	2.75	2.85	0.55	0.48

Laminated Glass

Glass makeup	Reflective colour	Visible Light(%)			Solar Energy(%)		U-Value (W/m ² .K)		SC	SHGC
		Trans	Refl.		Trans	Refl.	Summer	Winter		
			Outer	Inner						
3C/0.38PVB/3C	Clear	90	8	8	81	8	5.19	5.75	0.97	0.84
4C/0.38PVB/4C	Clear	88	8	8	74	7	5.13	5.69	0.91	0.79
5C/0.38PVB/5C	Clear	88	8	8	76	7	5.08	5.62	0.94	0.81
6C/0.38PVB/6C	Clear	87	8	8	70	7	5.04	5.56	0.87	0.75
8C/0.38PVB/8C	Clear	85	8	8	66	6	4.90	5.46	0.83	0.72
10C/0.38PVB/10C	Clear	84	8	8	61	6	4.82	5.36	0.79	0.68
3C/ 0.38 Grey PVB/3C	Light grey	43	5	5	54	6	5.20	5.76	0.76	0.66
5C/ 0.38 Grey PVB/5C	Light grey	43	5	5	50	6	5.08	5.62	0.74	0.64
5Euro grey/0.38PVB/5C	Light grey	48	5	5	45	5	5.12	5.66	0.65	0.56
6Euro grey/0.38PVB/6C	Light grey	42	5	5	39	5	5.02	5.56	0.60	0.52
8Euro grey/0.38PVB/8C	Grey	32	5	5	50	5	4.92	5.46	0.52	0.45
3C/ 0.38 Cool Blue PVB/3C	Light Blue	73	7	7	71	7	5.20	5.76	0.89	0.77
5C/ 0.38 Cool Blue PVB/5C	Light Blue	73	7	7	66	7	5.08	5.62	0.86	0.75
5Blue/0.38PVB/5C	Blue	60	6	6	43	5	5.12	5.66	0.64	0.56
6Blue/0.38PVB/6C	Blue	56	6	6	39	5	5.02	5.56	0.60	0.52
8Blue/0.38PVB/8C	Blue	47	5	5	31	5	4.92	5.46	0.53	0.46
5Green/0.38PVB/5C	Green	74	7	7	43	5	5.12	5.66	0.63	0.55

6Green/0.38PVB/6C	Green	71	7	7	39	5	5.02	5.56	0.60	0.52
8Green/0.38PVB/8C	Green	65	6	6	32	5	4.92	5.46	0.54	0.47
5Crystal grey/0.38PVB/5C	Light grey	60	6	6	52	6	5.12	5.66	0.78	0.68
6Crystal grey/0.38PVB/6C	Light grey	62	6	6	57	6	5.02	5.56	0.76	0.66
8Crystal grey/0.38PVB/8C	Light grey	54	6	6	50	6	4.92	5.46	0.70	0.61

Sunergy Clear Laminated Glass

Glass makeup	Reflective colour	Visible Light(%)			Solar Energy(%)		U-Value (W/m ² .K)		SC	SHGC
		Trans	Refl.		Trans	Refl.	Summer	Winter		
			Outer	Inner						
5Clear/0.38 Clear PVB/5Sunergy Clear	Light grey	67	8	10	46	8	3.32	4.03	0.65	0.56
6Clear/0.38 Clear PVB/6Sunergy Clear	Light grey	67	9	10	45	8	3.32	4.03	0.64	0.55
8Clear/0.38 Clear PVB/8Sunergy Clear	Light grey	66	8	10	44	8	2.28	3.39	0.63	0.55
10Clear/0.38 Clear PVB/10Sunergy Clear	Light grey	64	7	9	43	7	2.24	3.35	0.62	0.54

Planibel.G Laminated Glass

Glass makeup	Reflective colour	Visible Light(%)			Solar Energy(%)		U-Value (W/m ² .K)		SC	SHGC
		Trans	Refl.		Trans	Refl.	Summer	Winter		
			Outer	Inner						
5Clear/0.38 Clear PVB/5Planibel	Clear	81	10	11	61	8	3.00	3.77	0.78	0.67
6Clear/0.38 Clear PVB/6Planibel	Clear	78	9	9	55	7	2.98	3.74	0.72	0.62
8Clear/0.38 Clear PVB/8Planibel	Clear	74	8	8	48	6	2.93	3.68	0.65	0.57
5Green /0.38 Clear PVB/5Planibel	Green	69	8	10	37	6	2.99	3.77	0.56	0.48
6Green /0.38 Clear PVB/6Planibel	Green	65	7	8	31	6	2.98	3.74	0.52	0.44
8Green /0.38 Clear PVB/8Planibel	Green	60	6	7	25	6	2.94	3.70	0.48	0.42
5Blue/0.38 Clear PVB/5Planibel	Blue	55	7	9	38	6	2.99	3.77	0.57	0.49
6Blue/0.38 Clear PVB/6Planibel	Blue	49	6	7	32	6	2.98	3.74	0.52	0.44
8Blue/0.38 Clear PVB/8Planibel	Blue	43	5	6	26	6	2.96	3.70	0.47	0.41
5Euro grey/0.38 Clear PVB/5Planibel	Grey	44	6	9	34	6	2.99	3.77	0.54	0.46
6Euro grey/0.38 Clear PVB/6Planibel	Grey	38	5	7	28	5	2.98	3.74	0.48	0.41
8Euro grey/0.38 Clear PVB/8Planibel	Grey	32	4	6	22	4	2.96	3.70	0.42	0.37

SY-48 Laminated Glass

Glass makeup	Reflective colour	Visible Light(%)			Solar Energy(%)		U-Value (W/m ² .K)		SC	SHGC
		Trans	Refl.		Trans	Refl.	Summer	Winter		
			Outer	Inner						
5Clear/0.38 Clear PVB/5SY-48	Light grey	66	7	11	44	7	3.30	4.00	0.61	0.53
6Clear/0.38 Clear PVB/6SY-48	Light grey	65	8	10	43	7	3.26	3.96	0.60	0.52
8Clear/0.38 Clear PVB/8SY-48	Light grey	64	7	9	42	7	3.20	3.92	0.58	0.50

Solar Reflective Glass

Glass makeup	Reflective colour	Visible Light(%)			Solar Energy(%)		U-Value (W/m ² .K)		SC	SHGC
		Trans	Refl.		Trans	Refl.	Summer	Winter		
			Outer	Inner						
6mm CS108 coating on Clear	Platinum	8	44	38	6	38	3.20	3.77	0.18	0.15
6mm CS120 coating on Clear	Sterling Silver	20	32	27	17	26	4.80	5.37	0.35	0.30
6mm CS136 coating on Clear	Light blue	37	22	18	32	18	5.10	5.67	0.51	0.44
6mm CS150 coating on Clear	Lighty sky blue	51	18	17	45	14	5.30	5.87	0.64	0.56
6mm CS166 coating on Clear	Slightly blue	66	18	19	62	14	5.20	5.77	0.78	0.68
6mm CS320 coating on Euro grey	Grey	10	8	20	8	13	4.80	5.37	0.20	0.17
6mm CS336 coating on Euro grey	Grey	18	8	18	17	8	5.10	5.67	0.39	0.34
6mm CS350 coating on Euro grey	Grey	25	8	16	25	7	5.30	5.87	0.47	0.41
6mm CS366 coating on Euro grey	Grey	33	8	17	32	7	5.20	5.77	0.60	0.52
6mm CS420 coating on Green	Deep green	16	23	27	10	13	4.80	5.37	0.32	0.28
6mm CS436 coating on Green	Green	30	16	18	18	10	5.10	5.67	0.41	0.36
6mm CS450 coating on Green	Light blue green	42	14	16	25	9	5.30	5.87	0.48	0.42
6mm CS466 coating on Green	Green-Slightly blue	54	14	18	33	9	5.20	5.77	0.55	0.48
6mm CS520 coating on Crystal grey	Light Grey	16	11	20	14	16	4.80	5.37	0.25	0.22
6mm CS536 coating on Crystal grey	Light Grey	24	11	18	23	11	5.10	5.67	0.44	0.38
6mm CS550 coating on Crystal grey	Light Grey	33	10	16	33	9	5.30	5.87	0.54	0.47
6mm CS566 coating on Crystal grey	Light Grey	39	10	17	40	9	5.20	5.77	0.66	0.57
6mm CS720 coating on Blue	Dark blue	13	16	27	9	12	4.80	5.37	0.32	0.28
6mm CS736 coating on Blue	Blue	24	10	22	18	9	5.10	5.67	0.41	0.36
6mm CS750 coating on Blue	Royale blue	32	10	17	25	8	5.30	5.87	0.48	0.42
6mm CS766 coating on Blue	Light blue	42	10	18	34	8	5.20	5.77	0.56	0.49

6mm CS020 coating on Low-iron	Sterling Silver	21	32	28	19	28	4.80	5.37	0.35	0.30
6mm CS036 coating on Low-iron	Light blue	38	23	18	34	20	5.10	5.67	0.51	0.44
6mm CS050 coating on Low-iron	Lighty sky blue	52	18	17	49	15	5.30	5.87	0.66	0.58
6mm CS066 coating on Low-iron	Slightly blue	67	18	20	63	15	5.20	5.77	0.78	0.68

Insulated Glass Units-Solar Reflective Glass

Glass makeup	Reflective colour	Visible Light(%)			Solar Energy(%)		U-Value (W/m ² .K)		SC	SHGC
		Trans	Refl.		Trans	Refl.	Summer	Winter		
			Outer	Inner						
6CS108 coating on Clear+12A+6C	Platinum	7	44	38	5	38	1.88	1.87	0.14	0.12
6CS120 coating on Clear+12A+6C	Sterling Silver	18	32	29	13	26	2.65	2.52	0.27	0.24
6CS136 coating on Clear+12A+6C	Light blue	33	23	23	25	17	2.76	2.63	0.42	0.36
6CS150 coating on Clear+12A+6C	Lighty sky blue	46	20	21	37	15	2.81	2.67	0.54	0.47
6CS166 coating on Clear+12A+6C	Slightly blue	60	23	23	52	17	2.82	2.66	0.67	0.59
6CS320 coating on Euro grey+12A+6C	Dark grey	9	11	30	7	14	2.66	2.52	0.19	0.17
6CS336 coating on Euro grey+12A+6C	Grey	16	9	22	15	9	2.77	2.63	0.27	0.24
6CS350 coating on Euro grey+12A+6C	Grey	22	8	21	21	8	2.81	2.67	0.35	0.31
6CS366 coating on Euro grey+12A+6C	Grey	29	8	22	26	8	2.84	2.66	0.41	0.36
6CS420 coating on Green+12A+6C	Deep green	15	23	29	8	13	2.66	2.53	0.20	0.18
6CS436 coating on Green+12A+6C	Green	27	17	22	15	10	2.76	2.64	0.29	0.25
6CS450 coating on Green+12A+6C	Light blue green	37	15	21	21	10	2.82	2.67	0.35	0.31
6CS466 coating on Green+12A+6C	Light green	49	16	23	27	10	2.82	2.66	0.41	0.36
6 CS520 coating on Crystal grey+12A+6C	Dark grey	14	18	30	11	15	2.65	2.54	0.22	0.19
6 CS536 coating on Crystal grey+12A+6C	Grey	24	13	22	19	11	2.75	2.64	0.32	0.28
6 CS550 coating on Crystal grey+12A+6C	Grey	33	12	21	28	10	2.82	2.67	0.42	0.36
6 CS566 coating on Crystal grey+12A+6C	Light grey	42	13	24	37	10	2.83	2.66	0.52	0.45
6 CS720 coating on Blue+12A+6C	Dark blue	12	16	30	8	12	2.65	2.52	0.20	0.18
6CS736 coating on Blue+12A+6C	Blue	22	11	26	15	9	2.76	2.63	0.29	0.25
6CS750 coating on Blue+12A+6C	Royale blue	29	10	22	21	9	2.81	2.67	0.35	0.31
6CS766 coating on Blue+12A+6C	Light blue	38	12	22	27	9	2.82	2.68	0.45	0.40
6CS020 coating on Low-iron+12A+6Low-iron	Sterling Silver	20	32	27	15	25	2.65	2.52	0.28	0.24

6CS036 coating on Low-iron+12A+6Low-iron	Light blue	35	23	23	28	18	2.76	2.63	0.43	0.37
6CS050 coating on Low-iron+12A+6Low-iron	Lighty sky blue	48	20	22	40	15	2.81	2.67	0.55	0.48
6CS066 coating on Low-iron+12A+6Low-iron	Slightly blue	62	23	24	54	16	2.82	2.66	0.68	0.60
6CS120 Coating on Clear+12A+6CL184	Sterling Silver	17	32	25	10	26	1.74	1.76	0.21	0.19
6CS136 Coating on Clear+12A+6CL184	Light blue	31	23	19	18	19	1.74	1.76	0.33	0.29
6CS150 Coating on Clear+12A+6CL184	Lighty sky blue	43	19	18	25	19	1.74	1.76	0.43	0.37
6CS166 Coating on Clear+12A+6CL184	Slightly blue	58	21	21	38	23	1.74	1.76	0.56	0.49
6CS320 Coating on Euro grey+12A+6CL184	Dark grey	9	11	27	6	12	1.74	1.76	0.16	0.14
6CS336 Coating on Euro grey+12A+6CL184	Grey	15	9	18	11	9	1.74	1.76	0.22	0.19
6CS350 Coating on Euro grey+12A+6CL184	Grey	21	8	17	15	9	1.74	1.76	0.28	0.24
6CS366 Coating on Euro grey+12A+6CL184	Grey	28	8	19	20	9	1.74	1.76	0.32	0.28
6CS420 Coating on Green+12A+6CL184	Deep green	14	23	24	6	12	1.74	1.76	0.18	0.15
6CS436 Coating on Green+12A+6CL184	Green	26	17	19	11	10	1.74	1.76	0.24	0.21
6CS450 Coating on Green+12A+6CL184	Light blue green	35	15	17	15	9	1.74	1.76	0.29	0.26
6CS466 Coating on Green+12A+6CL184	Light green	46	15	19	20	10	1.74	1.76	0.35	0.31
6 CS720 coating on Blue+12A+6CL184	Dark blue	11	16	24	6	12	1.74	1.76	0.17	0.15
6CS736 coating on Blue+12A+6CL184	Blue	20	12	18	11	9	1.74	1.76	0.24	0.21
6CS750 coating on Blue+12A+6CL184	Royale blue	28	11	17	15	9	1.74	1.76	0.29	0.25
6CS766 coating on Blue+12A+6CL184	Light blue	36	11	18	20	10	1.74	1.76	0.35	0.31

Insulated Glass Units-Single Silver Low-E Coating

Glass makeup	Reflective colour	Visible Light(%)			Solar Enenergy(%)		U-Value (W/m ² .K)		SC	SHGC
		Trans	Refl.		Trans	Refl.	Summer	Winter		
			Outer	Inner						
6DF1530 coating on Clear+12A+6C	Silver grey	30	30	10	19	29	1.79	1.80	0.29	0.25
6DF140 coating on Clear+12A+6C	Light grey	37	23	11	23	24	1.80	1.80	0.33	0.28
6DF1548 coating on Clear+12A+6C	Light grey	42	27	18	25	37	1.81	1.81	0.34	0.30
6DF1850 coating on Clear+12A+6C	Silver grey	45	30	16	29	32	1.76	1.77	0.38	0.33
6DF1352 coating on Clear+12A+6C	Blue grey	46	21	10	28	26	1.83	1.84	0.40	0.35
6DF1560 coating on Clear+12A+6C	Light grey	53	19	11	33	25	1.84	1.84	0.44	0.38
6DF164 coating on Clear+12A+6C	Light blue	57	14	10	39	16	1.89	1.88	0.53	0.46

6DF166 coating on Clear+12A+6C	Blue grey	58	19	13	36	26	1.75	1.76	0.48	0.42
6DF1770 coating on Clear+12A+6C	Neutral	60	13	11	37	11	1.70	1.73	0.49	0.43
6DF1580 coating on Clear+12A+6C	Neutral	72	11	12	48	18	1.82	1.82	0.64	0.56
6CL184 coating on Clear +12A+6C	Clear	75	11	11	50	17	1.74	1.76	0.65	0.57
6DF340 coating on Euro grey+12A+6C	Dark Grey	18	9	12	12	11	1.80	1.80	0.21	0.18
6DF3548 coating on Euro grey+12A+6C	Grey	22	10	15	16	14	1.81	1.81	0.22	0.19
6DF3352 coating on Euro grey +12A+6C	Grey	23	7	10	17	9	1.84	1.84	0.27	0.24
6DF3560 coating on Euro grey +12A+6C	Grey	25	8	11	17	11	1.84	1.84	0.27	0.23
6DF366 coating on Euro grey+12A+6C	Grey	28	8	12	19	11	1.75	1.76	0.29	0.25
6CL384 coating on Euro grey+12A+6C	Grey	36	6	10	27	9	1.74	1.76	0.39	0.34
6DF440 coating on Green+12A+6C	Green	30	17	12	15	11	1.80	1.80	0.25	0.21
6DF4548 coating on Green+12A+6C	Green	37	21	16	18	13	1.81	1.81	0.26	0.22
6DF4352 coating on Green+12A+6C	Green	38	11	13	18	8	1.83	1.84	0.28	0.24
6DF4560 coating on Green+12A+6C	Light green	42	14	12	21	10	1.80	1.80	0.33	0.29
6DF466 coating on Green+12A+6C	Light green	48	14	13	23	10	1.75	1.76	0.33	0.29
6CL484 coating on Green+12A+6C	Light green	62	9	10	31	8	1.74	1.76	0.43	0.38
6DF540 coating on Crystal grey+12A+6C	Grey	26	14	12	17	17	1.80	1.80	0.27	0.23
6DF5548 coating on Crystal grey+12A+6C	Silver grey	31	18	16	23	23	1.81	1.81	0.28	0.24
6DF5352 coating on Crystal grey +12A+6C	Grey	32	9	13	22	15	1.83	1.84	0.32	0.28
6DF5560 coating on Crystal grey +12A+6C	Grey	36	11	11	25	17	1.84	1.84	0.35	0.30
6DF566 coating on Crystal grey+12A+6C	Light grey	41	9	10	28	14	1.75	1.76	0.39	0.34
6CL584 coating on Crystal grey+12A+6C	Light grey	53	8	11	39	14	1.74	1.76	0.51	0.45
6DF740 coating on Blue+12A+6C	Blue	24	12	12	14	10	1.80	1.80	0.23	0.20
6DF7548 coating on Blue+12A+6C	Blue	28	14	16	16	11	1.81	1.81	0.23	0.20
6DF7352 coating on Blue+12A+6C	Blue	29	11	10	17	10	1.90	1.88	0.30	0.26
6DF7560 coating on Blue+12A+6C	Blue	33	10	11	19	9	1.84	1.84	0.28	0.25
6DF766 coating on Blue+12A+6C	Blue	38	8	10	30	9	1.75	1.76	0.34	0.30
6CL784 coating on Blue+12A+6C	Light blue	48	7	10	28	8	1.74	1.76	0.38	0.33
6DF040 coating on Low-iron+12A+6Low-iron	Light grey	38	23	12	26	27	1.80	1.80	0.34	0.30
6DF0548 coating on Low-iron+12A+6Low-iron	Light grey	44	27	18	27	37	1.81	1.81	0.35	0.31
6DF0352 coating on Low-iron +12A+6Low-iron	Blue grey	48	21	10	30	26	1.83	1.84	0.41	0.36

6DF0560 coating on Low-iron+12A+6Low-iron	Light grey	53	19	12	37	27	1.84	1.84	0.46	0.40
6DF066 coating on Low-iron+12A+6Low-iron	Light blue	61	20	14	41	26	1.75	1.76	0.50	0.44
6CL084 coating on Low-iron+12A+6Low-iron	Clear	78	12	12	58	22	1.74	1.76	0.79	0.61

Insulated Glass Units-Double Silver Low-E Coating

Glass makeup	Reflective colour	Visible Light(%)			Solar Energy(%)		U-Value (W/m ² .K)		SC	SHGC
		Trans	Refl.		Trans	Refl.	Summer	Winter		
			Outer	Inner						
6SDF146 II coating on Clear+12A+6C	Blue	41	13	19	17	27	1.61	1.66	0.29	0.25
6SDF156 II coating on Clear+12A+6C	Blue green	51	15	19	24	32	1.54	1.61	0.32	0.28
6SDF163 II coating on Clear+12A+6C	Light blue green	58	15	16	30	28	1.60	1.65	0.38	0.33
6SDF176 II coating on Clear+12A+6C	Neutral	68	11	12	39	27	1.58	1.64	0.45	0.39
6SDF346 II coating on Euro grey+12A+6C	Grey	20	8	18	9	26	1.62	1.67	0.19	0.16
6SDF356 II coating on Euro grey+12A+6C	Grey	24	8	19	12	14	1.55	1.61	0.20	0.17
6SDF363 II coating on Euro grey+12A+6C	Grey	27	7	15	17	10	1.62	1.66	0.24	0.21
6SDF376 II coating on Euro grey+12A+6C	Grey	33	6	10	19	13	1.59	1.64	0.28	0.25
6SDF446 II coating on Green+12A+6C	Green	34	11	19	13	26	1.61	1.67	0.23	0.20
6SDF456 II coating on Green+12A+6C	Green	41	13	19	15	11	1.61	1.66	0.26	0.22
6SDF463 II coating on Green+12A+6C	Light blue green	48	12	15	21	9	1.62	1.66	0.29	0.26
6SDF476 II coating on Green+12A+6C	Light green	56	9	11	26	8	1.59	1.64	0.33	0.29
6SDF546 II coating on Crystal grey+12A+6C	Grey	29	13	18	13	25	1.62	1.67	0.23	0.20
6SDF556 II coating on Crystal grey+12A+6C	Grey	35	15	18	17	31	1.55	1.61	0.29	0.25
6SDF563 II coating on Crystal grey+12A+6C	Light Grey	41	10	14	22	26	1.62	1.66	0.34	0.30
6SDF576 II coating on Crystal grey+12A+6C	Light Grey	48	8	10	28	23	1.59	1.64	0.35	0.30
6SDF746 II coating on Blue+12A+6C	Blue	26	11	18	13	11	1.61	1.66	0.21	0.18
6SDF756 II coating on Blue+12A+6C	Blue	32	10	19	13	11	1.56	1.63	0.24	0.20
6SDF763 II coating on Blue+12A+6C	Blue	39	11	11	18	16	1.63	1.64	0.26	0.23
6SDF776 II coating on Blue+12A+6C	Blue	44	8	10	19	12	1.6	1.7	0.30	0.26
6SDF046 II coating on Low-iron+12A+6Low-iron	Light blue	43	13	19	19	27	1.61	1.66	0.30	0.26
6SDF056 II coating on Low-iron+12A+6Low-iron	Blue green	53	15	19	26	32	1.54	1.61	0.33	0.29
6SDF063 II coating on Low-iron+12A+6Low-iron	Light blue green	60	15	17	33	33	1.60	1.65	0.39	0.34

6SDF076 II coating on Low-iron+12A+6Low-iron	Neutral	71	11	12	39	27	1.58	1.64	0.46	0.40
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Insulated Glass Units-Triple Silver Low-E Coating

Glass makeup	Reflective colour	Visible Light(%)			Solar Energy(%)		U-Value (W/m ² .K)		SC	SHGC
		Trans	Refl.		Trans	Refl.	Summer	Winter		
			Outer	Inner						
6Sunguard SNX 62/27 coating on Clear+12A+6C	Neutral	61	11	12	23	39	1.56	1.63	0.31	0.27
6Sunguard SNX 62/27 coating on Green+12A+6C	Light green	52	10	11	18	11	1.56	1.63	0.28	0.25
6Sunguard SNX 62/27 coating on Low-iron+12A+6Low-iron	Neutral	64	11	12	24	48	1.56	1.63	0.31	0.27
6Sunguard SNX 62/27 coating on Crystal grey+12A+6C	Light grey	45	8	11	16	19	1.56	1.63	0.26	0.23

Notes:

1.The above data is obtained with the software"Windows 5.2",only for reference.

2. There computed values are average values, given for indicative purposes and are subject to modifications. They cannot be used to guaranty the properties of the products. There values are calculated according to standards NFRC 100-2001. The tolerance is ± 0.03 point for the values of the luminous and energy factors and ±0.1 W/m²K for the value of the Ug coefficient

3. The performance data for Table 1 applies to insulating glass constructed with two plies (clear inboard) of 6 mm glass and 12 mm air space. If Low-iron glass is used,both plies of the unit are the Low-iron glass substrate. Coating Type Outboard Glass Substrate Nominal Visible Light Transmittance of Coating
0 = Low-iron,1 = Clear, 3 = Euro grey,4 = French green,5 = Crystal Gray,7 = Ocean blue,9 = Bronze.

GLASS TERMINOLOGY GLOSSARY

The following is a glossary of common glass terms used in the glass manufacturing industry. If you have questions or need more clarification on any of the terms used in connection with our architectural glass products, contact us.

Annealed Glass

The most common form of glass found in residential applications, annealed glass is a standard sheet of float glass that is easily broken and produces large dangerous shards when shattered. On its own it provides very little insulation and acoustical qualities.

Emissivity

The measure of a surface's ability to emit long-wave infrared radiation.

Heat-Strengthened Glass

Flat or bent glass that has been heat-treated to have a surface compression between 3,500 and 7,500 psi (24 to 52 MPa) and meet the requirements of ASTM C 1048, kind HS. Heat-strengthened glass is not a safety glazing material and will not meet the requirements of ANSI Z97.1 . [View Heat Treated Glass Products](#)

Insulating Glass Unit

Two or more lites of glass spaced apart by a desiccant filled spacer bar and then hermetically sealed to form a dual-glazed unit with an air space between each lite.

U-Value

The measure of the thermal conductivity values of glazing materials. U-Value is expressed as W/m².K. The lower the K-value, the higher the performance of the product.

Laminated Glass

Two or more lites of glass permanently bonded together with one or more interlayers. [View Laminated Glass Products](#)

Light to Solar Gain (LSG)

The ratio of visible light transmittance to solar heat gain coefficient. A high LSG represents a relative efficiency of a glazing materials and its ability to transmit daylight while blocking heat gain.

Low-Emissivity (or Low-E)

A low rate of emitting (radiating) absorbed radiant energy. The radiant energy (heat), i.e. long wave infrared, is in effect,

re-radiated back toward its source.

Monolithic Glass

A single sheet of float glass.

PVB Plastic Interlayer

A vinyl-based, pliable, clear plastic material that is used to bond glass together.

Relative Heat Gain

The amount of heat gain through a glass product taking into consideration the effects of solar heat gain (shading coefficient) and conductive heat gain (U-value). The value is expressed in Btu/hr/ft² (W/m²).

The relative heat gain is calculated as $RHG = (\text{Summer U-value} \times 140F) + (\text{Shading Coefficient} \times 200)$. The Lower the relative heat gain, the more the glass product restricts heat gain.

Shading Coefficient

The ratio of the solar heat gain through a specific glass product to the solar heat gain through a lite of 1/8" (3mm) clear glass. Glass of 1/8" (3mm) thickness is given a value of 1.0; therefore, the shading coefficient of a glass product is calculated as follows:

Solar Control Glass

Tinted and/or coated glass that reduces the amount of solar heat gain transmitted through a glazed product.

Solar Energy Reflectance

In the solar spectrum, the percentage of solar energy that is reflected from the glass surface(s).

Solar Energy Transmittance

The percentage of ultraviolet, visible and near infrared energy within the solar spectrum (300 to 2100 nanometers) that is transmitted through the glass.

Solar Heat Gain Coefficient (SHGC)

The portion of directly transmitted and absorbed solar energy that enters into the buildings interior. SHGC is typically 86% of the shading coefficient. The lower the solar heat gain coefficient, the better the performance.

Solar Reflective Coatings

Solar reflective coatings reduce solar heat gain through high reflection and absorption. The glass appears almost mirror-like. Typically, the coating reflects and absorbs high amounts of visible and infra-red portions of the solar spectrum. As a result, heat gain is drastically reduced, but the so is the amount of visible light transmission.

Solar Spectrum

The sun radiates solar energy or sunlight by electromagnetic waves over a range of wavelengths known as the solar spectrum (290-2500 nanometers, where 1 nanometere = 1/1,000,000,000 of a meter).

The solar spectrum is divided into three bands. They are:

Ultra-violet light (UV) 290nm-380nm

Visible light 380nm-780nm

Infra-red 780nm-2500nm

The energy distribution within the solar spectrum is approximately 2% UV, 47% visible, and 51% infra-red. Only the visible light is seen by the human eye.

The shorter the wavelength, the higher the energy associated with the radiation. For example high energy UV light causes sunburns, fabrics to fade and plastics to deteriorate. While the longer wavelengths, and low radiation produce the visible light.

STC (sound transmission class) A single number rating derived from individual transmission losses at specified test frequencies. It is used for interior walls, ceilings and floors.

Tempered Glass

Flat or bent glass that has been heat-treated to have either a minimum surface compression of 10,000 psi (69 MPa) or an edge compression not less than 9,700 psi (67 MPa) in accordance with the requirements of ASTM C 1048, kind FT or meet the requirements of ANSI Z97.1

Thermal Heat Transfer

Heat is transferred either by convection (upward warm air currents), conduction (passing form one object to another), or radiation (where heat passes through space to an object where it is reflected, absorbed, or transmitted). The absorbed portion of the energy is subsequently dissipated by radiations (or emission) to both the outside and inside, in varying proportions, dependent on the type of glass and external weather conditions.

U-Value

A measure of air-to-air heat transmission (loss or gain) due to the thermal conductance and the difference in indoor and outdoor temperatures. As the U-value decreases, so does the amount of heat that is transferred through the glazing material. The lower the U-value, the more restrictive the fenestration product is to heat transfer. Reciprocal of R-value.

Visible Light Reflectance

The percentage of visible light (390 to 770 nanometers) within the solar spectrum that is reflected from the glass surface.

Visible Light Transmittance

The percentage of visible light (390 to 770 nanometers) within the solar spectrum that is transmitted through glass.