

unisunda

# PRODUCT PORTFOLIO

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Unisunda Industries Ltd

Version 1.0



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## ABOUT US

**Unisunda Industries Ltd** (hereinafter referred to as "**Unisunda**") is a global trading company based in China. With over decade of continued growth in the glass industry, we have become a dynamic business committed to providing building glass supply chain management services to clients in domestic and abroad.

Unisunda offers a diverse options of architectural glass primarily used in residential and commercial industry. The trending glass products include float glass, patterned glass, acid etched glass, silk-screened glass, tempered glass, laminated glass as well as insulated glass.

At Unisunda, we focus on a win-win business with our customers, vendor partners and employees. For that reason, we conduct robust services which helps to enhance the efficiency of our business operations.

An outline of the services provided by Unisunda includes:

☑ **Technical Solution Support**

Provide professional quotation(s) with technical support for glass performance.

☑ **Strictly Supplier Selections**

Supply base development and evaluation; Make selections based on quality, cost and delivery criteria.

☑ **Premises Inspection**

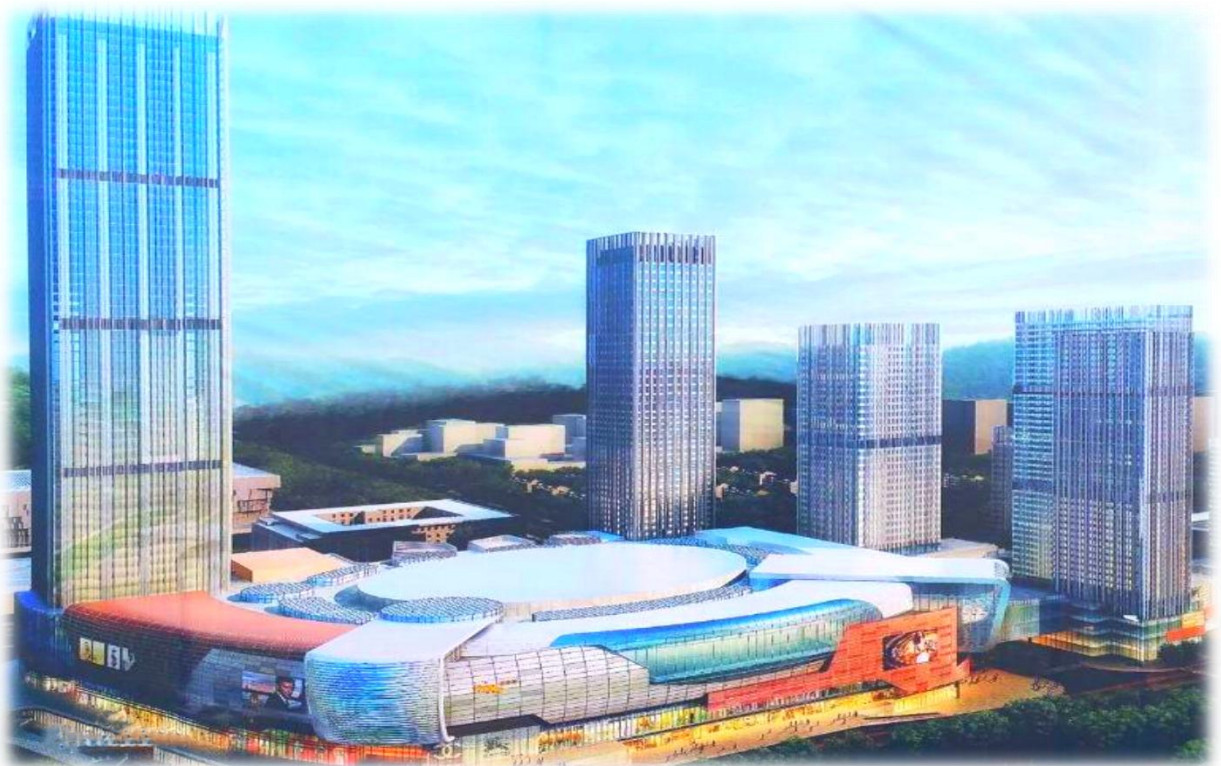
Conduct a thorough site inspection at the vendor's premises prior to shipment, to make sure the product quality as per order.

☑ **Flexible Finance Options**

Provide flexible payment options, such as T/T, L/C, D/P, O/A; Prices offered in major currencies, including USD, EUR, AUD, Cross-boarder RMB settlement.

☑ **Timely After-sale Service**

Respond in due time to the query and help our valuable customers out if any claim occurs after sales.



## FLOAT GLASS

**Float Glass** is a kind of flat glass made by floating melting glass on a molten tin bath, combining the brilliant fire-finish of flat glass. This process gives the glass uniform thickness and flat surfaces.

Modern windows are usually made from float glass. The composition of the product is generally Soda-lime-silicate (SLS) glass.

The float glass process is also known as the Pilkington process, named after the British glass manufacturer Pilkington, which pioneered the technique in the 1950s at their production site in St Helens, Merseyside.



Unisunda offers wide range of float glass products from origin to destination. The glass inventory items include Clear Float Glass, Low Iron Glass, Tinted Glass (Crystal Gray, Euro Gray, Euro Bronze, Ford Blue, French Green).

### Performance Data of Clear Float Glass

THK. (mm)	Weight (kg/m <sup>2</sup> )	Visible Light (%)		Solar Energy (%)			g Value ISO9050 AM=1.0	SHGC NFRC	SC NFRC	U Value W/(m <sup>2</sup> ·K)		U Value W/m <sup>2</sup> ·K EN 673	STC
		TVL	RVL	TS	RS	AS				Summer	Winter		
4	10	90	8	85	8	7	0.85	0.87	1	5.3	5.88	5.8	29
5	12.5	90	8	83	8	9	0.84	0.86	0.99	5.27	5.84	5.7	30
6	15	89	8	80	7	13	0.83	0.84	0.97	5.24	5.81	5.7	31
8	20	88	8	77	7	16	0.81	0.82	0.94	5.19	5.74	5.7	33
10	25	87	8	74	7	19	0.79	0.8	0.92	5.13	5.67	5.6	34
12	30	86	8	72	7	21	0.77	0.78	0.9	5.07	5.61	5.5	36
15	37.5	85	8	69	7	24	0.74	0.76	0.88	4.99	5.51	5.4	38
19	47.5	83	8	62	6	32	0.7	0.71	0.82	4.89	5.39	5.3	40

❖ The above data are calculated based on the WINDOW 6.3 software of the Lawrence Berkeley National Laboratory (LBNL) in the United States except for the indicated standards.

❖ All data shown in the tables are test results for reference only and not performance guarantees.

### Performance Data of Euro Gray Tinted Glass

THK. (mm)	Weight (kg/m <sup>2</sup> )	Visible Light (%)		g Value JGJ/T 151	SHGC NFRC	SC		U Value W/(m <sup>2</sup> ·K)			EN 673
		TVL	RVL			JGJ/T 151	NFRC	JGJ/T 151	NFRC		
				Summer-D	Winter-N						
4	10	57	6	0.65	0.67	0.74	0.77	5.23	5.30	5.88	5.80
5	12.5	52	6	0.62	0.64	0.71	0.73	5.21	5.27	5.84	5.70
6	15	45	6	0.57	0.60	0.66	0.69	5.18	5.24	5.81	5.70

❖ The above data are calculated based on the WINDOW 6.3 software of the Lawrence Berkeley National Laboratory (LBNL) in the United States and Glazing Design 1.0 software of Guangdong Academy of Construction Sciences in China.

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## PATTERNED GLASS

**Patterned Glass**—also called textured glass, figured glass, decorative glass or obscure glass—was produced by rolling a textured pattern onto one side of a sheet of molten glass as it cooled, leaving a permanent imprint behind.

Great for light diffusion, privacy and as a decorative feature, patterned glass can be toughened or laminated, further adding to its benefits and usability as an obscure safety glass.

There are several kinds of patterned glass available with a different texture and in varying sheet sizes and glass thicknesses. At Unisunda we utilise patterned glass in a number of products to take advantage of its benefits.



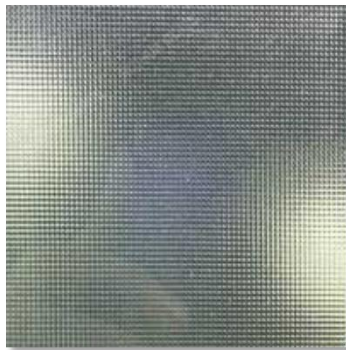
*Aqualite*



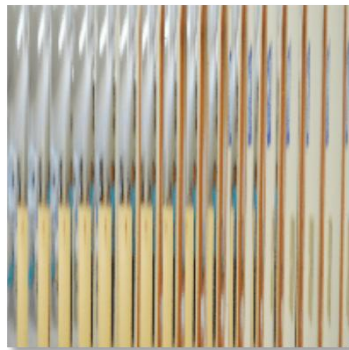
*Bamboo*



*Flutelite*



*Mistlite*



*Moru*



*Rain*

Thickness	Regular Sizes
3mm (1/8")	1830x2134mm (72"x84"), 1830x2440mm (72"x96")
4mm (5/32")	1830x2134mm (72"x84"), 1830x2440mm (72"x96")
5mm (3/16")	1830x2134mm (72"x84"), 1830x2440mm (72"x96")
6mm (1/4")	1830x2134mm (72"x84"), 1830x2440mm (72"x96")

Patterned glass can offer privacy while still allowing light to pass through. This make it ideal for:

- Shower Enclosures
- Room Partitions
- Furniture and Cabnets
- Glazed Doors
- Balustrade Panels
- Windows

## ACID ETCHED GLASS

**Acid Etched Glass** (often referred to as “French embossing”) is one kind of processed glass involving the treatment of flat glass with hydrofluoric (HF) acid to create a translucent satin matte finish, as well as accompanying special designs, such as vertical and horizontal lines, graphics, and other decorative effects.

### Benefits of Acid Etched Glass

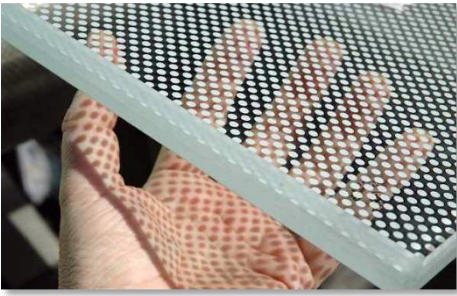
- **Daylight Friendly:** Diffuses light, reduces glare and minimizes reflections
- **Satin Smooth Surfaces:** Superior to sandblasted glass
- **Ease-To-Maintain:** Resists stains from fingerprints & water
- **Wide In-Stock Variety:** Available in regular clear, low-iron, patterns, tinted glass
- **Customized Deep Processing:** Can be back-painted or laminated to mirror for wall cladding applications; Can be laminated in combination with a virtually unlimited range of color interlayers, prints, other etched and textured glass varieties
- **100% Fabricated in China**

### Acid Etched Glass VS Frosted Glass *(in a nutshell)*

- Etching is a decorative technique, while frosting refers to the appearance of glass;
- Etching alters the glass surface for decorative purposes, usually artwork, a pattern, or lettering;
- Frosting, on the other hand, produces an opaque appearance that limits the light that goes through and gives more privacy.



## SILK – SCREENED GLASS



**Silk-Screened Glass** is a special kind of decorate glass made by silk-screening ceramic frit onto glass surface, and then processing heat strengthened or fully tempered treatment. Silk-screened glass improves solar control performance and can be combined with clear

or tinted glass substrates, as well as with high-performance coated glass to reduce glare and decrease solar transmission.

Unisunda offers a variety of silk-screened glass with customized patterns, to meet the needs of the specific guideline by the project owners, contractors, or designers.

### Color Hues Options

Here is RAL Classic color hues just for reference.

- Color is affected by light and reflectivity and therefore cannot truly be matched electronically online.
- Colors displayed should not be substituted for color matching with actual glass samples.
- We recommend that you order a sample to ensure you are pleased with your selection before ordering glass for your project.



### Silk – Screened Applications

Unisunda offers a variety of silk-screened glass products to satisfy a wide range of applications. Applications include glass doors, partitions, bathhubs, railings, elevator walls, court walls, skylights, etc.





## TEMPERED GLASS

**Tempered glass** (also known as toughened glass), is a kind of safety glazing materials processed by uniform heat treatment, so as to enhance its mechanical property and impact strength. Tempering puts the outer surfaces into compression and the interior into tension. Such stresses cause the glass, when broken, to shatter into small granular chunks instead of splintering into jagged shards as ordinary annealed glass does. The granular chunks are less likely to cause injury.

All fabrication, such as cutting to overall dimensions, edge work, drilled holes, notching, grinding, sandblasting, and etching, shall be performed prior to tempering. After the glass has been tempered, it shall not be modified except as recommended by the fabricator.



### Edgeworks

Glass Edging is one of the most important fabrication processes of grinding and shaping raw glass edges into a finished texture. Unisunda gives you options when it comes to glass edgework.

Edge Diagram	Edge Type	Description	Typical Application
	Seamed/Chamfered	A sanding belt is used to lightly sand off the shape arris edge of the glass. Make safe to handle.	Normal edgework for heat-treated glass
	Flat Ground	Diamond embedded grinding wheels put a satin finish on the edge.	Silicone structural glazing with exposed edges
	Bevel/Miter Ground	Ground Bevels on glass or mirror, circles, rectangles to specify degree can be provided	Mirrors, Silicone structural glazing
	Pencil Ground	Diamond embedded grinding wheels put a satin finish on the edge, with an edge radius similar to pencil or C-shape.	Mirrors, Decorative furniture glass
	Flat Polished	Polishing the edges to give the glass a sheen finish. Arris bevels can be ground or polished.	Silicone structural glazing where edge condition is critical for aesthetic purposes.
	Bevel/Miter Polished	Polishing Bevels on glass or mirror, circles, rectangles to specify degree can be provided	Mirrors, Decorative furniture glass
	Pencil Polished	Edges polished to a sheen finish, with an edge radius similar to pencil or C-shape.	Mirrors, Decorative furniture glass



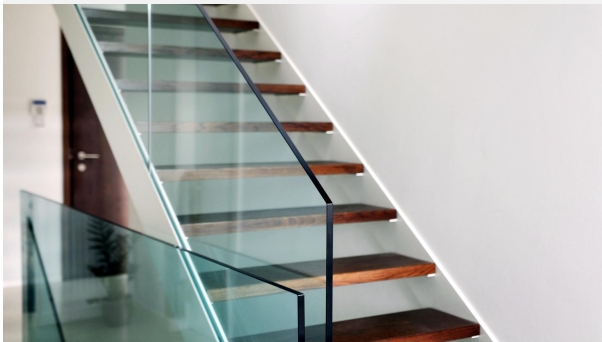
- ☑ Thickness:  
3mm - 19mm
- ☑ Size:  
300x300mm (min.) ;  
2400x12000mm (max.)
- ☑ Glass Substrate:  
Clear Glass  
Low Iron Glass  
Tinted Glass  
Patterned Glass  
Coated Glass.....

### Tempered Glass Applications

Shower Enclosure ▶



◀ Interior Railings



▼ Greenhouse System



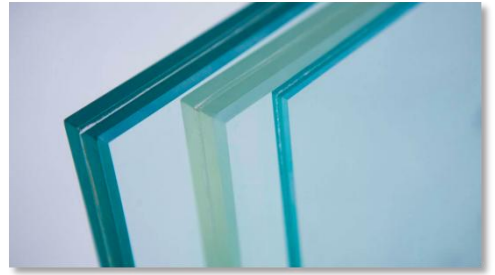
▲ Paddle Courts



CE marking confirms that Unisunda's tempered glass product complies with its relevant harmonised European Norm.

## LAMINATED GLASS

**Laminated Glass** is a type of safety glass fabricated by bonding two or more glass plies together with one or more interlayer(s). When broken, numerous cracks appear, but glass fragments tend to adhere to the interlayer. Depending on the level of security required, there are different type of laminated glass available.



### Glass Options

Unisunda’s laminated glass can feature any combination of glass substrate options include clear, tinted, low iron, patterned, reflective, Low-E coatings, heat strengthened, fully tempered, as well as silk-screened glass. For the thickness of glass substrates, please check with Unisunda for availability.

### Interlayer Options

**Polyvinyl Butyral (PVB)** - standard architectural interlayer available in several thicknesses and colours.

**Saflex® Acoustic** - a tri-layer system designed to decouple and disseminate sound waves for superior sound damping performance.

**SentryGlas®** - an ionoplast interlayer bonded directly between two layers of glass for superior protection. The rigid interlayer minimizes deflection.

**Decent® Color** - interlayer system made up of base colors and a range of white interlayers that can be combined to achieve varying layers of translucency and color.

### Decent® Colored Protective Interlayers – physical properties

Color	Color code	Film thickness
Milky White	M204A	0,38mm (15mil)
Absolute Black	BL201A	0,38mm (15mil)
French Green	F6	0,38mm (15mil)
Blue Green	GN103	0,38mm (15mil)
Ocean Blue	B102	0,38mm (15mil)
Light Blue	B103	0,38mm (15mil)
Light Grey	G102	0,38mm (15mil)
Dark Grey	G103	0,38mm (15mil)
Blue Grey	G104	0,38mm (15mil)
Smoke Grey	G200	0,38mm (15mil)
Euro Grey	BG113	0,38mm (15mil)
Bronze	G118A	0,38mm (15mil)
Yellow	Y129	0,38mm (15mil)
Orange	Y137	0,38mm (15mil)
Red	R121	0,38mm (15mil)

### Create your next glass design

- Order 15 x 15 cm Unisunda color samples
- Verify the actual sample color before specifying for your project
- Access technical data for color selections

## Performance Properties

Configuration	Visible Light (%)			g Value JGJ/T 151	SHGC NFRC	SC		U Value W/(m <sup>2</sup> ·K)			
	TVL	RVL	RVL			JGJ/T 151	NFRC	JGJ/T 151	NFRC		EN 673
		[in]	[ex]	Summer-D	Winter-N						
3-mm clear glass/0,38mm clear PVB interlayer/3-mm clear glass	89	8	8	0.83	0.83	0.95	0.96	5.14	5.19	5.75	5.70
6-mm clear glass/0,76mm clear PVB interlayer/6-mm clear glass	86	8	8	0.75	0.75	0.86	0.87	4.95	4.98	5.50	5.40

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## Benefits of Laminated Glass

**Safety** Protecting building occupants and pedestrians from accidental glass impact, breakage, or fallout

**Security** Resistance against burglary, forced-entry, ballistics, and bulletproof

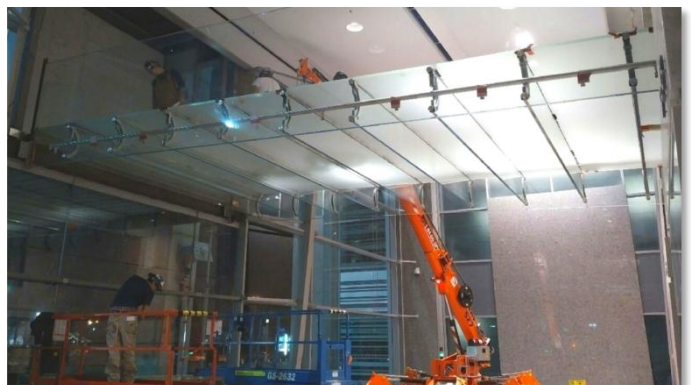
**Acoustic** Effectively absorb sound waves and reduce noise pollution

**Anti-UV** Filtering more than 99% of UV rays up to 380 nm, controlling visible transmittance, reducing glare and solar heat gain

## APPLICATIONS

Bringing a whole new aesthetic to both interior and exterior applications, Unisunda's laminated glass products are ideal for structural glazing:

- ✓ Partitions
- ✓ Windows & Doors
- ✓ Facade & Curtain Walls
- ✓ Balustrades/Railings
- ✓ Skylights
- ✓ Atriums
- ✓ Floors, Stairs & Bridges
- ✓ Speciality Glazing



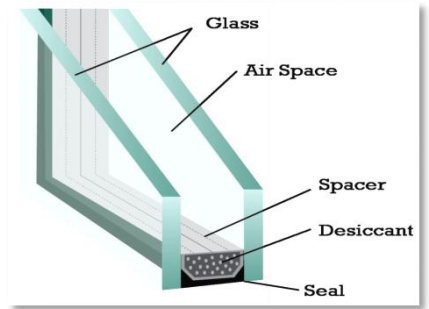
▲ Glass Bridge



▲ Glass Railings

## INSULATED GLASS

**Insulating glass** (IG) consists of two or more glass plies separated by a spacer to reduce heat transfer across a part of the building envelopes. Insulating glass units are sealed with a primary seal and a secondary seal of silicone.



When specifying insulating glass for your project, it is important to select and clearly outline the configuration as well as each individual component of the insulating glass unit. Unisunda offers multiple configurations of insulating glass units for your high-performance building envelopes.

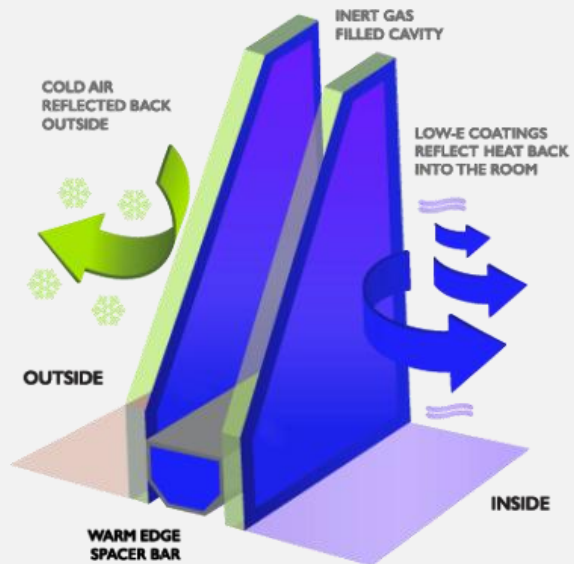
- ✓ Insulating Glass
- ✓ Laminated Insulating Glass
- ✓ Double Laminated Insulating Glass
- ✓ Triple Insulating Glass

### FINDING THE BEST GLASS FOR YOU

#### Understand your performance requirements

**U Value** - Measures the temperature which is transferred or flows through a window or door. For example, how effective is it at keeping the heat or cold in or out. A lower U Value indicates better insulation properties.

**SHGC** - Measures the ability to reduce heat generated by sunlight. It's the amount of heat from direct sunlight that passes through the glass. The lower the SHGC number, the better the glass is at keeping the sun's heat out of the house. Likewise, in a cold climate, the higher the SHGC number, the more natural warmth will occur.



#### Spacer

An insulating glass spacer is placed within the unit(s) to separate the plies of glass. Aluminum, Stainless Steel, Warm Edge Spacer are the spacer material options available from Unisunda.

- **Aluminum** has historically been the most-used spacer because of its malleability and availability.
- **Stainless Steel** is one warm edge spacer option offered by Viracon. Stainless steel is less conductive than aluminum and has one-tenth the thermal conductivity of aluminum.
- **Warm Edge Spacer** consists of a biopolymer in the cross section area which is encapsulated in stainless steel. This combination further reduces the edge conductivity and thus reduces heat transfer into the building.

## QUALIFICATIONS

With over decade in the glass business, Unisunda is specialized in providing one-step building glass products and services to meet the needs of customers in domestic and overseas. All the glass products are selected in accordance with international quality standards, including:

- ☑ AS /NZS 2208 Australian/New Zealand Standard for Safety glazing materials in buildings
- ☑ ANSI Z97.1 American National Standard for Safety Glazing Materials Used in Buildings
- ☑ EN 12150 – 1 Glass in building -Thermally toughened soda lime silicate safety glass
- ☑ EN 14449 Glass in building - Laminated glass and laminated safety glass
- ☑ GB 15763.2 Safety glazing materials in building-Part 2: Tempered glass
- ☑ GB 15763.3 Safety glazing materials in building-Part 2: Laminated glass
- ☑ GBT 11944 Insulating glass unit

### TEMPERED GLASS - Standard EN 12150-1 & EN 1288-3

Unisunda’s tempered glass product was certified in accordance with EN 12150-1 and EN 1288-3 from the accredited testing laboratory IKATES in Czech Republic.



This publication provides only a general description of the products.  
Unisunda reserves the right to alter or amend data and design details specified herein  
without prior notice and without incurring obligation.



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