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GLASS & MIRROR

Qingdao Kangdeli Industrial & Trading Co.,Ltd

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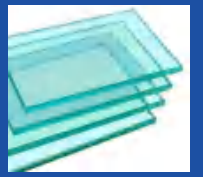

Laminated safety glass
is a combination of two or more glass sheets with one or more interlayers of PVB,PVE,SGP,EVA,XIR,PDLC,etc. In case of breakage, the interlayer holds the fragments together and continues to provide resistance to the passage of persons or objects. This glass is particularly suitable where it is important to ensure the resistance of the whole sheet after breakage such as: shop-fronts, balconies, stair-railings, roof glazing,etc.

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High strength PVE(Polyvinyl Ether) interlayer
for architecture laminated glass especially suitable for laminated glass application places where weather resistance, high temperature- humidity, low temperature and other harsh environments require high safety performance, such as outdoor building roof and curtain wall, decorative curtain wall, glass handrail, sunshine room and so on.

Characteristics
1.High permeability, low haze, high strength .
2.Crosslinked film, strong adhesive at high-low temperature.
3.Edge water resistance and stable， anti-combustion drip.
4.Suitable for nip roll+ autoclave process.
5.Low water absorption, room temperature storage & transportation.

Post Railing:Double-Plate Pillar + PVE Laminated Glass

Performance		Test Method	PVE-G301
Physical Performance	Thickness	Thickness Gauge	0.38mm，0.76mm
	Crosslinking Degree	T/CPIA 0004-2017	≥85%
	180°Peel Strength	GB/T 2790	≥50N/cm
	Tensile Strength	GB/T 1040.3-2006	≥20MPa
Optical Performance	Light Transmittance	GB/T 2680	≥86%
	Haze	GB/T 2410-2008	≤0.7%
	UV Transmittance	GB/T 2680	≤5%
Weather Ability	Boiling Test	GB 15763.3-2009	No bubble, delamination or white mist defects within 10mm of the edge or crack
	Damp Heating Test	GB 15763.3-2009	No bubble, delamination or white mist defects within 10mm of the edge or crack Visible light transmission ratio change Rate ≤5%.
	Irradiation Resistance	GB/T 5137.3-2002	Visible light transmission ratio change Rate ≤3%No bubble, delamination or white mist defects.

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PVB Laminated glass is a combination of two or more glass sheets with one or more interlayers of Polyvinyl butyral or resin. In case of breakage, the interlayer holds the fragments together and continues to provide resistance to the passage of persons or objects. This glass is particularly suitable where it is important to ensure the resistance of the whole sheet after breakage such as: shop-fronts, balconies, stair-railings, roof glazing.
Production:
There are two types of laminated glass: PVB and resin laminated glass: PVB laminated glass is two or more sheets of glass which are bonded together with one or more layers (PVB) under heat and pressure to form a single piece. Resins laminated glass is manufactured by pouring liquid resin into the cavity between two sheets of glass which are held together until the resin cures.

Features:
1) Extremely high safety: The PVB interlayer withstands penetration from impact. Even if the glass cracks, splinters will adhere to the interlayer and not scatter. In comparison with other kinds of glass, laminated glass has much higher strength to resist shock, burglary, burst and bullets.
2) Energy-saving building materials: PVB interlayer impedes the transmission of solar heat and reduces cooling loads.
3) Create aesthetic sense to buildings: Laminated glass with a tinted interlayer will beautify the buildings and harmonize their appearances with surrounding views which meet the demand of architects.
4) Sound control: PVB interlayer is an effective absorber of sound.
5)Ultraviolet screening: The interlayer filters out ultraviolet rays and prevents the furniture and curtains from fading effect.

Partrition Support Handrail + PVB Laminated Glass

Hi-Insulated PVB is light blue, with the infrared of 800-2500nm, which is the most sensitive to the human skin. Compared with the laminated glass with ordinary intermediate film, the heat-insulating laminated glass can produce the maximum heat insulation effect of 13℃。

Insulated PVB is transparent and cuts off the skin's most sensitive infrared of 1400-2500nm. Compared with the laminated glass with ordinary intermediate film, the heat-insulating laminated glass can produce the heat insulation effect of 8℃ at most.

Hi-insulated PVB Vs. Insulated PVB							
Item		VT %	IR%	UV Trans. %	SC	PVB mm	PVB Color
Hi-insulated	DST-HI9075	75	90	＜1	0.63	0.76	Light blue
	DST-HI9570	70	95	＜1	0.63	0.76	Light blue
Insulated	DST-PI5580	80	55	＜1	0.80	0.76	Transparent
	DST-PI5085	85	50	＜1	0.80	0.76	Transparent

Acoustic PVB normally is 0.76mm made up of two layers of common resin and one layer of sound insulation resin.

Features :
Near the ear is most sensitive at 1000-4000 cycles per second, compared with using conventional middle membrane laminated glass, acoustic laminated glass to produce 5 decibels of sound effects.

Test standard	GBT 8485
Glass type	Rw (C, Ctr)
4mm glass	30 (-2，-3)
2mm+0.76PVB+2mm	31（-1，-3）
2mm+0.76Acoustic PVB+2mm	35（0，-3）
3mm+0.76Acoustic PVB+3mm	37（0，-3）

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Photochromic PVB interlayer, as the intensity of sunlight increases, the color of the interlayer and glass gradually deepens, reducing the visible light transmittance while reducing the shading coefficient, as a result the better energy saving effects is realized.

Features:

1.Anti-bending: High bending strength and strong bearing capacity even when the glass is broken.
Laminated glass with photochromic PVB no breakage with 480kgs weight after 48hrs.
Laminated glass with clear PVB broken under 250kgs weight within 15mins.

2.Discoloration function: The light transmittance range is from 20% to 70% which is intelligently regulated with light intensity.

3.Heat insulation performance: Heat insulation and energy saving, shaded effects is close to double silver Low-E glass.
*Block more than 99% of UV and 80% IR rays.
*Total solar transmittance is 50% when non-discoloration; with-discoloration, the total solar transmittance is 44.3%.
*SC value ＜0.58.

Products	Thickness	Max. Width mm	UV Trans. %	VT %	VT Ref.%	Solar Trans. %	SC
Photochromic PVB interlayer	0.86±0.02mm1.24±0.02mm1.64±0.02mm	1500	＜1%	20-70%	8.7%	＜50.2%	＜0.58

Total Solar								
UV					Visual Light	IR		
0%			0.5 %	0.5 %	52%	43%		
Y Line	X Line	UV-C	UV-B	UV-A		Short Range IR	Middle Range IR	Long Range IR
Invisible heat source					Visible heat source	Invisible heat source		
Objects fade,skin blacken and aging contribute cataract,skin cancer					Dizziness	Cause skin hot		

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"Electric heating clamp safety glass" is a transparent conductive film layer coated on the surface of a single float, and another piece of float glass is sandwiched, the electric heating film layer is clamped on the inner surface of the laminated glass and leads out the electrode. After power, the heating film layer generates heat energy, which makes the glass temperature rise to 30-50 degrees Celsius, which can be used for the melting ice and snow of the building's light roof, indoor heating, anti-condensation, anti-condensation and other functions. The supply voltage used according to different requirements for AC36V-AC220V, the product adopts a unique safety design, and increases the temperature control switch, to achieve independent and constant temperature control, safe and reliable.

Applications:

1, construction glass:
Building lighting roof melting ice melting snow glass, building indoor partition heating, doors and windows heating, swimming pool, aquarium, window, greenhouse, winter garden, skylight heating, small climate environment to create glass.

2, industrial glass:
Ships, automobiles, trucks, coaches, winter service vehicles, military vehicles, emergency vehicles, trains, crane bulldozers, forklifts and other windows anti-fog glass.

3, technical/industrial glass:
Refrigerated display cabinets, refrigerator doors, freezers, material laboratories, extreme low temperature environment screen protection, video surveillance lens protection glass and so on. Can also be used in indoor heating glass, anti-condensation, anti-condensation glass, can maintain indoor comfortable ambient temperature and humidity.

Recommended range of electric heating glass power for different uses:

Automotive glass 350- 450w/m2.
Train 300 - 500 w/m2.
High-speed trains 600- 1500w/m2.
Ship 600- 1800w/m2.
Ships (polar) 900 - 3000w/m2.

Product structure	6CET+12A+6C	6CWG+1.52P VB+6C	6CWG+1.52P VB+6C	6CWG+1.52P VB+6C
Function	Electric heating defrosting	Temperature controlling glass	Heating glass	Defrost and thaw glass
Color	Neutral color	Neutral color	Neutral color	Neutral color
Operating voltage	AC36~220V	AC36~220V	AC36~220V	AC36~220V
Heating temperature	30-50℃	40-50℃	40-60℃	40-50℃
Electric heating glass power per unit area	200-400w/㎡	300-500w/㎡	400-600w/㎡	400-600w/㎡
Control mode	Automatic temperature control	Automatic temperature control	Automatic temperature control	Automatic temperature control
Max.Size mm	2000 x 2500	2400 x 3300	2400 x 3300	2400 x 3300

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Laminated glass with SGP interlayer is the latest innovation of glass laminated products.It extends the performance of laminated glass beyond current technologies.It offers five times the tear strength and 100 times the rigidity of conventional PVB interlayer.Because of its added strength, clarity, durability, fabrication and installation ease, it is an excellent candidate for demanding applications in the architectural market place.It can offer improved ballistic protection or thinner constructions than are nowpossible with conventional laminated glass.

Benefits:

* Better edge stability than PVB , making it the correct choice for exposed edge applications.

* Approximately five times stronger than PVB, allowing for thinner laminated for equal or greater strength.

* Unmatched clarity

* UV protection

* Sound attenuation

Point-Supported Spider with Tension Cable Curtain with Clear SGP Tempered Laminated Glass.

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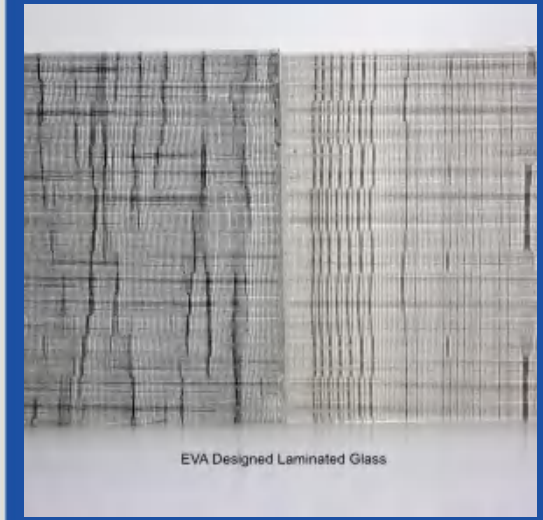
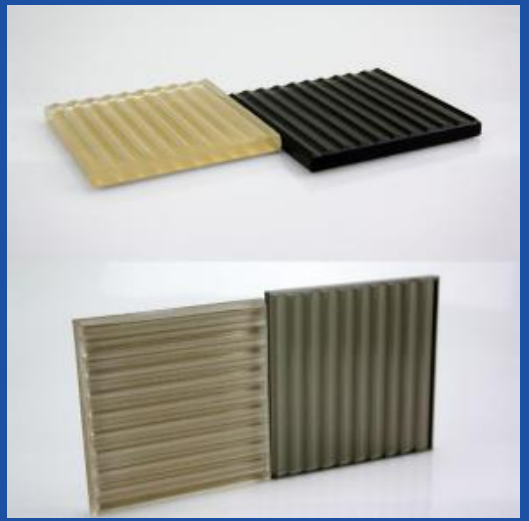
EVA Glass,one of the main differences between EVA and PVB is their water vapor transmission rate, coming from natural water or weather humidity. As the tests clearly shows the PVB has an average of 8-9 times higher tendency to permeate water than EVA. This property gives to EVA a great advantage compared to PVB in terms of transportation, storage and use. Not just that also in terms of product resistance against weathering conditions.
Normally due to capillarity PVB laminates suffer from water penetration around the edges and glass lamination pieces angles affecting negatively the durability and the mechanical resistance of the laminate. One of the great advantages of EVA is its lower water absorbing compared to the PVB, that allows to store and manipulate the film out of the climatic chambers where PVB needs to be manipulated before lamination.

Post Railing:Double-Plate Pillar Handrail + EVA Laminated Glass. Location:Inland Dry Climate



EVA Designed Laminated Glass

Customized Designed Laminated Glass



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XIR Laminated products encapsulate XIR "heat rejecting" film between two layers of PVB and glass. The finished product has a low-reflectance appearance, allowing greater than 70% visible light transmittance while reflecting ~50% of the invisible heat. Glazed monolithically or combined into sealed insulating glass units, XIR film can be laminated with annealed, heat strengthened, or tempered clear glass, or combined with tinted PVB and tinted glass.

XIR Laminated glass improves monolithic laminated glass solar control performance by almost 50% with minimal impact on view and aesthetics. XIR laminated glass enables designers to create solar control solutions incorporating curved glass and enhances the performance of point fixed applications:Skylights, Solariums, Large glass facades, Panoramic views, Control towers, Sports complexes, Libraries/museums, Medical facilities, Point-fixed glazing, Storefronts, Atriums.

Post Railing:Double-Plate Pillar + PVB Laminated Glass

Smart Glass is a laminated glass product consisting of a Polymer Dispersed Liquid Crystal (PDLC) film sandwiched between two layers of glass and two layers of conductive interlayers. The PDLC film is what allows you to change the visual appearance of the glass from opaque to clear on command (or dim anywhere in between).

Advantages

·Smart Glass also known as PDLC Glass provides Instant and precise privacy control
·Efficient use of space in the built environment
·Smart Glass blocks 98+% of damaging UV rays
·Eco friendly product
·Exceptional optical qualities that reduce glare and eye strain
·Large sizes of many shapes can be produced
·Our Smart Glass provides stable colour characteristics for the life of the unit
·Aesthetically pleasing
·Hygienic low maintenance reducing the transmission of MRSA and VRE pathogens
·Smart Glass enhances corporate image
·Reduces uncomfortable “Gold fish bowl” feeling when living or working in high-density buildings such as apartment blocks or office complexes
·Reduced fading of carpets, furniture and protect valuable artwork with the advantages of Smart Glass
·High UV stability
·Low working voltage
·High video contrast at any viewing angle and any illumination level
·Long life – tested to in excess of 3,000,000 cycles gives our Smart Glass an incredible advantage over competition.

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Projects Solution

Kindlyglass has already produced and exported laminated glass from 2007 and has been involved in many projects in Panama, Mexican， Australia, Malaysia, Norway, Croatia and Africa countries,etc. We actively cooperated with the local engineers to make the better solutions. Over the years we not only provide glass, more is to provide solutions and engineering supporting services such as railing project, bathroom project, curtain wall project and windows project. Especially for engineering hardware supporting facilities.

Partrition Support Frameless Railing + Tempered Laminated Glass

Partrition Support Frameless Railing :Side-fixed Structure+ Tempered Laminated Glass

Frameless Stair Guardrail Tempered Laminated Glass

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Aluminium Alloy U Groove Frameless Railing + Tempered Laminated Glass

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Post Railing + Tempered Laminated Glass

Circular Stainless Tube Pillar with Handrail

Square Aluminium Profile Tube Pillar

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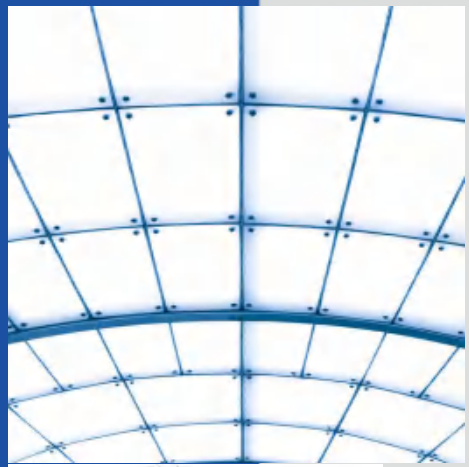
Point-Support Curtain Wall + Tempered Laminated Glass

Point-Supported with Tension Rod Curtain Wall

Point-Supported Roof Safety Glass



Point-Supported with tension cable

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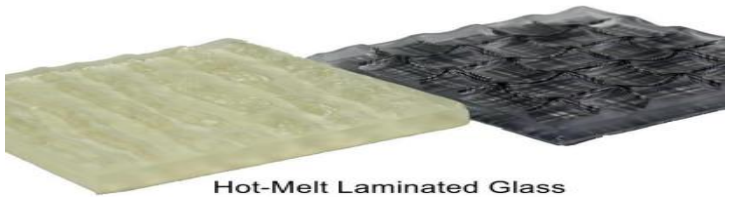
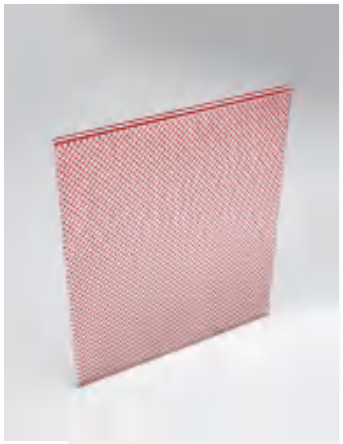
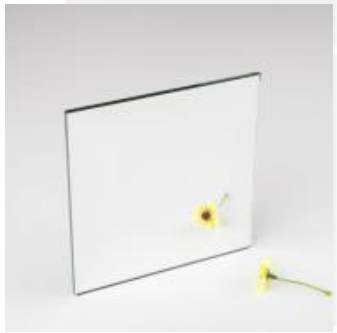
Open Top Container Loading and Reinforcement

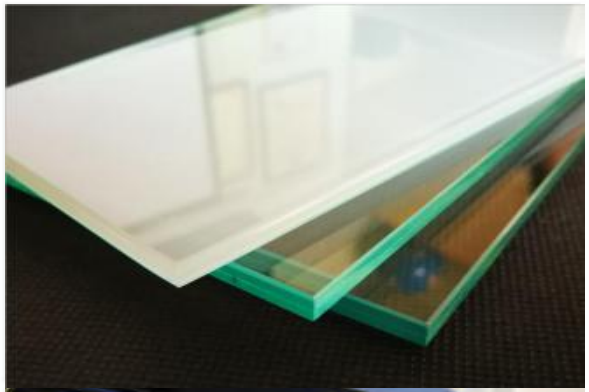

Hot-Melt Laminated Glass

Glazed Laminated Glass




Laminated Mirror

Acoustic Laminated Glass




Clear PVE Laminated Glass

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Euro & Africa

Tel: (86-532) 8308 5327 • Fax: (86-532) 8275 7985 •
E-mail: info@kindlyglass.com
Whatsapp:86 188 5322 9077

North,Central & South America

Tel: (86-532) 8308 5325 • Fax: (86-532) 8275 7985 •
E-mail: sales@kindlyglass.com
Whatsapp:86 187 6626 1362

Middle East

Tel: (86-532) 8275 7907 • Fax: (86-532) 8275 7985 •
E-mail: warren@kindlyglass.com
Whatsapp:86 138 5322 9077

Oceania & Asia

Tel: (86-532) 8275 7926 • Fax: (86-532) 8275 7985 •
E-mail: sophia@kindlyglass.cn
Whatsapp:86 186 6985 186

Qingdao Kangdeli Industrial and Trading Co. Ltd
Rm 905 Yihe Mansion, 108 Anshan Rd,Qingdao, Shandong 266033, China