



*Chuyên vật liệu trang trí khách sạn & khu nghỉ dưỡng*

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*Kính trang trí*



## TEMPERED GLASS

The treatment process of tempered and heat strengthened glass is as when heating glass close to molten point, to carry out even and rapid cooling treatment on the surface of glass, this enhancing the strength and thermal stability. The surface stress of tempered glass is above 90 Mpa, and that of heat strengthened glass is between 24 and 69 Mpa.

### Feature of tempered glass:

**High intensity:** The anti-bending strength of tempered glass is 3-4 fold of that common glass, anti-shock strength 6-7 fold that of common glass.

**Heat stability:** with high heat stability, this kind of glass can endure 300 °C of tempera ture difference, which is 3 fold of that common glass.

**Security:** the stress layer brings it high anti-shock performance, which makes it not easy to broke, and the obtuse angle granule after broken will have no impact on people's health.



Double Chamber Temper Furnace #1

Processing maximum board: 2850 × 6000mm  
Processing thickness: 4-19mm



Double Chamber Temper Furnace #2

Processing maximum board: 2800 × 60 00mm  
Processing thickness: 5-19mm



Jumbo Temper Furnace

Processing maximum board: 3300 × 13000mm  
Processing thickness: 8-19mm



### Homogeneity furnace Heat Soak Test Furnace

Processing maximum board: 2500 × 5000mm  
Processing thickness: no limitation



### Characteristics of Tempered glass

#### Self-explosion and the causes

Immanent cause lies in the interfusion of nickel purite in glass manufacturing process, a tiny proportion of nickel purite in about 7 tons of glass. Nickel purite has two crystal formation, small  $\alpha$  crystal phase in high temperature ( $T > 380^\circ\text{C}$ ) and  $\beta$  crystal phase in low temperature. In the stage of heating, the heating is slow, so transformation from  $\alpha$  crystal phase to  $\beta$  crystal phase is more complete; while in the stage of cooling, there is no enough time for  $\alpha$  crystal phase to transform to  $\beta$  crystal phase because of rapid cooling so that in room temperature,  $\alpha$  crystal phase reverts to  $\beta$  crystal phase gradually, the volume will swell by about 4%, which leads to the explosion of tempered glass. The diameter of explosion-causing nickel purite is about 0.04-0.65mm, average particle diameter is 0.2mm, nickel purite is in tensile stress area, most of which center on high tensile stress area in the core of glass plate. Besides, defects in the original piece of glass, improper pretreatment and excessive concentration of the stress caused by uneven cooling are all the causes of self-explosion. The way to avoid self-explosion: Heat Soak Test (hot-dipping test or igniting test)



## LAMINATED GLASS

### Production line for sandwich glass

Processing maximum board: 3900 × 13000mm  
Processing thickness: 6.38-60mm



### Safety

Laminated glass is of superior safety due to the firm tough bond between PVB film and glass. No matter it is installed vertically or slant, it can withstand external impact and shield it. Once it is broken, its fragments would be stuck with intermediate coat so that people will not be hurt. Besides, the integrity is maintained to keep resisting shock, wind and rain.

### Sound insulation

Laminated glass can reduce noise within acoustic frequency range. The unique laminated structure and PVB film has the damping function to sound wave; it can control the spread of sound effectively, and reduce low-frequency and high-frequency noise from vehicles and aircrafts, etc.

### Sunlight and UV resistance

PVB film can be a UV filter. The intermediate film of PVB can absorb at least 99.5% UV. Special PVB film can also make the laminated glass to control the transmission of sunlight, preventing glare and shield UV effectively so that indoor furniture, plastic items, textiles, carpets, artwork, antiques and commercials will be protected from the UV radiation.



**Production line for air pressure kettle**

Processing maximum board: 3300 × 13000mm  
 Processing thickness: 6.38-60mm



**The production of laminated glass**

Laminated glass is produced by clipping one or more layers of tough and adhesive PVB intermediate coat between two or more pieces of glass.  
 Production line of dual-line double-reactor laminated glass  
 thickness of laminated glass: 6.38-60mm  
 the largest size: 3300 × 13000  
 Processing varieties: flat glass, curve glass, transparent glass, color-sandwich glass and bullet-proof glass.

**Technique and equipment**

All the equipment-Reverse osmosis ultrapure water processing system, three-brushed special cleaning machine, rotary-type industrial dehumidifier and high power industrial air condition and dozens of tens thousands class of air cleaning system ensure glass lamination room of constant temperature, humidity and clean so that quality and useful life of laminated glass is well-insured.

**Other interlayer films:**

- EVA-- excellent water-resistance performance
- EN--simplified techniques, compounds of textile and paper
- SGP--super adhesion, composite metal material is of explosion-proof, anti-hurricane and electromagnetic shielding.

**Decorative Effect**

It looks elegant and graceful if we place Yunlong paper or PET film with various patterns inside laminated glass. Ice-crack glass is one kind of special laminated glass.

**Public security**

Laminated glass can protect personal and property safety. It can avoid stealing and violence. It has various adapted intensity for various purposes. It can not be single-sided cut, so it is easy to enter by cutting and it is easy to perceive.

**Bullet-proof and explosion-proof**

With an excellent flexibility, PVB can adsorb and bear striking energy caused by bullet and even bombs, so that bullet and shell fragments can not penetrate, and the glass debris at the back can not hurt others.

**Shakeproof and anti-hurricane**

The laminated glass compounded with SGP special intermediate coat can resist the attack of hurricane and mitigate the earthquake disaster.



The sandwich glass has better transparency



It is applied in jewelry shops and banking system, contribute to resist explosion, theft and illegal infiltration.



## Bullet Proof & SGP Laminate Glass



### SGP Laminate Glass



### Bullet-proof glass is widely used in:

Construction: the financial system, banks, Museum, jewelry, luxury villas and other.

Automotive: bullet-proof car and note-car.

Product Standard: GB17840-1999

Specifications: Size: 3300mm × 13000mm

The total range Thickness: Multilayer

Product Standards: GB15763.3-2009



## LOW-E IGU

Full-automatic medium altitude production line

Processing maximum board: 2500 × 4200mm

Processing thickness: 3-19mm



Jinchangda is equipped with first-class professional tempered Low-E insulated glass processing equipment. Its unique techniques and strict quality control supply you reliable and energy saving insulated glass.

The insulated glass is to separate two or more pieces of glasses with an effective support, then bond and seal at the edge to form cavity for dry gas. Insulated glass can be divided into two kinds—the single cavity and double cavities.



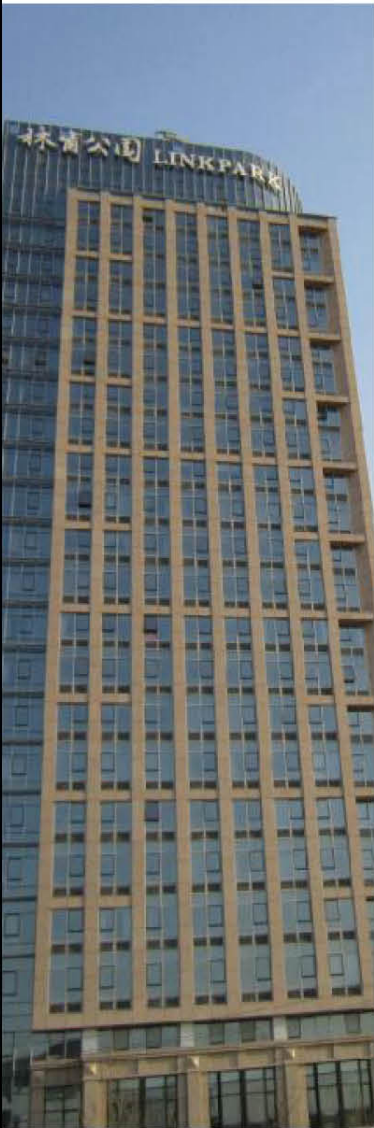
5C+9A+5C+9A+5C composition medium altitude with three glass and two cavity

Low emissivity coated glass (Low emissivity glass or Low-E glass for short) is a kind of coated glass with a high reflectance to the 4.5 μm~25 μm wavelength far infrared ray. Low-E glass is also called solar controlled Low-E glass.

The surface emissivity (E Value) of common glass is around 0.84, on-line Low-E glass is below 0.25, off-line single silver Low-E glass is 0.06, while off-line double silver Low-E glass is only 0.04. This kind of Low-E coated series, which is thinner than 1/100 single hair, has a high reflectance to far infrared ray and can reflect more than 80% far infrared heat radiation. Compared with common transparent float glass and heat absorbing glass whose far infrared reflectance is only 12%, Low-E glass has a good property to separate heat radiation.







## High-transmittance Low-E glass

### product properties:

- High visible light transmittance:natural and permeable day-lighting;
- High solar energy transmittance:more solar heat radiation can transmit the glass;
- High middle/far infrared ray reflectance:excellent heat insulating property with low U value.

### Areas of Application:

- Cold northern areas.In winter,it can effectively reduce heating energy consumption for solar heat radiates into the rooms through window glass to accumulate thermal energy and the far infrared ray from heating,household electrical appliances and human body is reflected back to indoors.
- Transparent,permeable and natural-lighting buildings:it can keep away from "light pollution" effectively;
- To synthesize insulated glass to make a perfect energy consumption.

## Single Silver Low-E glass

### Feature:

- High visible light transmittance: natural daylighting and penetrative effect;
- Higher solar transmittance and more solar thermal radiation;
- Extremely high mid-far infrared reflectivity: high heat-shielding performance and lower U value.

### Application:

- Cold northern area. In winter, solar heat radiation can increase the heat in the house, and the far infrared produced by the hot ari, home appliance and people' s body are refracted to the house by the glass, effectively reducing heating consumption;
- Applicable to buildings with transparent design and natural daylighting. It can avoid "light pollution" effectively.
- Also applicable to compound double glazing glass, bringing better energy-saving performance.



## Double silver Low-E glass

### product properties:

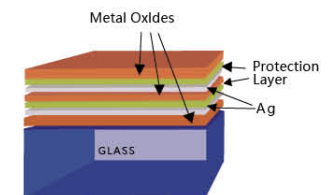
Double silver Low-E glass has double silver layers in coated surface.It is one of the complicated in coated side series.It emphasize the shading effects to solar heat radiation,combine high light transmittance of the glass and low solar heat transmittance skillfully,so compared with common Low-E glass,it has a lower solar energy transmittance and better heat insulation,under the condition of the same visible light transmittance.

### Areas of Application:

- Areas of various climates.
- The main differences between off-line Low-E glass and on-line Low-E glass

## triple silver Low-E glass

- Higher visible light transmittance and daylight
- Lower heat-transfer coefficient,effectively reduce indoor and outdoor heat transfer and keep the indoor temperature steady
- Very low shading coefficient,effectively reduce solar heat gain and lower the cooling costs in summer
- Suitable for places where daylight and shading are extremely required



Double silver Low-E

# CERAMIC FRITTED GLASS

Full-automatic color ceramic glaze glass production line

Processing maximum board: 2500 × 5100mm  
Processing thickness: no limitation



## High-intensity, safe and heat shock resistance.

Silk-screen tempered glass shares all the properties of tempered glass; its intensity is three to five times of common glass; granular particles after broken will not hurt people; it can resist the 220°C -250°C temperature changes. The Silk-screen glass can also be heat strengthened and shares all the properties of heat strengthened glass.

## Beautiful colors, diverse patterns.

Diverse patterns and colors can be impressed on the surface as required.

## Obvious shading effect

The unique, artistic and ornamental silk-screen glass has superior shading effect, which can soften indoor light, freshen the indoor air and reduce air-conditioning energy consumption. It can be used as indoor cut-off to block light or keep privacy.

## Skid-proof

The Special skid-proof glaze can also be used as floor or stair tread after special processing.

### Expert Tips:

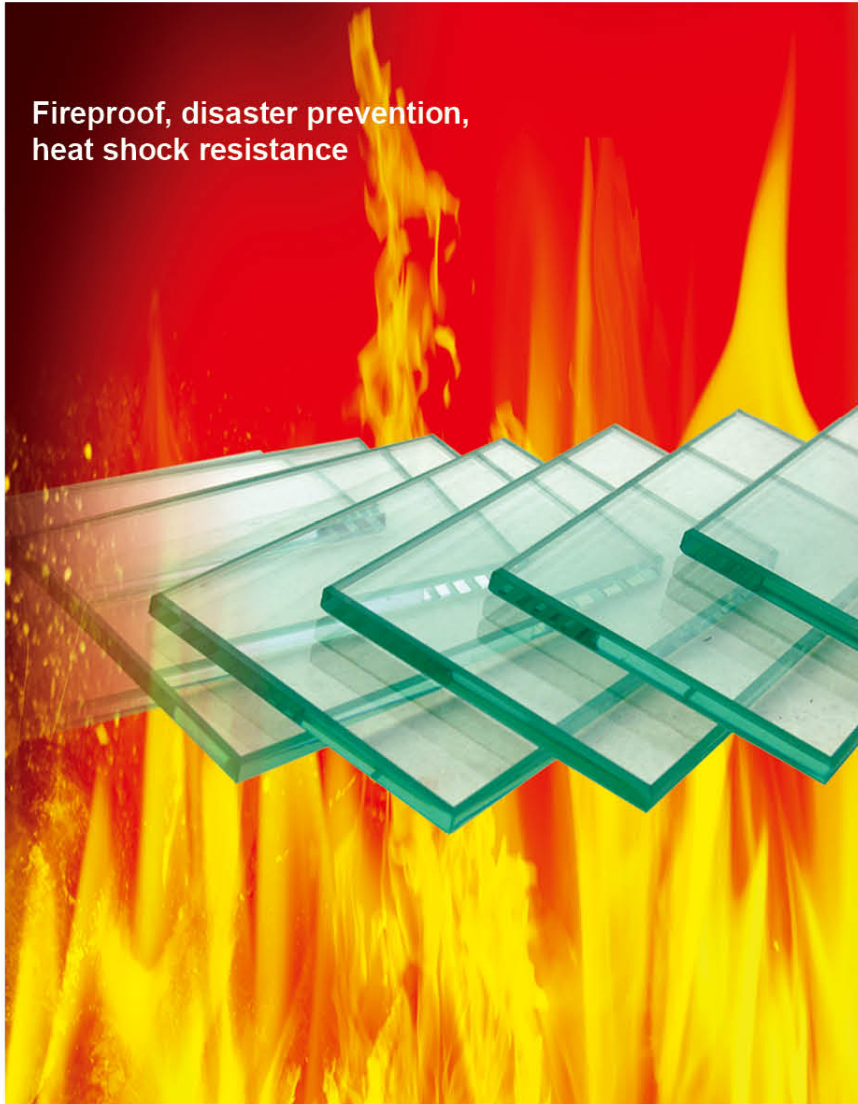
Color Glazed Glass can be used by single, or to compound to insulated glass and laminated glass.  
Color Glazed Glass can not be mechanical processed like common tempered glass.  
Slight color difference and printing signs may be seen due to imperfect techniques.  
Since it is single side printed, when applied to curtain walls or windows, the color Glazed side should be put inside.





## FIRE RESISTANT GLASS

Fireproof, disaster prevention,  
heat shock resistance



### Classification of Fire-resistance glass

#### Composite fire-resistance glass(FFB)

It is kind of special glass, compounded by two or more pieces of glass or by one piece of glass and organic materials to meet different fire-resistance levels.

#### Single Fire-resistance glass(FFB)

It is kind of single transparent glass that has integrity of fire-resistance and can prevent flame and smoke from spreading.

#### Classification of Fire-resistance glass

Type A has the property of fire integrity, fire-resistance and heat shielding.

Type B can meet the requirement of fire integrity and heat radiation intensity.

Type C can meet the requirement of fire integrity.

Each of the three types can be divided into four levels by fire-resistance property-Band I ,Band II ,Band III and Band IV .

### Fire-resistance glass

1.It can keep fire integrity within refractory period of time.It can stop flame,smoke and high temperature poisonous gases from spreading.It has a good permeability.

2.It has a high intensity,6 to 12 times of that of common float glass of the same thickness,and 1.5 to 3 times of that of tempered glass.

3.It can be deep processed in various ways.It can be processed into insulated fire-resistance glass,laminated fire-resistance glass and coated fire-resistance glass,etc.

4.It is heat resistant,cold resistant,moist resistant,light resistant and non-discolored.

5.It is light and easy to be transported and installed.

#### Principles of fire-resistance

After the special treatment on common glass by physical and chemical ways to improve thermal shock resistance.It can guaranteed not to break under flame shock and high temperature within 45 to 90 minutes,so that it can stop flame from entering rooms through windows.People have enough time to leave the scene of fire.The two sides of single fire-resistance glass have the same fire-resistance effect.It can increase the intensity,wind pressure resistance and safety when used for the external wall of buildings.

### Compounded Anti-fire glass

1.Stable fire-resistance, fire and heat insulation.

2.Excellent shock resistance.

3.Finished products can be edged,perforated and cut as required.

4.Natural lighting and perspective.

5.Decorative effect is not good enough for micro gas spots of higher density can be seen under the light.

6.It should keep away from water,moist and ultraviolet light.If it is used for the external wall of the buildings,it should be combined with fire-resistance glass and PVB laminated glass.



# CURVED GLASS



Bending tempered glass is kind of bent glass, produced by heating the original sheet glass close to softening temperature, bending the glass by gravity or mechanical force, then rapidly and evenly cooling the glass, and at last forming crushing stress on the surface. During cooling process, the external is solidified because of rapid cooling, while the internal slow cooling causes the crushing stress on the surface. The internal tensile stress improves the strength and thermal stability of glass.

### The property of curved tempered glass

Curved tempered glass has the same high-intensity, safety and thermal stability as flat tempered glass, however, its anti-wind-pressure performance is better than that of other types due to its shape. Widely applied by modern architects, the surface modeling makes richer designs. Combined with the surroundings, its smooth and natural style gives us an artistic enjoyment.

### The production of curved tempered glass

Jinchangda applies static press to upgrade techniques, computer-controlled curve adjusting to replace the mould. It can supply various sizes of bending tempered glass. (Hard axis) bending tempering furnace can produce the glass of arc length 3300mm, as well as the curved tempered glass of minimum radius 2000mm and arc length 600mm.



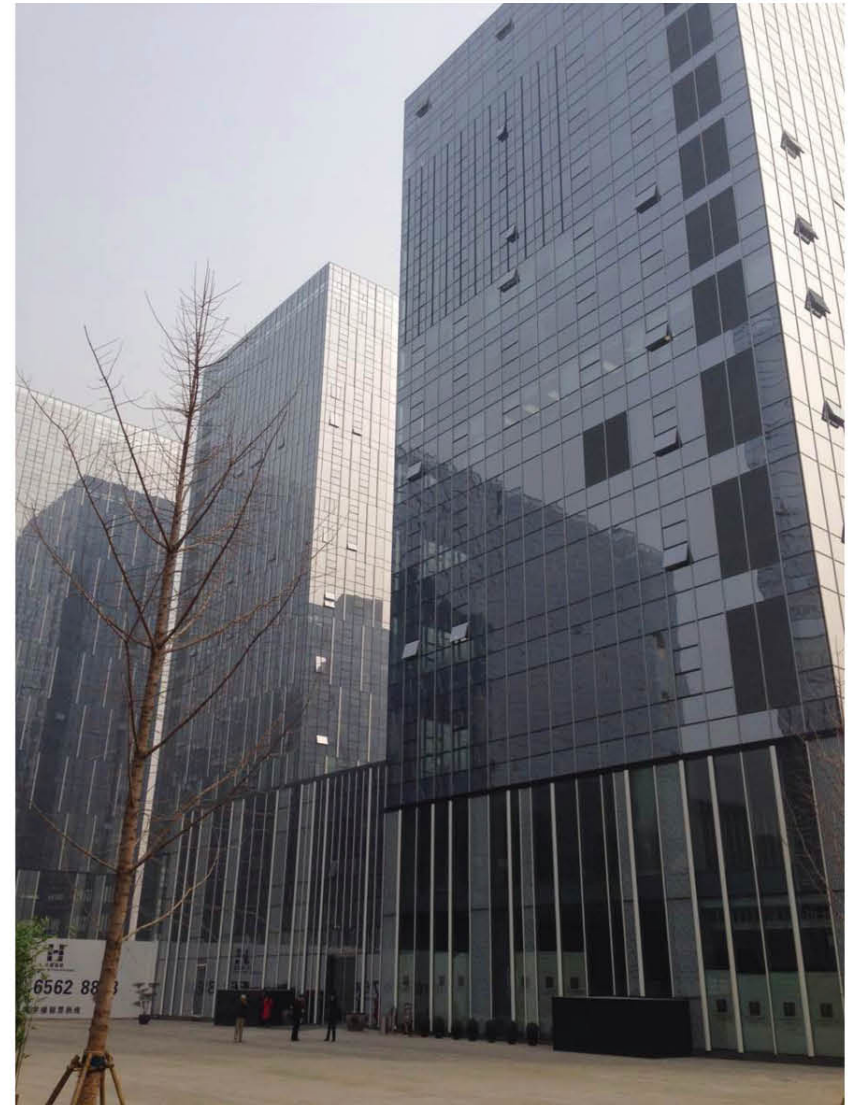
**Bend Tempered Glass**  
 Processing maximum board: 3300 × 6000mm  
 Processing thickness: 5~19mm

Glass Specification	Reflective Color	Visible Light			Solar Energy		U Value		SC	SHGC
		Tvis (%)	Rvis (out%)	Rvis (in%)	Tsol (%)	Rsol (%)	Winter	Summer		
5mm Clear	Clear	90	7	7	83	6	5.85	5.28	0.99	0.86
6mm Clear	Clear	89	7	7	80	6	5.81	5.25	0.97	0.84
8mm Clear	Clear	89	7	7	78	6	5.75	5.19	0.95	0.83
10mm Clear	Clear	87	7	7	74	6	5.67	5.13	0.92	0.80
12mm Clear	Clear	87	7	7	72	6	5.61	5.08	0.91	0.79
5mm French Green	Green	77	6	6	48	5	5.85	5.28	0.72	0.63
6mm French Green	Green	75	6	6	44	5	5.81	5.25	0.69	0.60
8mm French Green	Green	70	6	6	36	4	5.74	5.19	0.63	0.55
10mm French Green	Green	65	5	5	30	4	5.67	5.13	0.59	0.51
12mm French Green	Green	60	5	5	25	4	5.61	5.07	0.56	0.49
5mm Crystal Grey	Light Grey	68	7	7	61	6	5.85	5.28	0.82	0.71
6mm Crystal Grey	Light Grey	64	6	6	56	5	5.81	5.25	0.78	0.68
8mm Crystal Grey	Light Grey	56	6	6	48	5	5.74	5.19	0.72	0.63
10mm Crystal Grey	Light Grey	50	6	6	42	5	5.68	5.14	0.68	0.59
12mm Crystal Grey	Light Grey	44	6	6	36	5	5.62	5.08	0.63	0.55
5mm Euro Grey	Dark Grey	50	5	5	50	5	5.85	5.28	0.73	0.64
6mm Euro Grey	Dark Grey	45	5	5	44	5	5.82	5.25	0.68	0.59
8mm Euro Grey	Dark Grey	35	5	5	34	4	5.75	5.19	0.62	0.54
10mm Euro Grey	Dark Grey	26	4	4	26	4	5.67	5.13	0.56	0.49
12mm Euro Grey	Dark Grey	21	4	4	21	4	5.62	5.08	0.52	0.45
5mm Low Iron	Ultra Clear	91	8	8	89	8	5.85	5.28	1.04	0.90
6mm Low Iron	Ultra Clear	90	8	8	89	8	5.81	5.24	1.03	0.90
8mm Low Iron	Ultra Clear	90	8	8	88	8	5.74	5.19	1.03	0.90
10mm Low Iron	Ultra Clear	89	8	8	87	8	5.68	5.13	1.02	0.89
12mm Low Iron	Ultra Clear	89	8	8	86	8	5.62	5.08	1.01	0.88
5mm Blue Grey	Blue Grey	48	7	7	47	7	5.27	5.84	0.66	0.57
6mm Blue Grey	Blue Grey	42	7	7	41	7	5.24	5.81	0.62	0.54
5mm Ford Blue	Ford Blue	61	7	7	50	7	5.27	5.84	0.69	0.60
6mm Ford Blue	Ford Blue	56	7	7	45	7	5.24	5.81	0.64	0.56
5mm Modern Grey	Grey	52	6	6	49	6	5.27	5.84	0.68	0.59
6mm Modern Grey	Grey	45	6	6	43	6	5.24	5.81	0.63	0.55
5mm Century Grey	Grey	65	7	7	61	7	5.24	5.81	0.76	0.66
6mm Century Grey	Grey	61	7	7	56	7	5.21	5.78	0.74	0.64
5mm Light Blue	Light Blue	71	8	8	54	7	5.27	5.84	0.72	0.63
6mm Light Blue	Light Blue	68	8	8	51	7	5.24	5.81	0.69	0.60
5mm Euro Bronze	Bronze	52	6	6	52	7	5.27	5.84	0.70	0.61
6mm Euro Bronze	Bronze	47	7	7	47	7	5.24	5.81	0.66	0.57

## DOMESTIC PROJECT PERFORMANCE



Beijing Linkin Office Park Residence and Commercial Building



Beijing Xinkong Technology Park



## DOMESTIC PROJECT PERFORMANCE



Baic Motor Corporation, Ltd Office Building



Xuhui Airport Residence and Commercial Building



Tianjin Baolong International Center

## DOMESTIC PROJECT PERFORMANCE



Beijing Vanker Residence



## FOREIGN PROJECT PERFORMANCE



Ulaanbaator Khurd Office Building



Angola Kabing University



Australia Residence Building

## FOREIGN PROJECT PERFORMANCE



Two Roaxa Triangle Tower



Philippine SHELL-RESIDENCES



Philippine Globe HQ



# FOREIGN PROJECT PERFORMANCE



Singapore Changqi Business Park  
Avenue Office Building

Singapore Changqi Business Park Avenue



Mongolia Peace Tower



Philippine AVIDA-TOWERS-CENTERA-TOWER