



上海耀皮玻璃集团股份有限公司

Shanghai Yaohua Pilkington GLASS GROUP

上海耀皮玻璃集团股份有限公司
SYP GLASS GROUP



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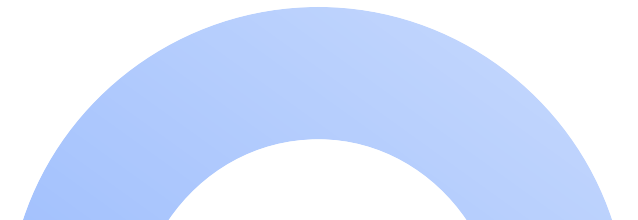
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Q&A





1. Who is SYP?





Shanghai Yaohua Pilkington Glass Group


SYP → **S**hanghai **Y**aohua **P**ilkington

Founded in Nov 1983

Public Listed in 1993.



PILKINGTON

- SYP is a professional manufacturer specializing in glass research & development, production, and the delivery of customized glass solutions.
 - SYP is the **first** in China to adopt advanced float production technology from overseas, marking a significant turning point in the history of China's float glass production.
- 



SYP SHAREHOLDING COMPOSITION

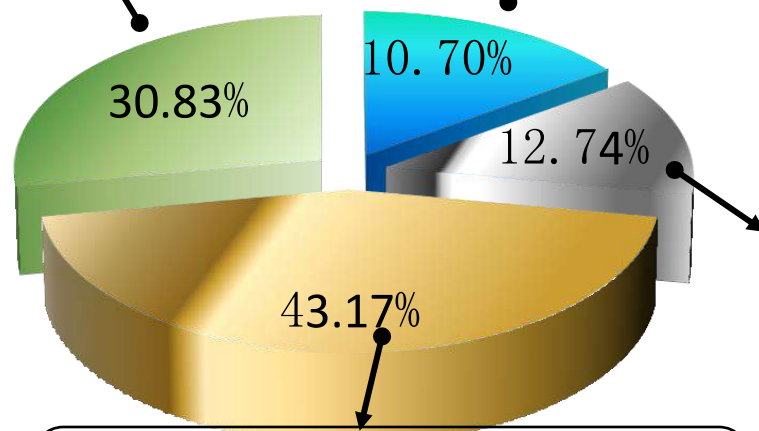


Shanghai Building Materials
(Group) Co. Ltd.



PILKINGTON
NSG
GROUP
NSG UK ENTERPRISES LIMITED

Total Assets: 8,202M RMB
Total Market Value: 7,021M RMB
(2015.05.11)
Total Share Capital: 934M Shares



Other Social Corporation Shares
Other Outstanding Shares
Other Circulation B Shares

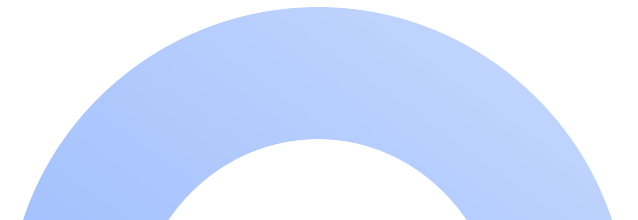


中国建材
China Composites Group
Co., Ltd

The largest glass company
controlled by the government.



2. Why SYP?



2. Why SYP?

01 Complete Industrial Chain

- ✓ Cost Control
- ✓ Operational Stability
- ✓ Product Innovation
- ✓ Market Competition

- ✓ Customer Satisfaction
- ✓ Employee Self-Realization
- ✓ Corporate Development and Social progress

04 Social responsibility

02 Scientific research & application

SYP Glass Research Institute

Founded 2020

- ✓ Research-to-business conversion
- ✓ Industry bottleneck breakthrough

- ✓ Technological Advancement
- ✓ Operational Optimization
- ✓ Talent Cultivation

03 Backed by foreign-invested technologies



2.1 Complete Industrial Chain



Float Glass

Architectual Glass

Auto Glass

Special Glass

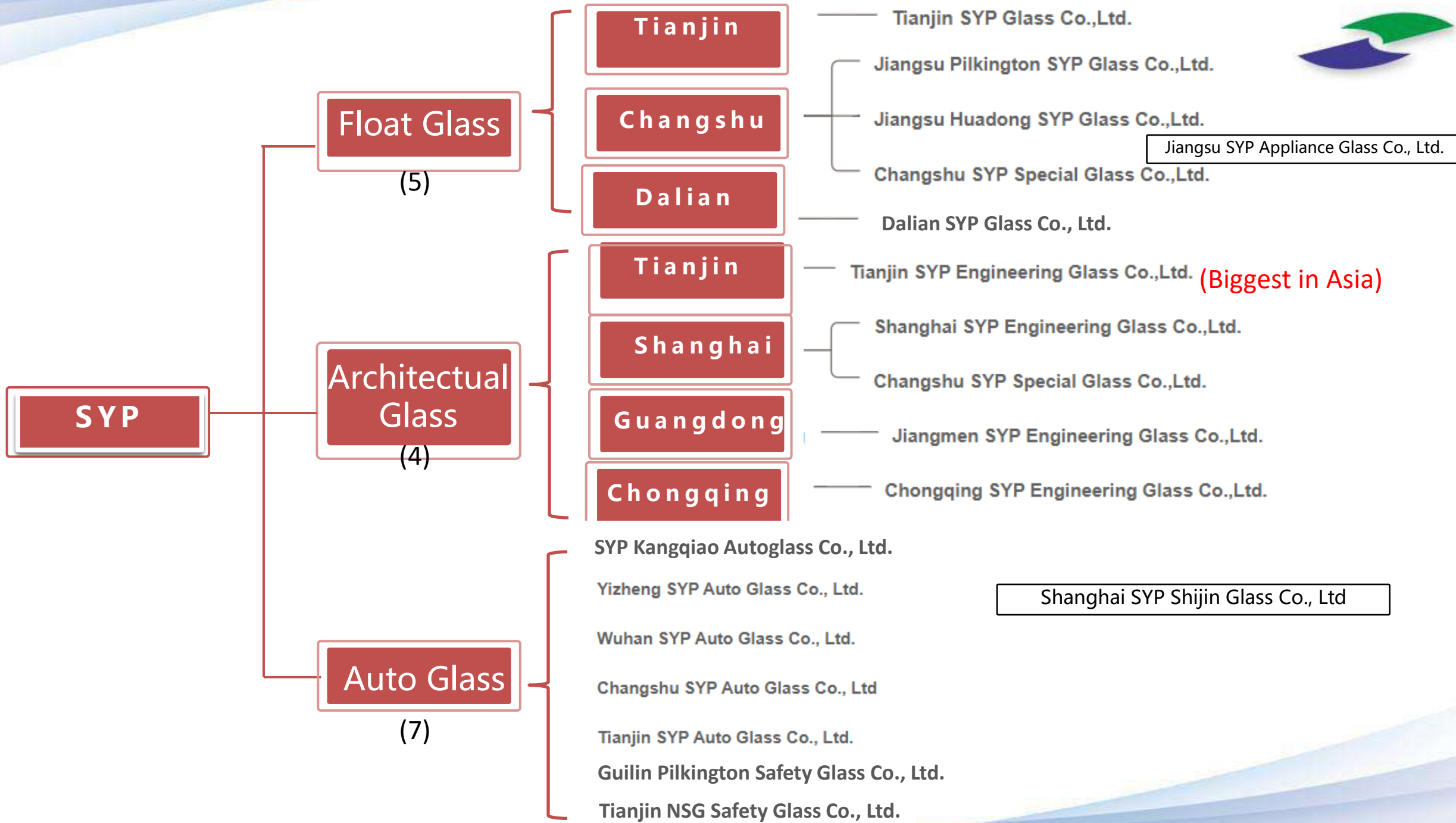
The Only Company in China has On-line & Off-line Coating Technology.

- Clear Glass, Low Iron
- Hard Coat
- Aviation float glass
- (The Only factory in China)**
- High borosilicate fireproof glass
- Self cleaning glass

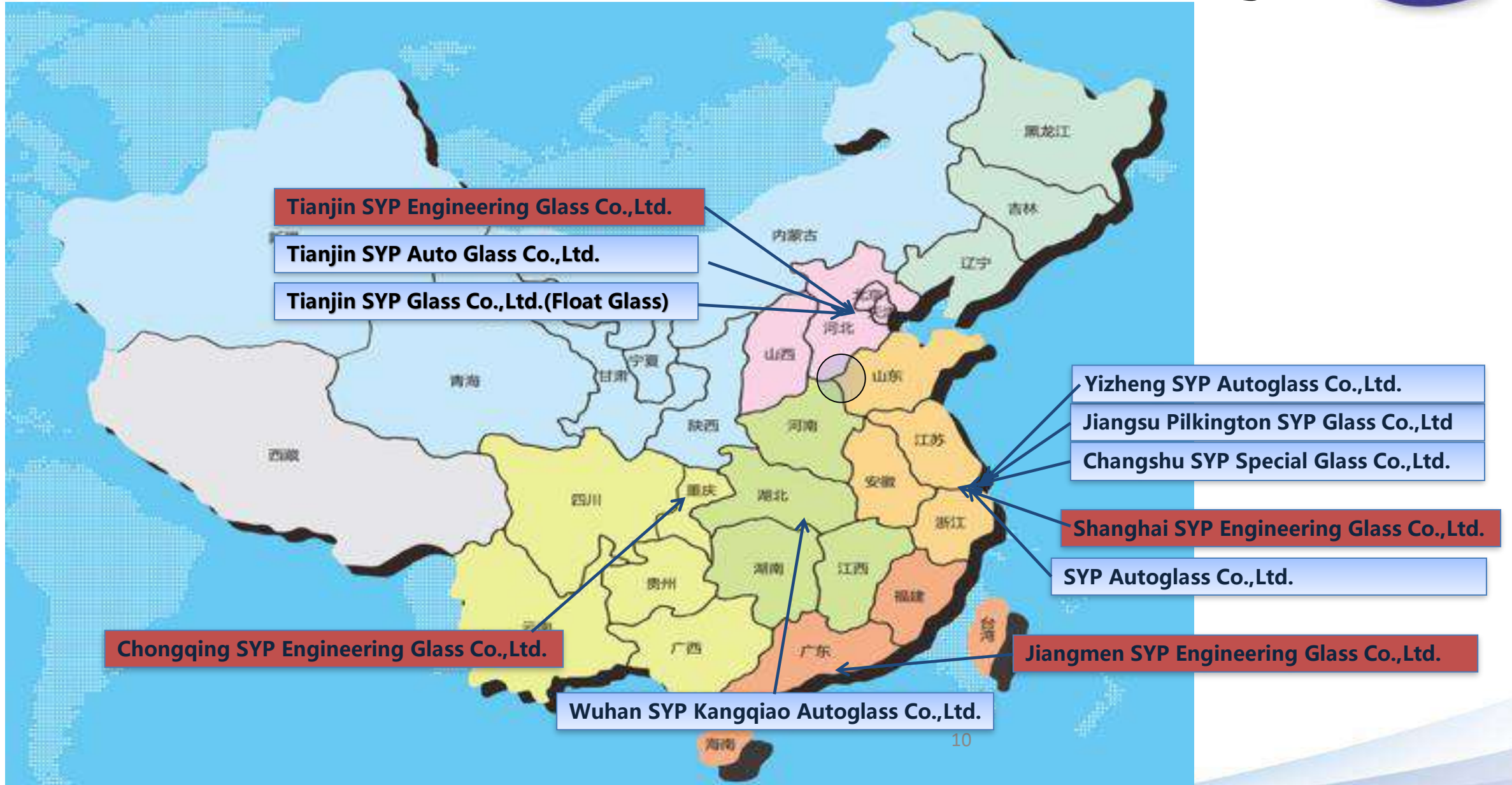
- Heat Treated Glass
- Laminated glass
- IGU
- Single/double/triple Low-e
- Post Temperable low-e
- Curve glass
- Jumbo size

- Customized by car models

- Fire Rated glass
- Bullet Proof Glass
- Waterproof Laminated glass
- Post temperable mirror glass
- BIPV glass
- PDLC glass



5 Production Bases overall the country





2.2 Scientific research & application

SYP Glass Research Institute

《玻璃工业“十三五”发展指导意见》指出，“十三五”是玻璃行业转型升级的关键时期,力争实现发展方式的根本转变。

- 发展模式由“速度规模型”转向“资源环境友好型”;

Development model: Speed and scale -> environmentally resource - friendly

- 发展源动力由依靠“市场需求拉动”转为“科技创新驱动”;

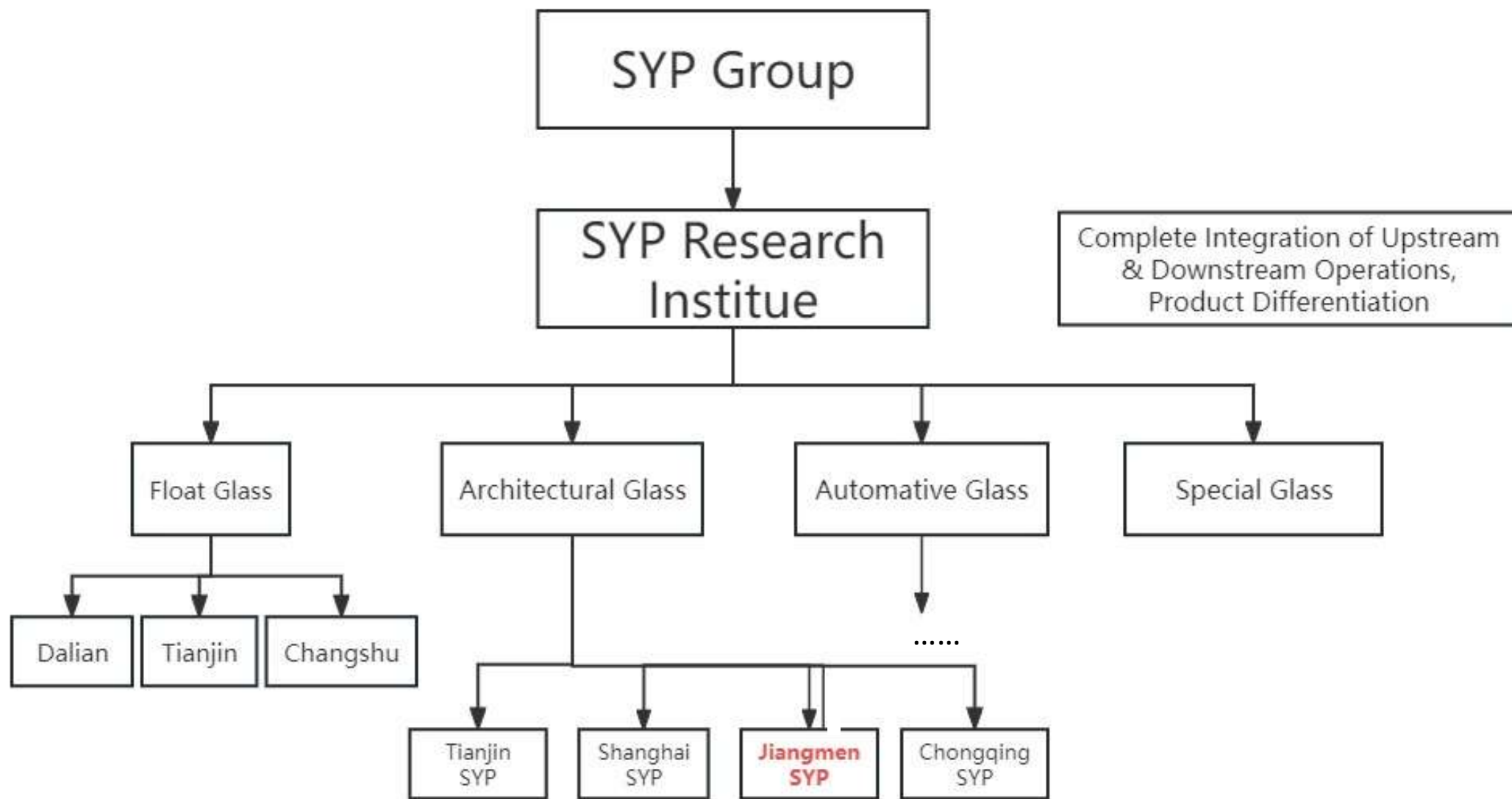
Driving force: Market demand -> scientific and technological innovation

- 发展方式由“工业制造单一型”转为“制造与生产服务并举型”;

Development approach: S solely industrial manufacturing - based model -> combines manufacturing with production services

- 发展的市场布局由“国内为主”转向“国内、国际同步发展的全球资源配置型”。

Market layout: Domestic-centric model -> a global resource - allocation model that promotes synchronized development both at home and abroad.





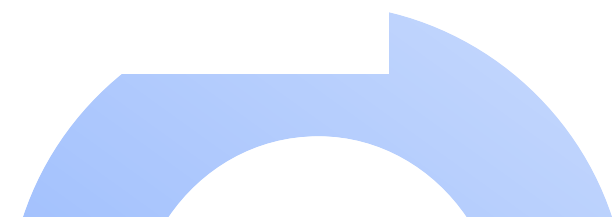
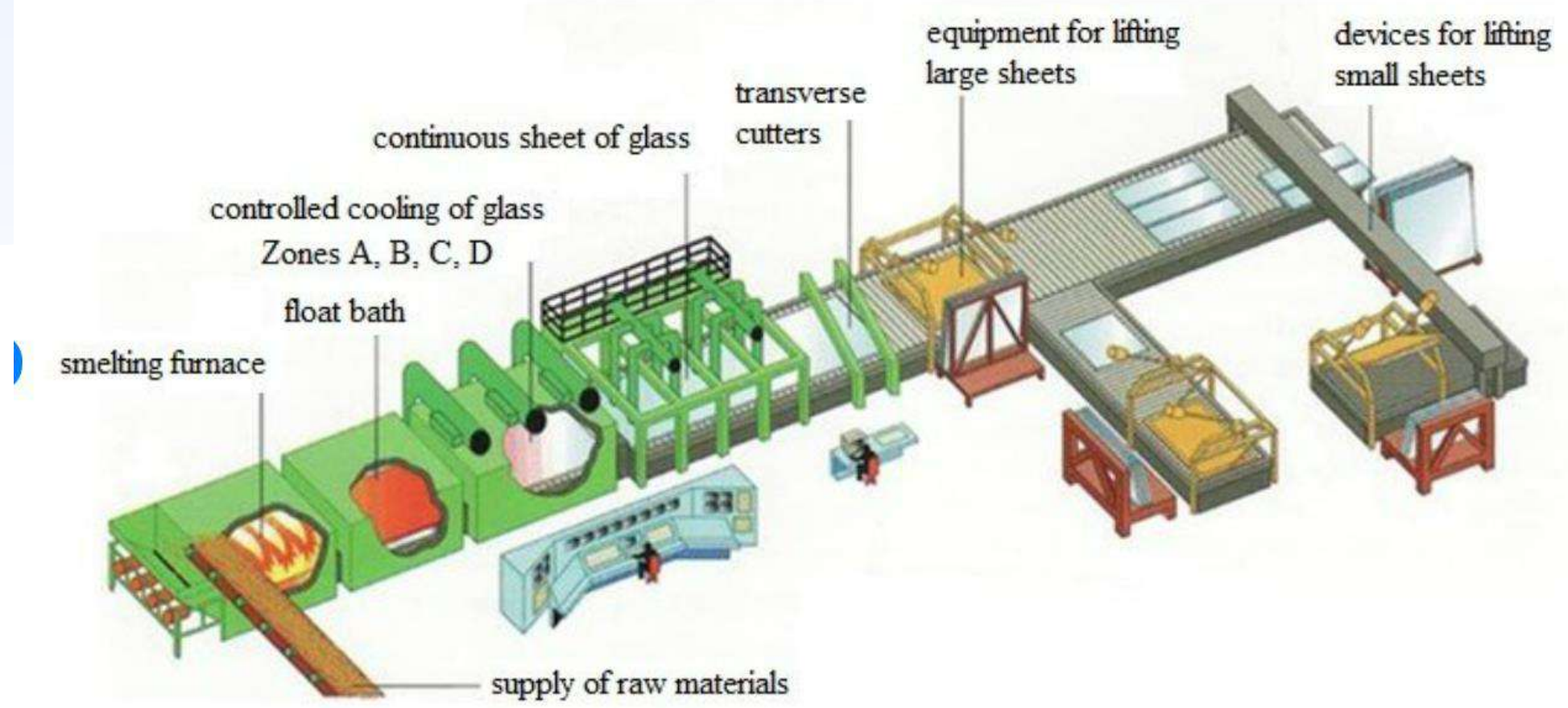
Ultra High-quality Aviation Float Glass

The **Only** supplier in China,
Breaking foreign technological blockade.





2.3 Backed by foreign-invested technologies





Pilkington
Hard Coat

- Eneergy Advance
- Suncool 60
- Solar lite 60
- Solar F-cool
- Self cleaning
-

SYP LOW IRON
Float Glass



100x100mm

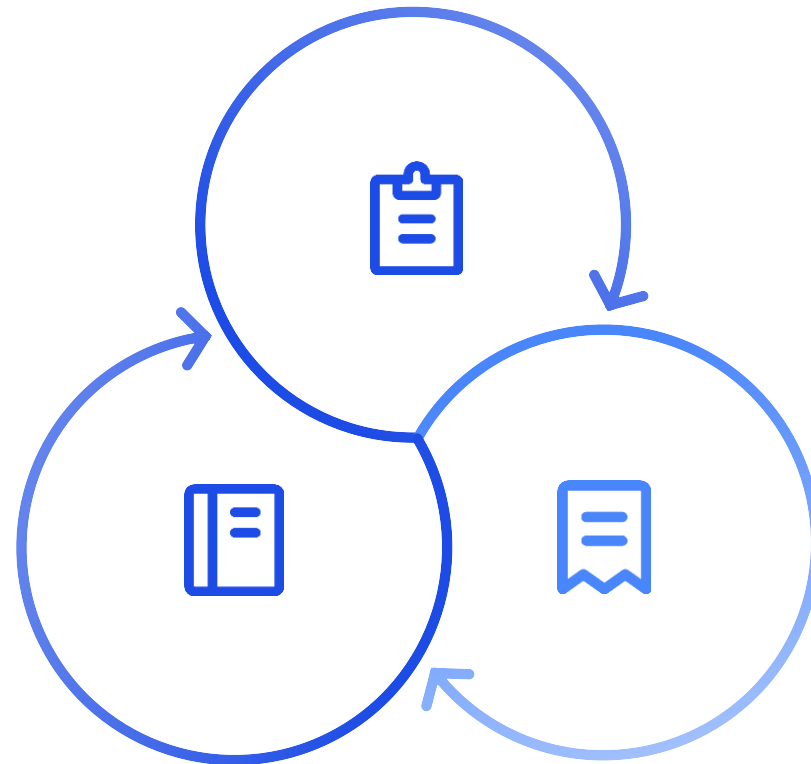




2.4 Social responsibility

Environmentally friendly production and operation

Excellent Quality
A Trustworthy Partner

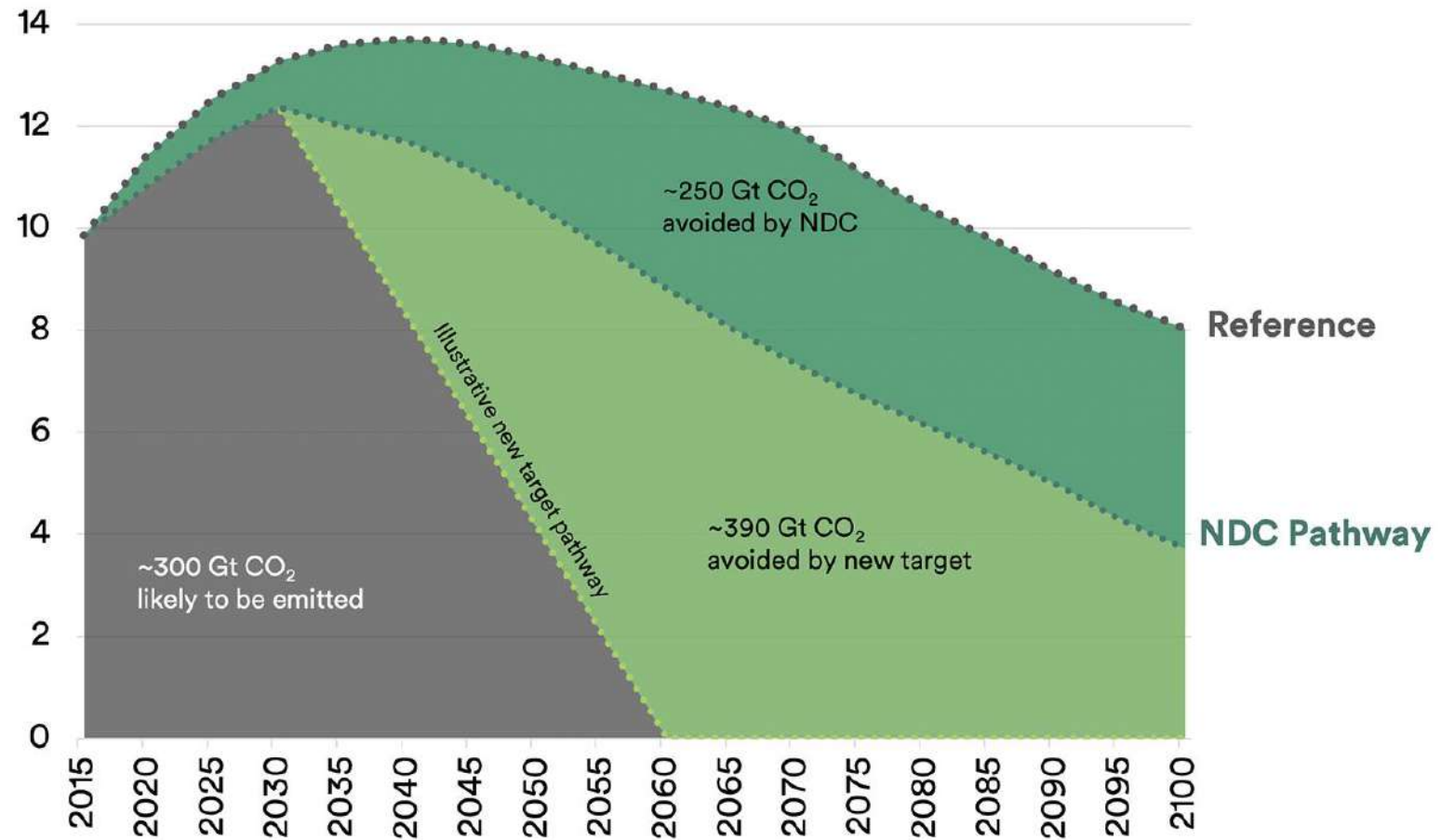


Produce environmentally friendly glass products

China aims “to have CO₂ emissions peak before 2030 and achieve carbon neutrality before 2060.”



Potential carbon dioxide emissions pathways for China (Gt CO₂/year)



SYP Actions to lower the CO2 emissions



The roof of the plants are covered with **photovoltaic solar panels**, that converts sunlight into electricity.

Solar panels use a renewable and clean source of energy and reduce greenhouse gas emissions.

SYP Actions to lower the CO2 emissions



Activated carbon air filtration equipment

is installed in the ceramic and IGU processes to improve the air quality and achieve green emissions.

Electric forklifts are used to reduce air pollution



SYP Actions to lower the CO2 emissions



A water circulation system

is installed in the edge grinding process to reduce the waste of water resources;

SYP Actions to lower the CO2 emissions



- ✓ Raw Material wastes such as glass, interlayer, aluminum spacer are recycled by professional companies.



- ✓ Hazardous wastes such as waste mineral oil are collected and treated by professional companies.




SYP Management System



ISO 14001 Environmental Management System Certificate

ISO 45001 Occupational Health and Safety Management System Certificate

 北京标准认证中心
BEIJING STANDARD CERTIFICATION CENTRE

ENVIRONMENTAL MANAGEMENT SYSTEM CERTIFICATE

Registration No. 064-23-E-2800-R0-M




This is to certify that
JIANGMEN SYP ENGINEERING GLASS CO.,LTD
Unified social credit code: 91440700666538595U


Registration Address: No.10 Yinyuan Road,Xinhui District,Jiangmen City,Guangdong
Province,529141


Produce Address: No.10 Yinyuan Road,Xinhui District,Jiangmen City,Guangdong
Province,529141

Which is in conformity with
GB/T24001-2016 / ISO14001:2015
Scope of Certification
Production of laminated glass, tempered glass, glazed glass, coated glass, and insulating glass for construction purposes (mandatory certification requirements are limited to the scope of mandatory certification) and related management activities involved

Issue date: Sep 25,2023 Term of validity: Sep 24,2026

 主任签字:



 NOTE: Before 09-24 of each year for annual review, this certificate will continue to be effective after the review. Please scan the QR code certificate valid state query. Also can query in the center website: www.bjpsc.net, and the CNCA official website: www.cnca.gov.cn. This certificate is valid for the period of validity of the state regulations and the validity of the administrative license.
注册号: CNCA-R-2002-064 地址: 北京市朝阳区东三环西路19号12层1211
www.bjpsc.net office@bjpsc.net +86-10-64195199

 北京标准认证中心
BEIJING STANDARD CERTIFICATION CENTRE

OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT SYSTEM CERTIFICATE

Registration No. 064-23-S-2801-R0-M




This is to certify that
JIANGMEN SYP ENGINEERING GLASS CO.,LTD
Unified social credit code: 91440700666538595U


Registration Address: No.10 Yinyuan Road,Xinhui District,Jiangmen City,Guangdong
Province,529141

Produce Address: No.10 Yinyuan Road,Xinhui District,Jiangmen City,Guangdong
Province,529141

Which is in conformity with
GB/T45001-2020/ISO 45001:2018
Scope of Certification
Production of laminated glass, tempered glass, glazed glass, coated glass, and insulating glass for construction purposes (mandatory certification requirements are limited to the scope of mandatory certification) and related management activities involved

Issue date: Sep 25,2023 Term of validity: Sep 24,2026


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注册号: CNCA-R-2002-064 地址: 北京市朝阳区东三环西路19号12层1211
www.bjpsc.net office@bjpsc.net +86-10-64195199

Green Product Certification



Carbon Footprint of Products

 **ctc**
国检集团

Carbon Footprint of Products

Certificate number: CFP-CTC-2024-09003

Product name: Building energy saving glass
Name and address of applicant: JiangMen SYP Engineering Glass Co., Ltd.
10# Yinyuan Road, Economic Development Zone Xinhui, Jiangmen City, Guangdong, China
Name and address of manufacturer: JiangMen SYP Engineering Glass Co., Ltd.
10# Yinyuan Road, Economic Development Zone Xinhui, Jiangmen City, Guangdong, China

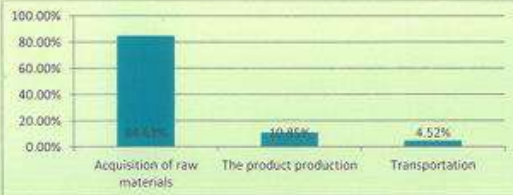
References: ISO 14067:2018 Greenhouse gases - Carbon footprint of products - Requirements and guidelines for quantification & PAS 2050:2011 Specification for the assessment of the life cycle greenhouse gas emissions of goods and services.

Functional unit: 1m² Building energy saving glass
System boundary: From resource exploitation, raw and auxiliary materials production and transportation, energy production, product production to product delivery (from cradle to gate)

Carbon footprint per functional unit: 49.3 kg

Term of validity: From 2024-1-5 to 2029-1-4
Issuing authority: China Testing & Certification International Group Co., Ltd.
Address: No.1 Guanzhuang Dongli, Chaoyang District, Beijing, 100024. Tel: 010-51167347


Within the period of validity, the certificate shall remain valid through annual supervision. The result of the annual supervision shall be shown in the annual supervision qualification announcement.



Category	Percentage
Acquisition of raw materials	85.32%
The product production	10.86%
Transportation	4.52%

中国 北京中朝和认证有限责任公司 100024 网址: www.ctc.ac.cn

Environmental Product Declarations

 **ctc**
国检集团

Environmental Product Declarations

Declaration number: EPD-CTC-2024-09003

Product name: Building energy saving glass
Name and address of applicant: JiangMen SYP Engineering Glass Co., Ltd.
10# Yinyuan Road, Economic Development Zone Xinhui, Jiangmen City, Guangdong, China
Name and address of manufacturer: JiangMen SYP Engineering Glass Co., Ltd.
10# Yinyuan Road, Economic Development Zone Xinhui, Jiangmen City, Guangdong, China

References: GB/T 24025-2009 Environmental labels and declarations. Type III environmental declarations. Principles and procedures
ISO 14025:2006 Environmental labels and declarations - Type III environmental declarations - Principles and procedures

Functional unit: 1m² Building energy saving glass
System boundary: From resource exploitation, raw and auxiliary materials production and transportation, energy production, product production to product delivery (from cradle to gate)

Results: See the appendix

Date of issue: 2024-1-5
Date of expiry: 2029-1-4
Issuing authority: China Testing & Certification International Group Co., Ltd.

Within the period of validity, the certificate shall remain valid through annual supervision. The result of the annual supervision shall be shown in the annual supervision qualification announcement.

Address: No.1 Guanzhuang Dongli, Chaoyang District, Beijing, 100024. Tel: 010-51167347

中国 北京中朝和认证有限责任公司 100024 网址: www.ctc.ac.cn

Green Product Certification



China Green Product Certificate

 
中国绿色产品 国检集团

中国绿色产品认证证书

证书编号: 10924CGP040241

申请人名称及地址: 江门耀皮工程玻璃有限公司
广东江门市新会区银源路10号

商标:
制造商名称及地址: 江门耀皮工程玻璃有限公司
广东江门市新会区银源路10号

生产企业名称及所在地: 江门耀皮工程玻璃有限公司
广东江门市新会区银源路10号

产品名称: 建筑用中空玻璃

系列规格型号: (具体规格型号及关键原材料见附件)

认证模式: 初始检查+产品抽样检验+获证后监督

产品标准和技术要求: GB/T35604-2017《绿色产品评价 建筑玻璃》

上述产品符合CNCA-CGP-04:2021《绿色产品认证实施规则建筑玻璃》的要求,特发此证。

发证日期:2024年3月22日 有效期至:2029年3月21日
换发日期:*****

在证书有效期内,获证组织必须定期接受监督审核并经审核合格,此证书方继续有效。本证书信息可在国家认证认可监督管理委员会公示的网站(www.cnca.gov.cn)上查询或从本公司网站(www.ctc.ac.cn)上查询。

中心通信地址:北京市朝阳区管庄东里1号 100024

证书签发人:  中国国检测试控股集团股份有限公司



中国 北京市朝阳区管庄东里1号 100024 网址: www.ctc.ac.cn

China Green Building Materials Product Three-Star Certificate

  
国检集团

中国绿色建材产品认证证书

证书编号: 10924GBM020030166

申请人名称及地址: 江门耀皮工程玻璃有限公司
广东江门市新会区银源路10号

商标:
制造商名称及地址: 江门耀皮工程玻璃有限公司
广东江门市新会区银源路10号

生产企业名称及所在地: 江门耀皮工程玻璃有限公司
广东江门市新会区银源路10号

产品名称: 建筑用中空玻璃

系列规格型号: (具体规格型号及关键原材料见附件)

认证模式: 初始检查+产品抽样检验+获证后监督

产品标准和技术要求: T/CBCS 10034-2019《绿色建材评价 建筑节能玻璃》

上述产品符合CNCA-CGP-13:2023《绿色建材产品分级认证实施通则》和CTC-TVc-OP02003《绿色建材产品分级认证实施规则 建筑节能玻璃》三星级的要求,特发此证。

发证日期:2024年3月22日 有效期至:2029年3月21日
换发日期:*****

在证书有效期内,获证组织必须定期接受监督审核并经审核合格,此证书方继续有效。本证书信息可在国家认证认可监督管理委员会公示的网站(www.cnca.gov.cn)上查询或从本公司网站(www.ctc.ac.cn)上查询。

中心通信地址:北京市朝阳区管庄东里1号 100024

证书签发人:  中国国检测试控股集团股份有限公司



中国 北京市朝阳区管庄东里1号 100024 网址: www.ctc.ac.cn



A Trustworthy Partner

SINCE 1983



中国 TOP1
● 上海中心
632米

广东省 TOP1
● 广州塔
600米

广州市 TOP1
● 广州东塔
530米

俄罗斯 TOP1
● 俄罗斯联邦大厦
509米

美国
● 111 W.57th St.
472米

重庆 TOP1
● 重庆来福士国际中心
458米

科威特 TOP1
● 科威特哈利法大厦
412米

香港 TOP1
● 香港环球贸易广场
388米

泰国 TOP1
(曼谷 MahaNakhon)
314米

泰国 TOP1
(曼谷 MahaNakhon)
314米

江苏省 TOP1
● 苏州九都荟IFS
450米

河南省 TOP1
● 长沙国金金融中心
452米

越南 TOP1
● 越南 Landmark81
463米

香港 TOP1
● 香港ICC
484米

上海 TOP1
● 上海环球金融中心
492米

北京 TOP1
● 中国尊(北京中信大厦)
528米

韩国 TOP1
● 韩乐天世界大厦
555米

深圳 TOP1
● 深圳平安金融中心
388米

长沙 TOP1
● 长沙国金金融中心
300米

南昌 TOP1
● 南昌绿地303双子塔
303米

天津 TOP1
● 天津周大福金融中心
315米

北京 TOP1
● 北京华贸中心
272.3米

北京 TOP1
● 北京中信大厦
192米

广州 TOP1
● 广州东塔
330米

俄罗斯 TOP1
● 俄罗斯联邦大厦
266米

阿曼 TOP1
● 阿曼巴拿马国际中心
209米

广州 TOP1
● 广州东塔
198米

重庆 TOP1
● 重庆来福士国际中心
198米

香港 TOP1
● 香港环球贸易广场
308米

广州 TOP1
● 广州东塔
303米

广州 TOP1
● 广州东塔
260米

北京 TOP1
● 北京华贸中心
192米

Top 20 completed Skyscrapers in the World, SYP Supplied

9



RANK	NAME	CITY	STATUS	COMPLETION	HEIGHT	FLOORS	MATERIAL	FUNCTION
1	Burj Khalifa	Dubai	C	2010	828 m / 2,717 ft	163	Steel Over Concrete	Office / Residential / Hotel
2	Merdeka 118	Kuala Lumpur	C	2023	679 m / 2,227 ft	118	Concrete-Steel Composite	Hotel / Serviced Apartments / Office
3	Shanghai Tower	Shanghai	C	2015	632 m / 2,073 ft	128	Concrete-Steel Composite	Hotel / Office
4	Makkah Royal Clock Tower	Mecca	C	2012	601 m / 1,972 ft	120	Steel Over Concrete	Serviced Apartments / Hotel / Retail
5	Ping An Finance Center	Shenzhen	C	2017	599 m / 1,965 ft	115	Concrete-Steel Composite	Office
6	Lotte World Tower	Seoul	C	2017	555 m / 1,819 ft	123	Concrete-Steel Composite	Hotel / Residential / Office / Retail
7	One World Trade Center	New York City	C	2014	541 m / 1,776 ft	94	Concrete-Steel Composite	Office
8	Guangzhou CTF Finance Centre	Guangzhou	C	2016	530 m / 1,739 ft	111	Composite	Hotel / Residential / Office
8	Tianjin CTF Finance Centre	Tianjin	C	2019	530 m / 1,739 ft	97	Concrete-Steel Composite	Hotel / Serviced Apartments / Office
10	CITIC Tower	Beijing	C	2018	528 m / 1,731 ft	109	Concrete-Steel Composite	Office

11	TAIPEI 101	Taipei	C	2004	508 m / 1,667 ft	101	Composite	Office
12	Shanghai World Financial Center	Shanghai	C	2008	492 m / 1,614 ft	101	Concrete-Steel Composite	Hotel / Office
13	International Commerce Centre	Hong Kong	C	2010	484 m / 1,588 ft	108	Concrete-Steel Composite	Hotel / Office
14	Wuhan Greenland Center	Wuhan	C	2023	476 m / 1,560 ft	101	Concrete-Steel Composite	Hotel / Serviced Apartments / Office
15	Central Park Tower	New York City	C	2020	472 m / 1,550 ft	98	All-Concrete	Residential / Retail
16	Lakhta Center	St. Petersburg	C	2019	462 m / 1,516 ft	87	Concrete-Steel Composite	Office
17	Vincom Landmark 81	Ho Chi Minh City	C	2018	461 m / 1,513 ft	81	Concrete-Steel Composite	Hotel / Residential
18	Changsha IFS Tower T1	Changsha	C	2018	452 m / 1,483 ft	94	Concrete-Steel Composite	Hotel / Office
19	Petronas Twin Tower 1	Kuala Lumpur	C	1998	452 m / 1,483 ft	88	Concrete-Steel Composite	Office
19	Petronas Twin Tower 2	Kuala Lumpur	C	1998	452 m / 1,483 ft	88	Concrete-Steel Composite	Office

Data from CTBUH World Council on Tall Buildings and Urban Habitat 2024

<https://www.skyscrapercenter.com/buildings/>

SYP Skyscraper Projects, Height ≥300m



No	Project Name	Country	City	Height (m)		Glass Qty (km ²)	
				≥450m	400~450m		
1	Shanghai Tower 上海中心大厦	China	Shanghai	632		200	2014年
2	Guangzhou New TV Tower 广州新电视塔	China	Guangzhou	610		30	2009年
3	Lotte World Tower 韩国LOTTE大厦	Korea	Souel	556		80	2012年
4	Guangzhou IFC Finance Tower 广州周大福金融中心	China	Guangzhou	539		100	2015年
5	China Zun 北京中信大厦 (中国尊)	China	Beijing	528		120	2018年
6	Russia Federation Tower 俄罗斯联邦大厦	Russia	Moscow	506		130	2018年
7	International Silk Road Center 国际丝路中心	China	Xi'an	498		60	U/C
8	Shanghai World Financial Center 上海环球金融中心	China	Shanghai	492		100	2008年
9	IFC HK, 香港IFC 国际金融中心	China	HK	484		90	2008年
10	111 West Ave, New York	USA	New York	472		30	2018年
11	Shanghai Oriental Pearl TV Tower 上海东方明珠	China	Shanghai	468		10	2005年
12	Landmark 81, HCMC	Vietnam	CHMC	463		70	2018年
13	Chongqing Land Sea International Center 重庆陆海国际中心	China	Chongqing	458		80	U/C
14	Changsha Jiulong Canguo Finance Center 长沙九龙仓国金中心	China	Changsha	452		80	2017年
15	Suzhou Jiulong Canguo Finance Center 苏州九龙仓国金中心	China	Suzhou	450		80	2019年
16	Greenland Shandong International Financial Center 绿地山东国际金融中心	China	Jinan		428	80	U/C
17	Nan Jiang Finance Center 南京金融城	China	Nanjing		426	80	U/C
18	Guiyang Zhongtian International Financial Center 贵阳中天国际金融中心	China	Guiyang		412	80	U/C
19	Kuwait Hamara Tower 科威特哈马拉大厦	Kuwait	Kuwait		412	80	2007年
20	Nanning Tianlong Wealth Center 南宁天龙财富中心	China	Nanning		409	80	U/C
21	Guiyang Garden Twin Towers 贵阳花果园双子塔	China	Guiyang		406	100	U/C

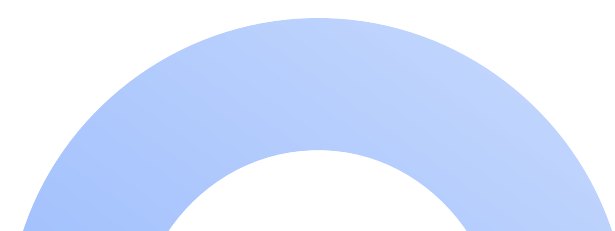
SYP Skyscraper Projects, Height ≥300m



No	Project Name	Country	City	Size		Finished year/ Under Contraction
				Height (m)	Glass Qty (k m ²)	
22	Singature Tower Eypt 埃及标志塔	Eypt	Cairo	393.8	80	U/C
23	Citymark Center, Shenzhen 深圳城脉中心	China	Shenzhen	388	80	U/C
24	ABU Dhabi Central Market 阿布扎比中心市场	Abu Dhabi	Abu Dhabi	385	130	2008年
25	Yujing Dalian 大连裕景	China	Dalian	383	70	2013年
26	Guiyang World Trade Center Tower A 贵阳世贸中心A楼	China	Guiyang	381	70	U/C
27	Haitian Center, Qingdao 青岛海天中心	China	Qiangdao	369	100	U/C
28	Vieti Bank 越南VTB银行	Vietnam	Hanoi	363	90	U/C
29	Hang Lung Plaza Shenyang 沈阳市府恒隆	China	shenyang	354	80	2015年
30	Hang Lung Plaza Tower Wuhan 武汉恒隆广场塔楼	China	Wuhan	348	80	2019年
31	Nanjing Durkee World Trade Center 德基南京世界贸易中心	China	Nanjing	343	100	U/C
32	Yunding Tower 汉峪金融商务中心（云鼎大厦）	China	Jinan	339	80	U/C
33	Zhuahai Central Tower 珠海中心大厦	China	Zhuhai	330	80	2018年
34	Wuxi Suning Plaza 无锡苏宁广场	China	Wuxi	328	8万	2013年
35	Mahanakhon Bangkok	Thailand	Bangkok	314	50	2015年
36	Tianjin Ping An Teda Financial Center 天津平安泰达金融中心	China	Tianjin	313	80	U/C
37	Shenzhen Bay Innovation and Technology Center Tower A 深圳湾创新科技中心A	China	Shenzhen	311	50	2019年
38	HK One Island 香港港岛东中心	China	HK	308	60	2008年
39	South Korea Northeast Asia Trade Building 韩国东北亚贸易大厦	Korea	Souel	305	50	2007年
40	Leatop Plaza 广州利通广场	China	Guangzhou	303	70	2012年
41	Nanchang Greenland Center 南昌绿地中心	China	Nanchang	303	70	2013年
42	Jinan Greenland Puli Center 济南绿地普利中心	China	Jinan	303	60	2013年
43	Shenzhen OCT HQ building 深圳华侨城总部大厦	China	Shenzhen	300	60	2019年
44	Nanjing Shimao G11 南京世茂G11	China	Nanjing	300	80	U/C



3. What Can SYP Do?





Curve Tempered Glass with

MORE SHAPES

CURVE TEMPERED GLASS



R=100mm
SINGLE CURVE



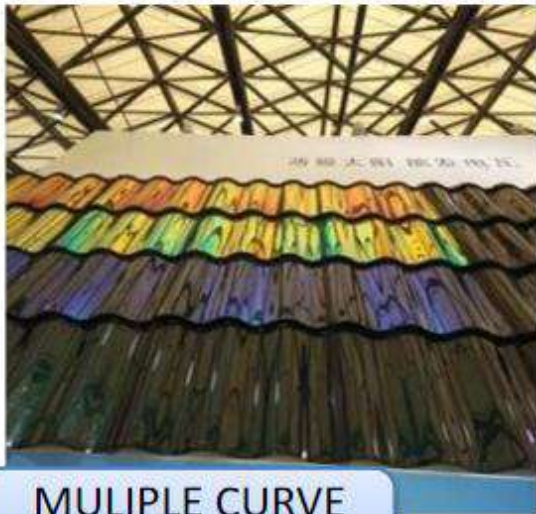
R=175mm
SINGLE CURVE
φ550x4000mm



REVERSE
CURVE



MULTIPLE CURVE
4100x1500



MULIPLE CURVE
TILE SHAPE



L-SHAPE
CURVE



MULTIPLE
CURVE



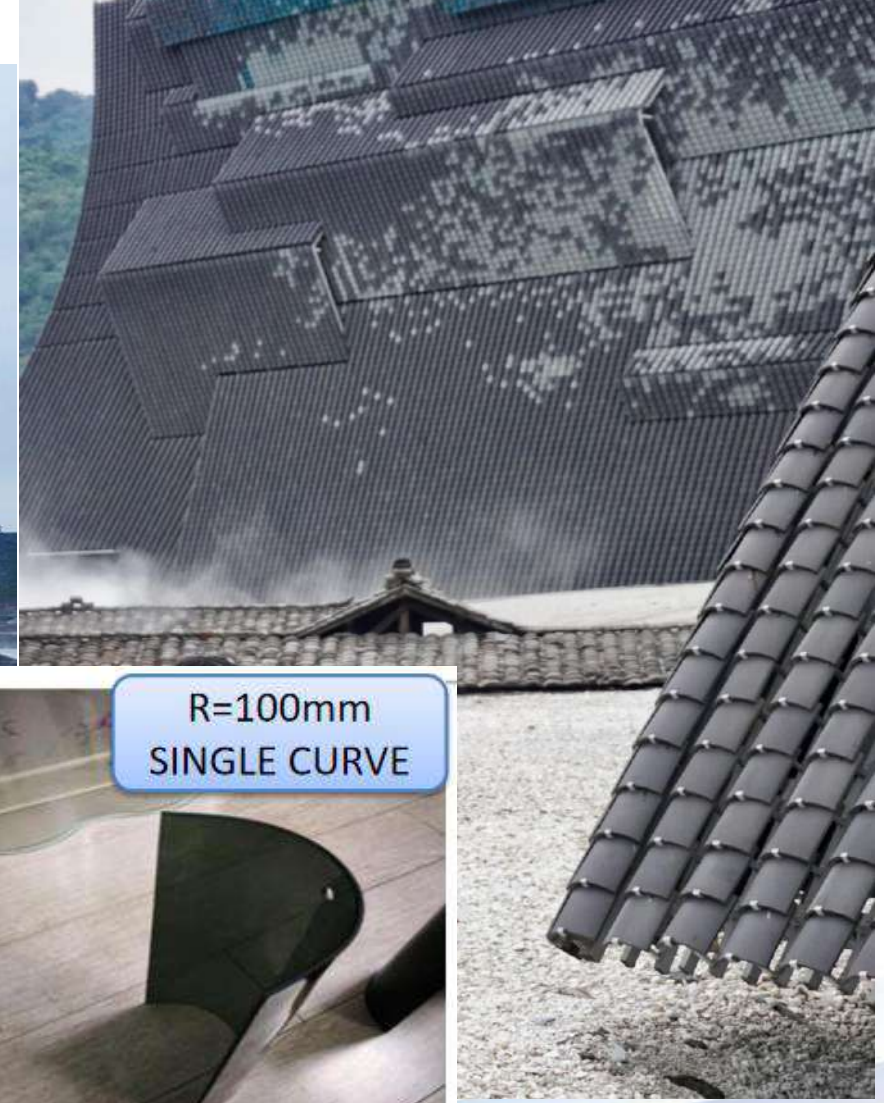
HORN SHAPE
CURVE

Mount Emei Theater, Emei, Sichuan

四川峨眉山大剧院



Art Roof with Solar PV Glass lite





Landmark 81, HCMC

Top 1 in Vietnam (462m)



8mm Clear Curve TP Low-E
+16A+8mm Grey Curve TP

Size: $\cap 1541 \times 2601 \text{mm}$

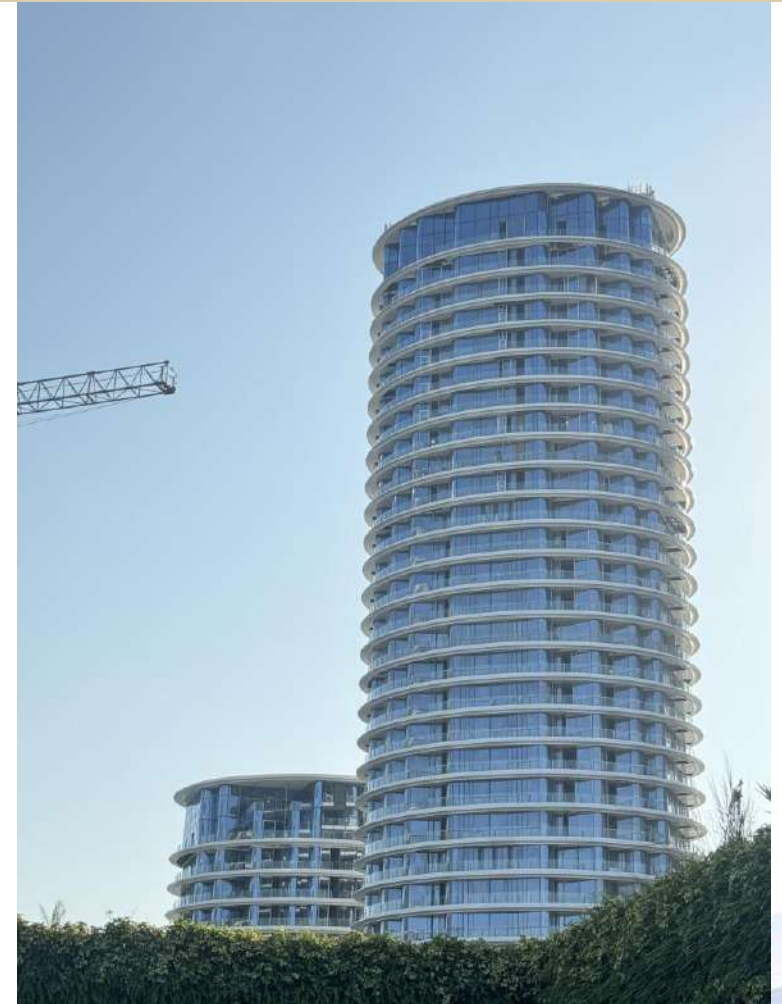
R=450mm

Curve TP qty: 14,000sqm

Guangzhou One Pengrui



Size: $\cap 1852 \times 3906 \text{mm}$
R=1200mm



上海耀皮玻璃集团股份有限公司 SYP GLASS GROUP

8 Shenton Way Singapore



Size: 2435*5125mm
Radius: 1800mm

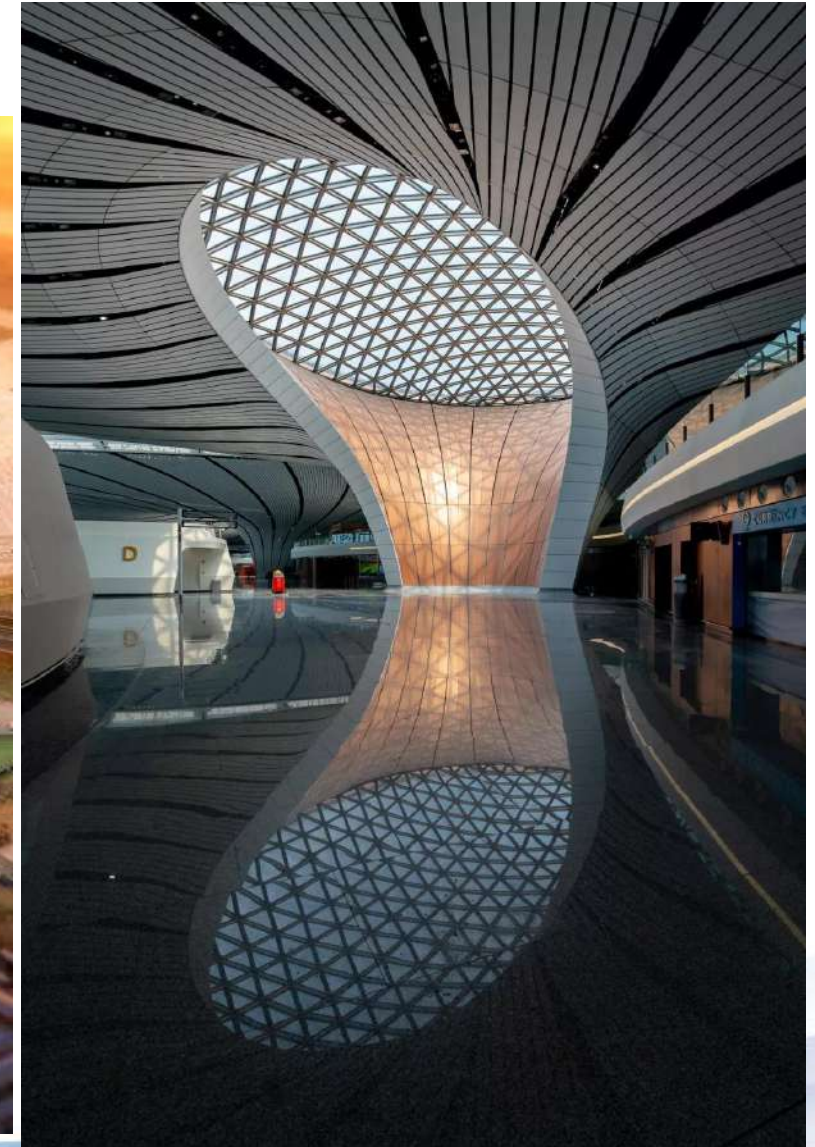


Beijing Daxing International Airport

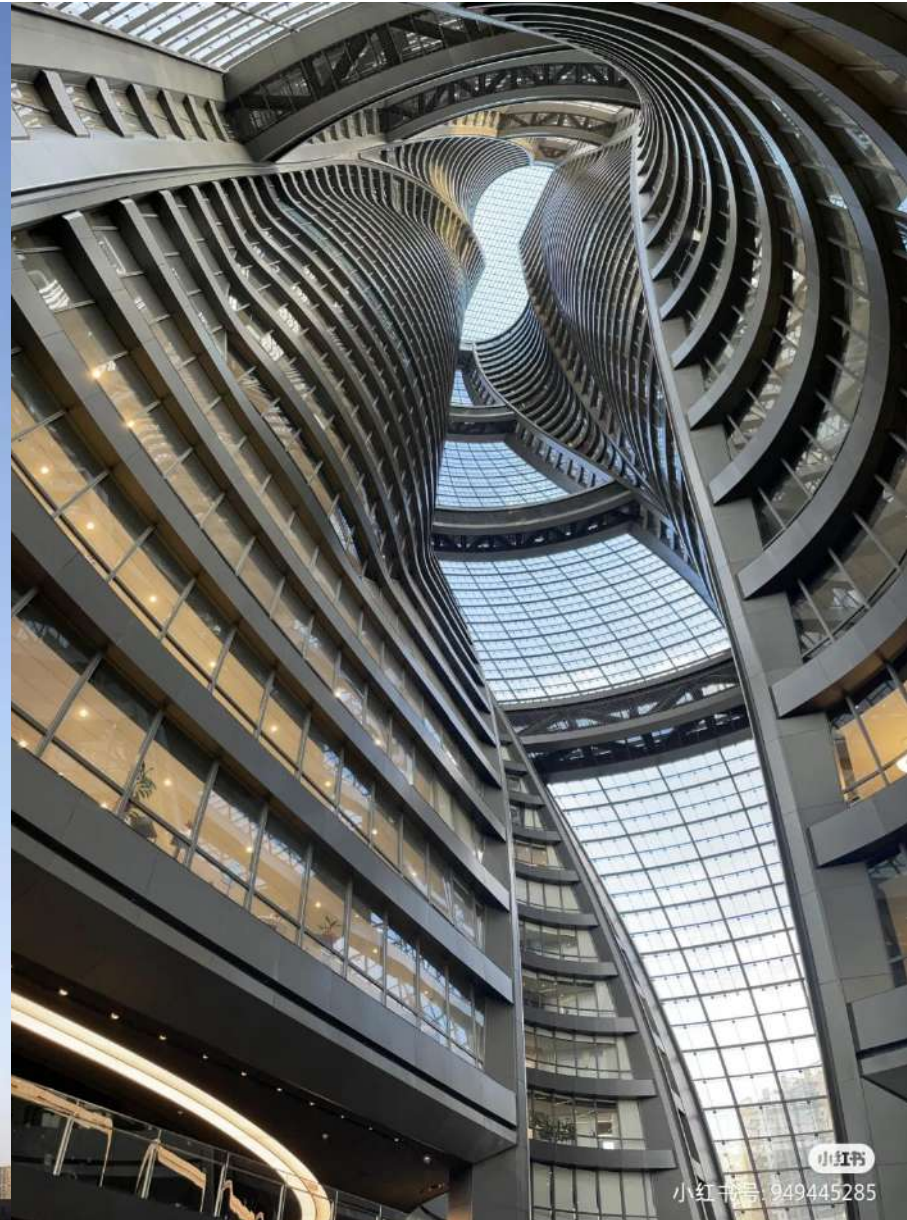


12mm Low Iron Curve TP Low-E+12A+10mm Low Iron Curve TP+3.04PVB+10mm Low Iron Curve TP

Size: $\cap 2918 \times 3027 \text{mm}$



Lize SOHO Beijing China - MULTIPLE CURVE



ITC Twin Tower & Dolphin Square, Guiyang



Top 1 in Guizhou Province, China (406m)

Single Curve, Multiple Curve, Reverse Curve TP

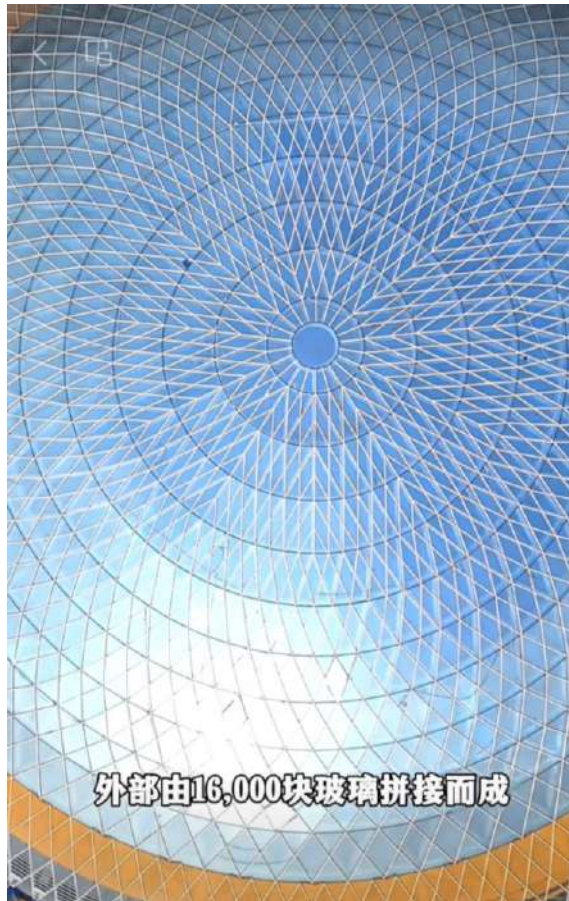


Sun Hotel Huzhou, Zhejiang China



The largest spherical building in the world

Single Curve, Multiple Curve, Reverse Curve TP



Production Capacity of Curve TP / HS



Single Curve Max Size:

∩ 2350x 14000mm (CSYPE)

∩ 3000x 6000 mm (TSYPE)

∩ 3300x 6000 mm (JSYPE)

Mini Radius: 750mm

***** Multiple Curve TP/HS, please contact us for glass proposal.**

Wide Range of Post-Temperable Low-E Coatings

(Partial listed, 6mm Clear+12Air+6mm Clear)

Type	Glass	VLT	Rout	Rin	SC	U-Value (Summer)
Post-Temperable Double Low-E	YDT0170T	66	11	14	0.42	1.58
	YDT0156T	52	22	23	0.34	1.57
	YDT0152T	47	13	13	0.30	1.61
	YDT0145T	40	19	12	0.25	1.59
	YDT0151AC-HT	41	27	15	0.25	1.58
	YHE0143NJ	44	17	23	0.28	1.63
Post-Temperable Triple Low-E	YTE0178T	65	13	13	0.31	1.55
	YTE0165C	61	16	17	0.31	1.5
	YTXE0158C	51	16	21	0.29	1.6
	YXE0154C	48	18	17	0.27	1.5

- SYP Projects -
(Partial)

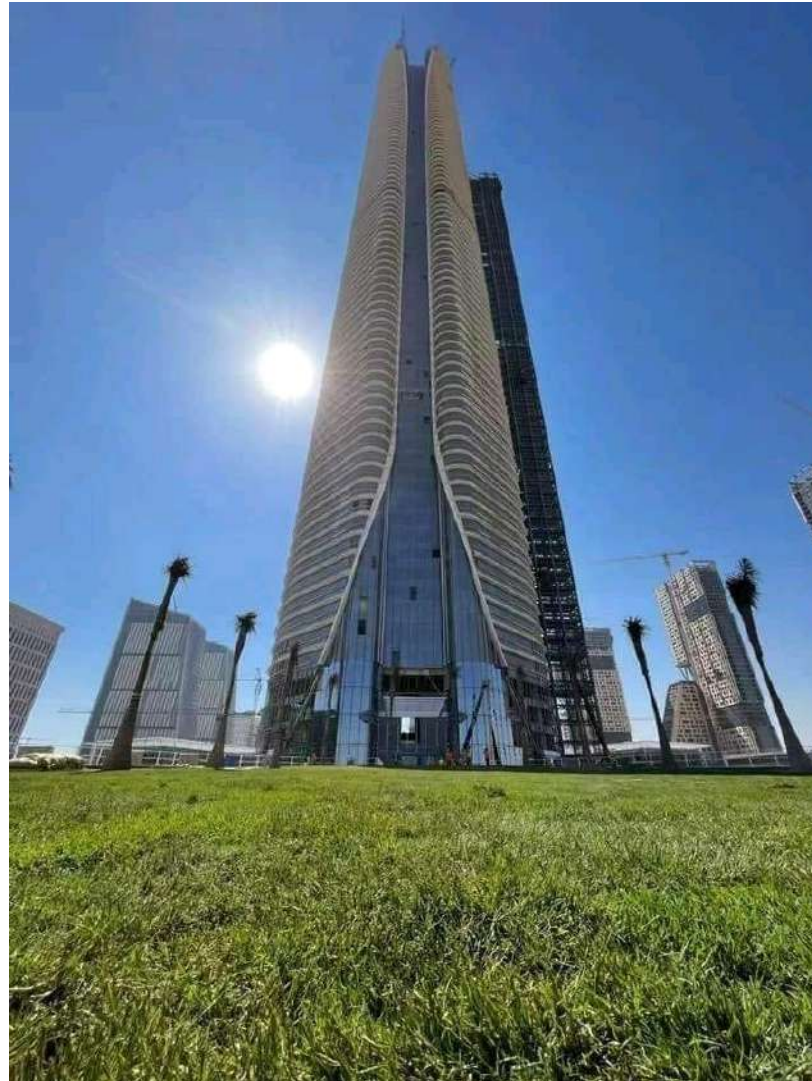
Post-Temperable Triple Low-E

Iconic Tower, Cairo, Top 1 in Egypt (393.8m)

Post Temperable Triple Low-e: YDT-100R2-4

Glass Qty: 60000 m2

Consultant: ALT

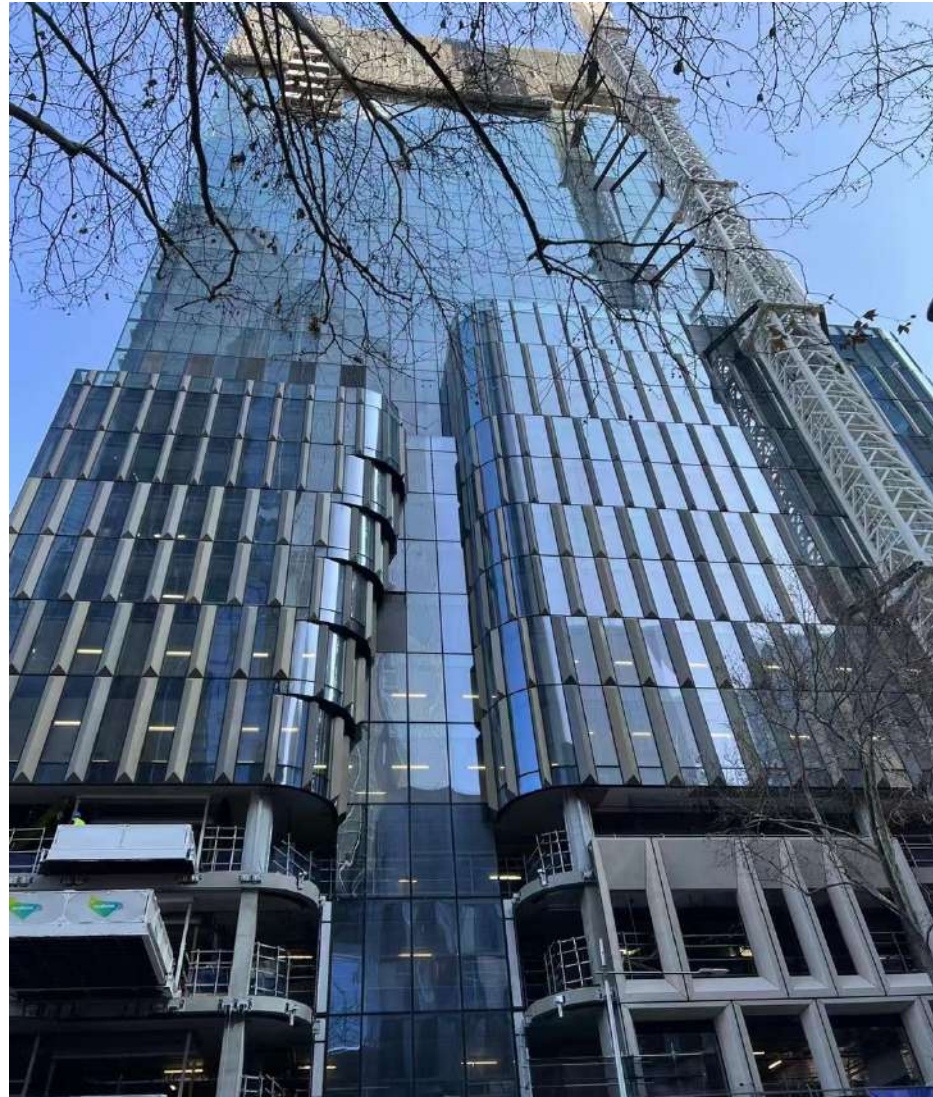


555 Collins St Melbourne, Australia



Post Temperable Triple Low-e: YTE-65HT

Glass Qty: 22000 m2



**60 King William St,
Adelaide Australia**

Post Temperable Triple Low-e: YTE-54HT

Single Curve & Reverse Curve

Glass Qty: 17000 m²





Innovation on Appearance

Low-E Appearance

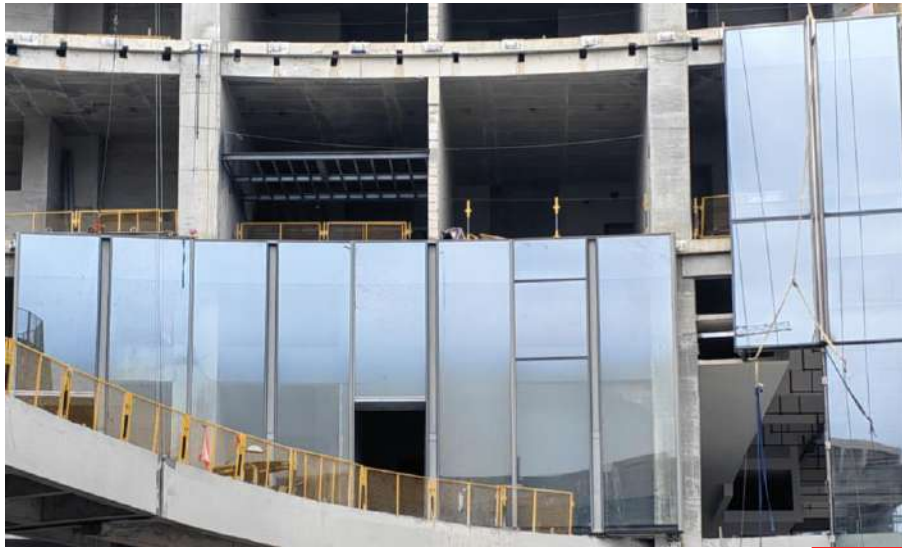
Gradient Change of Low-E Coating



Two Shades of Low-E coating



GBA Guangzhou Technology Finance Centre



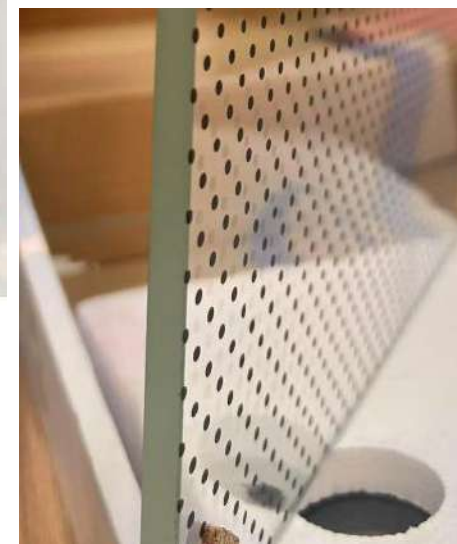
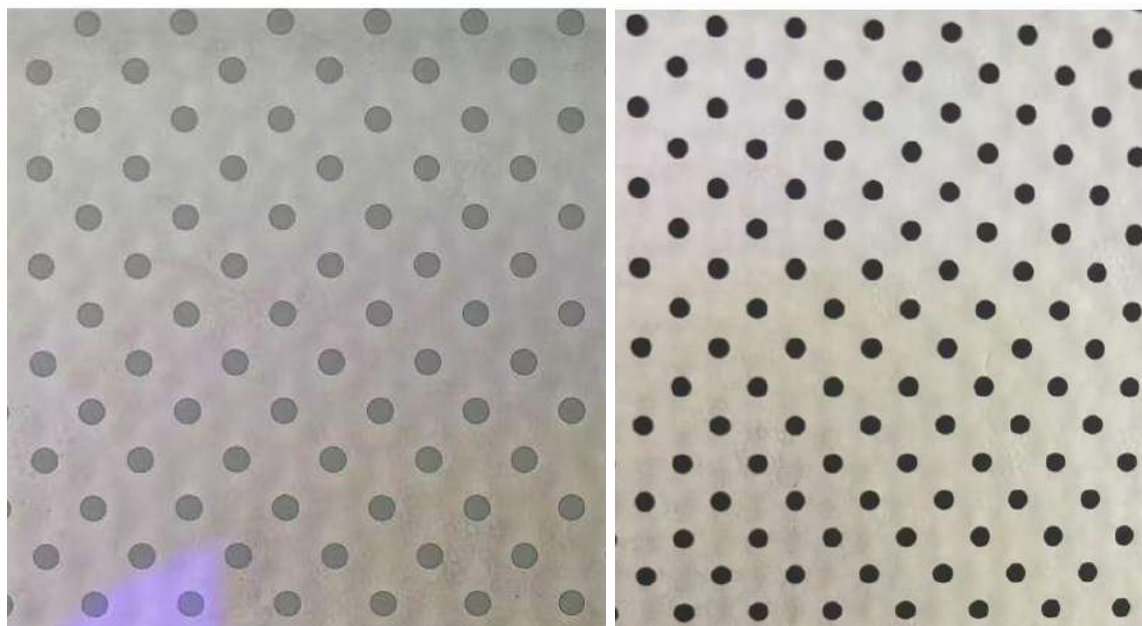
National Invention Patent



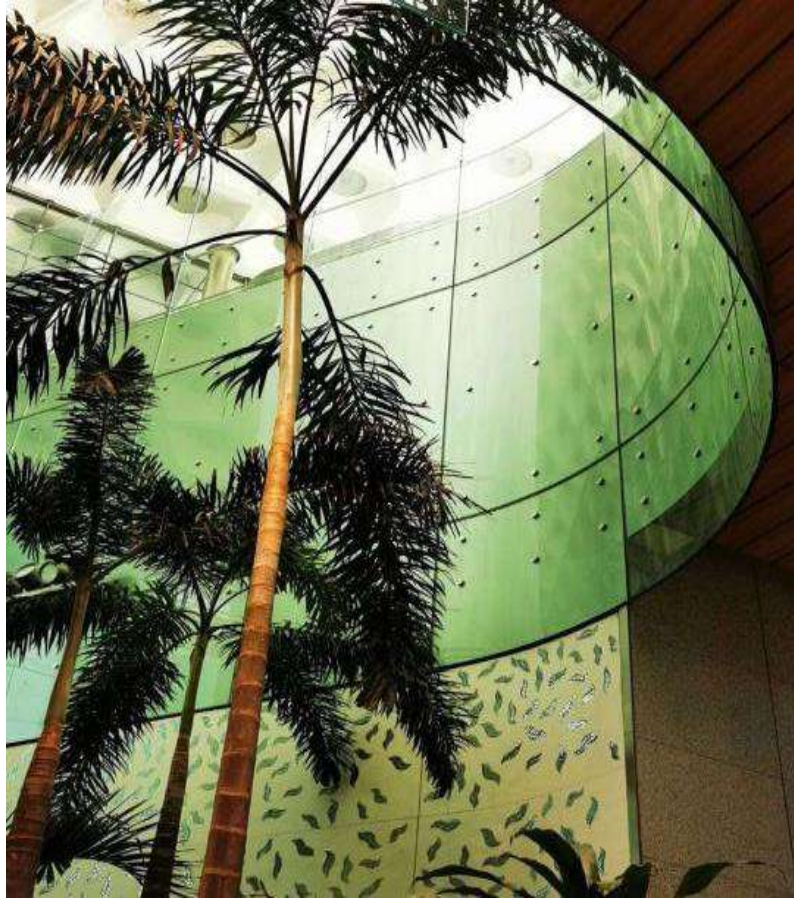
Dual-color coating



Dual-color Ceramic Frit



Digital Printing Curve Product



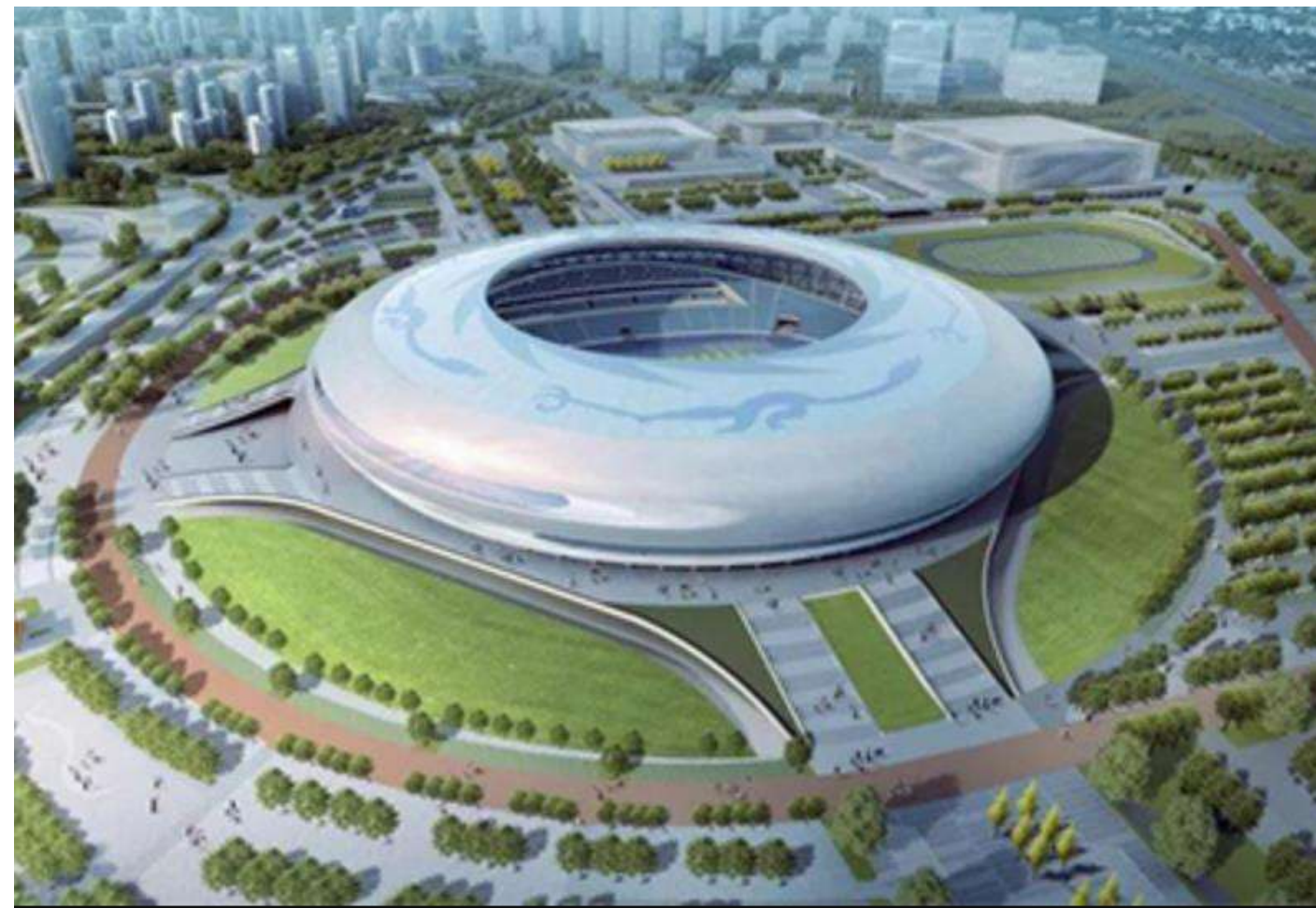
**Marble
Patter
n**





成都东安湖主体育馆（大运会主场馆）

Dong'an Lake Sports Park Main Stadium, Chengdu



Art Roof with Silkscreen Frit Pattern Glass

Lower Shading Coefficient

(Partial listed, 6mm Clear+1.52PVB+6mm Clear)



	Glass	VLT	Rout	Rin	SHG C	SC	U-Value (Summer)
1	6mm Ocean Blue YSD2520T #2+1.52PVB+6EA#4	11	14	19	0.23	0.26	2.73
2	6mm Euro Grey YSD5840J (2#)+1.52PVB+6EA#4	16	12	19	0.26	0.3	2.68
3	6mm Crystal Grey YBE6840J #2+1.52PVB+6EA#4	23	19	18	0.27	0.31	2.68
4	6mm Clear YGE0150J #2+1.52PVB+6EA#4	44	14	21	0.29	0.33	2.74
5	6mm Crystal Grey YRE6859J #2+1.52PVB+6EA#4	32	19	19	0.31	0.36	2.68
6	6mm Clear YBE0152J #2+1.52PVB+6EA#4	43	21	9	0.34	0.39	2.77
7	6mm Clear YBE0152J-TS #2+1.52PVB+6	33	19	8	0.38	0.44	4.88

Leedon Height, Singapore



5mm Crystal Grey YBE-68N52 (2#) +1.52PVB+5mm Clear



Amber Park, Singapore



Terminal 21 Pattaya, Bangkok, Thailand



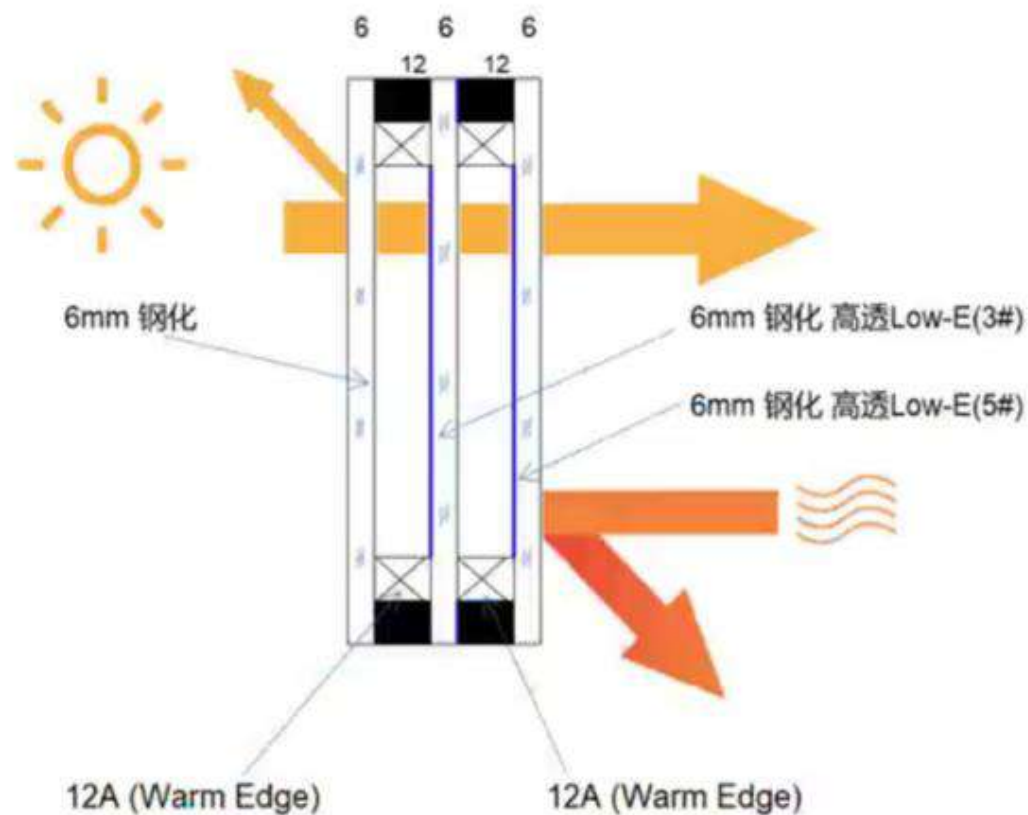
6mm Clear YBE0180J(2#)+1.52PVB+6mm Clear



Lower U-Value: Super IGU



No.	Glass	VLT	G	SC	U-Value
			(JGJ/T151)		
1	6+12Ar+6Low-E(#3)+12Ar+6Hard Coat(#5)	66	0.55	0.63	0.80
2	6+12Ar+6Low-E(#3)+12Ar+6Low-E(#5)	64	0.52	0.60	0.76



London Chongqing Low Carbon House



U-Value: 0.72 W/m²·K



BIGGER !

*Low-E is available at size of 3.3x18m

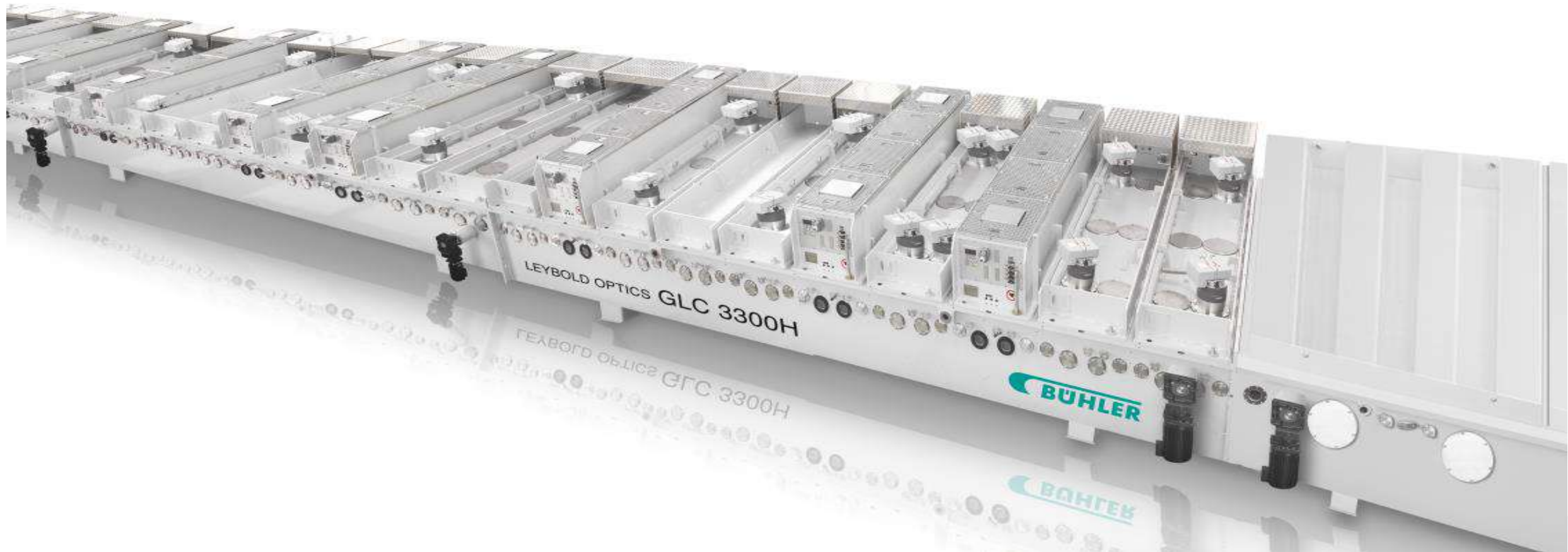
THICKER!

*Low-e max thickness is 28mm (12+1.52+12)



Most Advance Low-E coating Line of LEYBOLD Germany

Max Size: 3300x18000mm, Thickness 28mm



PRODUCTION Size of Four Sites



Equip- ment	Jiangmen			Shanghai			Tianjin			Chongqing		
	Min. Size (mm)	Max. Size (mm)	Thickn ess (mm)	Min. Size (mm)	Max. Size (mm)	Thick ness (mm)	Min. Size (mm)	Max. Size (mm)	Thickn ess (mm)	Min. Size (mm)	Max. Size (mm)	Thickn ess (mm)
Ceramic Frit	300*300	3300*14500	3-19	300*300	2400*4800	3-19	300*300	2440*12000	4-19	300*300	2440*4800	3-19
DIP-Tech Printing	300*300	3300*15000	3-19	-	-	-	300*200	2500*12000	4-19	No limits	2800*4000	2-19
Temper- ing	100*250	3300*15000	4-19	100*250	2440*6000	3-22	300*300	3300*12000	4-19	400*500	2400*14000/ 3000*5000	5-19
Coating	300*800	3300*18000	3-28	300*800	2540*4200	3-19	300*800	3300*12000	3-19	300*800	2400* 8000	3-19
Laminat- ing	300*300	3300*14500	≤80	300*300	2440*6000	6-60	300*300	3300*12000	6-65	500*500	3300*14000	3-19
IGU	300*300	3300*14500	≤54	300*300	2700*5000	12-55	300*300	2700*12000	≤60	300*300	2400*4500	≤54

Tongwan Cheng Site Museum, Yulin, Shanxi



15mm Low Iron TP Low-e +16A+12mm Low Iron TP+2.28PVB+12mm Low Iron TP
Size: **2880*11730mm**

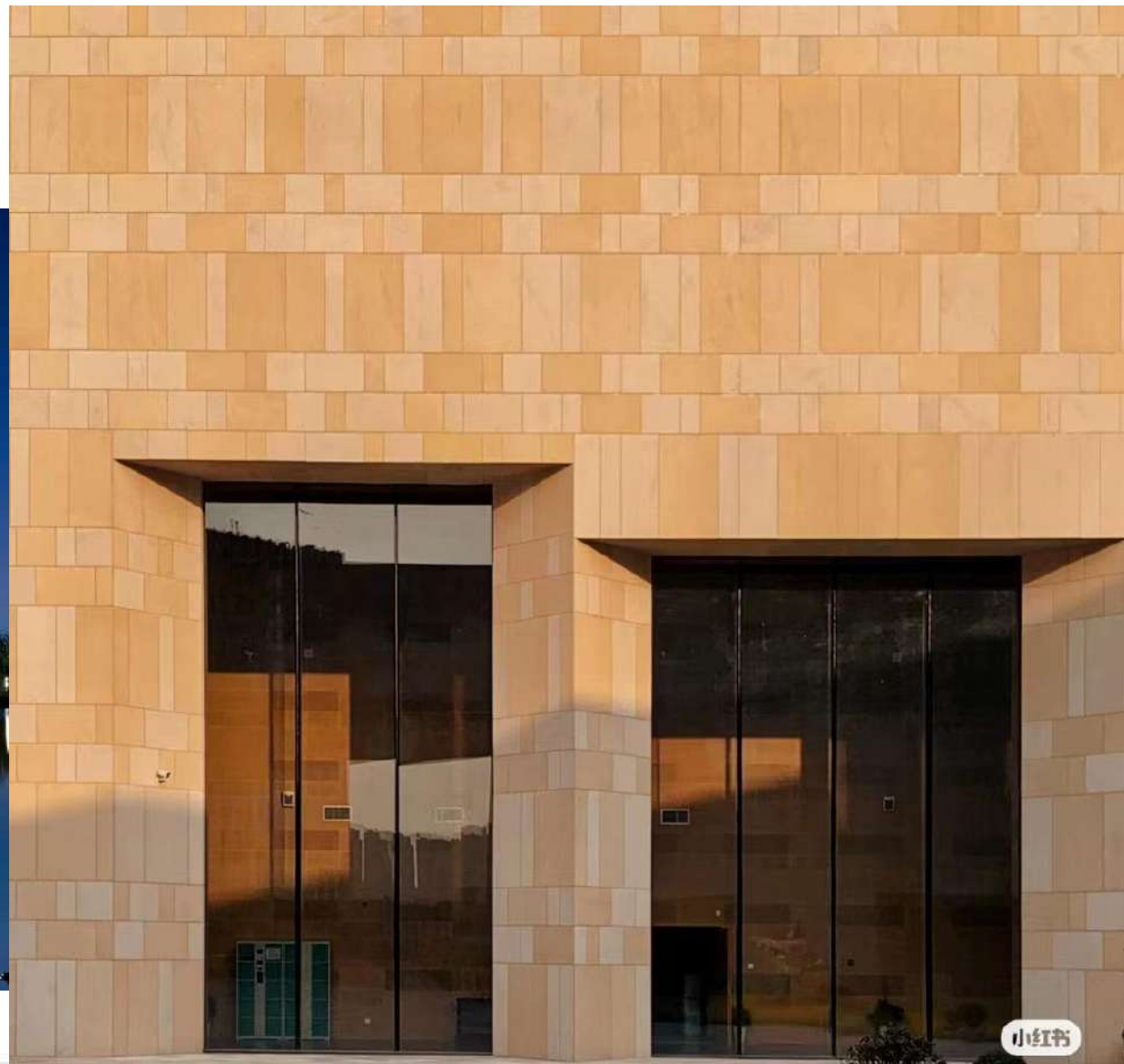


Haimen Opera House, Nantong, Jiangsu China



10mm Low Iron TP+2.28SGP+10mm Low Iron TP Low-E#4 +16A+10mm Low Iron TP
+2.28SGP+10mm Low Iron TP

Size: 1495***11215mm**



Hangzhou Bay City Gallery, Ningbo Zhejiang, China

12mm Low Iron TP+2.28SGP+12mm Low Iron TP Frit #4 杭州湾公共广场及展览馆

Size: 1577***11215**mm



Grand Milestone, Xi An, Shanxi China

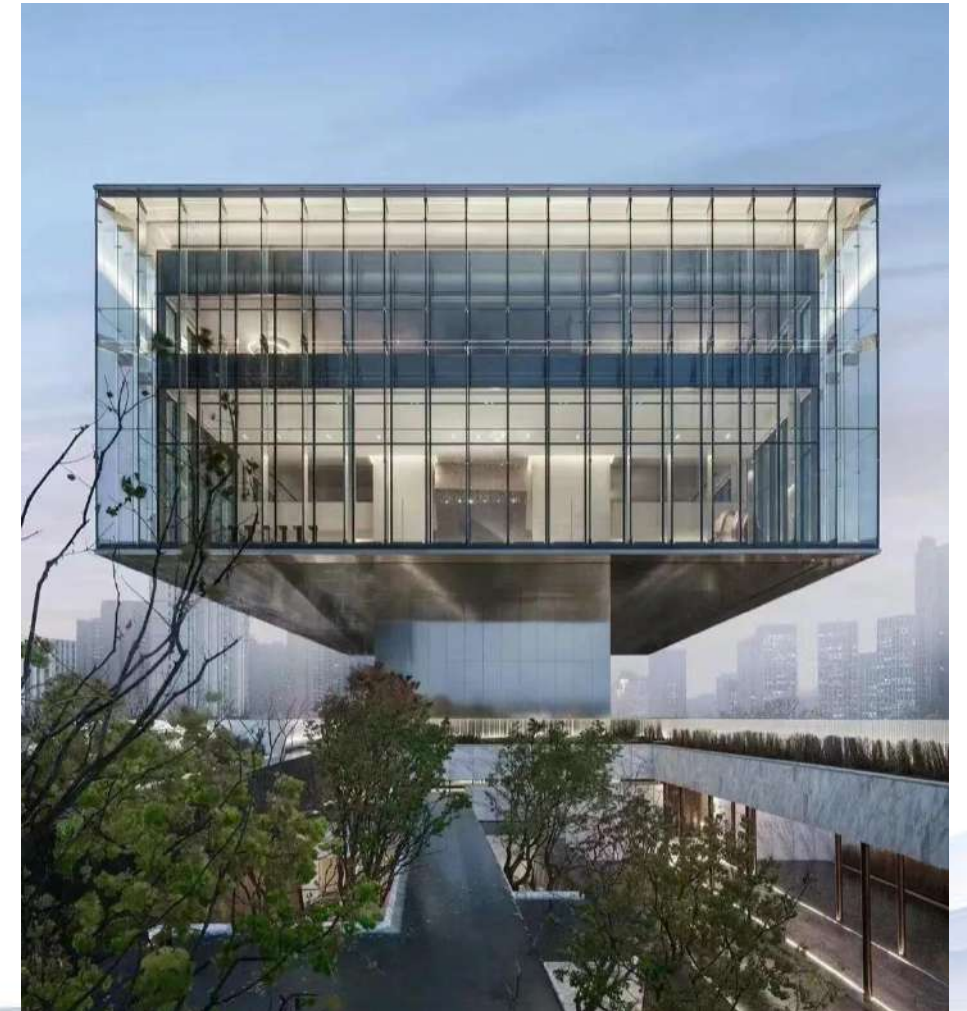
曲江印国际社区



82.84mm Thick:

19mm Low Iron TP+2.28PVB+19mm Low Iron TP +2.28PVB+19mm Low Iron TP+2.28PVB+19mm Low Iron TP

Size: 1495*10555mm





Aotaoji Glass Bridge, Chongqing

The world's longest cantilevered aerial glass corridor

12mm Low Iron TP+1.52SGP+12mm Low Iron TP+1.52SGP+12mm Low Iron TP w/ Frit





LOW-E MORE

ENERGY-EFFICIENT

Lower Shading Coefficient

(Partial listed, **6mm Clear+12Air+6mm Clear**)



Type	Glass	VLТ	Rout	Rin	SC	U-Value (Summer)
Double Low-E	YKE0130J	28	20	15	0.22	1.62
	YKE0135J	32	19	16	0.23	1.62
	YKE0143J	39	19	11	0.26	1.6
	YKE0145J	41	17	14	0.28	1.6
Triple Low-e	YTE0135T	28	16	14	0.20	1.54
	YTE0142C	38	17	15	0.23	1.61
	YTE0149T	46	19	19	0.25	1.61
	TEX0145C	41	20	16	0.23	1.57
	TEX0146C	42	17	14	0.23	1.56
	TEX0151C	47	14	11	0.25	1.56

PSA Singapore

YKE-30J



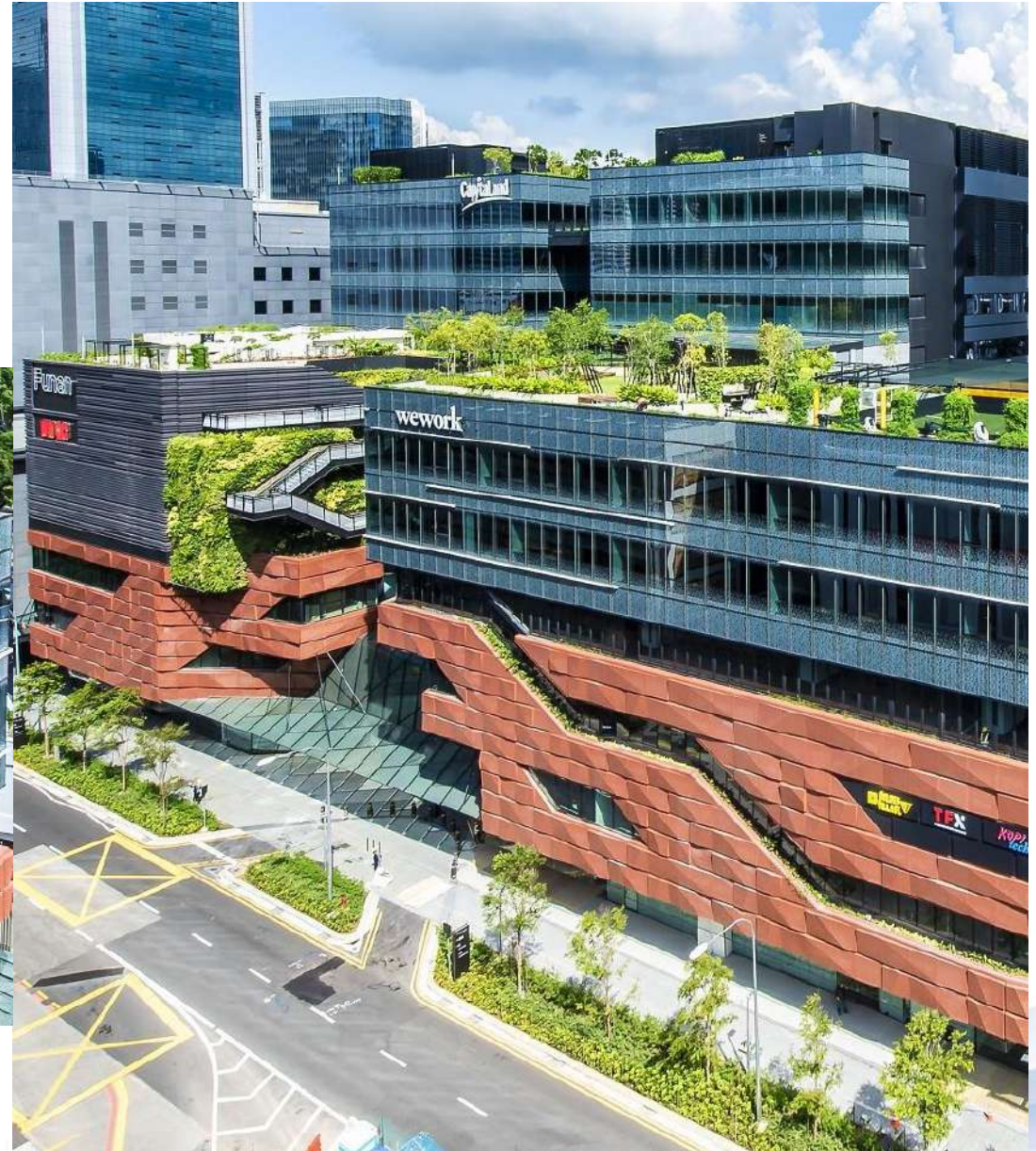
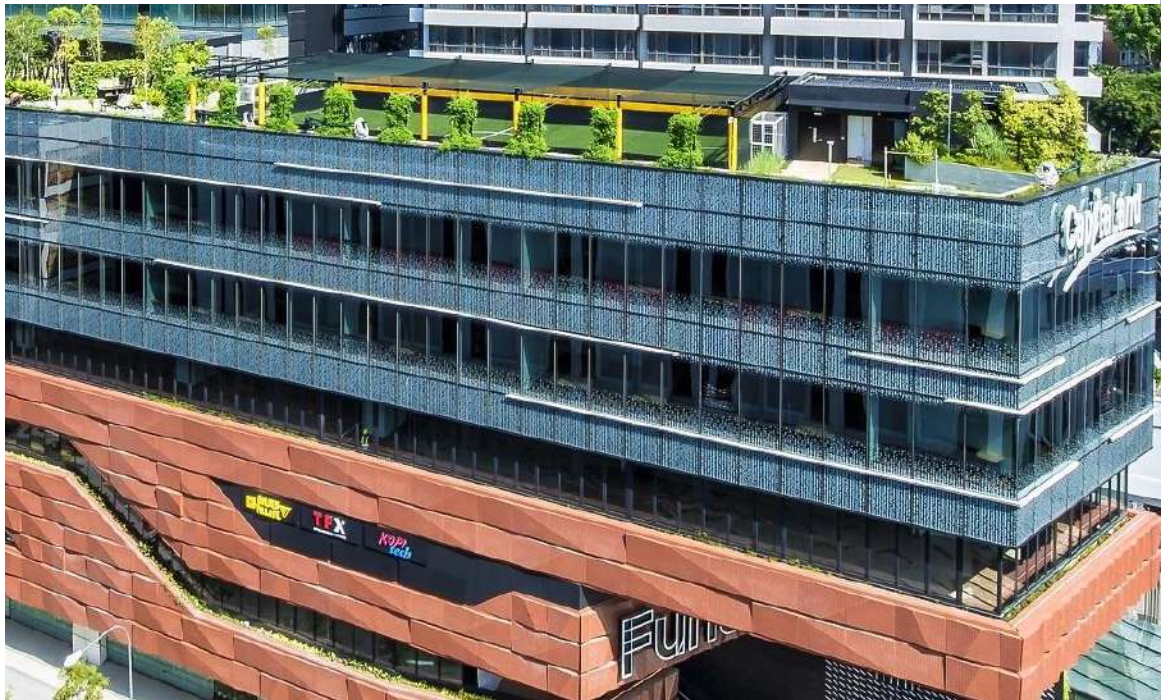
RASA Two Bangkok, Thailand



Funan IT Mall Singapore



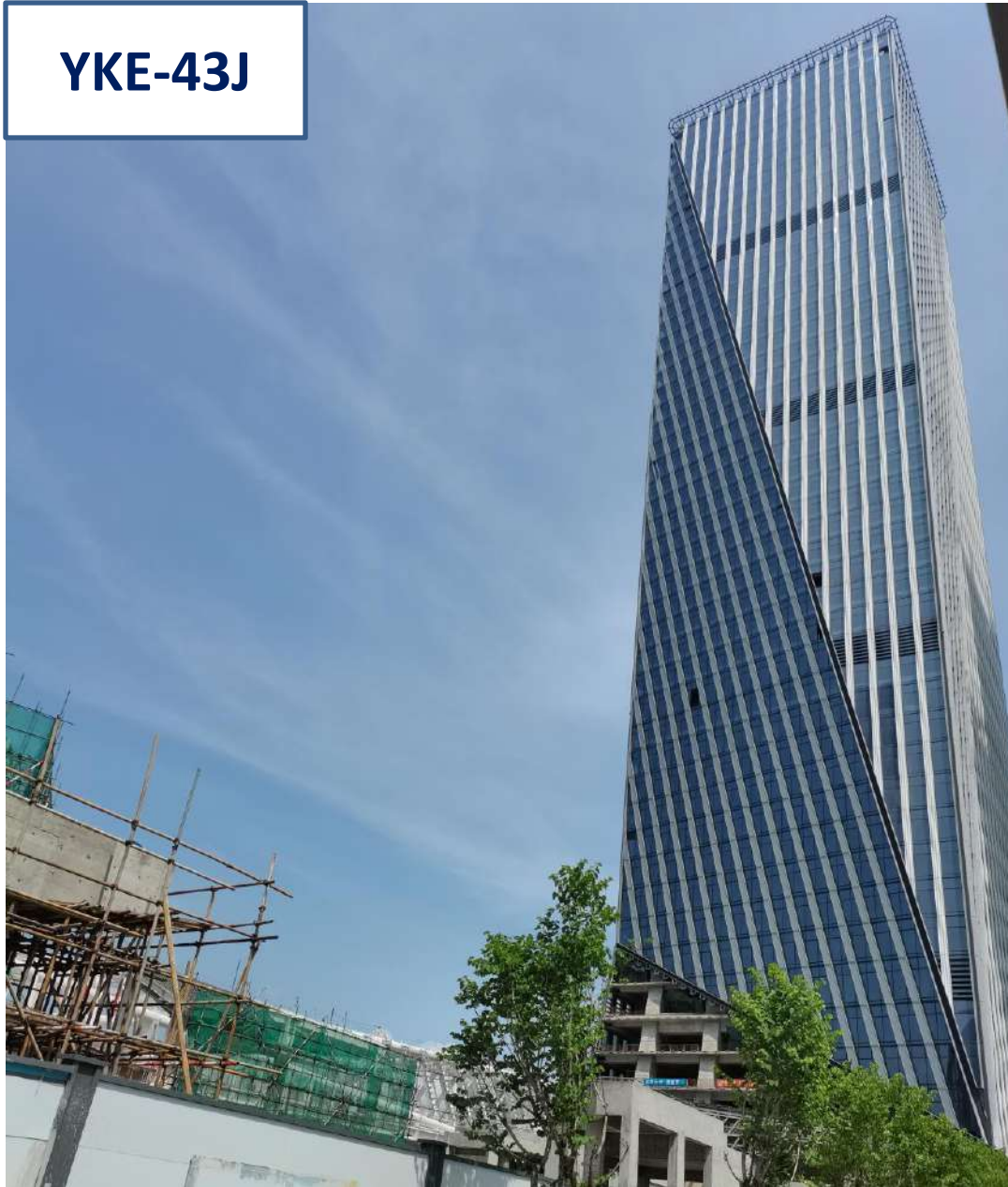
YKE-35J



Tencent Tower, Qianhai , Shenzhen



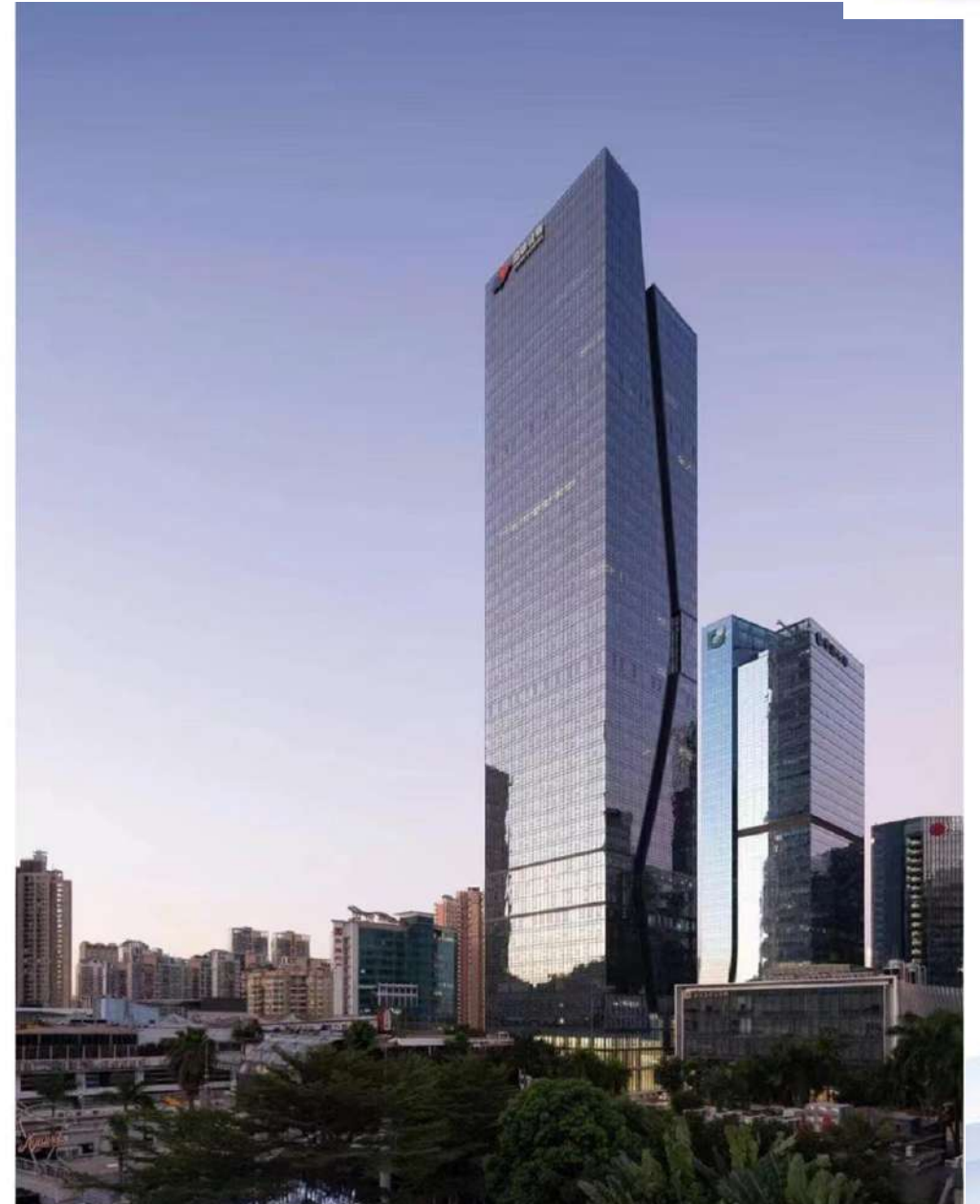
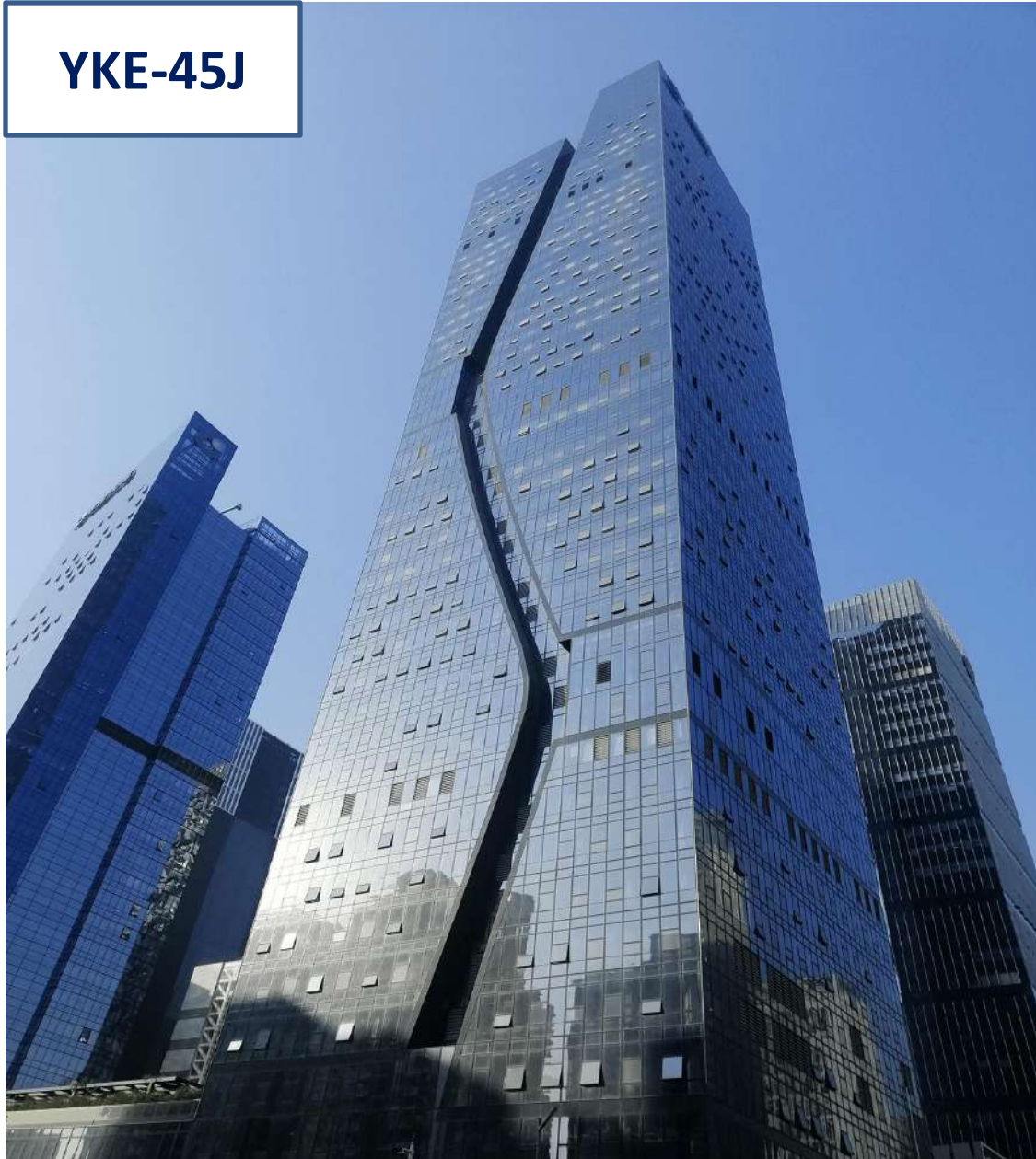
YKE-43J



Guosen Securities Tower, Shenzhen



YKE-45J



SJ Campus, Singapore



YTE-42J & YTE-56T



1201 2ND Avenue Seattle, USA

YTE-49T





Products More Environment-Friendly

Lower Reflection, Lower Light Pollution



No	Coating	VLT	Rout	Rin	SC	U-Value (Summer)
1	6YDF-0148+12A+6	44	8	13	0.35	1.7
2	6YDF-0145+12A+6	41	7	15	0.30	1.7

Rongyue Center
Shanghai



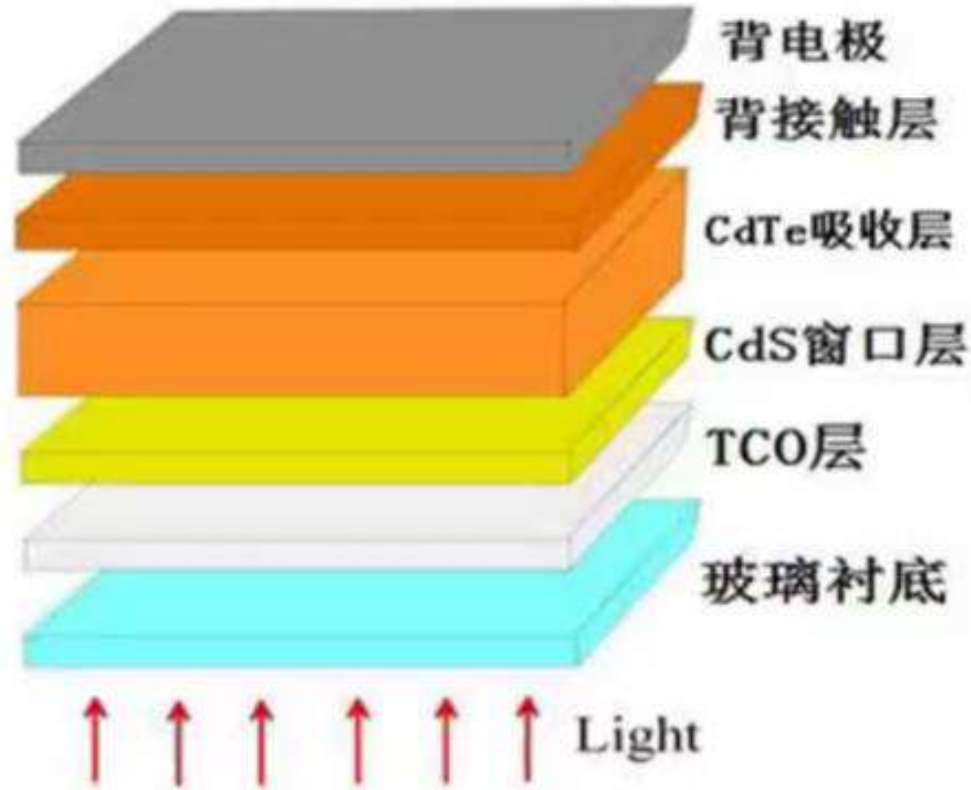
Suhe Center
Shanghai



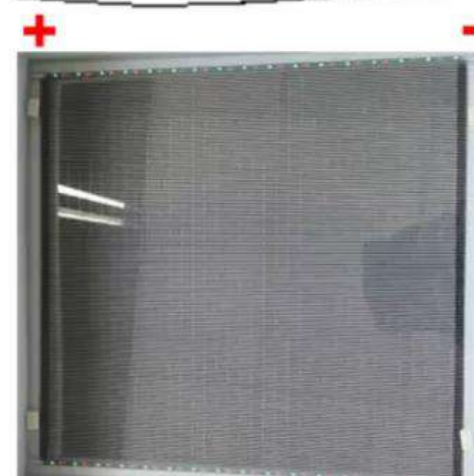
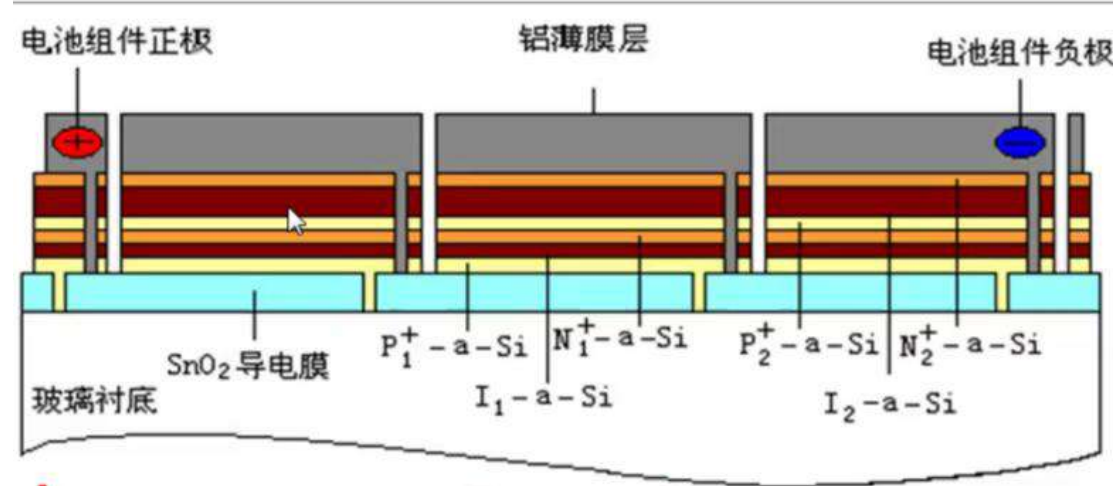
Building Integrated Photovoltaics (BIPV) Glass



- Renewable Energy Technology on Curtain Wall



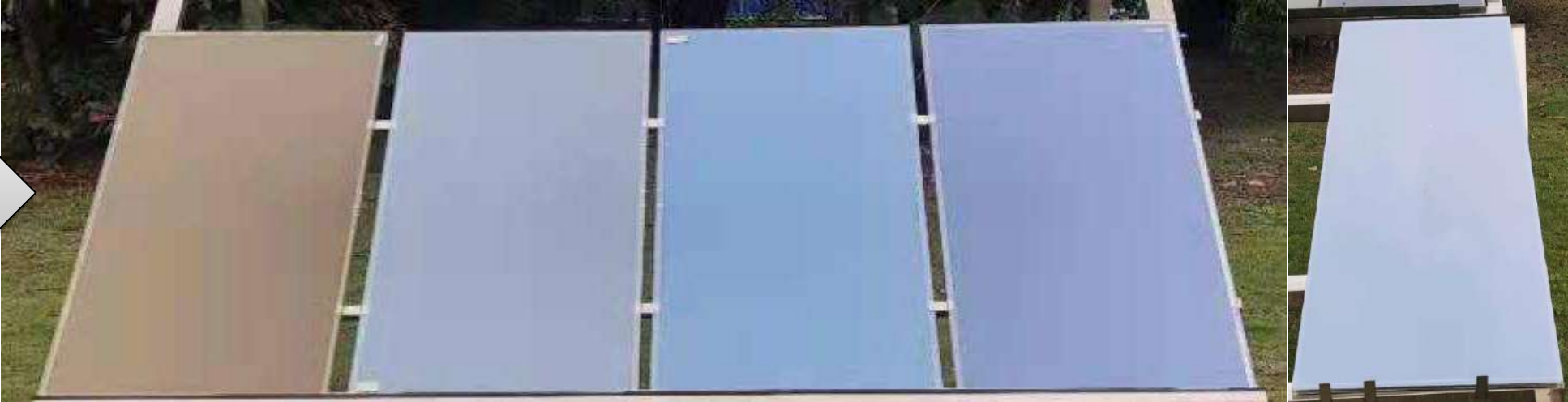
Al
Mo
CdTe
Cds
FTO
Glass



Glass / FTO / CdS / CdTe / Mo / Al / Cr

SYP BIPV Products: Various of Colors for Appearance

View from Exterior



Brown

Grey

Sky blue

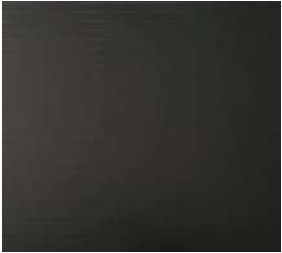






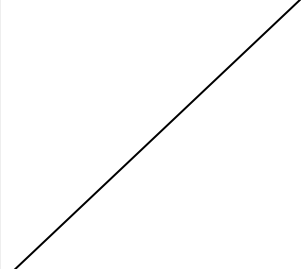

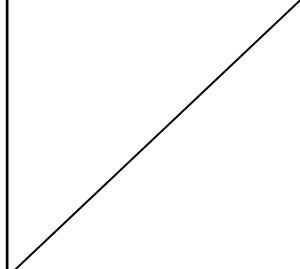
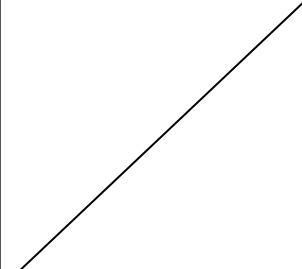

Dark blue

White

View from Interior



SYP BIPV Products: Wide Range of BIPV VLT

View from	0%	10%	20%	30%	40%	50%
Interior of the building						
Exterior of the building						

Prüfbericht-Nr.: Test report no.:	SI501449 001	Auftrags-Nr.: Order no.:	80100159 20	Seite 1 von 6 Page 1 of 6
Kunden-Referenz-Nr.: Client reference no.:	N/A	Auftragsdatum: Order date:	2023-11-21	
Auftraggeber: Client:	TIANJIN SYP ENGINEERING GLASS CO., LTD Street NO.1HUATAI ROAD, HI-TECT INDUSTRIAL PARK, BEICHEN, TIANJIN, China			
Prüfgegenstand: Test item:	Solar Photovoltaic Modules			
Bezeichnung / Typ-Nr.: Identification / Type no.:	SYP double glass series modules (TSYP-CDTE)			
Auftrags-Inhalt: Order content:	Performance Test			
Prüfgrundlage: Test specification:	EN 13501-1: 2018 Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests			
Wareneingangsdatum: Date of sample receipt:	2024-03-21			
Prüfmuster-Nr.: Test sample no.:	1V0324000064			
Prüfzeitraum: Testing period:	2024-03-25 – 2024-04-03			
Ort der Prüfung: Place of testing:	No.2, Keyan Road, Science City, Guangzhou			
Prüflaboratorium: Testing laboratory:	TÜV Rheinland (Shanghai) Co., Ltd			
Prüfergebnis*: Test result*:	Pass			
geprüft von: tested by: Jason Gu	genehmigt von: authorized by: Alex Gu			
Datum: Date: 2024-06-06	Ausstellungsdatum: Issue date: 2024-06-06			
Stellung / Position: Project Engineer	Stellung / Position: Authorizer			
Sonstiges / Other:	The test was performed at Guangzhou Building Material Research Institute Co., Ltd, (CNAS accredited lab, registration No. CNAS L0057)			
Zustand des Prüfgegenstandes bei Anlieferung: Condition of the test item at delivery:	Prüfmuster vollständig und unbeschädigt Test item complete and undamaged			
<small>* Legend: P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet * Legend: P(ass) = passed a.m. test specification(s) F(ail) = failed a.m. test specification(s) N/A = not applicable N/T = not tested</small>				
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. This test report only relates to the above mentioned test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.				

Fire Test Report

EN 13501-1:2018

Prüfbericht-Nr.: Test report no.:	SI501449 001	Seite 4 von 6 Page 4 of 6	
Absatz Clause	Anforderungen - Prüfungen / Requirements - Tests	Messergebnisse - Bemerkungen/ Measuring results - Remarks	Ergebnis Result

Test results:

Test item	Unit	Test method	Requirement	Result	Verdict
FIGRA _{0,2MJ}	W/s	EN 13823:2020	≤ 120	73	Pass
LFS	m	EN 13823:2020	<edge of specimen	<edge of specimen	Pass
THR _{600s}	MJ	EN 13823:2020	≤ 7.5	1.7	Pass
Temperature rise in furnace	°C	EN ISO1182:2020	≤ 50	1.7	Pass
Duration of sustained flaming	s	EN ISO1182:2020	≤ 20	0	Pass
Mass loss	%	EN ISO1182:2020	≤ 50	0.2	Pass
SMOGRA	m ² /s ²	EN 13823:2020	≤ 30	3	Pass
TSP _{600s}	m ²	EN 13823:2020	≤ 50	10	Pass
Flaming droplets _{600s}	---	EN 13823:2020	d0	No droplets	Pass

Classification: A2-s1, d0

Remark:

- Test photos refers to Appendix A.

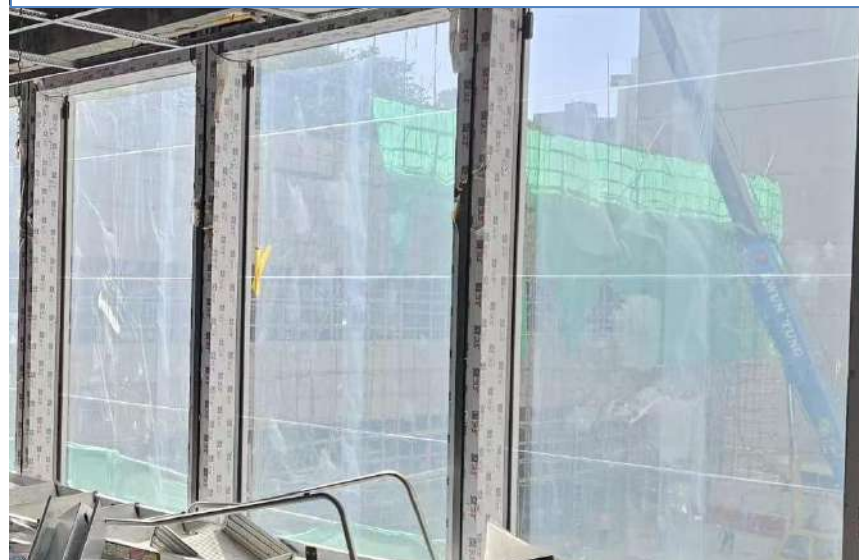


Redevelopment Queen Mary Hospital HK

香港玛丽医院重建



CdTe BIPV Facade



SYP BIPV Projects



Huanghai Wetland Museum,
Yancheng, Jiangsu

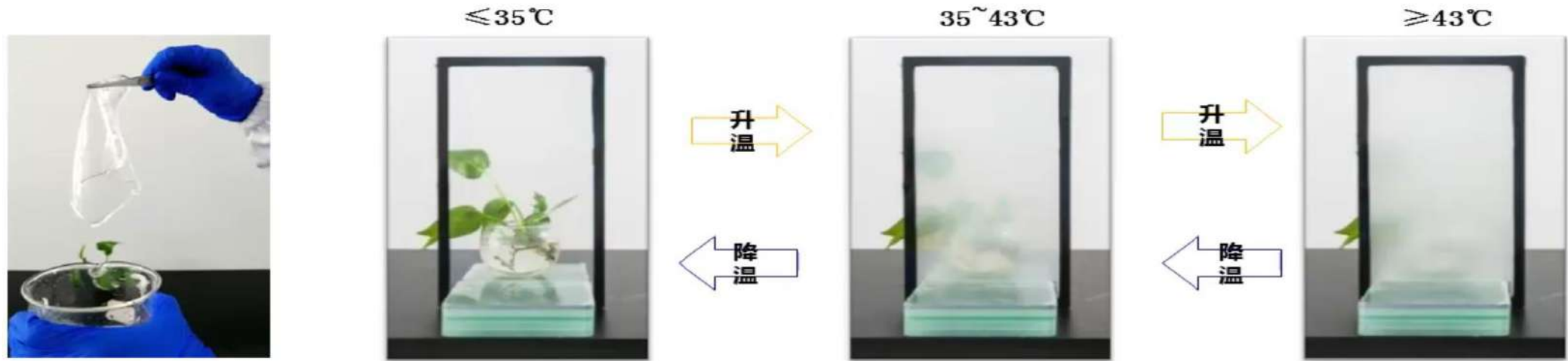


Dingke Exhibition Hotel,
Lingang, Shanghai

Capital the Grand Canal
Museum, Beijing



Thermochromic Dynamic Glass



热致调光膜

热致调光玻璃35°C产品遮阳（雾化）过程示意



Yuelai Ecological Art Museum, Chongqing



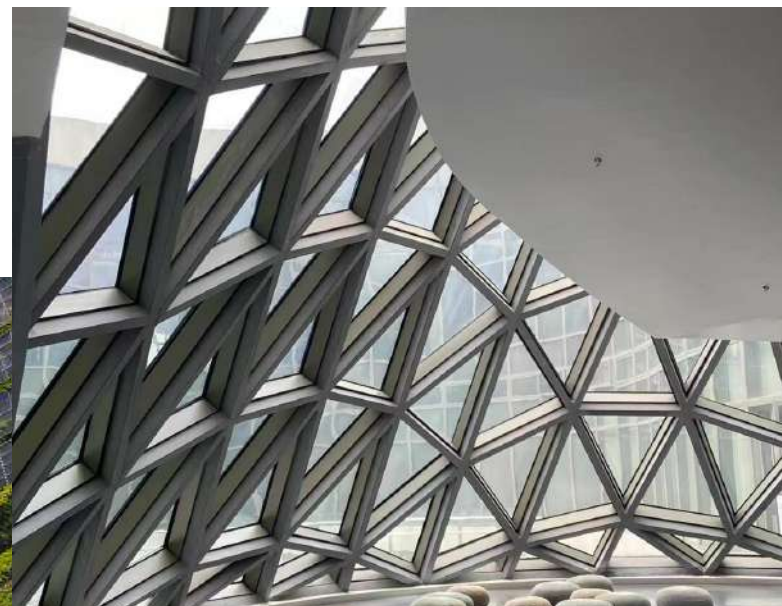
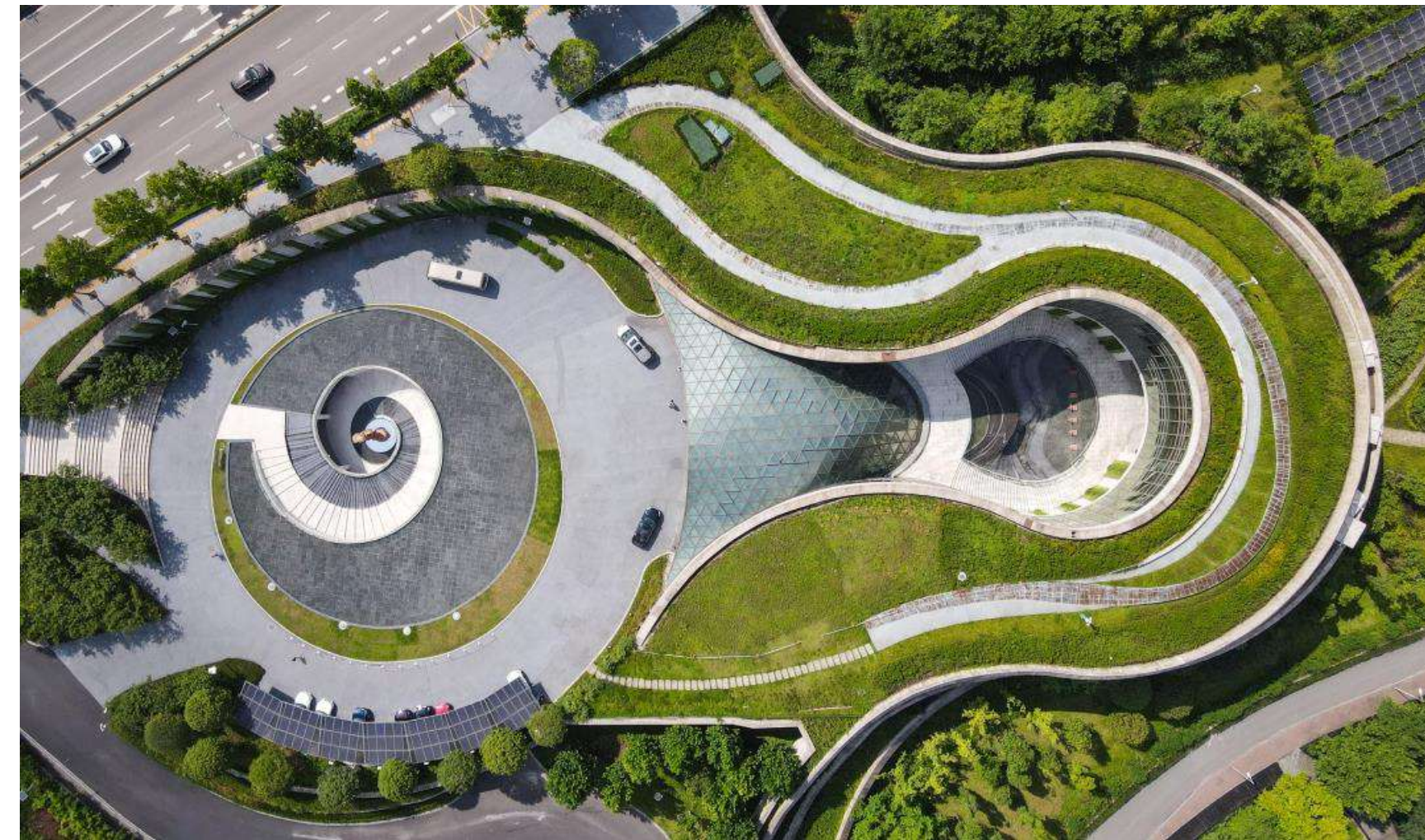
The Hong Kong University of Science and Technology, Nan Sha Campus





重庆悦来生态美术馆

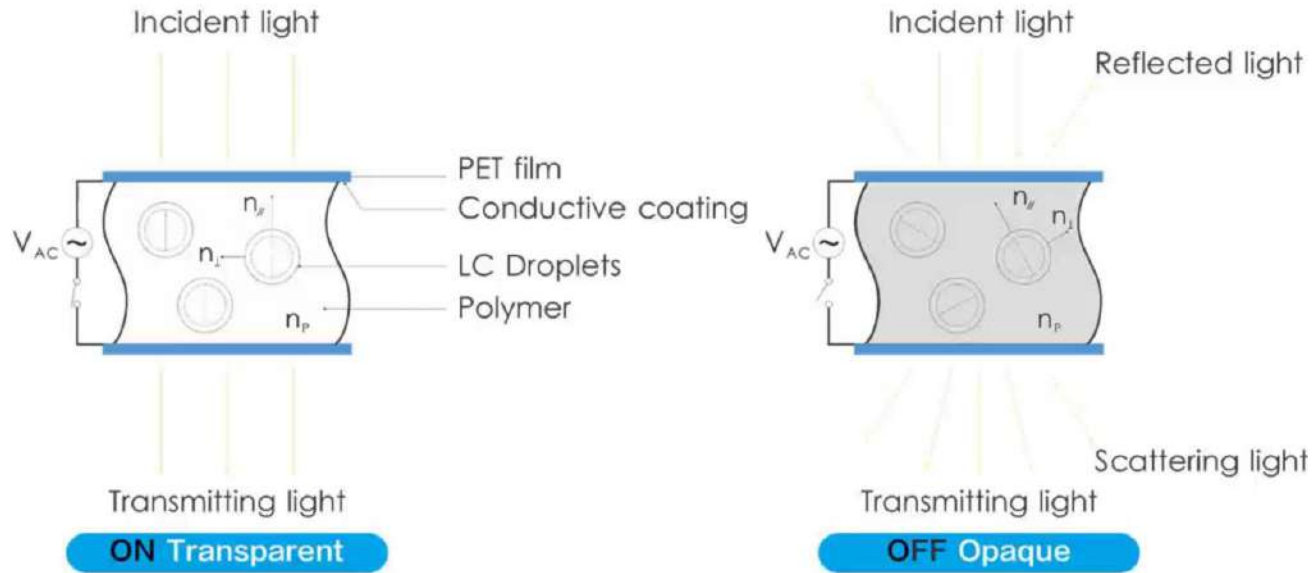
Yuelai Ecological Art Museum, Chongqing



**Smart Facade with
Thermochromic Dynamic Glass**



Polymer Dispersed Liquid Crystal (PDLC) GLASS



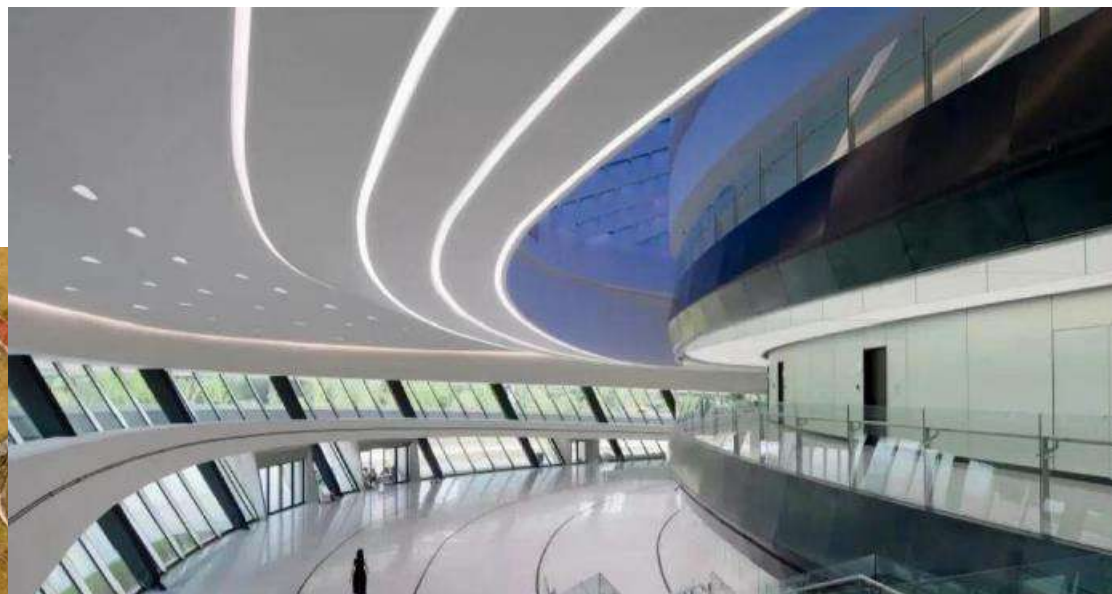
With no applied voltage, the liquid crystals are randomly oriented and scatter the light which enters. When an electrical signal is applied, the liquid crystals orient themselves parallel to each other, allowing light through.





杭州电竞中心

Hangzhou E-sports Center



Smart skylight with Polymer Dispersed Liquid Crystal (PDLC) Glass

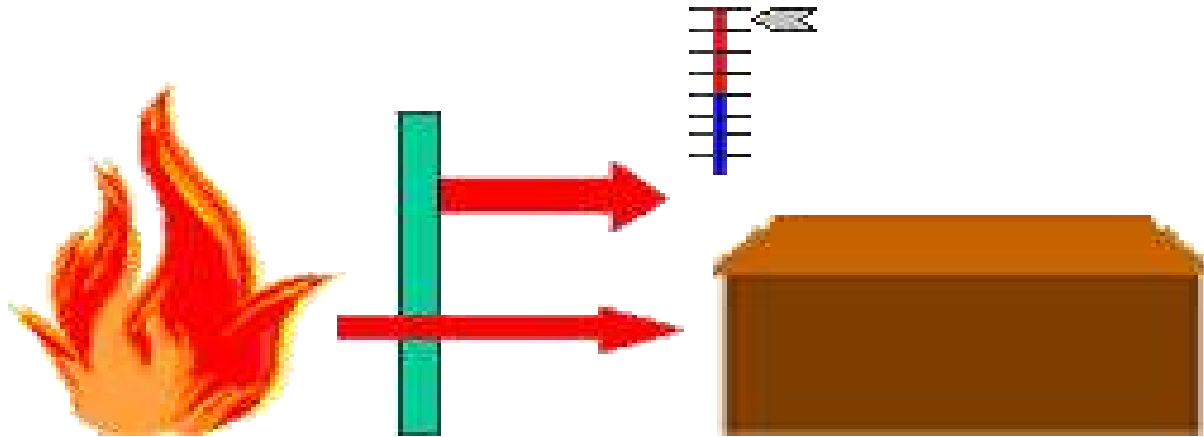




More Extensive Product,

MORE Application Scenarios

Fire Rated Glass - High Borosilicate Glass



Available Thickness & Sizes

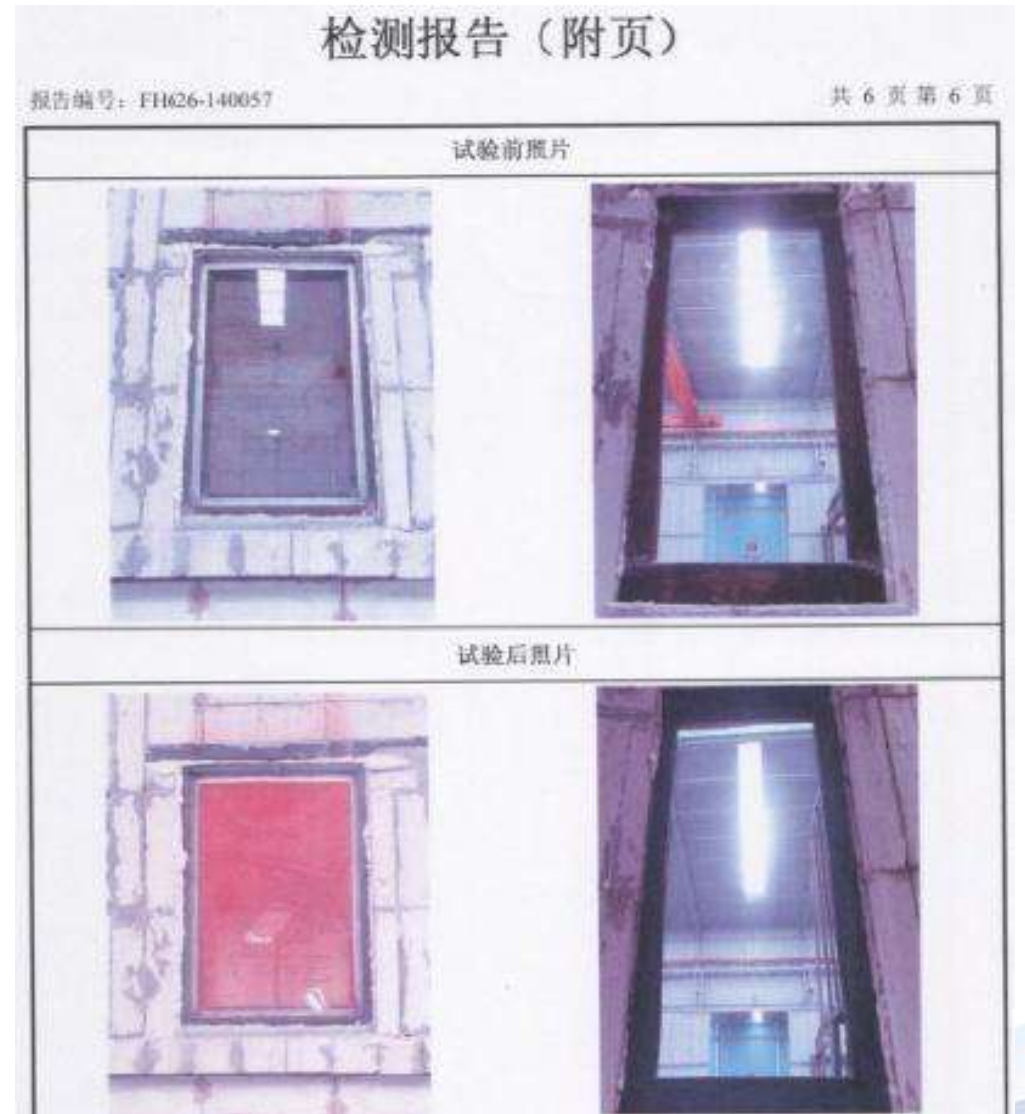
5mm 1800×3600

6mm 1800×3600

8mm 1800×3600

10mm 1700×3600

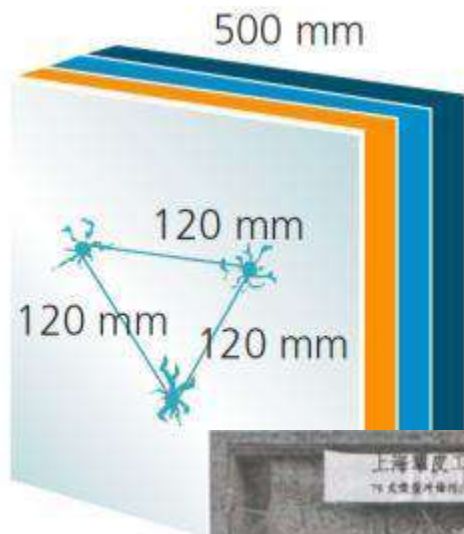
12mm 1700×3600



Bullet Proof Glass



500 mm



样品 1#射

样品 3#射击面

样品 2#射击面

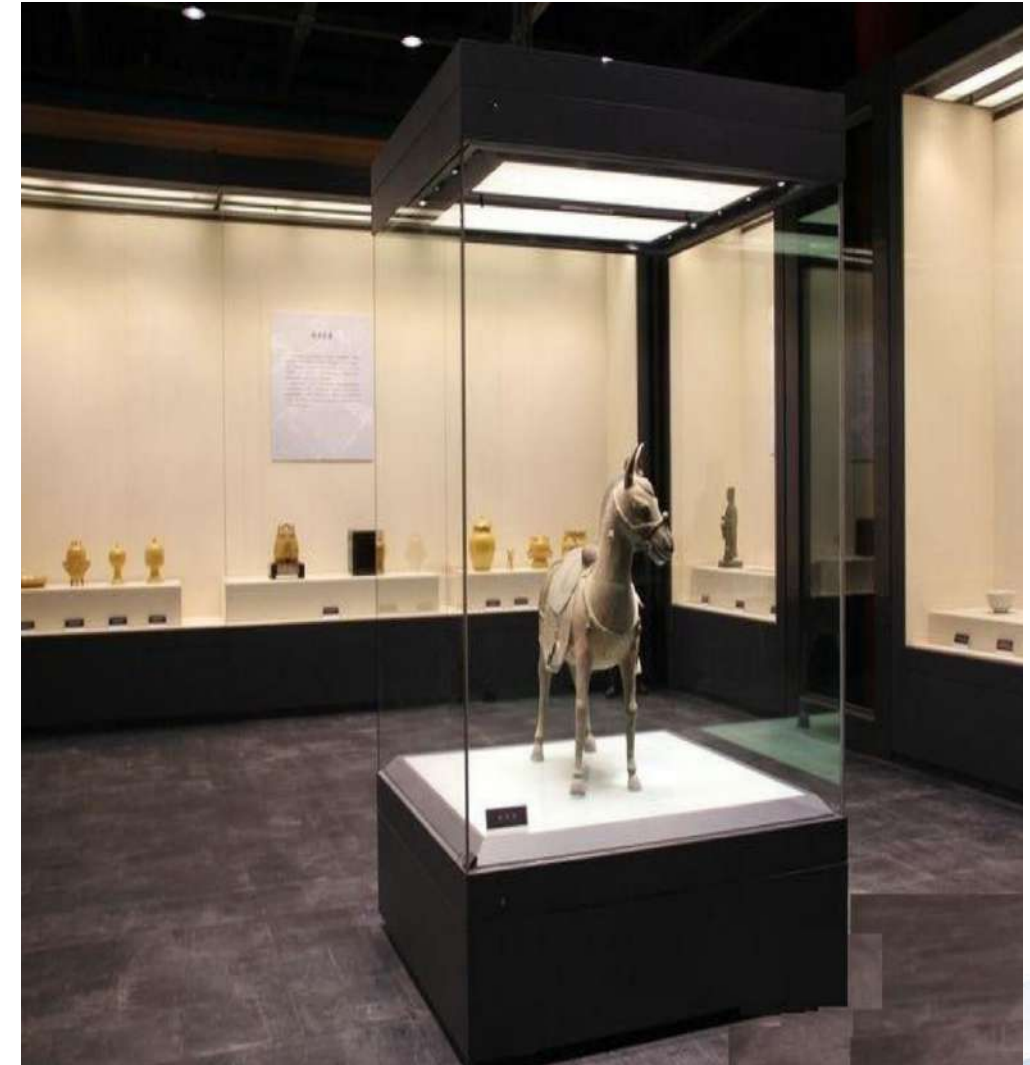
The Grand Halls 上海世界会客厅



Anti-Reflection Glass



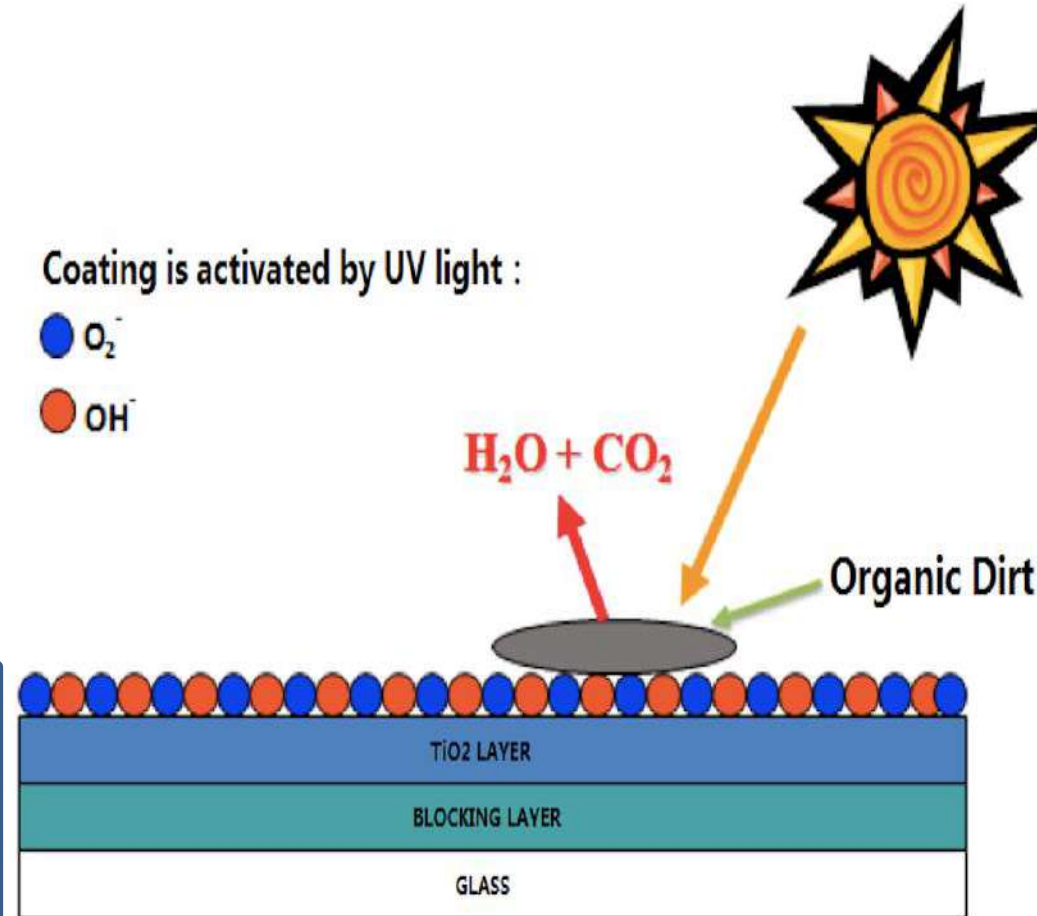
Glass	Visuable Light	
	VLT	Rout
6mm Low Iron	91	8
6mm Low Iron AR #2	94	5.2
6mm Low Iron AR #1 & #2	97	1.1



Self-Cleaning Hard Coat



Normal Glass v.s. Self cleaning Glass



Self-Cleaning Hard Coat - Application





4. How SYP Ensures Your Projects?



1.2 Jiangmen SYP Engineering Glass Co., Ltd.

JSYPE was established in 2007 as a subsidiary of Shanghai Yaohua Pilkington Glass Group Co., Ltd., with a total area of 171,000 square meters.

She is one of the largest and most advanced glass deep processing manufacturers in South China.

Two phases of investment:

Phase I was into production on September 28, 2009, with an investment of approximately RMB 360 million

Phase II was put into production on July 1, 2023, with an investment of RMB 399 million.





Export port:

Tianjin

Shanghai

Shenzhen, Guangzhou

Destination:

Vietanme +2~3 days

HAI PHONG (Hanoi)

DA -NANG

CAT LAI (HCMC)

Singapore +5 days

Indina + 14~18days

Nhava Sheva,

Chennai,

Mundra

JSYPE ERP System - DATA TRACEABLE



- A+W (Production)
- Liangjing (Production)
- SYP (Production)
- NC (HR)
- OA (Purchasement)
- Yongyou (Material)



JSYPE Production Capacities



NO.	PRODUCTION LINE	THICKNESS (mm)	MAXIMUM SIZE (mm)	MINIMUM SIZE (mm)	EQUIPMENT QTY (NOS.)
1	CUTTING	3-19	3300*14500	100*100	7
2	GRINDING	4-19	3300*15000	300*300	7
3	CERAMIC FRIT	5-19	2440*6000	300*300	1
4	DIP FRIT	5-19	2400*4800	300*300	1
5	HEAT SOAK TEST	5-19	3300*15000	300*300	3
6	FLAT TEMPER	5-19	3300*14500	100*250	7
7	CURVE TEMPER	5-19	H=6000*Arc L3300mm, R: 1500~20000mm; H=3300*Arc L5000mm, R: 3000~20000mm;	H*Arc L ≥800*800	1
8	COATING	3-28	3300*18000	300*800	2
9	LAMINATE	4-19	3300*14500	300*300	4
10	DGU	≤70mm	3300*14500	180*350	8

Cut-Grind-Temper fully automated Equipment



Automated Storage & Retrieval System
Max Size:
3800mm*14500mm

CUT

Temporary Storage System

GRIND

TEMPER



Machines (Partial)

- BOTTERO BY ITALY (Cutting)
- BENTELER BY GERMAN (Edging)
- TAMGLASS BY FINLAND(TP)



BENTERLE BY GERMAN (Laminate)



LISEC BY AUSTRIA (IGU)





• Most Advance Low-E coating Line of LEYBOLD Gemany

Max Size: 3300x18000mm, Thickness 28mm



BIGGER !

*Low-E is available at size of 3.3x18m

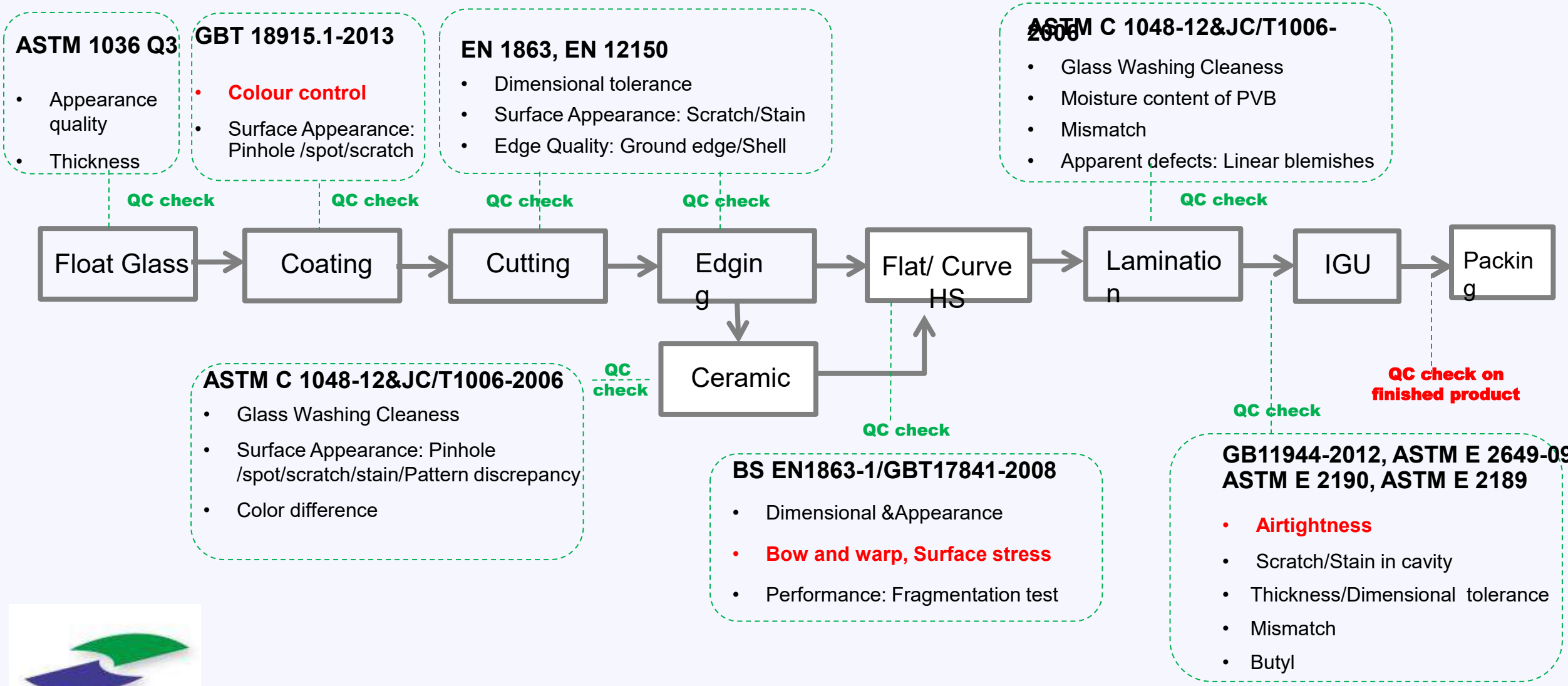
THICKER!

*Low-e max thickness is 28mm (12+1.52+12)

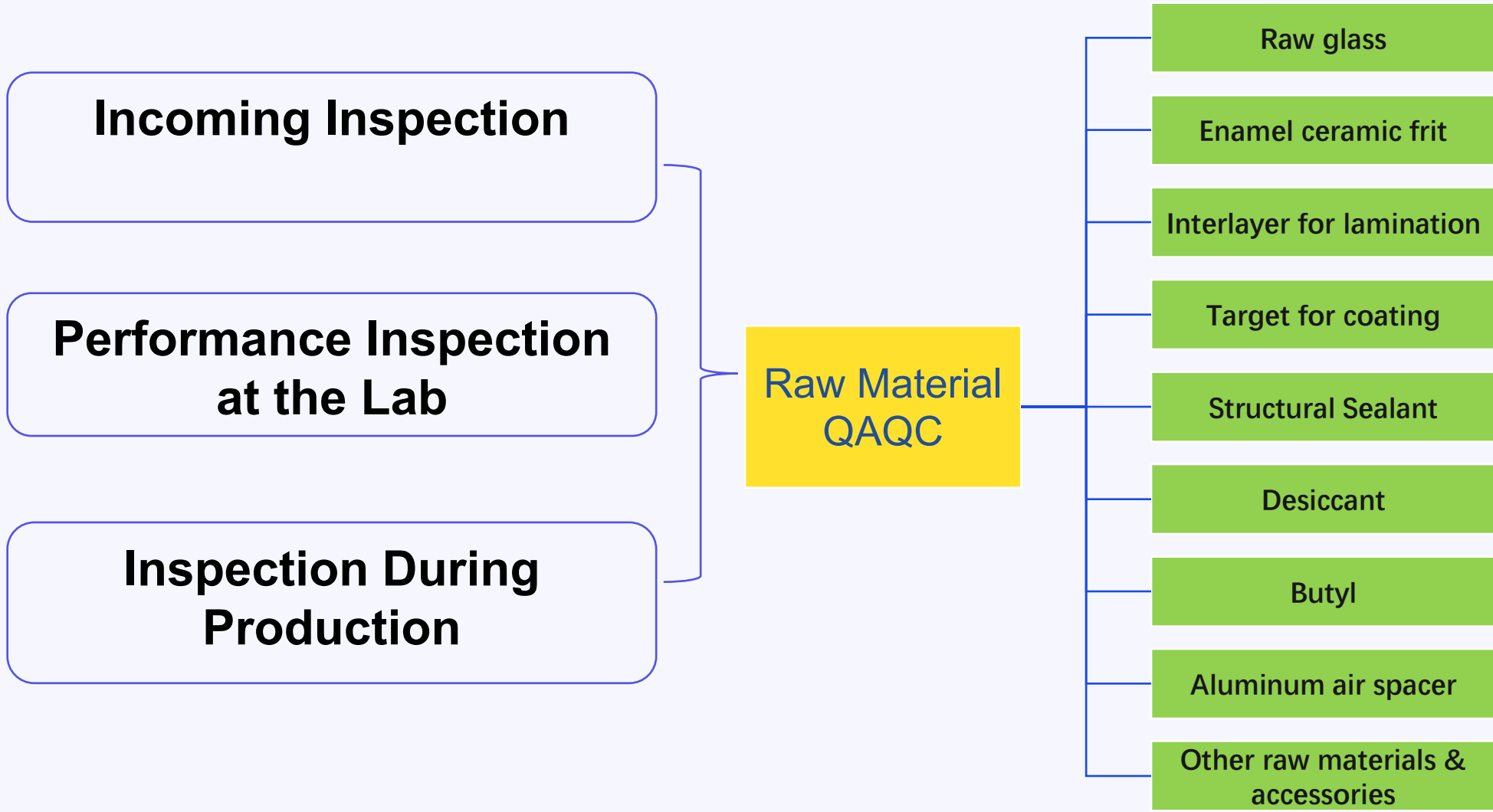
QAQC PLAN



Production Process



2.1 Material





Reliable suppliers

SentryGlas®

kuraray

Possible starts here



SEKISUI

TECHNOFORM
INDUSTRIES

Saflex

KÖMMERLING

EASTMAN

2.1.1 Incoming Inspection



Float Glass check & record



Lamination Interlayer visual check & record



Butyl visual check & record



Secondary sealant visual check & record

2.1.2 Performance Test at the lab



Impact test



Ball drop test



Boil Test



UV test



Water-vapor Resistance Test

2.1.2 Performance Test at the lab



Water initial content measuring for desiccant



Weather cycling test and high humidity test



Sealant performance and hardness check



Rally machine
(Performance of Sealant)

Dew Point test



2.1.3 Inspection During Production

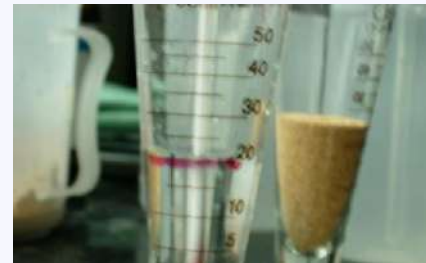


Snap test and Butterfly Test for silicone sealant



Desiccant temperature rise test
 $\Delta T > 30^{\circ}\text{C}$

PVB moisture content Test



2.2 Raw Glass



1. 原片 (Raw glass)

序号 NO.	工序名称 Process name	控制项目 The items to control the quality	控制标准 Control standards	检查设备和工具 The Equipment and Tools for checking	测试频次 Frequency to check
1	原片 浮法玻璃 Float glass	原片 Raw glass	参照 ASTM 标准 C1036-Q3 Refer to ASTM C1036-Q3	目测 Visual check	每包一次 Once a package
		厚度公差 Thickness tolerance	6mm \pm 0.2 8~12 \pm 0.3mm	千分尺 Micrometer	每批次一片 Once per a batch
			15mm \pm 0.5		

Thickness
Check

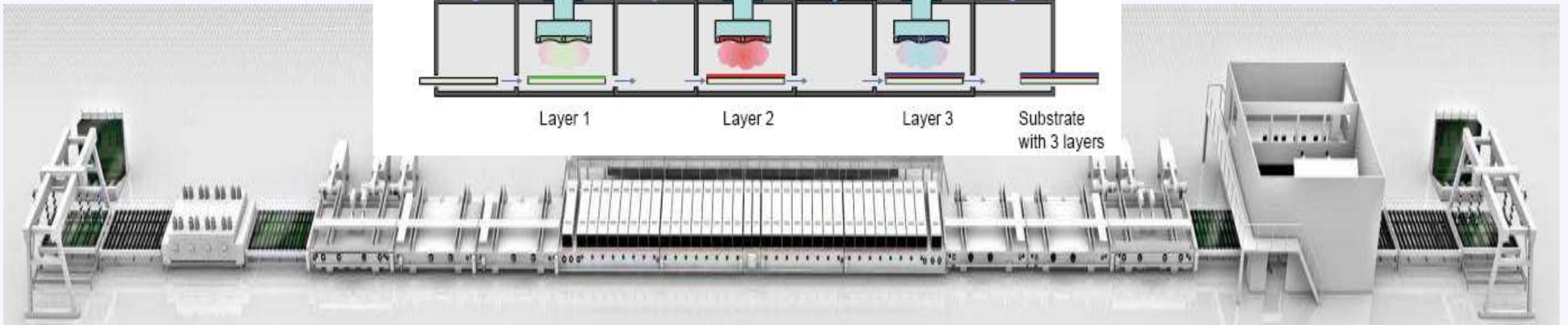
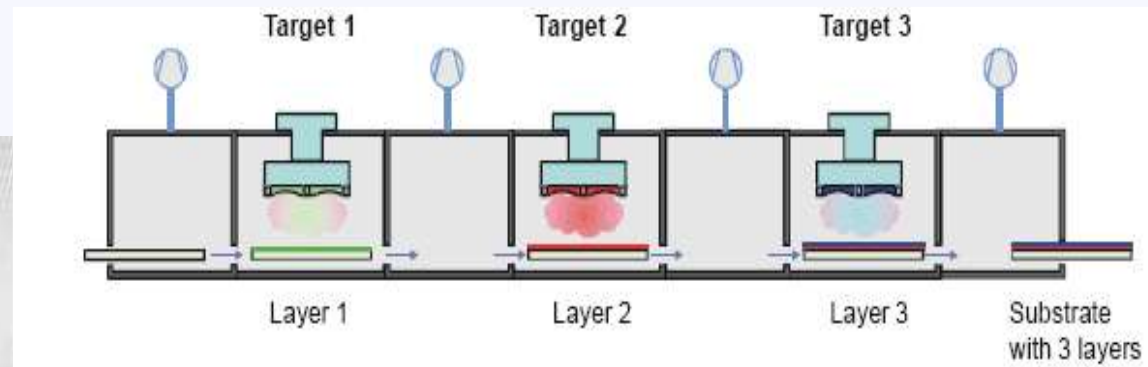


2.3 Coating Quality Control



Low-E Coating

- Sputtering coating is a physical vapor deposition (PVD) method of thin film deposition by sputtering.
- A metal or ceramic target bombarded with ions releases atoms to form a thin coating on glass surface.



2.3 Coating Quality Control



Glass uploading 玻璃上片

Glass washing by high purity deionized water and drying
用高纯去离子水清洗干燥玻璃

Glass entering entrance pre-vacuum chambers, waiting to be sputtered
玻璃进入缓冲腔室准备溅射镀膜

Glass being coated with low-e thin film layers by method of vacuum magnetic enhanced sputtering
玻璃利用磁控溅射的方式镀上Low-E膜

Glass entering exit pre-vacuum chambers
玻璃进入出口缓冲腔室

Glass being inspected for appearance and color uniformity
检查外观和颜色均匀性

Glass being applied with interleaving powder
玻璃表面喷粉

Glass downloading and being transferred to IGU process
玻璃卸载转移到中空

Glass size and appearance checking
检查玻璃外观和尺寸

Quality control: EN 1096
质量控制标准EN 1096

Color uniformity checking
检查玻璃颜色均匀性

Visual appearance checking
外观检查

Photothermal/energy-saving performance control
光学性能检测

Abrasion/water abrasion resistance
耐磨性/耐水性

Coating
QAQC

2.3 Coating Quality Control



Glass uploading

玻璃上片



Glass size measuring

玻璃尺寸测量

镀膜线上片台首检/抽检记录表 GDM09-301-1/2

First Check & Sample Check Record Sheet before Coating

白班 Day Shift: 日期 Date: _____ 班号/班别/班次 Line No./Group/Shift: _____ 记录人 Record by: _____ 审核人 Reviewed by: _____

夜班 Night Shift: 日期 Date: _____ 班号/班别/班次 Line No./Group/Shift: _____ 记录人 Record by: _____ 审核人 Reviewed by: _____

项目 Item	时间 Time	合同号 Contract No.	架号 Rack No.	客户名称 Client	尺寸 Dimension	马克要求 Logo	镀膜面 Coating Side		原片日期 Production Date for Raw Glass	标签 Label	外观质量 Visual appearance	判定 Conclusion
							空气面 Air	锡液面 Tin				
首检 First Check												
抽检 Sample Check	8:30											
抽检 Sample Check	9:30											
抽检 Sample Check	10:30											
抽检 Sample Check	11:30											
抽检 Sample Check	12:30											
抽检 Sample Check	13:30											
抽检 Sample Check	14:30											
抽检 Sample Check	15:30											
抽检 Sample Check	16:30											
抽检 Sample Check	17:30											
抽检 Sample Check	18:30											
抽检 Sample Check	19:30											
首检 First Check												
抽检 Sample Check	20:30											
抽检 Sample Check	21:30											
抽检 Sample Check	22:30											
抽检 Sample Check	23:30											
抽检 Sample Check	0:30											
抽检 Sample Check	1:30											
抽检 Sample Check	2:30											
抽检 Sample Check	3:30											
抽检 Sample Check	4:30											
抽检 Sample Check	5:30											
抽检 Sample Check	6:30											
抽检 Sample Check	7:30											

备注: 表中所有尺寸单位为mm 当班最后一片做收件, 记录收件时间和详细原片内容
Note: The unit of all dimension recorded in the table is mm. The first check shall be recorded with time and quality

QC records 镀膜玻璃抽检记录

2.3 Coating Quality Control



Color control by online color scanner
通过在线颜色扫描仪监控颜色



The observation cabin
观察室检查膜层质量

2.3 Coating Quality Control



Coating color data comparision with control record.



Sampling
放样检测颜色



Color Quest and Glass samples
Color Quest 测色仪和玻璃样片



Calibrating apparatus
校验器具



Testing
测试

2.3 Coating Quality Control



Glass downloading table
玻璃下平台



Visual check: Pinhole, Scratches,
Streaks, Splotches
目视检查：针孔、划伤、色带、斑点



Visual check: Measuring length of scratch
目视检查：测量划伤的长度



Portable Spectrophotometer KONICA MINOTA CM-26d
便携美能达测色仪

Photothermal/energy-saving performance control at the |



Insight1000 portable energy-saving glass on-site comprehensive test system



USA Lambda PE 900 & 1050+ spectrophotometer



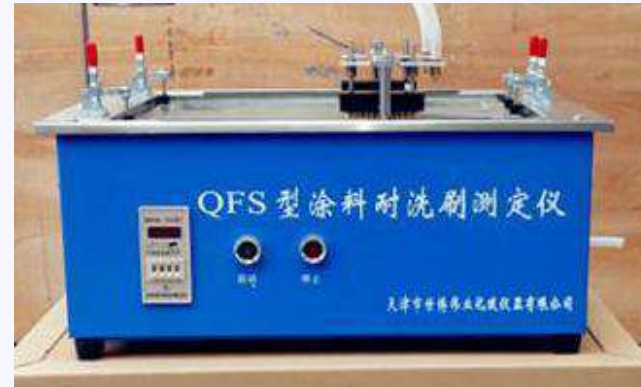
Abrasion/water abrasion resistance at the Lab



Radiometric meter



Water mill tester



Grinding gauge



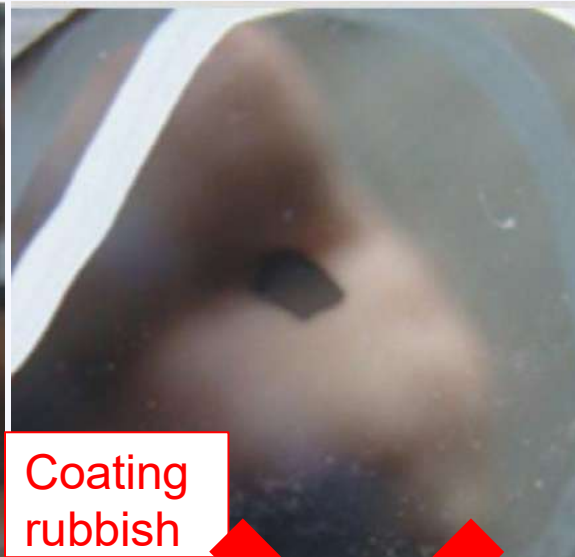
Surface Resistance Measuring Instrument



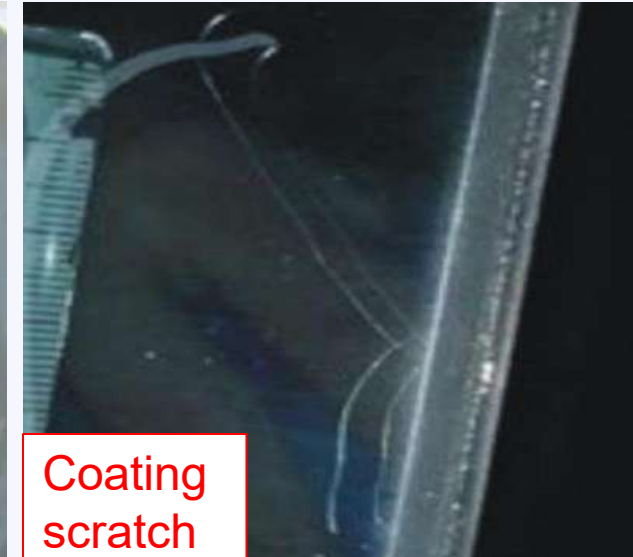
2.3 Reject of Low-E coating



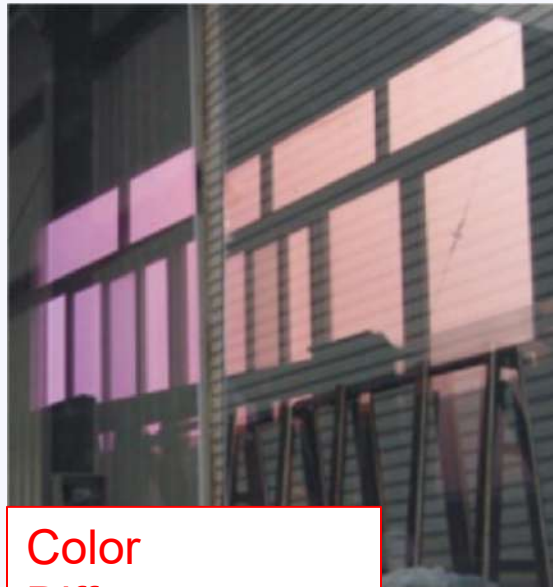
Pin Hole



Coating rubbish



Coating scratch



Color Difference



Stains



Oxidation

Grinding

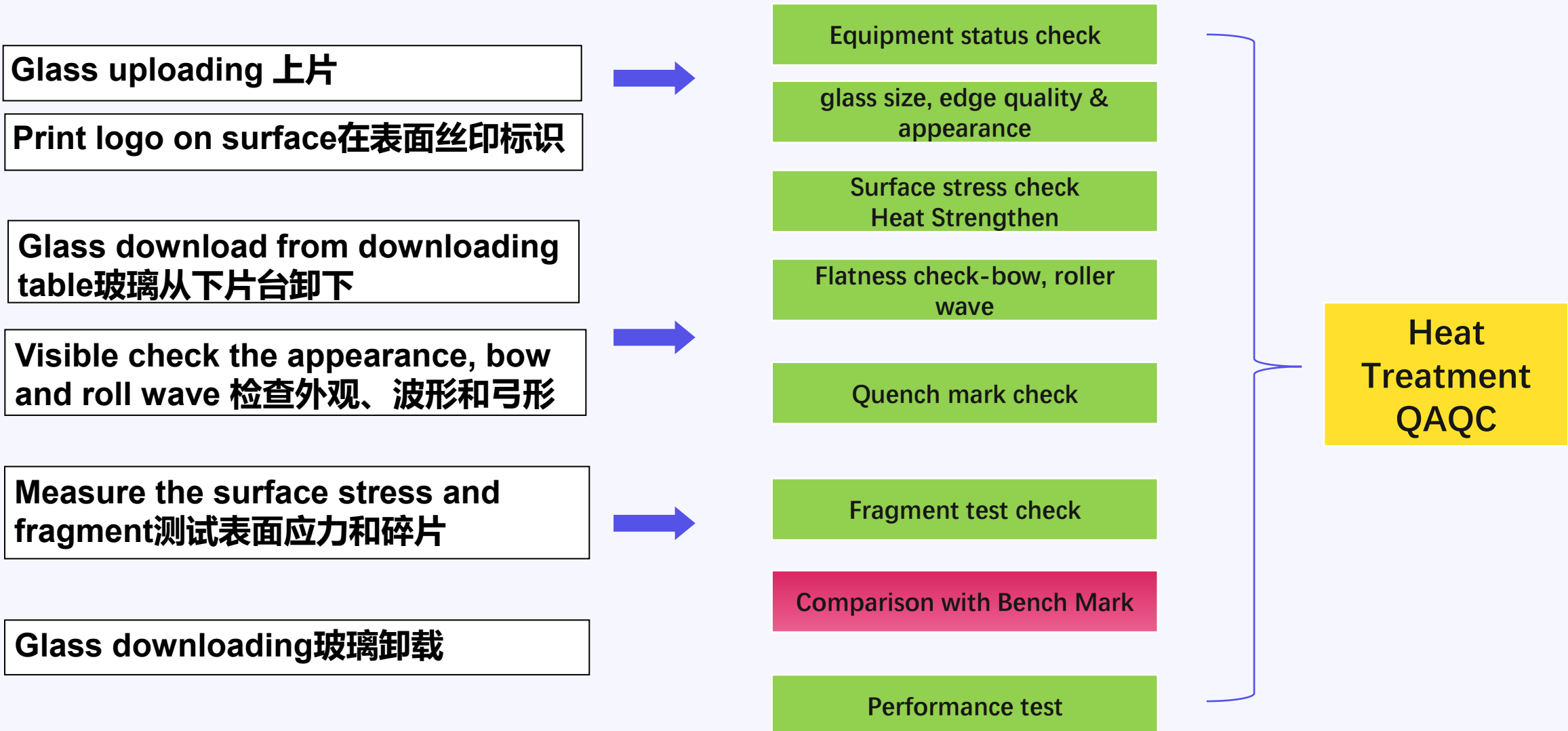


Quality Control Items 质量控制要素

- The type of the raw glass 原片类型
- Dimensional tolerance 玻璃尺寸偏差
- Surface Appearance 外观质量
 - Scratch 划伤
 - Stain 结石
- Edge 边部质量
 - Ground edge 粗磨边质量 (控制亮斑)
 - Shell 爆边
- Hole diameter tolerance 孔径偏差
- Hole distance tolerance 孔距偏差

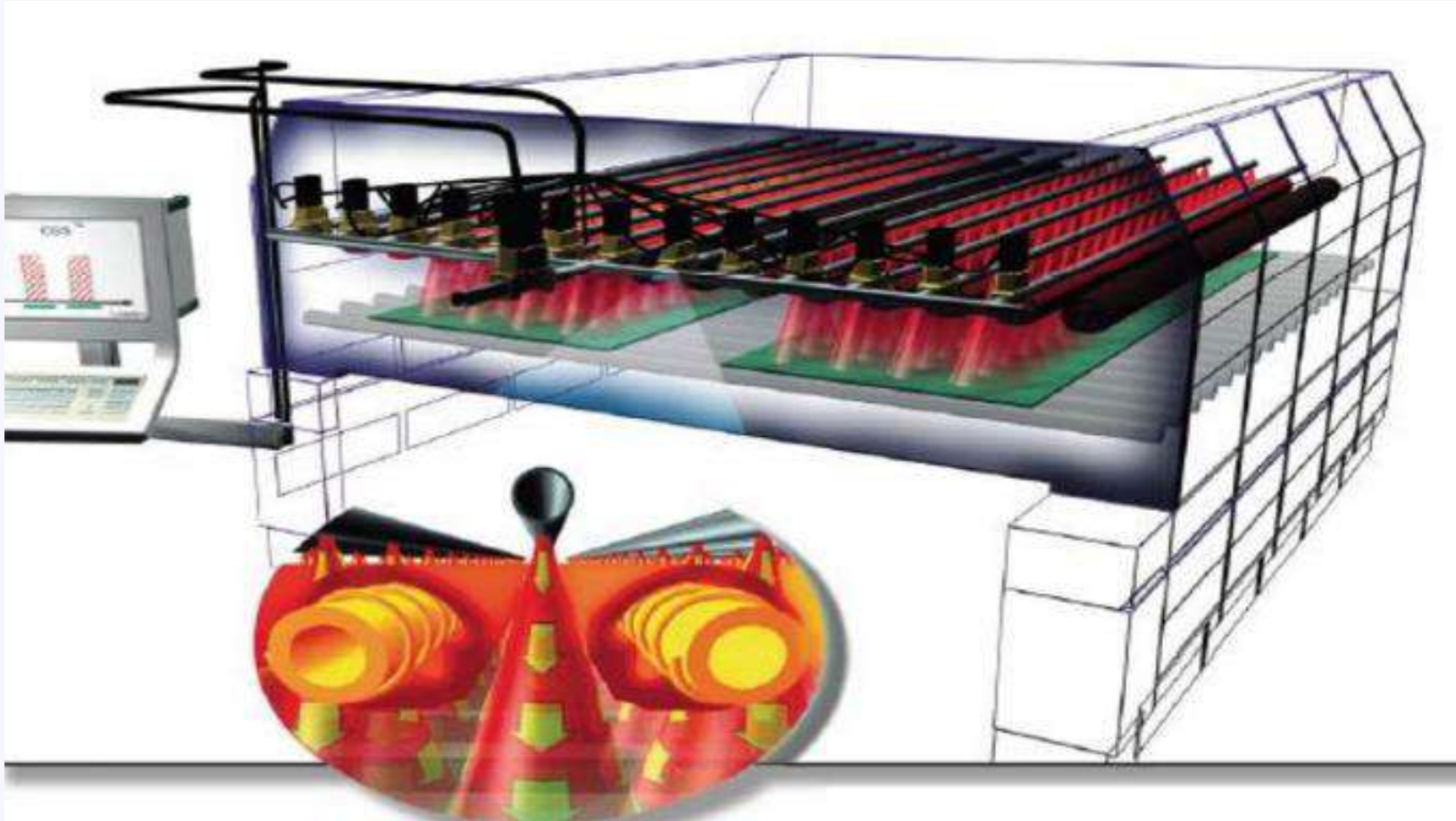


2.5 Heat Treatment Quality Control



2.5 Heat Treatment Quality Control

The glass will be produced by full-convection tempering furnace which has a double-chamber double-bar to ensure the uniformity of glass heating.



2.5 Heat Treatment Quality Control

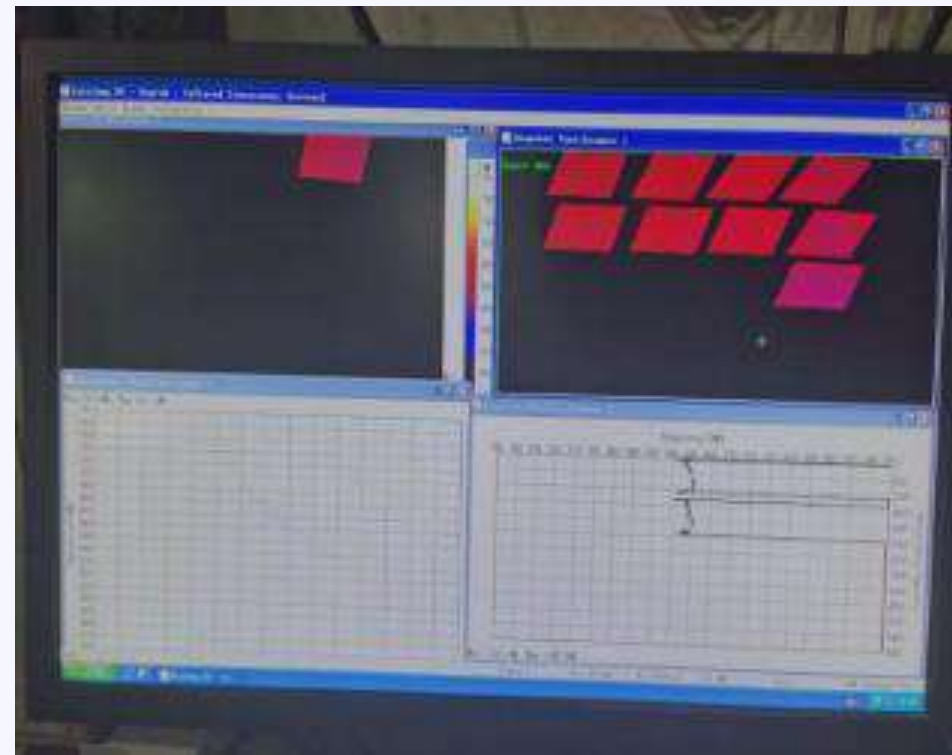


Before Glass uploading

Adjust the tempering machine to make sure the heating uniformity and the best condition.



Real-time temperature monitoring with a thermal imager



2.5 Heat Treatment Quality Control



During Glass uploading



Cross Check with the Production flow information

上海耀皮玻璃集团股份有限公司_JSYPE
SYP GLASS GROUP, JSYPE CO., LTD
生产流转卡

计划号: 项目:
架卡: J1410170213 箱号: 片序: A 主架
玻璃类别: 5YBE-0154 牌号: 供应商: 101
边形处理: EG带粗FE 架数: 1 包装处理 衬纸

产品配置: 5YBE-0154 (2#) 平钢+12A(银)+5平钢

生产顺序 切 磨 平钢 中空 包装
落架顺序 正 反 正 反 正

配对: J1410170213 J1410170214

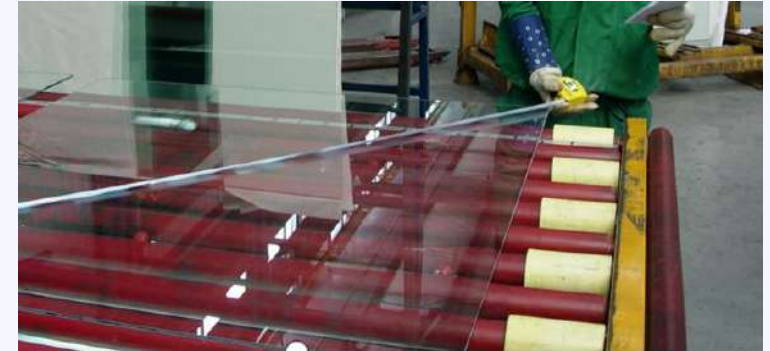
条目	子编号	W	H	W切割	H切割	数量	异形槽片	钻孔	半径	备注
I	C100180	805.0	1605.0	805	1605	4			0	

J1410170213 满架数量合 4 面积: 5.17 重量: 0.06

技术要求

质量要求: A片印左下反3C马克(2#), B片印右下反3C马克(3#),
技术要求: 1、LOW-E膜位于2#面; 2、打新展胶, 胶深: 7mm, 两片玻璃都打3C标识, 方向、位置请尽量保持一致; 3、上机磨边, 周边倒棱粗磨, 注意产品外观质量, 其他加工要求严格按照国标执行; 4、产品室内面贴尺寸标签, 标签距离玻璃边部100mm处, 标签上必须注明产品规格, 客户名称(项目名称), 产品配置, 以及“窗号”见序号; 5、标签, 合格证、发货清单、质保书需注明产品配置; 5SYP恒大LOW-E(H460)钢化+12A+5C钢化; 注: 请务必保证外包装的坚固、完好。
送货地址: 临汾

打印时间: 14-10-17 14:03:23 NJZ1410200-A
制单人: 吴桂明
生产时注意对照计划和图纸, 本面不得填写和涂改。注意安全生产!



Glass size measuring



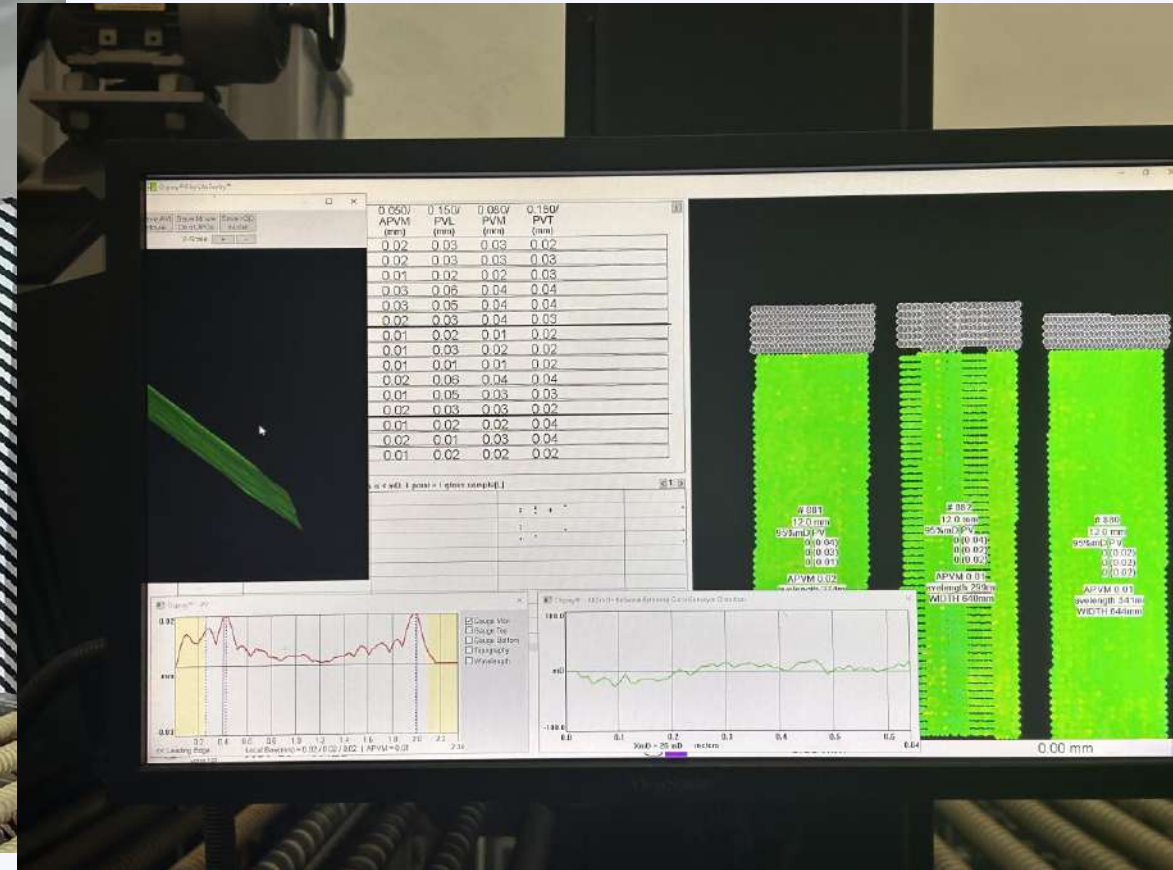
Visual check uploading

2.5 Heat Treatment Quality Control



Osprey®6 Distortion & Flatness Inspection System For Glass Tempering Lines

Online real-time optical reflection inspection during the production

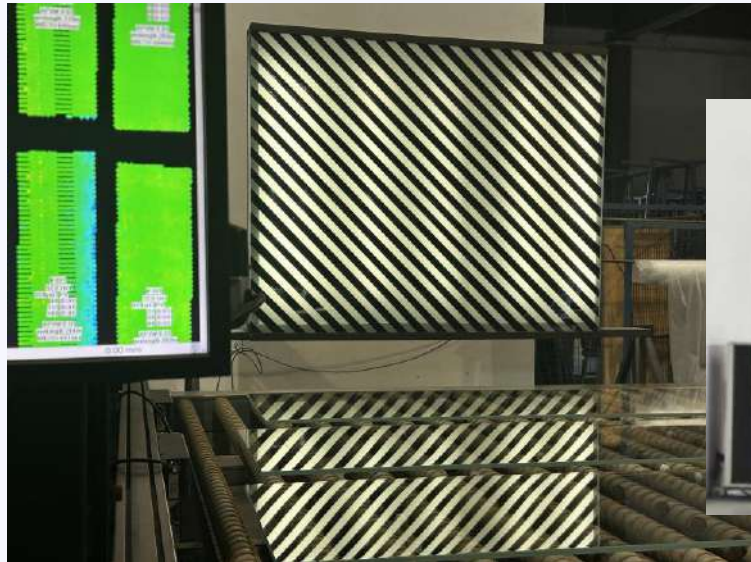


2.5 Heat Treatment Quality Control



After Glass unloading

Image distortion check- zebra board with lightbox
and checkerboard



Quench mark lightbox inspection



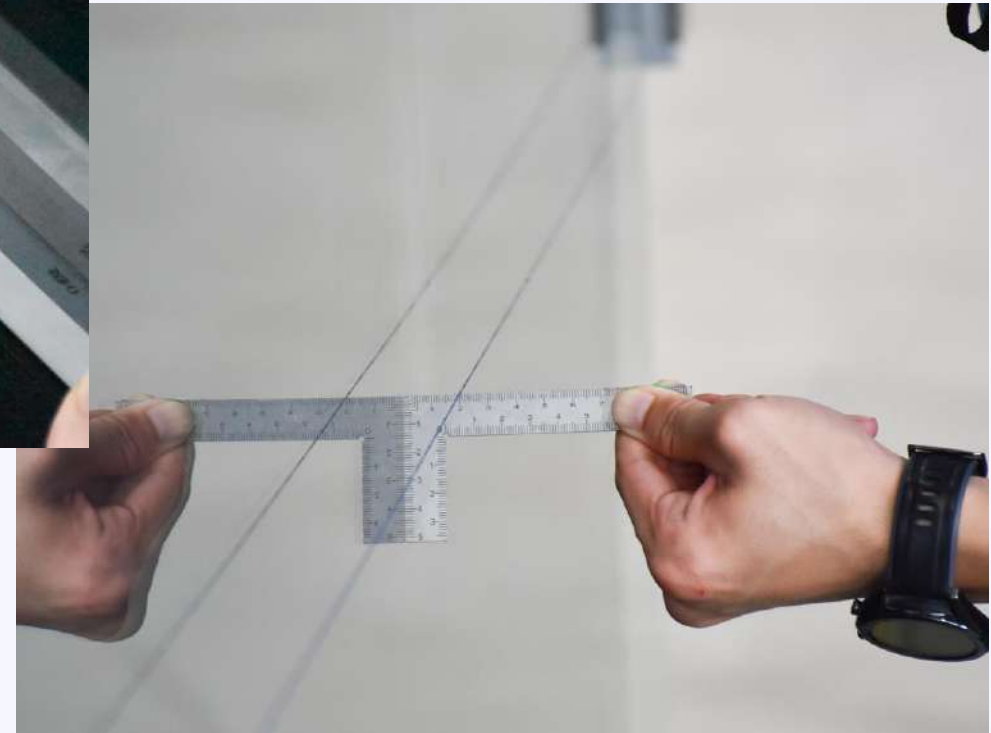
Glass image relection
viewing from 30m away



2.5 Heat Treatment Quality Control



Roller wave and overall bow check



2.5 Heat Treatment Quality Control

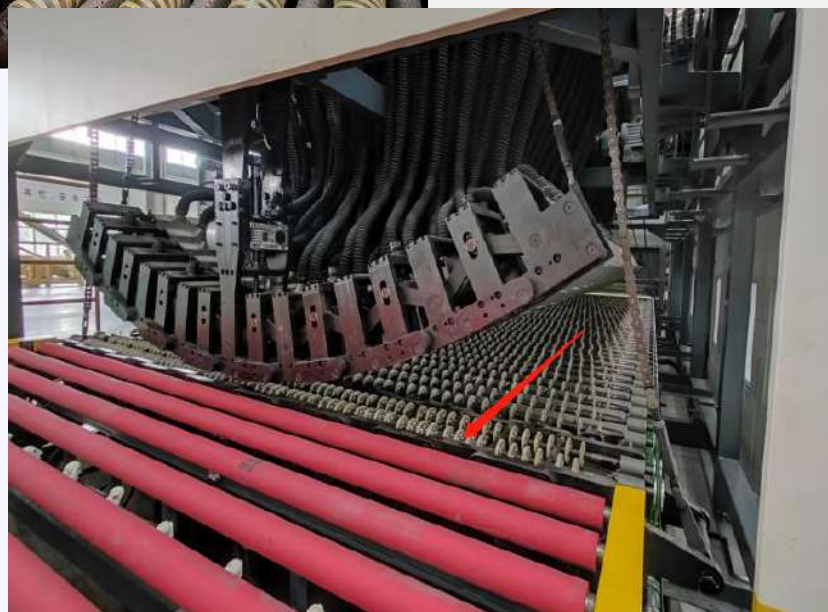
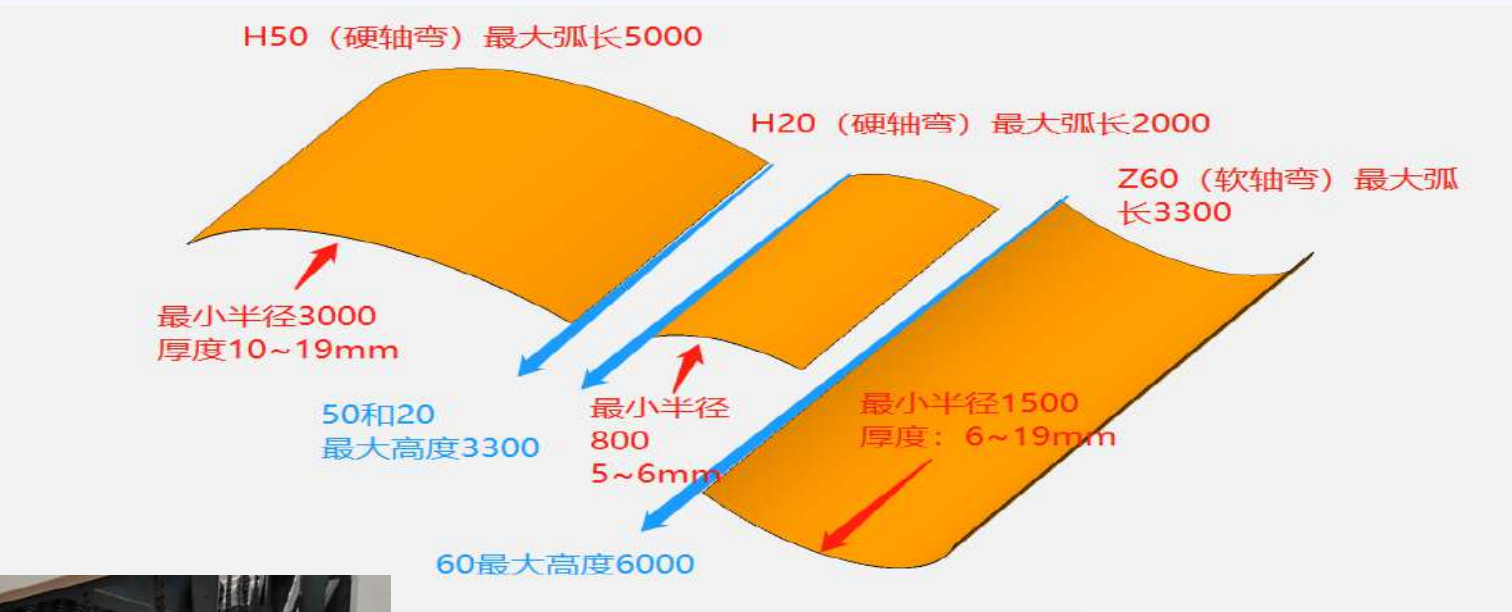


Surface compress check

Fragmentation test

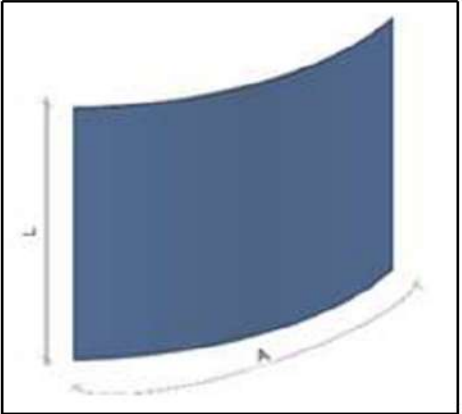
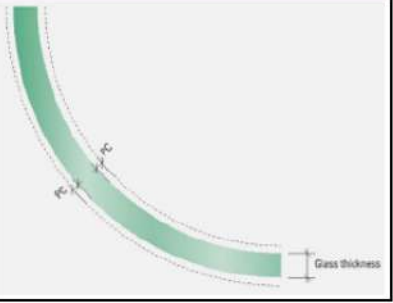


2.5 Curve Tempering Oven



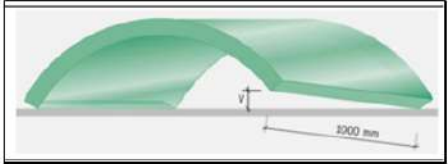

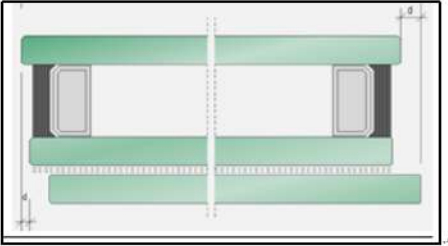
2.5 Curve Temper QAQC



NO. 序号	Process 工序名称	Quality Control Term 质量控制术语	Inspection Facility and Tool 检测设备和工具	Inspection Frequency 测试频率	Executive Standard 执行标准	Criteria (Qualified/Failed) 基准、规范 (合格/不合格)								
10.	Curve glass 弯玻璃	Size tolerance of flat edge / curved edge. 直边、弧边尺寸偏差	Tape ruler, straight steel ruler. 卷尺, 钢直尺	Once per 2 hours, one piece a time. 1次/2小时, 1片/次	8 Shenton Way 项目 控制要求	 <table border="1" data-bbox="1447 753 2084 868"> <tr> <td>高边尺寸 Height size ≤ 2000</td> <td>±3.2</td> </tr> <tr> <td>高边尺寸 Height size > 2000</td> <td>±4.8</td> </tr> <tr> <td>弧边尺寸 Girth size ≤ 2440</td> <td>±3.2</td> </tr> <tr> <td>弧边尺寸 Girth size > 2440</td> <td>±4.8</td> </tr> </table>	高边尺寸 Height size ≤ 2000	±3.2	高边尺寸 Height size > 2000	±4.8	弧边尺寸 Girth size ≤ 2440	±3.2	弧边尺寸 Girth size > 2440	±4.8
高边尺寸 Height size ≤ 2000	±3.2													
高边尺寸 Height size > 2000	±4.8													
弧边尺寸 Girth size ≤ 2440	±3.2													
弧边尺寸 Girth size > 2440	±4.8													
		Fit of arched edge 弧边吻合度	Standard model of radian, straight steel ruler. 标准弧度模板、 钢直尺	Once per 2 hours, one piece a time. 1次/2小时, 1片/次	8 Shenton Way 项目 控制要求	 <p data-bbox="1429 1210 1574 1296">Within 3mm. 不超过 3mm.</p>								

2.5 Curve Temper QAQC



NO. 序号	Process. 工序名称	Quality Control Term. 质量控制术语	Inspection Facility and Tool. 检测设备和工具	Inspection Frequency. 测试频率	Executive Standard. 执行标准	Criteria (Qualified/Failed). 基准、规范 (合格/不合格)
10.	Curve glass. 弯玻璃	Distortion deviation. 扭曲偏差	Tape ruler, straight steel ruler. 卷尺, 钢直尺	Once per 2 hours, one piece a time. 1次/2小时, 1片/ 次	8-Shenton-Way 项目 控制要求	 <p>高度 $H \leq 1830\text{mm}$ 且弧长 $\leq 2440\text{mm}$: $\pm 3.2\text{mm}$ 高度 $H > 1830\text{mm}$ 且弧长 $\leq 2440\text{mm}$: $\pm 4.8\text{mm}$</p>
		Flat curvature. 直边弯曲度	Steel ruler, filament. 钢直尺, 细线	Once per 2 hours, one piece a time. 1次/2小时, 1片/ 次	8-Shenton-Way 项目 控制要求	 <p>不超过 0.2%</p>
		Overlap 叠差	Tape ruler, straight steel ruler. 卷尺, 钢直尺	Once per 2 hours, one piece a time. 1次/2小时, 1片/ 次	8-Shenton-Way 项目 控制要求	 <p>面积 ≤ 5 平方: $\pm 2\text{mm}$, 面积 > 5 平方: $\pm 3\text{mm}$</p>
		Appearance 外观质量	light box, visual check. 透视观察、灯箱、 目测	Once per 2 hours, one piece a time. 1次/2小时, 1片/ 次	Same as flat glass. 与平玻璃一致	Same as flat glass. 与平玻璃一致

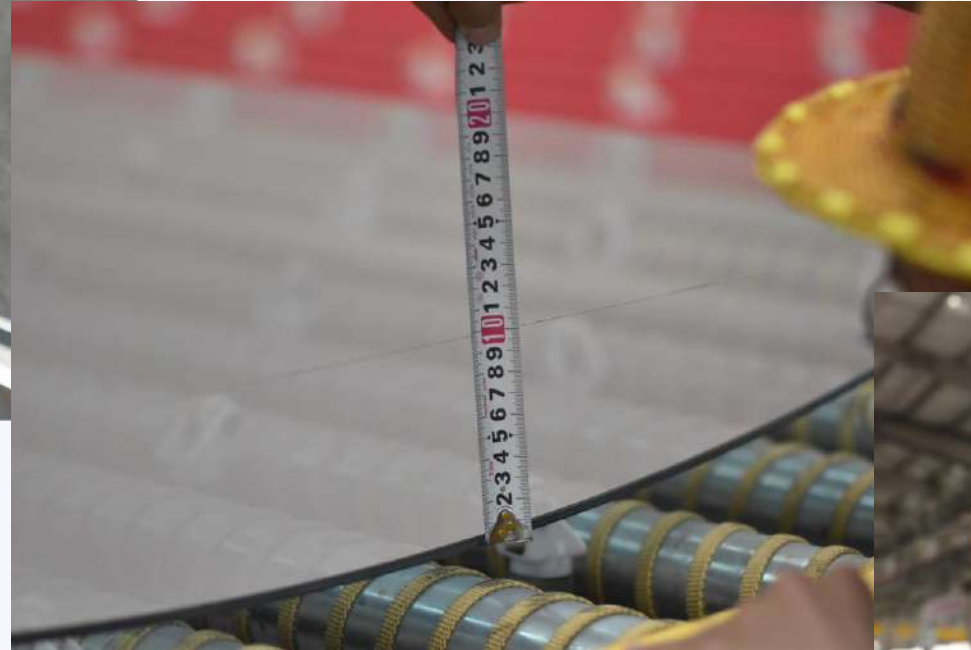
2.5 Heat Treatment Quality Control- Curve



Curve Glass



Check on the size



Check on the arch height



Check on the arch length

2.5 Heat Treatment Quality Control- Curve



Curve Glass



Check on the radius



Check on the warp



Check on the goodness of fit

2.5 Reject of Heat Treatment



Pressed Mark



Heavy quench mark



Poor distortion



Uneven quench mark

2.6 Lamination Quality Control



Lamination QAQC

Assemble room control -
temperature and humidity

PVB moisture content check

Appearance check

Performance check

Dimension check

Safety performance check



Room temperature, humidity and cleanliness control



Dimension check



Distortion check

2.6 Lamination Quality Control

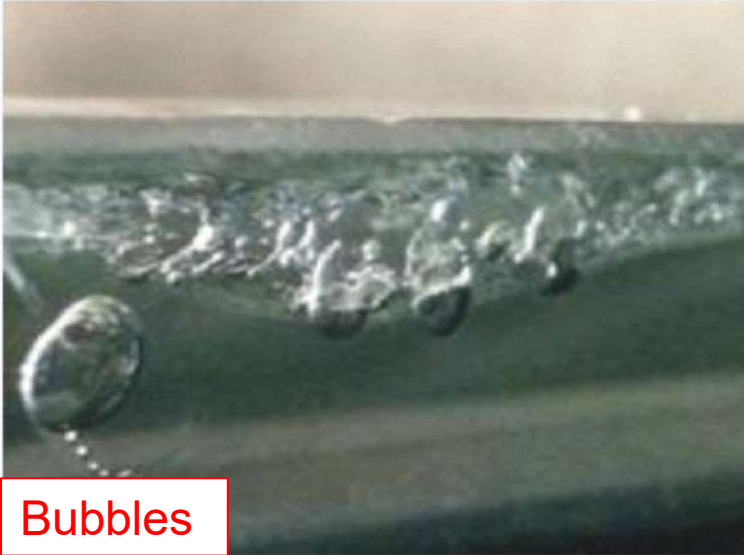


Quality Control Items (Reference Standard ASTM C 1048-12&JC/T1006-2006)

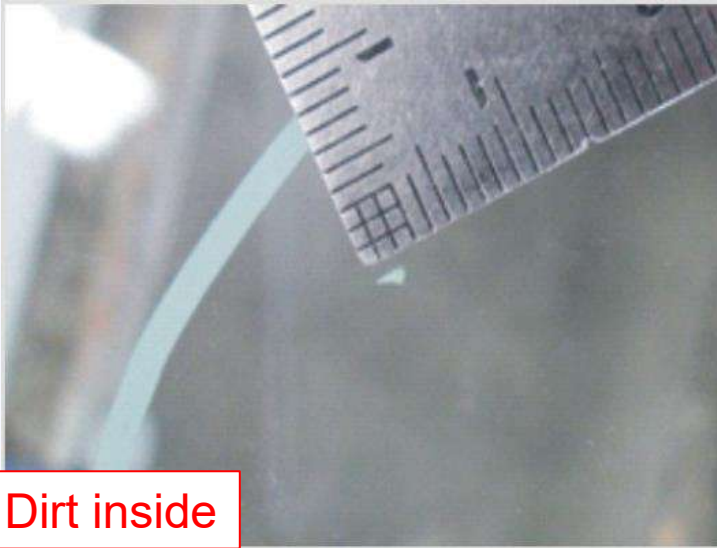
质量控制要素 (参考标准ASTM C 1048-12&JC/T1006-2006)

- Glass Washing Cleaness玻璃清洗清洁度
- Moisture content of PVB, PVB含水率
- Relative humidity of atomsphere in clean room合片室相对湿度
- Air temperature in clean room合片室温度
- Mismatch叠差
- Apparent defects外观瑕疵
 - Linear blemishes线性缺陷

2.6 Reject of Lamination



Bubbles



Dirt inside



Delamination

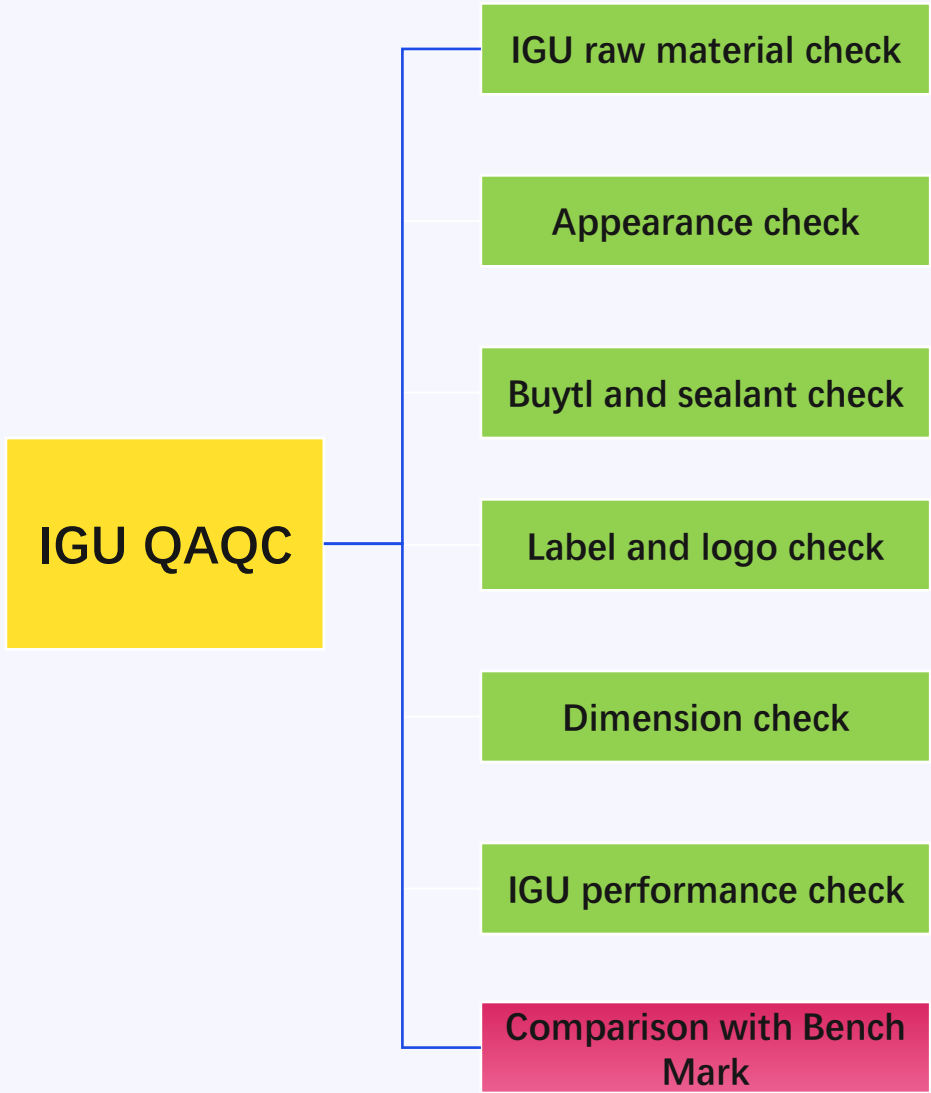


PVB shrink



Offset beyond the spec

2.7 IGU Quality Control



Flatness check



Dimension check



Glass thickness check

2.7 IGU Quality Control

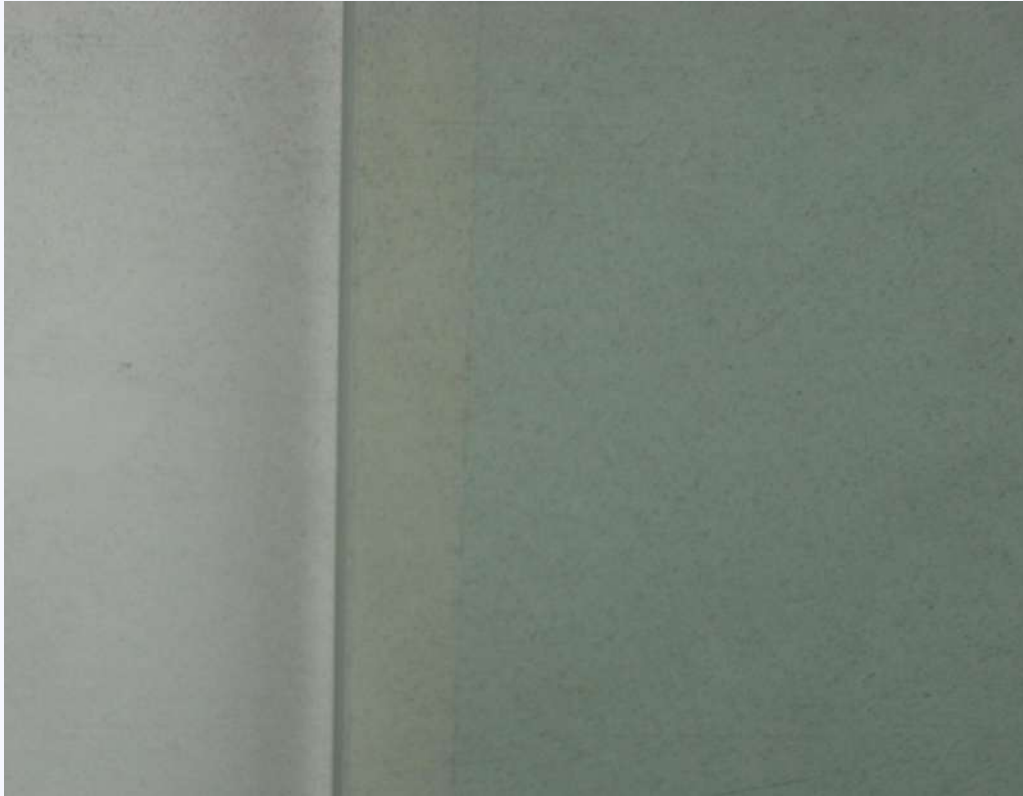


Quality Control Items 质量控制要素

(Reference Standard GB11944-2012, ASTM E 2649-09, ASTM E 2190, ASTM E 2189)

- Appearance quality外观质量
 - Pinhole /scratch针孔\划伤
 - Stain in cavity 腔内污点
 - Thickness tolerance 厚度公差
 - Dimensional tolerance尺寸公差
 - Mismatch叠差
 - Butyl丁基胶
 - Glass washing cleanliness玻璃清洗度

2.7 IGU Quality Control



Check Low-E edge deletion

检查玻璃边部去膜质量



Measuring width of primary sealant (Butyl)

测量丁基胶宽度

During Production

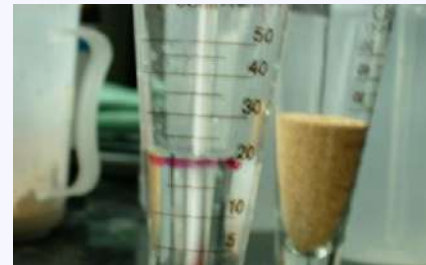


Snap test and Butterfly Test for silicone sealant



Desiccant temperature rise test
 $\Delta T > 30^{\circ}\text{C}$

Dew Point Test

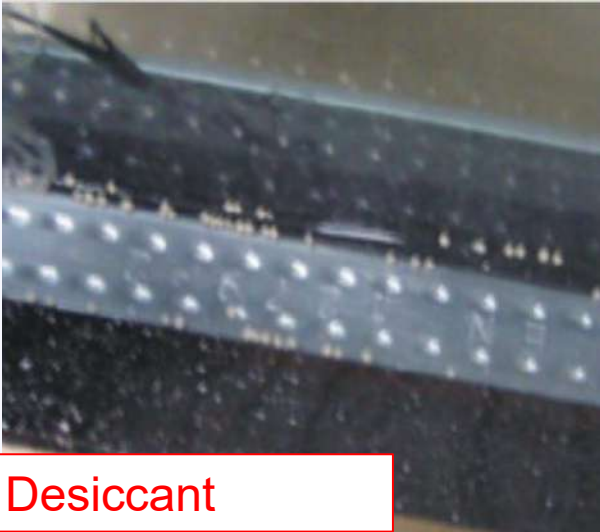


2.7 IGU Quality Control

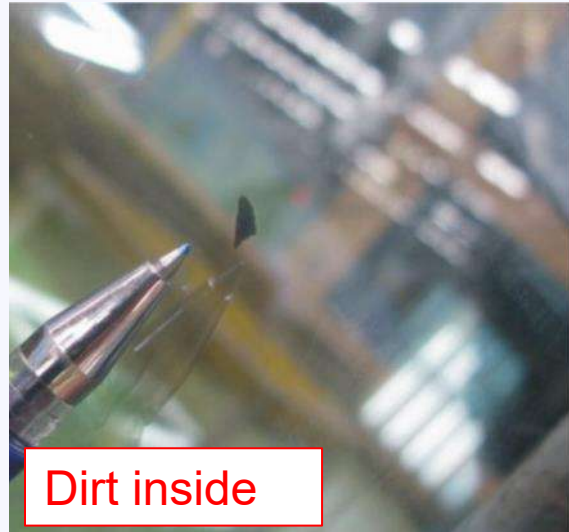
Comparison with Bench Mark



2.7 Reject of IGU



Desiccant
Leakage



Dirt inside



poor overlap of low-
e and butyl



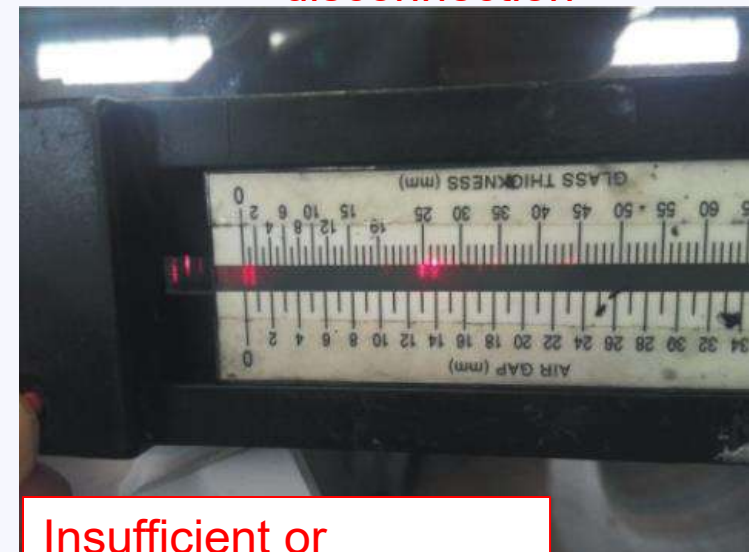
Butyl
disconnection



Poor Low-E edge deletion



Poor joint of
spacer



Insufficient or
excessive air content

2.8 Packing



- All the information on the **production flow card**, **sticker** or **Product Certificate** are correct and consistent, including Product Name, Glass type, Schedule Number, Dimensions, Customer Name and Quantity.
- Visual check the appearance of finished products.



Traceable Mark



Every panel shall bear the Identification sticker as shown below:



Shanghai Yaohua Pilkington Glass Co., Ltd

Project name:

Glass Type:

Size:

Notes (Drawing No.)

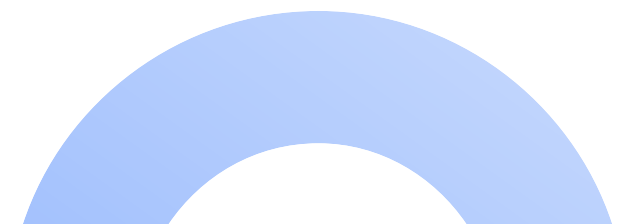
Every package shall bear the Product Certificate as shown below:

合格证 CERTIFICATE OF COMPLIANCE	
产品名称 PRODUCTS:	
产品标准 STANDARD:	
产品类型 GLASS TYPE:	
计划号: SCHEDULE NO:	规格 数量 备注 SIZE QUANTITY REMARK
客户名称: CUSTOMER NAME:	
箱号: CASE NO:	
流转卡号: TRACKING CARD NO.:	
生产班组/日期 SHIFT/DATE:	
检验员/日期 INSPECTORS/DATE:	
装箱员/日期 PACKER/DATE:	
合计(TOTAL):	
制造商: 天津耀华工程玻璃有限公司 (E0009958) TIANJIN SYP ENGINEERING GLASS CO., LTD. 地址: 天津市北辰区科技园华泰道1号 ADDRESS: NO. 1HUATAI ROAD, HI-TECH INDUSTRIAL PARK BEICHEN TIANJIN 邮编(POST CODE): 300400 电话(TEL): 86-22-86880262 传真(FAX): 86-22-86880219	
轻拿轻放, 小心破碎 向上 防潮 防潮 FRAGILE UP DAMP PROTECTED	

This side is outdoor side



5. Project Reference





**PLEASE TELL US
YOUR DEMAND!**



6. Q&A

