NHG®

南興玻璃公司集團

NAM HENG GLASS GROUP

www.namhengglassgroup.com

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ABOUT US 關於我們

1996

基於馬來西亞各地區的快速發展之下，**南興玻璃集團**為應對市場需求劇烈變化，于2017年第二季**南興玻璃集團**主席陳俐蓀決定再投資數千萬馬幣在森美蘭州新那旺設立新廠房，新廠房面積約 18，130 平方米，同時也引進全新高科技玻璃加工設備，這包含一架雙式雙對流鋼化玻璃爐，同比舊試鋼化爐的生產量增加多50%生產量，此機也是馬來西亞目前最大架的鋼化爐，直徑高12米，寬位3米。與其同時也引入全自動雙邊拋光磨邊機，這大大提高產能也同時確保玻璃的品質要求。

南興玻璃集團不止如此，也把最大型最先進的夾層生產線帶進了馬來西亞，最大尺寸達8米高，3米寬的夾層玻璃，能讓廣大的顧客群不需引進外來支援就能把手上的項目做完。此生產線預期在 2018 年 8 月全面投入生產。

除此之外，2018**南興玻璃集團**位於在沙巴建立的新廠房也竣工，新廠除了供應玻璃原片之外，也添購了玻璃鋼化爐和玻璃夾層生產線，以便滿足東馬的顧客的需求。

南興玻璃集團目前在全馬供擁有4間批發玻璃廠，坐落於柔佛州，雪蘭莪州，檳城和沙巴州，供應著玻璃原片，鏡子和各種玻璃。各種各樣的玻璃庫存量達到數百萬方尺。

與其同時，公司也一直在擴充玻璃加工業市場，從去年原本的兩間廠房，增加到四間，已有7條鋼化玻璃生產線，5條夾膠玻璃生產線，兩條中空玻璃生產線和各類玻璃加工產品生產線，能供應全馬各種大行玻璃工程項目。

南興玻璃集團勇於自我突破，開創新天地，從批發玻璃到玻璃加工業，都勇於突破，希望把最先進，最高品質的玻璃帶入本地市場，提高本地玻璃市場的水平。

In line with the rapid market expansion, Mr. Tan Lai Huan, the chairman of **Nam Heng Glass Group** has invested a new plant in Senawang in 2017 on top of various branches within Malaysia. The investment is approximately to cost about RM50 millions with land area about 18,130 square meters.The plant is equipped with new innovative high-tech glass processing machineries. This includes a double chamber with convection tempering furnace, which can produce 50% more than the production volume of the old tempering furnace. This machine is also currently the largest frame tempering furnace in Malaysia, measuring 12 meters high and 3 meters wide. At the same time, it also introduced a fully automatic double-edge polishing machine, which greatly increased the production capacity while also ensuring the quality requirements of the glass.

In addition, **Nam Heng Glass Group** also brought in the largest and most advanced laminated processing line into Malaysia. It can process the biggest size of 8 meters high and 3 meters wide laminated glass. This production line is expected to be fully operational by August 2018.

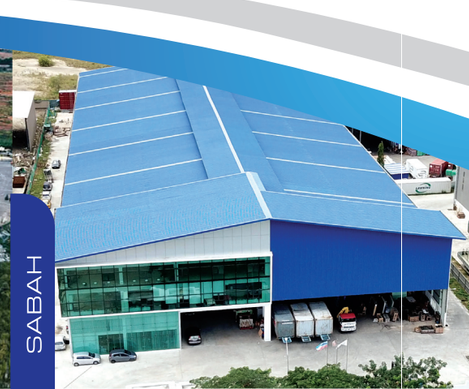
In year 2018 **Nam Heng Glass Group** also completed the construction of its new plant in Sabah. Besides supplying float glass, the new plant also expanded into processed glass by investing in processing line in order to cater to market needs in East Malaysia.

2001

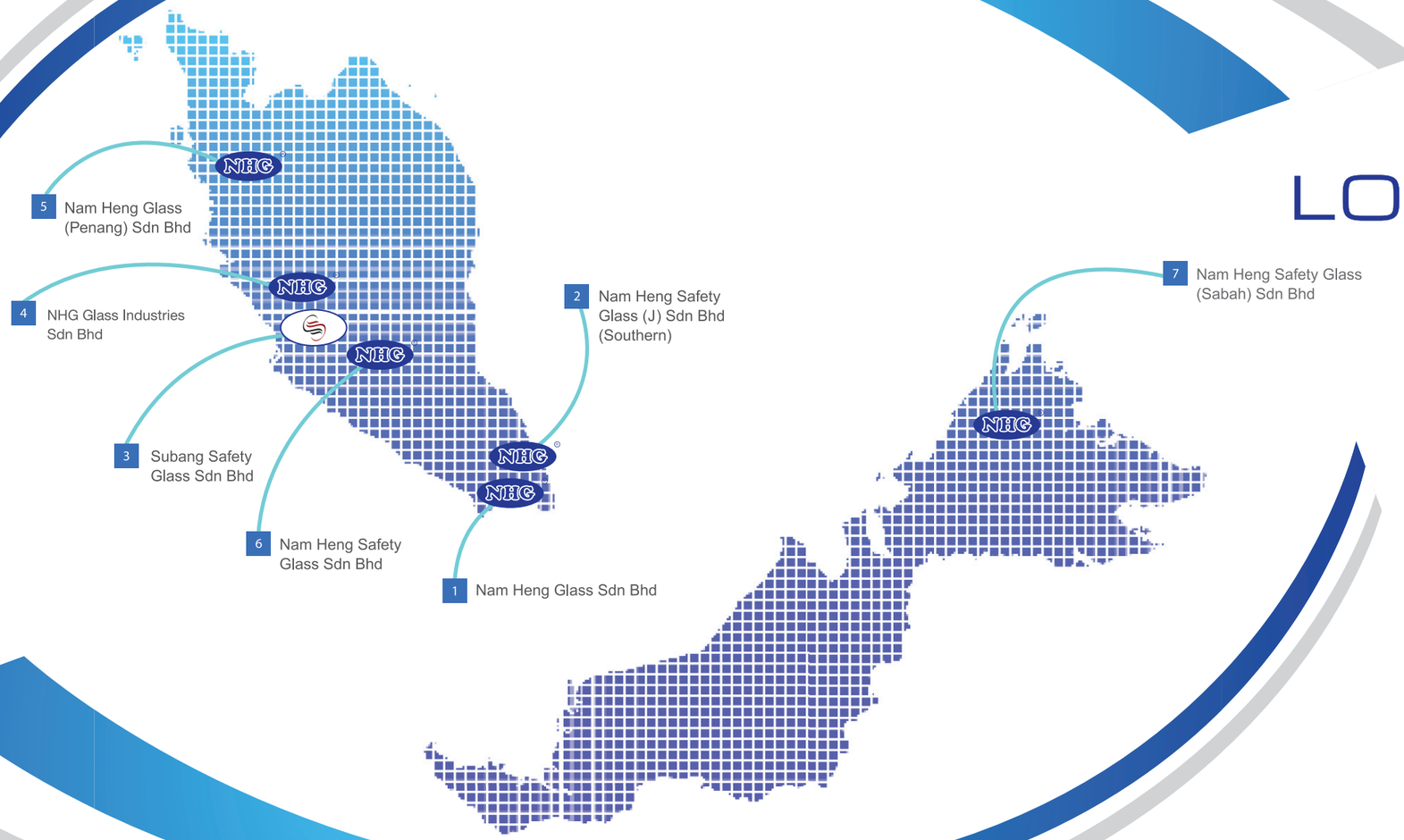
Nam Heng Glass Group currently has four wholesale glass factories in Malaysia. It is located in Johor, Selangor, Penang and Sabah. It supplies raw glass, mirrors and all kinds of glasses. The glass inventory comprises a varity of glasses, totalling millions of square feet.

At the same time, the company has also been expanding the glass processing facilities, from the original two factory buildings last year, to four. Now **Nam Heng Glass Group** has seven tempered glass production lines, five laminated glass production lines, two insulated glass production lines and various types of glass processing production line which can supply to all kinds of glass projects in Malaysia.

Nam Heng Glass Group continue to break through and create a new glass world, from the wholesale glass to the glass processing industry, inspiring to bring the most advanced and highest quality glass to the local market and to improve the local glass market level.



LOCATIONS



1 Johor | Warehouse

NAM HENG GLASS SDN.BHD. (557814-P)

Lot 2476 (Lorong 8), Jalan Kempas Lama, 28KM kg,
See Loong Jaya, 81300 Skudai, Johor Bahru, Johor.

Telephone No : 07 - 599 3116 (Hunting line)
Facsimile No : 07 - 598 6168
Email : namheng@namheng.my

2 Johor | Processing Factory

NAM HENG SAFETY GLASS (J) SDN.BHD. (1074092-M)

PTD 93890, Jalan Seelong, 81400 Senai, Johor.

Telephone No : 07 - 599 5101
Facsimile No : 07 - 599 6246
Email : j_inquiry@namheng.my

3 Selangor | Processing Factory

SUBANG SAFETY GLASS SDN.BHD. (954358-M)

Lot 10244, Jalan Subang 6, Taman Perindustrian Subang,
47600 Subang Jaya, Selangor Daruk Ehsan, Malaysia.

Telephone No : 03 - 8081 8161 / 8162
Facsimile No : 03 - 8081 5098
Email : enquiry@subangsafety.com.my

7 Sabah | Processing Factory

NAM HENG SAFETY GLASS (SABAH) SDN.BHD. (811547-U)

Lot 53, Lorong 1H, KKIP Selantan Eoiz, Phase 2,
Kota Kinabalu Industrial Park, 88450 Kota Kinabalu, Sabah.

Telephone No : 088 - 415 627 / 628
Facsimile No : 088 - 415 629
Email : sabahnhg@namheng.my

6 Seremban | Processing Factory (Headquarter)

NAM HENG SAFETY GLASS SDN.BHD. (612347-X)

Lot 32482, Jalan TJ 2/7, Kawasan Perindustrian Tunku Jaafar,
71450 Sungai Gadut, Seremban D.K Malaysia.

Telephone No : 06 - 675 0618/ 619, 06 -671 7331
Facsimile : 06 - 675 0788
Email : namheng@gmail.com

5 Penang | Warehouse

NAM HENG GLASS (PENANG) SDN.BHD. (111550-M)

No.869, Jalan Kebun Baru, Kawasan Industri Ringan Juru,
14100 Simpang Ampat, Pulau Pinang.

Telephone No : 04 - 588 5587
Facsimile No : 04 - 588 9088
Email : nhgpenang@gmail.com

4 Selangor | Marketing Headquarter & Warehouse

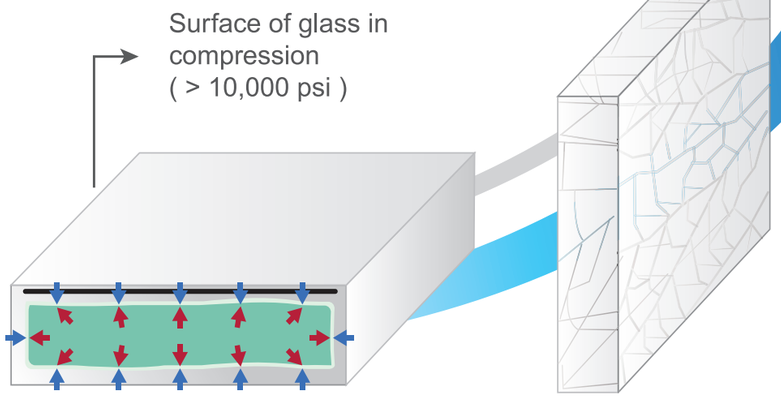
NHG GLASS INDUSTRIES SDN. BHD. (1291407-K)

Lot 890, Jalan Subang 9, Taman Industri Sg, Penaga,
47620 Subang Jaya, Selangor.

Telephone No : 03 - 8024 6188 (Hunting Line)
Facsimile No : 03 - 8024 6788
Email : namheng@gmail.com

PRODUCT 01

TEMPERED GLASS



NAM HENG (NHG) TEMPERED GLASS is made by heating flat glass to just below its softening temperature and suddenly chilling it with jets of cold air, resulted the outer skins under powerful compressive stress and the interior with severe tensile stress. Inconsequence, the impact applied to the glass will be overcome by the compressional stress on the surfaces to assure safety of use. We are able to supply tempered glass from 4mm to 19mm on normal clear glass, tinted glass and Super Low-E with the size of up to 3m x 12m.

A latest technology of Tamglass-RC350 tempering line (Vortex Plus-latest tempering technology for excellent quality) and a full force convection line is able to produce all kinds of safety glass that requires heat treatment for building application with excellent quality.

APPLICATION

- Suitable where safety glazing required by building codes or Design specifications
- Fire knock-out panels
- All glass entrances and storefronts
- Extreme wind loads
- Fireplace enclosures

PRODUCT APPLICATION

- Curtain Walls
- Balustrades
- Shop Fronts
- Windows
- Flameless Glass Doors
- Greenhouses
- Showcases
- Escalator Side Panels

CHARACTERISTICS

What

A type of safety glass created with controlled chemical or thermal treatments to increase its strength when compared to annealed or “normal” glass.

Why

Nam Heng (NHG) Tempered glass is four to five times stronger than annealed glass which makes it desirable in transportation, architectural and a variety of other applications. In addition, its balanced internal stresses enable the glass, when broken, to crumble into small, harmless “chunks” instead of splintering into sharp, jagged shards.

How

Flat glass is heated to ±690 degrees Celsius and then cooled rapidly, or “quenched,” with concentrated air currents, manipulating temperature and pressure (at times greater than 10,000 psi) to achieve the desired properties. The cooling differential created between the surface and central layers of the glass creates surface compression and internal stresses which underlay the enhanced strength.

NOTES

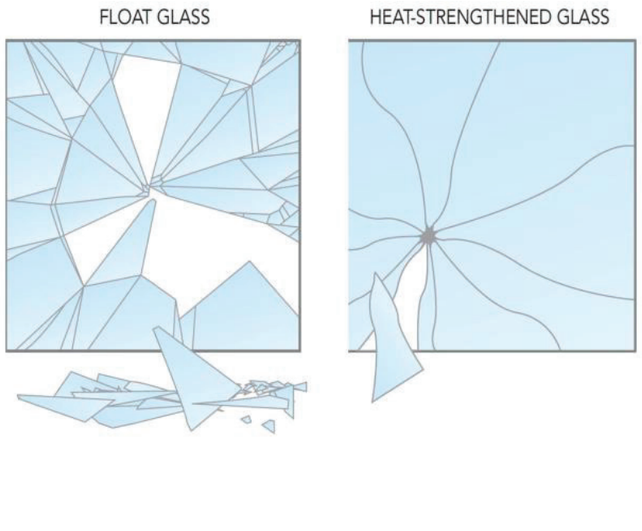
As Tempered Glass is well balanced in tension and compression stress, it cannot be cut, sanded or bent. All dimensions and specifications must be determined precisely before the tempering process.

Tempered Glass is not cracked or weakened if it is slightly damaged, but may be broken if deep scratches are made with a hard material. In such a case, the glass may not break immediately, but will only break after several times of usage.

The center of the glass creates surface compression and internal stresses which underlay the enhanced strength.

PRODUCT 02

HEAT STRENGTHENED GLASS



NAM HENG (NHG) HEAT-STRENGTHENED GLASS

Proper heat Strengthened Glass will not have spontaneous breakages by nickel sulfide inclusion. It is the product of choice, with the exception of instances where tempered glass or laminated glass is required by law, wind load, local or national building codes.

CHARACTERISTICS

- Approximately twice the mechanical and thermal strength of annealed glass of equal thickness.
- Greater resistance to thermal loads than annealed glass.
- Heat-strengthened glass is not a safety glass product.

APPLICATIONS

- Suitable for use in spandrel and/or vision areas where added resistance to wind load and thermal stress is required.
- Laminated solariums
- High wind load areas
- Laminated skylights

NHG HEAT TREATED GLASS

SPECIFICATION	PRODUCTION SIZE (WxH mm)		PRODUCTION THICKNESS (mm)	
Type of Process:	Minimum:	Maximum:	Minimum:	Maximum:
NHG Tempered Glass	300 x 300	3000 x 12000	4	19
NHG Heat Strengthened Glass	300 x 300	3000 x 6000	4	10

AVAILABILITY

- Clear, Ultra-Clear and various tinted glass.
- Other glass thicknesses may be available on request

PRODUCT APPLICATIONS

- Windows
- Shop Fronts
- Curtain Walls
- Balustrades

NOTES

Heat Strengthened Glass cannot be cut, sanded, drilled, bent or edged after heat treated. All dimensions and specifications must be determined precisely earlier.

PRODUCT 03
HEAT SOAKED GLASS

NAM HENG (NHG) TEMPERED GLASS may break without warning due to the expansion of nickel sulfide inclusions (NiS) present within float glass. When glass is heat treated, these nickel sulphide inclusions undergo a phase change as a function of time and temperature. If located near the central tension core of the glass, the expansion of these inclusions may provide sufficient stresses to produce spontaneous breakage. The inclusion expands at a rate greater than the glass and literally causes the glass to break from within. When tempered glass is heat soak tested, the glass is placed in an oven and subjected to temperatures of 550°F±50°F(290°C±10°C).

NAM HENG (NHG) TEMPERED GLASS is 3 – 5 times stronger than annealed glass and is very safe. However, after installation, tempered glass may shatter spontaneously for no apparent reason, sometimes even after being used for many years. These rare incidences of breakage cause damage to cars and people. To reduce the frequency of such instances, tempered glass should specify the heat soak test during design.

APPLICATION

- All tempered glass should undergo heat soak test
- Windows
- Shop fronts
- Frameless tempered glass doors
- Showcase
- Balustrades
- Curtain Walls
- Escalator side plates
- Elevators panels

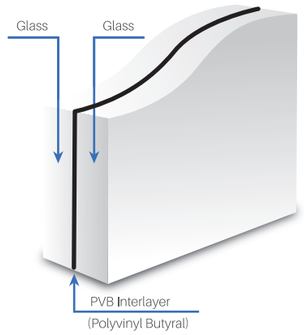
BENEFITS

- Computerized control system, guaranteed quality.
- Reduces risks of spontaneous breakage of tempered glass.
- Increases strength and safety

NHG LAMINATED GLASS

PRODUCTION SIZE (WxH mm)		PRODUCTION THICKNESS (mm)	
Minimum:	Maximum:	Minimum:	Maximum:
300 x 300	3000 x 8000	6	80

PRODUCT 04
LAMINATED, SAFETY & SECURITY GLASS



LAMINATED GLASS has almost the same strength as ordinary annealed glass of the same thickness. Laminated Glass is a safety glazing material made by bonding layers of glass, using heat and pressure, with one or more interlayers of tough polyvinyl butyral film (PVB / SGP Interlayer / DG41- Structural PVB or etc). The glass sheets may be of the same or different thickness.

APPLICATION

- Skylights
- Balustrades
- Greenhouse
- Windows
- Slope Glazing
- Anti thief show cases
- Large aquarium
- Curtain Walls

FEATURES

Safety

Laminated Glass can withstand high impact. The PVB interlayer absorbs the energy of the impact, resisting penetration, and although glass may break, glass fragments remain firmly bonded to the PVB interlayer, minimizing the risk of injuries.

Variety

Laminated Glass can be made with sheets of an annealed, heat strengthened, tempered, reflective or Low E Glass, depending on design needs.

Security

Laminated Glass offers high resistance against penetration from objects. When broken, the PVB interlayer continues to safeguard the building until the glass is replaced.

Sound Reduction

Laminated Glass has proved to be an excellent barrier to notice, having a higher sound reduction index than monolithic glass of equal thickness.

UV Control

The major cause of fading and deterioration of furnishing and artworks is caused by UV radiation. Laminated Glass can screen out almost 99% of damaging rays, due to the UV absorbing addictive in the PVB interlayer.

PVB THICKNESS

0.38mm (15mil)
0.70mm (30mil)
1.14 mm (45mil)
1.52mm (60mil)

PRODUCT 04
LAMINATED, SAFETY & SECURITY GLASS

When safety and security are a must, a wide array of performance glass products can meet your needs. Laminated – From windows and curtain walls, to aquariums and display cases, laminated glass is the perfect safety solution. Two or more panes of glass are bonded together by a durable plastic interlayer, which enables the glass to strongly resist penetration by impacting objects. However, if it should break the glass will tend to remain in its frame, minimizing the risk of injury from sharp edges and flying or filling glass particles. Because of its strength and safety features, laminated glass is preferred when any of the following are required:

- A laminated glass is an assembly comprising at least two panes of glass, bonded together across their entire surface by an interlayer. For laminated safety glass, the most widely used interlayer is a plastic PVB (polyvinyl butyral) film.
- In the event of breakage, the bond between the glass and the interlayer ensures that the broken pieces remain in place (at least for a certain period or up to a specified load level).
- Laminated glass with PVB has its own system to denote composition. This takes the form of two (or more) figures indicating the thickness of the different panes of glass in mm, followed by a further figure separated from the rest by a dot giving the number (rather than the thickness) of the PVB films between each pane of glass.
- Thermally toughened or heat-strengthened glasses are used to manufacture laminated glass. In specific applications requiring a high level of compressive, a laminated glass made up of thermally toughened and heat-strengthened glass is sometimes used; the former provides mechanical strength while the latter gives adequate residual stability if the glass breaks until it is replaced.
- Heat-strengthened laminated glass is sometimes used when a higher level of bending resistance is required than that offered by float glass or to prevent the risk of breakage due to thermal shock.
- Protection against forced entry
- Glass floors or stairs
- Protection from fallout of broken glass form building facades
- Earthquake resistance
- Protection from “smash and grab” thefts from storefront window displays

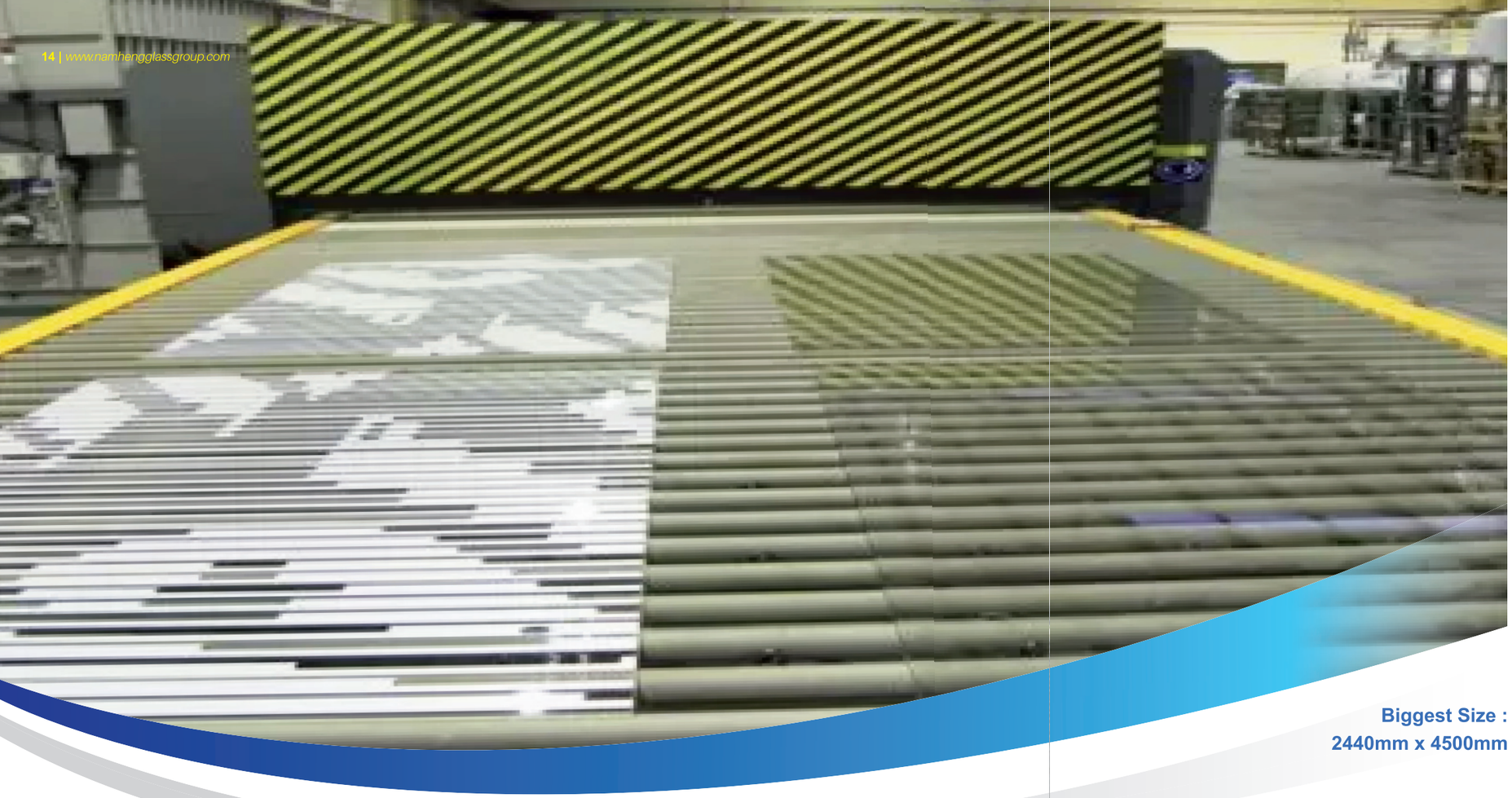
AUTO-CLAVE LINE

Equipment enables laminated glass to use all types of PVB, EVA and ionomer interlayers such as SentryGlas®.

It is specifically designed for cut to size/miscellaneous production and to laminate tempered/toughened glass.

Glass is loaded horizontally in to the kiln by means of specific trays, which are equipped with silicone blankets to enable vacuum process.

Trays are loaded into and unloaded from the kiln by using specific racks.



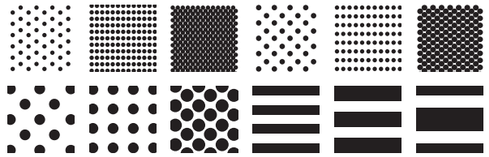
Biggest Size :
2440mm x 4500mm

PRODUCT 05
MACHINERY OF PROCESSING PLANT
CERAMIC FRIT GLASS

SILK-SCREENED CERAMIC FRIT GLASS for architecture and commercial use. The process involves screen printing ceramic frit paint onto the glass and fusing it onto the surface during the toughening or heat strengthening process. The result is a tough decorative glass. Full Ceramic frit is a roller coated glass with a solid colour. Design Ceramic frit is screen printed glass with a pattern or design.

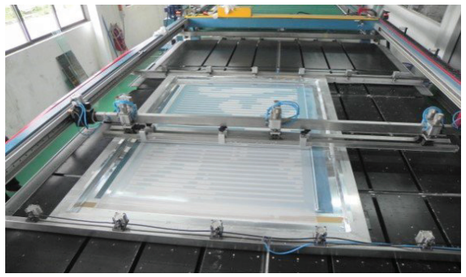
This decorative process allows the designer flexibility in selecting cladding materials where colour and pattern design are important for visual impact. It also offers creative solutions for controlling solar heat gain and glare and providing privacy.

NAM HENG (NHG) CERAMIC COATED GLASS is produced by applying ceramic paint on the glass surface and by melting the colorant into glass surface in a tempering furnace. A wide range of designs and colours are available to suit customers need. It can be used Heat Treated Glass, laminated or double glazed.



APPLICATION

- Facade
- Auto Glass
- Stepping Glass
- Furniture or art glass
- Graphics Glass For Interior Partition



FEATURES

Scratch Resistant

After heat treated process by tempering furnace, the coating is fused to the glass and cannot be scratched off.

Fade Resistant

The colour of the coating is highly durable and will not fade even in harsh climates.

Wide Range Of Colours & Patterns

A wide range of standard colours & patterns are available. Custom colour is available upon special request.

Light Weighted Building Materials

Ceramic coated glass serves as substitute for stone, tile, metal plate and reduce structural load on the external wall and glazing is also easy.

Reduce Solar Transmission

Ceramic coated glass can also be designed to reduce solar transmission.

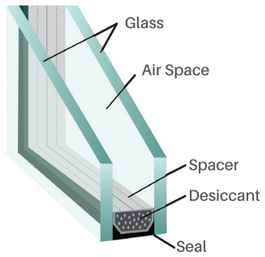
Energy Saving

Ceramic coated glass can reduce air conditioning cost by insulating solar heat.

Biggest Size : 2700mm x 5000mm
Max thickness: 60mm

PRODUCT 06

INSULATING GLASS UNIT



Insulating glass unit is made of two or more layer glass panels, bonded with spacer bar filled with desiccant and sealed with butyl sealant and secondary sealant to create insulated space.

With combining Low E coatings, standard and high performance tinted glass, solar control glass, silk screen ceramic glass, laminated glass and more, a wide variety of insulating glass unit makeups are available to satisfy a wide range of performance and aesthetic requirements.

Insulating glass unit's lite can be annealed, Heat Strengthened, Tempered or Laminated.

NAM HENG (NHG) INSULATING GLASS

Our IG machine line is able to produce or assembly of double and triple (as an option) insulating glass unit with the height up to 2.5 m and total length of 5000 mm on all kind of flat glass.(Common Clear, Tinted, Wired, Laminated, Tempered and Super Low-E glass).

CHARACTERISTICS

- Saves on heating and cooling by reducing air – to – air heat transfer.
- Increases personal comfort and aids in energy conservation.
- Reduces sound transmission.
- Increases strength to withstand wind loads.

APPLICATION

- Suitable for commercial and residential glazing. In dual-seal insulating glass units the primary seal is polyisobutylene (butyl). The secondary seal is polysulfide or silicone.
- For all structural glazing applications a secondary seal of silicone must be specified.

PUTRAJAYA 2C5

GLASS TYPE

~ 13.52mm NHG Tempered Heat Soaked Laminated C/W 50% Soverage Opaque White Ceramic Frit in Songket Design Pattern On Surface #2 consists of:
(6mm NHG Clear Tempered Heat Soaked C/W 50% Coverage Opaque White Ceramic Frit Songket Design Pattern On Surface #2 + 1.52mm Clear PVB + 6mm NHG Clear Tempered Heat Soaked Glass)

Quantity (m2)

24000.00

OUR ACHIEVEMENTS

THE COLONY CONDOMINIUN KL

GLASS TYPE

~ 6mm NHG Blue Tinted Glass + 0.38mm Clear PVB + 6mm NHG Clear Annealed Glass

~ 10mm NHG Clear Tempered Glass

PROJECT

CLUSTER C TRX KL

GLASS TYPE

Glass Type:

~ 5mm NHG Grey Coating#2 Glass + 0.38mm Clear PVB + 5mm NHG PG Clear Low-E#4

~ 6mm NHG Grey Coating#2 Tempered Heat Soaked Glass

~ 5mm NHG Grey Coating#2 Glass + 0.38mm Clear PVB + 5mm NHG Clear Annealed Glass

PROJECT

SKY AVENUE GENTING

GLASS TYPE

- 10mm NHG Clear Tempered Glass
- 12mm NHG Clear Tempered Glass
- 17.52mm NHG Clear Tempered Laminated Glass (Glass Railing)
- 15mm NHG Clear Tempered Glass

M101 BUKIT BINTANG

GLASS TYPE

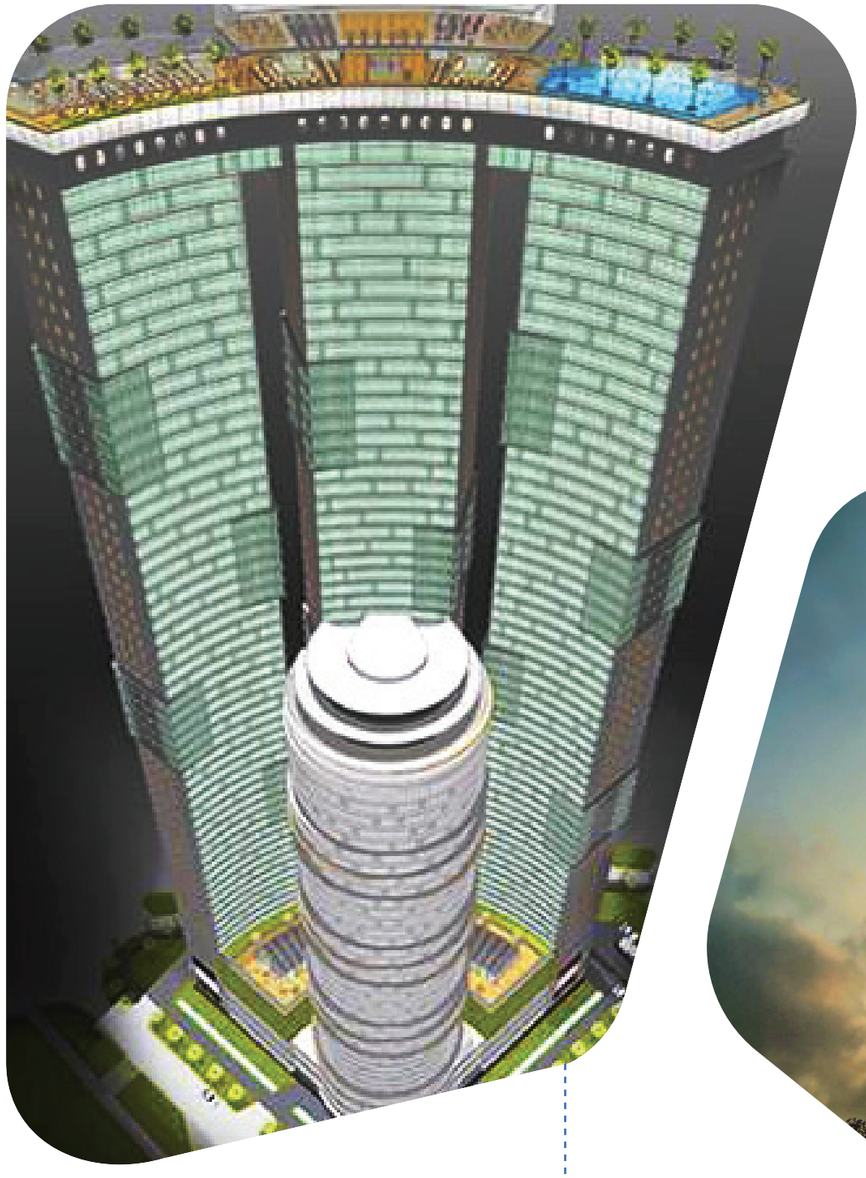
~ 12.76mm NHG Grey Laminated Glass consists of: (6mm NHG Grey Tinted Glass + 0.76mm Clear PVB + 6mm NHG Clear Annealed Glass)
~ 10.38mm NHG Grey Laminated Glass consists of: (5mm NHG Grey Tinted Glass + 0.38mm Clear PVB + 5mm NHG Clear Annealed Glass)

PUTERI COVE

GLASS TYPE

~ 9.38mm NHG Green Laminated Glass consists of: (5mm NHG Green Annealed Glass + 0.38mm Clear PVB + 4mm NHG Clear Annealed Glass)
~ 10.38mm NHG Clear with Grey PVB Laminated Glass consists of: (5mm NHG Clear Annealed Glass + 0.38mm Grey PVB + 5mm NHG Clear Annealed Glass)
~ 15mm Clear NHG Tempered Heat Soaked Glass
~ 12mm NHG Clear Tempered Heat Soaked Glass
~ 8mm NHG Green Tinted Glass

PROJECT



SKY SUITE HOTEL, KLCC MALAYSIA

GLASS TYPE

~ 6mm Grey Annealed Float + 0.76mm Acoustic PVB + 6mm Green Annealed Solar Control #3

ANJALI @ NORTH KIARA

GLASS TYPE

~ 10mm NHG Clear Tempered Glass (Shower Screen)
~ 6mm NHG Grey Tempered Glass
~ 8mm NHG Grey Tempered Glass
~ 10mm NHG Grey Tempered Glass

THE GRAND ZENITH PUTRAJAYA

GLASS TYPE

~ 8mm NHG Blue Tempered Glass
~12mm NHG Blue Tempered Glass
~10mm NHG Clear Tempered with Super White Ceramic Pattern Glass (Shower Screen)

THE RUMA HOTEL & RESIDENCES @ JALAN KIA PENG, KUALA LUMPUR

GLASS TYPE

~ 10.38mm Grey Annealed Solar Control #4 consists of : 5mm Grey Annealed Float + 0.38mm Clear PVB + 5mm Clear Annealed Solar Control #4

ION D'ELEMEN AT GENTING HIGHLANDS

GLASS TYPE

~ 8.38mm NHG Clear Low-E #4 Laminated Glass consists of: (4mm NHG Clear Annealed Glass + 0.38mm Clear PVB + 4mm NHG Clear Low-E #4 Glass)
~ 13.52mm Clear Tempered Laminated Glass consists of: (6mm NHG Clear Tempered Glass + 1.52mm Clear PVB + 6mm NHG Clear Tempered Glass)
~ 8mm NHG Clear Tempered Glass (Shower Screen)

PROJECT

PROJECT

MIDVALLEY PHASE 3

GLASS TYPE

~ 6mm Light Gold Heat Strengthened Glass + 1.52mm Clear PVB + 6 mm Clear Heat Strengthened Glass
~ 12mm Champagne Tempered Heat Soaked Glass
~ 10mm Light Green Tempered Heat Soaked Glass
~ 6mm Champagne #2 Heat Strengthened Glass + 1.52mm Clear PVB + 6mm Light Gold #4 Heat Strengthened Glass + 12mm Air Space + 6mm Clear Heat Strengthened Glass
~ 6mm Clear Heat Strengthened Glass + 1.52mm Clear PVB + 6 mm Champagne #4 Heat Strengthened Glass + 12mm Air Space + 6mm Clear SJ78-1#5 Heat Strengthened Glass
~ 6mm Champagne #2 Heat Strengthened Glass + 1.52mm Clear PVB + 6mm Clear Heat Strengthened Glass
~ 6mm NHG Clear Heat Strengthened Glass + 1.52mm Clear PVB + 6mm NHG Clear Low-E#4 Heat Strengthened Glass

TROPICANA GARDEN @ KOTA DAMANSARA

GLASS TYPE

~ 11.38mm NHG Clear Annealed Solar Control #4
~ 10mm NHG Clear Tempered Heat Soaked Glass
~ 10mm NHG Clear Tempered Heat Soaked Glass With Full Super White Ceramic Glass (Shower Screen)

PJ MIDTOWN

GLASS TYPE

~ 6mm NHG Blue Tempered Solar Control #2
~ 6mm NHG Blue Tempered Glass
~ 10mm NHG Clear Tempered Glass
~ 13.52mm NHG Clear Tempered Laminated Glass
~ 12mm NHG Blue Tempered Glass
~ 12.38mm NHG Clear Annealed Laminated Glass

SETIA SKY 88 @ JOHOR

GLASS TYPE

~ 10.38mm NHG Grey Low-E #4 Laminated Glass consists of:
(5mm Grey Annealed Glass + 0.38mm Clear PVB + 5mm Clear Low-E #4)
~ 11.38 mm NHG Clear Low-E #4 Laminated Glass consists of : (5mm Clear Annealed Float + 0.38 mm Grey PVB + 6mm NHG Clear Annealed Solar Control #4)
~ 12mm NHG Clear Tempered Heat Soaked Glass
~ 10.38mm NHG Translucent Laminated Glass consists of: (5mm NHG Clear Float Glass + 0.38mm White Translucent PVB + 5mm NHG Clear Float Glass)

MEDINI 9 @ ISKANDAR JOHOR

GLASS TYPE

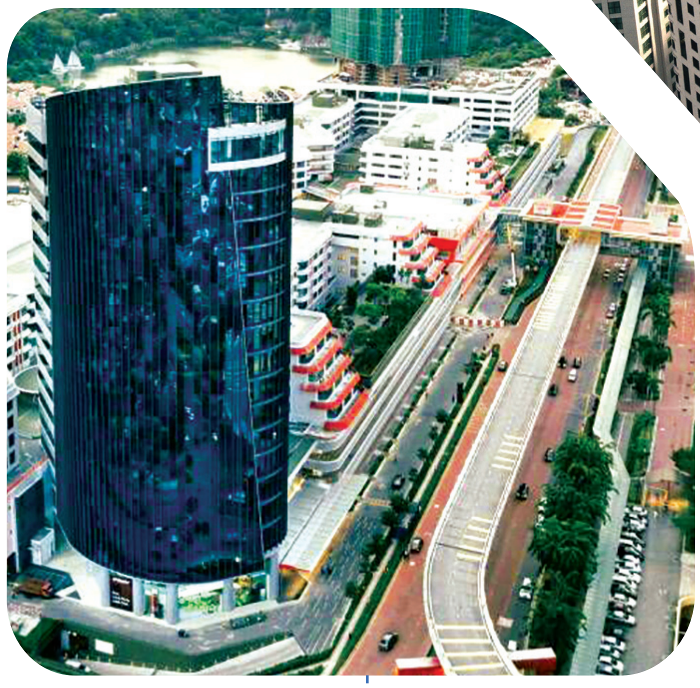
~ 11.52mm Grey Heat Strengthened Solar Control #4 Laminated consists of:
(5mm Grey Heat Strengthened Float + 1.52mm Clear PVB + 5mm Clear Heat Strengthened Solar Control #4)
~ 6mm NHG Grey Tempered Heat Soaked Glass

PROJECT

DORSETT@ BUKIT BINTANG

GLASS TYPE

~ 10.76mm NHG Grey Laminated Glass consists of: (5mm NHG Clear Annealed Glass + 0.38mm Grey PVB + 0.38mm Clear PVB)
~ 12.76mm NHG Grey Annealed Laminated With Solar Control #2 Laminated Glass consists of:
(6mm NHG Clear Annealed Solar Control #2 + 0.38mm Grey PVB + 0.38mm Clear PVB + 6mm NHG Clear Annealed Glass)
~13.52mm NHG Clear Tempered Heat Soaked Laminated Glass



SUNWAY GEO CP4

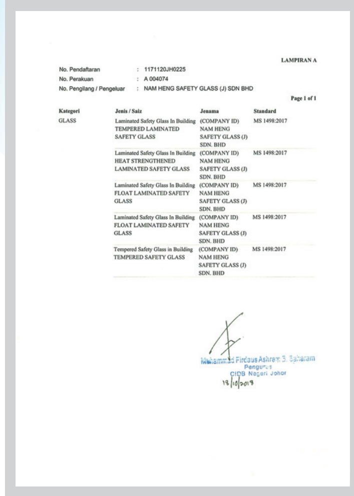
GLASS TYPE

~ 6mm NHG Dark Blue T-CS514 Reflective#2 Tempered Heat Soaked Glass
~ 12.52mm NHG Dark Blue T-CS514 Reflective#2 Heat Strengthened Laminated Glass consists of: (6mm NHG Dark Blue T-CS514 Reflective#2 Heat Strengthened Glass + 1.52mm Clear PVB + 5mm NHG Clear Heat Strengthened Glass)
~ 12mm Clear Tempered Heat Soaked Glass (Door)
~ 19mm NHG Clear Tempered Glass
~ 13.52mm NHG Clear Tempered Heat Soaked Laminated Glass consists of: (6mm NHG Clear Tempered Heat Soaked Glass + 1.52mm Clear PVB + 6mm NHG Clear Tempered Heat Soaked Glass)
~ 15mm NHG Clear Tempered Heat Soaked Glass
~ 12.52mm NHG Dark Blue & White Translucent Tempered Heat Soaked Laminated Glass consists of: (6mm NHG Dark Blue Tempered Heat Soaked Glass + 0.38mm White Translucent PVB + 1.14mm Clear PVB + 5mm NHG Clear Annealed Glass)
~ 10.38mm NHG Clear Laminated Glass consists of: (6mm NHG Clear Annealed Glass + 0.38mm Clear PVB + 4mm NHG Clear Annealed Glass)

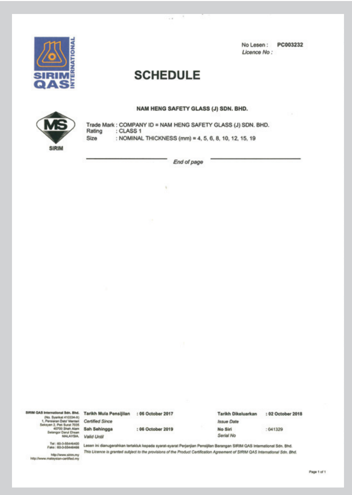
OUR QUALITY ASSURANCE


NAM HENG SAFETY GLASS SDN BHD
INDUSTRY CONFEDERATION PARTNER
MALAYSIA GREEN BUILDING CONFEDERATION


PERAKUAN PEMATUHAN STANDARD (BAHAN BINAAN)




LESEN PENSIJILAN BARANGAN
Product Certification Licence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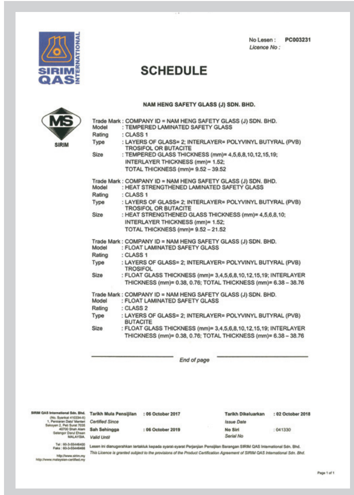
LESEN PENSIJILAN BARANGAN
Product Certification Licence


SCHEDULE


CERTIFICATE


IQNet
CERTIFICATE

PERFORMANCE DATA

Glass Item	Visible Light		Solar Energy			U - Value (W/m2k)	SC
	Trn %	Ref % (out)	Trn %	Ref % (out)	Absorp %		
6mm Clear Tempered	89	8	79	7	14	5.8	0.95
8mm Clear Tempered	88	8	75	7	18	5.7	0.93
10mm Clear Tempered	87	8	72	7	22	5.7	0.90
12mm Clear Tempered	86	8	69	6	25	5.6	0.87
6mm Bronze Tempered	50	5	50	5	44	5.8	0.73
6mm Light Green Tempered	76	6	48	5	46	5.8	0.72
10mm Light Green Tempered	66	6	34	4	60	5.7	0.62
6mm Dark Grey Tempered	15	4	31	4	65	5.8	0.58
6mm Euro Grey Tempered	43	5	44	5	51	5.8	0.68
12mm Euro Grey Tempered	20	4	21	4	75	5.6	0.51
6mm Dark Blue Tempered	58	6	44	5	51	5.8	0.68
8mm Dark Blue Tempered	49	5	36	5	60	5.7	0.61
6mm Grey Tempered Solar Control #2	24	5	19	5	76	3.7	0.39
6mm Green Tempered Solar Control #2	45	6	20	5	75	3.7	0.4
6mm Blue Tempered Solar Control #2	30	5	17	5	78	3.7	0.37
5mm Clear Tempered Heat Soaked + 1.52mm Clear PVB + 5mm Clear Tempered Heat Soaked	88	8	71	7	23	5.5	0.87
6mm Blue Annealed Float + 0.76mm Clear PVB + 6mm Clear Annealed Float	56	6	38	5	57	5.4	0.59
4mm Clear Annealed Float + 0.38mm White Translucent PVB + 4mm Clear Annealed Float	67	6	56	5	39	5.1	0.78
5mm Light Grey Tempered + 1.52mm Clear PVB + 5mm Clear Tempered with 8mm Polka Dot 50% Coverage White Ceramic Frit Printing #4	43	14	34	10	56	5.1	0.58
5mm Clear Annealed Float + 0.38mm Grey PVB + 6mm Clear Annealed Solar Control #4	26	5	21	5	5	3.6	0.38
6mm Grey Annealed Float + 0.76mm Clear PVB + 6mm Clear Annealed Hard Coated Low E #4	25	5	18	5	77	3.5	0.36
6mm Clear Tempered Heat Soaked + 1.52mm Clear PVB + 6mm Green Tempered Solar Control #4	55	7	17	5	68	3.9	0.41
6mm Blue Tempered Solar Control #2 Heat Soaked + A12 + 6mm Clear Tempered Heat Soaked	36	7	23	6	71	2.2	0.34
6mm Grey Tempered Solar Control #2 Heat Soaked + A12 with Argon Gas + 6mm Clear Tempered Heat Soaked	30	6	26	7	67	1.9	0.37
6mm Grey Tempered Solar Control #2 + A12 with Argon Gas + 6mm Clear Tempered Solar Control #3	28	7	23	7	70	1.5	0.35
(6mm Green Heat Strengthened + 1.52mm Clear PVB + 6mm Clear Soft Coated Heat Strengthened Low E#4) +A12 + 6m Clear Tempered Heat Soaked	36	17	16	10	74	1.5	0.24
(6mm Clear Heat Strengthened + 1.52mm Clear PVB + 6mm NP50 on Clear Heat Strengthend Soft Coated Low E#4) + A12 + 6mm Clear Tempered Float	48	11	21	17	62	1.53	0.32
(8mm Clear Heat Strengthened + 1.52mm Clear PVB + 8mm N60T on Clear Heat Strengthend Soft Coated Low E#4) + A12 + 8mm Clear Heat Strengthend with 8mm Polka Dot 50% Coverage White Ceramic Frit Printing #6	38	19	16	23	61	1.53	0.31

Specification, technical and other data are based on information available at the time of preparation of this document and are subject to change without notice. Nam Heng Safety Glass Sdn. Bhd. cannot be held resposible for any deviation between the data introduced and the conditions on site. This document is only informative, in no way it implies an acceptance of the order by Nam Heng Safety Glass Sdn. Bhd.

ACOUSTIC COMFORT

The table below shows the maximum acoustic pressure levels depending on the type of area or activity performed there.

Maximum levels of acoustic pressure in rooms

Area	Level of Acoustic Pressure (dB)
Bedrooms, Libraries	20 to 30
Apartments, Living Areas	20 to 40
Schools	25 to 40
Cinemas and Conference Rooms	30 to 40
Individual Offices	30 to 45
Shared Office	40 to 50
Office with People Typing, Large Shops, Restaurants	45 to 55

ACOUSTIC DATA

Glass Make Up			Acoustic Data Frequency in Hertz (Hz)																		
			100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	STC
			Sound Transmission Loss (dB)																		
6mm			23	25	25	24	28	26	29	31	33	34	34	35	34	30	27	32	37	31	31
12mm			26	30	26	30	33	33	34	36	37	35	32	32	36	40	43	46	50	51	36
Glass	PVB	Glass																			
3mm	0.38mm	3mm	27	23	27	24	27	28	29	31	33	35	35	35	33	31	32	37	41	45	33
3mm	0.76mm	3mm	25	26	28	27	29	29	30	32	34	35	35	36	36	35	35	38	43	46	35
6mm	0.76mm	3mm	27	28	26	30	31	31	32	34	35	36	36	35	35	36	40	44	48	51	36
6mm	1.52mm	3mm	27	28	27	30	31	31	33	35	36	37	37	37	36	37	41	44	48	51	37
6mm	0.38mm	6mm	25	25	27	30	32	32	34	35	35	35	32	33	35	40	43	46	49	51	36
6mm	2.29mmSGP	6mm	31	30	29	31	32	33	33	34	35	35	34	32	34	37	40	42	44	47	36
Glass	Space	Glass																			
6mm	12mm	6mm	27	24	29	22	22	25	30	33	35	38	40	42	42	37	37	43	46	49	35
6mm	18mm	6mm	27	23	28	21	27	29	34	35	37	41	43	45	44	39	39	46	49	52	38

GENERAL PROPERTIES

PHYSICAL & MECHANICAL PROPERTIES OF GLASS

Refractive Index	1.52
Reflectance (Vertical Incidence)	4% at Each Surface
Specific Heat	0.2 kcal/kg (0° - 50°C)
Softening Temperature	720° - 730°C
Thermal Conductivity	0.68 kca/mh°C
Coefficient of Linear Expansion	8.5 x 10^{-6}/°C (25-350°C)
Specific Gravity	2.5
Hardness	6.5° (Mohs' Scale) 548kg /mm² (Vickers' Scale)
Compressive Strength	6,000~12,000kg/cm²
Young's Modulus	720.000 kg/cm²
Poisson's Ratio	0.25
Average Breaking Strees	Approx 500 kg/cm²

MAIN COMPONENTS OF FLAT GLASSES

Component	Content	Remarks
SiO2	70 - 74%	Main Component
Al203	0 - 2%	Increasing Elastic Modulus & Hardness
CaO	6 - 12%	Making Glass Less Soluble In Water
MgO	0 - 4%	
Na2O	12 - 16%	Lowering Melting Point

PHYSICAL & MECHANICAL PROPERTIES OF GLASS

	*1 Winter	*2 Summer
Outdoor Temperature	-18°C (0°F)	32°C (89°F)
Room Temperature	21°C (70°F)	24°C (75°F)
Outdoor Wind Velocity	6.7 m/s (15mph)	3.3 m/s (7.5mph)
Indoor Air Velocity	0 m/s (0mph)	0 m/s (0mph)
Solar intensity	0 Kcal/m²hr	672 Kcal/m²hr

Shading Coefficient (SC) is the ratio of heat gain through a glass to the heat gain through 3mm clear sheet glass under the same set of condition. The SC of 3mm clear glass is equivalent to 1.0. A lower SC indicates better solar control glass performance.

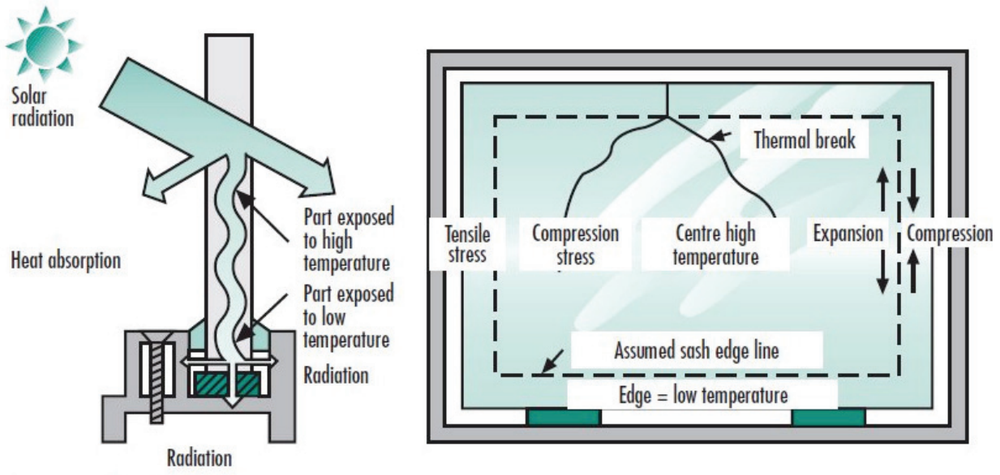
U-Value is the heat gain or loss conducted throught the glass due to the temperature difference between the indoor and the outdoor environment. A lower U-Value indicates a better glass insulation.

Visible Light (VL) - The visible radiation wavelength falls between the range of 380 to 780 nanometer (nm)

Reflection (REF) - the values in the column "Out" indicates reflection towards outdoor, and column "in" for the reflection indoor.

PROJECT

BBCC
(Bukit Bintang City Center)



THERMAL STRESS BREAKAGES

When window glass, particularly heat absorbing glass, is exposed to sunshine, the glass absorbs solar energy. The glass area warms rapidly and expands, reaching a very high temperature. In the other hand, such solar energy does not directly reach the glass edge which is shaded and covered by sash. In due course, the edge of the glass receives less heat than the sunlit area.

As a result, the thermal expansion of the sunlit area is suppressed at the glass edge and creates tensile stress which is produced by thermal differential developes at the edge. When this tensile stress surpasses the strength of the glass edge, the thermal crack may occur. This type of cracking is referred to as Thermal Crack.

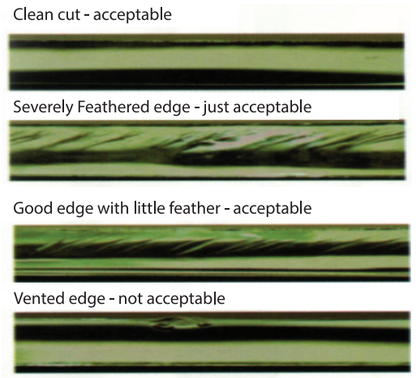
Glass Type

Different glass products have a different tolerance to thermal stress. Generally, the more solar energy a glass product absorbs, the higher the risk of the thermal stress breakage.

Edge Condition

The breaking stress of glass is directly related to the position and size of any flaws in the edges. Good clean cut edges are considered the strongest edge for the monolithic glass. With laminated glass good edges can be difficult to achieve, therefore flat ground edges are recommended on all high performance laminated products.

Glass Edge Condition



Glass Size

The larger a pane of glass, the greater the area of glass that is absorbing the sun's energy, compared to its relatively narrow cooler edges. The larger area of hot glass results in higher levels of thermal stress in the edges of the glass.

Iinternal cooling / Heating Sources

Direct air streams from air conditioners, heaters, computers etc. onto the glass surface may increase the risk of thermal breakages.

Glazing Meterial

Dark colour materials will promote fewer edge temperature differences than light coloured frames. Concrete and wood have a higher thermal breakage factor than metal or plastic frames.

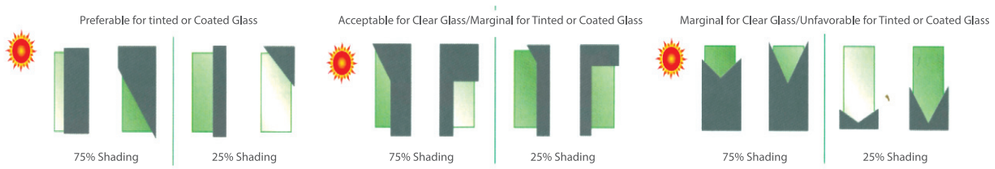
Interior Shading

A thermal stress risk factor that is encountered more often in residential construction than commercial, is the use of curtains and blinds on the inside of a window. The impact that blinds and curtains have on thermal stress depends on the colour, type and other factors, however the effect can be significant.

To minimise this, the space between the glass and shade must be at least 50mm (preferably 150mm) and should be vented. Ventilation is provided by leaving a gap between the blinds and the walls, or frame, of 50mm at the head and 38mm at the sill. The effect that blinds and curtains have on thermal stress is also dependent upon how much energy they reflect back onto the glass. Light colours are good reflectors while dark colours are not. Closed weave fabric helps trap heat more effectively while open weave lets the heat pass through. Venetian blinds are excellent heat reflectors as are metallised blinds.

Exterior Shading

External shading devices, building overhangs and mullions or column depth which may cast unfavourable shadows will increase the possibility of breakages.
Vary outdoor shading patterns will have different effects on glass products for example, under marginal shading conditions, uncoated tinted glass would require heat strengthened or tempered (refer to the following illustrations).



Managing the Risk of Thermal Stress

The risk of thermal stress breakage can be eliminated by managing the factors outlined above or by heat-strengthening the glass. Heat strengthening increases the strength of the glass, which allows it to resist the thermally induced stress.
Heat strengthening can be relatively expensive, particularly if required for laminated glass, so unless replacing glass which has been broken under thermal stress, a method of quantifying the risk level is needed.

Many glass manufacturers' websites provide detailed information on thermal stress breakage. Some also provide online tools that enable you to perform a thermal stress analysis yourself, or they will perform a thermal stress analysis for you providing you purchase glass from them.

By using available information, the glass installer can objectively assess the risks prior to installation. In some cases redesign may be possible, eliminating the need for heat strengthening and therefore saving unnecessary expense.

TECHNICAL INFORMATION

RISK OF NICKEL SULFIDE PRESENCE IN GLASS

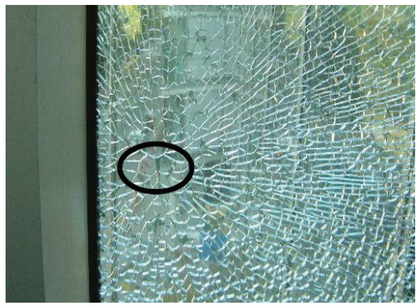
ORIGIN

Glass can contain inclusions of various natures, coming from the raw materials, cullet or from the production facilities themselves. Among these, we find the Nickel Sulfide (NiS). These inclusions have a size of about 60 µm to 500 µm. They have the distinction of having a different crystalline structure at low and high temperature so that their volume is greater at low temperature. The presence of such inclusion does not render the glass defective, and normally does not impair the appearance or technical performance of the glass.

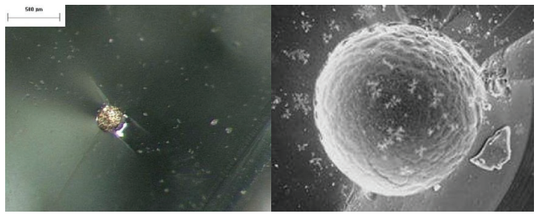
PHENOMENON

During annealing process, all particles of NiS have the time to reach their structure at low temperature (asannealed glass). The change in volume of inclusions can be absorbed by the still "soft" glass and they do notpresent a danger to the glass. But, in the case of thermally toughened glasses, NiS reaches its stable structure at high temperature at the beginning of the operation of tempering when temperature of the glass is about 650°C.The quenching process (rapid cooling) which follows does not leave time for NiS to reach its stable structure since the glass temperature rapidly reduce to room temperature (glass have solidified). Its transformation will therefore continue at the temperature of service of the glass and the related increase in volume can cause spontaneous breakage of the glass sheet.

In this case, we find a characteristic breakage in the shape of butterfly. Many articles and publications exist on the subject.
The phenomenon is inherent to thermally toughened glass, and can therefore not be considered a hidden defect of the product.



Typical brekage starting from NiS inclusion



Zoom on a NiS inclusion

These ruptures remain not very frequent, but can affect a certain number of thermally toughened glazings of a building.

PREVENTION

In order to reduce the risks of spontaneous breakage, two solutions exist.
.
1) If the thermally toughened glass is necessary for your application, we can opt to choose heat strengthened glass instead of tempered glass which can reduce the risk of spontaneous breakage. However, please mind
that heat strengthened glass has also possibility of spontaneous breakage.

2) If the tempered glass is necessary, a process called “heat soak" treatment should be strongly recommended.

This one consists in placing glass in a furnace at a stage of temperature, during a determined time, in order to enable and accelerate the transformation of NiS. The breakage due to the possible presence of critical particles of NiS will partially occur during this treatment. Please mind that "heat soak" treatment cannot fully eliminate the risk of spontaneous breakage. The "heat soak" treatment methods are described in several standards such as EN 14179 and ASTM.

When using thermally toughened glass, a risk of spontaneous breakage due to the presence ofnickel sulfide particles is possible. And it is not possible to eliminate nickel sulfide in glass composition, in terms of characteristics of raw material of glass and current technology. But this problem can be minimized using heat strengthened glass or tempered glass with " heat soak " treatment.

Under this condition, **Nam Heng Group Company** do not guarantee spontaneous breakage and strongly recommend applying "heat soak" treatment for tempered glass.

WE BUILD WITH GLASS

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