



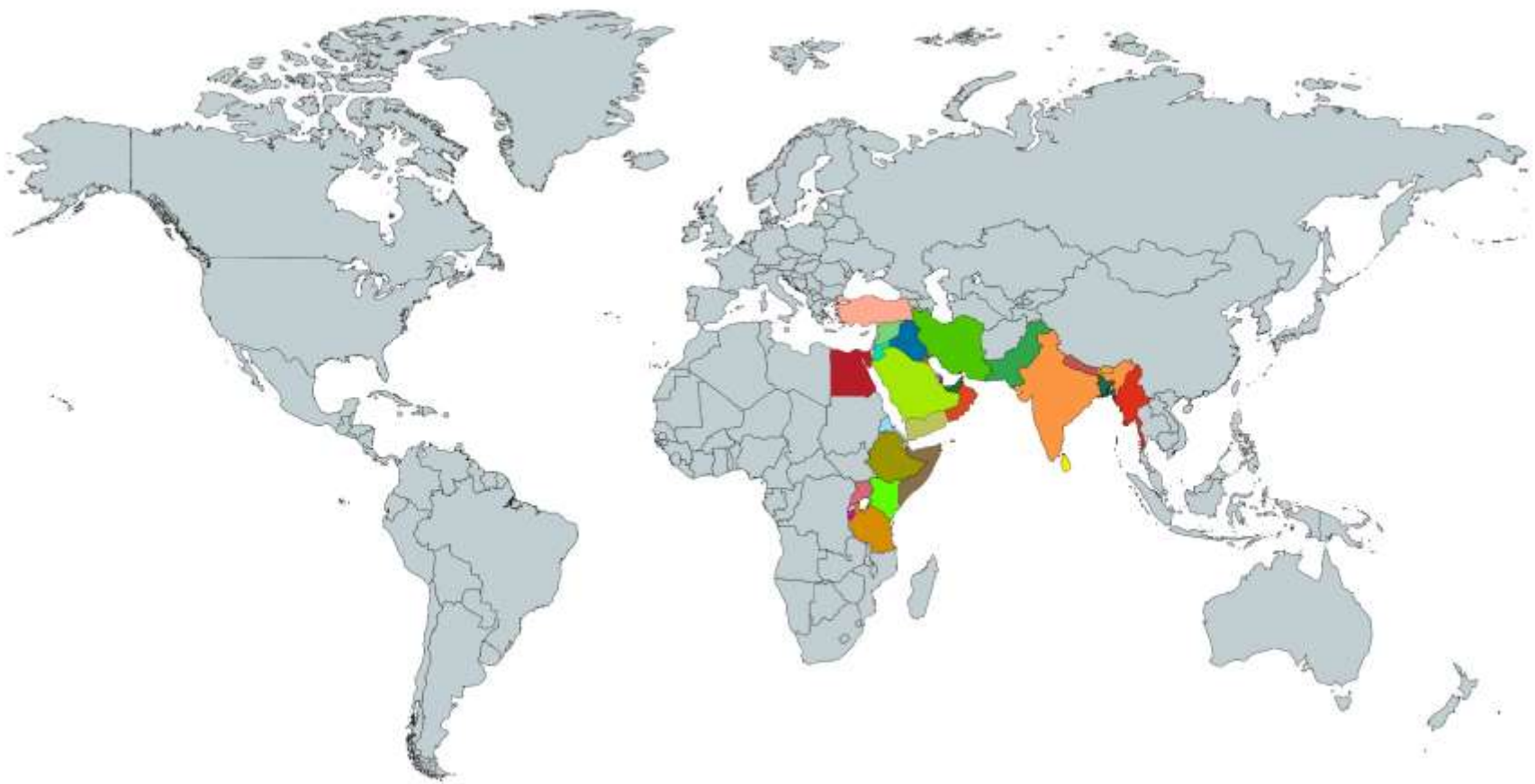


**ARCHITECTURAL AVENUE**

MIDDLE EAST | INDIAN SUBCONTINENT | EAST AFRICA

**Architectural Avenue** provides a one stop solution to all architectural product needs for builders and architects across the Middle East, Indian Subcontinent and Africa. We collaborate with top class companies across the regions, promoting and marketing their quality products/ brands while providing exceptional architectural solutions to the builders and architects all over. We bridge the gap to help build the best while aiming for excellence in terms of quality, service and reliability.

## FIND US :



### MIDDLE EAST

- QATAR
- OMAN
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- ERITREA

- SOMALIA

- ETHIOPIA

- UGANDA

- TANZANIA

- RWANDA

- BURUNDI

## PRODUCT LIST :



### ARCHITECTURAL GLASS FOR FAÇADE AND INTERNAL GLAZING

MADE IN TURKEY, CHINA, EUROPE AND INDIA

5-14



### THERMAL INSULATION PRODUCTS

MADE IN TURKEY

15-20



### SMOKE VENTILATION SYSTEM

MADE IN BRITAIN (UK)

21-32



### FILM LED MEDIA SCREEN

MADE IN KOREA

33-36



### MULTIMEDIA TRANSPARENT PHOTO-ELECTRIC LED GLASS

MADE IN CHINA

37-39



### POLYCARBONATE MODULAR SYSTEMS AND SHEETS

MADE IN ITALY, GREECE, POLAND, US AND INDIA

40-54



### STONE IMPOSED ALUMINIUM SHEETS

MADE IN CHINA

55-58



### PVDF COATED ALUMINIUM SHEETS AND COILS

MADE IN CHINA

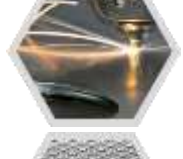
59-60



### PERFORATED ALUMINIUM SHEET & DECO ALUMINIUM PANELS

MADE IN TURKEY & CHINA

61-65



### SHEET METAL FABRICATION

MADE IN TURKEY & CHINA

66



### ALUMINIUM OR GI EXPANDABLE MESH

MADE IN TURKEY

67-70



### FIBRE CEMENT PANELS

MADE IN TURKEY

71-72



We are a 'One Stop Solution' for all glass requirement that you need. We take care of your requirements with utmost sincerity. We closely work with clients and partners at a global, regional and local level to apply glass innovation across an immensely diverse variety of projects. we're keen to work with you every step of the way to help make your plans tangible, whether you are a local glass fabricator or a global architecture firm.

Architectural glass is a type of glass used as a building material. It is most typically used as transparent glazing material in the building envelope, including windows in the external walls. Glass is also used for internal partitions and as an architectural feature. When used in buildings, glass is often of a safety type, which include reinforced, toughened and laminated glasses

The main products includes solar reflective glass, Post - temperable Low-E, insulated glass units, laminated glass, tempered glass& heat-strengthened glass, curved tempered glass, fire-resistant glass, digital printer ceramic frit glass, silk-screen glass, as well as composite glass products. The quality of our products are strictly in accordance with the standard of BS/EN, AS/NZS, ASTM, ANSI standards etc.

## OUR GLASS PRODUCTS :

1. LOW E COATING GLASS
2. SOLAR REFLECTIVE GLASS
3. INSULATED GLASS
4. HEAT TREATED GLASS
5. CURVED TEMPERED GLASS
6. HEAT SOAKED GLASS
7. LAMINATED GLASS
8. SENTRY GLASS PLUS
9. SOUND CONTROL GLASS
10. SILK SCREEN GLASS
11. DIGITAL PRINTED GLASS
12. PRICISION DRILLING AND MILLING
13. POINT SUPPORTED GLASS SYSTEM
14. INTERNAL GLAZING



BEIJING HILTON CONRAD HOTEL, BEIJING, CHINA



## LOW E GLASS

Glass is one of the most popular and versatile building materials used today, and it provides a dramatic aesthetic. But the beauty of glass is pointless if the people inside the building are uncomfortable or if energy inefficiency makes the building too expensive to operate.

Low-emissivity (low-e) glass coatings were developed to minimize the amount of ultraviolet and infrared light that can pass through glass without compromising the amount of visible light that is transmitted. A microscopically thin transparent coating allows Low-E glass to reflect exterior heat in warm temperatures and hold in heat during cold temperatures, making buildings light, bright and energy-efficient. We offer two types of low-e coated glasses: Single silver Low-E and Double silver Low-E.

### SINGLE SILVER LOW E GLASS

Within the coating structure of single silver Low-E glass, there is one silver layer. Single Silver Low-E glass has been widely used in various buildings at different locations worldwide.

#### Features

- Visible light transmittance— adequate indoor natural daylighting.
- Solar energy transmittance — a wide range of shading coefficient SC available, for different geological locations.
- High far infrared reflectance — low U-value, reduced thermal transfer due to temperature difference.

### DOUBLE SILVER LOW E GLASS

Within the coating structure of double silver Low-E glass, there are two silver layers. While maintaining the same visible light transmittance, it has lower shading coefficient, SC, than single silver Low-E glass. In other words, it filters the sunshine as a cool lighting source to a larger extent and provides a solution to energy efficiency in design of high transparency architectures.

#### Features

- Higher visible light transmittance — ensuring better natural lighting
- Extremely low solar heat transmittance — effectively impeding solar heat radiation.

### TRIPLE SILVER LOW E GLASS

Triple Silver Low E Glass is the most complicated and advanced series of Low-E glass in the world which can be produced by few companies. It is because the radiation transmittance reaches to only 0.01% which is perfect technology data, it has the wide applications in many fields.

- High level of visible light transmission: provide a natural lighting, with a neutral exterior appearance.
- Very low shading coefficient: effective in reducing solar heat radiation from reaching the building interior, especially for infrared heat radiation.
- Very low heat gain or heat loss value (U Value): good heat Insulated, effectively reduce heat gain in summer and heat loss in winter.



Solar reflective glass range is an offline coated glass manufactured by magnetron sputtering deposition under vacuum conditions onto float glass. The manufacturing process and type of materials with which the glass is coated ensure that this coating offers excellent resistance and stability over time.

These qualities enable this coated glass to be processed (e.g. tempered, laminated, bent, enamelled etc.), while still retaining its aesthetic and technical benefits.



By combining Low-E coatings, standard and high performance tinted glass, reflective coatings, silkscreened patterns, laminated glass products and more, a wide variety of insulating Glass compositions are available to satisfy a wide range of performance and aesthetic requirements. IG units can be fabricated to meet state energy and safety codes, sound control and seismic requirements, impact, bullet, hurricane and blast resistance requirements. IG units can be designed to reduce heat loss and solar heat gain entering the building, with a minimal reduction of visible light transmittance. Insulating glass units are fabricated according to project specifications. IG units can be constructed using a large variety of glass products to achieve desired aesthetics, meet design criteria, safety codes and/or to improve solar control and thermal performance. Glass options include clear, low iron, Low-E's, standard or high performance (spectrally selective) tints, reflective, silk-screened, spandrel, laminated, decorative and wired glass. The glass lite of an IG unit can be annealed, heat-strengthened, tempered or laminated.



## CURVED TEMPERED GLASS

Curved tempered glass or curved heat-strengthened glass, is achieved by heating glass to softening temperature and then bending by weight or external force, followed by fast cooling with air blowing. We adopt advanced synchronized roller way formation technology, being able to produce various curved tempered glass products, such as round-shaped, J-shaped etc., with high formation precision and quality. If required by application, curved insulating glass, curved laminated glass, or curved tempered laminated coated insulating glass by use of bendable coated glass, can also be manufactured.

## HEAT TREATED GLASS

Heat-treated glass is a general term used in the glass fabrication industry to describe glass that has been processed through a tempering oven to change its strength and breakage characteristics (i.e., the size and/or shape of the glass pieces after breakage). There are two distinct heat-treated products, heat-strengthened glass and fully tempered glass, as defined in ASTM C1048 Standard Specification for Heat-treated Flat Glass—Kind HS, Kind FT Coated and Uncoated Glass. Compared to annealed glass (non-heat-treated glass), both have increased strength to resist higher levels of impact, mechanical load and thermal stress. Heat-strengthening adds strength to the glass while limiting the change in its breakage characteristics. Tempered glass is stronger than heat-strengthened glass and significantly reduces the broken piece size to meet the safety glazing standards.

## HEAT SOAKED GLASS

Reduce the possibility of spontaneous tempered glass on site breakage by specifying Heat Soaked Glass from us. Our exclusive process provides an increased level of security by reducing site breakage of tempered glass. Utilizing the latest in digital recording equipment, we are able to automatically record the batch data of the heat soaked glass, guaranteeing customers that the stringent EN 14179 Standard.



**CURVED TEMPERED GLASS**



**HEAT SOAKED GLASS**





## LAMINATED GLASS

Add unsurpassed safety, security and performance to your glazing applications with our Laminated Glass products. Choosing the safety, security and serenity of laminated glass no longer means limiting yourself in regards to glass type, colour or size. Our Laminated Glass is available in all glass types, including, clear, tinted, reflective, Low-E, spandrel, ceramic frit and silk-screened. All the while offering unmatched quality, advanced features and oversized capabilities to match our heat treated, heat soaked and insulated glass offerings.

A wide variety of interlayer thickness, opacities and colours are available in:

- PVB Laminated Glass
- Polycarbonate Laminated Glass
- SentryGlas® Plus Laminated Glass

The most common laminated glass units are constructed with two plies of glass permanently bonded together with one or more interlayers. The most important characteristics of laminated glass are fall-out protection due to the ability of the interlayer to support and hold the glass when broken as well as the reduced ability to penetration the opening. The ability to resist various kinds of penetration is dependent upon a number of factors including thickness of the glass and the type of interlayer selected. Laminated glass also offers a greater availability of coatings than monolithic glass. Low-E coatings which cannot be exposed, and therefore cannot be used with monolithic glass, can be used inside a laminated unit where they are protected. Laminated glass units also have more aesthetic possibilities than monolithic glass. The interlayers used in laminated glass are available in a variety of colours and opacities. In addition, the Low-E coating and silk-screen pattern, if desired, are Laminated Glass applied to the exterior ply of glass leaving the interior ply available for additional treatment. For a spandrel location, a full coverage opaque ceramic frit can be applied to the inner face (surface #4). For vision areas where daylight is desired but view through needs to be minimized, a translucent ceramic frit can be applied to surface #3.

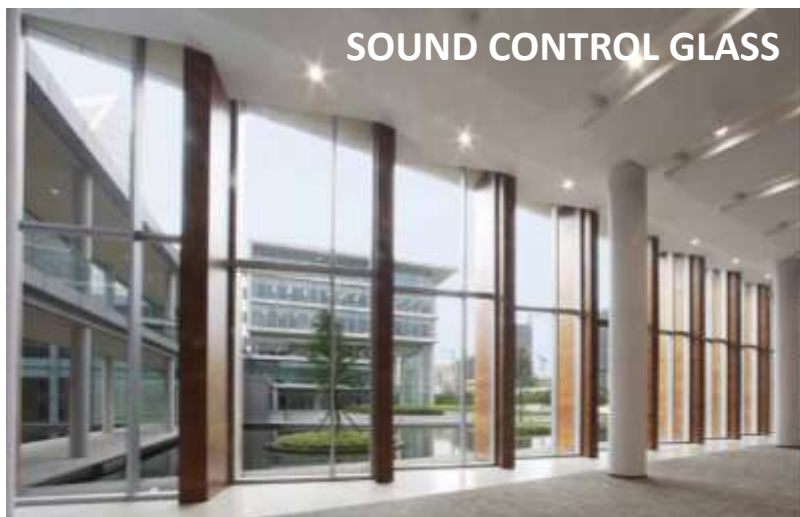
## SENTRYGLAS PLUS

**For glass that's more than glass** DuPont™ SentryGlas® Plus creates new glazing opportunities by changing the way glass performs and providing new design options for architects and building designers. Tests have proven that SentryGlas® Plus has exceptional residual strength, even when both lite of glass are broken (sky walk photo). This brings greater peace of mind to building owners and occupants in locations that experience typhoons or hurricanes and makes it possible to specify safer laminated glass for point-supported glazing systems, canopies, skylights and railings. SentryGlas® Plus is an ideal product for complex glazing projects that require increased strength and enhanced appearance. The benefits of SentryGlas® Plus are not only confined to complex projects. Glazing systems that utilize SGP are typically lighter than their PVB counterparts. This can result in larger panels, reduced number of support fittings and a lighter weight support structure that enhance the visual impact. There are significant performance benefits that can be achieved when specifying SentryGlas® Plus laminated products from us.



### SKY WALK





Shielding a building's environment from increasing noise levels, especially near airports and busy highways, is a critical factor in the specification of glazing materials for both new and renovated structures. Laminated glass is a proven, effective solution for acoustical protection. Sound Control Glass is a perfect solution for insuring exceptional levels of sound insulation. It not only provides insulation for impact and airborne noise but also maintains the safety and security properties of laminated glass. Our Sound Control Glass is the ultimate solution, it is an excellent combination of Safety and Acoustic performance with all of the benefit of laminated glass, and can be combined with solar absorbing laminated glass and any of our tinted interlayers for added desirable effects.

Sound is a wave phenomenon characterized in frequencies (Hz), speed (approximately 340 m/sec through air) and amplitude (amount of energy in the sound wave). Our Sound Control Glass is designed to decouple and disseminate sounds waves for superior sound damping performance. This system targets sounds in the 1000 – 3000 Hz range which is the “noise transparency” range that allows the most irritating of sounds to penetrate windows. Monolithic glass is a relatively light substance and is also hard, therefore allows sound to pass. For installation in Building Areas: quite easily, whereas the Sound Control interlayer is a soft and flexible substance that is not inclined to allow sound to pass through it eliminating noise by approximately 50%.

## SILK-SCREENED GLASS



Our silk-screened ceramic enamel frit products offer building designers exciting and different ways to customize exterior and interior glass, by using standard and custom screened patterns in a variety of colours. Silk-Screened glass is offered monolithically, in insulating glass units, or as laminated glass, providing beauty, safety and functionality. Available in one-piece orders or high-volume runs, silk screened decorative glass is custom made by transferring a silk-screen image to the glass and then processing it through a horizontal tempering furnace. Each individual lite is screen-printed with the desired pattern and ceramic enamel frit colour. The ceramic frit can be silk-screened onto the glass substrate in one of three standard patterns, dots, lines, holes, or in a full-coverage application. In addition, custom patterns can be easily duplicated on the glass. Depending on the pattern and the colour, the glass lite can be made transparent, translucent or opaque. We offer a variety of silk-screened decorative glass products to satisfy a wide range of applications. Light frit colours and certain pattern designs can cause enhanced brightness when viewed from indoors under certain daylight and background sky conditions, while dark frit colours will tend to reduce glare. Applications include transparent and translucent silk-screened glass for interior applications, including glass doors, partitions, handrails, glass ceilings, floors, bathrooms, elevator walls, shower enclosures, court walls for racket sports and sneeze guards for food service.

## DIGITAL PRINTED GLASS

From the initial design stage, through the value engineering process, we can assist architects designers and engineers with calculating the long-term savings enabled by digital ceramic printed glass. Digital ceramic in-glass printing meets complex functional performance requirements. It enables control of all special elements of architectural and designed glass

- TRANSLUCENCY/OPACITY
- LIGHT DIFFUSION AND TRANSMISSION
- SOLAR HEAT GAIN COEFFICIENCY
- ENERGY EFFICIENCY
- PRIVACY LEVELS
- ELECTRICAL CONDUCTIVITY
- SLIP RESISTANCE
- ANTI-BIRD COLLISION



## DIGITAL PRINTED GLASS

**ANYWHERE-** Exterior and interior durability. Ceramic ink resistance after tempering is equal to glass resistance.

**ANYDESIGN-** Personalized, opaque, transparent and textured-look effects. Micro-drop precision enables highly detailed, accurate photorealistic and graphic designs and gradients.

**ANYNEED-** Any aesthetic requirements and a wide range of functional applications. Micro-drop precision supports light diffusion, light transmission, energy efficiency, sun control, temperature control, privacy levels and other functional requirement.

**ANYCOLOR-** Multi-colour printing in a single glass. Digital in-glass printing technology enables truly limitless multi-colour designs with ceramic ink durability.

**ANYSIZE-** From small panes to building facades, with perfect-registration multi-pane printing. Modular printer hardware and advanced printing software enable simple and flexible printing on glass panes.

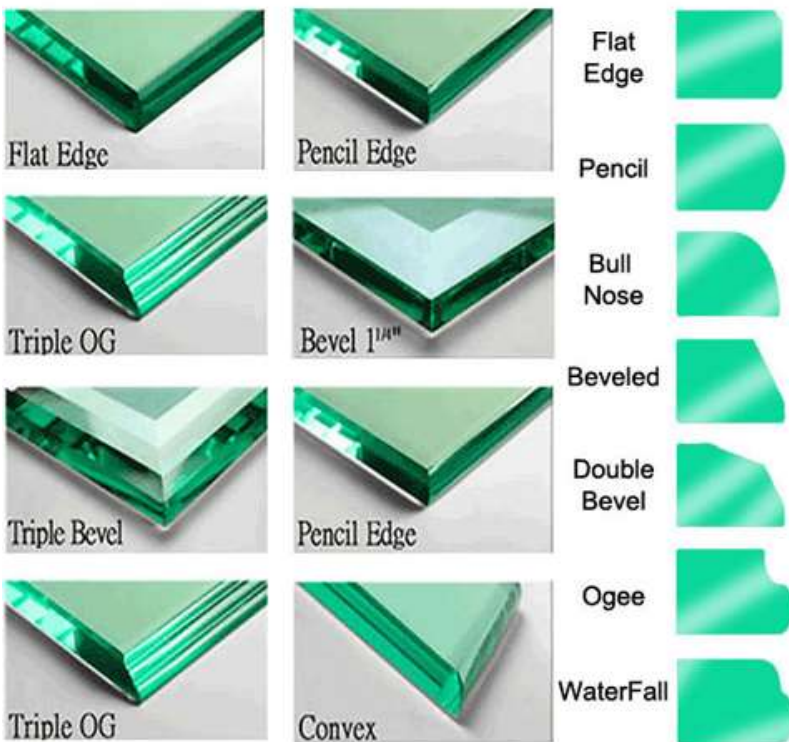
**ANYCONDITIONS-** Full resistance to weather and chemicals. Ceramic inks fused into the glass stand up to harsh weather conditions and are scratch and acid-resistant, ideal for exposed, high-traffic and graffiti-prone installations.





## PRECISION DRILLING & MILLING

Glass entrances, shower doors, railing and furniture glass need a special degree of attention. We use a precision Computerized Numeric Control (CNC) fabrication machine to drill, mill, polish and cut holes and notches with the exact precision and quality required for these jobs. Polishing and Edgework have the edge when it comes to polished edges, offering four standard edge types: flat polish, flat grind, mitered polish and mitered grind. Flat and mitered edges are available on all glass thicknesses, with mitres ranging from 0 to 45 degrees.



## POINT SUPPORTED GLASS SYSTEM

Create a statement on your next glazing project with Point-Supported System. This striking all-glass glazing option is ideally suited for vertical walls, entrances and canopies, providing architects the greatest level of transparency in today's facades and eliminating the need for metal mullions. Point supported systems can incorporate insulating glass with or without Low-E, laminated glass or monolithic tempered glass.





## PROJECT LIST :

**COSTANERA CENTRE  
TOWER, SAN DIEGO CITY,  
CHILE**



**AL HAMRA TOWER,  
KUWAIT CITY,  
KUWAIT**



**LOOKOUT TOWER OF  
OLYMPIC PARK, BEIJING,  
CHINA**



**MARINA BAY SANDS,  
SINGAPORE**





**DUBAI METRO STATION,  
DUBAI, UAE**



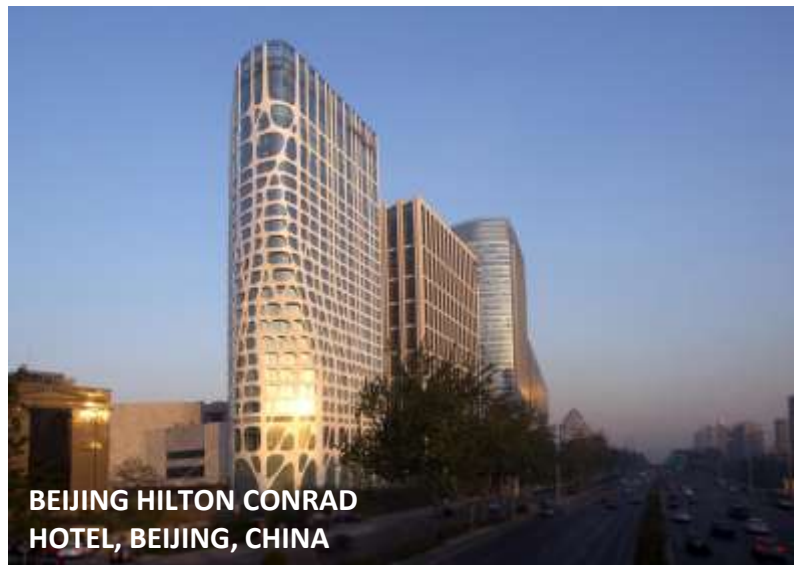
**W-FIFTH BUILDING,  
MANILA, PHILIPPINES**



**CITY OF LIGHTS,  
ABU DHABI CITY, UAE**



**BEIJING HILTON CONRAD  
HOTEL, BEIJING, CHINA**











..... Turkey's innovative brand in production and marketing.

## MEGABOARD/ INSULATION BOARDS :

### CONTACT FACADE :



Megaboard Stone Wool Insulation Board is an uncoated Stone Wool board which is produced inline with EN 13500 standard and produced according to EN 13162 standard and is used for heat sound insulation and fire safety in plastered exterior insulation systems.

#### Fields of use :

Megaboard Contact Facade Insulation System reduces the thermal losses, prevents noise and condensation, ensures the thermal comfort and fire safety.



## VENTILATED FACADE :



Megaboard Stone wool Ventilated Facade Board is a slab one side faced with Alu-foil or glass fiber (yellow and black) or both side are uncoated.

### Fields of use :

- It is used in ventilated facade details.
- Megaboard Insulation System provides high performance
- heat and sound insulation as well as very high fire resistance.

## HVAC/ DUCT CHANNEL :



It is the Stone Wool board which is one side faced with alufoil, used for sound and thermal insulation of air conditioning and ventilation ducts.

### Fields of use :

In ventilation duct applications, alufoil faced boards should be used to eliminate condensation possibilities. The joints of the boards should be covered with adhesive aluminum foil tape.

## INTERNAL PARTITION BOARD :



Megaboard Stone wool partition board is used to provide sound and thermal insulation in light internal partition wall systems by ensuring fire safety because it is classified as "A1 No Flame Propagation". Megaboard Stone wool partition insulation board is used to provide acoustic performance, fire safety and sound insulation by maximizing the insulation in partition walls.

### Fields of use :

It is mineral wool insulation board specially developed by Megaboard for use in partition wall systems/dry wall system.

## FLAT ROOF BOARD :



Megaboard Flat Roof Board can meet all requirements regarding heat, sound and fire safety and can be applied on all roof types. Since it can also be produced in low thicknesses, it can also be used as double layer when it is necessary. It can be produced 40-50-60-70 kpA values.

#### Fields of use :

It is mineral wool insulation board specially developed by Megaboard for use in partition wall systems.

## FABRICATED PIPES :



Megaboard Stone Wool Prefabricated Pipe is used for the purpose of heat saving, fire insulation and sound insulation in industrial and installation pipes, with or without alufoil.

#### Fields of use :

Megaboard Stone wool Prefabricated Pipe Is selected according to the diameter of the surface to be applied. It is opened from the cutting place and placed in such a way that no gaps remain at the joints.

## MEGABOARD / EPS :

### EPS:



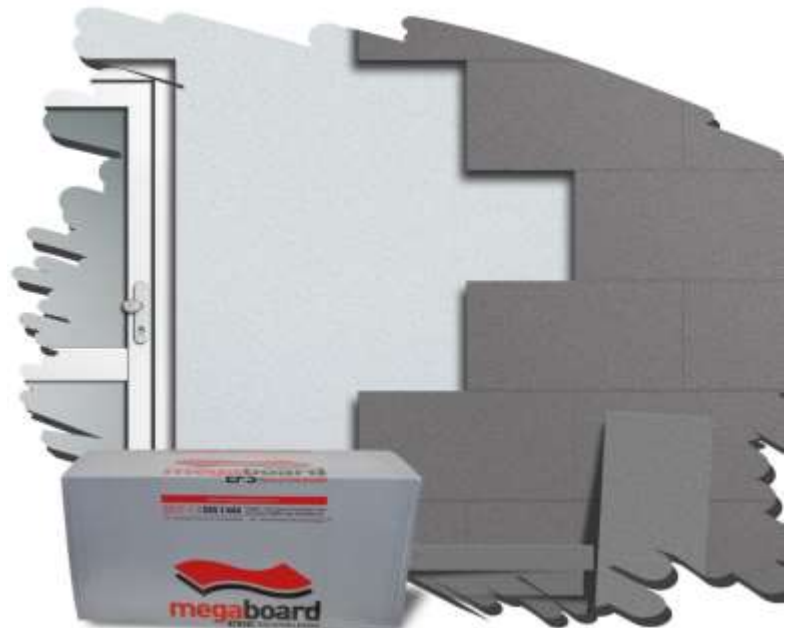
Megaboard EPS boards are black, grey and white colored, closed cell thermal insulation boards. It was kept in closed environment until dimensional stability occurred. It has high compressive strength and insulation property.

It is exposed with the inflation and adherence of granules to each other by pentane gas in the raw material granules, as a result of contact of Polystyrene raw material with water vapor.

#### Fields of use :

On thermal insulation of external walls (contact facade).

## CARBON EPS:





Megaboard Carbon Eps Boards have the same production Process with the White EPS Boards. Carbon EPS Boards have higher thermal insulation capacity than the White Boards by containing graphite.

#### Fields of use :

On thermal insulation of external walls (contact facade).

#### FLOOR HEATING BOARDS :



Megaboard EPS Floor Heating Board is a multi-comfort insulation board made of expanded polystyrene foam (EPS), which ensures the fixation of under-floor insulation materials and hot water pipes laid on the floor with a healthy distribution.

Megaboard EPS Floor Heating Board also facilitates the installment of PVC pipes under parquet in interior spaces and thus provides thermal insulation at the same time.

#### MEGA FOAM :



Megaboard Geofoam product is a lightweight filling material which has high compressive strength. This product greatly saves time and cost where it is used for soil amendment of soft soil of highways, airports, bridge beam molds and landscaping etc.

#### EPS BOARD :



Megaboard EPS BOARD creates a brand-new trend in insulation with its innovative design, superior insulation properties and being economical.

Megaboard EPS BOARD is an insulating board that combines superior mechanical properties and insulation properties with a splined surface on one side, a patterned surface on other side and a mounted lamp on all four sides. EPS BOARD provides high adherence where it is applied with its surface shape and eliminates heat bridges with its edge shape.

#### Fields of use :

In plastered exterior systems (contact facade), under siding and cold storages.

## MEGABOARDS/ XPS : XPS ROUGH BOARDS :



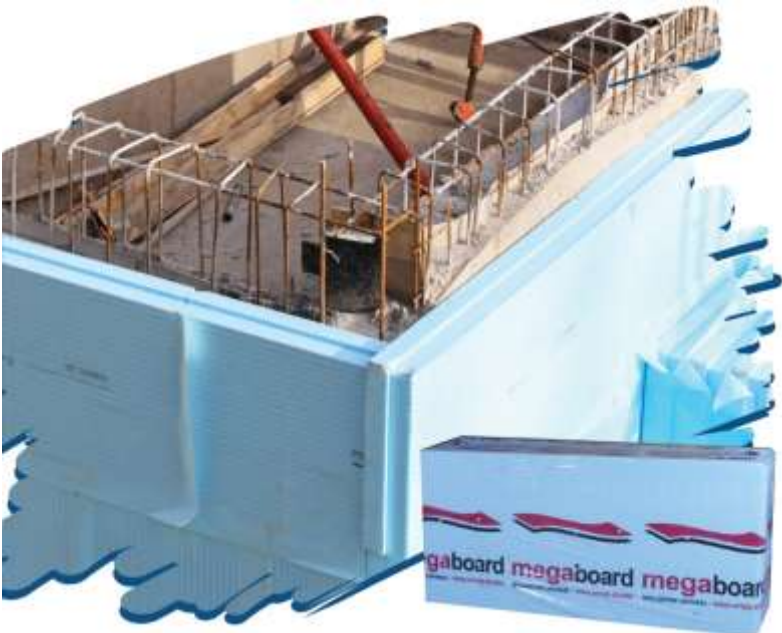
Megaboard Rough and Rough-Channeled Surface XPS Boards are produced as a result of extrusion processing of polystyrene raw material.

Megaboard XPS provides high adherence where it is applied with its surface shape and eliminates heat bridges with its edge shape. Providing maximum thermal insulation with low thermal conductivity value, Megaboard XPS does not disintegrate or crumble with its high compressive strength.

### Fields of use :

Megaboard XPS Boards are used in the contact facade system and internal cladding system, which are used to provide insulation from outside or inside of buildings.

## FLAT XPS :



Megaboard Flat Surface XPS Boards are produced by extrusion processing of polystyrene raw material. Megaboard XPS has a high level of water impermeability with its flat surface shape and has the quality to eliminate heat bridges with its edge shape.

Providing maximum thermal insulation with low thermal conductivity value. Megaboard XPS does not disintegrate or crumble with its high compressive strength.

### Fields of use :

Terrace roofs, under-ground curtain walls and basic insulation in contact with soil.

## CONSTRUCTION CHEMICALS :



- Megatech Adhesive for Thermal Insulation Board.
- Megatech Plaster for Thermal Insulation Board.
- Megatech Decorative Mineral Plaster.









Creating a healthier & safer environment.

Mighty oaks from little acorns grow... The continued success and growth of SE Controls is based on the belief that to stand still is to fall behind. With the end of every business cycle comes an opportunity to re-evaluate, diversify, innovate and grow.

Our solutions have been established and specified worldwide for 30 years and our goal is to develop the next generation of innovative control systems that will ensure buildings are intelligent, safe, compliant and energy efficient for the next 30 years. We believe in continuous product improvement after any hardware launch. Using our SE Cloud link remote services solution, we are able to monitor then optimize the software and algorithms throughout the product lifecycle. Our products are not only Made in Britain but with a full suite of technical and operational functions on site in the UK, they also have a British infrastructure that underpins their ongoing global success.

#### What we do

Fire safety  
Solutions

Façade  
automation  
Engineering

Product  
Manufacture

#### How we deliver it

Supply

Commissioning

Design

Maintenance

Installation

Contracting

Manufacture

Export

Remote service

#### Our market sectors

Residential

Commercial

Infrastructure

Education

Healthcare

## Product range:

Actuators

Control Systems

Control Strategies

Component Integration

### FOLDING ARM ACTUATORS

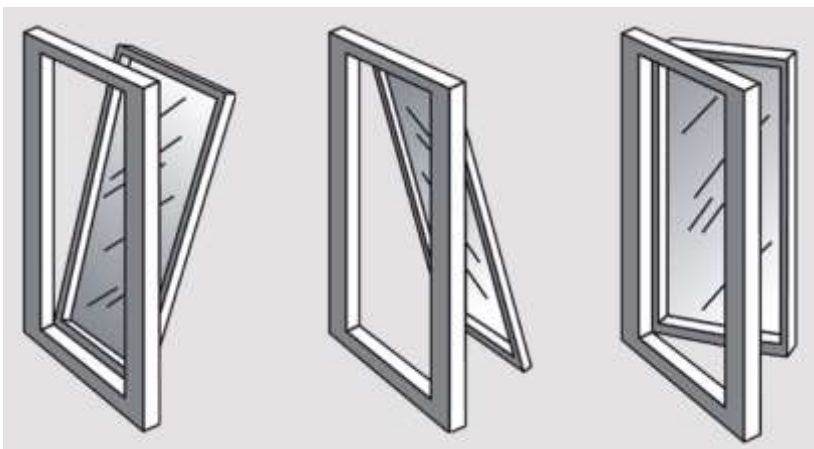


Smoke  
ventilation



Natural ventilation

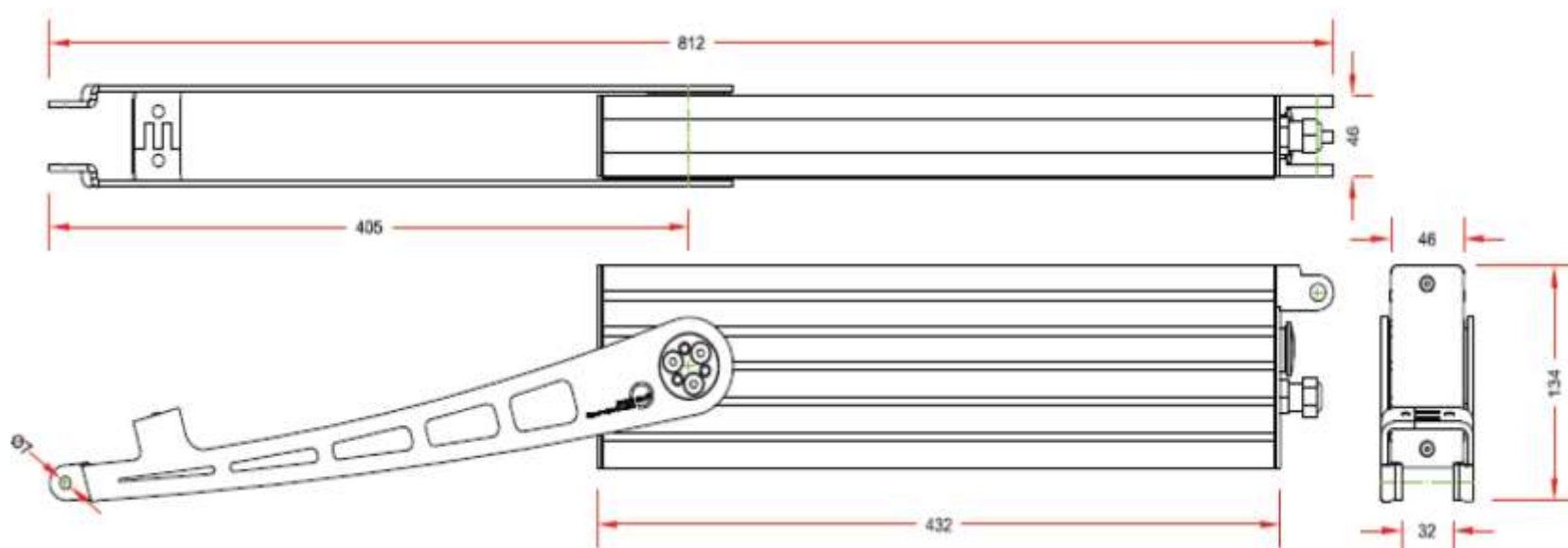
### APPLICATIONS



### FEATURES

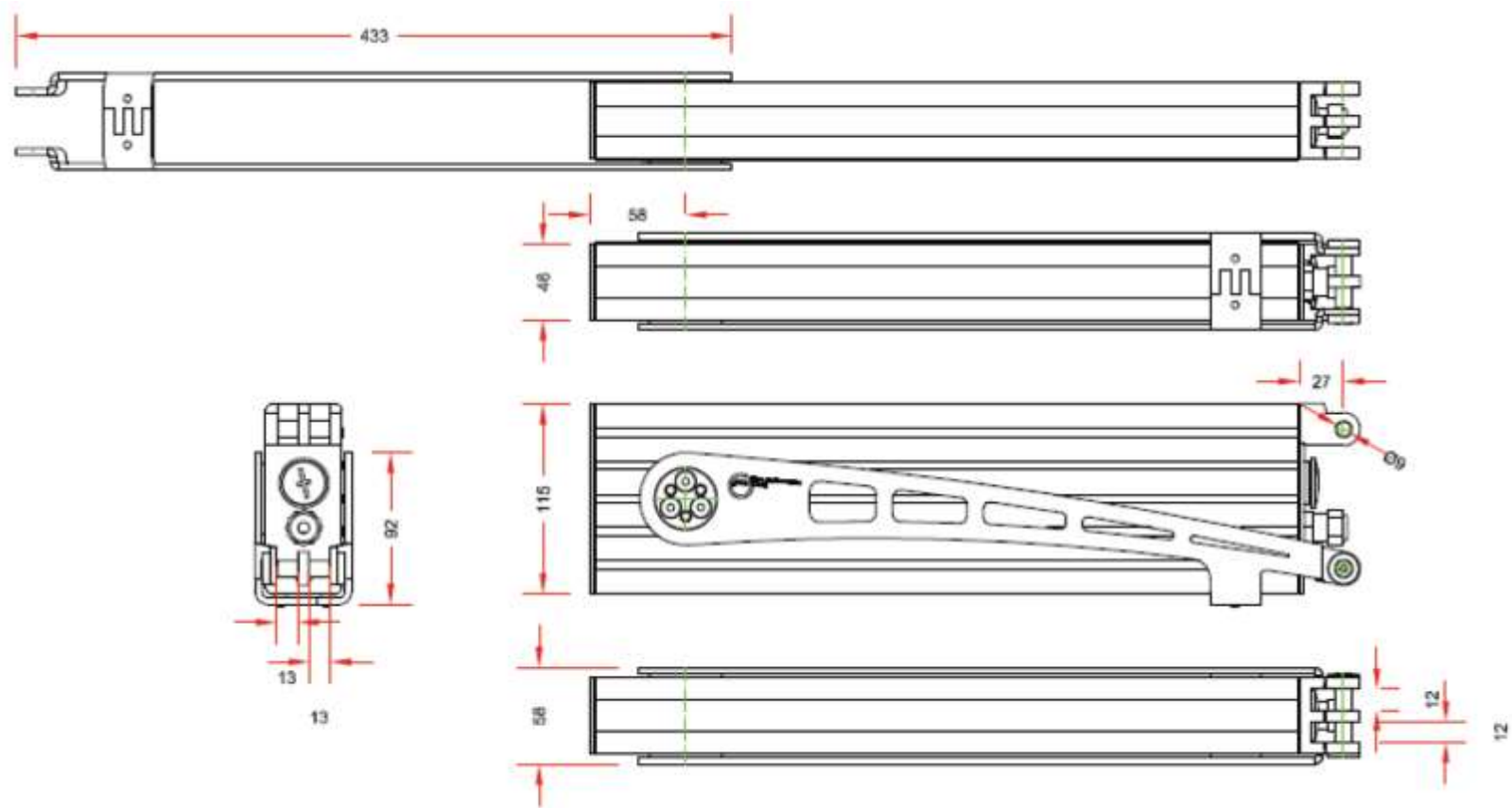
- Very large opening angles can be implemented.
- Suitable for SHEV systems.
- Very weather resistant.
- Low current consumption for high energy efficiency.
- Tested to the principles of EN 12101.
- Opening time less than 60 seconds.
- Programming interface »» Roller version available.

### TECHNICAL DRAWINGS





TECHNICAL DRAWINGS



TECHNICAL DATA

ACTUATOR	140° FOLDING ARM ACTUATOR	Product	Silver
TYPE	MOTORISED	Roller Version Actuator (500N 500mm stroke)	AAE00500500
DIMENSIONS	500 X 58 X 122mm	Flat plate bracket for door frame	ABE00K21621
VOLTAGE	24V dc (-15%; +25%)	Angle plate for reveal	ABE00K21620
RATED CURRENT	500N- 2.0A 800N- 2.6A 1000N- 3.0A	Folding Arm Actuator Fixed (1000N 710mm stroke)	AASF100710S
MAXIMUM STARTING CURRENT	3A (OPENING), 2A (CLOSING)	Folding Arm Actuator Fixed (500N 710mm stroke)	AASF500710S
STROKE	710mm	Folding Arm Actuator Fixed (800N 710mm stroke)	AASF800710S
OPERATING TIME	14.8mm/s	Open outward bracket for Fixed Folding Arm (leading edge mounted apps)	ABE00K21610
AMBIENT OPERATING TEMP.	-5°C +75°C	Open inward bracket for Fixed Folding Arm	ABE00K21611
THRUST FORCE	710mm = 500N 710mm = 800N 710mm= 1000N	Open outward bracket for Fixed Folding Arm (side opening mounted apps)	ABE00K21612
STANDARD FINISH	Alu E6/EV1		
FLEX LENGTH	2000mm		
FLEX TYPE	Recommended 6 core/ 0.75mm Silicon light grey P54		
PROTECTION DEGREE			

These actuators require control from a compatible low voltage unit such as OS2.

**Recommended Control:** Contact an **SE Controls** sales representative for recommendations.

CHAIN ACTUATORS



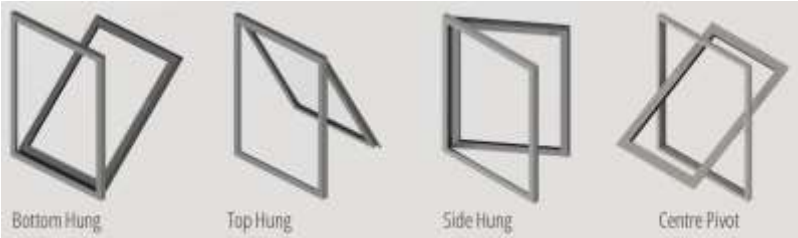
CHAIN ACTUATOR / 24V DC / 400N

The **SECO Ni 24 40** is a certified and compliant Chain Actuator designed to provide precise and reliable operation for Smoke and Environmental Ventilation applications.

SE Controls manufacture this high-quality ‘Made in Britain’ actuator with the following features:

- Tested with specific system profiles to all annexes of smoke vent standard EN12101-2-2003 (contact SE Controls to ensure it is tested with your profile, and the correct manufacturing process is followed).
- ‘Frequency of operation’ data logging records every actuator movement.
- Compact design with variable options for stroke length
- Standard finish is Grey RAL 9006, can be customized to suit requirements.
- Standard flex length is 2m, but this can be modified to suit installation requirements.
- Extensive range of brackets to suit a variety of window systems.
- Quiet operation with configurable speed control.
- 900mm version is not suitable for Top Hung applications.

APPLICATIONS



Natural ventilation

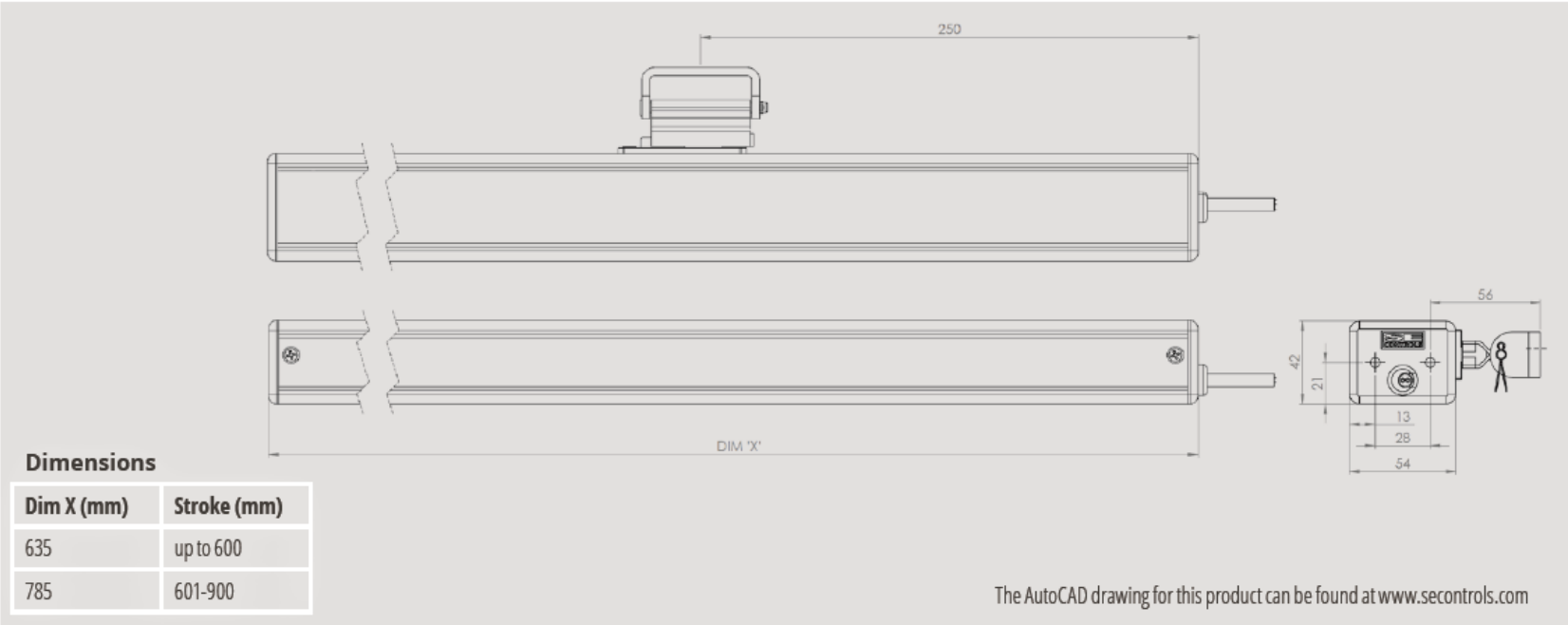


Smoke ventilation

ASSOCIATED CONTROLS

Stroke	600mm	900mm
Controller	No. Actuators*	No. Actuators*
3 AMP Transformer	3	2
NVLogIQ PSU	4	4
SHEVTEC Controller	8	6
30 AMP PSU	30	25
OS2 AC Controller	N/A	N/A

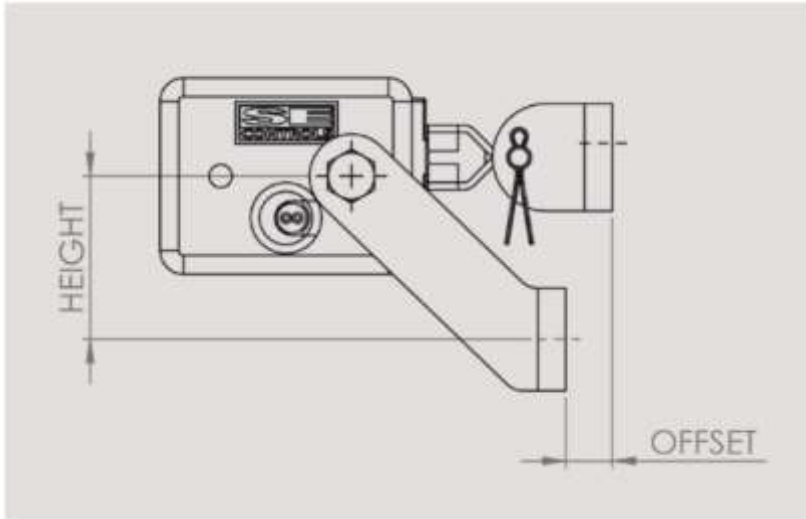
TECHNICAL DRAWINGS



The AutoCAD drawing for this product can be found at [www.secontrols.com](http://www.secontrols.com)



## STANDARD BRACKET DETAIL



## BRACKET PRODUCT CODES

	Height (mm)		
Offset (mm)	35	40	50
0	AKS16000001	AKS16000002	AKS16000003
5	AKS16050001	AKS16050002	AKS16050003
8	AKS16080001	AKS16080002	AKS16080003
10	AKS16100001	AKS16100002	AKS16100003
15	AKS16150001	AKS16150002	AKS16150003
20	N/A	N/A	AKS16200003

## TECHNICAL DATA

Actuator	SECO Ni 24 40
Actuator Type	24V dc Chain Opener
Voltage (all +/-5%)	24V dc
Current Draw (Amp)	0-600mm= 1.0A 601-900mm= 1.2A
Stroke	0-600mm (configurable) 601-900mm (configurable)*
Operating Speed	15mm/sec min. 8mm/sec (configurable)
Ambient Operating Temp	-5°C to +60°C
Thrust Force	400N
Close Force	400N
Soft Close	Yes
Switching	Electronic
Standard Finish	Powder coated Grey (RAL 9006)
Seal Relief	Programmable up to 20mm
Clamping Force	4000N
Colour Option	Other RAL colours available on request
Flex Length	2m
Flex Type	2 core/ 0.75mm silicone 4 core (volt free contact) as option
Flex Colour	Grey
Product Warranty	15,000 cycles
Duty Cycle	22% (2 mins on, 7 mins off)
IP Rating	IP20 or IP42 (see Product Codes below for details)
Bracket	Sill fixing/ open inward/ face fix bracket
Synchronization	Optional
Application	Smoke and Environmental Ventilation

## PRODUCT CODES

Silver Grey (RAL 9006)	Operating Voltage	Force	Stroke	IP Rating
AASI400600S	24V	400N	600mm	IP20
AASI400900S	24V	400N	900mm	IP20
AASI4006001	24V	400N	600mm	IP42
AASI4009001	24V	400N	900mm	IP42

CHAIN ACTUATORS



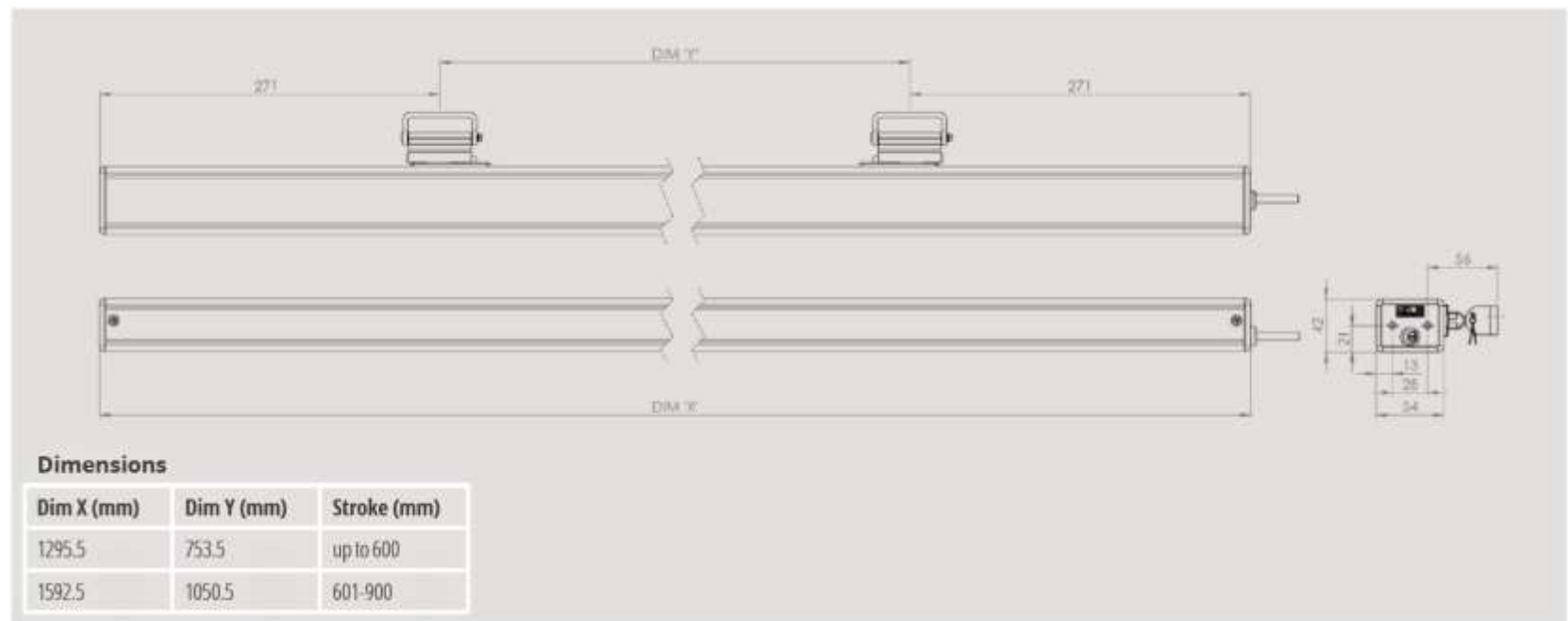
CHAIN ACTUATOR / 24V DC / 2 X 400N

The **Twin SECO Ni 24 40** is a certified and compliant Chain Actuator designed to provide precise and reliable operation for Smoke and Environmental Ventilation applications.

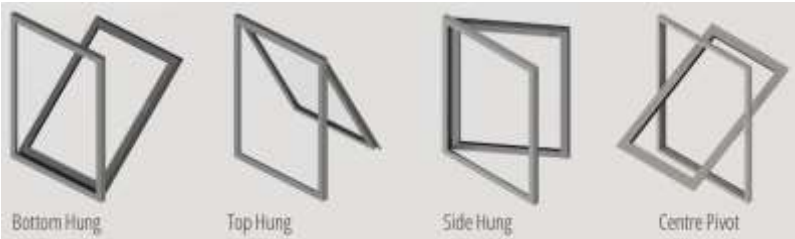
SE Controls manufacture this high-quality ‘Made in Britain’ actuator with the following features:

- Tested with specific system profiles to all annexes of smoke vent standard EN12101-2-2003 (contact SE Controls to ensure it is tested with your profile, and the correct manufacturing process is followed).
- ‘Frequency of operation’ data logging records every actuator movement.
- Compact design with variable options for stroke length.
- Standard finish is Grey RAL 9006, can be customized to suit requirements.
- Standard flex length is 2m, but this can be modified to suit installation requirements.
- Extensive range of brackets to suit a variety of window systems.
- Quiet operation with configurable speed control.
- 900mm version is not suitable for Top Hung applications.

TECHNICAL DRAWINGS



APPLICATIONS



Natural ventilation



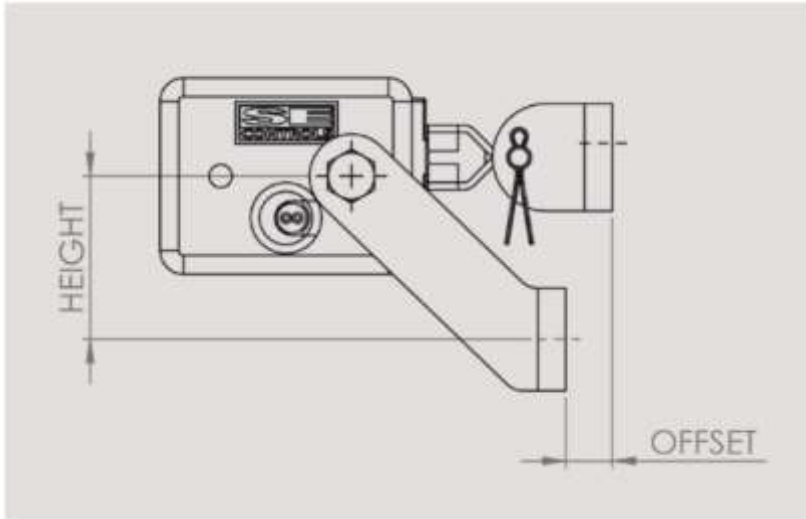
Smoke ventilation

ASSOCIATED CONTROLS

Stroke	600mm	900mm
Controller	No. Actuators*	No. Actuators*
3 AMP Transformer	1	1
NVLogiQ PSU	2	2
SHEVTEC Controller	4	3
30 AMP PSU	15	12
OS2 AC Controller	N/A	N/A



## STANDARD BRACKET DETAIL



## BRACKET PRODUCT CODES

	Height (mm)		
Offset (mm)	35	40	50
0	AKS16000001	AKS16000002	AKS16000003
5	AKS16050001	AKS16050002	AKS16050003
8	AKS16080001	AKS16080002	AKS16080003
10	AKS16100001	AKS16100002	AKS16100003
15	AKS16150001	AKS16150002	AKS16150003
20	N/A	N/A	AKS16200003

## TECHNICAL DATA

Actuator	Twin SECO Ni 24 40
Actuator Type	24V dc Chain Opener
Voltage (all +/-5%)	24V dc
Current Draw (Amp)	0-600mm= 2.0A 601-900mm= 2.4A
Stroke	0-600mm (configurable) 601-900mm (configurable)*
Operating Speed	15mm/sec min. 8mm/sec (configurable)
Ambient Operating Temp	-5°C to +60°C
Thrust Force	2 x 400N
Close Force	2 x 400N
Soft Close	Yes
Switching	Electronic
Standard Finish	Powder coated Grey (RAL 9006)
Seal Relief	Programmable up to 20mm
Clamping Force	4000N
Colour Option	Other RAL colours available on request
Flex Length	2m
Flex Type	2 core/ 0.75mm silicone 4 core (volt free contact) as option.
Flex Colour	Grey
Product Warranty	15,000 cycles
Duty Cycle	22% (approx. 2 mins on, 7 mins off)
IP Rating	IP20 or IP42 (see Product Codes below for details)
Bracket	Sill fixing/ open inward/ face fix bracket
Synchronization	Optional
Application	Smoke and Environmental Ventilation

## PRODUCT CODES

Silver Grey (RAL 9006)	Operating Voltage	Force	Stroke	IP Rating
AASTI40600S	24V	2 x 400N	600mm	IP20
AASTI40900S	24V	2 x 400N	900mm	IP20
AASTI406001	24V	2 x 400N	600mm	IP42
AASTI409001	24V	2 x 400N	900mm	IP42

\*900 mm version is not suitable for Top Hung applications.

CHAIN ACTUATORS



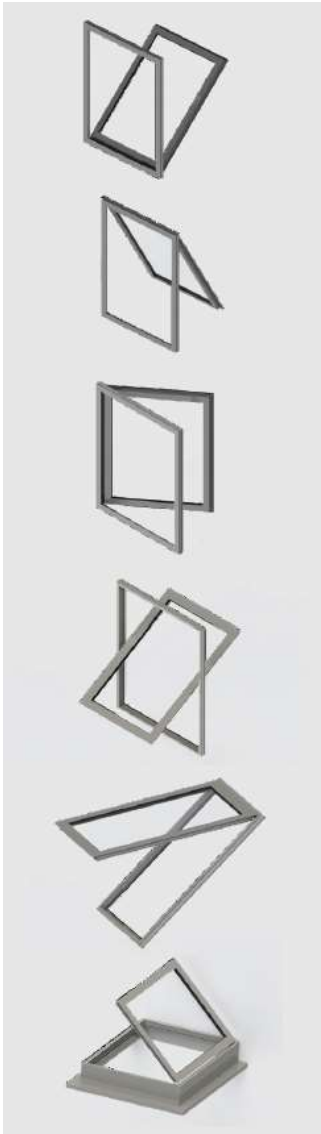
LINEAR ACTUATOR/ 24V dc/ 1000N

Cost effective and strong rack and motor drive mainly used for sloping smoke vent and roof light applications.

Two actuators are used in tandem (fully synchronized), providing two push points on the same vent removing the need for a separate synchronization unit.

Tested to EN12101-2 smoke vent standard with specific incline system profiles. Contact SE Controls for selection advice.

APPLICATIONS

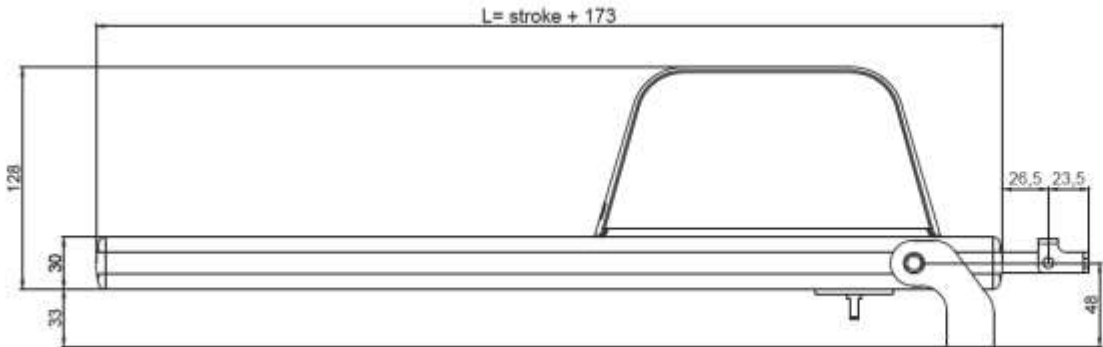


Smoke ventilation

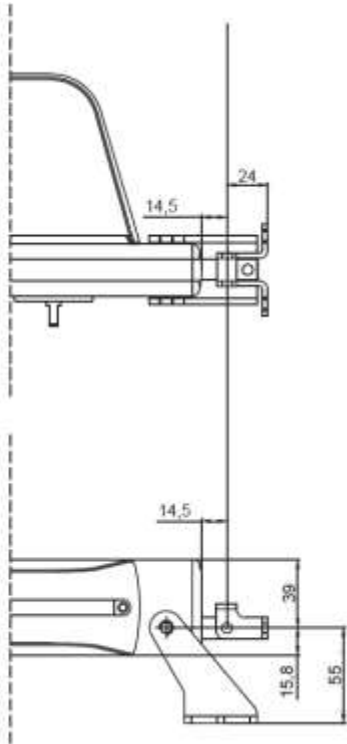
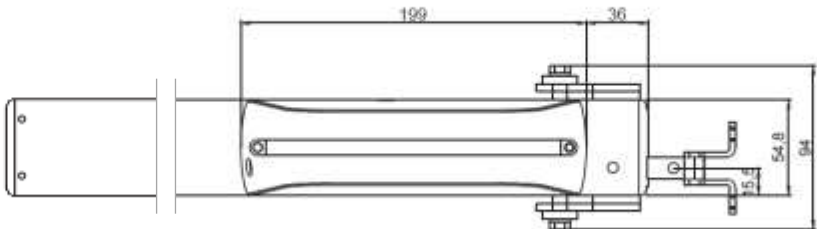


Natural ventilation

TECHNICAL DRAWINGS



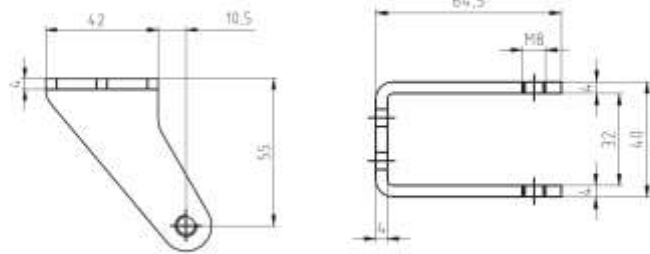
DIMENSIONS	
STROKE	L
350mm	523mm
550mm	723mm
750mm	923mm
1000mm	1173mm





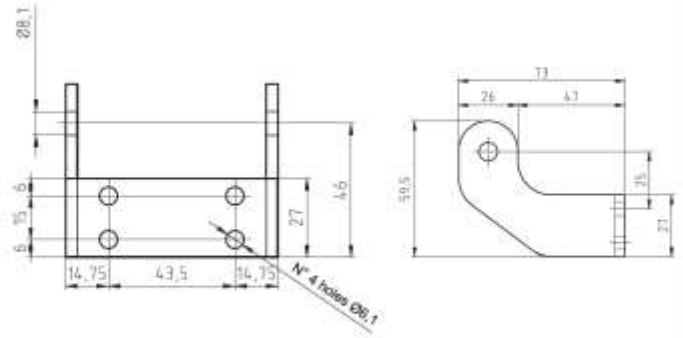
## BRACKET DETAIL

### BRACKETS SELA T ALUMINIUM END BRACKET



AAU0141760Y

### BRACKETS SELA T ALUMINIUM SLIDING BRACKET



AAU0041761Z

## BRACKET PRODUCT CODES

SILVER ANODISED	OPERATING VOLTAGE	FORCE	STROKE
AAU01000350	24V	1000N	350mm
AAU01000550	24V	1000N	550mm
AAU01000750	24V	1000N	750mm
AAU01001000	24V	1000N	1000mm*

## TECHNICAL DATA

ACTUATOR	SELA T 750 SYNCHRO
ACTUATOR TYPE	24V dc Rack & Pinion Linear Actuator
VOLTAGE (all +/-5%)	24V dc
CURRENT DRAW (Amp)	2 x 1.5A
STROKE	350, 550, 750, 1000*mm
OPERATING SPEED	12.5mm/s
AMBIENT OPERATING TEMP	-10°C to +40°C
THRUST FORCE	1000N
CLOSE FORCE	1000N
SWITCHING	Electronic
STANDARD FINISH	Silver anodized
COLOUR OPTION	N/A
FLEX LENGTH	1.5m
PRODUCT WARRANTY	10,000 cycles
DUTY CYCLE	25 %
IP RATING	IP65
BRACKET	End and Sliding Bracket
SYNCHRONISATION	Yes
APPLICATION	Smoke and Environmental Ventilation

## PRODUCT CODES

SILVER ANODISED	OPERATING VOLTAGE	FORCE	STROKE
AAU01000351	24V	1000N	350mm
AAU01000551	24V	1000N	550mm
AAU01000751	24V	1000N	750mm
AAU01001001	24V	1000N	1000mm*

## PROJECT LIST :



PARKVIEW GREEN, BEIJING, CHINA



EVELYN GRACE ACADEMY, LONDON



ONE/TWO SNOW HILL, BIRMINGHAM UK



DRAGONMART, DUBAI, UAE

LUSAIL MULTIPURPOSE HALL, DOHA. QATAR







KAI TAK CRUISE TERMINAL, HONG KONG, CHINA







In the booming glass LED screen industry, the transparency is the most important factor for windows, this is why most of manufacturers try to make the highest transparency, so do our company. Our company produce invisible PCB technology came out after many years of development, this new technology not only expand the transparent rate up to 95%, but also can be made for any custom projects with soft PCB technology, you can also cut the size of firm as you wanted easily.



The invisible PCB means the PCB board is also transparent, it is hard to find wires in the PCB even if you get closer and check it carefully, the traditional PCB of glass LED screen can not made like this. This is why when the film LED screen is off, you cannot see anything on the window glass. The transparency is 95%.

The invisible PCB is also soft and 1.2 mm thickness, you can make any shape and size with any limitation and applied most of your projects.

#### DETAIL VIEW



PIXEL VIEW



CLOSE VIEW



FRONT VIEW



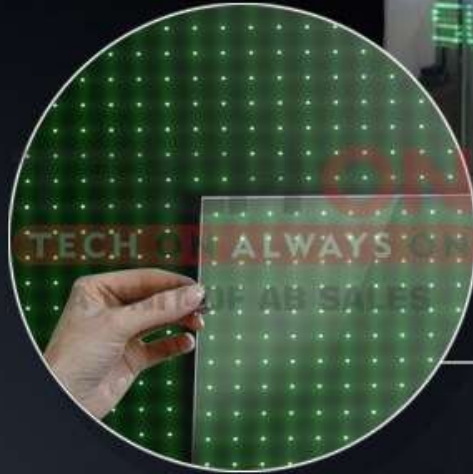
REAR VIEW



# Easy installation



**Paste on** glass directly without any installation frame, and never break the original design on site.



PipeLine



## Vivid see through experience



Transaprent Led Film



Transparent LED module



Cut the size as you want

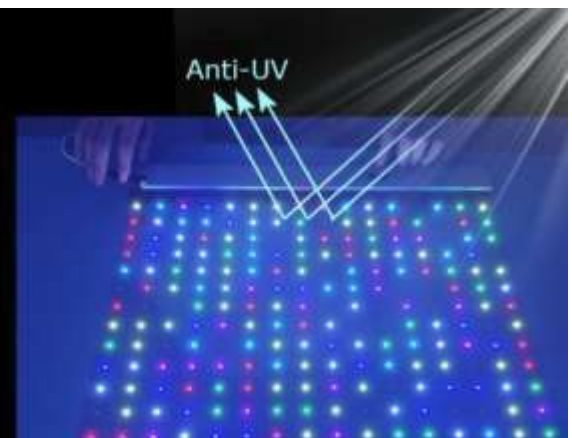


## Slim and light weight

the thickness is only 1.2mm,  
Each 500\*500mm Weighs 0.3kgs,  
the lightest LED display in the world.

## Anti-UV

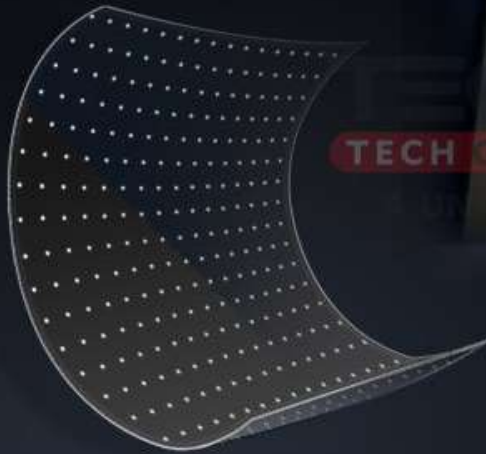
Strong anti-UV material  
5 years without color changes.





\*\*\*\*\*

Soft material for *any creative* installation,  
like curve, round shapes.



TECH ALWAYS



Soft for  
creative design

## Easy and safe system

\*\*\*\*\*

Separate 12V DC telecom power supply ensures the  
highest standard reliability and safety; the system  
controlled by PC or APP through Wifi or 4G,  
and also can be cluster control.



power supply



media player



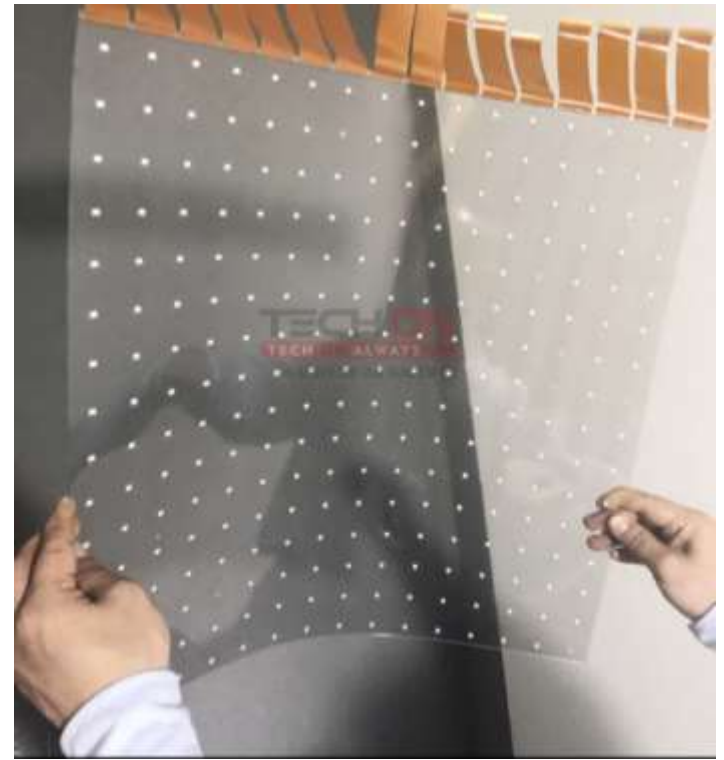
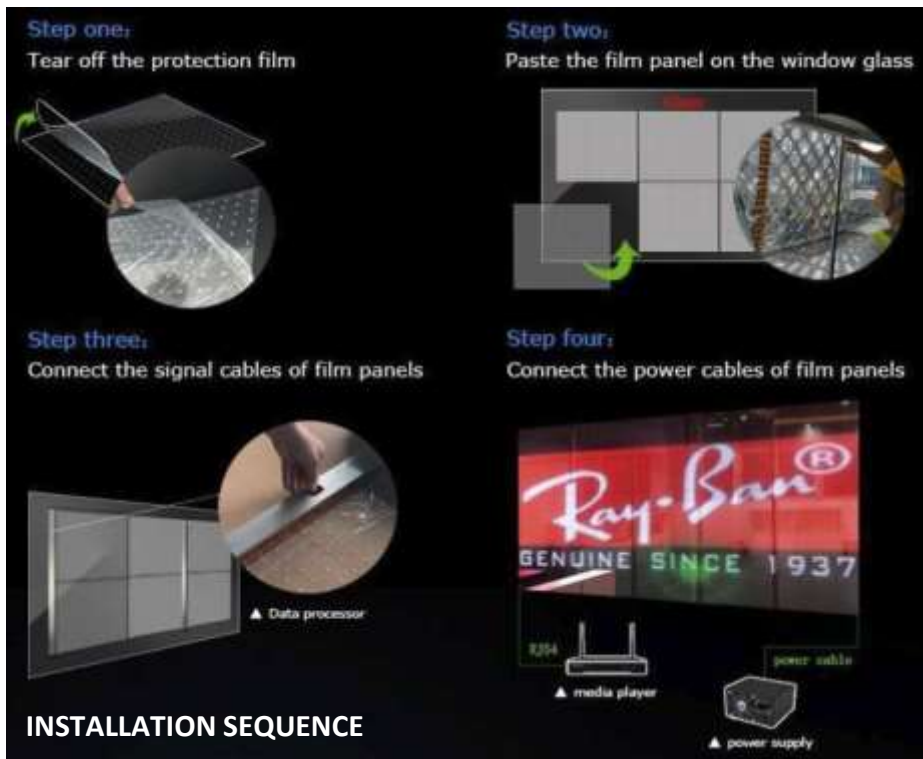
Can be connected to  
most common  
household gadgets.

High Refresh Rate - High Grey Grade



Flexible

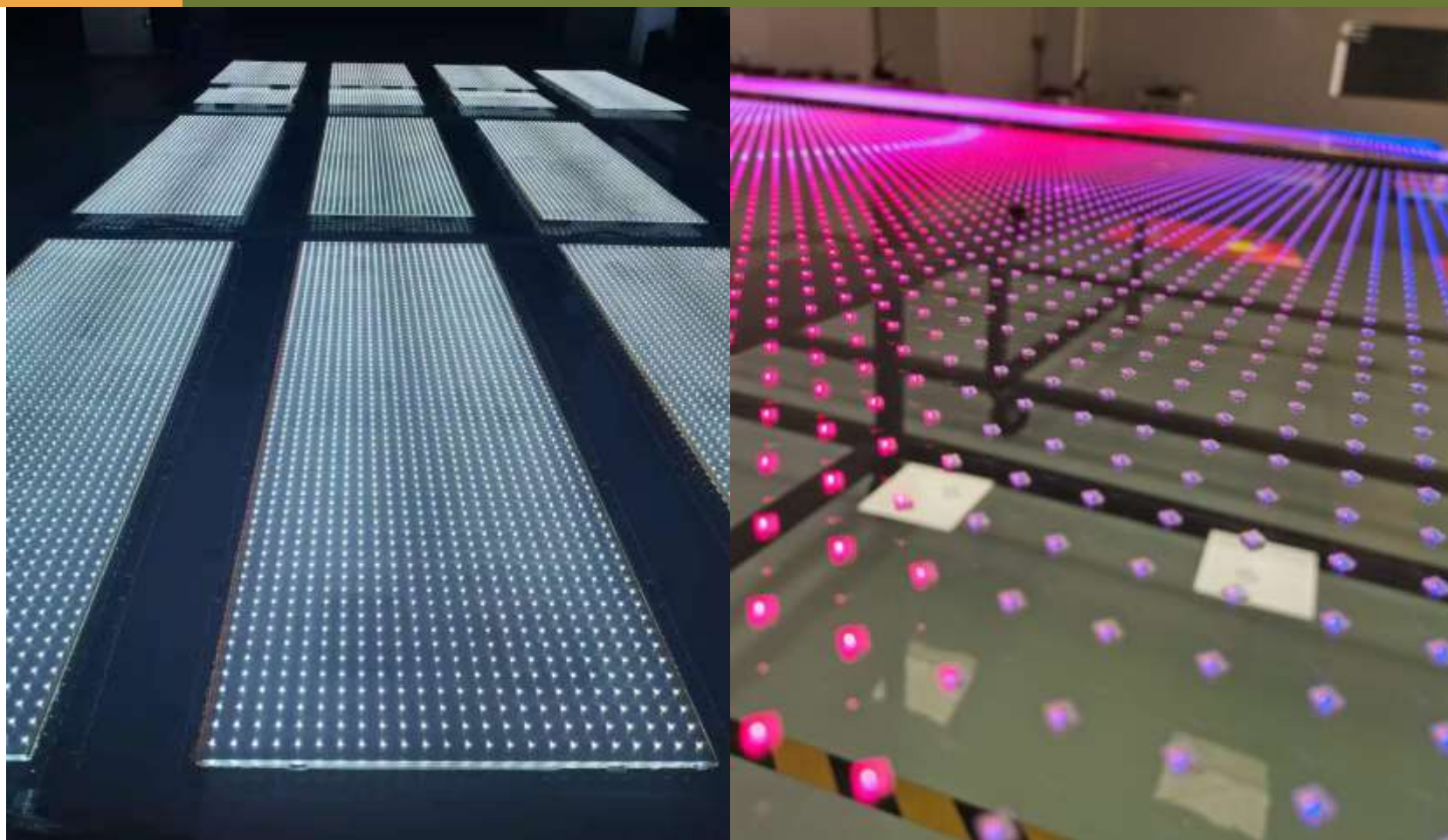




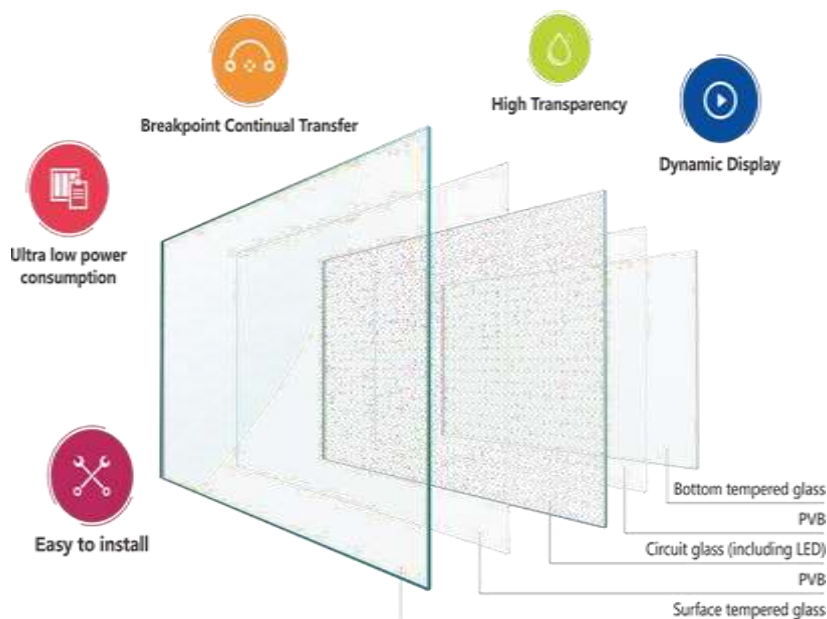
## PRODUCT DESCRIPTION

Parameter	Value	Value	Value
Model	INVISIBLE-20	INVISIBLE-30	INVISIBLE-60
LED Type	SMD3528	SMD3528	SMD3528
Pitch ( mm )	20	31.25	62.5
Film Size ( L×W×H ) / ( mm )	500*500*1.2mm (CUSTOM MADE)	500*500*1.2mm (CUSTOM MADE)	500*500*1.2mm (CUSTOM MADE)
Pixel Per Film	24*24	16*16	8*8
Material	Anti UV PET+AL	Anti UV PET+AL	Anti UV PET+AL
Weight ( kg/m <sup>2</sup> )	3	3	3
Brightness ( nits )	2000	2000	2000
Transparency	>92%	>95%	>95%
Weathering Resistance	Anti-yellowing	Anti-yellowing	Anti-yellowing
Color Temperature ( K )	4500	4500	6500
Viewing Angle ( H/V ) ( ° )	140/140	140/140	140/140
Driving Type	Static	Static	Static
Operating Voltage ( V )	AC220~DC12	AC220~DC12	AC220~DC12
Max Power Consumption ( W/m <sup>2</sup> )	350	300	300
Average Power Consumption ( W/m <sup>2</sup> )	120	100	100
Storage Temperature ( °C )	- 40~ + 85	- 40~ + 85	- 40~ + 85
Operating Temperature ( °C )	- 20~ + 60	- 20~ + 60	- 20~ + 60
Storage Humidity ( RH )	10 % ~90 %	10 % ~90 %	10 % ~90 %
Operating Humidity ( RH )	10 % ~90 %	10 % ~90 %	10 % ~90 %
IP Rating	IP43	IP43	IP43
LED Lifetime ( H )	100,000	100,000	100,000
Installation Type	OCA Pasting	OCA Pasting	OCA Pasting
Maintenance	Rear	Rear	Rear
Max loading numbers of single cable	10 PCS	10 PCS	16 PCS
Certificate	CCC/CE	CCC/CE	CCC/CE





**Multimedia transparent photoelectric glass** is a new type of display material that embeds the LED light source in the glass and controls the built-in LED light source through a smart signal control system to play dynamic videos and graphics. It perfectly integrates the media functions into buildings and does not destroy the design of the buildings. Meanwhile, it has high transparency, high energy efficiency and energy-saving insulation, giving the glass an unlimited value.



#### SPECIAL FEATURES

- **Dynamic Display** - Transparent dynamic display effect, infinite splicing of super-large display screen, strong visual impact brings high advertising returns.
- **High Transparency** - The visible light transmittance is as high as more than 85%, which does not affect the normal lighting of the building and realizes a true "clear" and "transparent" visual perception.
- **Breakpoint Continual Transfer** - The highly reliable breakpoint continual transfer function. The damage of one LED chip will not affect the cascade transmission of signals, making the design simpler and the performance more stable.
- **Ultra low power consumption** - Low power consumption (power consumption is less than 50% of ordinary LED screen), natural heat dissipation, up to 80,000 hours lifespan.
- **Easy to install** - The module integrated design makes it easy to install and maintain.



APPLICATION





Performance Parameter					
Model No		P16	P20	P30	P40
1	Pixel Pitch	16mm X 16mm	20mm X 20mm	30mm X 30mm	40mm X 40mm
2	Pixel Density	3844 dot/m <sup>2</sup>	2500 dot/m <sup>2</sup>	1089 dot/m <sup>2</sup>	625 dot/m <sup>2</sup>
3	Pixel Color	1R+1G+1B Full Color LED/Total 16.7M Colors			
4	Module Size	400×750mm			
5	Maximum Size	1500×2400mm			
6	Brightness (Adjustable)	>2000cd/m <sup>2</sup>	>1500cd/m <sup>2</sup>	>1300cd/m <sup>2</sup>	>1000cd/m <sup>2</sup>
7	Best Viewing Distance	16m	20m	30m	40m
8	Horizontal Viewing Angle	140°			

System Parameter					
1	Input	AC220V±10%,50Hz			
2	Ave.Power Consumption	≤230W/m <sup>2</sup>	≤200W/m <sup>2</sup>	≤150W/m <sup>2</sup>	≤150W/m <sup>2</sup>
3	Max.Power Consumption	≤300W/m <sup>2</sup>	≤300W/m <sup>2</sup>	≤300W/m <sup>2</sup>	≤250W/m <sup>2</sup>
4	Ave. No Failure Time	>10000h /Continuous Working Time>24h			
5	Lifetime	>80000h(Laboratory Data)			
6	Operating System	Android / IOS / WINDOWS 10(8/7/XP)			
7	Playable Content	All animation files(MPG/MPEG/MPV/MPA/AVI/VCD/SWF/RM...), all picture files(BMP/JPG/GIF/PCX...) and office files such as WORD			
8	System Protection	Moisture-proof,dust-proof,anti-corrosion,anti-static, and also has protection over over-current,short-circuit,over-voltage,under-voltage.			
9	Assembly Structure	Unit modular structure, easy to assemble and easy to maintain.			



These sheets can be applied to vertical windows, roofing, curved roofing and ceiling.

Polycarbonate is an innovative engineering plastic that is also versatile due to its transparency, good thermal insulation and impact strength. This makes it suitable for use in a wide range of residential and industrial building applications.

Extrusion is a process used to produce continuously formed plastic multi-wall profiles and solid sheets. All products are co-extruded to ensure protection against exposure to ultraviolet radiation, extending their life and delaying the natural ageing of the material.

## PROPERTIES

**LIGHT WEIGHT** : Polycarbonate is a lightweight material that is used in the construction industry to reduce building costs while guaranteeing compliance with positive and negative wind load requirements.

**TRANSLUCENT** : A key feature of polycarbonate is its transparency. The use of natural lighting, achieved by installing translucent polycarbonate roofing and walls, creates a more comfortable ambience while also ensuring good thermal insulation. Polycarbonate can be suitably tinted to modulate light transmission, optimise shading and thus reduce overheating inside the building. Coloured pigments are used to achieve pleasant colour effects to satisfy the most demanding aesthetic and architectural requirements.

**VERSATILE** : We supply an extensive range of products for use in the construction of translucent roofing and walls, skylights, fixed and openable insulated windows. Our continuous research has led to the development of a series of steel and aluminium accessories to complete the range. These are designed to make installation simple and safe and ensure compliance with the applicable fire and load strength ratings and safety of building requirements. Our products are all certified to the latest thermal insulation and energy saving standards.

**UV AND HAIL RESISTANT** : The exterior surface of the panel is coextruded with high-performance UV absorbing polycarbonate to ensure excellent protection against ultra-violet rays, hail and accidental impacts even after prolonged exposure to sunlight.

**SAFE** : Polycarbonate has a particularly high impact strength. Our products are therefore highly resistant to accidental impacts and hail and meet the requirements of safety standards for translucent glazing in public and work environments.

**ENVIRONMENTAL FRIENDLY MATERIAL** : The various phases of polycarbonate processing involve very low energy consumption and environmental impact. Polycarbonate is an energy-efficient solution and is totally recyclable at the end of its life.

**CHEMICAL RESISTANCE** : Polycarbonate has good resistance to most chemicals with which it is likely to come into contact during normal use.

	VALUE	TEST METHOD
PHYSICAL PROPERTIES	Density	1.200 Kg/m <sup>3</sup>
	Water absorption	± 0.19 %

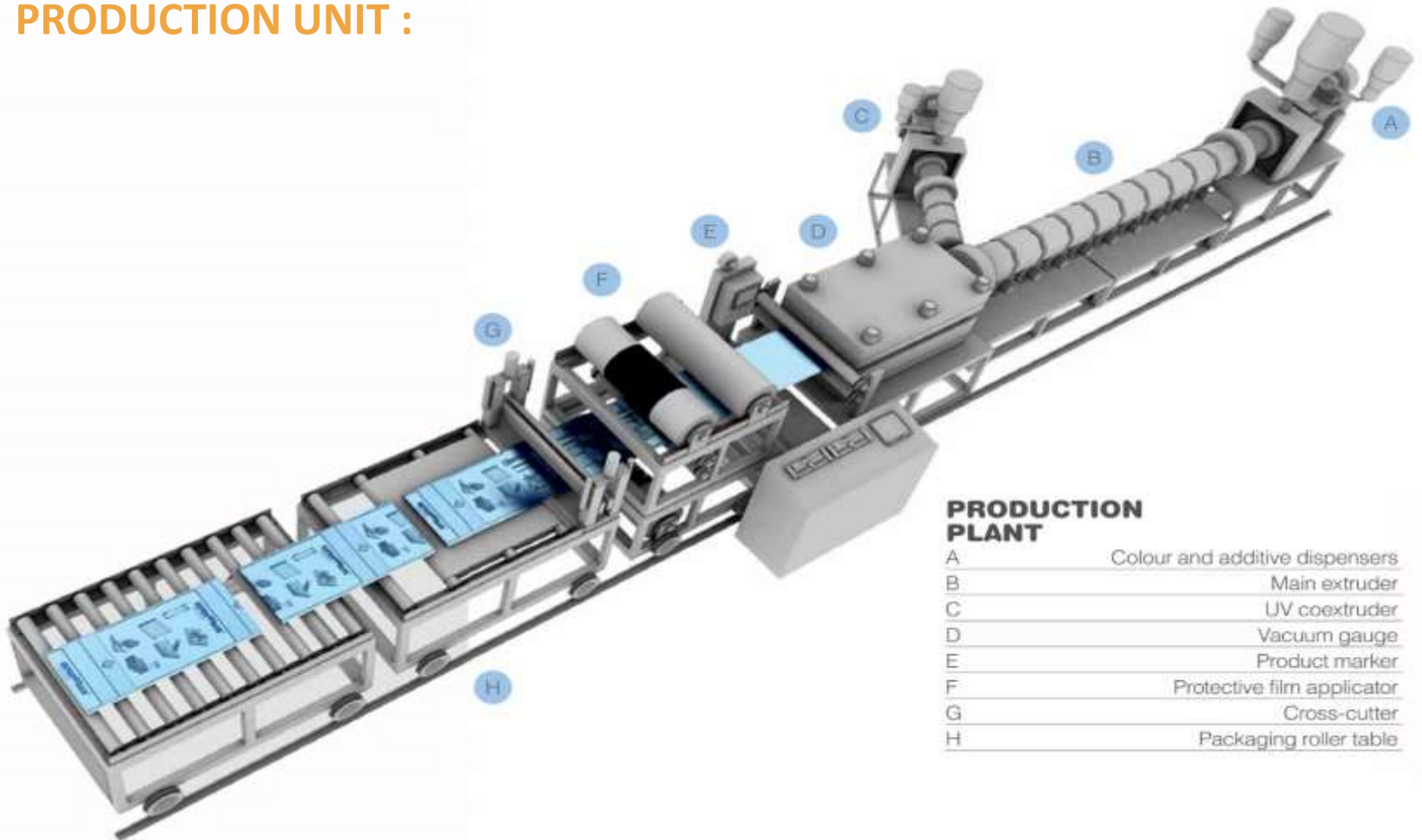
	VALUE	TEST METHOD
OPTICAL PROPERTIES	Light transmission	89 %
	Refraction index	1.58

	VALUE	TEST METHOD
MECHANICAL PROPERTIES	Resistance to tensile stress	66 MPa
	Resistance to yield stress	60 MPa
	Tensile modulus	2,300 MPa
	Elongation at break	150 %
	Izod impact	93 kJ/m <sup>2</sup>

	VALUE	TEST METHOD
THERMAL PROPERTIES	Application temperature	-40 +120°C
	Linear thermal expansion	0.065 mm/m°C
	Vicat (B/50)	151 °C



# PRODUCTION UNIT :



## PRODUCTION PLANT

A	Colour and additive dispensers
B	Main extruder
C	UV coextruder
D	Vacuum gauge
E	Product marker
F	Protective film applicator
G	Cross-cutter
H	Packaging roller table

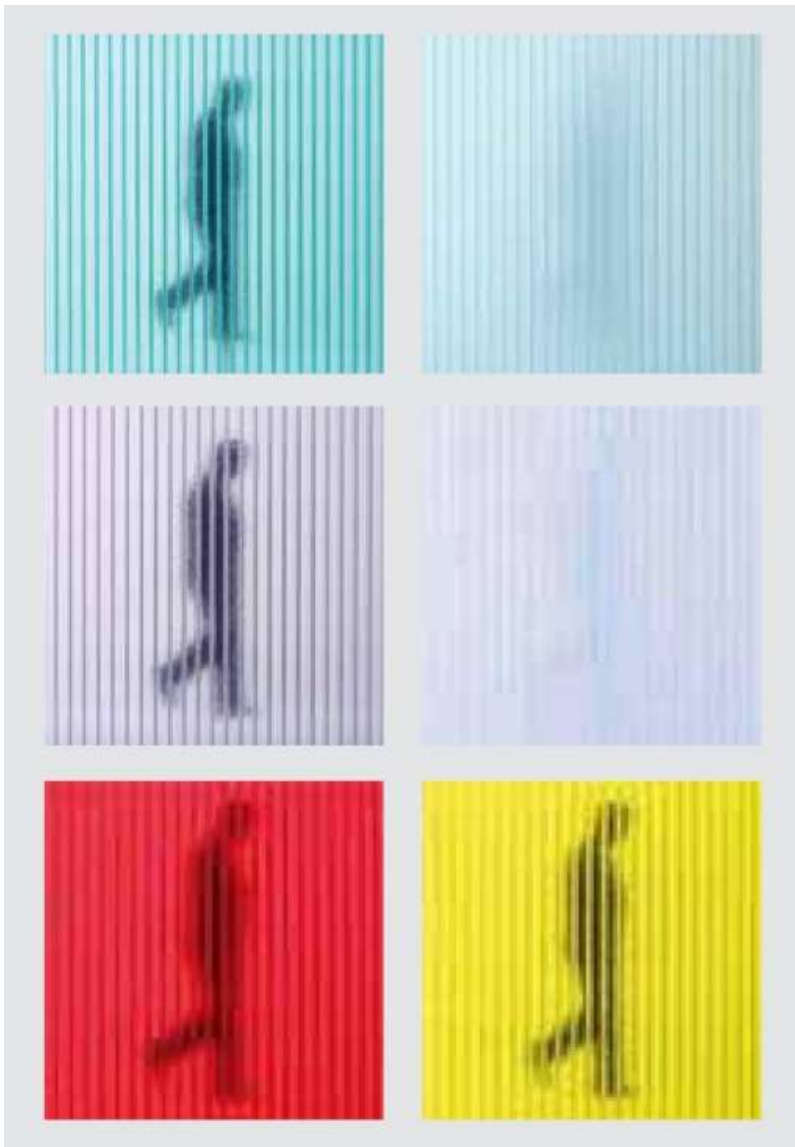
# CERTIFICATION :





## SPECIAL TREATMENT PROCESS:

Special treatment for the improvement of the characteristics of the products in the construction of roofs and facades translucent, with innovative design solutions.



## SPATIAL FEATURES :

**CUSTOM MADE COLOURS** : Panels can be produced with an infinite range of nuances, leaving the traditional few standard PC colours. Thanks to our production capacity, we can pull out the desired shade from a sample and re-create it in the polycarbonate mass. We produce the creativity shades.

**THE TECHNOLOGY OF DOUBLE COLOUR** : The panels can be produced also with different colours on the two sides, this is due to the extrusion of two different masses, one for the inner surface and another for the external one. The particular production's technology allows to manage simultaneously the light transmission and colour effect, maximizing the projects visual impact.

**UV MATT TREATMENT** : In order to avoid surface's glares that usually characterize the PC building covering and to get a new material sensation, we can coextrude a special matt and UV-protected finish on the outer wall panels. It called UV-protected MATT. This treatment allows also a better distribution of natural light in the interiors and give a special one silk fill-touch.

**AR TREATMENT** : The panels with AR coating are characterized by a kind of co-extrusion on the inner wall which diffuses the sunlight. It reduces the passage of heat but moreover this innovative surface prevents glares or flash, thus improving the environment's visual comfort of the locations they are installed.

**AR ABSOLUTE TREATMENT** : Coloured opaque co-extrusion, white or any other colour, applied to the inner wall of panels (whose external side can have a different coloration or can be transparent), in order to block the view of any substructures or insulating materials when they are used to realize translucent glazing or façade cladding.

**IR TREATMENT SOLAR CONTROL** : The panels spiked with IR treatment can absorb the portion of light corresponding to the infrared spectrum (780-1400nm), blocking solar heat but letting pass the brightness. Using these products, you can reduce up to 25% increase in the internal temperature caused by the greenhouse effect and you can keep the climate comfort.

**ANTI-GRAFFITI ANTI-SCRATCH TREATMENT** : The panels (polycarbonate) are virtually unbreakable and this property jointed with the insulation value makes them ideal for: façade, translucent window, skylights. If in the location where the polycarbonate panels are installed exists the risk of damage by vandalism as spray paint or kind of surface scratch, the better solution is the "AG-ANTIGRAFF" treatment. It create an anti-graffiti and anti-scratch surface, with a repellent barrier to oils and water prevents the "graffiti" to penetrate deeply into the substrate and will make it easy to remove. At the same time the surface will be more resistant to the aggression of many chemical agents.



## MODULAR INTERLOCKING SYSTEM:

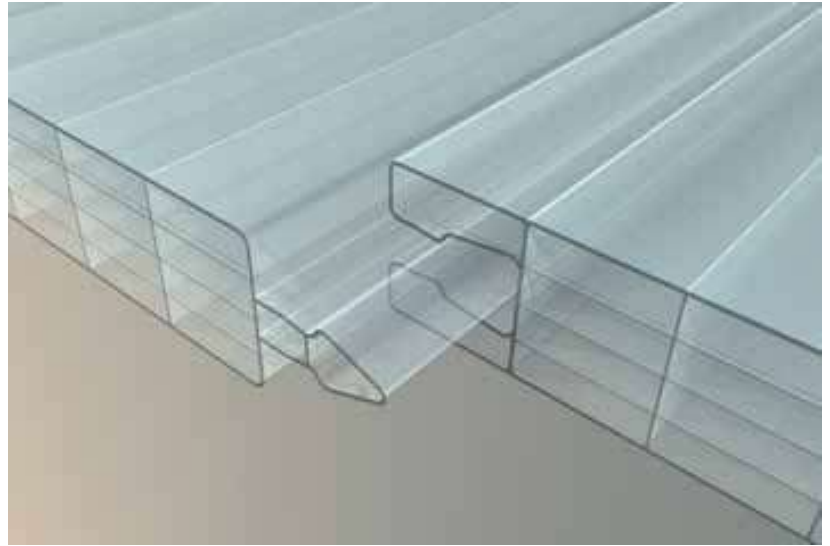
**INSERTION OF PLATE :** Insertion of stainless steel plate for anchorage to existing structure.



**VERTICAL GLAZING :** Construction of continuous transparent glazing, with section-breaker profile

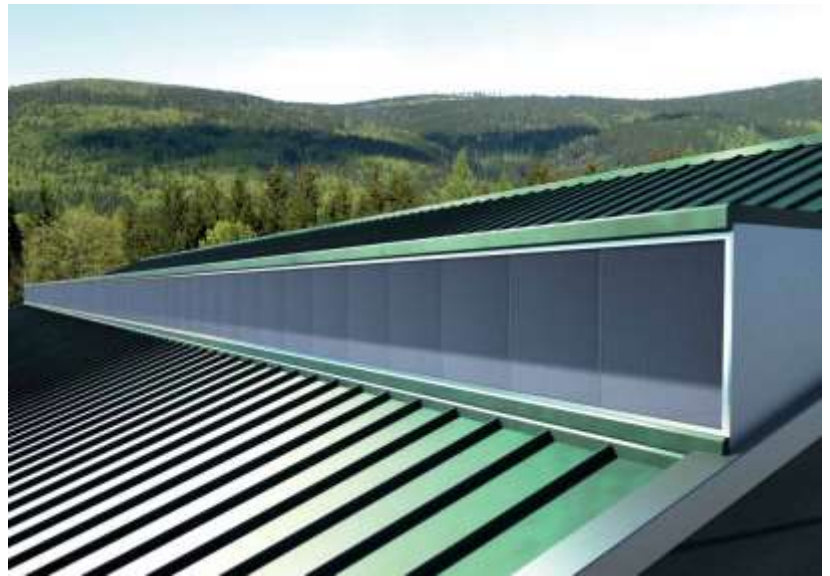


**INTERLOCKING JOINTS :** Detail joint male – female.



The 20mm-thick, 5 walls structure with tongue and groove connection gives the panels remarkable flexural strength. It also allows the panels to be installed without the use of metal reinforcement frames, thus eliminating heat loss due to the thermal bridges caused by these structures.

The modular connection ensures a watertight seal for glazing with an inclination of up to 30°.

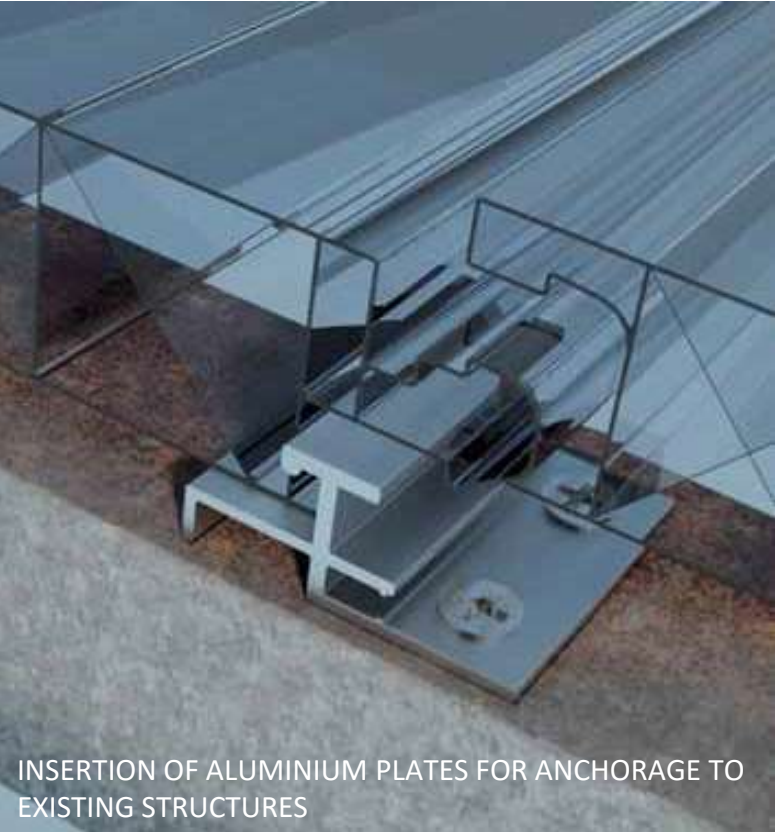


The sheet thickness varies from 10 mm – 60 mm.



The 40mm-thick, 4 walls design with tongue and groove connection gives the panels remarkable flexural strength. It also allows the panels to be installed without the use of metal reinforcement frames (continuous windows), thus eliminating heat loss due to the thermal bridges caused by these structures (discontinuous windows).

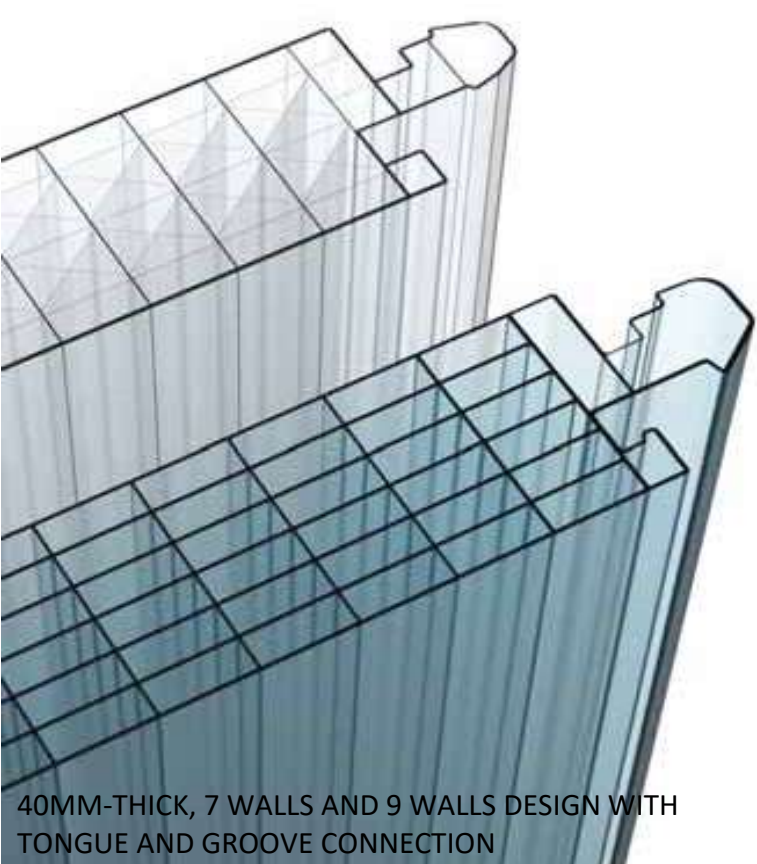
For installations exceeding 2.2m, a suitable section breaker profile must be installed to which the panels can then be fixed. This is done using the specific brackets to give the system the necessary resistance to negative wind load and permit sliding due to thermal expansion



INSERTION OF ALUMINIUM PLATES FOR ANCHORAGE TO EXISTING STRUCTURES



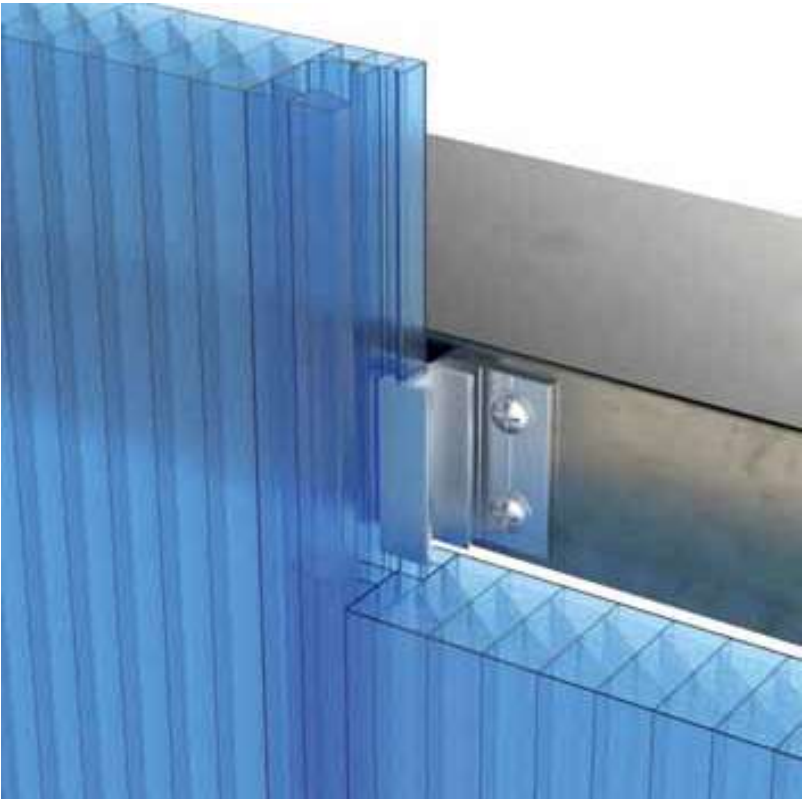
BASE PROFILE



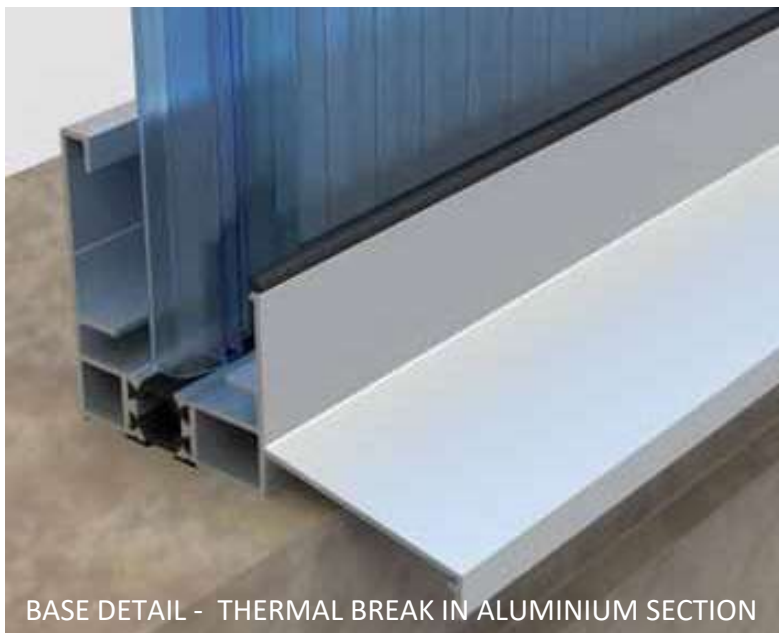
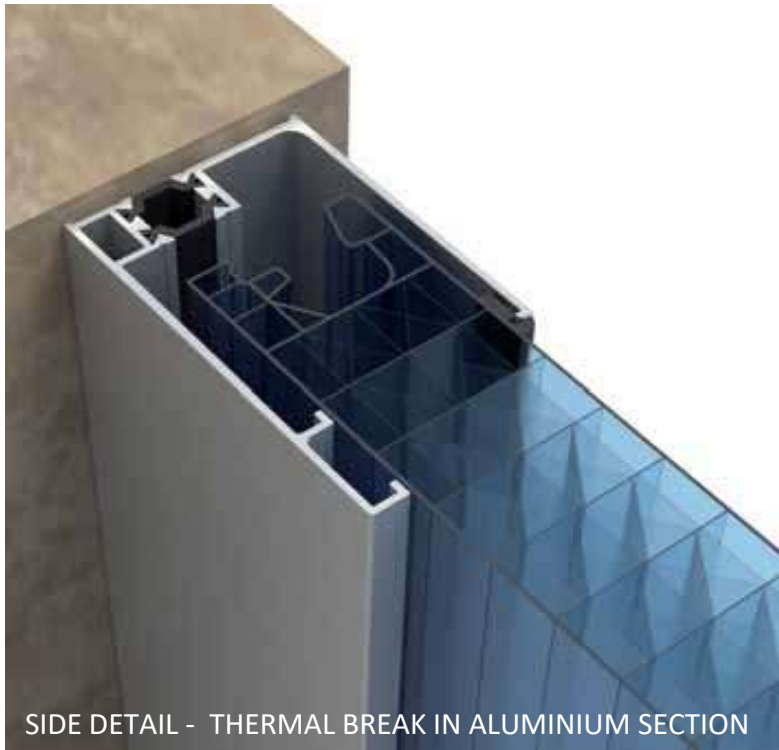
40MM-THICK, 7 WALLS AND 9 WALLS DESIGN WITH TONGUE AND GROOVE CONNECTION

The 40mm-thick, 7 walls and 9 walls design with tongue and groove connection gives the panels remarkable flexural strength. It also allows the panels to be installed without the use of metal reinforcement frames (continuous glazing), thus eliminating heat loss due to the thermal bridges caused by these structures (discontinuous glazing).

For installations exceeding 2.2m, a suitable section-breaker profile must be installed to which the panels can then be fixed. This is done using the specific brackets to give the system the necessary resistance to negative wind load and permit sliding due to thermal expansion.



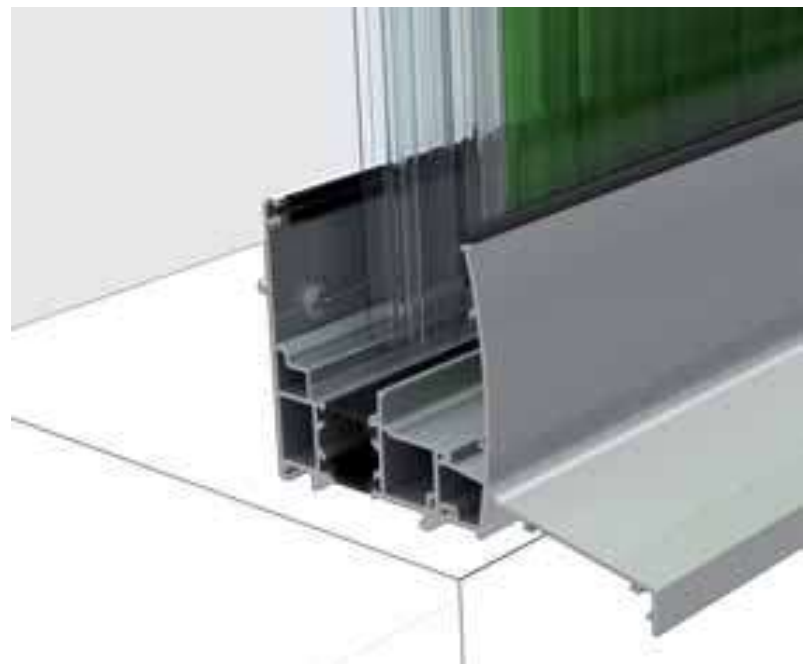
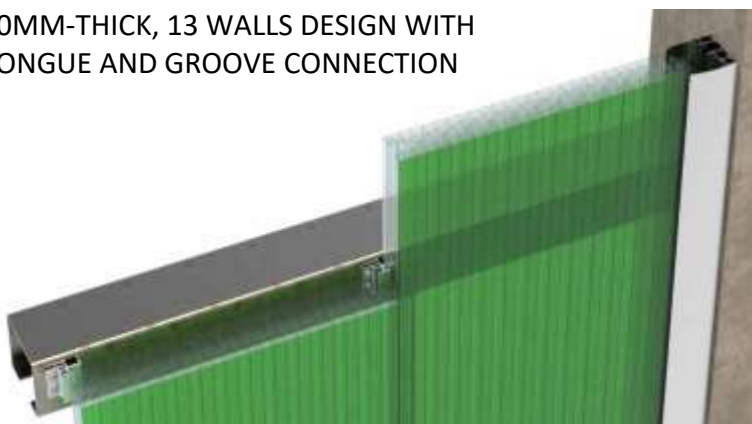




In addition to a complete range of aluminium profiles (also available as thermally insulated) for installing the panels, the system also includes opening windows (manually operated or motorised) to ventilate the building.

The air cells of the polycarbonate panels must be sealed using vented aluminium breather tape. This allows correct ventilation and prevents soiling on the inside.

60MM-THICK, 13 WALLS DESIGN WITH TONGUE AND GROOVE CONNECTION



BASE DETAIL - REMOVABLE BASE PROFILE WITH THERMAL BREAK IN ALUMINIUM SECTION

The 60 mm-thick, 13 walls design with tongue and groove connection gives the panels remarkable flexural strength. It also allows the panels to be installed without the use of metal reinforcement frames, thus eliminating heat loss due to the thermal bridges caused by these structures. For installations exceeding 3.5m, a suitable section-breaker profile must be installed to which the panels can then be fixed. It is done using the specific brackets to give the system the necessary resistance to negative wind load and permit sliding due to thermal expansion.

## MODULAR OPENING SYSTEM:

### OPENABLE SYSTEM WITH THERMAL BREAK





**OPENABLE SYSTEM – HEAD DETAIL**



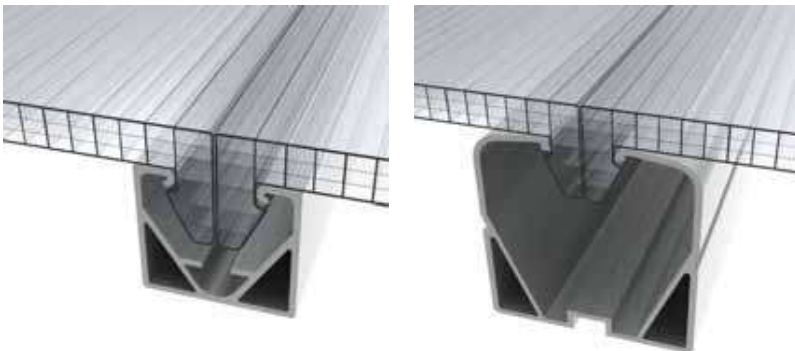
**OPENABLE SYSTEM – BOTTOM DETAIL**

The use of new perimeter profiles with thermal break ensures perfect sealing against atmospheric agents thus avoiding the common occurrence of heat loss.

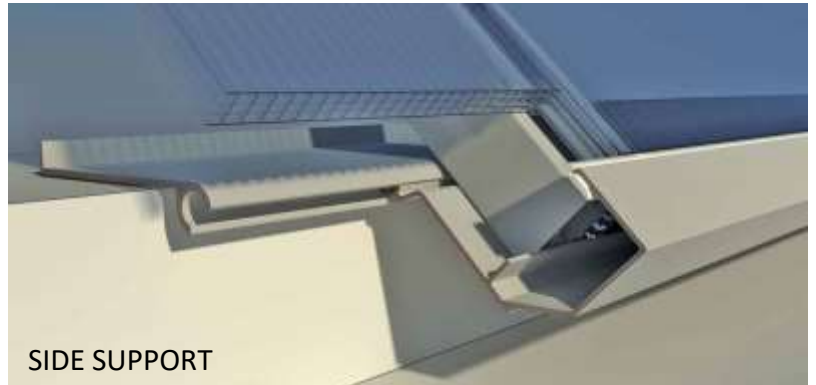
New aluminium profiles with thermal break allow creation of openable systems for ventilation of curtain walls.

## MODULAR CONNECTOR SYSTEM:

### SELF SUPPORTING SYSTEM

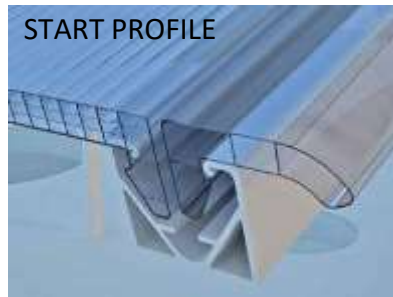


The systems can be used for vertical walls and flat roofing applications. The panels are inserted on open joint metal tubes using a click-on system. This ensures the necessary wind and snow load resistance properties

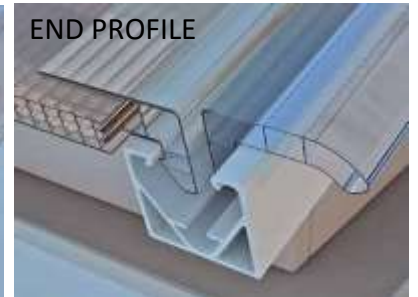


**SIDE SUPPORT**

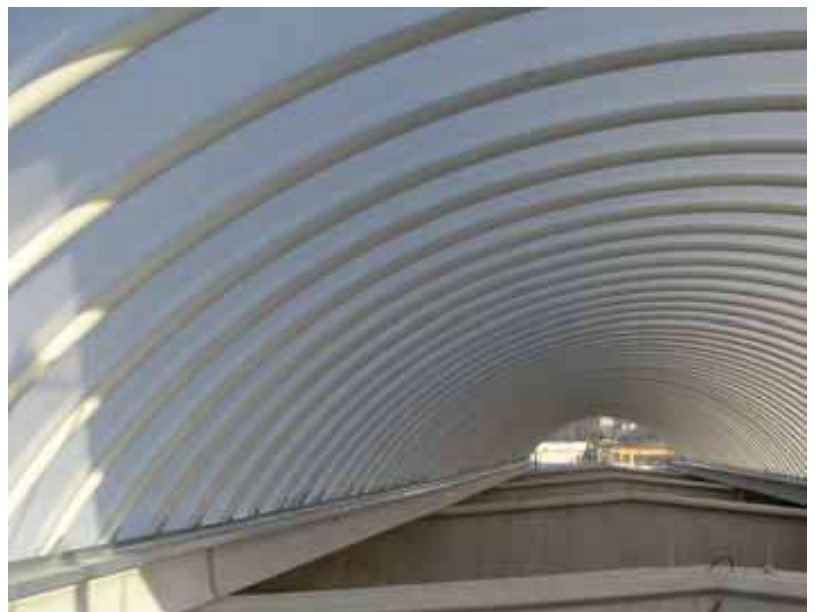
### SELF SUPPORTING SYSTEM - CURVED



**START PROFILE**

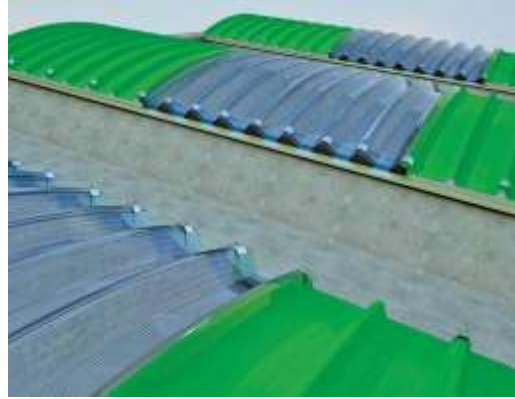
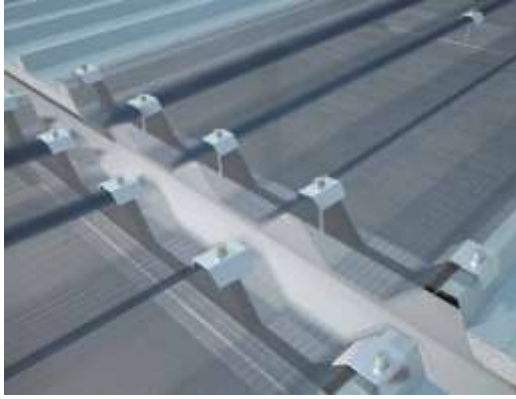


**END PROFILE**





# CORRUGATED POLYCARBONATE SHEET



## TECHNICAL PROPERTIES :

The corrugated sheets are produced in different profiles keeping in mind the structural part attached to it. They are widely used in the construction of skylights, walls, transparent roofs also in combination with cover plates and insulated panels. The versatility of this product allows you to create skylights, gutter-ridges or eave inter-layers.

**LIGHT TRANSMISSION** : Their versatility in the roofing applications makes it ideal to optimize light diffusion within the building.

**PROFILE RANGE** : With the new production technology any kind of requested profile could be obtained.

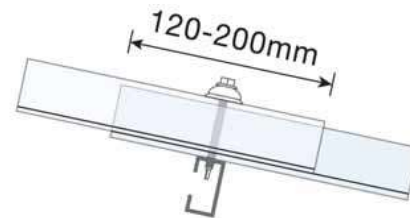
**UV PROTECTION** : These sheets are produced with external protection against UV rays. This treatment gives the product a better guarantee of durability, mechanical properties and optical properties over time.

**SHEET CUTTING** : These sheets can be cut with a circular saw, small-toothed, at high speed of rotation, being careful to advance slowly. You can also use jig saws or shears. In any case, it is important to support the sheet in the vicinity of the point of cutting and to eliminate the dust generated by cutting.

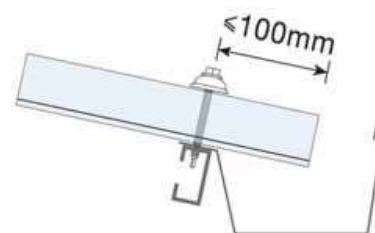
**CHEMICAL RESISTANCE** : If necessary for installation, use only neutral sealants and adhesives compatible with polycarbonate. Avoid contact between sheet plates and fresh paint or other substances that are incompatible and could damage the sheets.

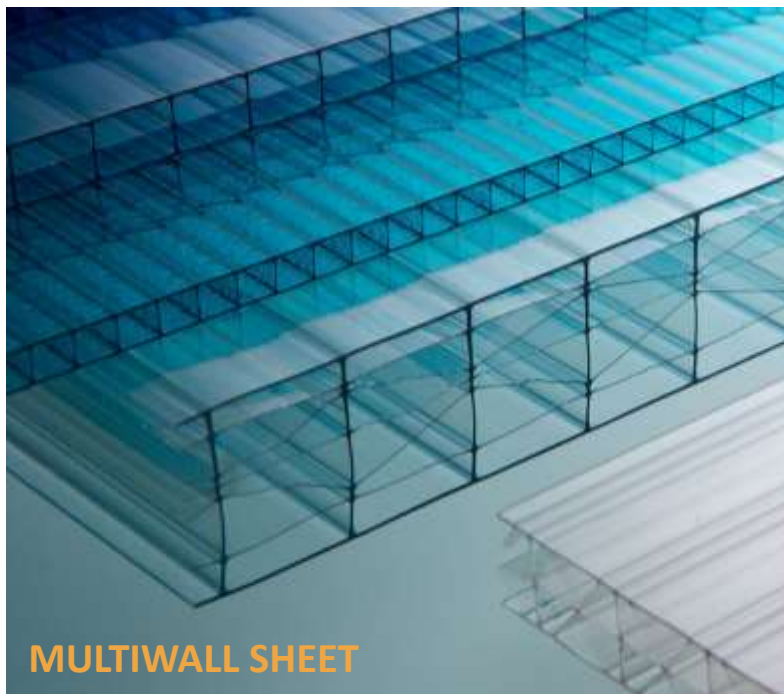
**MOUNTING THE PANELS** : The fixing of the plates must take place in correspondence of the structures of each high ridge, with screws 6,3 x 80 mm, fitted with sealing. The use of other types of fasteners may alter the resistance of the sheets. For the fastening a pre-drilling is advisable, made with a metal tip with a diameter greater than 2 mm to that of the screw. The excessive tightening of the fasteners, preventing movement of the plates due to thermal expansion, may compromise the seal.

**ELEMENT OVERLAPPING** : The minimum overlap of the sheets in width should be 120 mm.



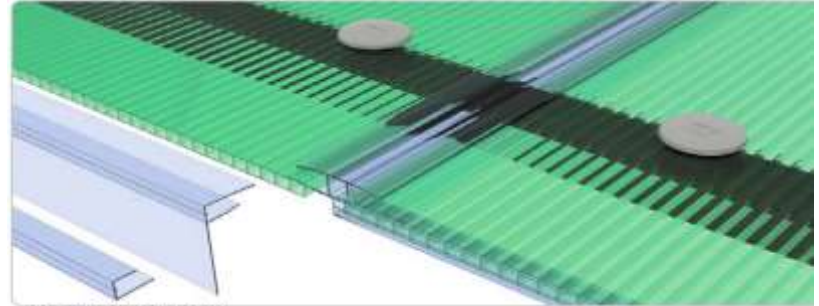
**END PROTRUSION** : At the end of the covering the sheets must not protrude more than 100 mm above the gutter.





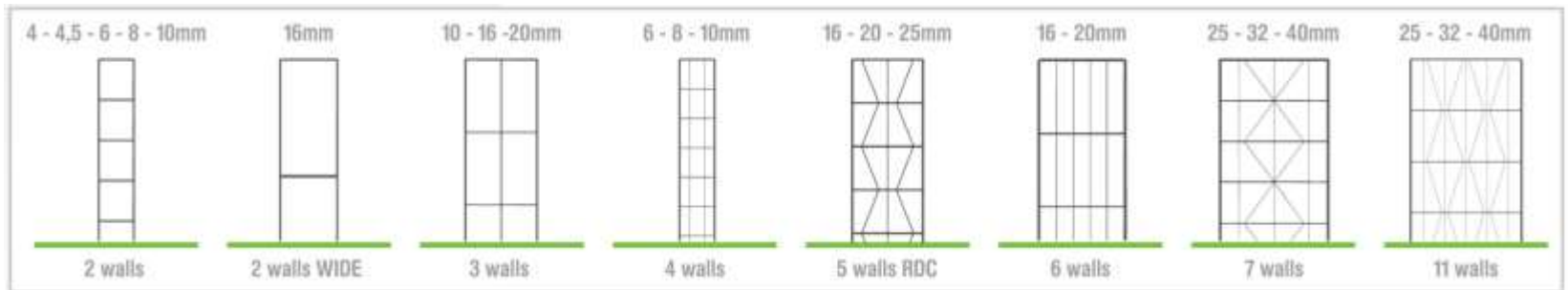
**MULTIWALL SHEET**

The multiwall structure with air-cells ensures excellent thermal insulation and excellent impact resistance. It is produced with ultraviolet protection on the outer side (2 sides upon request), which guarantees aging resistance even after prolonged exposure to atmospheric agents. It is used for roofing, glazing, greenhouse, skylight, veranda, gazebos, shelters and false ceiling. Moreover in the curved applications, the honeycomb structure increases the rigidity in the same direction of the channels.

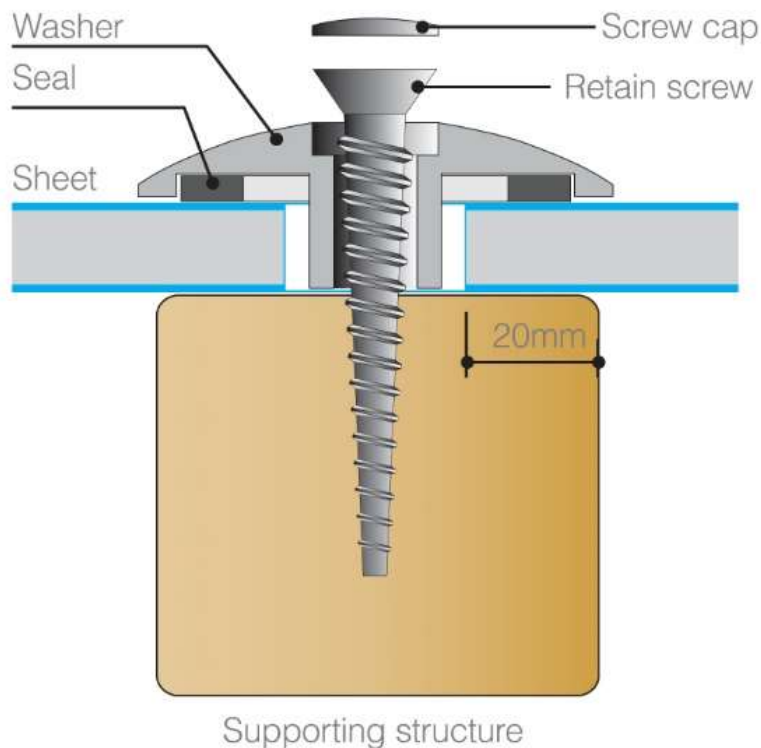


**CONTINUOUS ROOFING**  
Detail of roof with H-shaped connector and air cell and profiles

### SHEET PROFILES :



### TYPICAL FIXING DETAIL : LOCK WASHERS



## TECHNICAL FEATURES

**LIGHT TRANSMISSION** : High-resistance pigments (opal, bronze and green) are added to the polycarbonate to achieve different light transmission values.

**SOLAR FACTOR** : The solar factor is closely linked to the sheet structure. It is the ratio, expressed as a percentage, between the total energy transmitted to the inside and total solar radiation.

**THERMAL INSULATION** : Heat loss is normally defined as thermal transmittance and referred to in physics as the “U-value”. It is the rate of heat loss through a unitary surface per degree centigrade difference in temperature between the two sides and depends on the properties of the material of which the structure is made and the linear thermal transmittance conditions.

**THERMO WELDING** : The sheets can be supplied welded at their ends, (up to 10mm thick) ensuring throughout time the cleanliness on the inside of the cells and greater transparency.

**CLOSING TAPES** : Adhesive steel tapes of varying heights for the closing of the cells are available:

- H. 19mm for sheets thick 4,5-6mm.
- H. 25mm for sheets thick 8-10mm.
- H. 38mm for sheets thick 16mm.
- H. 60mm for sheets thick 25-32-40mm.

**SELF EXTINGUISHING** : These sheets have Class 1 type approval and meet the Euro-Class B-s1,d0 fire rating.





# POLYCARBONATE SOLID SHEET

The development of technologies in the extrusion plastic’s field has allowed to create our production plant, unique in Europe, for the extrusion of polycarbonate solid sheets with a width of 2.500mm, available in various thicknesses and colours. The sheets can be ultraviolet-protected on both sides. The sheets are as transparent as glass but weigh half as much it, they are 250 times more impact resistant then glass and they have a good fire rating. For these reasons PC sheets have a high-versatility in the construction and Industry sectors.

## PRODUCTION STANDARDS :

Thickness (mm)	2	3	4	5	6	8	10	12
Weight (Kg/m²)	2,4	3,6	4,8	6,0	7,2	9,6	12,0	14,4
Width (mm)	2.050 - 2.500							
Lenght (mm)	6.100							

## TECHNICAL FEATURES

**SAFETY** : These sheets are used in safety glazing applications, for machine tool guards. They are used instead for build roof, vertical windows and advertising signs.

**LIGHTNESS** : Compared to normal glass structures, these sheets considerably reduce the weight of the structures. A solid polycarbonate sheet weighs 50% less than a sheet of glass of the same thickness.

**LIGHT TRANSMISSION** : They have good light transmission properties and are also available in bronze and opal.

**ENERGY SAVINGS** : They provide excellent thermal insulation, an important factor in reducing fuel consumption for heating buildings.

**SELF EXTINGUISHING** : The solid polycarbonate sheets have Class1 type approval in thickness from 8mm to 12mm, and meet the Euro-Class B-s2,d0 fire rating in accordance with the European legislation EN 13501-1 for thickness from 2mm to 6mm.

**COEXTRUSION** : A layer of high-performing UV absorber is coextruded onto both sides of these sheets. This filters the light and protects the polymer against the effects of ageing, ensuring excellent impact strength even after prolonged exposure to sunlight.

**IT IS DURABLE AND IT HAS UV PROTECTION ON BOTH SIDES.**

PHYSICAL PROPERTIES		Value	Unit	Test metod
	Density	1.2	gr/cm <sup>3</sup>	ISO 1183
	Moisture absorption 23°C	0.15	%	ISO 62-4
	Refractive index 20°C	1.586	-	ISO 489

MECHANICAL PROPERTIES		Value	Unit	Test metod
	Resistance to tensile stress	>60	MPa	ISO 527-2
	Elongation at yield	6	%	ISO 527-2
	Elongation at break	>70	%	ISO 527-2
	Elastic modulus	2.300	MPa	ISO 527-2
	Limiting flexural stress	ca.90	MPa	ISO 178
	Impact strength (Charpy, unnotched)	no break	KJ/m <sup>2</sup>	ISO 179
	Impact strength (Charpy, notched)	ca.11	KJ/m <sup>2</sup>	ISO 179

THERMAL PROPERTIES		Value	Unit	Test metod
	Vicat softening temperature	148	°C	ISO 306
	Thermal conductivity	0.2	W/m°C	ISO 8302
	Linear thermal expansion	0,065	mm/m°C	ISO 11359-2

ELECTRICAL PROPERTIES		Value	Unit	Test metod
	Dielectric strength	35	kV/mm	IEC 60243-1
	Volume resistivity	1E14	Ohm/m	IEC 60093
	Surface resistivity	1E16	Ohm	IEC 60093

## APPLICATION OF FLAT SHEET

Solid polycarbonate sheets can be installed in most PVC, wood, steel and aluminium structures and frames. The frame must hold the sheet in place while allowing it to expand. The choice of sheet thickness depends on the load value required. According to the size of the sheet, the effective area and also the thickness can be calculated.



## APPLICATION OF COLD-CURVED SHEET

It is ideal for building integral arch or tunnel structures. The minimum bend radius is 150 times the thickness of the sheet. The choice of sheet thickness depends on the bend radius R but also on the width of the sheet.

Example:

Sheet thickness: 3mm

Min. radius = 3 x 150 = 450mm



### MINIMUM BEND RADIUS

Thickness (mm)	2	3	4	5	6	8	10	12
Radius (mm)	300	450	600	750	900	1.200	1.500	1.700



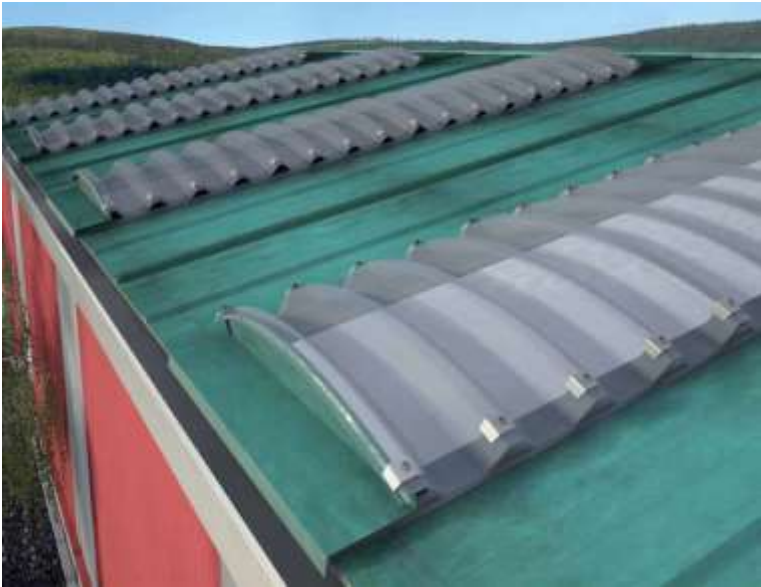
## PROJECT LIST :



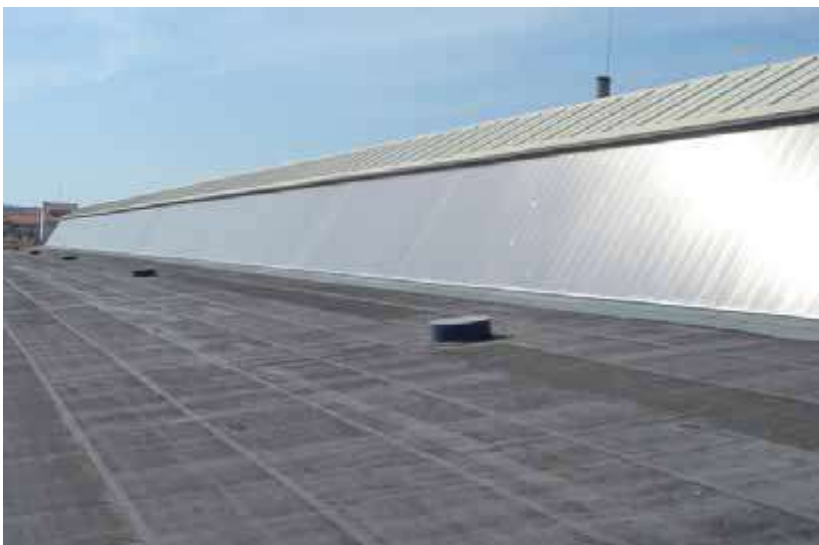




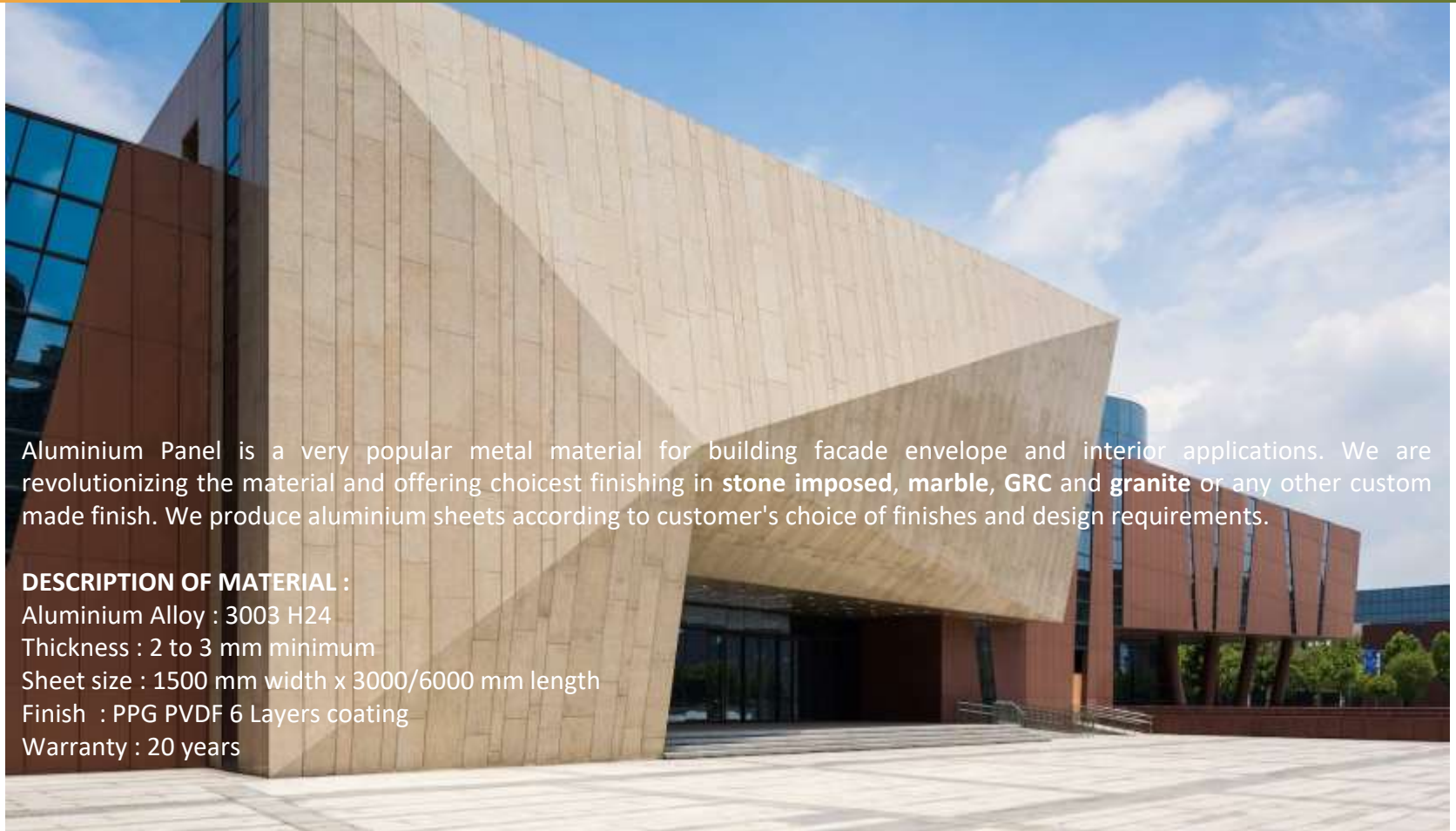












Aluminium Panel is a very popular metal material for building facade envelope and interior applications. We are revolutionizing the material and offering choicest finishing in **stone imposed, marble, GRC** and **granite** or any other custom made finish. We produce aluminium sheets according to customer's choice of finishes and design requirements.

#### DESCRIPTION OF MATERIAL :

Aluminium Alloy : 3003 H24

Thickness : 2 to 3 mm minimum

Sheet size : 1500 mm width x 3000/6000 mm length

Finish : PPG PVDF 6 Layers coating

Warranty : 20 years

#### MATERIAL SAMPLES :



MARBLE FINISH



STONE FINISH



GRANITE FINISH



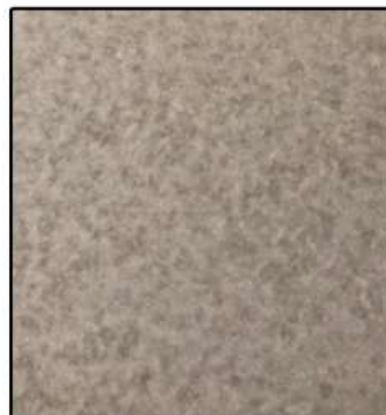
GRANITE FINISH



GRC FINISH



MARBLE FINISH



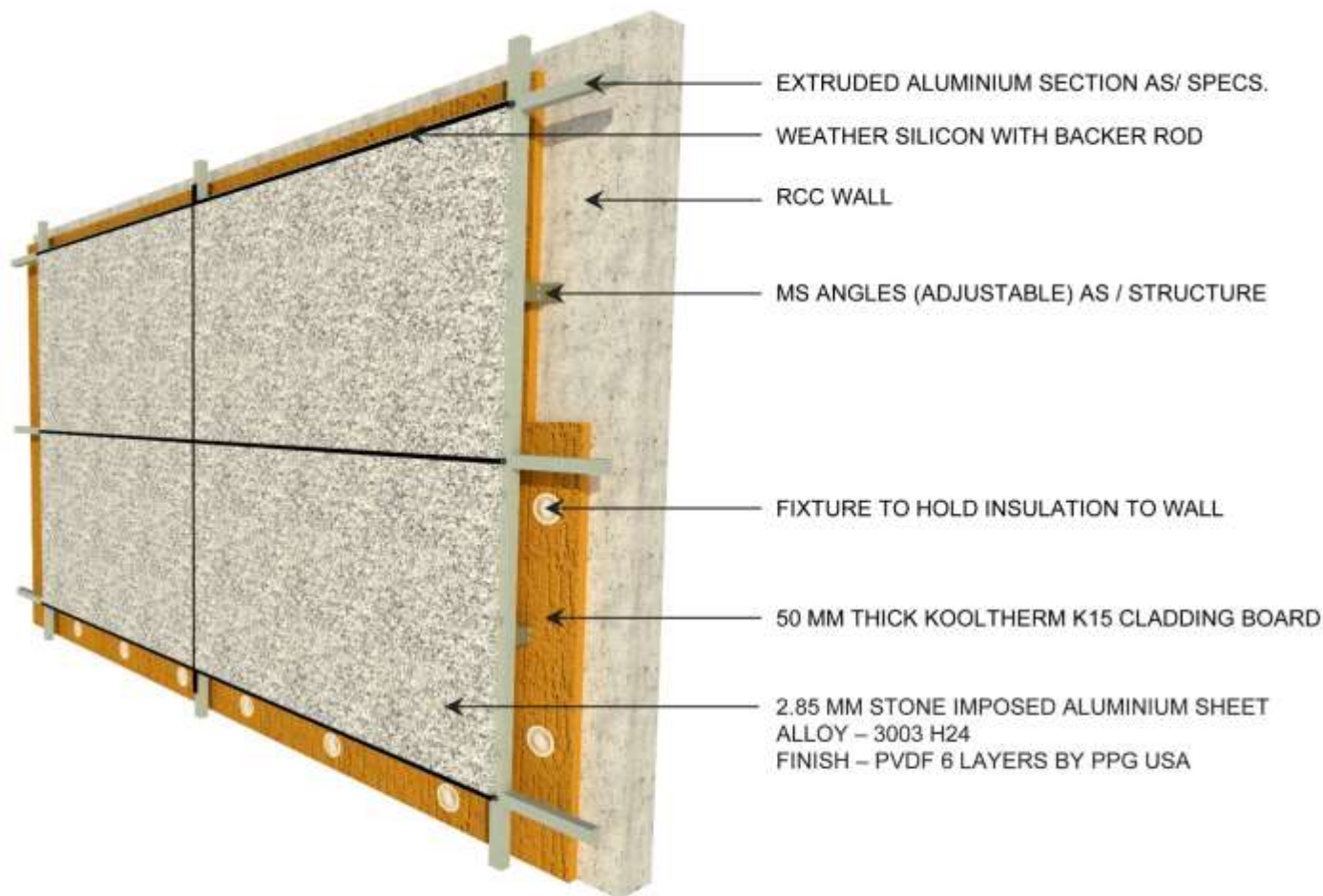
GRC FINISH



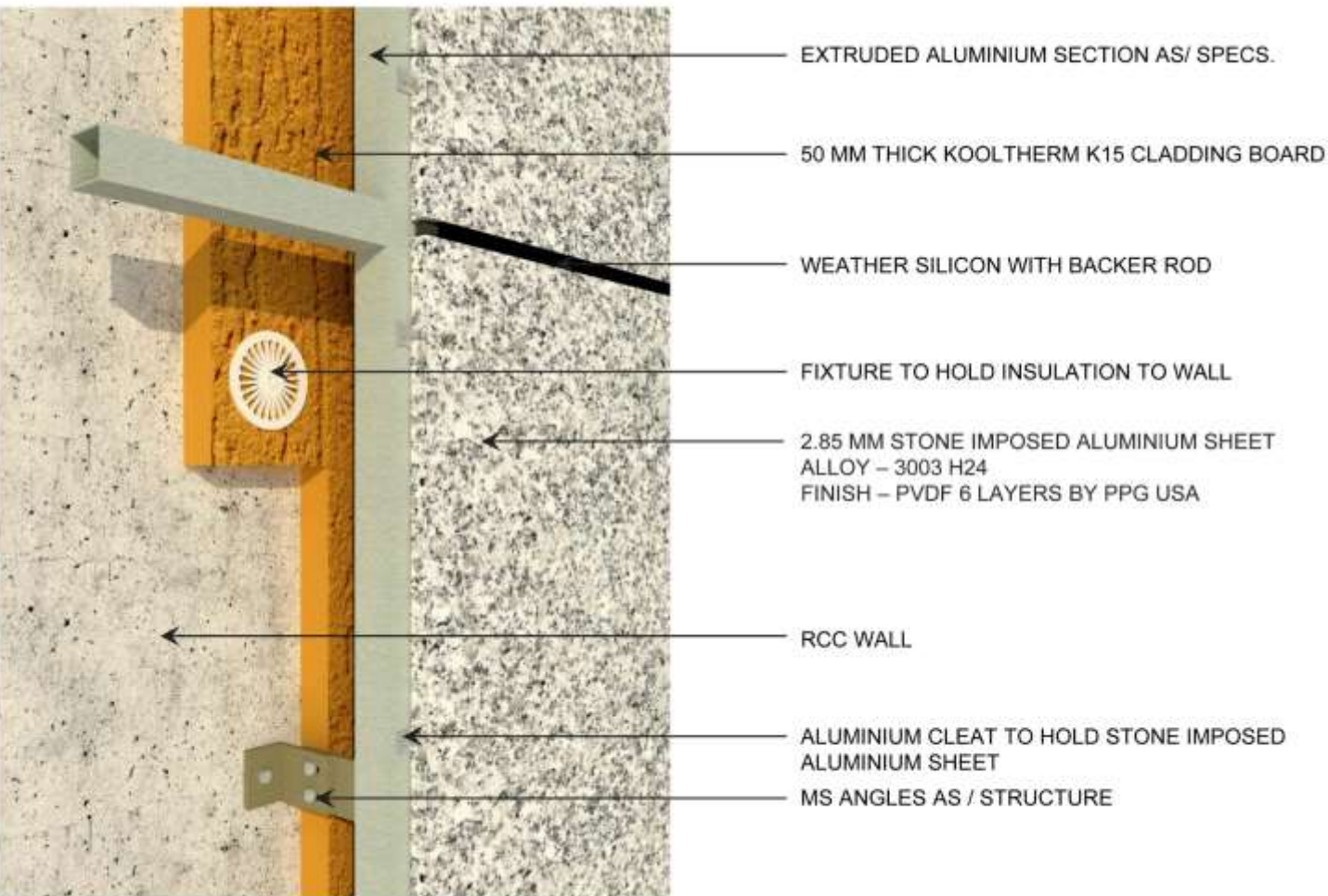
3D BENDING - STONE FINISH



# TYPICAL FIXING DETAILS:



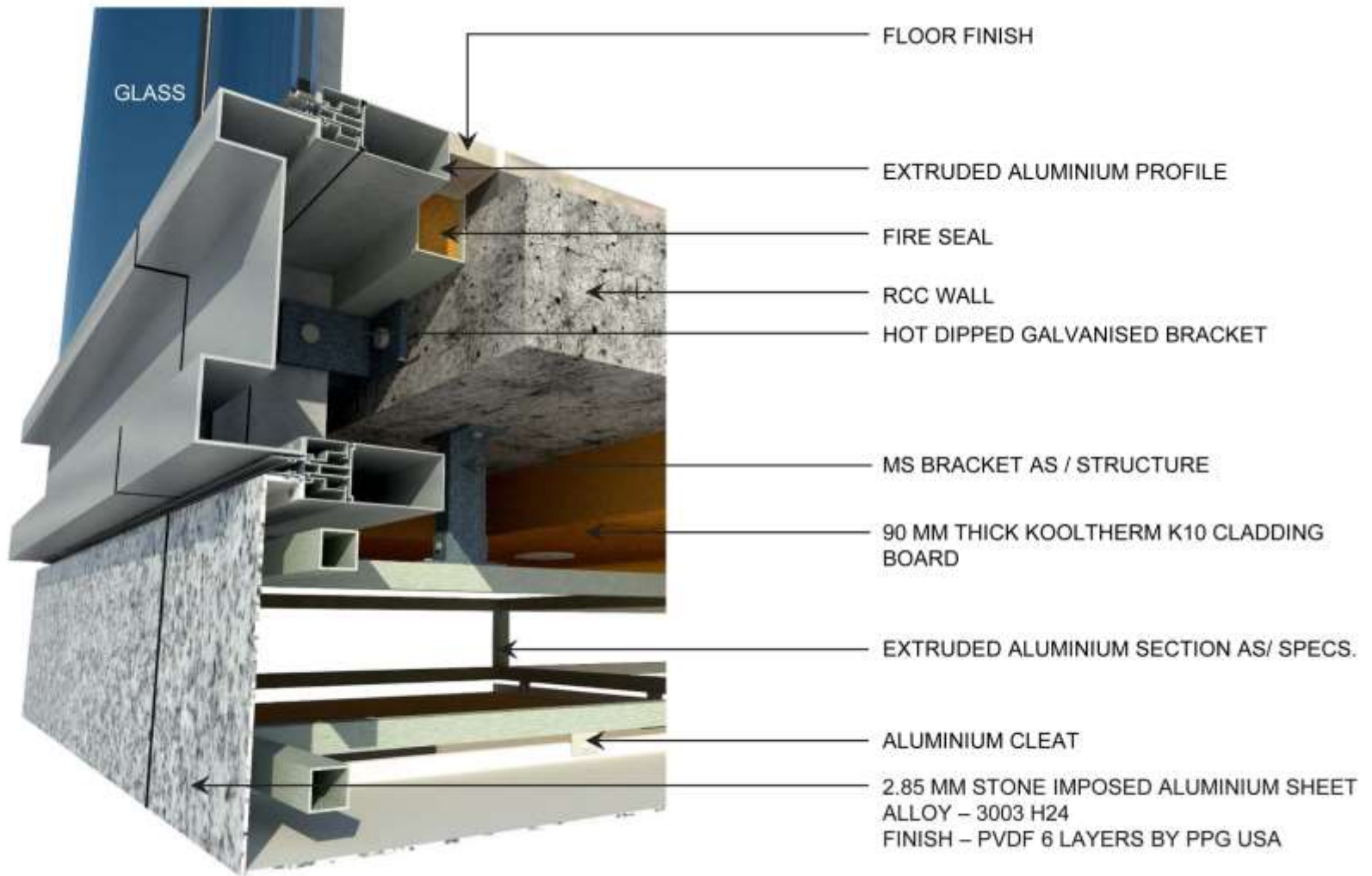
RAIN SCREEN - TYPICAL WALL DETAIL



RAIN SCREEN - TYPICAL WALL DETAIL



# TYPICAL FIXING DETAILS:



RAIN SCREEN - TYPICAL SOFFIT CLADDING DETAIL



RAIN SCREEN - TYPICAL PORTAL DETAIL



## PROJECT LIST :





Aluminium sheet is the most widely used form of aluminium, it is used for light fabrications, truck and trailer repairs, car body panels, enclosures, machine building and extensively in construction, aerospace and defence. It is light weight and has a good strength to weight ratio. Aluminium sheets can be cut with a guillotine or a jig saw with the correct blade, very thin sheets can be cut with tin snips. It is easy to fold and form aluminium sheet, and fabrication is easy as it can be welded with correct training and equipment and can also be joined with rivets and other traditional fasteners. It is supplied with a thin removable plastic coating on one side to help protect it during fabrication. We can also supply pieces cut to your preferred dimensions.

PVDF coating provide an ease to clean surface. Façade are dirt repellent and require very little maintenance. Dirt can be cleaned by using environment friendly warm water and neutral detergents. Conventional fastening methods are applicable for façade installation. The sheets can be adhesive bonded to the sub structure without any visible fix

## PRODUCTION RANGE :

FACTORS	COILS	SHEETS
GAUGE (IN MM)	0.20 – 12.00	0.30 – 12.00
WIDTH (IN MM)	UPTO 2500	UPTO 2500

**SURFACE FINISH** – Sheets can be produced either with protection PE film or paper interleaved.

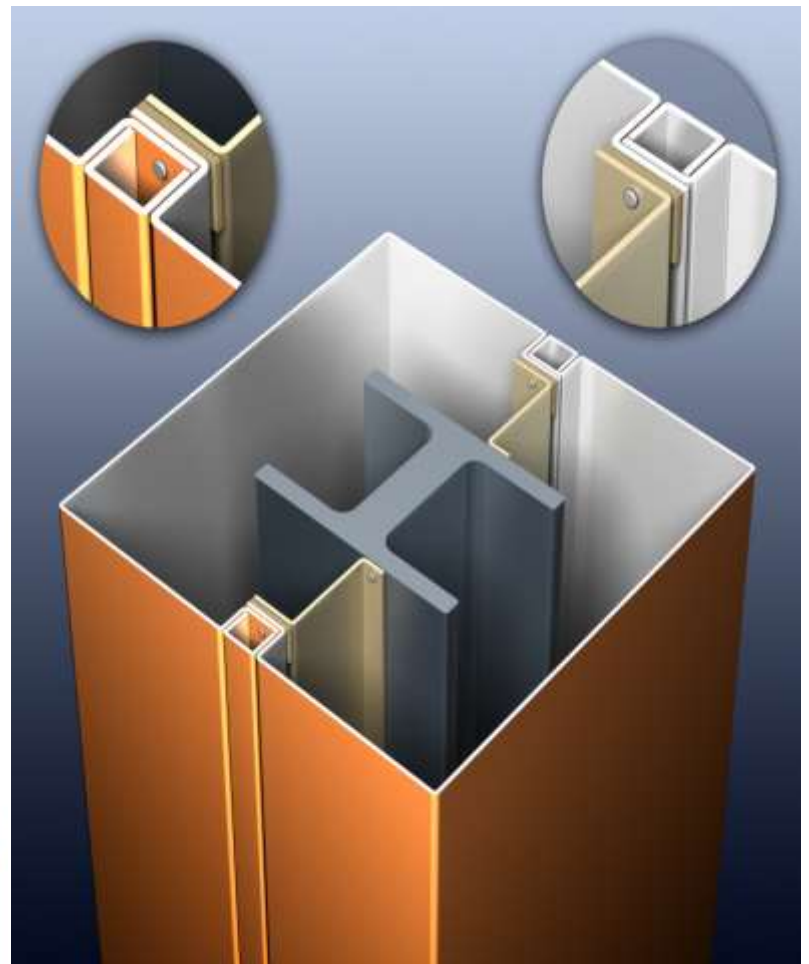
- Sheets and coils can also be delivered stucco embossed.

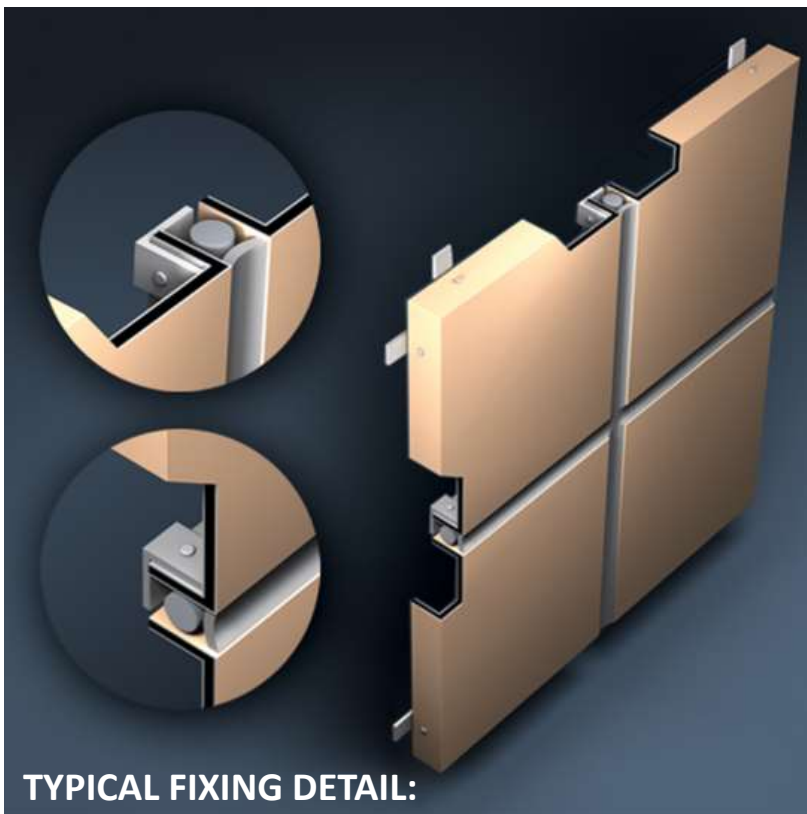
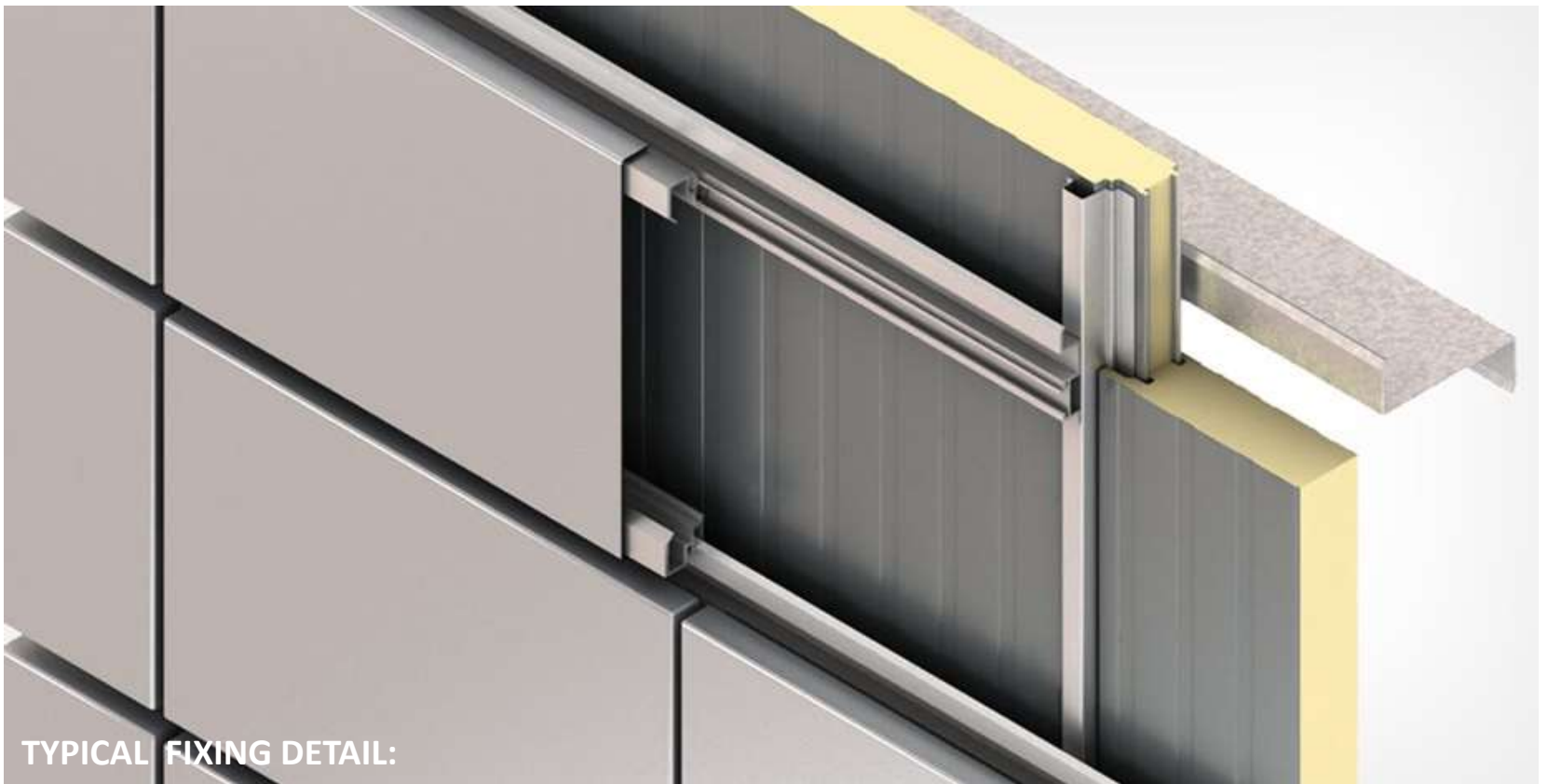
### FILM PROTECTION

- 50 microns – transparent.
- 60 microns – blue transparent.
- 80 microns – black and white UV resistant.
- 100 microns – black and white suitable for laser cut.



## TYPICAL FIXING DETAIL:

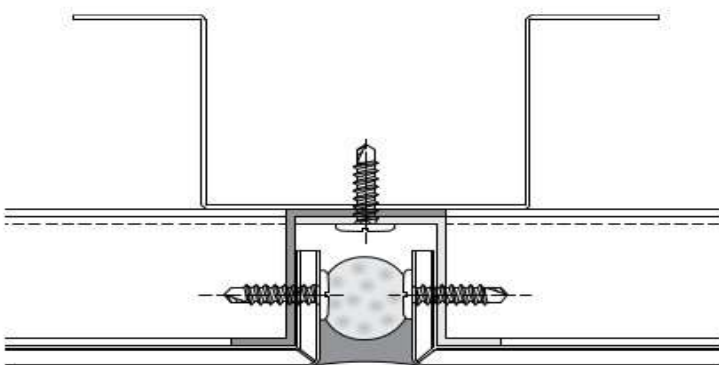




The sub-structure should be made up of aluminium instead of steel or wood so that it has the same thermal behaviour as the cladding material itself.

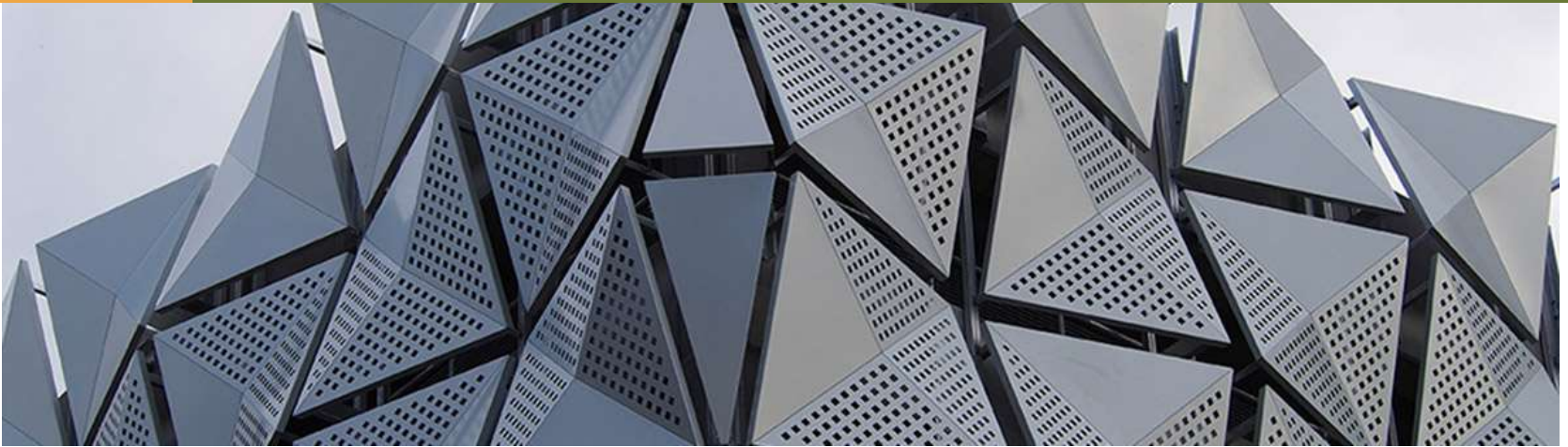
Fixed points bear the weight of the material, whereas sliding points accommodate wind loads. This type of installation insures that thermal expansion can take place as necessary.

Another important factor is the difference between the installation temperature and the highest and lowest temperature expected on the installed façade.



**PLAN : TYPICAL FIXING DETAIL**





**Perforated metal**, also known as perforated sheet, perforated plate, or perforated screen, is sheet metal that has been manually or mechanically stamped or punched to create a pattern of holes, slots, or decorative shapes. Materials used to manufacture perforated metal sheets include stainless steel, cold rolled steel, galvanized steel, brass, aluminium, tinplate, copper, Monel, Inconel, titanium, plastic, and more.

The process of perforating metal sheets has been practiced for over 150 years. In the late 19th century, metal screens were used as an efficient means of separating coal. Unfortunately, the first perforators were labourers who would manually punch individual holes into the metal sheet. This proved to be an inefficient and inconsistent method which led to the development of new techniques, such as perforating the metal with a series of needles arranged in a way that would create the desired hole pattern.

Modern day perforation methods involve the use of technology and machines. Common equipment used for the perforation of metal include rotary pinned perforation rollers, die and punch presses, and laser perforations.

The acoustic performance of perforated metal helps people or workers to limit health effects from noise. Studies have shown that perforated metals help reduce sound levels.

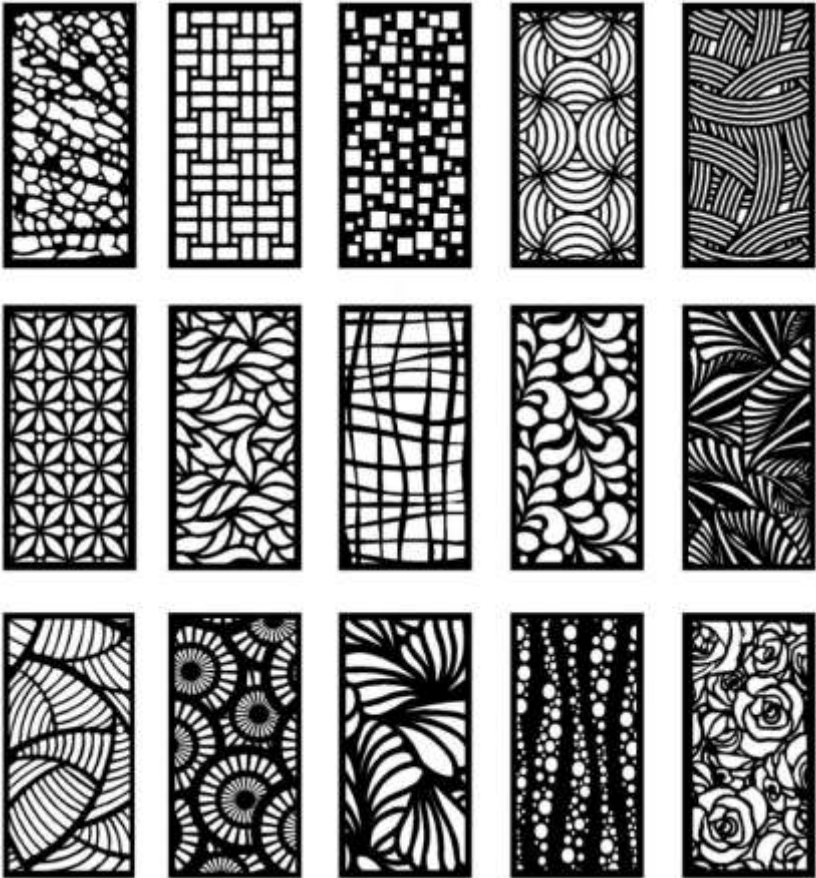
Studies have shown that having buildings use perforated metal sheets in front of their façade can bring in one study 29% energy savings (HVAC + Lighting estimated consumption in 1 year) and in the second one 45% energy savings (heating, ventilation, air conditioning). Depending on the location of the building (intensity of the external sun), solar irradiation can be decreased by 77.9%.





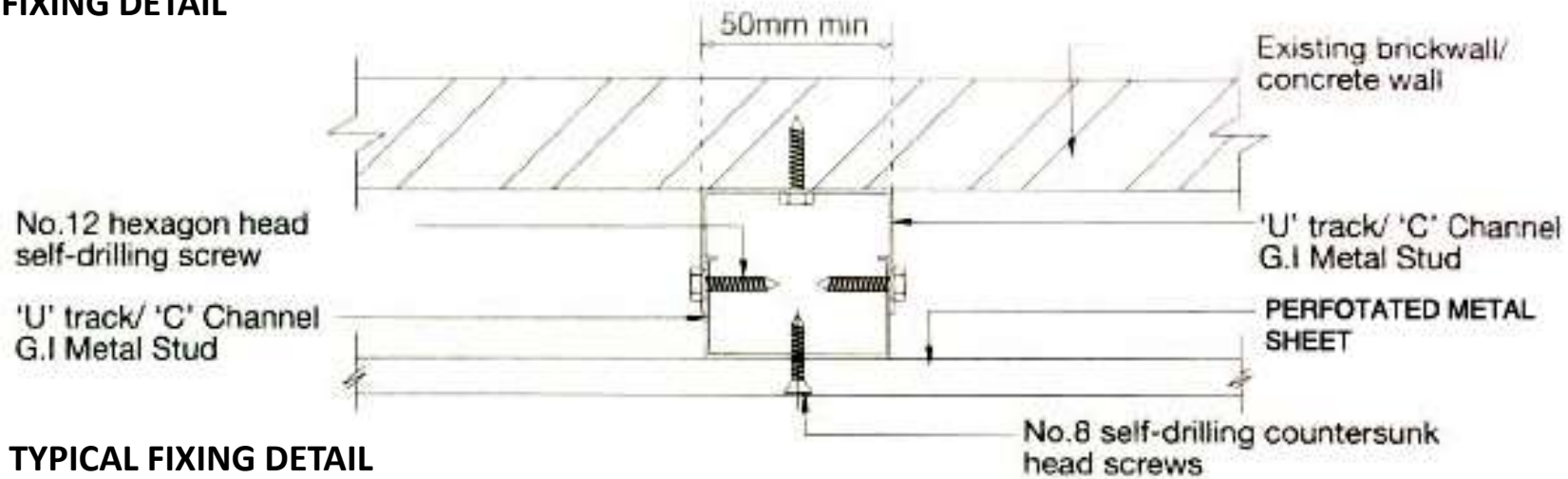


The sheet can be cut to any design as per architectural requirement. Purpose made design can also be produced on demand and feasibility.



PERFORATION DESIGN OPTIONS

**FIXING DETAIL**



TYPICAL FIXING DETAIL



DECO ALUMINIUM PANELS



## PROJECT LIST :



QATAR SCIENCE & TECHNOLOGY PARK, DOHA, QATAR



PROTEL HEADQUARTERS, ISTANBUL



OZYEGIN UNIVERSITY CAMPUS, ISTANBUL



GREYDER SHOE FACTORY, CORUM, TURKIYE





SELCUK ECZA HEADQUARTERS BUILDING, ISTANBUL



MERMERLER PLAZA, ISTANBUL



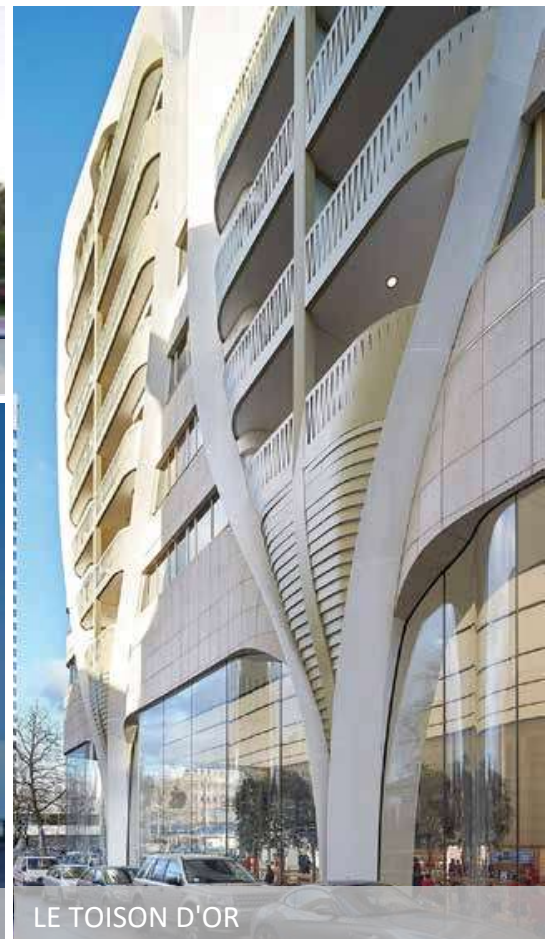
MEEZA DATA CENTER, DOHA QATAR



GURAL SUADIYE RESIDENCES



S20SB HEADQUARTERS, SAKARYA, TURKIYE



LE TOISON D'OR





ODEABANK HEADQUARTERS, ISTANBUL



EGE PERLA, IZMIR TURKIYE



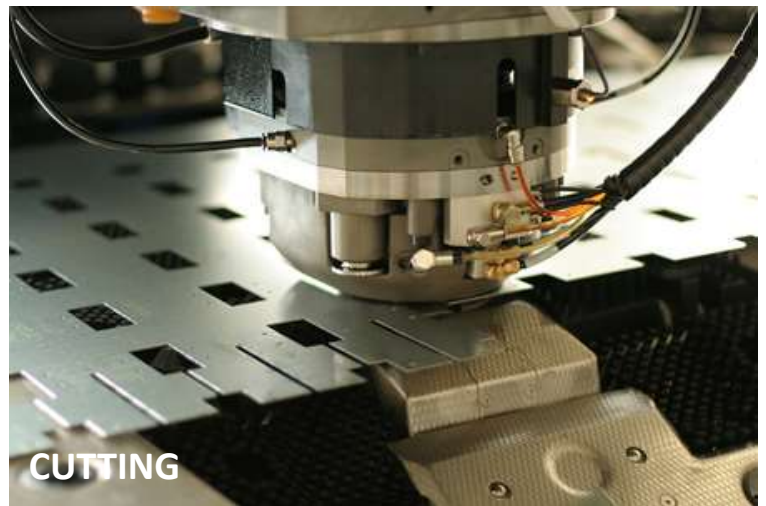
AUDI SHOWROOM, ISTANBUL



**Sheet metal** is metal formed by an industrial process into thin, flat pieces. Sheet metal is one of the fundamental forms used in metal working and it can be cut and bent into a variety of shapes. Countless everyday objects are fabricated from sheet metal. Thicknesses can vary significantly; extremely thin sheets are considered foil or leaf, and pieces thicker than 6 mm (0.25 in) are considered plate. Sheet metal is available in flat pieces or coiled strips. The coils are formed by running a continuous sheet of metal through a roll splitter.

In most of the world, sheet metal thickness is consistently specified in milli-meters. In the US, the thickness of sheet metal is commonly specified by a traditional, non-linear measure known as its gauge. The larger the gauge number, the thinner the metal. Commonly used steel sheet metal ranges from 30 gauge to about 7 gauge. Gauge differs between ferrous (iron based) metals and nonferrous metals such as aluminium or copper; copper thickness, for example is measured in ounces, which represents the weight of copper contained in an area of one square foot. Parts manufactured from sheet metal must maintain a uniform thickness for ideal results.

There are many other metals that can be made into sheet metal, such as aluminium, brass, copper, steel, tin, nickel and titanium. For decorative uses, some important sheet metals include silver, gold and platinum. Sheet metal is used in automobile and truck (lorry) bodies, airplane fuselages and wings, medical tables, roofs for buildings (architecture) and many other applications. Sheet metal of iron and other materials with high magnetic permeability, also known as laminated steel cores, has applications in transformers and electric machines. Historically, an important use of sheet metal was in plate armour worn by cavalry, and sheet metal continues to have many decorative uses, including in horse tack. Sheet metal workers are also known as "tin bashers" (or "tin knockers"), a name derived from the hammering of panel seams when installing tin roofs.







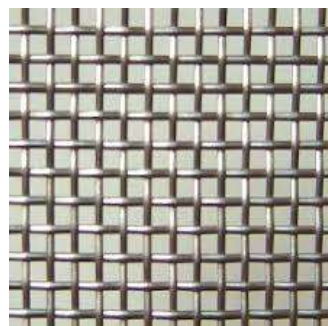
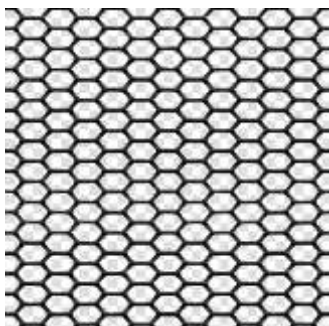
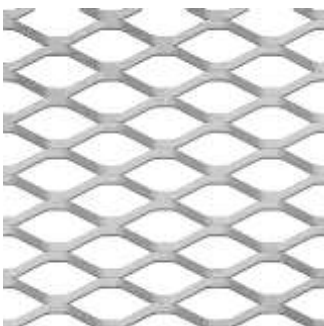
**Expanded metal** is a type of sheet metal which has been cut and stretched to form a regular pattern (often diamond-shaped) of metal mesh-like material. It is commonly used for fences and grates, and as metallic lath to support plaster or stucco. Expanded metal is stronger than an equivalent weight of wire mesh such as chicken wire, because the material is flattened, allowing the metal to stay in one piece. The other benefit to expanded metal is that the metal is never completely cut and reconnected, allowing the material to retain its strength.

Some commonly used shapes are circles, squares, and diamonds; diamonds are the most popular shapes because of how well the shape absorbs energy and resists mechanical deformation after installation. Other design considerations are the size and angles of the shapes, which will also affect how well the metal absorbs energy and where the energy is spread throughout the expanded metal.

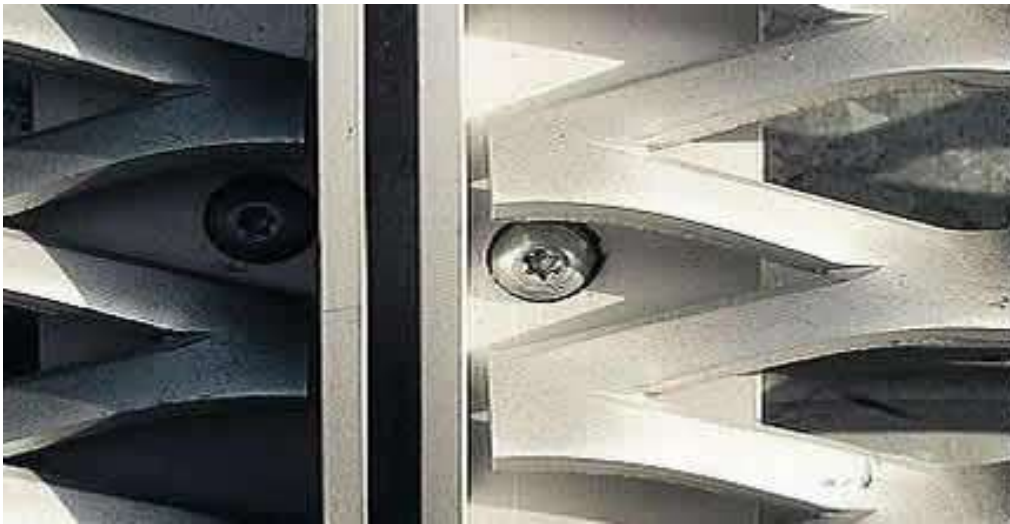
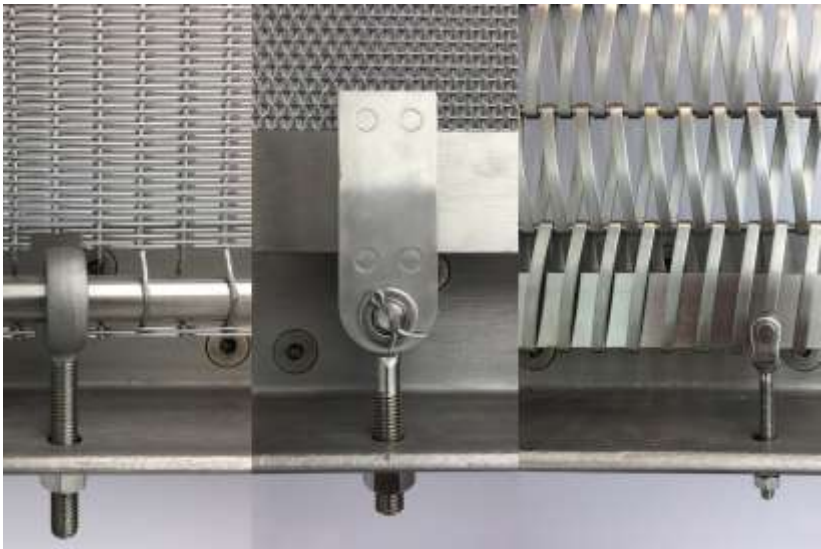
For the diamond shape, there are at least four different angles that come into account, the two acute and two obtuse angles. The larger the angles, the less strength the shape will have because there would be too much space inside the shape. However, if the angles are too small, strength is lost because the shape is too close together, so there is no space for the structure to hold.

The angle in which the shapes are laid also plays a significant role. If the angle is zero the ends of the shape point to the start and the end of the sheet, making straight lines across the sheet of diamonds. This option provide the most strength when it comes to compressing the sheet on its side. This can even take more pressure than a solid piece of metal because the sheet will compress and spread the pressure throughout the sheet. The other four commonly used angles are 60°, 90°, 90° plus 60°, and 60° plus 90°. A 60° angle puts the diamond diagonal at the start and end to the sheet. A 90° angle makes the diamond vertical to the start and the end of a sheet. The 90° plus 60° and 60° plus 90° angles combine both a 60° angle and a 90° angle; the order of the angles is respective to the order in naming.

In contemporary architecture, expanded metal has been used as an exposed facade or screen material which can be formed into simple or complex decorative shapes. Photographic images may be printed on the surface, producing textures or large graphic images, which still allow light to filter through the exterior surface of a building.



**TYPICAL FIXING DETAILS:**





## PROJECT LIST :



MURAT KARAMANCI STUDENT CENTER, ISTANBUL



AUTOPARK AND TERMINAL BUILDING, IZMIR, TURKIYE



ULUGOL AUTOMOTIVE, ISTANBUL





PIRI REIS UNIVERSITY, ISTANBUL, TURKIYE



FOLKART TOWER, IZMIR, TURKIYE



LULEBURGAZ TERMINAL, KIRKLARELI, TURKIYE



BAKU CONVENTION CENTER, BAKU, AZERBAIJAN

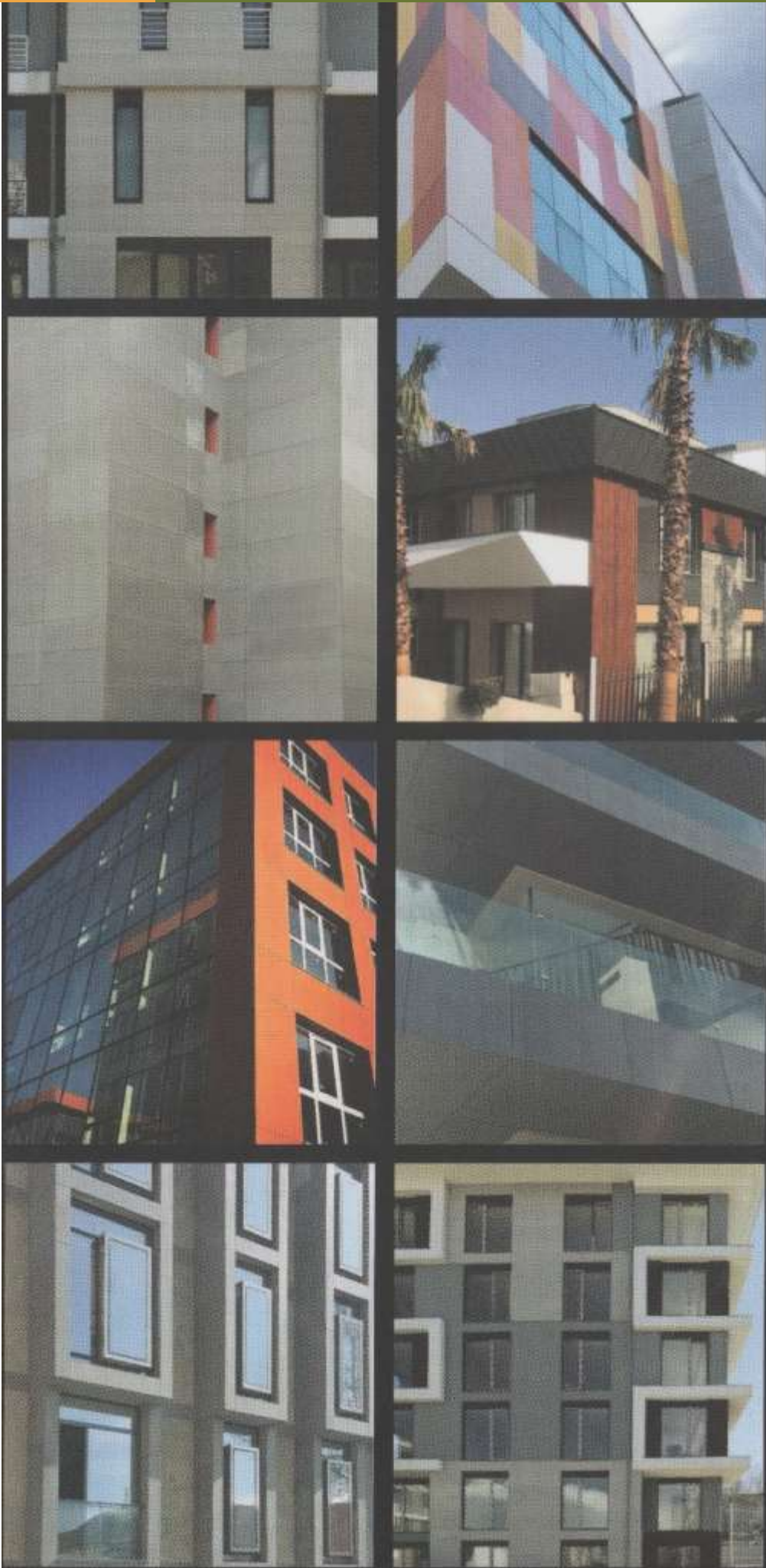


ISTANBUL MEDENIYET UNIVERSITY, ISTANBUL, TURKIYE



KANYON MALL, ISTANBUL, TRKIYE





Asbestos-free, anti-bacterial, waterproof, resistant to hot and cold weather conditions, has no deformation, does not swell, maximizes noise insulation; produced with fibercement\* technology. Thanks to the aesthetic appearance of FIBERTY, which has a 'non-combustible structure' certificate; the architects prefer the composition that it has. Our 25-years guaranteed proportion contribute to the excellence of your creativity in (bathrooms and kitchens), hospitals, metro and tunnels, shopping malls, residential restorations, space designs, winders and villas, etc. With a lighter and more aesthetic value, FIBERTY ores your imagination

### WHY FIBERCEMENT

Fibercement is a material which is used both as an interior and exterior closure mask. Fibercement Lirylin is a pimento-based, glass fibre reinforced plastic for elasticity, and is a high density pressed-pimento particle board. It can be mould into different shapes. The surface of the material is covered with UV protection filler.

In fibre cement there is fibre reinforcement with cement, which contributes to making the fibre-cement material even stronger. Together with a carefully planned production process, fibre cement makes it possible to develop strong and long lasting construction materials. Today fibre cement is considered as a material physically suited for construction products such as cladding and roofing. It is primarily due to its function, performance and commercial value.



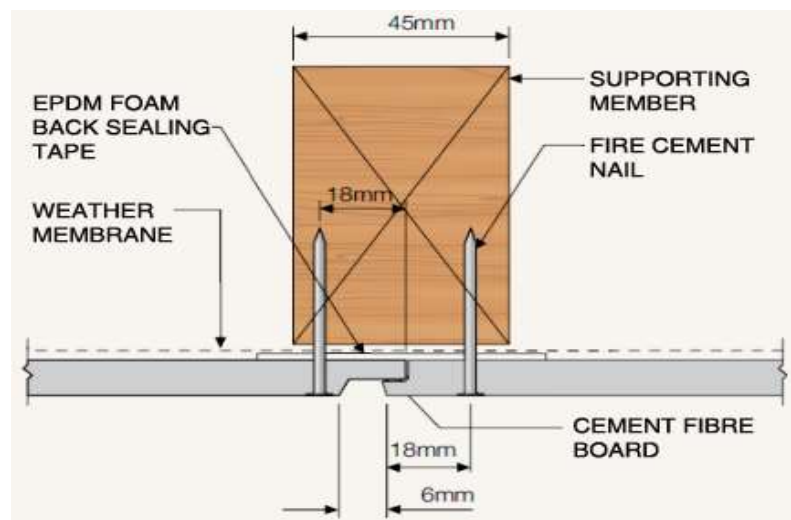
## MATERIAL SPECIFICATION :

These are available under three categories:

- 1 – Textured
- 2 – Natural
- 3 - Polished

TECHNICAL SPECIFICATION	
THICKNESS	6 – 8 – 9 - 12 MM
STANDARD SIZE	1220 X 2440 MM/ 1220 X 3050 MM
COLOUR OPTION	8 COLOUR OPTIONS ARE AVAILABLE
FIRE CLASS	EN 13501-1E A1 (NON-FLAMMABLE)
DENSITY	> 1.60 GR / CM3
WEIGHT (M.SQ.)	10 KG – 20 KG
WARRANTY	25 YEARS

## TYPICAL FIXING DETAIL :







## ARCHITECTURAL AVENUE

MIDDLE EAST | INDIAN SUBCONTINENT | EAST AFRICA

### MIDDLE EAST OFFICE

Level 41, Emirates Towers, Sheikh Zayed Road  
Office Tel. No. +97143132089 | Fax No. +97143197474  
Mo. No.: +971528661451 (Dubai)  
P.O Box 31303, Dubai - UAE

### QATAR CORPORATE OFFICE

Al Bustan Building 14, Kate Business Center  
2<sup>nd</sup> Floor, Office no. 204/69 | Office Tel/ Fax : +974 44047769  
Mo. No.: +97455886997 (Qatar)  
P.O Box 82863 Doha – Qatar

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