

Installation manual for
**XTERIOR
&
INTERIOR COMPACT**
Laminates

CROWN
LAMINATES & BEYOND



CROWN XCL
XTERIOR COMPACT LAMINATES

CROWN

COMPACT

www.crownlam.com

PARTIAL VIEW OF FACTORY



PARTIAL VIEW OF FACTORY



THE PRODUCT

Crown XCL laminates is a high quality HPL panel, innovative, practical and durable solution for any exterior application. These stunning exterior surface solution panels are an asset to make your exterior exciting and gripping. They come with a revolutionary unmatched technology that makes them UV resistant, weather proof and fire retardant which makes them most suitable product for any exterior usages.

These panels have the following features :



Water Resistant



Heat Resistant



Resistant To Cigarette Burns



Colourfast



Scratch Resistant



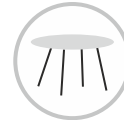
Impact Resistant



Environment Friendly



Stain Resistant



Sleek Modern Design



Rot Resistant



Stability



Suitable for Contract use



Flame Resistant



Weather Resistant



Indoor and Outdoor use



Easy To Clean



Minimum Maintenance

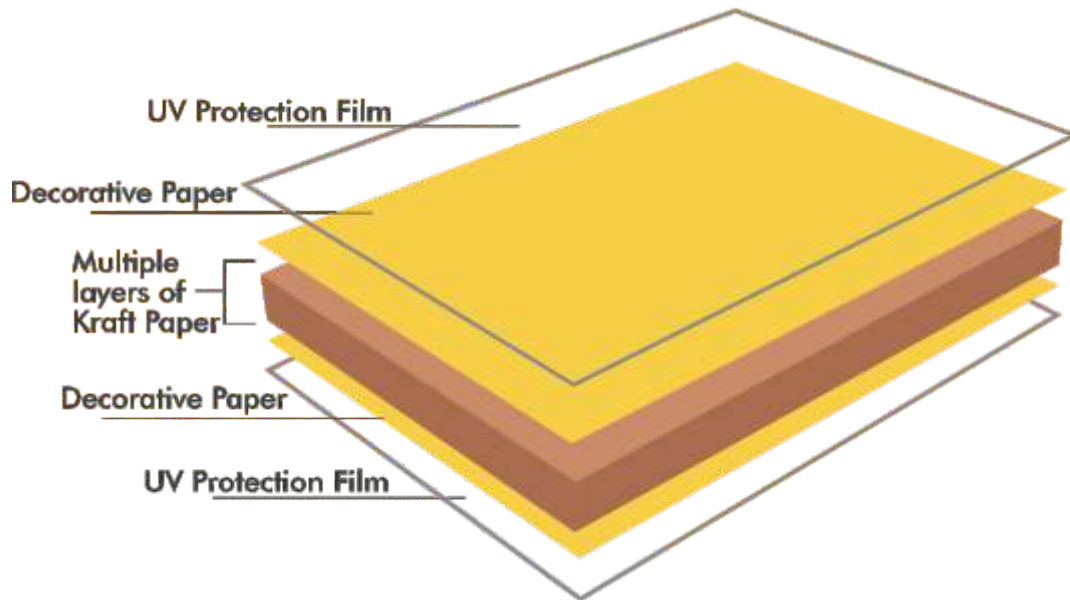
Available In Endless Decor Selection



Scan for full catalogue

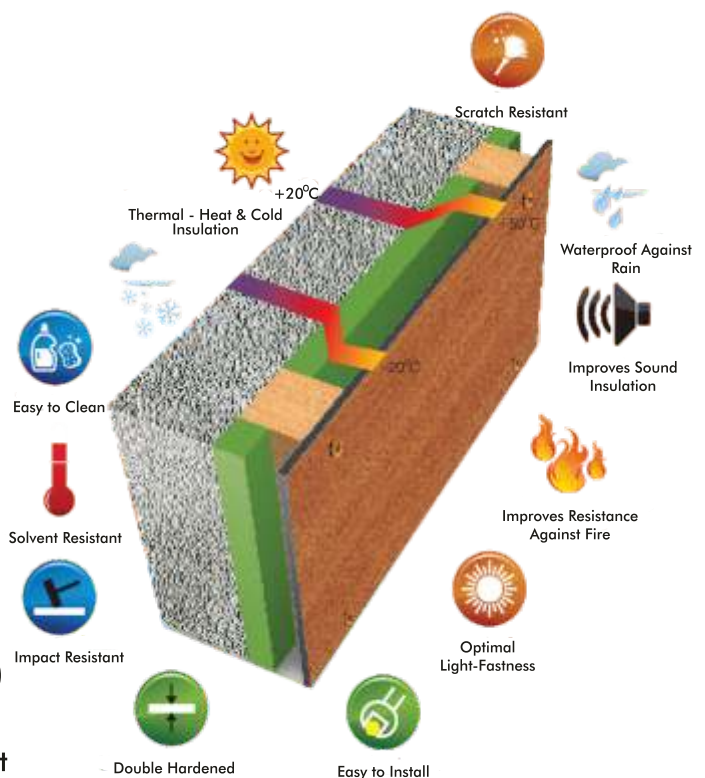
COMPOSITION

Crown XCL panels are solid phenolic engineered exterior panels having a decorative surface on both the sides. Robust and resilient rigid homogeneous panels are produced using thermosetting resins reinforced with cellulose fiber for added strength and durability. An acrylic overlay provides enhanced UV protection. With a density of 1.45gms /CM³ they are extremely strong,damage resistant have a remarkable structural stability which requires no substrate support in thickness over 6mm.



FEATURES & BENEFITS

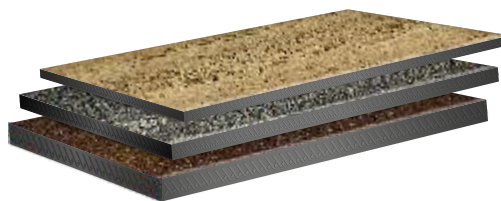
- ★ Decorative
- ★ High Weather Resistance
- ★ Optimal Light Fastness
- ★ Scratch Resistance
- ★ Solvent Resistance
- ★ Self Supporting
- ★ Impact Resistance
- ★ Heat Resistance
- ★ Fire Resistance
- ★ Easy to Clean and Maintain
- ★ Overall Light Weight Substructure and facade
- ★ Sustainability
- ★ Quick and Easy to Assemble
- ★ Increased Sound Proofing Function (upto 15 Db)
- ★ Decrease Air Conditioning Costs
- ★ Provide Wall Protection & Heat Insulation against Atmospheric Precipitation



DIMENSIONS 2440 x 1220 mm
 3050 x 1220 mm
 3050 x 1300 mm
 4300 x 1400 mm
 3860 x 1860 mm
 4300 x 1860 mm

*(Available in Selected Colours)

THICKNESS available from 6 to 15 mm



DECORS Double - sided
 Single - sided
 (available upon request)

FINISH Suede Finish
 Other Finishes - refer to our product catalogue

PERFORMANCE

Properties	Standard Value	CrownXCL Value
Apparent Density	1.35g/cm ³	1.45g/cm ³
Flexural Strength	80N/mm ²	114N/mm ²
Modulus of elasticity	9000N/mm ²	13966N/mm ²
Tensile Strength	60N/mm ²	66N/mm ²
Dimensional stability at elevated temperatures	Lengthwise: 0.40% Crosswise: 0.80%	Lengthwise: 0.25% Crosswise: 0.40%
Artificial Weathering	Grey Scale: Rating 3 Appearance: Rating 4	Grey Scale: Rating 4 Appearance: Rating 4
UV-light resistance	Grey Scale: Rating 3 Appearance: Rating 4	Grey Scale: Rating 4 Appearance: Rating 4

FIRE BEHAVIOUR

Valid in	Test Method	CrownXCL Value
Canada	CAN/ULC S134	Passed
Europe	CSN EN 13501-1+A1	B-s1, d0 (Passed)
USA	NFPA 285	Passed
Canada + USA	ASTM E 84	Flame Spread Index: 10 Smoke Developed: 0

Area's Where CrownXCL Can Be Used

Rear Ventilated Facades
Building Envelopes(Cladding)
Balcony Claddings
Railings and Fences
Partitions
Attic Claddings
Ceilings
Outdoor Furnitures
Public Facilities
Playground and Sports Facilities
Awnings, Sun Protection and Car Ports
Gates
Business Entry Portals



Rear Ventilated Facades



Building Envelopes(Cladding)



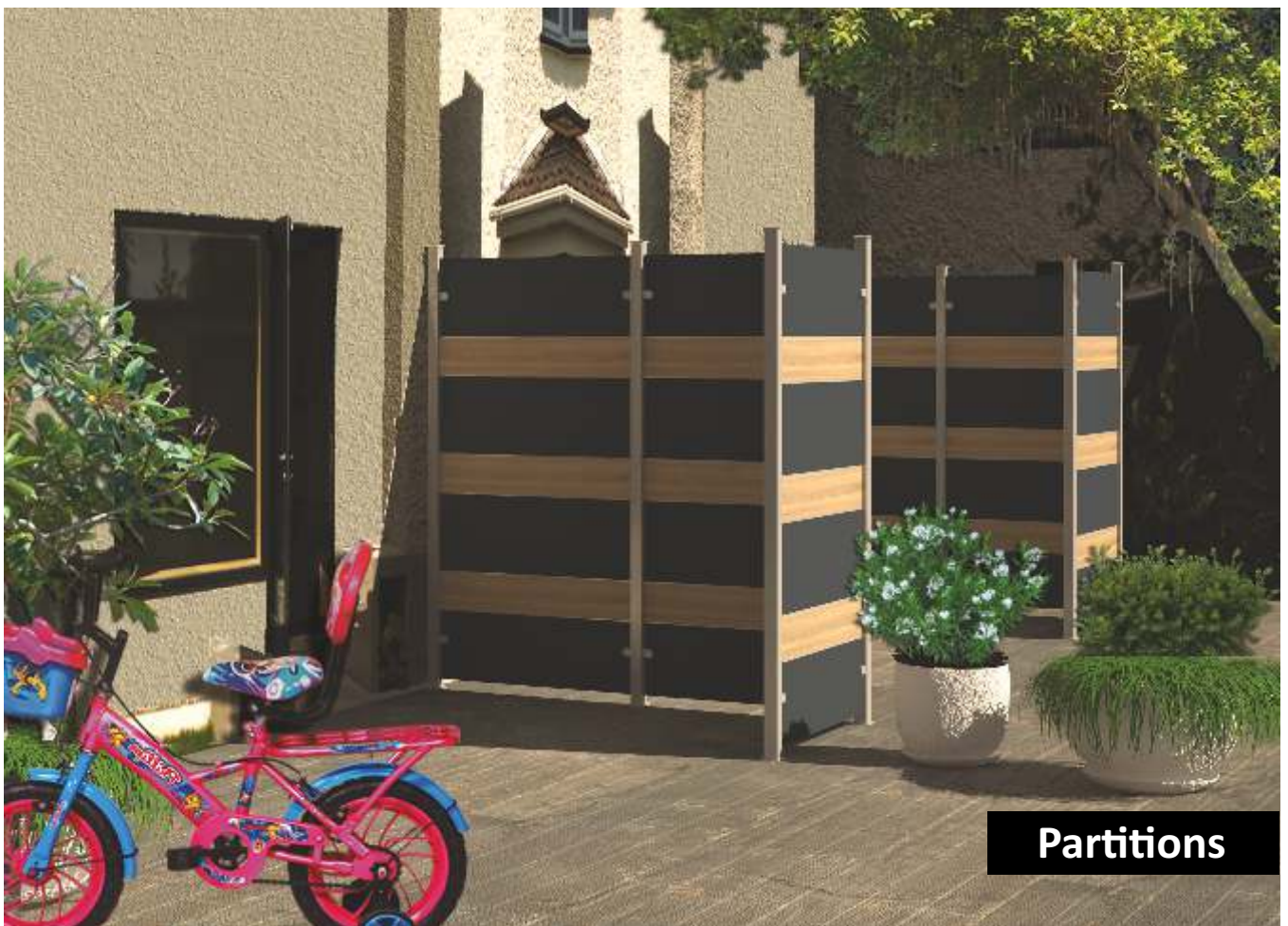
Balcony Claddings



Railings

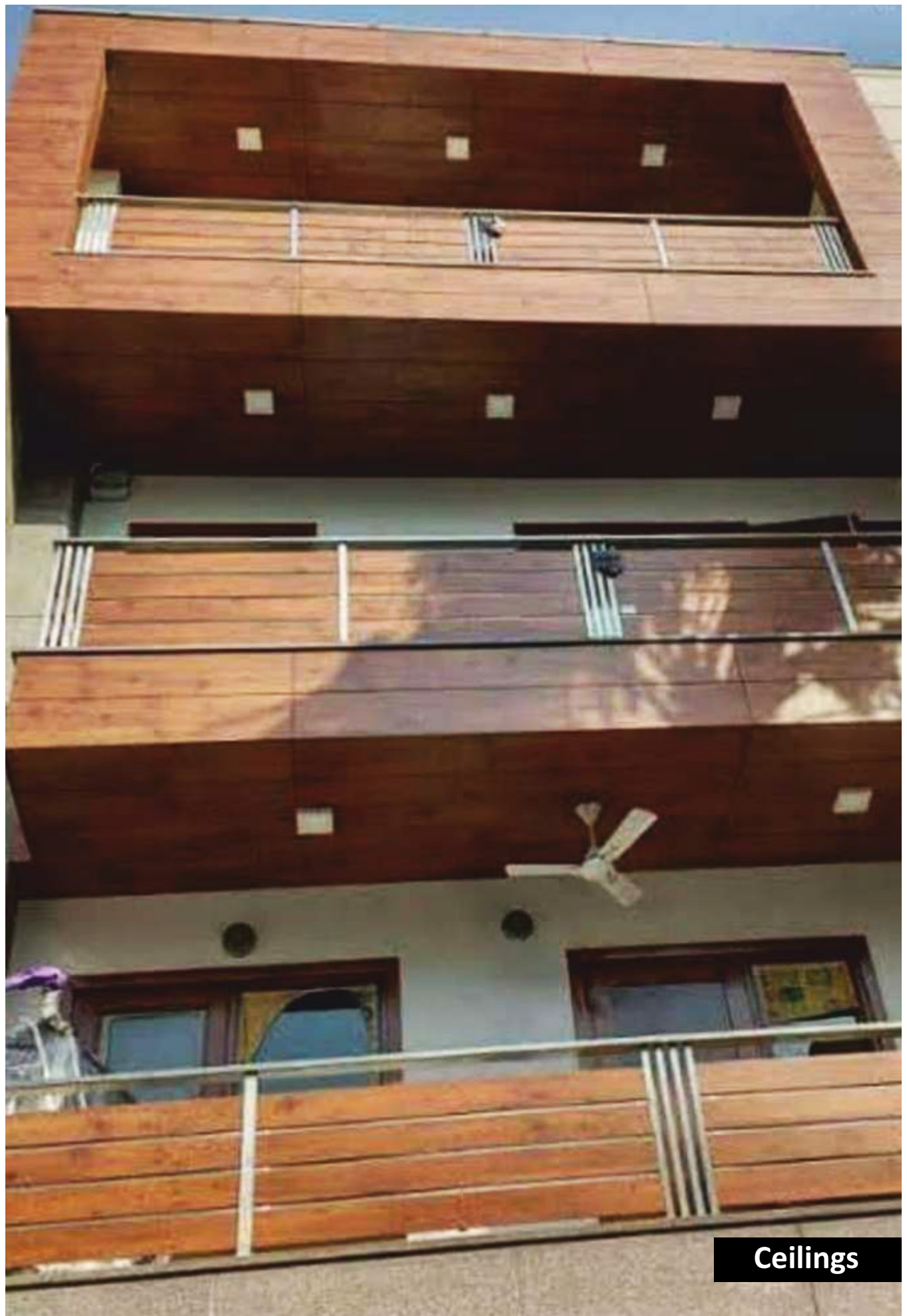


Fences





Attic Claddings





Outdoor Furnitures



Public Facilities



Playground and Sports Facilities





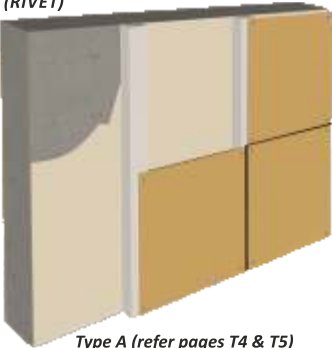
Gates



INSTALLATION SYSTEM

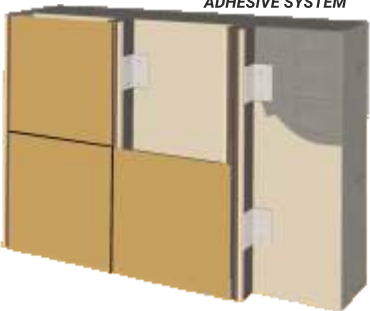
CrownXCL installation system is a thermally broken, ventilated rainscreen system that provides maximum efficiency at cost savings compared to alternatives. CrownXCL installation prevents thermal bridging caused by other installation systems. This reducing the environment impact of the building and can provide significant heating and cooling cost savings for your buildings. CrownXCL installation system provides ventilation behind the panel, which prevents moisture buildup and increases the longevity of panels.

EXPOSED FITTING
(RIVET)



Type A (refer pages T4 & T5)

ADHESIVE SYSTEM



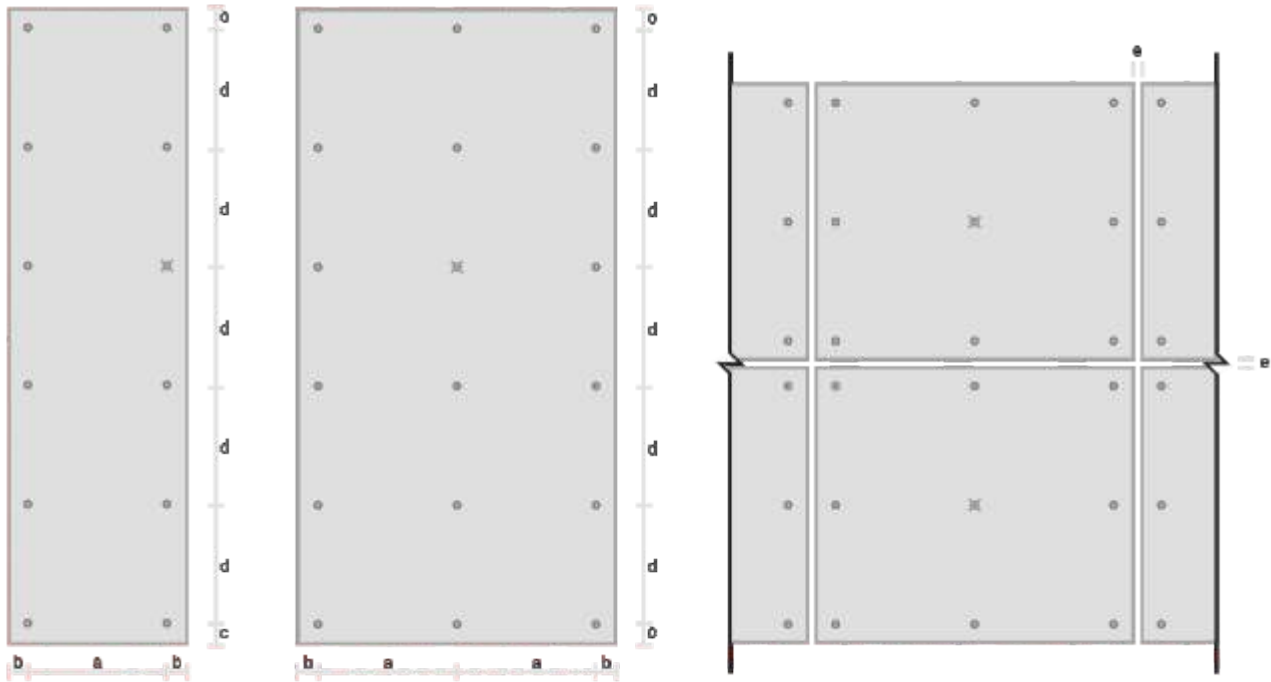
Type B (refer pages T6 & T7)

EXPOSED FITTING
(L&T Rivet)



Type C (refer pages T8 & T9)

SPACING



✳ Represents a fixed point.

The diagrams above show the optimal space between fasteners and the edge pf the panel. It also displays the optimal spacing between individual panels. These are guidelines and can be altered appropriately depending on the project.

Panel Thickness *	Maximum Fastener Spacing (a) *	Minimum Edge Distance (b, c) *	Maximum Fastener Spacing (d) *	Expansion Joint (e) *
6mm	600mm	50, 20mm	600mm	6-10mm
8mm	750mm	50, 20mm	750mm	6-10mm
10mm	900mm	50, 20mm	900mm	6-10mm

PROCESS RECOMMENDATIONS FOR CUTTING

Crown XCL Panel should be straight and perpendicular in size before cutting.

SAW & SAW BLADES

Carbide tipped saw blades are used for cutting two sides having tooth spacing of 10-15mm with cutting speed of 40-100 m/s. Cost effective results for producing a clean cut on both sides are obtained when using a marking saw. When using circular saw blades, the quality of the cut can be influenced by adjusting the angle of emergents (height adjustment.)

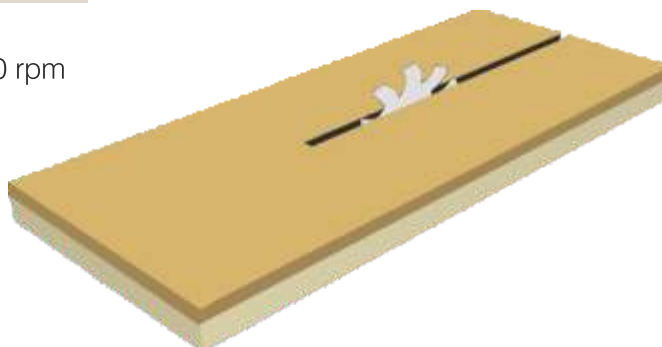
For straight cuts with hand held circular saws, a stop bar or guide rails should be used. Fitted panels can also be machined on site using an electric hand held planing machine with carbide blade.

Cutting speed V in m/s as a function of tool diameter and speed, e.g. on circular saws.

BLADE DIAMETER IN (mm)	CUTTING SPEED V IN (m/s)									
400	20	40	60	80	100	100				
380	19	38	57	76	95	114				
360	18	36	54	72	90	108				
340	17	34	51	68	85	102				
320	16	32	48	64	80	96				
300	15	30	45	60	75	90				
280	14	28	42	56	70	84				
260	12	26	39	52	65	78				
240	12	24	26	48	60	72				
					55	66				
					50	60				
					45	54				
					40	48				
					35	42				
					30	36				
					25	30				
					20	24				
					15	18				
					10	12				
					5	6				
					1000		2000	3000	5000	6000

SPECIFICATION OVERVIEW FOR CUTTING MACHINE

Rated power input	2,100 w
No-load speed	4000 - 6000 rpm
Weight without cable	7.6 kg
Saw blade bore	25 mm
Saw blade diameter	235 mm
Number of Teeth	40 - 48
Cutting depth	
Cutting depth (90°)	85 mm
Cutting depth (45°)	65 mm



The cutting machine will be Bostch GKS235

PROCESS RECOMMENDATIONS FOR DRILLING

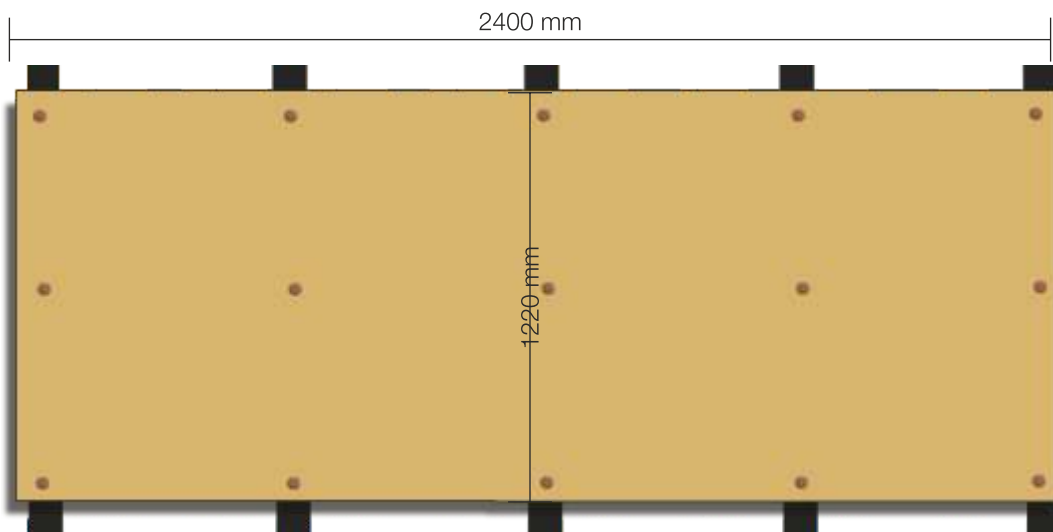
Crown XCL panel are drilled using the metal drill bits or steel bits with a cutting angle of more than 100°. The panel must be well placed to achieve a good hole.

The holes of fixing panel holding the rivet must be 2 mm greater than diameter of the rivet, except the hole at the panel geometrical center.

Drilling of higher diameters must be done with universal drilling machines and with drills without a center point.

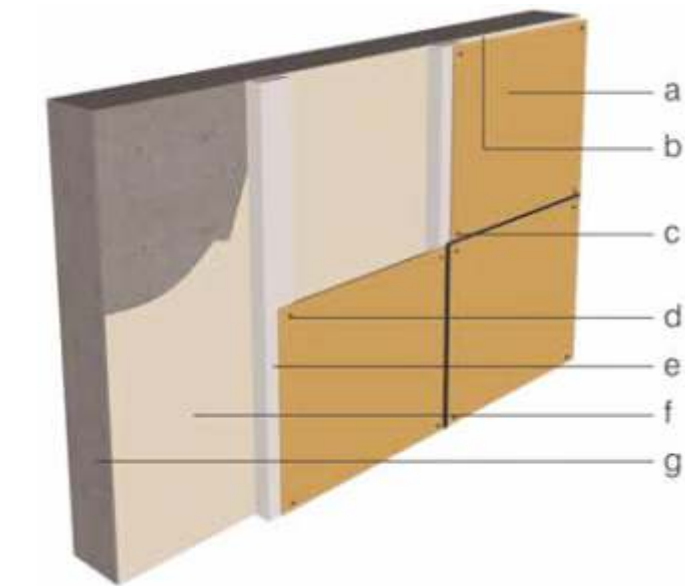
In order to prevent the front face from flaking where it comes out of the machine.

- The progression of the drill must be smooth.
- It's recommended to work on a flat table that can be drilled.
- The edges will not require a special treatment but are machinable for particular finishes.
- Machine the edge of the compact by square cutting, chaffering and beveling.



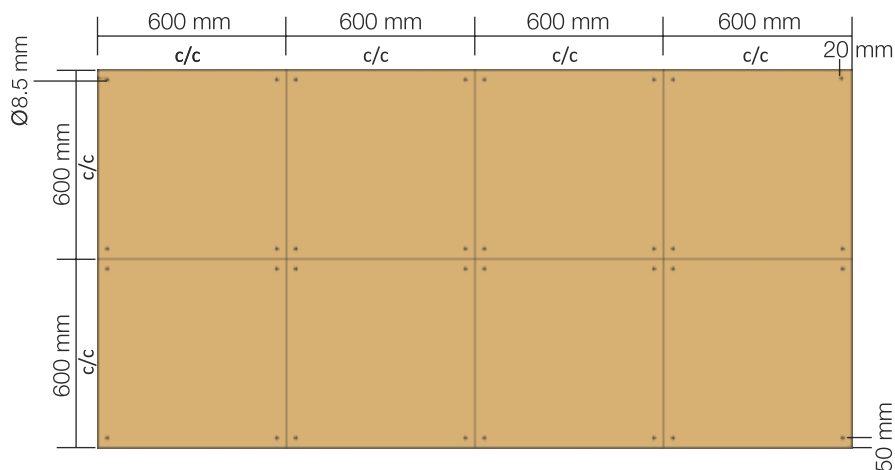
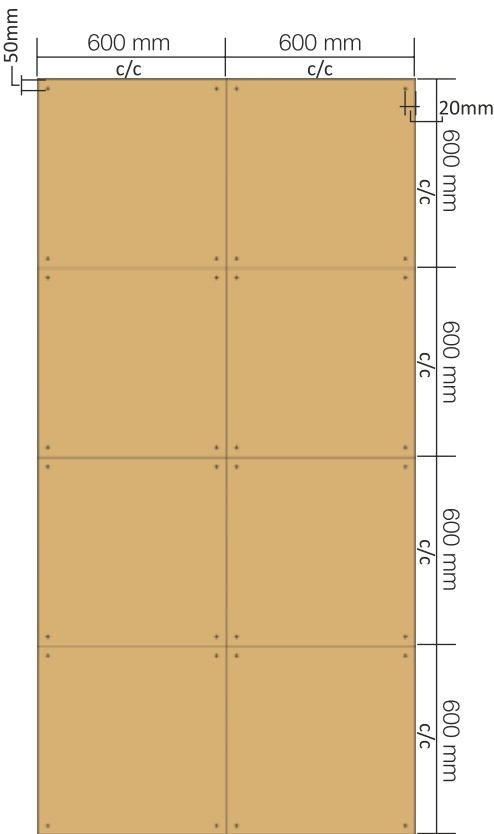
FIXATION - TYPE A

EXPOSED FITTINGS (Rivet)



BOX- SECTION DETAIL

- a. **Crown XCL** panel thickness : 6,8,10 mm
- b. Air cavity 20 mm (min.). The air cavity to be filled by GI or Aluminium Flasing
- c. Rivet hole diameter
- d. Rivet
- e. Vertical fixing profile
- f. Load bearing wall
- g. Weather resistive barrier



- a. **Crown XCL** panel thickness : 6,8,10 mm
- b. Typical edge distance min 20mm
- c. Hole diameter : 1.5 x rivet

Rivet size, d (in mm)	Rivet hole size, d _o (in mm)
d ≤ 25mm	d + 1.5 mm
d > 25mm	d + 2 mm

Calculation :
 $d = 20 + 1.5 = 21.5 \text{ mm}$

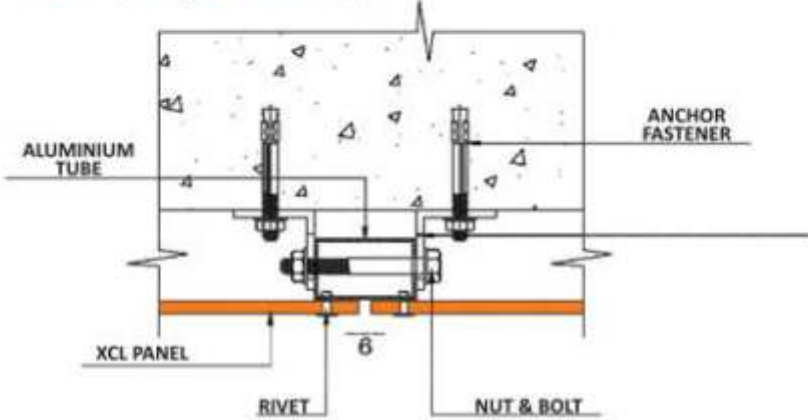
Due to the heating effect, the size of rivets gets expanded which upon cooling gets reduced (called shank diameter).

- d. Fastening Spacing :

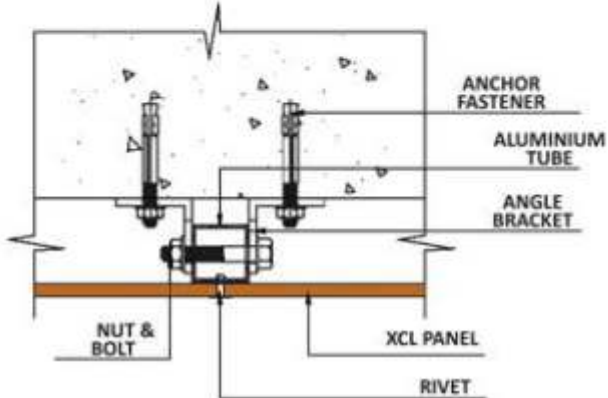
6 mm	8 mm	10 mm
600 mm	750 mm	900 mm

CAD DETAILS OF FIXATION - TYPE A (BOX SECTION)

TYPICAL PLAN OF MIDDLE
SUPPORT (PLAN VIEW)



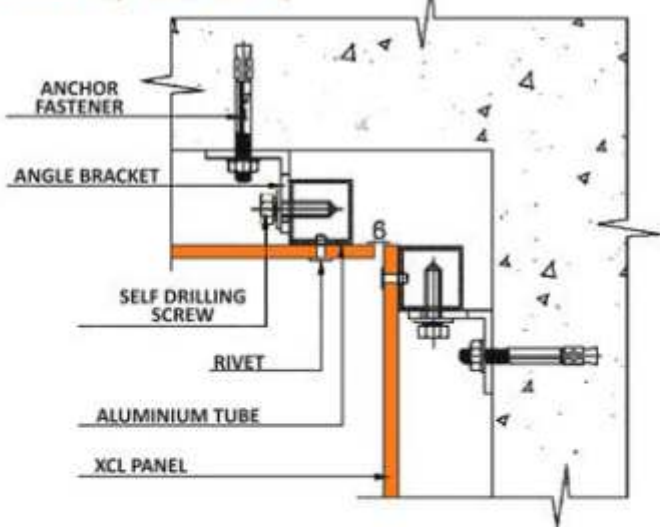
TYPICAL GROOVE DETAIL
(PLAN VIEW)



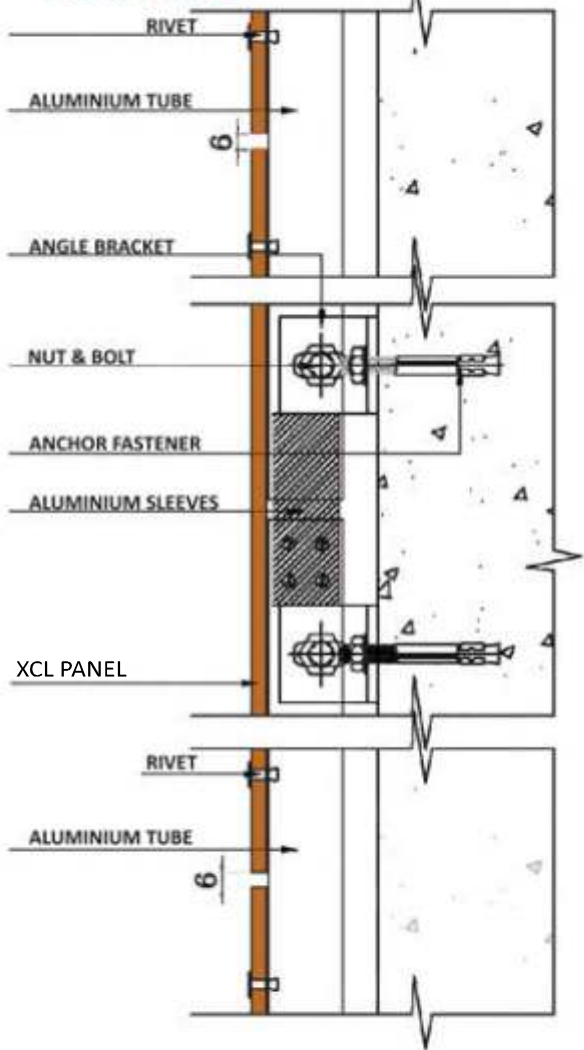
TYPICAL CORNER DETAIL
TYPE 1 (PLAN VIEW)



TYPICAL CORNER DETAIL
TYPE 2 (PLAN VIEW)

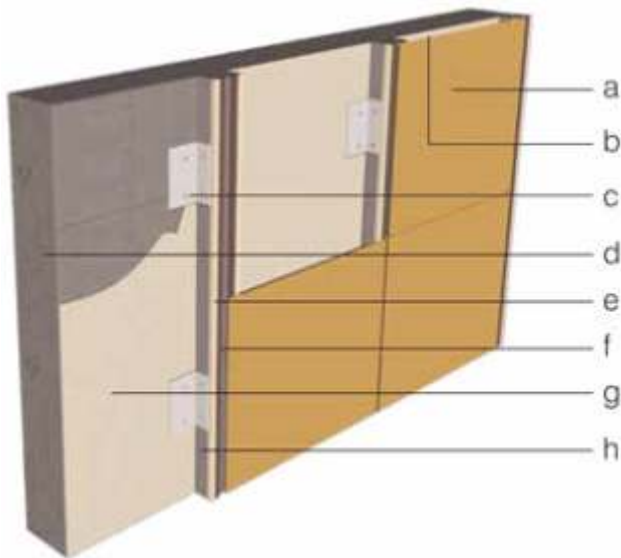


BRACKETING DETAIL AT
BEAM LEVEL



FIXATION - TYPE B

ADHESIVE SYSTEM

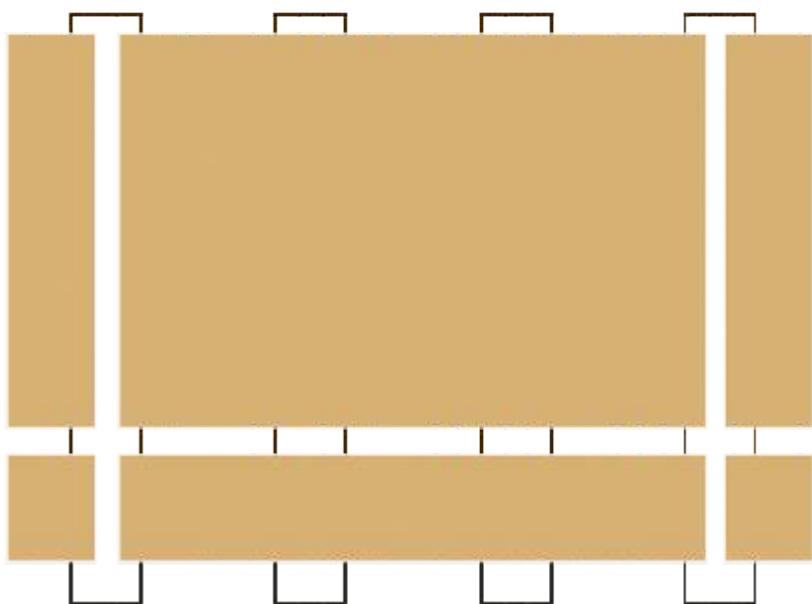
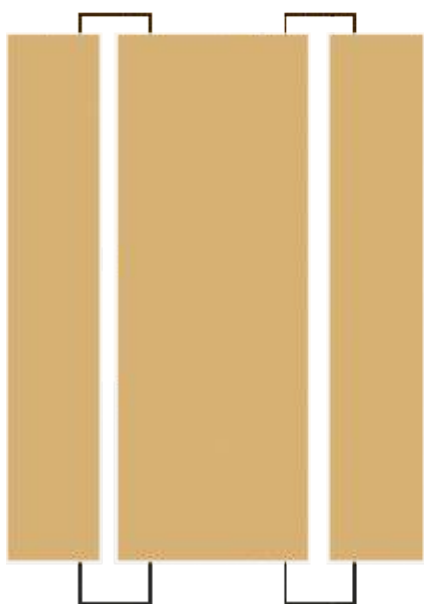
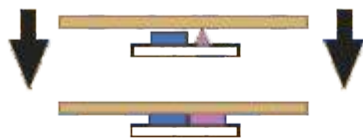
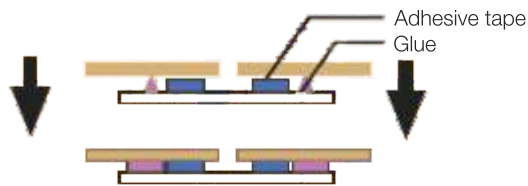


BOX- SECTION DETAIL

- a. **Crown XCL** panel thickness : 6,8,10 mm
- b. Air cavity 20 mm (min.). The air cavity to be filled by GI and Aluminium Flasing
- c. Stainless Screw
- d. Load Bearing Wall
- e. Panel Fixing Tape
- f. Panel Adhesive
- g. Weather Resistive Barrier
- h. Vertical Fixing Profile

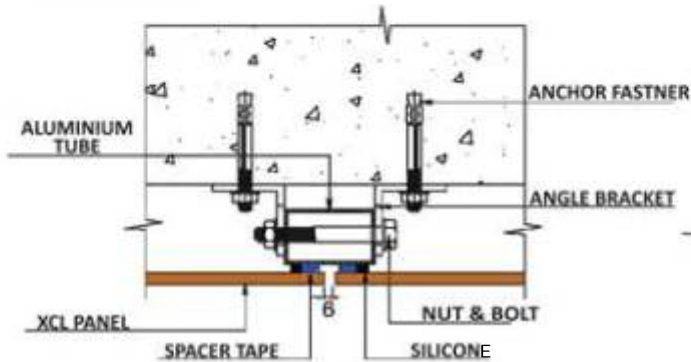
For Installation with Adhesive Panel (Spacing of the Vertical Support)	
Panel Thickness	Fastening Spacing
6 mm	450 mm
8 - 10 mm	600 mm

Note: Proper Procedure must be followed for the application of glue.

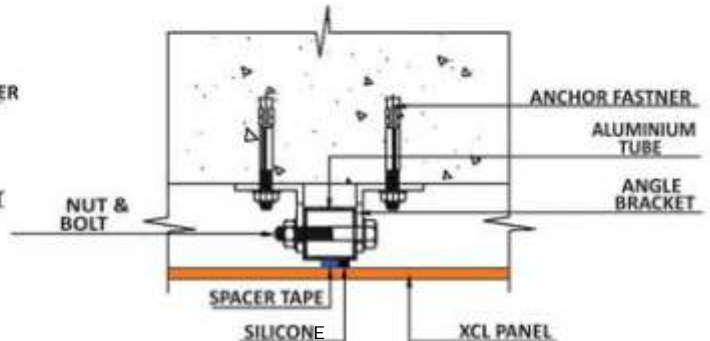


CAD DETAILS OF FIXATION - B (ADHESIVE SECTION)

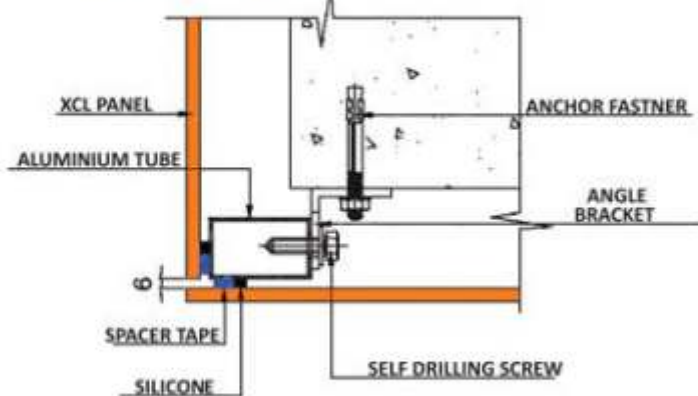
TYPICAL XCL GROOVE DETAIL
(PLAN VIEW)



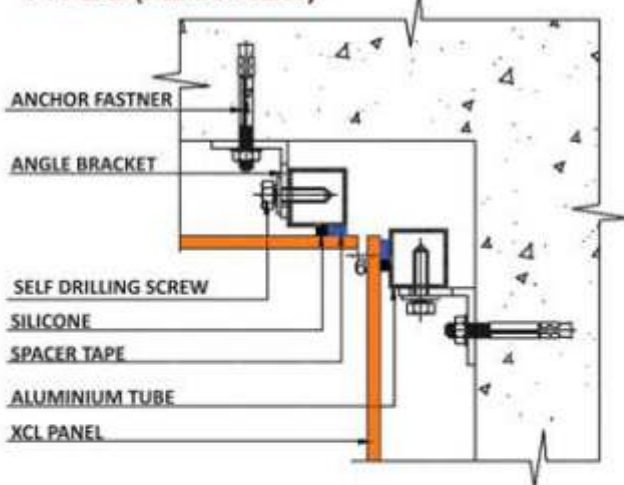
TYPICAL PLAN OF MIDDLE
SUPPORT (PLAN VIEW)



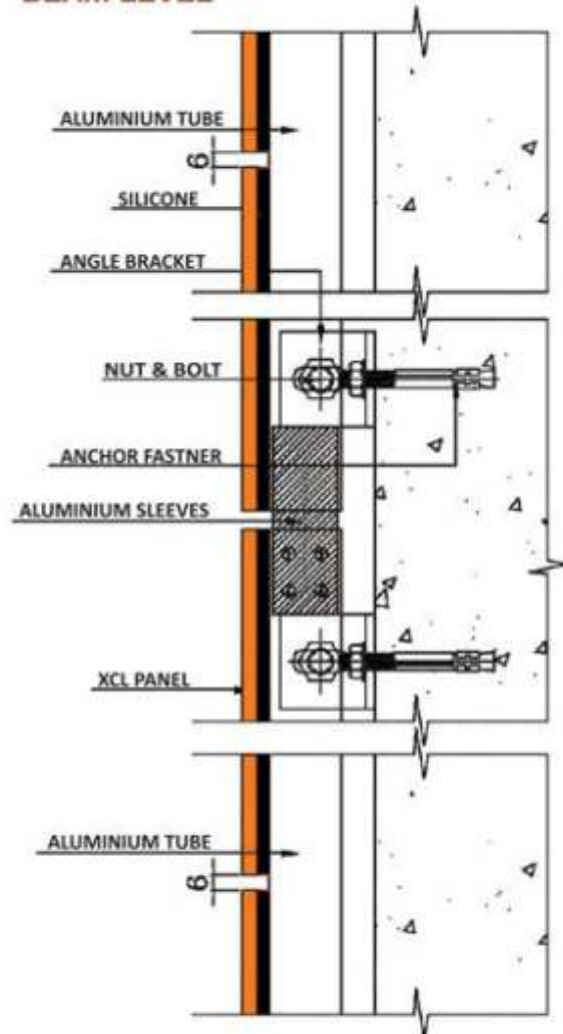
TYPICAL CORNER DETAIL
TYPE 1 (PLAN VIEW)



TYPICAL CORNER DETAIL
TYPE 2 (PLAN VIEW)

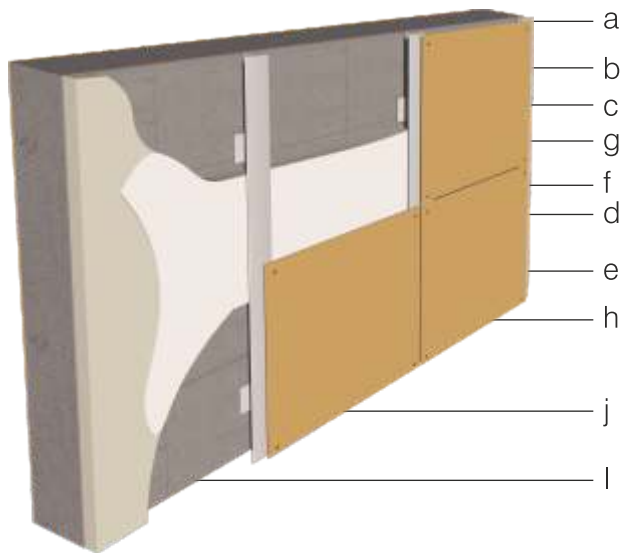


BRACKETING DETAIL AT
BEAM LEVEL



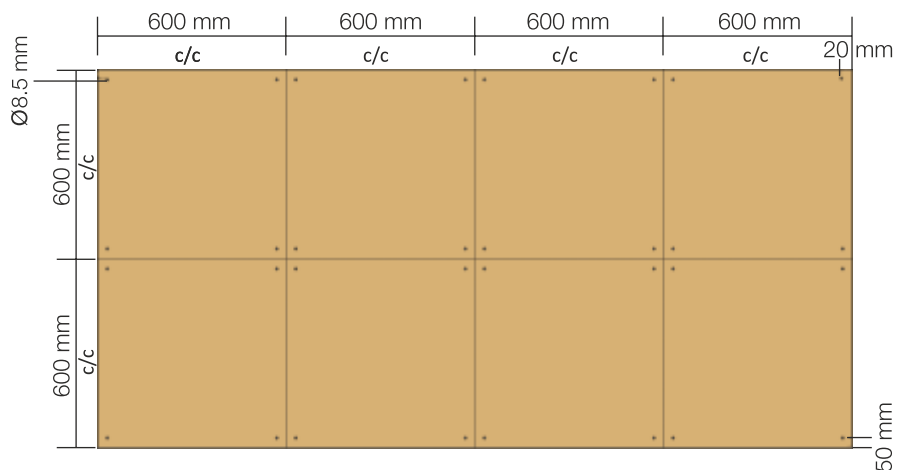
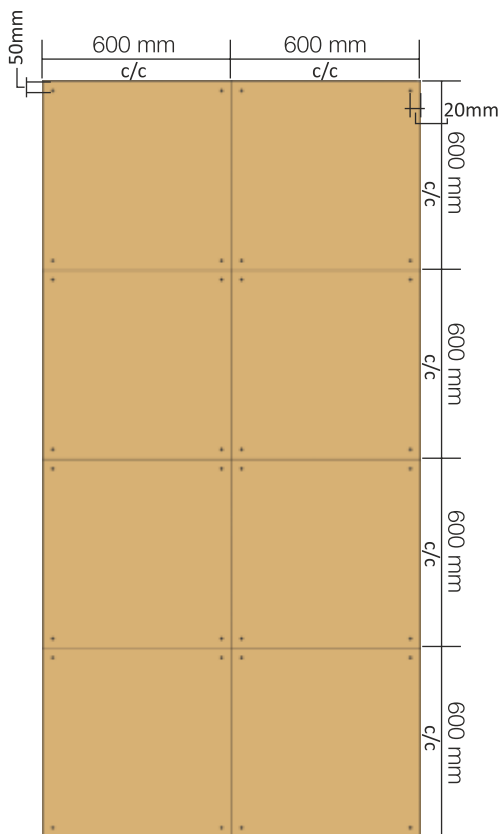
FIXATION - TYPE C

EXPOSED FITTING TYPE 2 (L&T Rivet)



T - Section Detail

- a. Load Bearing Wall
- b. Air cavity 20 mm (min.). The air cavity to be filled by GI or Aluminium Flasing
- c. **Crown XCL** panel thickness : 6,8,10 mm
- d. Rivet Hole Diameter
- e. Rivet
- f. Vertical Fixing Profile
- g. S.S.SCcrew
- h. Fixing Bracket
- I. Thermal Insulation
- j. Anchor Bolt



- a. **Crown XCL** panel thickness : 6,8,10 mm
- b. Typical edge distance min 20mm
- c. Hole diameter : 1.5 x rivet

Rivet size, d (in mm)	Rivet hole size, d _o (in mm)
d ≤ 25mm	d + 1.5 mm
d > 25mm	d + 2 mm

Calculation :

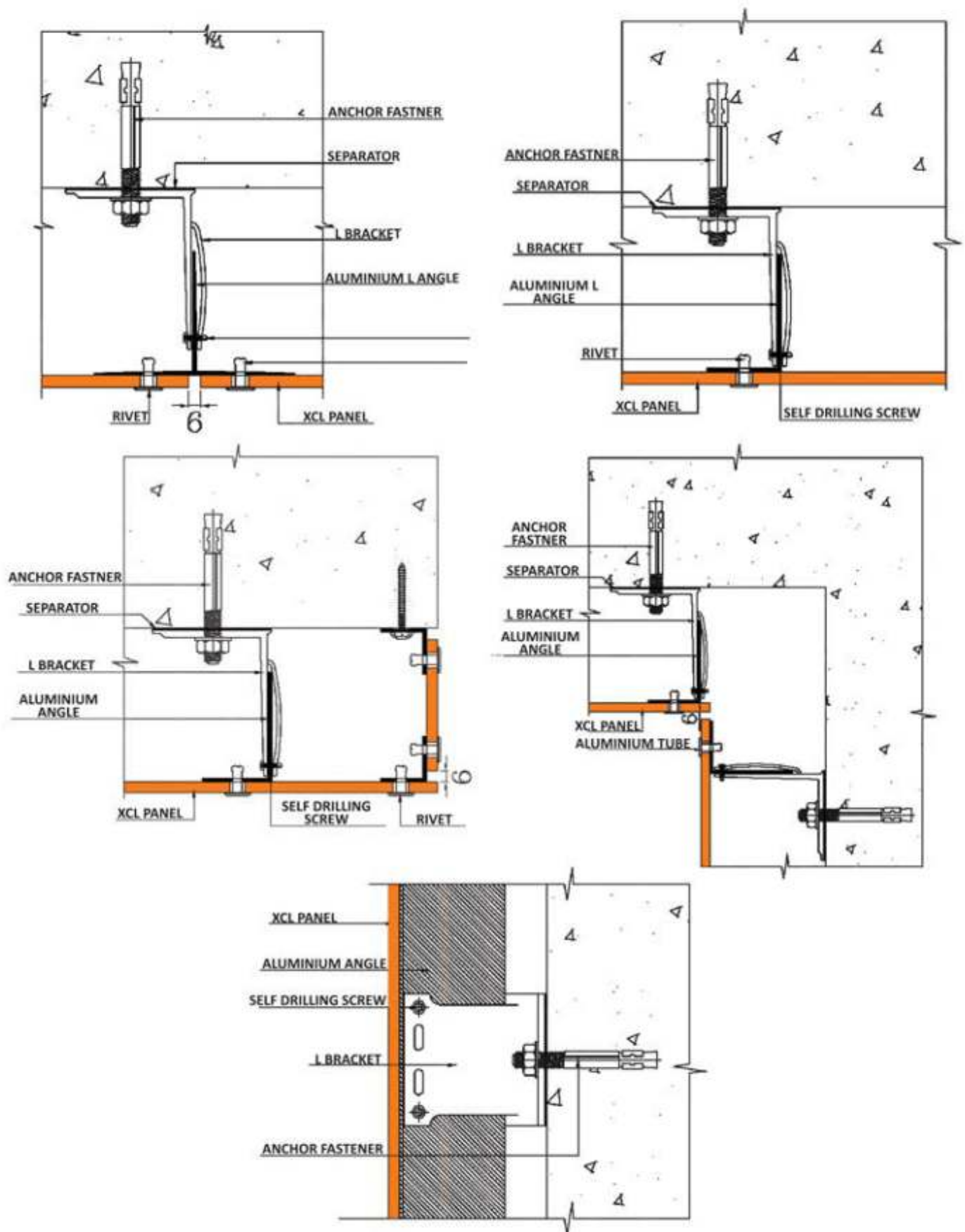
$$d = 20 + 1.5 = 21.5 \text{ mm}$$

Due to the heating effect, the size of rivets gets expanded which upon cooling gets reduced (called shank diameter).

- d. Fastening Spacing :

6 mm	8 mm	10 mm
600 mm	750 mm	900 mm

CAD DETAILS OF FIXATION - C



FUNCTION & ADVANTAGES OF REAR VENTILATED FACADE

THE BUILDING ENVELOPE

Crown XCL installations utilising the rain screen system contribute to seven areas of the LEED credits across several LEED rating systems. In order to be recognised by these rating systems, they must have various sustainable attributes. One of the most important is the system durability. Because of its long life span, there are no re-furbishments required and very little maintenance. Using a ventilated insulated rain screen cladding system means less material replacement and considerably lower maintenance cost over the lifetime of the building or structure.

The rain screen cladding system is used in conjunction with Crown XCL panels for the exterior of the building enclosure. It is especially resistant to mold and moisture build up, which directly contributed to the quality of the living environment. It also helps insulate the exterior of a building, which helps to address any thermal bridging issues.

The biggest benefit of using rain screen systems is the temperature regulation and its ability to accommodate for the use of exterior insulation, continuous energy barrier, preventing thermal building which causes energy loss and building envelope inefficiency.

The ventilated rain screen cladding system, (on its own) also helps to cool the building as most of the sun's rays are reflected away. Additionally, any heat that does in fact pass through the exterior wall dissipates because of the ventilating effect of the air space between the Crown XCL panel and the structural wall itself. Ultimately, any residual heat that penetrates the building is very minimal.

Crown XCL panel performs best when installed in a ventilated wall assembly also called a ventilated rain screen assembly. The ventilation that occurs in the space behind the panel will ensure that the moisture content of the panel is the same on both the inside and the outside ensuring the panel expands and contracts evenly and does not cause the panel to buckle. This movement of air behind the panel also ensures that moisture does not build up in the insulation so preventing mould to find a habitat inside the wall.

COMPONENTS OF VENTILATED FACADE

XCL sizes

Panel Sizes	1220 x 2440 mm 1220 x 3050 mm *1300 x 3050 mm *(Available in Selected Colours)
Thickness	6, 8 & 10 mm

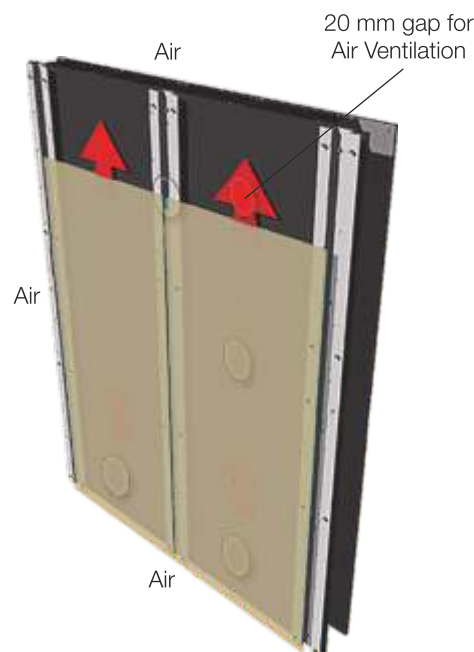
Substructure

The substructure may be made up of :

- Metallic brackets (L)
- Vertical profile (T) or Box Section

Elements used for attachment of Crown XCL panels to the substructure

Panels are attached to the substructure using screws, rivets or other hidden attaching devices



ADVANTAGES OF REAR VENTILATION SYSTEM

CALCULATIONS FOR FACADE SYSTEM

Loads to be taken into consideration

The loading to be factored into calculating the facade system is worked out using the weight of the panels themselves and the wind load. The effects of variations in temperature or humidity do not need to be taken into account when the system has been calculated and executed properly.

The installer must take into account local wind load and national building regulations.

RECOMMENDED PANEL WEIGHTS

Weight of the Panel = 1.45gm/cm³

WIND LOAD

Wind load is transmitted through panels to the substructure and unloaded through the supporting wall. Calculations are performed on a project basis by assigned engineers. Please contact your preferred system manufacturer or installer who will be able to provide the necessary values and calculations. Your Royale Touche Group representative can provide contact information, if required.

DESIGN

The following recommendations need to be taken into consideration:

- The minimum distance between a drilled hole and the edge of the Crown XCL panel should be 20mm (or 75mm if concealed and the maximum distance should be the panel thickness x 10)
- The minimum space between Crown XCL panels is 6-10mm. The Crown XCL panel will expand and contract at a rate of 2mm per meter length of panel.
- The maximum distance between screws/rivets depends on the thickness of the panel.
- A minimum of 6mm thickness is recommended for facade cladding.

SETTING UP THE SYSTEM

The system should be installed by skilled and experienced fitters using the appropriate tools and equipment. The system profile should be perfectly levelled and flat, particularly when using panels of 6mm thickness. The system manufacturer's instructions must be followed carefully especially with regard to the attachment of the parts of the profile to allow for its expansion differential for thermal loads.

Crown XCL panels should be pre conditioned, outdoor on site, for a period of 72 hours before installation. (The protective film should be removed from both sides of the panel simultaneously before installation.)

Crown XCL panels should be transported packed on the specially supplied pallets and covered with a cap sheet. Care should be taken to shield the protective film on the surface of the panels from solar radiation or other heat sources during pre-conditioning and storage.

Lift the panels straight up. Do not slide the panels against each other.

CERTIFICATIONS

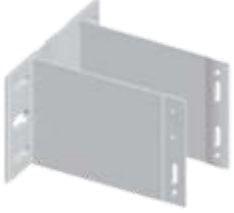


TECHNICAL SPECIFICATIONS

EXTERIOR GRADE COMPACT LAMINATE SIZE : 1220mm x 2440mm & 1220mm x 3050mm			
Sl. No.	Properties	EDF Grade Specification As per EN 438 - part 6	 CROWN LAMINATES & <i>Bygghälsan</i> Values
1	Thickness (mm.) (max.)		
	5.00 ≤ t < 8.00 (mm.)	6.00 ± 0.40mm.	6.15 mm.
2	Length (mm.)	2440.00 + 10.00/-0.00mm.	2441.00 mm.
3	Width (mm.)	1220.00 + 10.00/-0.00mm.	1221.00 mm.
4	Edge Straightness mm. (max)	1.50 mm./m.	0.90 mm./m.
5	Edge Squareness mm. (max)	1.50 mm./m.	0.80 mm./m.
6	Flatness mm. (max)		
	2.00 ≤ t < 6.00 mm.	8.00 mm./m.	4.00 mm./m.
	6.00 ≤ t < 10.00 mm.	5.00 mm./m.	2.50 mm./m.
	t ≥ 10.00 mm.	3.00 mm./m.	1.30 mm./m.
7	Flexural Modulus (min.)	9000 Mpa.	13966 Mpa.
8	Flexural Strength (min.)	80 Mpa.	114 Mpa.
9	Tensile Strength (min.)	60 Mpa.	66 Mpa.
10	Density, gm./cm3 (min.)	1.35 gm./cm3	1.45 gm./cm3
11	Resistance to impact by large diameter ball.		
	a) Drop height mm. (min.)		
	2.00 ≤ t < 5.00 mm. (t=nominal thickness)	1400 mm.	1600 mm.
	t ≥ 5.00 mm.	1800 mm.	2000 mm.
	b) Indentation dia. mm. (max.)	10 mm.	6 mm.
12	Resistance to wet conditions		
	a) Mass increase (%) max.		
	2.00 ≤ t < 5.00 mm. (t=nominal thickness)	10%	4%
	t ≥ 5.00 mm.	8%	3%
	b) Appearance not worse than	Rating 4	Rating 5
13	Dimensional stability at elevated temperature		
	2.00 ≤ t < 5.00 mm. (t=nominal thickness)		
	a) Longitudinal, % max	0.30%	0.25%
	b) Transverse, % max	0.60%	0.40%
	t ≥ 5.00 mm.		
	a) Longitudinal, % max	0.30%	0.12%
14	Resistance to climatic shock		
	a) Appearance	Rating 4	Rating 4
	b) Flexural Strength index, min.	0.95	1.10
	c) Flexural Modulus index, min.	0.95	1.50
15	Resistance to artificial weathering (Including Light Fastness)	After 650MJ/m2 radiant Exposure (1500 hrs)	1500 hrs
	a) Gray scale rating (not worse than)	Rating 3	Rating 4
	b) Apperance (min.)	Rating 4	Rating 4
16	Resistance to UV light	After 1500 hrs Exposure	1500 hrs
	a) Gray scale rating (not worse than)	Rating 3	Rating 4
	b) Appearance (min.)	Rating 4	Rating 4
17	Spread of Flame	Class 1	Class 1
Remark : E (Exterior Grade), D (Serve Use), F (Flame Retardant Grade)			



ACCESSORIES

			
BOX SECTION	DEAD LOAD BRACKET	WINDLOAD BRACKET	U BRACKET
			
T - SECTION	L BRACKET	NUT BOLT	FASTERNER
			
RIVET	MOUTH PIECE	SELF DRILLING SCREW	PRIMER
			
TAPE	CUTTING MACHINE	DRILLING MACHINE	
			
RIVET GUN	SILICONE		

**INSTALLATION MANUAL
FOR
INTERIOR COMPACT LAMINATES**



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INTERIOR WALL CLADDING INSTALLATION



CROWN COMPACT panels are sustainable, robust and a suitable product for interior wall paneling. Suggested panel thickness are from 6mm and up. It is essential that the wall substructure must be completely dry at the time of panel installation. A gap between the wall structure and the panel must be left for proper air circulation. The panels must not be exposed to any trapped moisture. These panels should be joined together without leaving any space/gaps in between

Substructure:

It is important that the substructure base must be strong to take care of the load of installation as well as the compact panel. Sturdy and corrosion free channels should be used by leaving a space between the wall and sub structure for proper air ventilation. For any dry application compact panels and attachment of substructure must be anchored to the channel framing.

It is important to have proper selection of the screw which should hold the substructure and the weight of the wall. Indifferent condition can lead to the warping of the compact panels both in the front and behind of the element. Adequate ventilation is required to equalize the humidity and temperature.

Vertical studs always permit good ventilation. However for any horizontal substructure, adequate ventilation must be provided. It is recommended that the substructure should be vertically plumbed to allow for proper mounting of the entire panel surface.

The spacing of the battens/ substructure depends on the selection of the thickness of the panel. While doing so ensure that the inlet and outlet area remains unobstructed for proper flow of the air. It is also advised that the moisture of the surface to be paneled does not significantly differ from the moisture of finished wall panels

Three different types of fixation methods can be adopted, which are as below:

1. Visible mechanical fixation
2. Invisible mechanical fixation
3. Invisible fixation with glue (Adhesive)
4. Direct Installation

VISIBLE MECHANICAL FIXATION

For this installation, firstly the substructure is required to be fixed to the wall or the base. Panel is then placed on the substructure with a sufficient dilation gap together with right positioning of the fixed and floating points. Screws or rivets are required to be fixed to the substructure. In case the substructure is of wood then it is advisable to use EPDM tape for decoupling.



INVISIBLE MECHANICAL FIXATION

This installation is basically done by two methods. First one, hanging by means of sectional strip and secondly hanging by means of a metal hardware.

For the first method a groove is cut into the horizontal substructure to hold the rebate rail attached to the wall element. For the ease of fitting the tongue of the rebate rail should be thinner than the groove. Rebate rails should be intermittent for vertical air circulation Metal Z profiles or wood can be used for this purpose. One can use additional glue if secured screw connections are not achieved.

In the second method, for mounting the wall panels system metal hardware are also used(see the picture below) One should use the chosen hardware as per the instruction of the hardware manufacturer for a secured installation.

Invisible fixing of the compact panels by suspension permits easy disassembly and aesthetically more appealing. Removal of the panel is quick and simple which enables easy access to the pipe/cable work behind the panel. Elements can be adjusted at a later date so also the stress relieved mounting. Sufficient space should be allowed to raise or lower the element. This clearance (suspicious gap) will remain visible as a shadow gap.



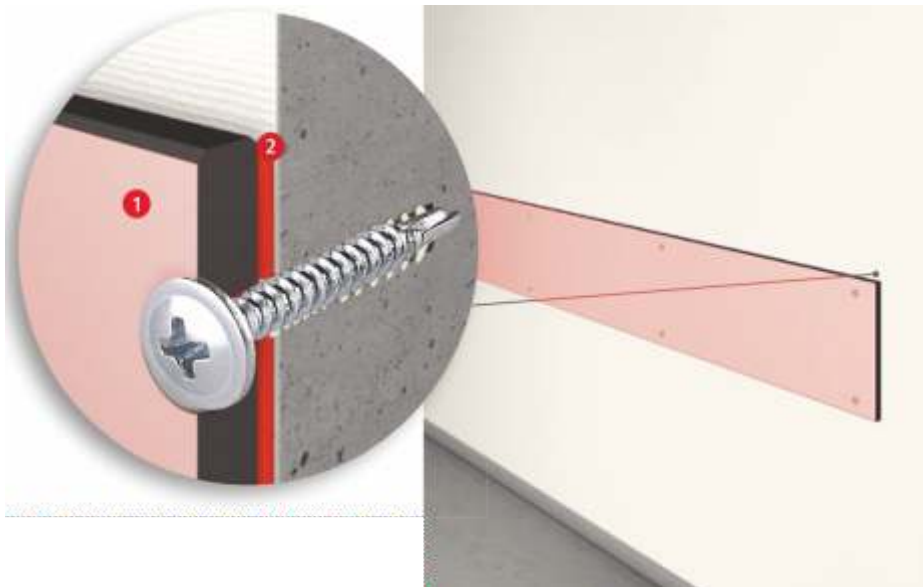
INVISIBLE FIXATION WITH GLUE (ADHESIVE)

With the use of permanent elastic adhesive system compact panels can also be mounted to arigid substrate. When using wood as a substructure, primer should be applied to ensure secure adhesion and moisture decoupling.

The systems consisting of the glue, an installation band and support required for priming the surface prior to the gluing. The mounting tape is used for the preliminary fixation thereafter the permanent fixation is done with the glue. The mounting tape also helps in setting the defined distance. This helps in determination of required glue thickness in order to elastically absorb the board movement. We can recommend several European glue manufacturers, if so desired

DIRECT INSTALLATION

Compact panels can be installed by direct fixing to the wall. Normally such installation is used for partial wall cladding. Vapor barrier must be used for such installation which is done by visible screw connections. For such installation a maximum height of 300mm is suggested.



DESIGNING DETAILS:

Whatever the substructure or the mounting system is chosen, following patterns are used for continued and unproblematic mounting of wall cladding.

1. Stack & joint formation- Several options are available to create horizontal and vertical joints. It is most important to ensure that the elements have sufficient clearance for expansion and contractions(see picture)



2. Top Closure – There must be a gap on the upper side ceiling of cladding installation to allow internal air circulation to ensure functional ventilation. This distance also helps expansion space. This distance however should be minimum in line with requirement of ventilation gap.



3. Bottom Gap- Closure at a minimum distance of 50mm from the floor is required for functional ventilation and air circulation to prevent moisture from stalling behind the cladding. Bases should be as thin as possible for sufficiently large ventilation cross section remains available.



4. Corner fixing solution: A thickness equal to at least the thickness of substructure should be in place. The corner connection between two panels must be sufficiently large to take care of the size changes due to the climate modification. However if the corners required to be sealed (especially in the shower area) this should be done with a compression tape to take care of the expansion. The split between the two panels is protected from incoming moisture to be additionally sealed with Silicone joint.



5. Surface stack solution: Normally in the hospital wall cladding is need for surface protection to the walls as a crash protector. Compact panels can be used as a half-height wall cladding. Seamless transition can be done by compact panels to the drywall. A stainless steel angle bracket can be used for functional ventilation as well as for optical closure

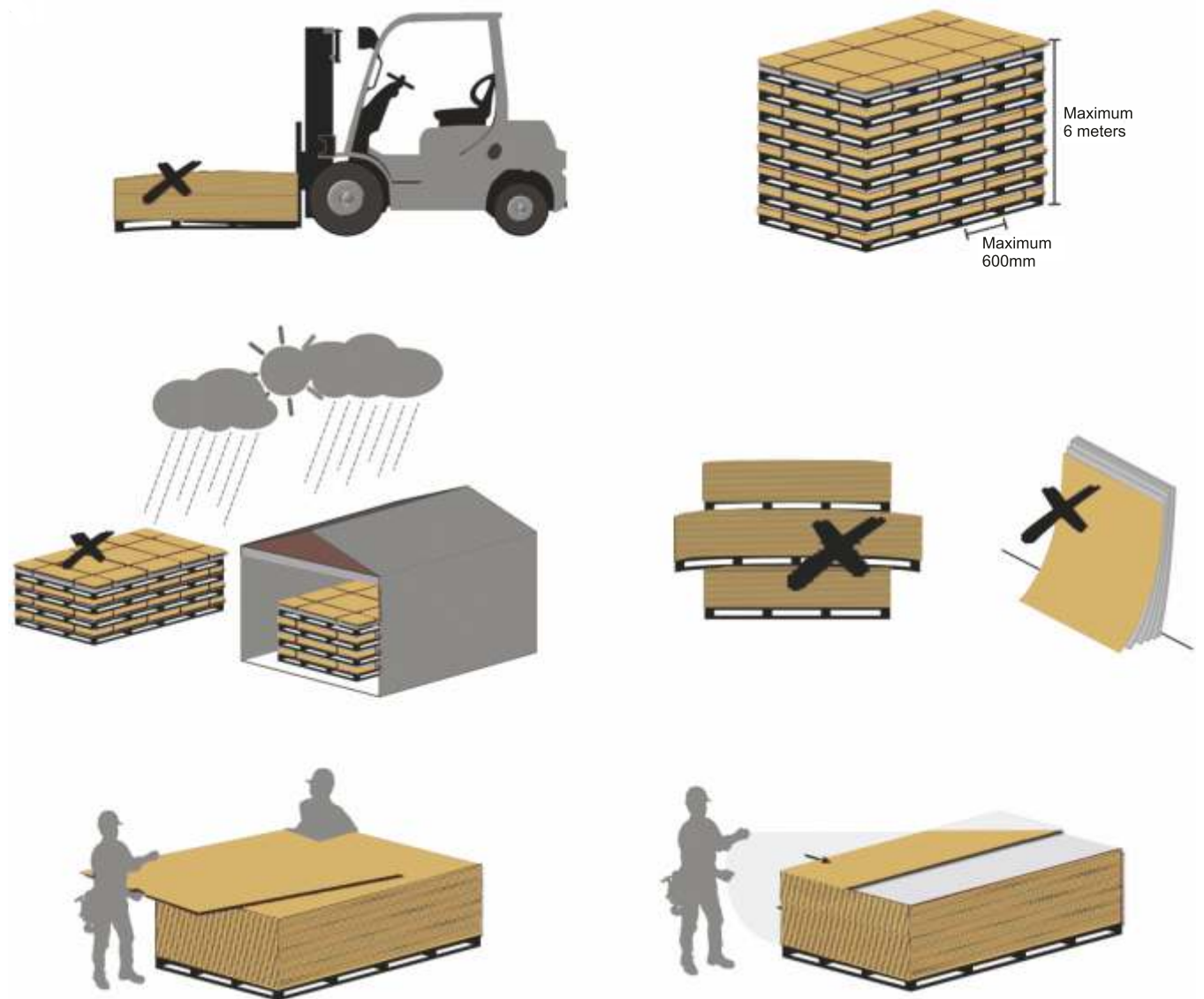


HANDLING & LOGISTIC GUIDELINES

Handle Crown XCL panels with care in order not to damage the edges and surface of high quality material. In spite of the excellent surface hardness and the protection film, the stack weight of compact weight panel is a positive cause of damage. Therefore, any form of dirt or dust between these panels must be avoided. Panels must be secured against slippages during transportation. When loading and unloading, the panels must be lifted and not pushed or pulled over the edges.

During the handling and installation of Crown XCL panels, one must use protection equipments specially hand gloves. The panels must be stacked horizontally on flat and stable support with supporting panels. These panels must lie completely flat and the coverplates should be left on the stack. The top cover should be weighed down and must be wrapped by plastic.

Crown XCL panels are to be stored in a closed room under normal climatic conditions to avoid excess humidity and heat. Appropriate distance to be maintained between each side of the panel.



CLEANING GUIDELINES

Crown XCL panels are low maintenance. Thanks to its homogeneous and pore free surface, it does not require any special care. However, after processing and finishing or over the course of time, it maybe necessary to clean the surface.

The recommended cleaning procedures apply to surface contaminations resulting from the general use, processing and installation of Crown XCL panels.

Cleaning Methods

- Light dirt can be removed with clear, luke warm water. Heavier dirt can be removed with soap suds or a liquid solution.
- Use non abrasive household cleaning products diluted in water.
- Use fine and clean cloth or sponge.
- Always rinse with clean, clear water to prevent streaks from forming.

The following cleaning agents must never be used :

- Abrasive cleaning agents (e.g. scrubbing powder and abrasive cleaning liquids)
- Solvents and solvent cleaner (e.g. acetone, benzine, thinner etc.)
- Scrubbing and abrasive cleaning rags or sponges (e.g. micro fiber cloth, scrubbing sponge, steel wool etc.)
- High pressure cleaners and steam cleaners.









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