1. BEFORE STARTING THE INSTALLATION

1.1. TRANSPORT & TRANSFER:

Transport for the panels must be performed in a horizontal position, perfectly aligned one over the other, with a maximum of 10 modules in height. We recommend protecting the perimeter with cardboard to avoid the panels being chipped due to contact, and they must be preferably transported over stools.

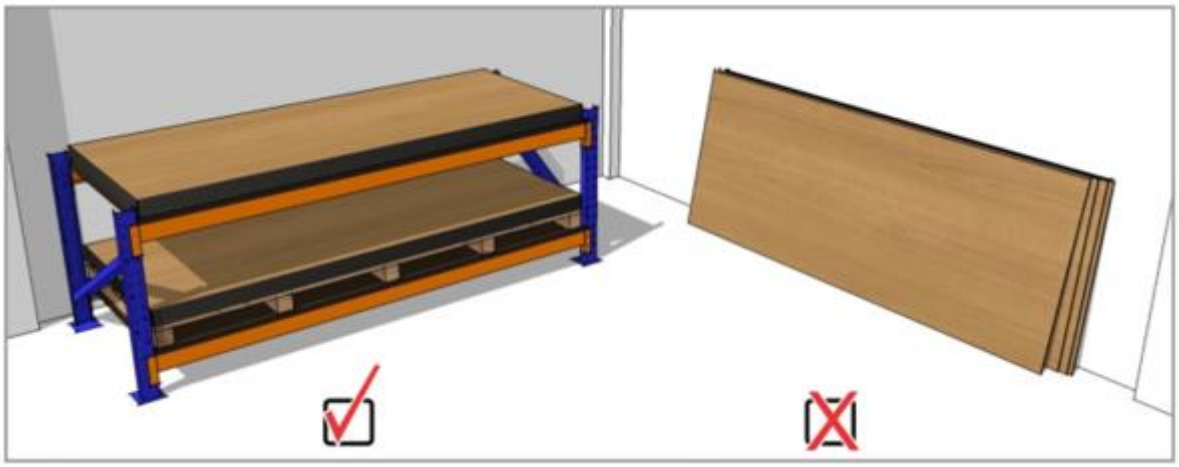
The handling of the modules when working must be always be performed with gloves to avoid cuts on the panel edges. Manual transfer must be performed in a horizontal position. If stretchers are required for vertical transport, these must be designed with the same dimensions of the panels.

1.2. STORAGE:

Storage of the panels must always follow the following recommendations, independent from their modulation:

Storage must always be carried out in a horizontal position, by no means should the panels be left leaning on walls or placed in a vertical position, since due to gravity and frequent temperature changes, the panels may lose dimensional stability. It must be verified that the modules are one on top of the other in a continuous way, without areas of the panel overhanging over other panels. A maximum of 10 modules may be stored continuously.

We recommend placing the panels over stools or any other type of platform that allows the inferior circulation of air, and that protects from possible water puddling.
Storage must be carried out in a dry, ventilated, and clean place. Excess humidity may damage the dimensional stability of the panels, they must never be stored outside since by being stored horizontally, the modules may be affected by water puddling. The protective film with which the panels are delivered must only be removed at the time of the delivery for the project, since it protects them from friction to which they are exposed during transport, storage, and installation. Additionally, this film protects them from dust and other agents that may be present.



1.3. MACHINERY:

The cut of the laminate for facades must be performed with saws of speeds between 8-12 m/min, and 3,000 to 5,500 r.p.m. We suggest that the saw must have diamond-type teeth with alternating flat trapezoidal geometry. For routing tasks, you must use milling cutters of 12,000 r.p.m. as a minimum.

To perforate the laminate for facades, use 10,000 r.p.m. tungsten carbide drills with biangular point.

2. INSTALLATION

To begin the installation of the **PANELEX®** facade system, it is necessary to have cutting plans and a defined modulation. The dimensions of the plan must be verified, in a way that you can foresee any inconsistency that may occur.
the installation of the **PANELEX®** facade system must strictly follow the technical recommendations established in the "**PANELEX® FACADE & COATING INSTALLATION MANUAL".**

The materials installed with visible defects are not covered by the warranty. Do not install if you are not satisfied with the product, contact **LAMITECH S.A.S.** immediately. Final quality control and approval of the product is the exclusive responsibility of the owner and installer. The installer must determine that the work environment in situ and the materials used meet with the applicable construction and industry norms for those materials.
Below you will find a list of chronological activities to be taken into account for the installation of the **PANELEX®** façade system:

2.1. LAYOUT:

Must be carried out by verifying the constructive viability. For the installation, the levels and dimensions of the plan to be installed must be verified. The angles and/or profiles in T, which will serve as fixing accessories for the building's main structure, must be able to absorb differences in the leveling and/or lead of the main structure or wall. It must be verified that these will not coincide with the location of electrical and/or hydraulic installations.

2.2. GENERAL RECOMMENDATIONS:

Any of the systems must be installed by qualified personnel, and with the adequate tools and equipment.
The substructure must be perfectly vertical, leveled, and aligned. Manufacturer's recommendations must be followed for each one of the system's components.
It is very important that the system allows movement of the panels and other components, which result from the thermal dilatation of each one of the panels. The amount of the thermal dilatation for **PANELEX®** is greater at the width of the sheet than on the length (see technical sheet).
In fixing or rivet systems with screws, tolerance occurs on the dimensional variations, defining in the panel a central perforation (fixed point), whose diameter is slightly greater than the external diameter of the thread of the screw or the stem of the rivet, and the other perforations (flexible points), with a diameter that allows movement of the panel without subjecting the fittings to shearing or stress from shearing.

Lamite

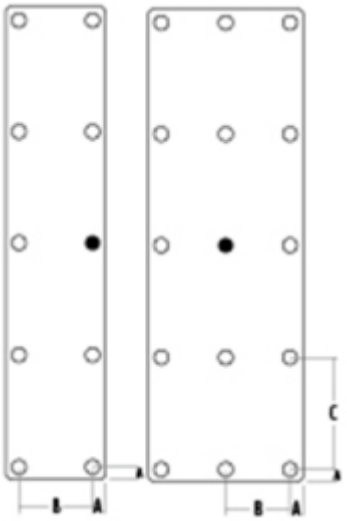
Punto Flexible

Punto Fijo

A Distancia del borde del panel a la primera perforación, entre 20 mm y 10 veces el espesor de la lámina.

B Distancia horizontal entre ejes (400 mm < B < 600 mm)

C Distancia Vertical (400 mm < A < 600 mm) o según cálculos.

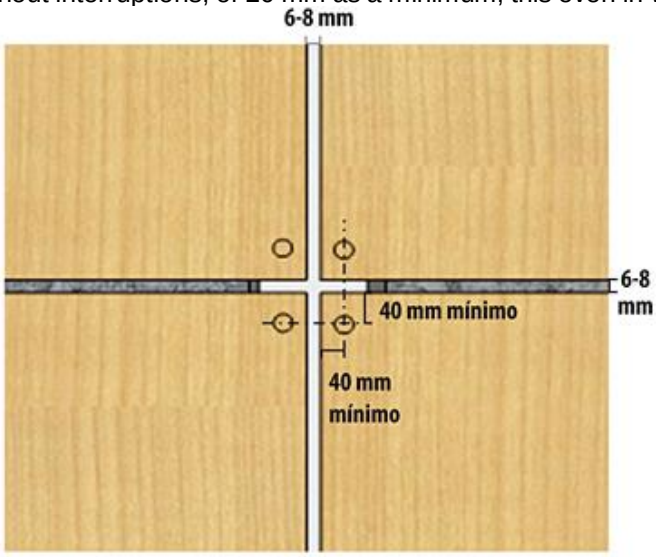


anelex®

The exact measure of the diameter of the flexible points is determined according to the panel dimensions and the thermal dilatation coefficient. This may be around 8mm, reason why the diameter of the head of the screw must be greater than 12 mm to cover it, and that of the rivet greater than 16 mm to cover it and obtain good hold.
In any case, the screw or rivet hold the panel, it does not fix it, otherwise natural movement would be restrained. This is achieved through depth stops in the tools.

2.3. VENTILATED CHAMBER:

Being a floating and/or ventilated façade system, it must without exception, generate a posterior chamber of no less than 30 mm of the closing plane of the building, as it requires permanent and constant ventilation of the modules. The posterior chamber must take into account an inferior and superior ventilation without interruptions, of 20 mm as a minimum, this even in Windows or balconies.



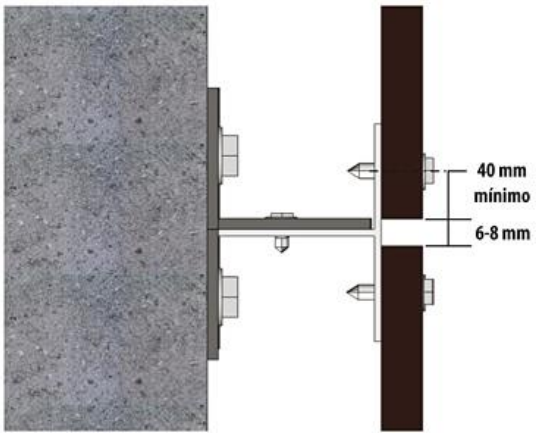
2.3.1. SELECTING THE PANEL'S THICKNESS:

The thickness of the panel is defined according to the parameter to be covered (walls, ceilings, canopies, exteriors). The distance between support profiles has influence over these: the greater the distance, the greater the thickness. The thickness used for exteriors will be between 6, 8, and 10 mm.

2.3.2. DILATATION JOINTS:

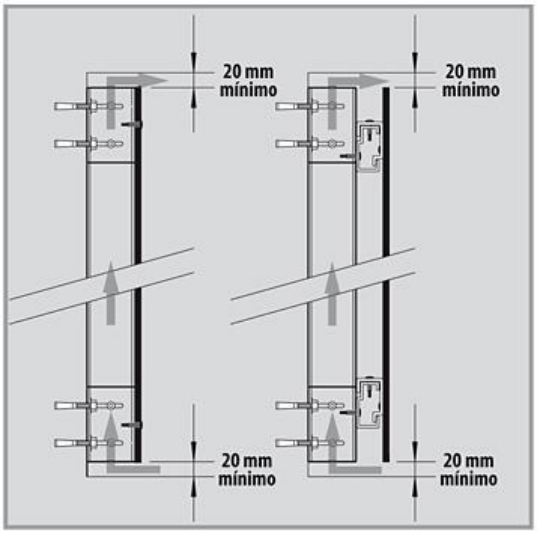
It is necessary to leave perimeter dilatation joints between panels (modules), in a way so that they absorb the dilatation movements of the facade.

The **PANELEX®** facade system allows including thermal and acoustic insulation, which can be installed on the posterior part and completely independent from the facade. However, fixing accessories must be used for the main structure of greater diameter, that will allow the generation of a ventilation chamber.



2.3.3. STRUCTURAL FIXATION ELEMENTS:

Vertical metal profiles are used with the purpose of creating an air chamber, additional to the structure, and which are accompanied by regulating fixation elements to plumb the façade. This structure must be analyzed according to the location´s wind load, complying with the static requirements.



2.4. INSTALLATION OF FIXATION ACCESSORIES TO THE MAIN STRUCTURE AND PLUMB:

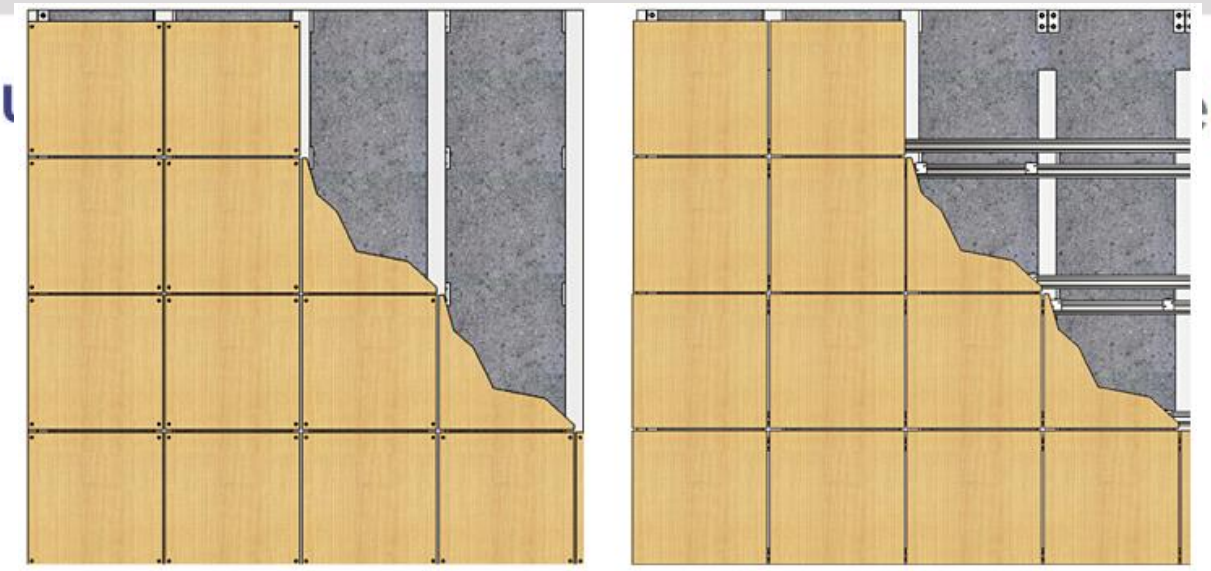
Begin the installation of the elements that will allow fixing the profile of the **PANELEX®** façade system to the main building structure, including concrete walls, masonry, frames or metal frames.

"PANELEX® does not recommend the application of the facade system over light construction systems. The application over this type of system must be approved by a specialist in structural calculations"

The definition of the specifications of the T fixation accessories or angles, must be approved by engineering. To select the anchor elements, the following must be taken into account: the weight of the panel to be installed, the T dimensions or angles, and the wind conditions. If dealing with concrete structures, wedge anchors may be used; in this case, a drill of the same diameter as the anchor must be used, and the concrete must be perforated a bit deeper than the length of the anchor. It should be guaranteed at all times, that the fixation accessories are perfectly aligned and squared on their axels. It is typical that the facades will have bends that will be transmitted to the panels; in these cases, we recommend that the fixation accessories have leveling slots, as any unevenness will be evidenced in the façade's modules

2.5. INSTALLATION OF VERTICAL PROFILES:

The installation of vertical profiles will be performed by fixing them with self-drilling screws. These have a special cut at the tip that when they are pushed with a screwdriver, perforate the sheet and immediately twists and tightens in a single operation. Likewise, it is advisable to use screws with neoprene twists to isolate the metallic elements. The alignment of the vertical profiles must be permanently verified, since by having a length of 3.00 m., it is possible that butt joints will need to be done between several elements. The distance between them will depend on the fixation system (you can have profiles of 6.00 m, for lights between plates of 4.00 to 5.00 m).



A la vista completa

Oculta completa

2.6. FIXATION:

The **PANELEX®** facade and coating system is designed to provide the possibility of 3 different fixation systems for the **PANELEX®** modules, to the building's main structure. These same systems may be implemented for interior coatings. With the purpose of ensuring an optimal installation in terms of performance and quality, it is important to take the following characteristics into account:

2.6.1. IN-SIGHT FIXING:

1. Fixation accessory/main Structure.
2. Vertical profile.
3. PANELEX®.
4. Self-drilling screw or rivet.

SYSTEM COMPONENTS:
PANELEX® Vertical Profile.
Is a lineal element manufactured in structural aluminum in T, L or tubular shape, with dimensions of 3.00 m, which facilitates the manipulation of the element at the time of installation. By being made of aluminum, it guarantees adequate maintenance outdoors.
PANELEX® Fixation screw or rivet, panel to vertical profile.
Panels suffer dimensional variations caused by frequent changes in temperature and humidity. These must be absorbed by a difference in the screw or rivet's diameter, and the drilling diameter of between 2 and 3 mm.
COUNTERSUNK SCREWS MUST NEVER BE USED AS THEY CAN OBSTRUCT THE FREE MOVEMENT DUE TO THE DIMENSIONAL VARIATION OF THE PANELS.

INSTALLATION:
Installation of profiles separated at the maximum fixation distances stipulated on the fixation distances table, according to the thickness of the panel. Installation of the **PANELEX®** panel, previously drilled for the fixation of the self-drilling screw or rivet to the vertical profile, maintaining the level of the panels and their constant perimeter dilatation.

2.6.2. HANGING HIDDEN FIXATION:

1. Fixation accessory/main Structure.
2. Vertical profile.
3. Horizontal profile.
4. Hanging hook.
5. PANELEX®.

SYSTEM COMPONENTS:
PANELEX® Vertical Profile.

Is a lineal element manufactured in structural aluminum in T, L or tubular shape, with dimensions of 3.00 m, which facilitates the manipulation of the element at the time of installation. By being made of aluminum, it guarantees adequate maintenance outdoors.

PANELEX® Horizontal Profile.

In installed over the vertical profiles and is a lineal element with special design that allows the fixation of the hanging nails from the sheet. It is elaborated in structural aluminum, which guarantees a low weight and optimal behavior outdoors. The **PANELEX®** horizontal profiles must preserve a maximum fixation distance stipulated in the distances table, according to the panel's thickness.

PANELEX® Hanging Nails.

These are elements elaborated in aluminum that are attached to the **PANELEX®** sheets through screws on their posterior side, and which allow the panels to hang at the **PANELEX®** horizontal profile. The nails have a mechanized hole that is used to regulate the height and blockage of the modules. Hanging nails must be placed with a horizontal and vertical separation between them, not greater than 60 cm.

INSTALLATION:

Installation of profiles separated at the maximum fixation distances stipulated on the fixation distances table, according to the thickness of the panel. Installation of horizontal profiles located at a maximum fixation distance stipulated on the fixation distances table, according to the thickness of the panel, leaving as a minimum, two profiles per panel. They are fixed with self-drilling screw with neoprene twist. The panel must have the hanging nails installed in its flipside with maximum distances of 60 cm, and of 4 cm on the far corners. The **PANELEX®** modules must be hanged over the horizontal profiles, reviewing the constant leveling and preserving a perimeter dilatation of minimum 6-8mm. The panel is fixed with a captive screw over the superior part of the hanging nail.

2.6.3. HIDDEN FIXATION WITH ADHESIVES:

1. ***Fixation accessory/main Structure.***
2. ***Vertical profile.***
3. ***Adhesion system (tape)***
4. ***Adhesion system (structural adhesive)***
5. ***PANELEX®.***

SYSTEM COMPONENTS:

PANELEX® Vertical Profile.

Is a lineal element manufactured in structural aluminum in T, L or tubular shape, with dimensions of 3.00 m, which facilitates the manipulation of the element at the time of installation. By being made of aluminum, it guarantees adequate maintenance outdoors.

Fixation system with structural adhesives.

Elastic bonding system. You must consult the components and protocols of application with the suggested adhesive providers; the system is made up by a structural elastic adhesive; it promotes adherence that allows removal of any trace of dust and grease that may impede adequate adherence; primer to create an anchor profile over the aluminum structure and over the panel; double-sided tape to ensure a minimum thickness of 2 mm.

INSTALLATION:

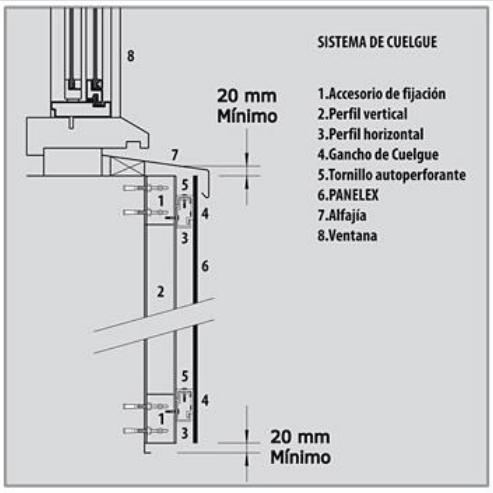
Installation of profiles separated at the maximum fixation distances stipulated on the fixation distances table, according to the panel's thickness.

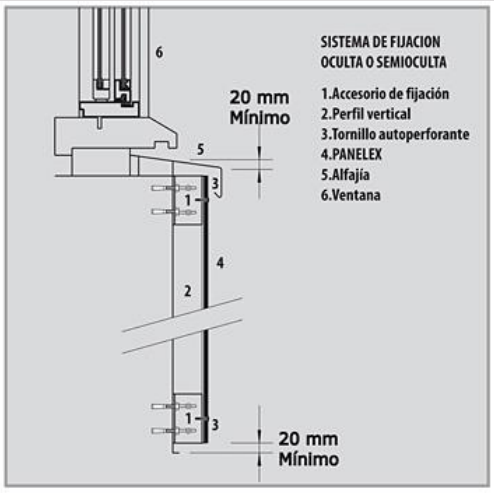
Sand the panel on the area where gluing will occur, eliminating the dust. Leave to dry for 10 minutes, prime the panel.

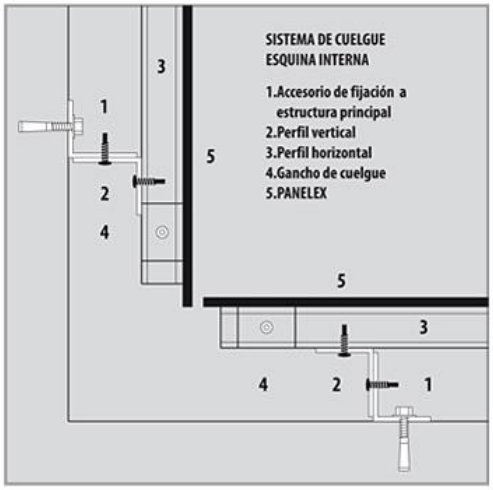
Clean the aluminum or galvanized steel profiles with adherence primer, then prime and apply the tape, which is used to control the thickness and serves as primary adhesive, avoiding sliding of the plate.

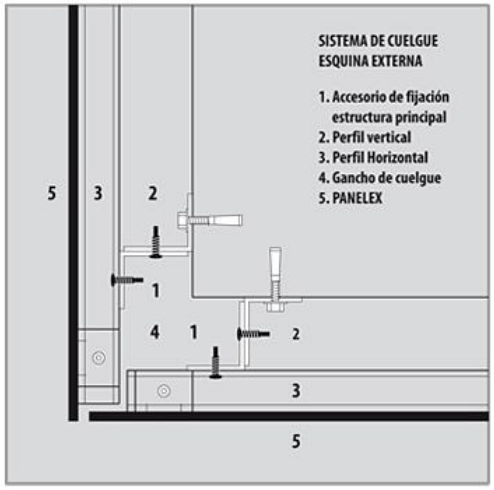
On the same profile, on one side of the tape, apply the structural adhesive and install the **PANELEX®** panel, revising the constant leveling and preserving the perimeter dilatations of 6-8mm as a minimum. **(It is mandatory to consult the suggested adhesive providers so they can provide support and the application implementation protocols before, during, and after the execution of each project).**

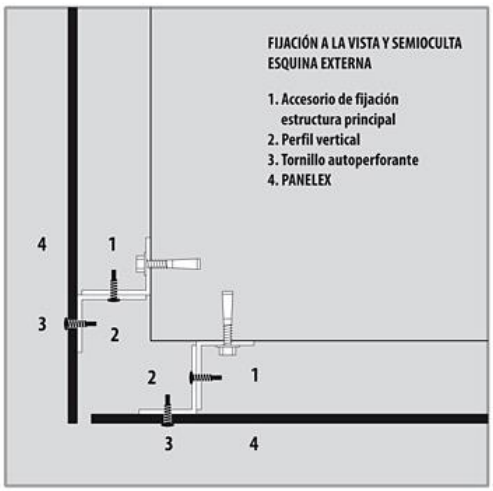
2.7. DETAILS:

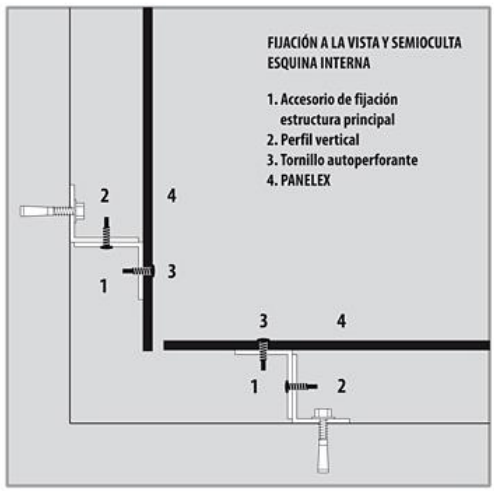












2.8. ACCESSORIES TABLE

	FIJACIÓN A LA VISTA	FIJACIÓN OCULTA O CON CUELGUE	FIJACIÓN OCULTA CON PEGADO
PERFIL VERTICAL 	☑	☑	☑
ACCESORIOS DE FIJACIÓN 	☑	☑	☑
TORNILLOS 	☑	☑	☑
PERFIL HORIZONTAL 		☑	
GANCHO DE CUELGUE 		☑	
SISTEMA DE PEGADO 			☑
PÁNEL 	☑	☑	☑

2.9. SUGGESTED FIXATION DISTANCES

DISTANCIA ENTRE PUNTOS DE FIJACION EN SISTEMAS ANCLADOS	
ESPESOR (mm)	DISTANCIA MÁXIMA DE FIJACIÓN (mm)
4	300
6	400
8	600
10	700
12, 14, 16	1000

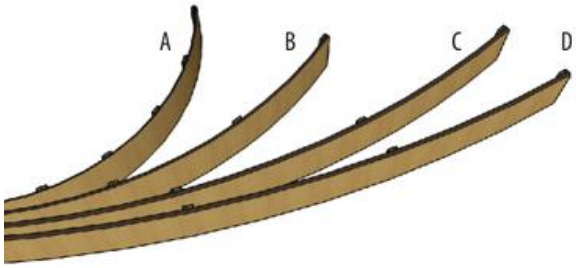
DISTANCIA ENTRE LINEAS DE FIJACION CON ADHESIVO	
ESPESOR (mm)	DISTANCIA MÁXIMA DE FIJACIÓN (mm)
4	300
6	400
8	600
10	700
12, 14, 16	1000

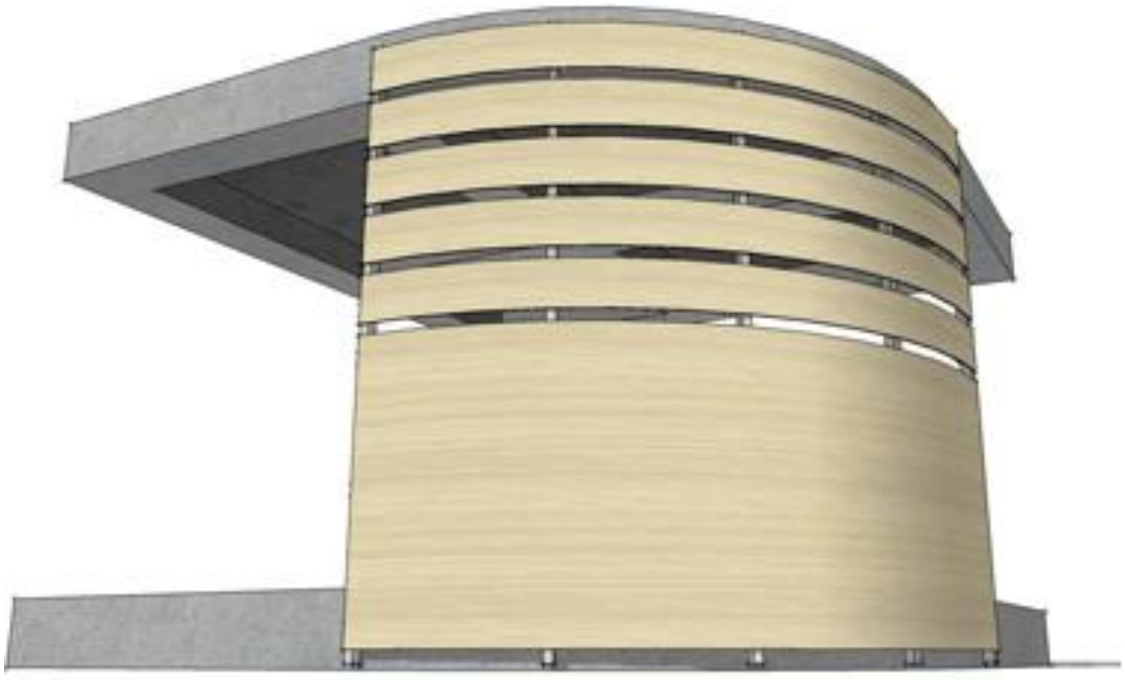
DISTANCIA ENTRE PUNTOS DE FIJACION PARA BALCONES		
ESPESOR DE LA LAMINA EN (mm)		DISTANCIA MÁXIMA DE FIJACIÓN (mm)
8	Ancho	450
	Largo	950
10	Ancho	500
	Largo	1100
12	Ancho	550
	Largo	1150

3. CURVING OF PANELS

The **PANELEX®** system panels are rigid planes, however, they can be curved to obtain certain curving radius. They will be fixed only with the fixation system shown through the use of screws. They will only curve on the longest side of the panel.

	RADIO DE CURVATURA REQUERIDA	DISTANCIA ENTRE PUNTOS DE FIJACION	ESPESOR RECOMENDADO
-	< 1,00 m	-	Realizar estructuras poligonales
A	1,00 - 5,00.	≤ 150 mm	3 mm
B	5,00 - 10,00 m	≤ 300 mm	6 mm
C	5,00 - 10,00 m	≤ 400 mm	8 mm
D	>20,00 m	≤ 450 mm	10 mm





The current technical documents updated in the corresponding web page must be verified by the distributor/installer.
Visit us at www.novadeck.com.co for more information.