TECHNICAL CATALOGUE

EXTERIORS

Prodema

NATURAL WOOD BEAUTY

EDITION Nº 7	04/2017
SPECIFIC CATALOGUE FOR	EUROPE ASIA AFRICA OCEANIA CENTRAL AND SOUTH AMERICA

For the satisfactory installation of **ProdEX** panels, it is necessary to follow all the instructions contained within this technical catalogue, without exception.

For technical queries, alternative installation systems, etc., we recommend contacting **Prodema** (prodema@prodema.com).

The updated version of this present guide can be found on the **Prodema** website.

CONTENTS

4. POST-INSTALLATION

5. REMOVAL INFORMATION

6. ACCESSORIES

❶ INTRODUCTION

ProdEX. EXTERIORS

ProdEX is a construction kit for the cladding of ventilated façades made up of natural wood panels and the corresponding substructure. Each panel consists of a high density bakelite core, clad in a veneer of natural wood with a surface treated with synthetic resin and an exterior PVDF film, which lends greater durability to the panels, with anti-adherent properties, to protect the panel from solar radiation, atmospheric agents, dirt and the attacks of chemical products (anti-graffiti). Due to its high resistance, it does not require the typical maintenance of other woods for exteriors.

ProdEX panels are unique, no two are alike, each grain is different, which explains the difference in tone between them and which gives it a natural and authentic appearance that can be appreciated in the reflection of the light on its wood fibers.

At **Prodema**, we have invested a large part of our resources in constantly improving the quality of our products, subsequently obtaining different certificates of trials performed at independent laboratories.

This is because our philosophy of continual improvement obliges us to obtain the most demanding quality certificates, such as the **ISO 9001** quality management standard.

DIMENSIONS

ProdEX panels are extremely versatile and can be cut into different shapes or sizes to adapt to the needs of all projects. Always follow the cutting instructions set out in this technical catalogue (see section 2.4).

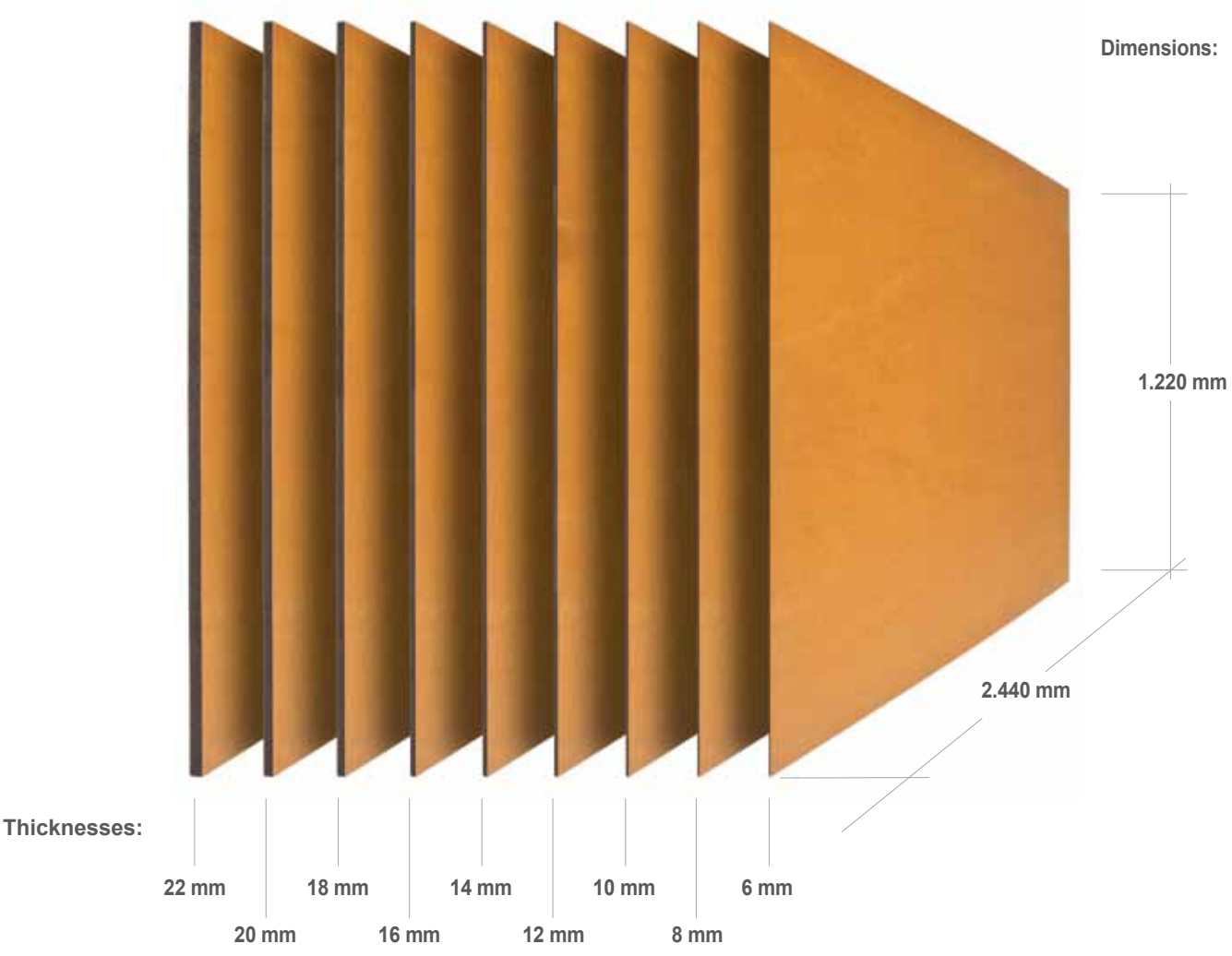
Panel dimensions:

Length x width: 2,440 mm x 1,220 mm

Thicknesses:

6, 8, 10, 12, 14, 16, 18, 20, 22 mm

Panel thickness:	6	8	10	12	14	16	18	20	22	(mm)
Weight / unit surface area:	8,10	10,80	13,50	16,20	18,90	21,60	24,30	27,00	29,70	(Kg/m$^{2)}$



1.1 PRODEX SYSTEM CERTIFICATES

Due to the high quality of the **ProdEX** system, it complies with the most demanding of certifications in different countries.

The certificates available are listed below according to country and are available on the **Prodema** website*.

ORGANIZATION	CERTIFICATE	FASTENING SYSTEM	PANEL TYPE	PANEL THICKNESS
IETcc	European Technical Assessment ETA-13/0626	Exposed: Wood, Aluminum or Galvanized Steel Battens	ProdEX IGN	6-14
		Concealed: Al Sections		10-14
IETcc	Ditplus 522-P/16	Exposed: Wood, Aluminum or Galvanized Steel Battens	ProdEX and ProdEX IGN	6-14
		Concealed: Aluminum Sections		10-14
CSTB	Avis Technique 2/14-1646	ProdEX on Metal Framework	ProdEX and ProdEX IGN	6-14
		ProdEX on Aluminum Framework (in seismic areas)		6-10
DiBt	Allgemeine bauaufsichtliche Zulassung Z-33.2-590	Exposed: Wood or Aluminum Battens	ProdEX IGN	8- 12
BBA	Agrément Certificate 12/4917	Exposed: Wood, Aluminum or Galvanized Steel Battens	ProdEX and ProdEX IGN	6 - 14
ICC-ES	ESR-3439	Interior finish: • Concealed • Exposed (AL J-channels and Hat channels) • Exposed (20 GA, Galvanized Z-Girts)	ProdEX IGN	6 - 12
		Exterior Walls (V-Type Construction): • Concealed • Exposed (AL J- channels and Hat channels) • Exposed (20 GA, Galvanized Z-Girts)		10 - 12 8 - 12 10 - 12
		Exterior Walls (V-Type Construction): • Exposed (AL J- channels and Hat channels) • Exposed (20 GA, Galvanized Z-Girts)		8 10

Prodema carries out an exhaustive quality control process for **ProdEX** and offers a 10-year warranty**.

If the panel is installed at an angle greater than 30º, the warranty will be reduced to 5 years due to the increased solar radiation and potential for deposit of water on the face of the panels.

* It is recommended to visit this section of the web page on a regular basis to obtain the latest version of these certificates.

** The general terms and conditions of the warranty may be altered without prior notice.

1.2 ENVIRONMENTAL COMMITMENT

Prodema has had a long-standing commitment to the conservation of the environment and so we continually strive to develop initiatives to keep us at the forefront of sustainable practices. We have stayed true to this commitment and continue to contribute to our clients' environmental responsibilities and that of society in general.

In 2002, the ISO 14001 Environmental Management certification was granted to our factory in Legorreta (Spain), requiring that **Prodema** follow an environmental plan and improve its protocol as new industry and environmental standards develop.

More recently, we became the first company in our sector, world-wide,to obtain the ISO14006 for ECOdesign. ECOdesign recognizes companies for integrating environmental considerations into the design and development of products so as to reduce negative environmental impacts and continually improve the environmental performance of a product or service throughout its lilecycle. **Prodema** has also been granted the ECOlabel, recognizing the product's environmental impact during its lifecycle.

Prodema is PEFC certified which recognizes that we only use woods originating from managed forests that abide by the strictest environmental and socially responsible standards.

Prodema meets LEEDS standards and can contribute significant points to qualify for LEED certified buildings. Our products also meet the standards of other rating systems used throughout theworld (Breeam, Casbee, GBTool,and Green Globes)

SUMMARY OF CERTIFICATES

Environmental Management System Certificate	UNE - EN ISO 14001 GA-2002/0070
ECOdesign Management System Certificate	UNE - EN ISO 14006 ED-0009/2010
Certificate of Conformity of the Forestry Products Chain of Custody	PEFC/14-35-00025

1.3 TECHNICAL DATA SHEETS

ProdEX

Prodema NATURAL WOOD BEAUTY	TECHNICAL DATA SHEET	Doc.: FTPRODEX Rev.: 011 – Feb 2013 Page: 1/1

MATERIAL:	THICKNESS:	SURFACE FINISH:
PRODEX	6 – 22 mm	SMOOTH

TESTS	RESULTS	PROPERTY OR ATTRIBUTE	MEASURE UNIT	STANDARD
1. INSPECTION				
Colour, pattern and surface finish	Due to the fact that wood is a natural product, each veneer may be considered as unique. Colour and structure differences are considered as normal. Singularities such as knots and resin inclusions are not considered as defects, but as a part of the décor. There are differences in light fastness performances depending on the wood species and the source of the wood.			EN 438-8 Part 5.2.2.3
2. DIMENSIONAL TOLERANCES				
Thickness (t)	± 0,40 ± 0,50 ± 0,60 ± 0,70 ± 0,80	6,0 ≤ t < 8,0 8,0 ≤ t < 12,0 12,0 ≤ t < 16,0 16,0 ≤ t < 20,0 20,0 ≤ t < 25,0	mm	EN 438-2 Part 5
Flatness ①	5,0 3,0	6,0 ≤ t < 10,0 10,0 ≤ t	mm/m	EN 438-2 Part 9
Length and width	+ 10 / - 0	-----	mm	EN 438-2 Part 6
Edge straightness	1,5	-----	mm/m	EN 438-2 Part 7
Edge squareness	1,5	-----	mm/m	EN 438-2 Part 8
3. PHYSICAL PROPERTIES				
Dimensional stability at elevated temperature	0,30 0,60	Longrain Crossgrain	% max.	EN 438-2 Part 17
Resistance to impact by large diameter ball	≥ 1.800	Maximal height for which no visible surface cracking or imprint greater than 10 mm (t ≥ 6 mm)	mm	EN 438-2 Part 21
Tensile strength	> 60	Longrain Crossgrain	MPa	EN ISO 527-2
Determination of graffiti resistance	Level 4 Level 4 Level 1 Level 2	Permanent blue marker Spray red paint Wax black crayon Water based ink black marker	Cleanability level	ASTM D 6578:2000
4. WEATHER RESISTANCE				
Resistance to UV light	≥ 3 ≥ 4	Contrast Aspect	Grey scale rating Rating	EN 438-2 Part 28 Rating according to EN 20105 – A02
Resistance to artificial weathering (including light fastness)	≥ 3 ≥ 4	Contrast Aspect	Grey scale rating Rating	EN 438-2 Part 29 Rating according to EN 20105 – A02
5. CE SAFETY REQUIREMENTS				
Reaction to fire	C-s2,d0 ②	Euroclass t ≥ 6 mm	Classification	EN 13501-1
Thermal resistance/Conductivity	0,266	Thermal conductivity (λ)	W/m K	EN 12664
Water vapour permeability	110 250	Wet cup method Dry cup method	μ	EN 438-7 Part 4.4
Résistance to fixings	> 2.000 > 3.000 > 4.000	Screw holding value for t = 6 mm Screw holding value for t = 8 mm Screw holding value for t ≥ 10 mm	N	EN 438-7 Part 4.5
Flexural strength	≥ 80 ≥ 80	Longrain Crossgrain	MPa	EN ISO 178
Flexural Modulus	≥ 9.000 ≥ 9.000	Longrain Crossgrain	MPa	EN ISO 178
Resistance to climatic shock	≥ 4 ≥ 0,95 ≥ 0,95	Appearance Flexural strength Elastic modulus	Rating Index Ds Index Dm	EN 438-2 Part 19
Density	≥ 1,35	Density	g/cm³	EN ISO 1.183
Resistance to wet conditions	≤ 5 ≥ 4	Moisture absorbed Appearance	% Rating	EN 438-2 Part 15

① Provided that the laminates are stored in the manner and conditions recommended by the manufacturer.

② Class B for North America.

The reaction to fire detailed has been obtained in accordance with European Standard EN 13501 - 1. For further information on the reaction to fire of the product in other places and under different standards, contact Prodema (prodema@prodema.com).

ProdEX IGN

Prodema NATURAL WOOD BEAUTY	TECHNICAL DATA SHEET	Doc.: FTPRODEXIGN Rev.: 010 – Feb 13 Page: 1/1

MATERIAL	THICKNESS	SURFACE FINISH:
PRODEX IGN	6 – 22 mm	SMOOTH

TESTS	RESULTS	PROPERTY OR ATTRIBUTE	MESURE UNIT	STANDARD
1. INSPECTION				
Colour, pattern and surface finish	Due to the fact that wood is a natural product, each veneer may be considered as unique. Colour and structure differences are considered as normal. Singularities such as knots and resin inclusions are not considered as defects, but as a part of the décor. There are differences in light fastness performances depending on the wood species and the source of the wood.			EN 438-8 Part 5.2.2.3
2. DIMENSIONAL TOLERANCES				
Thickness (t)	± 0,40 ± 0,50 ± 0,60 ± 0,70 ± 0.80	6,0 ≤ t < 8,0 8,0 ≤ t < 12,0 12,0 ≤ t < 16,0 16,0 ≤ t < 20,0 20,0 ≤ t < 25,0	mm	EN 438-2 Part 5
Flatness ①	5,0 3,0	6,0 ≤ t < 10,0 10,0 ≤ t	mm/m	EN 438-2 Part 9
Length and width	+ 10 / - 0	-----	mm	EN 438-2 Part 6
Edge straightness	1,5	-----	mm/m	EN 438-2 Part 7
Edge squareness	1,5	-----	mm/m	EN 438-2 Part 8
3. PHYSICAL PROPERTIES				
Dimensional stability at elevated temperatures	0,30 0,60	Longrain Crossgrain	% max.	EN 438-2 Part 17
Resistance to impact by large diameter ball	≥ 1.800	Maximum height for which no visible surface cracking or imprint greater than 10 mm (t ≥ 6 mm)	mm	EN 438-2 Part 21
Tensile strength	> 60	Longrain Crossgrain	MPa	EN ISO 527-2
Determination of graffiti resistance	Level 4 Level 4 Level 1 Level 2	Permanent blue marker Spray red paint Wax black crayon Water based ink black marker	Cleanability level	ASTM D 6578:2000
4. WEATHER RESISTANCE				
Resistance to UV light	≥ 3 ≥ 4	Contrast Aspect	Grey scale rating Rating	EN 438-2 Part 28 Rating according to EN 20105 – A02
Resistance to artificial weathering (including light fastness)	≥ 3 ≥ 4	Contrast Aspect	Grey scale rating Rating	EN 438-2 Part 29 Rating according to EN 20105 – A02
5. CE SAFETY REQUIREMENTS				
Reaction to fire	B-s2,d0 ②	Euroclass t ≥ 6 mm	Classification	EN 13501-1
Thermal resistance/ conductivity	0,220	Thermal conductivity (λ)	W/m K	EN 12664
Water vapour permeability	110 250	Wet cup method Dry cup method	μ	EN 438-7 Part 4.4
Resistance to fixings	> 2.000 > 3.000 > 4.000	Screw holding value for t = 6 mm Screw holding value for t = 8 mm Screw holding value for t ≥ 10 mm	N	EN 438-7 Part 4.5
Flexural strength	≥ 80 ≥ 80	Longrain Crossgrain	MPa	EN ISO 178
Flexural Modulus	≥ 9.000 ≥ 9.000	Longrain Crossgrain	MPa	EN ISO 178
Resistance to climatic shock	≥ 4 ≥ 0,95 ≥ 0,95	Appearance Flexural strength Elastic modulus	Rating Index Ds Index Dm	EN 438-2 Part 19
Density	≥ 1,35	Density	g/cm³	EN ISO 1.183
Resistance to wet conditions	≤ 8 ≥ 4	Moisture absorbed Appearance	% Rating	EN 438-2 Part 15

① Provided that the laminates are stored in the manner and conditions recommended by the manufacturer.

② Class A for North America.

The reaction to fire detailed has been obtained in accordance with European Standard EN 13501 - 1.

Prodema NATURAL WOOD BEAUTY	TECHNICAL DATA SHEET	Doc.: FTPRODEXFIREPROOF Rev.: 01 – Feb 2013 Page: 1/1

MATERIAL	THICKNESS	SURFACE FINISH:
PRODEX FIREPROOF	8 – 22 mm	SMOOTH

TESTS	RESULTS	PROPERTY OR ATTRIBUTE	MEASURE UNIT	STANDARD
1. INSPECTION				
Colour, pattern and surface finish	Due to the fact that wood is a natural product, each veneer may be considered as unique. Colour and structure differences are considered as normal. Singularities such as knots and resin inclusions are not considered as defects, but as a part of the décor. There are differences in light fastness performances depending on the wood species and the source of the wood.			EN 438-8 Part 5.2.2.3
2. DIMENSIONAL TOLERANCES				
Thickness (t)	± 0,50 ± 0,60 ± 0,70 ± 0.80	8,0 ≤ t < 12,0 12,0 ≤ t < 16,0 16,0 ≤ t < 20,0 20,0 ≤ t < 25,0	mm	EN 438-2 Part 5
Flatness ①	5,0 3.0	6,0 ≤ t < 10,0 10.0 ≤ t	mm/m	EN 438-2 Part 9
Length and width	+ 10 / - 0	-----	mm	EN 438-2 Part 6
Edge straightness	1,5	-----	mm/m	EN 438-2 Part 7
Edge squareness	1,5	-----	mm/m	EN 438-2 Part 8
3. PHYSICAL PROPERTIES				
Dimensional stability at elevated temperatures	0,30 0,60	Longrain Crossgrain	% max.	EN 438-2 Part 17
Resistance to impact by large diameter ball	≥ 1.800	Maximum height for which no visible surface cracking or imprint greater than 10 mm (t ≥ 6 mm)	mm	EN 438-2 Part 21
Tensile strength	> 60	Longrain Crossgrain	MPa	EN ISO 527-2
Determination of graffiti resistance	Level 4 Level 4 Level 1 Level 2	Permanent blue marker Spray red paint Wax black crayon Water based ink black marker	Cleanability level	ASTM D 6578:2000
4. WEATHER RESISTANCE				
Resistance to UV light	≥ 3 ≥ 4	Contrast Aspect	Grey scale rating Rating	EN 438-2 Part 28 Rating according to EN 20105 – A02
Resistance to artificial weathering (Including light fastness)	≥ 3 ≥ 4	Contrast Aspect	Grey scale rating Rating	EN 438-2 Part 29 Rating according to EN 20105 – A02
5. CE SAFETY REQUIREMENTS				
Reaction to fire	B-s1,d0 ②	Euroclass t ≥ 8 mm	Classification	EN 13.501-1
Thermal resistance/ conductivity	0,281	Thermal conductivity (λ)	W/m K	EN 12664
Water vapour permeability	110 250	Wet cup meted Dry cup method	μ	EN 438-7 Part 4.4
Resistance to fixings	> 3.000 > 4.000	Screw holding value for t = 8 mm Screw holding value for t ≥ 10 mm	N	EN 438-7 Part 4.5
Flexural strength	≥ 80 ≥ 80	Longrain Crossgrain	MPa	EN ISO 178
Flexural Modulus	≥ 9.000 ≥ 9.000	Longrain Crossgrain	MPa	EN ISO 178
Resistance to climatic shock	≥ 4 ≥ 0,95 ≥ 0.95	Appearance Flexural strength Elastic modulus	Rating Index Ds Index Dm	EN 438-2 Part 19
Density	≥ 1,35	Density	g/cm³	EN ISO 1.183
Resistance to wet conditions	≤ 8 ≥ 4	Moisture absorbed Appearance	% Rating	EN 438-2 Part 15

① Provided that the laminates are stored in the manner and conditions recommended by the manufacturer.

② Does not apply to North America.

For further information on the reaction to fire of the product in other places and under different standards, contact Prodema (prodema@prodema.com).

❷ PRIOR TO INSTALLATION OF THE PRODUCT

2.1 RECEIPT OF MATERIAL

Verify condition of package:

• In the case of visible damage, leave details on the transporter's delivery note.

• In the case of hidden damage, notify within 72 hours.

No claims will be accepted for transport damage if any of these instructions are not followed.

2.2 HANDLING AND STORAGE

• **ProdEX** panels must be stored in a closed and climate controlled area, at an ambient temperature of 10–25º C and with an air humidity of 30–70%.

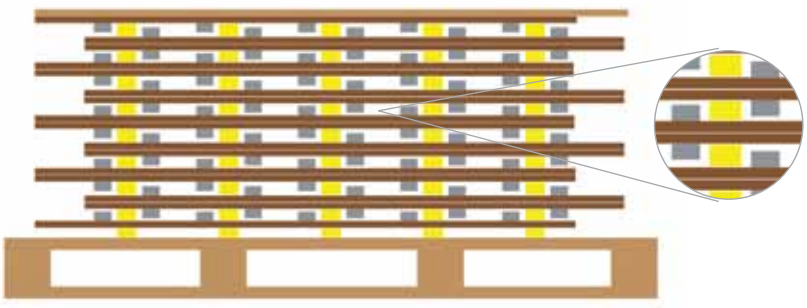
• It is recommended to store **ProdEX** panels in their original packaging until the time of installation. In the case of having to repackage any panel, this should be done under the same conditions as the original packaging.

• Once the packaging has been opened, it is recommended to remove only those **ProdEX** panels that will be installed immediately. The remaining panels must then be stored under the same conditions in the original packaging.

• **ProdEX** panels cannot be stored vertically, only in a horizontal position on a pallet with supports < 800mm in distance. Improper storage can result in warping of panels.

• The floor supporting the pallet must be free of material and debris that may affect the stability of the pallet.

• During transport, **ProdEX** panels must be properly secured as they easily slide when stacked, resulting in damage. They must always be placed horizontally on a flat surface.



• It is recommended to avoid exposure of both sides of the **ProdEX** panel to different humidity and temperature conditions. When **ProdEX** panels have been fitted with fastening elements (such as clips for a concealed installation), they must be stored face to face; back to back, using wood or plastic supports placed between panels at a maximum distance of 600 mm.

• These instructions also apply to cut panels.

The incorrect storage / handling of **ProdEX** panels may cause permanent deformation.

2.3 RANDOM POSITIONING OF PANELS

ProdEX panels, are manufactured with natural wood and therefore will exhibit variations in tone. Prior to fabrication and installation, it is recommended to mix panels to achieve an even distribution of tones throughout the facade. The steps to follow are detailed below:

1. Number all the pallets 1, 2, 3, etc., - The pallets must be stored throughout the fabrication / installation process in accordance with the requirements described in section 2.2.

2. Open pallet No. 1 and remove two panels - Place these two panels on a flat pallet, with a maximum distance of 800mm between supports.

3. Turn over the third panel from pallet No. 1 without removing it from the pallet.

4. Close pallet No. 1 and store it respecting the packaging conditions in section 2.2.

5. Repeat the same process with the other pallets, selecting them in a random order until 10 to 20 panels have been removed. For example, if there are 20 pallets, remove panels from numbers 1, 8, 13, 15 and 20, or other random order.

6. Mix the 10 to 20 panels that have been removed and install them within 2 to 3 hours from the time the first panel was removed.

7. Repeat the first six steps until all the panels have been installed.

PANEL MODULE SIZE

Depending on the module size selected for the façade, the aesthetic result in the majority of cases summarized as the following two options:

A. Installation of slats.
B. Installation of full size panels or large modules.

A. INSTALLATION OF SLATS

B. INSTALLATION OF FULL SIZE PANELS OR LARGE MODULES

Natural wood will always show variations in tone from panel to panel. This variation of color between panels is more obvious when installing large size panels (photo on right). However, the difference in color will be minimized when smaller size panels are used (photo on left). This is most notable only in the Rustik and Pale colors. If you wish to see less color variance, a control sample must be sent with material order. We will then do our best to produce panels that are more homogeneous in color, although there will always be variations.

2.4 FABRICATION

2.4.1 CUTTING RECOMMENDATIONS

Panels need to be squared before cutting begins.

Cuts made to the exterior panels must be performed using tools with a material hardness of K - 05 and K - 01 (Tungsten carbide / Widia), be well sharpened and avoid overheating at all times.

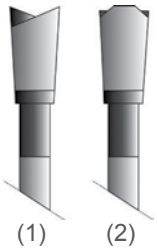
A. SAW

Types of Saw and Blades:

Circular saw blades for wood made from hard material (Widia tip) or blades designed for HPL (high pressure laminate) panels.

Parameters for saw blades according to tool type:

DIAMETER (mm)	TEETH (z)	SPEED (rpm)	BLADE THICKNESS (mm)	TYPES OF TEETH
300	48	4000-6000	3,2	Alternating inclined teeth (1) and trapezoidal teeth. (2)
250	40 / 48	4000-6000	3,2	
190	30	3000-3500	2,2	



(1) (2)

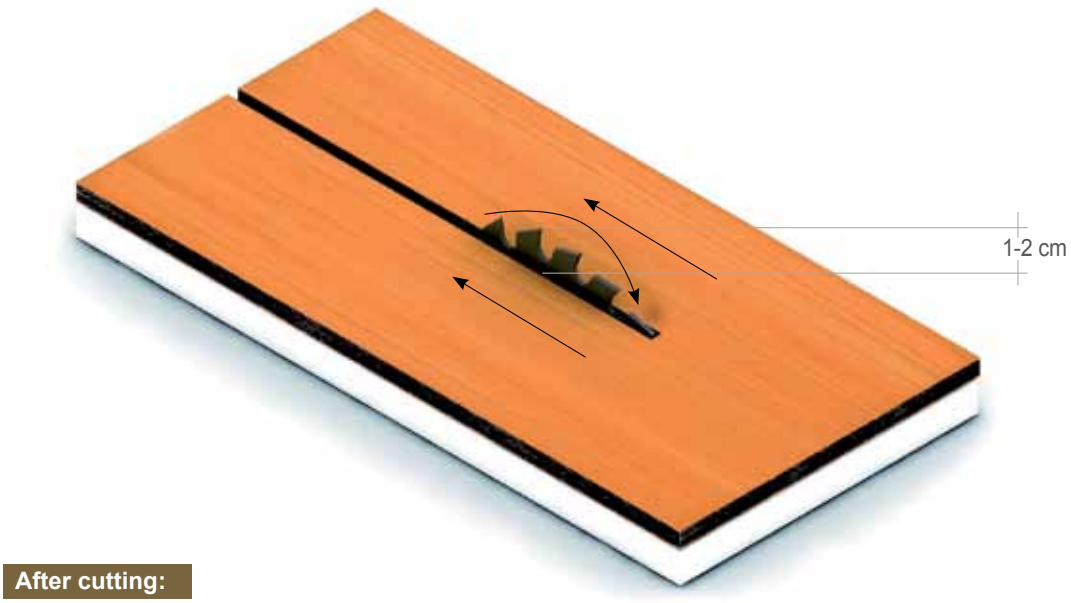
Positioning the Panel

The saw blade must always begin cutting on the front side (face) of the panel.

- Table saw: the front face of the panel must be face up.
- Manual saw: the front face of the panel must be face down.

Height of cutting Blade:

In order to obtain a clean cut, we recommend the height of blade to be 1–2 cm above the panel face.



After cutting:

After fabrication (cutting, drilling, sanding of edges, if required), no other treatment for finishing or protection is required. Rough edges may be smoothed out with sand paper.

B. CNC

The **ProdEX** panel can be fabricated with computerized numeric control (CNC) machines. Ensure that bits are always well sharpened.

Recommended Speeds:

- Cutting speed: 16,000 rpm.
- Feed speed: 4 m / min.

It is very important to avoid any overheating of the machine. The above recommended speeds must be monitored throughout the fabrication process to ensure optimal results.

C. ALTERNATIVE SYSTEMS

Apart from the already mentioned systems, there are other machining options. Not all of them are compatible with the material.

- **Waterjet cutting:** this system is compatible with the **ProdEX** panels, however, it is advisable to carry out a test beforehand to adjust the parameters.

- **Laser cutting:** this system is not recommended for use on **ProdEX** panels as they blacken and burn the wood veneer.

2.4.2 DRILLING RECOMMENDATIONS

The **ProdEX** panels are drilled using hard metal drill bits or steel bits with tungsten carbide tips (Widia) with a cutting angle greater than 100º. Bits for perforating metal may also be used.

In order to avoid any splintering of the material to be drilled, it is best to use a support plate under the panel to obtain a clean hole (see figure 1). If a support plate is not used, the finished face of the panel will face up (see figure 2).

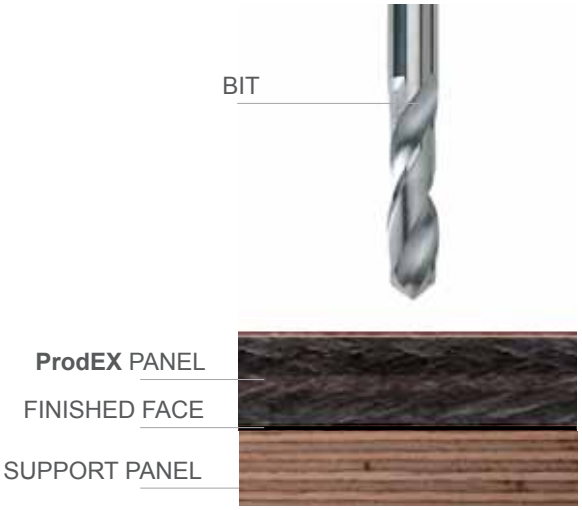


FIGURE 1

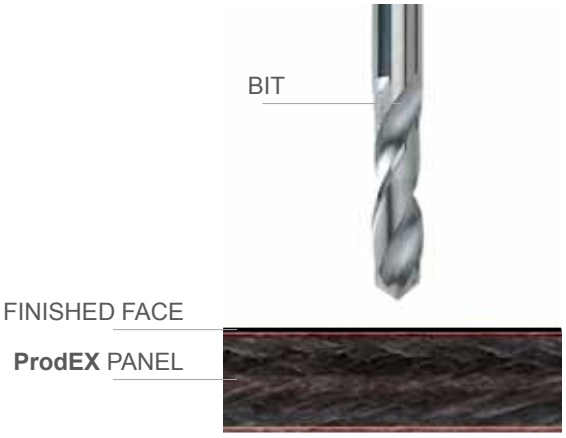


FIGURE 2

Drilling Speeds Recommendations:

- Cutting speed: 16,000 rpm.
- Feed speed: 4 m / min.

NOTE: Only use as reference as these will vary according to each tool.

3 INSTALLATION OF THE PRODUCT

3.1 GENERAL CONCEPTS

3.1.1 VENTILATED FAÇADES

Did you know that... the use of a ventilated façade is essential for the assembly of **ProdEX** panels?

To ensure the good performance of this type of panel, it is very important that the differences in humidity and temperature between both faces is minimal. The ventilated facade has several advantages over a conventional façade:

• Watertight to rain

The ventilated façade provides better water-tightness in the rain and stops the water from penetrating into the air chamber.

• It offers a good diffusion of water vapor from within the building to the exterior.

• The ventilated façade generates a constant ventilation of air and prevents there being any stagnation of humidity or the insulation from becoming damp.

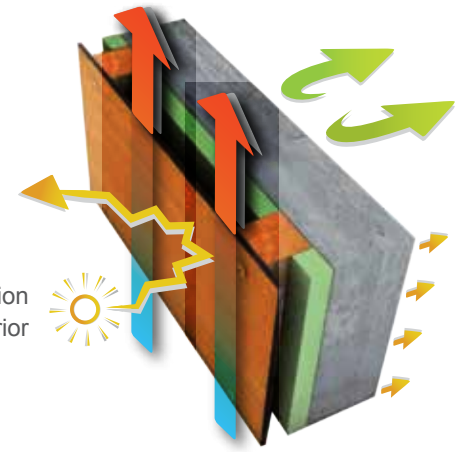
• Reduces thermal bridges to a minimum.

• Improved acoustic insulation

• Thermal insulation

Generates an energy saving of up to 50%* by absorbing less heat in summer and dispersing less heat in winter.

• Easy assembly and disassembly and a good solution for rehabilitations.



Interior insulation of the building in the event of exterior changes of temperature

Solar radiation reflected to the exterior

Low transmission of temperature into the interior of the building

In the summer, or during hot spells, the sun shines on the **ProdEX** panels instead of on the building. This solar radiation heats the air in the air chamber generating a "chimney" effect due to the change in its density. This generated ventilation avoids the accumulation of heat on the façade, which together with the thermal insulation are the perfect combination to protect the building for atmospheric agents

In winter, or during cold spells, the ventilated façade acts as a heat accumulator, given that the air chamber assists in the thermal stability of the system. This ventilated façade construction system together with the thermal insulation prevents the loss of heat of the building.

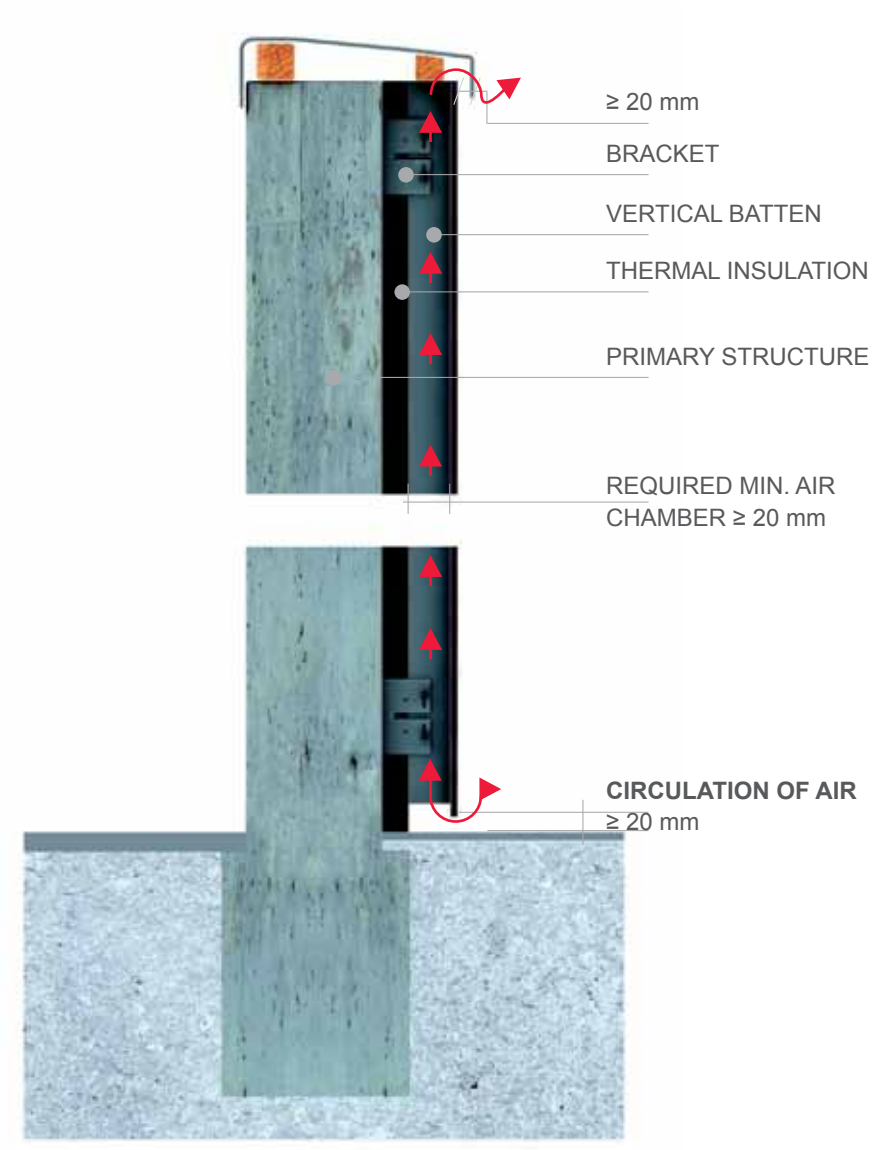
* Depending on which direction the building faces, the insulation used and the numbers of doors, windows, etc.

Did you know that... a ventilated facade require unobstructed, continuous air flow for proper performance?

• The air flow cavity behind the panel must be a minimum of 20 mm. Note that national or local regulations must be respected (refer to section 1.1).

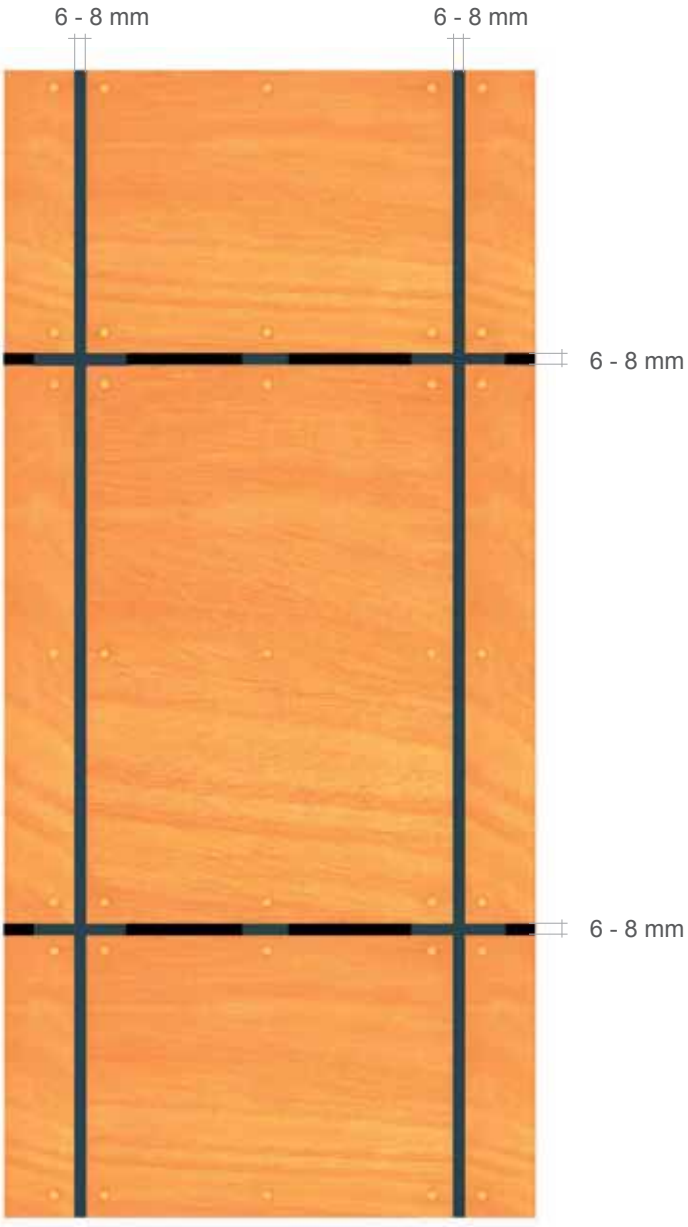
• Leave an opening of 20 mm at the top and bottom part of the façade, as well as at door and window openings. This is critical to ensure required air flow .

• The subframing used to create the air flow cavity must be installed in a vertical direction. If conditions require horizontal battens, these will require weep holes allowing 20cm2 / m on facades up to a height of 1m and 50 cm2/m on facades at a height of over 1 m.



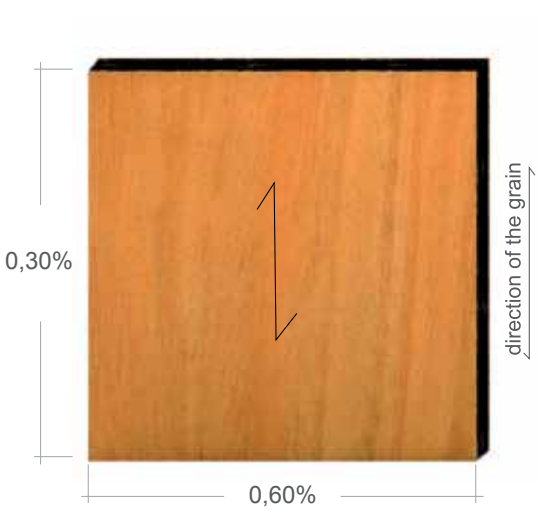
3.1.2 EXPANSION JOINTS

A 6–8mm expansion joint between panels is required. The joint allows the **ProdEX** panels to expand and contract as the material reacts to fluctuating temperature and humidity conditions.

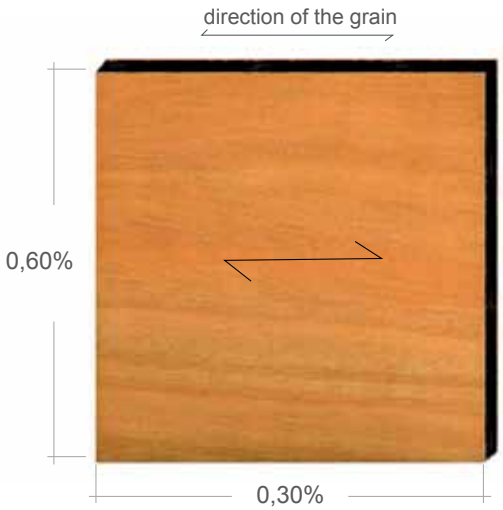


3.1.3 DIMENSIONAL STABILITY

ProdEX is finished with a natural wood veneer and will experience dimensional changes due to temperature and humidity fluctuations. The maximum dimensional variation in a longitudinal direction is 0.30% and 0.60% in a transversal direction. These small dimensional variations do not affect either the aesthetics or the performance of the panels. Therefore it is very important to take into account the expansion joints indicated by **Prodema**.



MAXIMUM TRANSVERSAL
DIMENSIONAL VARIATION



MAXIMUM LONGITUDINAL
DIMENSIONAL VARIATION

ProdEX is resistant to vapor, water, snow and ice. However, we do not recommend submerging panels permanently or for extended periods of time in any of these conditions as a darker color may appear along the edges of the panel surface.

3.1.4 SUBFRAMING OPTIONS

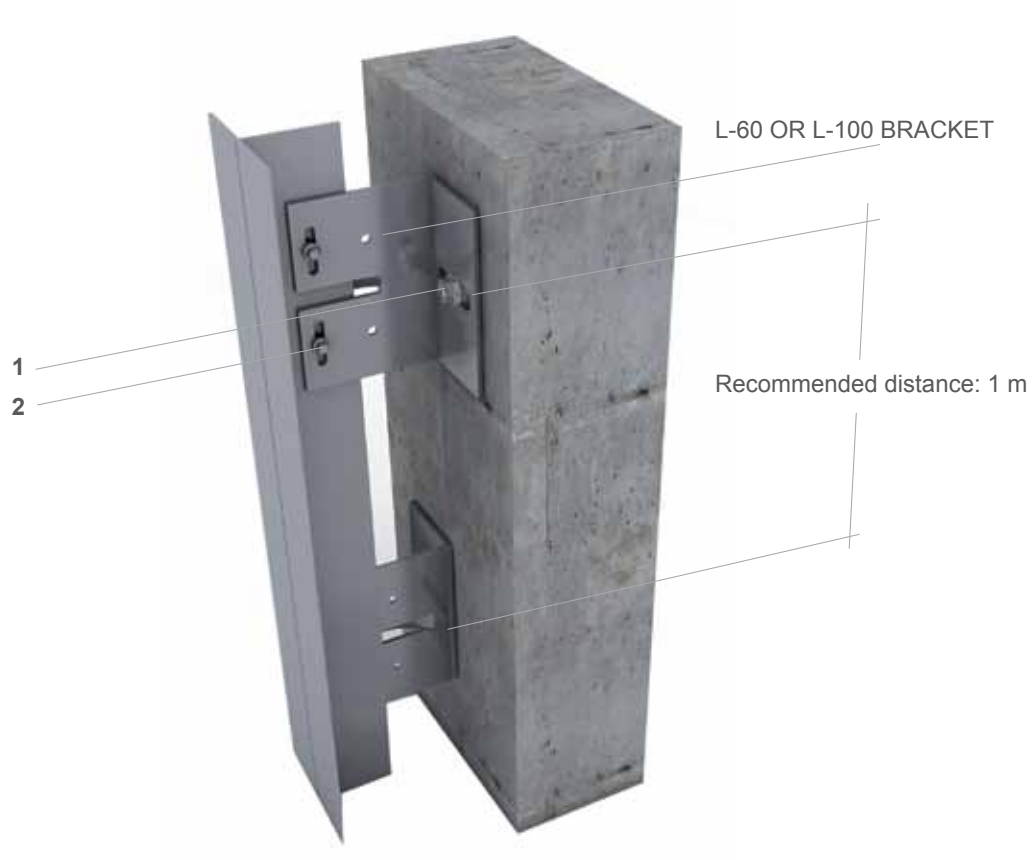
Due to **ProdEX** panels requiring a ventilated façade for their installation, the battens used as a subframe must be installed vertically. The fastening of the battens to the substrate must be done using fastening elements suitable for the material used.

The subframing system must comply wlth local wind-load and building code requirements.

The installation method, thickness, and dimension of the panel will also be taken into consideration. Lastly, the components of the subframing system must be protected against corrosion, regardless of the material or type of installation.

Metal Subframe

In rainy or humid areas it is advisable to use galvanized steel or aluminum metal battens. In coastal areas, we recommend using stainless steel or anodized aluminium battens.



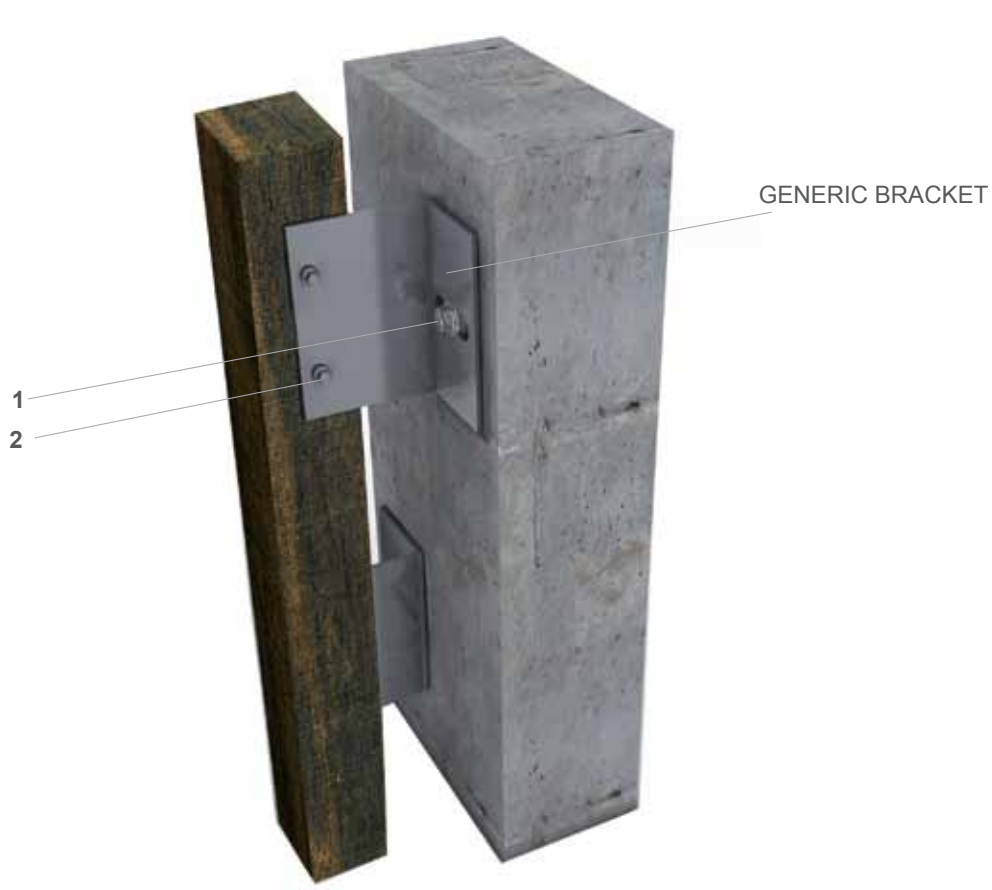
1. The brackets are fixed to the substrate using screws and their corresponding sleeve (steel or nylon).
2. The batten is fixed to the brackets using austenitic stainless steel self-drilling screws.

For further information on accessories, see chapter 6 of this catalogue.

Wood Subframe

This type of subframe requires treated wood. A PVC or closed cell polyethylene foam seal is required between the batten and backside of panel to act as a moisture barrier.

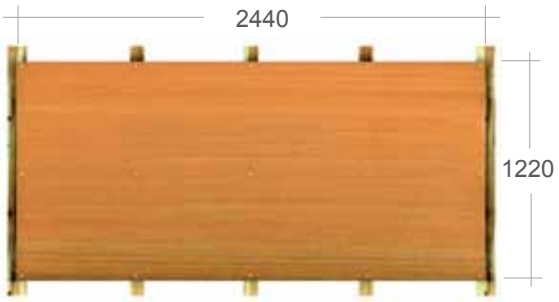
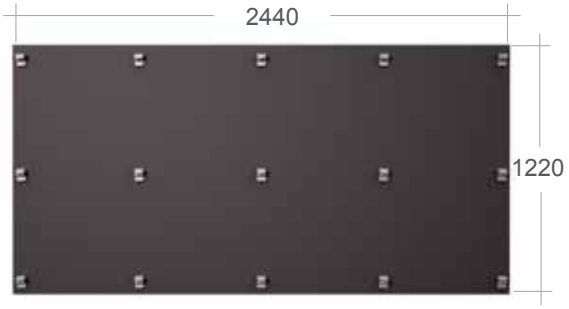
If needed, the generic bracket can be used to resolve irregularities in surface alignments.



1. The brackets are fixed to the substrate using screws with their corresponding sleeve (steel or nylon).
2. The batten is fixed to the brackets with screws for fastening to wood.

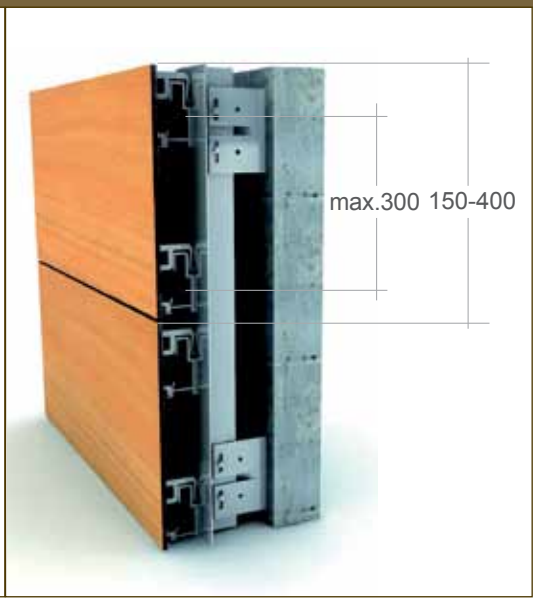
3.1.5 MINIMUM SUPPORT POINTS PER PANEL

The panel should be supported by the maximum surface area of sub-frame element, regardless of the system. A minimum of 3 supports, vertically and horizontally are required per the diagram.

PANEL DIMENSIONS	EXPOSED FASTENING
Applicable to all panels except in the case of exceptions	
	CONCEALED FASTENING
	

When the panel width falls within the specified dimensions (per below diagram), only two support points are required.

EXCEPTIONS

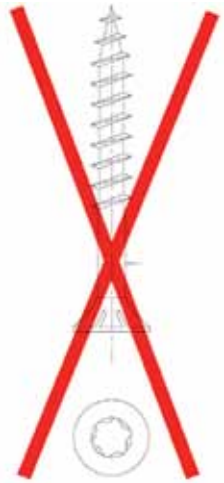
PANEL DIMENSIONS	EXPOSED FASTENING	CONCEALED FASTENING
EXPOSED FASTENING Pieces from 100 to 300 mm		
CONCEALED FASTENING Pieces from 150 to 400 mm		

PANEL DIMENSIONS	EXPOSED FASTENING	CONCEALED FASTENING
EXPOSED FASTENING Pieces from 300 to 600 mm	 INTERMEDIATE SUPPORT BATTEN REQUIRED (only 2 rows of fasteners along edge of panel)	 3 rows of hanging hook required
CONCEALED FASTENING Pieces from 400 to 600 mm		

3.1.6 TONGUE AND GROOVE AND COUNTERSUNK SCREWS

Prodema does not allow installing tongue and groove panels for exterior façades. This system is fastened using countersunk screws that prevent the panels from moving, and furthermore, they are only screwed in around the perimeter of the female joint and not the male; which is insufficient for the proper functioning of the **ProdEX** panels according to our recommendations.

TONGUE AND GROOVE SYSTEM



3.2 INSTALLATION SYSTEMS

3.2.1 EXPOSED FASTENING WITH SCREWS OR RIVETS

This type of installation involves securing **ProdEX** panels using exposed screws or rivets. The screws and rivets* are made of stainless steel and can be ordered to color match the panels.

The distance between screws or rivets*, both horizontally and vertically, varies according to panel thickness.

THICKNESS (mm)	DISTANCE BETWEEN BATTENS (mm)
6**	≤ 400
8, 10	≤ 600
12	≤ 800
14	≤ 1.000
≥ 16	contact **Prodema**

Only for special applications. Contact **Prodema.

- Each piece must have at least 3 support points in each direction.
- Never use countersunk screws for fastening **ProdEX.**

* Rivets are only used with metal subframing, not wood subframe.

For further information on accessories, see chapter 6 of this catalogue.

Distances of the screws and rivets from the panel edges

The screws and rivets* must be fastened between 20 mm (minimum) and 40 mm (maximum) from the edge of the panel.

Types of Fasteners

Wood Battens

Screw: SFS - TW - S - D12 - 4,8 x 38 (lacquered or mill finish).

EPDM

When installing the panels using wood strips, it is required to place a strip of **EPDM** between batten and panel as a moisture barrier.

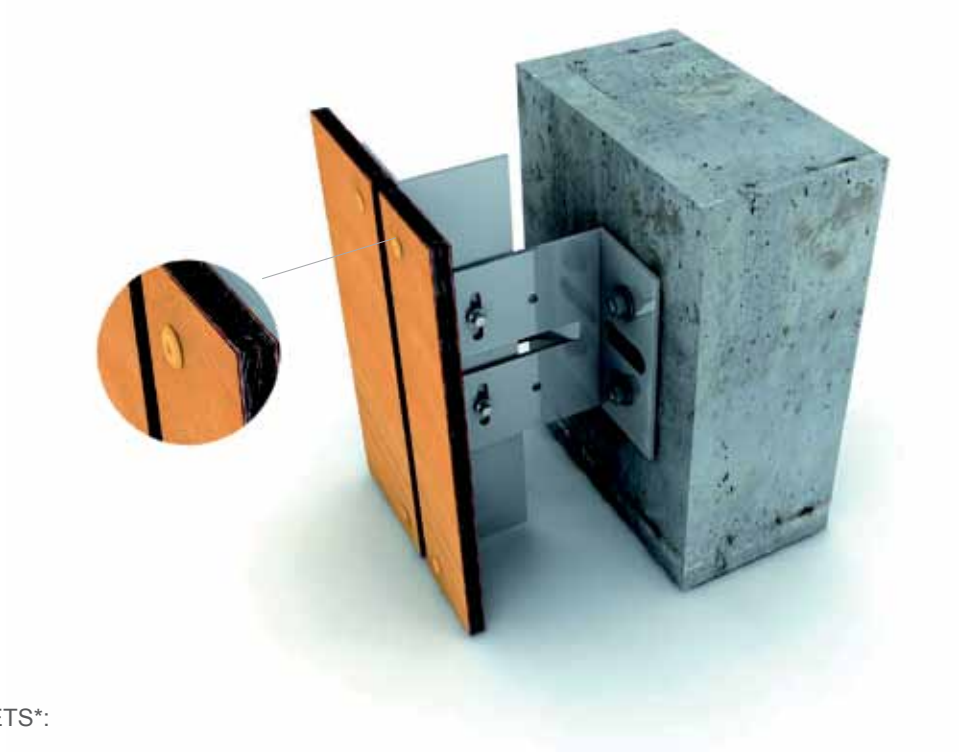
* Rivets are only used with metal subframing, not wood subframe.

For further information on accessories, see chapter 6 of this catalogue.

Metal Battens

• SCREWS:

SFS - SX3 - L12 - 5.5 x 32 - IRIUS head (lacquered or mill finish).
SFS - SX3 - D12 - 5.5 x 30 - TORX head (lacquered or mill finish).

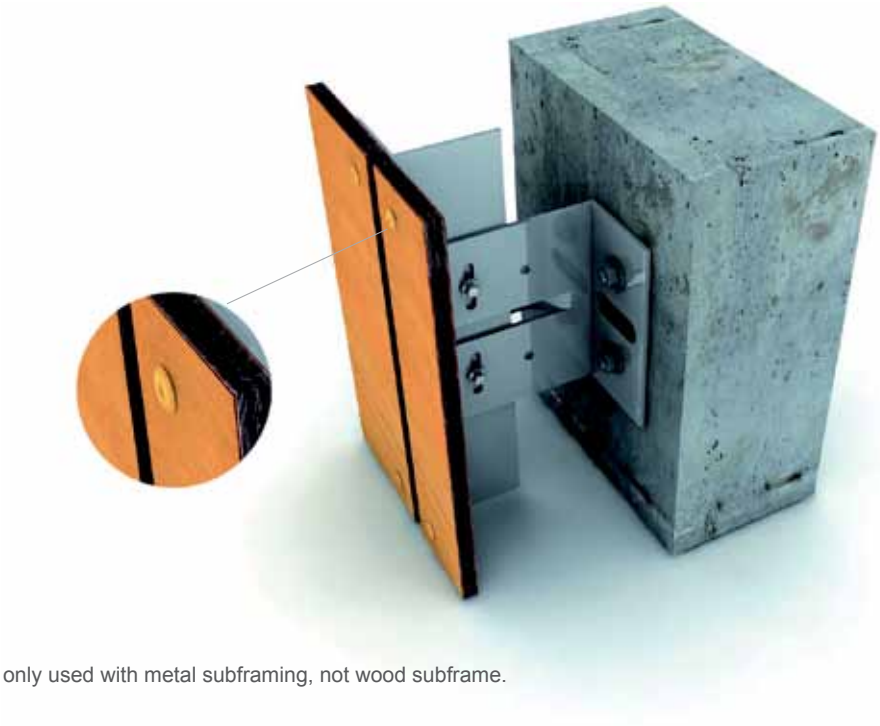


• RIVETS*:

SFS - AP16 - 50160 (lacquered or mill finish).

SFS - AP16 - 50180 (lacquered or mill finish).

SFS - AP16 - 50210 (lacquered or mill finish).



* Rivets are only used with metal subframing, not wood subframe.

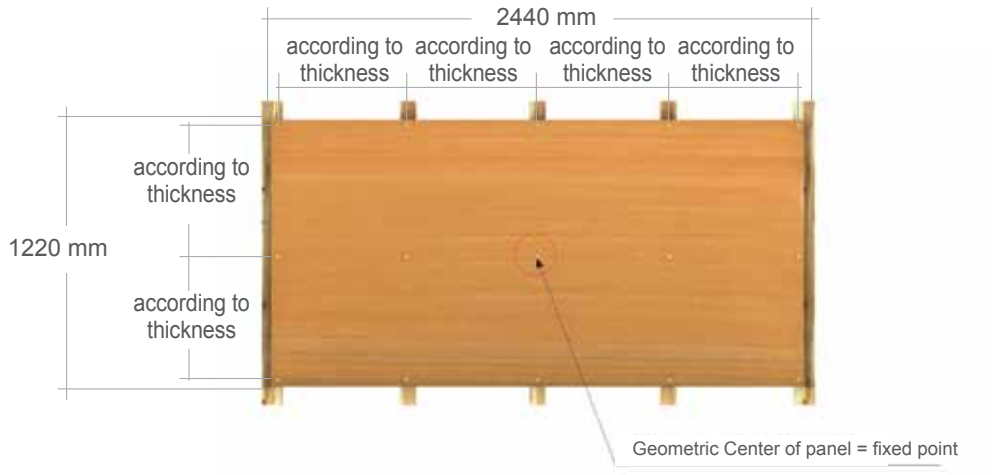
For more information on screws, rivets and other installation tools, see chapter 6 of this catalogue.

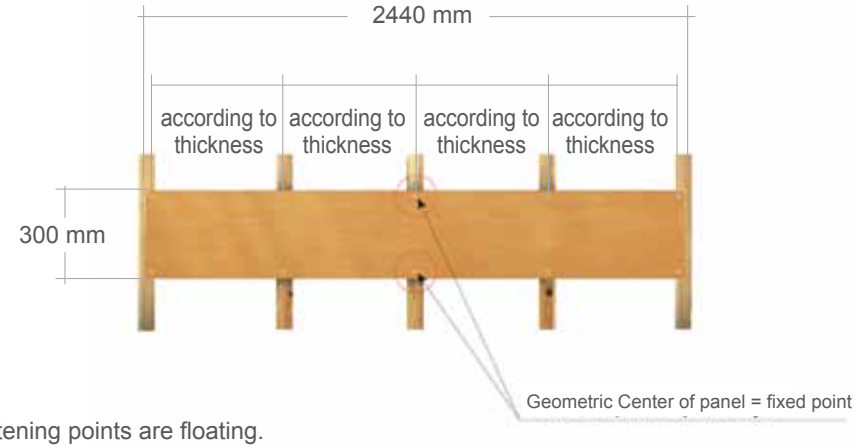
Diameter of holes for screws / rivets

The holes for the exposed fastening screws must be drilled 3mm greater than the diameter of the screw shaft. This allows the panel to expand and contract freely.

Exception: The geometric center hole is permanently fixed and will be the same size as the screw shaft. This fixed point ensures that the panel movement is evenly distributed.

Follow the drilling instructions detailed in section 2.4.2.

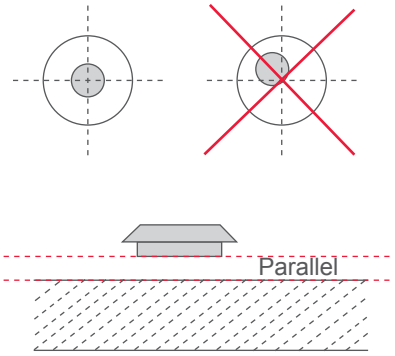




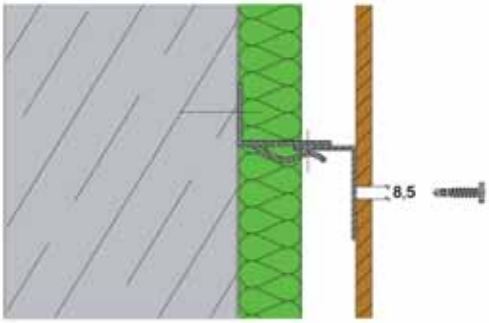
*All other fastening points are floating.

Position of screw / rivet when installing the panel

It is critical to insert the screw / rivet at the center of the hole and ensure that the fastener head is completely level to the panel surface.

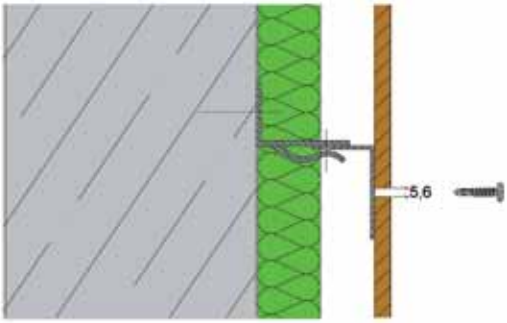


METAL SUBFRAME WITH SELF-DRILLING SCREW SFS-SX3-L 12-5,5 x 32 mm



•FLOATING POINTS

Pre-drilled on panel to 8.5 mm.



• FIXED POINTS

Pre-drilled on panel to 5.6 mm.

Recommended installation tools:

• **SX centering seat.**
To ensure the perpendicularity of the screw to the panel, as well as the concentric insertion of the same.

• **E-430 screwdriver.**
For SX3 screws with IRIUS heads.

• **T25W adapter.**
For SX3 screws with TORX heads.

Torque Recommendations:

• Aluminum batten with 2.5mm thickness:

5 Nm to perforate the batten and fasten the panel.

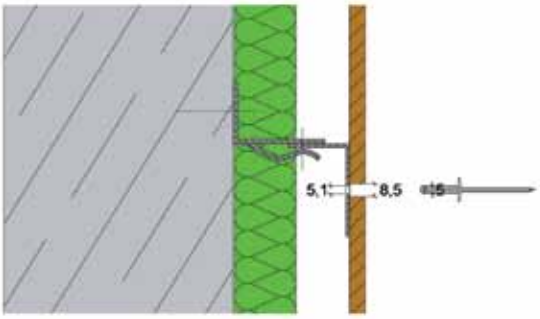
• Galvanized steel batten with 1,5mm thickness:

5 Nm to perforate the batten and fasten the panel.

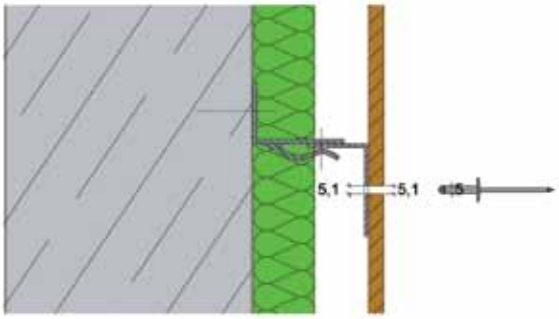
• NOTE: These results have been obtained after carrying out assembly testing in a laboratory. In any event, the above mentioned values must always be considered as approximate. It is therefore recommended to carry out a previous test on site to determine the suitable value before installing the **ProdEX** panels.

For more information on screws, rivets and other installation tools, see chapter 6 of this catalogue.

METAL SUBFRAME WITH RIVET SFS-AP-16-50XXX



• FLOATING POINTS
Pre-drilled on panel to 8.5 mm.
Pre-drilled on strut to 5.1 mm.



• FIXED POINTS
Pre-drilled on panel to 5,1 mm.
Pre-drilled on strut to 5.1 mm.

Recommended installation tools:

• **ZL centering seat.** To perform the pre-drilling of the subframe concentrically to that of the wall.

• **Centering seat with integrated bit** (recommended). To perform the pre-drilling of the subframe concentrically to that of the wall.

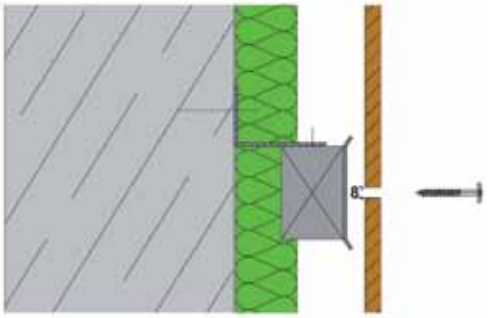
• **AP nozzle.** This is fitted to the riveter for the installation of the rivets on floating points.

• NOTE. In the case of steel battens, marine environments, etc., steel A4 SS0-D15 rivets and accessories should be used.

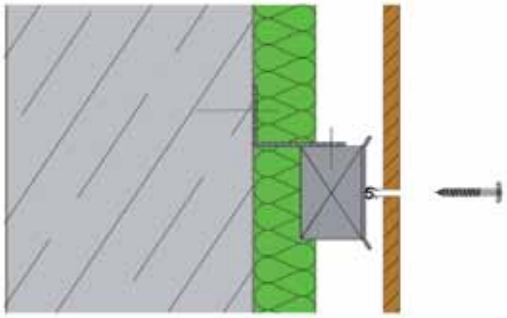
SS0-D15 rivet
(lacquered or mill finish).

Nozzle for SS0-D15 rivet on **floating points.**

WOOD SUBFRAME WITH SCREWS SFS-TW-S-D12-4.8 X 38 mm



• FLOATING POINTS
Pre-drilled on panel to 8 mm.



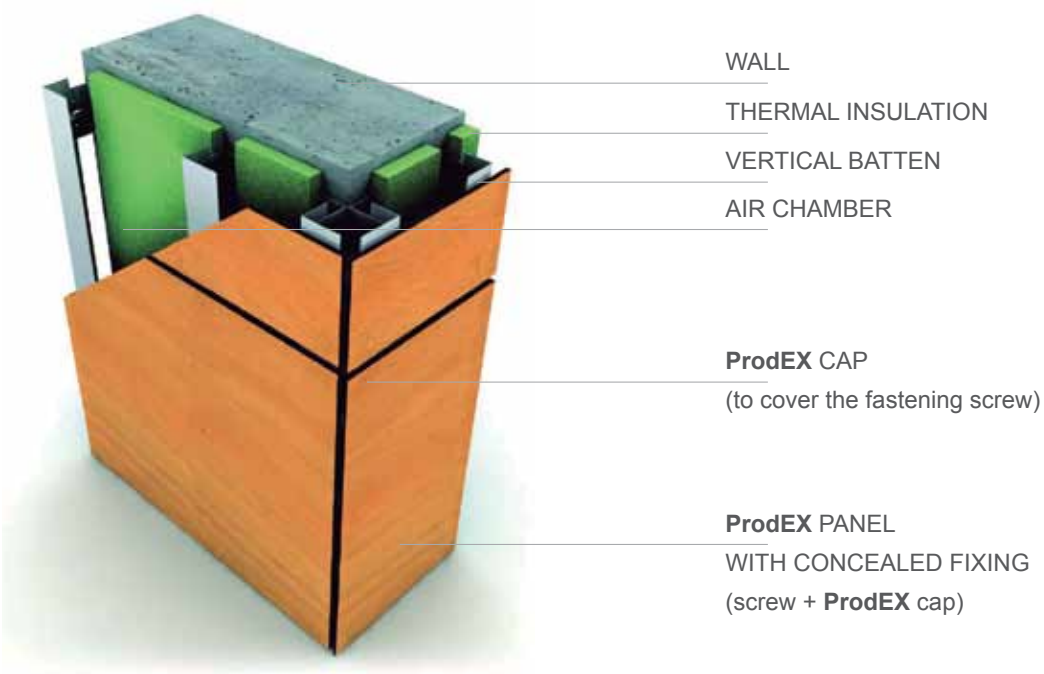
• FIXED POINTS
Pre-drilled on panel to 4.9 mm.

Recommended installation tools:

• **T25W adapter.** For TW-S screws with TORX heads.

3.2.2 CONCEALED FASTENING WITH CAPS

This type of installation is carried out using screws to fasten the **ProdEX** panels to the subframe, which are covered with 14.25 mm caps, supplied by Prodema in the same finish as the panels.



This installation system is designed for use with **ProdEX** panels with a thickness of 10 or 12 mm.

Installing the Subframe

In order to install the battens that make up the subframe, calculate the distance between the battens and fastenings, etc. follow the instructions detailed in sections 3.1.4 and 3.2.1 of this technical catalogue. The distances between the fastenings vary depending on the thickness of the panel.

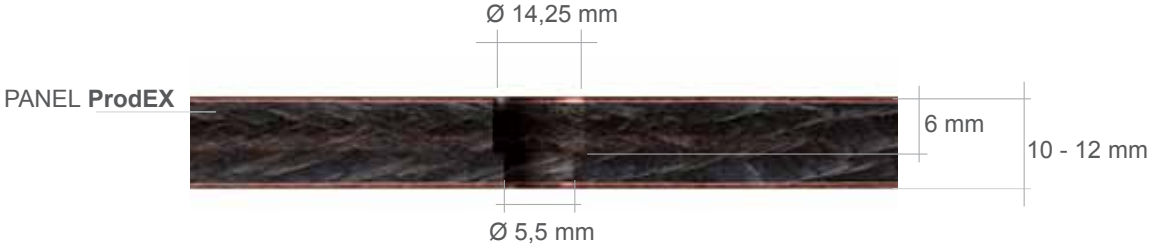
THICKNESS (mm)	DISTANCE BETWEEN BATTENS (mm)
10	≤ 600
12	≤ 800

• Each panel must have at least 3 support points in each direction.

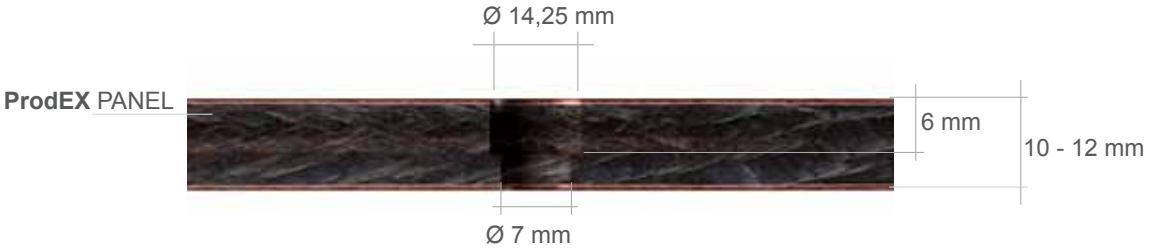
Pre-drilling of the panels

In order to install the panels using this system it is necessary to pre-drill the panels as indicated below.

Fixed point



Floating point



Pre-drilling of the panels must be performed according to the drilling instructions detailed in section 2.4.2 of this technical catalog.

Installation of the panels

Once the panels have been pre-drilled, they are fastened to the subframe using the appropriate screws for the batten type. Screws are not supplied by **Prodema** (See fastener examples below).

• **Metal Subframe:** DIN 7504N pan head self-drilling, self-threading screw.

Screw diameter: 5,5 mm.
Head diameter: 10,8 mm.
Length: 32 mm.

• **Wood Subframe:** DIN 7505B pan head screw.

Screw diameter: 5 mm.
Head diameter: 10 mm.
Length: 30 mm.

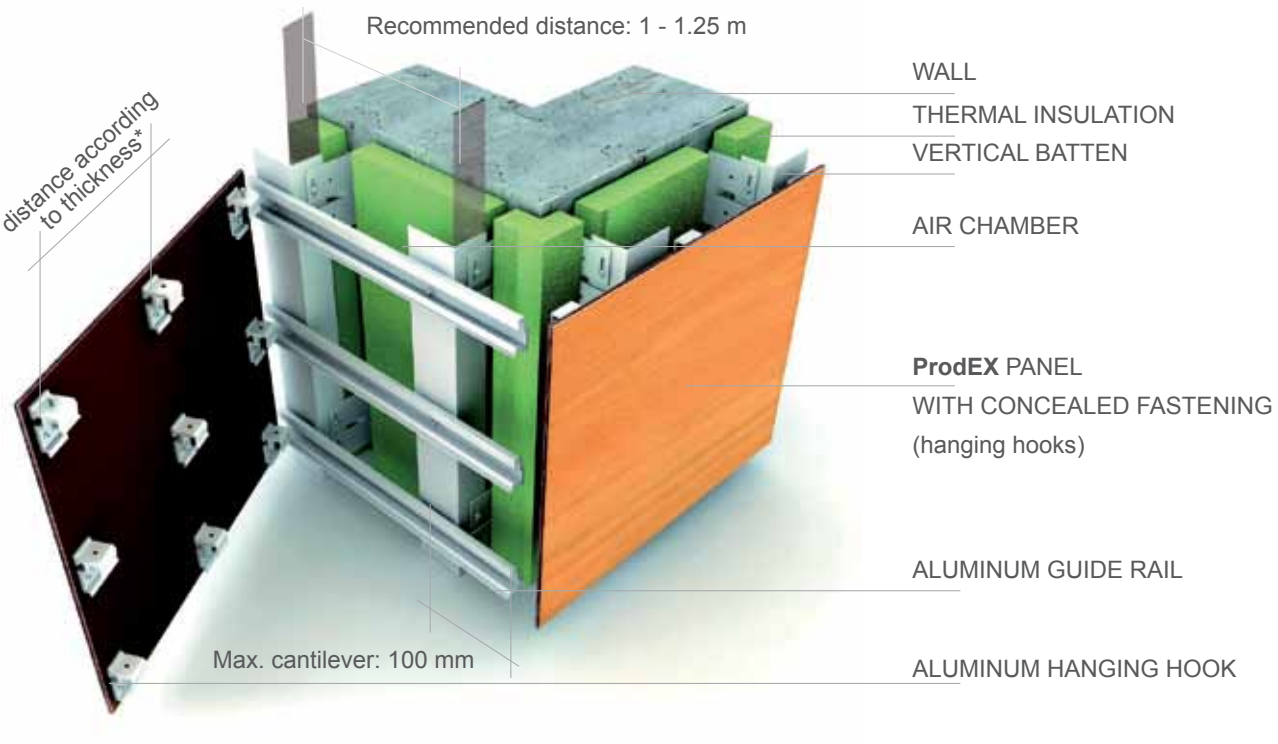
WOOD SUBFRAME

METAL SUBFRAME

Placing caps

Once the panels have been fastened, caps are inserted to hide the screw heads. To do so, first fill the existing cavity with a flexible silicon, leaving enough space to accommodate the 2 mm thick cap. To insert the cap and to seal it correctly, it is recommended to tap it with a wooden peg to avoid damaging it.

3.2.3 CONCEALED FASTENING WITH HANGING HOOKS



This system allows **ProdEX** panels to be installed with hardware that´s concealed. This type of installation requires 10, 12, or 14mm thick panels.

ALUMINUM GUIDE RAIL

* See table on page 36.

For further information on accessories, see chapter 6 of this catalogue.

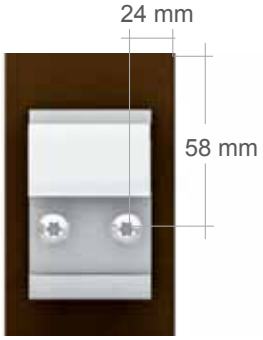
The guide rails are horizontal and mounted over the primary aluminum vertical subframe. Two self-threading screws installed diagonally are used to fasten the guide rail to the subframe.

The hanging hooks are fastened to the back side of the panel using TB-A2 TX 30 Panel screws.

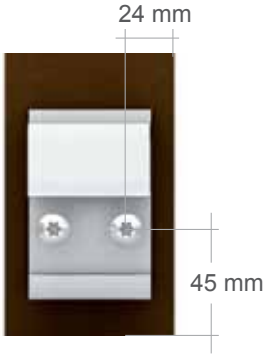
As the **ProdEX** material is very hard, a blind perforation must be made before fastening the panel screw. In addition, the hole must be countersunk and chip cleaned before the screw is screwed in in order for it to enter smoothly. The allowed distances from screw to panel edges are detailed below.

PERFORATED DEPTH

UPPER EDGE

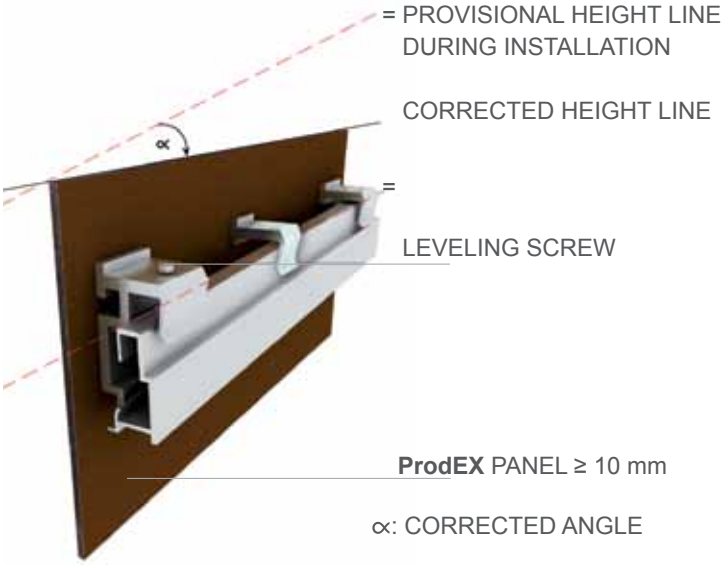


LOWER EDGE



Leveling panels

The main difficulty with installing panels with a guide rail is aligning the panel height. You can add a leveling screw to the hanging hook to assist with leveling the panel height.



Securing panels

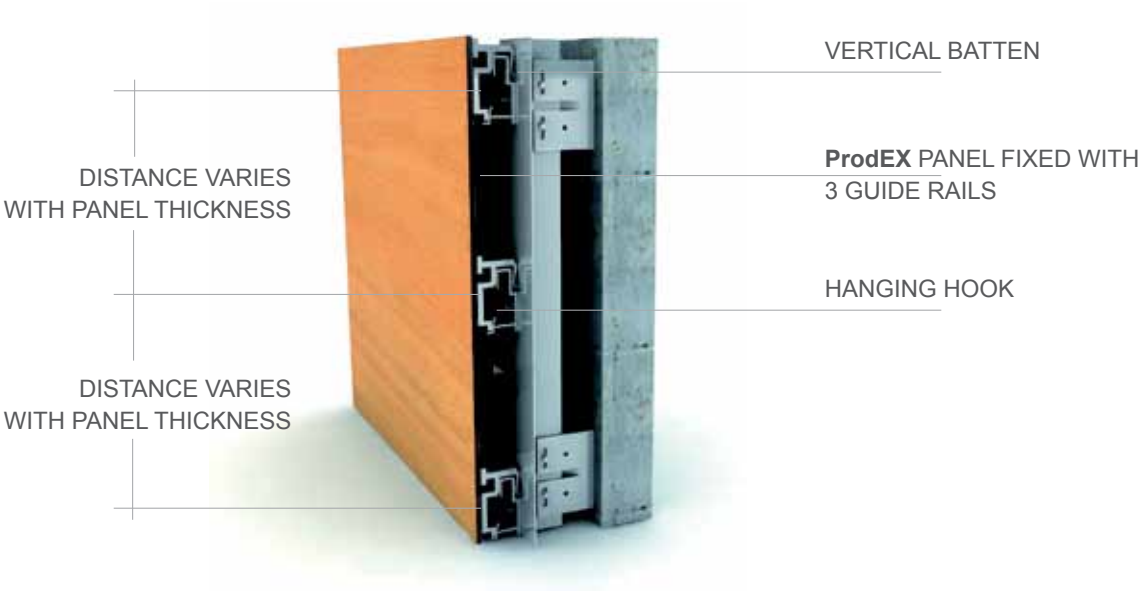
Once the panels have been leveled, a fastening screw is added to secure the panel in place and prevent lateral movement.

The fastening of panels or pieces must be performed once they are correctly leveled and in their definitive position.

Fastening is carried out by inserting an austenitic stainless steel self-drilling screw and fastening the upper central clip of each panel or piece to the horizontal guide strip.

Installing the horizontal Guide Rails

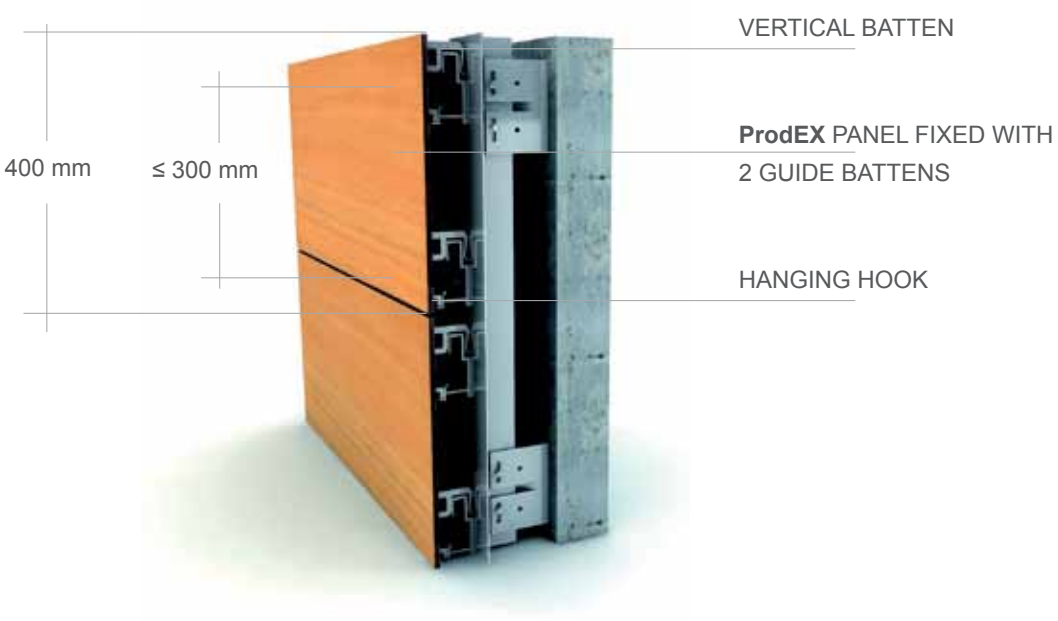
The aluminum guide rails are installed horizontally over the vertical subframe following the distance on the table below (each panel must have at least three supports in each direction).



THICKNESS (mm)	DISTANCE BETWEEN FASTENINGS (mm)
10	≤ 600
12	≤ 800
14	≤ 1.000

EXCEPTION:

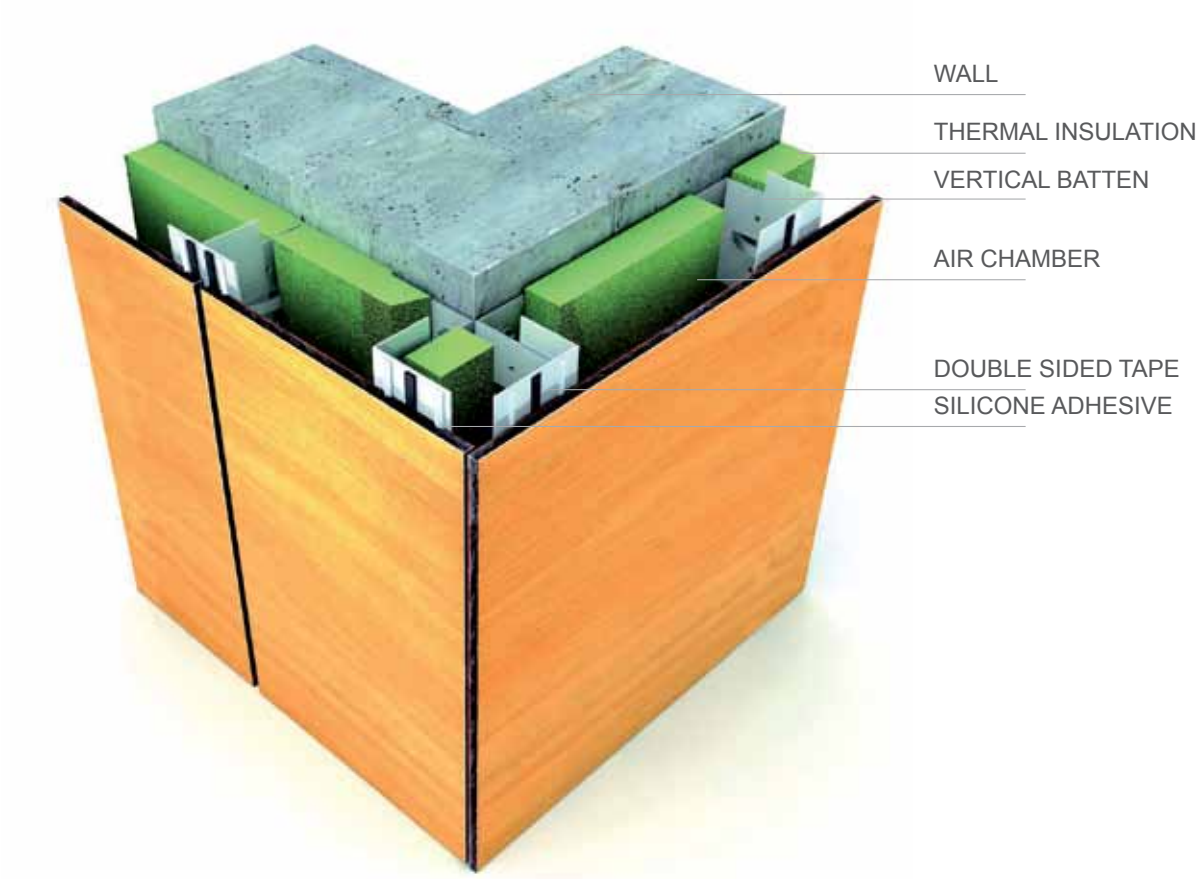
When the panel width is 150 to 400 mm, two guide rails are sufficient. The distance between the axis of the rails must always be ≤ 300 mm.



For further information on accessories, see chapter 6 of this catalogue.

3.2.4 CONCEALED FASTENING WITH ADHESIVE

Concealed fastening with adhesive consists of a primer, sillicone adhesive, and double-sided tape applied to the vertical subframe. Each panel must have at least three supports.



This type of installation requires 8, 10 or 12mm thick panels.

This installation method requires precision. The adhesive manufacturer's instructions must be followed to ensure the systems' performance.

THICKNESS (mm)	DISTANCE BETWEEN FASTENINGS (mm)
8	≤ 400
10 - 12	≤ 600

For further information on accessories, see chapter 6 of this catalogue.

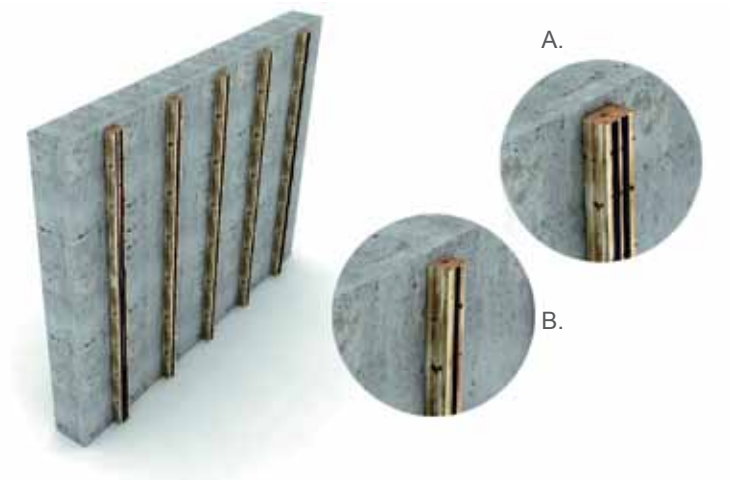
INSTRUCTIONS: ADHESIVE INSTALLATION

1 Clean the **ProdEX** panel only in areas receiving the adhesive. Use a brush, air gun, or solvent supplied by adhesive manufacturer.

2 Sand the batten on the surface area that will make contact with the panel. Wood or aluminum battens must be sanded free of dust and dry. Steel battens are not sanded to prevent damage on the oxide protection, but must be cleaned with proper degreaser.

3 Shake the primer well before use and apply to the clean and dry adhesion areas of the panel and batten. Note: Apply primer only to material that will install within a six hour period. A specific primer must be used for each material (wood, metal, etc).

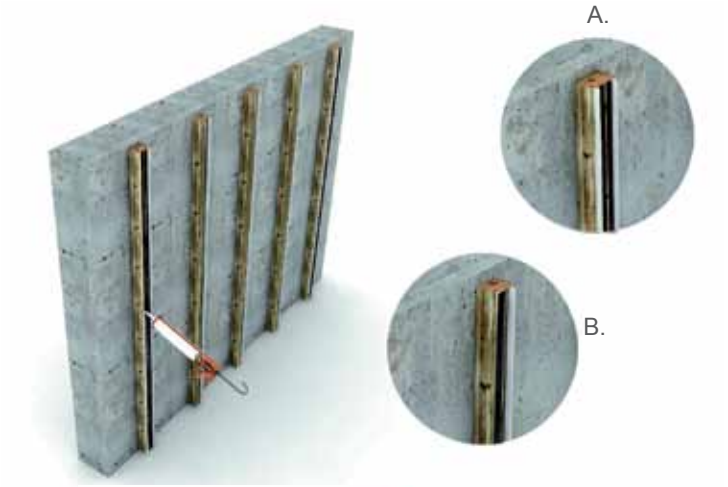
4 Each primer will have a minimum / maximum drying time. Follow product manufacture's drying instructions and continue with adhesive.



5 Intermediate battens (B) will require one double-sided tape line along one edge and full length of batten. Battens used to support adjoining panels (A) require 2 double-sided tape lines, applied at center, along full length of battens.

6 A. Apply a bead of adhesive on each side of double-sided tape on batten used to support adjoining panels.

B. Apply a bead of adhesive alongside double-sided tape on intermediate batten.

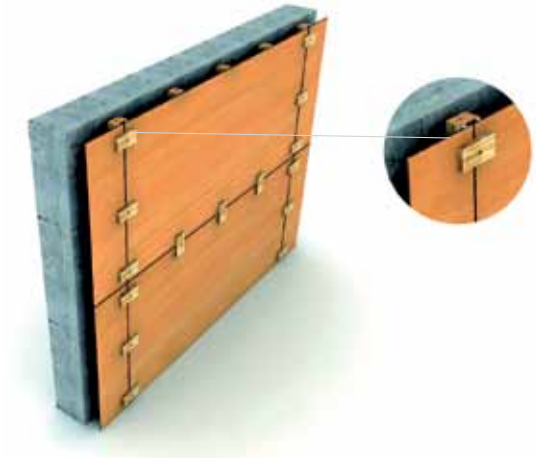


7 Remove the protective tape from the adhesive tape.

8 Wait 10 minutes after the adhesive application and carefully position the panels.

Do not place excessive force as this can smear the adhesive bead, resulting in an uneven facade. The tape will hold the panel in position until the adhesive cures.

9 **Clamps are required to hold the panel in place until the adhesive polymerizes. These clamps must be placed every of 200–300 mm beginning at panel edge.**



3.2.5 FIXED LOUVER SYSTEM

This system allows you to install **ProdEX** panels as fixed louvers. The system is versatile enough to allow horizontal or vertical louvers with 0°, 30°, or 60° angles.

The louvers are supplied in the 10mm thickness and 3 different widths. The louvers can be finished on one or both sides.

The installation of the louver system is carried out in three easy steps:

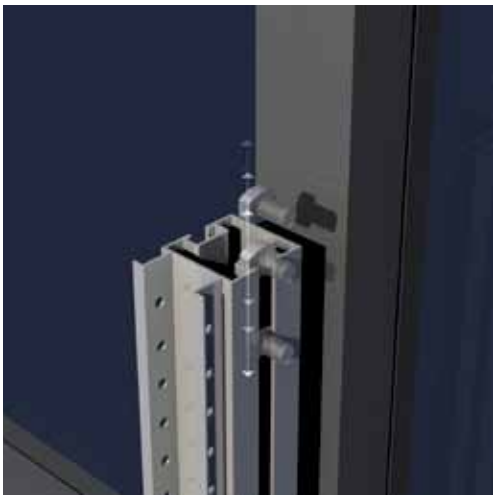
1. Preparation of the Subframing
2. Installation of Hardware to Louver Slats
3. Assembly of Louver System

3.2.5.1 PREPARATION OF THE SUBFRAMING

Installation of the profiles to the building

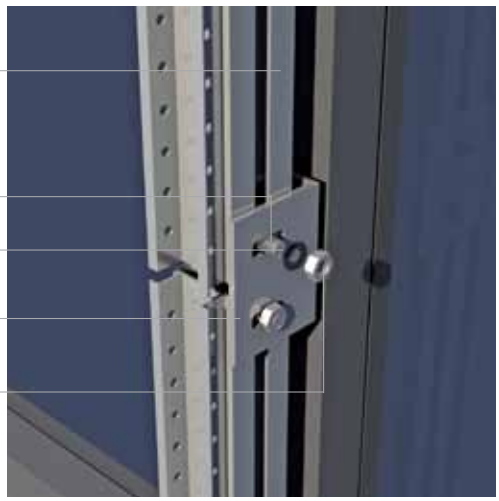
The first step is to assemble the subframing system using L-brackets to fasten the aluminium profiles to the substrate. The profiles are fastened to the L-brackets using T-M28 25 mm long bolts and are tightened using DIN 125 A washers and DIN 943 nuts. The distance between the profile and substrate will vary depending on the L-Bracket length selected (refer to section 6.5.1).

BOLT HOUSING

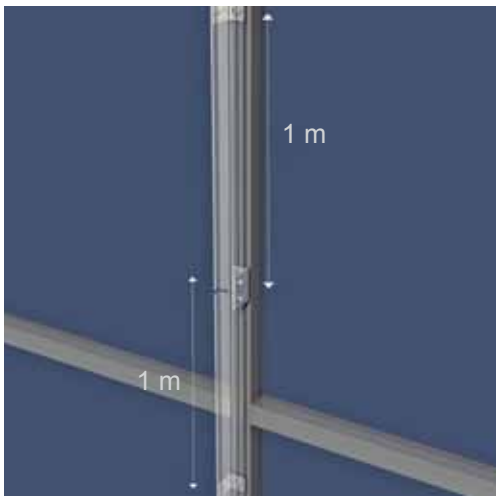


FASTENING OF SINGLE L-BRACKET TO PROFILE

FASTENING OF DOUBLE L-BRACKET BETWEEN PROFILES



DISTANCE BETWEEN L-BRACKETS



The louver orientation determines whether the profiles are installed vertically or horizontally. Horizontal louvers require vertical profiles and vertical louvers require horizontal profiles.

Accessories are available in mill, black, RAL or FUTURA colors (refer to Accesories in Section 6).

INSTALLATION OF PROFILES FOR HORIZONTAL LOUVERS

INSTALLATION OF PROFILES FOR VERTICAL LOUVERS

It is crucial to perfectly align profiles as failing to do so will result in uneven louvers.

Fixed louvers also require vertical and horizontal joint spacing and air cavity behind panels to promote ventilation (refer to sections 3.1.1 and 3.1.2).

Installation of the Base Parts to Profiles

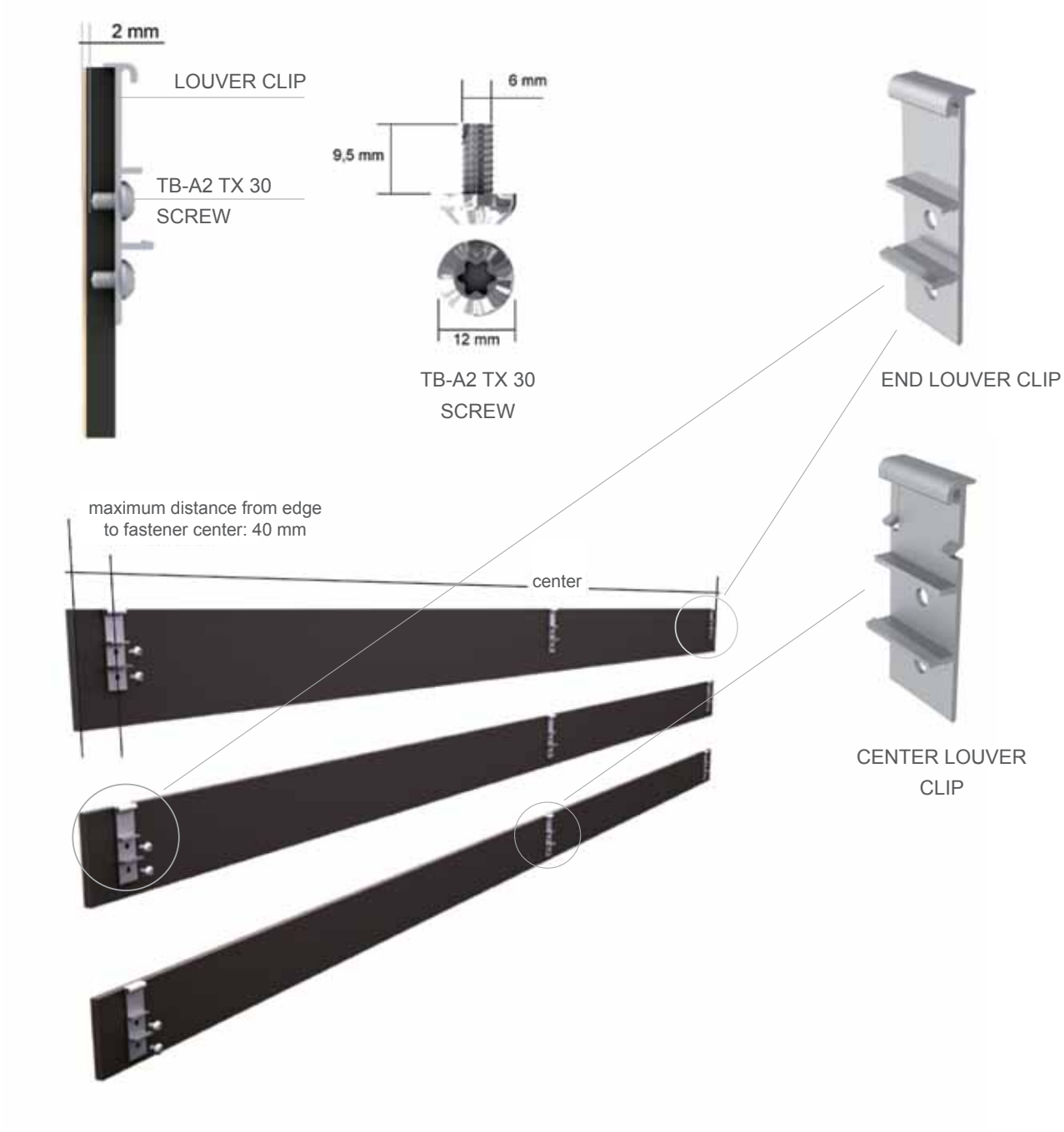
After installing the profiles, the angled or flat base parts must be installed.These pieces are fastened to the profiles by inserting austenitic stainless steel DIN 7981 fasteners into the holes on each side (see image below). Note that the profiles are supplied with pre-drilled holes every 20mm. Although this distance is standard, the profiles can be supplied without perforations, upon request.

INSTALLATION OF BASE PART

3.2.5.2 INSTALLATION OF HARDWARE TO LOUVER SLATS

The clips used to anchor the louvers to the subframe are fastened to the back side of the louver slat.

Every **ProdEX** louver must have three clips fastened to its back side. The distance between the end clips and panel edges must not exceed 40mm. The center clip must be installed in the geometric center of the louver. This center clip has two tabs that prevent the panel movement. Two 9.5mm long TB-A2 TX 30 screws will be used to fasten the clips to the **ProdEX** louvers. A 5-5,1mm blind perforation must be made before inserting the screws. A 2mm solid panel area must remain between the blind perforation and louver face.



• Each slat must be supported by 3 louver clips.
Exception: 2 louver clips may be used when lenght is ≤ 305mm.

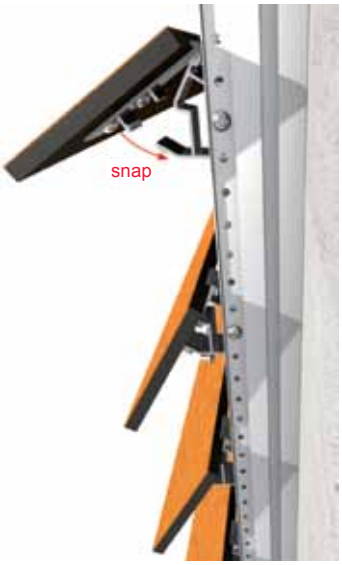
3.2.5.3 INSTALLATION OF FIXED LOUVERS

Once the subframing and louver slats are prepared, assemble the system by simply snapping the clips onto the base parts.

INSTALLATION OF FIXED LOUVERS
(STRAIGHT 0º ANGLE)

BASE PART FOR STRAIGHT FIXED LOUVERS (0º)

INSTALLATION OF ANGLED FIXED LOUVERS
(30º AND 60º ANGLES)



BASE PART FOR ANGLED FIXED LOUVERS (30º)

BASE PART FOR ANGLED FIXED LOUVERS (60º)*

* See warranty conditions on page 9.

EXPANSION JOINTS

A 6mm vertical expansion joint is required between adjoining louvers.

Under this conditions, adjoining louvers will share a profile and require a double base part (available in 0º, 30º, and 60º angles). Each louver slat will still require its own end clips.

INSTALLATION OF THE DOUBLE BASE PART

DOUBLE BASE PART FOR STRAIGHT FIXED LOUVERS (0º)

INSTALLATION OF ADJOINING LOUVERS

DOUBLE BASE PART FOR ANGLED FIXED LOUVERS (30º)

DOUBLE BASE PART FOR ANGLED FIXED LOUVERS (60º)*

3.2.6 CLAPBOARD SYSTEM

This system is designed to install as a traditional Clapboard façade and uses 8mm thick **ProdEX** panels with concealed fastening.

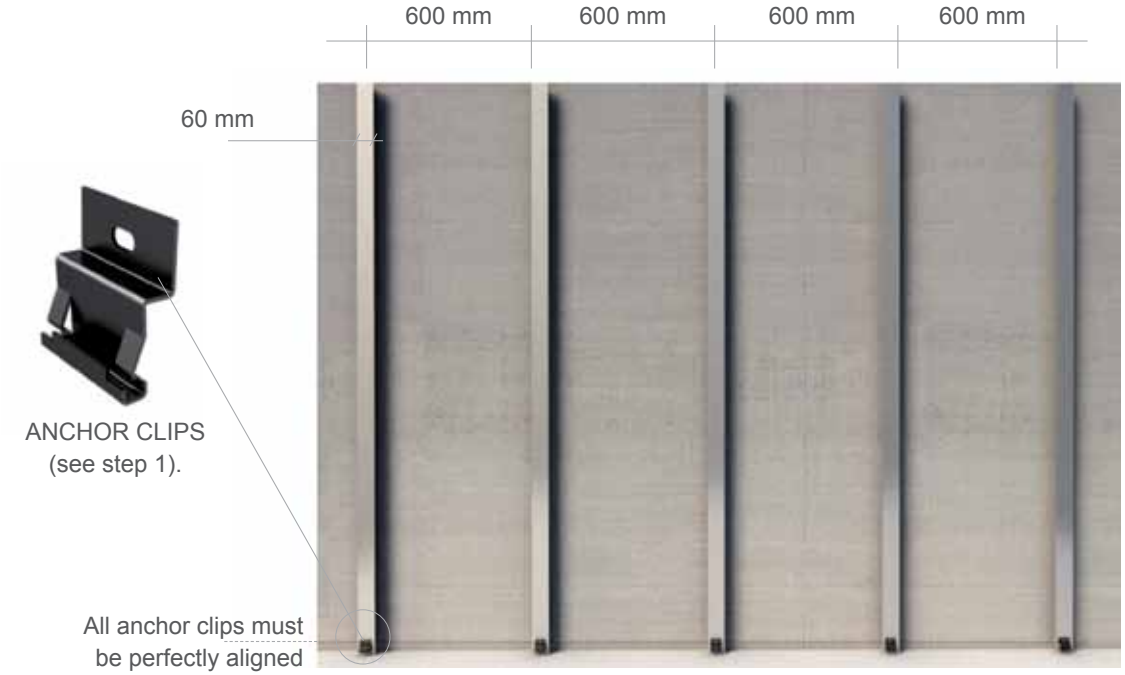
3.2.6.1 INSTALLATION OF THE SUBFRAME

Start by using the standard wood or metal subframe required for the exposed installation (refer to sections 3.1.4 and 3.2.1).

METAL SUBFRAME

WOOD SUBFRAME

For panels measuring 2440 mm (length), battens must be 60mm wide. The distance between battens must not exceed 600mm. Each panel must be supported by a minimum of three vertical battens.



3.2.6.2 INSTALLATION OF **ProdEX** SLATS

Step 1

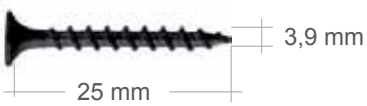
First, install the anchor clips that will support the panels. These stainless steel clips are finished in black, and supplied by **Prodema**.

The anchor clips are fastened to the battens, starting at the bottom of the façade. Since the clips will be holding the panels in place, it is crucial to perfectly align them. It is recommend to insert a wood block behind the first clip in order to serve as a stopper.

Anchor clip fasteners are not supplied by **Prodema** (See examples below).

FOR METAL BATTENS:
DIN 7504 N
(black zinc)

FOR WOOD BATTENS:
DIN 7505 B
(black zinc)



Aluminum subframing: stainless steel screw.
Steel subframing: galvanized steel screw.

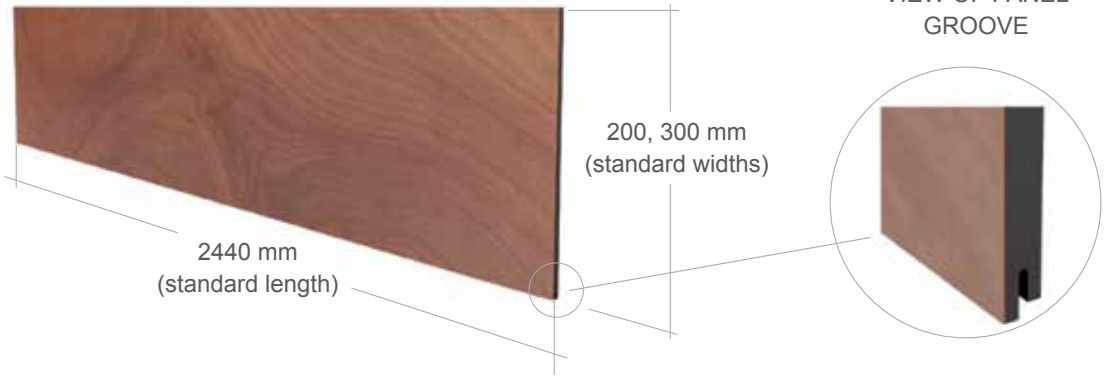
Step 2

Once the first row of clips is installed, mount the first **ProdEX** panel. For the Clapboard system, the panels are supplied in the 8mm thickness, 2440mm length, and 200mm or 300mm widths. For shorter lengths panels can be cut on-site.

The panels are supplied with a groove along the lenght of the bottom that fits perfectly onto the anchor clips.

Prodema supplies the fabricated panels in the sizes shown below.

PANELS FABRICATED FOR
CLAPBOARD SYSTEM



VIEW OF PANEL
GROOVE

Step 3

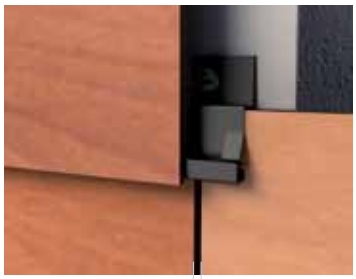
The third step consists of fastening the anchor cllps to the battens and over the top of each panel (see image).

Once the first row of clips is fastened, simply repeat these three steps again and again until you get to the top row of panels on the façade.

Step 4

For the clapboard system, a 6-8mm vertical expansion joint is also required between panels. The 6-8mm joint is created by using only one anchor clip between adjoining panels. Sharing an anchor clip allows adjoining panels to be even and on the same level. The part of the anchor clip through the joint cannot be seen as it is finished in black.

VIEW OF EXPANSION JOINT



6-8 mm

Step 5

Finally, the top row of panels are fastened to each batten using standard **Prodema** screws. Each panel only requires one horizontal row of fasteners (20-40mm from the top edge).

In order to select the appropriate fastener, the type of batten used must be considered.

Metal: screw type SX3 - L12 - 5.5 x 32 IRIUS head
SX3 - D12 - 5.5 x 30 TORX head
Wood: screw type TW - S - D12 - 4.8 x 38
(refer to accessories section).

THREE INSTALLATION PATTERNS

Due to the versatility of the system, different panel patterns can be accomplished without having to change the position of the battens (the staggered pattern must be in multiples of 600mm).

STAGGERED PATTERN IN MULTIPLES OF 600mm.

3.3 UNIQUE FACADES

3.3.1 UNIQUE SHAPES

The **ProdEX** material is so versatile that it allows the creation of unique facades by fabricating panels into an infinite number of shapes. For this type of fabrication, it is very important to follow the instructions in section 2.3 or contact **Prodema** (prodema@prodema.com) or your local representative.

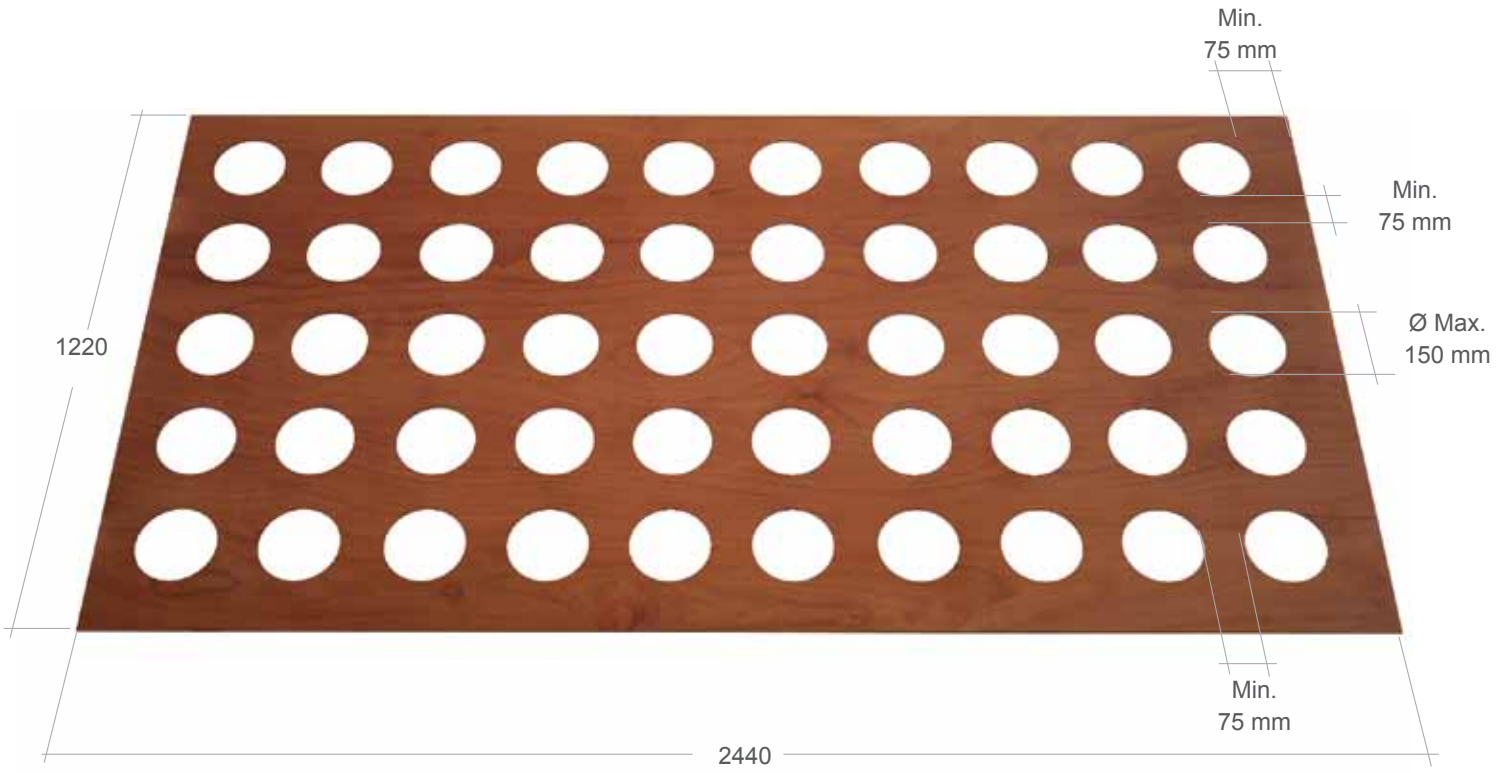
Fabrication of ProdEX Panels

There are a series of limitations and requirements to consider when fabricating **ProdEX** panels for use on exteriors.

It is important to note that every perforation increases the percentage of exposed edges to UV and moisture conditions. This makes the panel more vulnerable, so we recommend the following parameters to ensure the panel's stability.

1. The fabrication must be performed by a professional using the appropriate tools.
2. If the percentage of the perforation pattern is > 20%, contact **Prodema** for recommendations.
3. All types of perforation patterns will require a solid 75mm border along the perimeter of the panel.
4. The distance between perforations must never be less than 75 mm.
5. If the fabrication consists of perforations, the maximum diameter of each may not be greater than 150 mm.
6. The maximum panel openess must not exceed 30%.

When the panel requires custom fabrication as herein described, the consent of the **Prodema** technical department must be obtained.

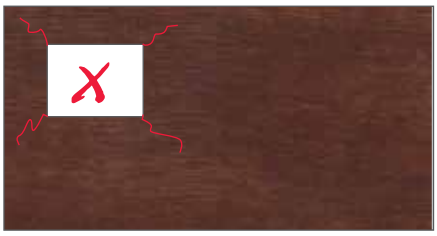


Cracks due to stress

If the panel needs to be perforated for aesthetic or functional reasons (ventilation outlets, installation of signage, lighting, etc.) it is very important to follow the recommendations below to avoid cracking of the panel due to excessive stresses.

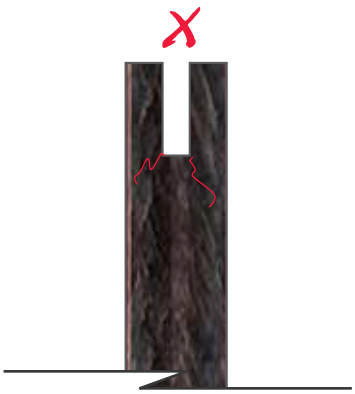
OPENINGS, GROOVES, ETC.:

If you need to cut openings, grooves, etc., it is very important to avoid leaving sharp edges. The corners on openings should be softened by cutting the largest possible radius, a minimum of 5mm.



GROOVES ON THE EDGE:

It is likely that on some occasions, and always with the approval of the **Prodema** Technical Department, machining will be required to add a groove on the edge of the **ProdEX** panels (for a Clapboard facade installation for example). In these cases, it is also very important to avoid sharp edges and attempt to maximize their size, with the recommended minimum being 1 mm.

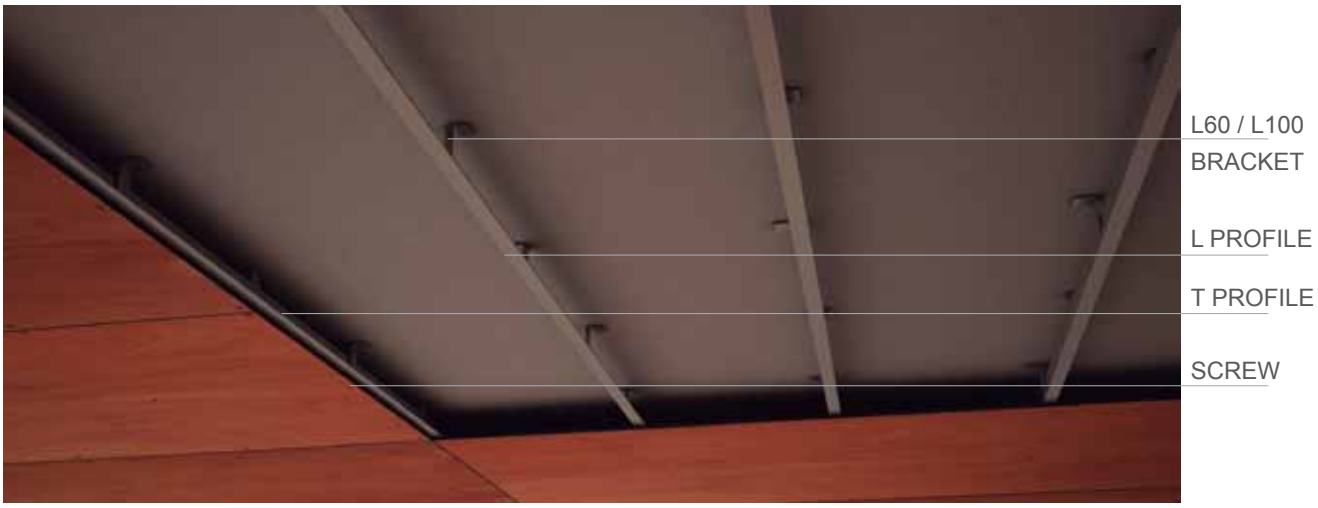


3.3.2 SUSPENDED CEILINGS

The versatility of the **ProdEX** system allows the panel to be installed as a suspended ceiling. Select the installation method that is best suited to your project and follow the recommendations listed below.

3.3.2.1 EXPOSED FASTENING

When installing **ProdEX** panels as a suspended ceiling you must follow the instructions detailed in section 3.2.1. Also take note that the subframing supporting the panels is always installed perpendicular to the wood grain.



The **ProdEX** panel recommended thickness for an exposed ceiling is 8mm (min.) and 14mm (max.). See table below for recommended distance between fastening points.

THICKNESS (mm)	DISTANCE BETWEEN BATTENS (mm)
8, 10	≤ 600
12	≤ 800
14	≤ 1000

- Each panel must have at least 3 support points in each direction.
- Never use countersunk screws for fastening **ProdEX.**

Perimeter ventilation and Expansion Joints

A 20mm min. open joint is required along the perimeter of ceiling to allow ventilalion and create similar temperature and moisture conditions on both faces of the panels.

Unobstructed 6-8 mm expansion joints between panels are also required for ventilation purposes.

* Rivets are only used with metal subframing, not wood subframe.

3.3.2.2 CONCEALED FASTENING WITH CAPS

This system permits the installation of **ProdEX** panels 10–12 mm thick as a suspended ceiling, using caps to conceal the fasteners.

Ensure that you follow the steps indicated in sections 3.2.2 and 3.3.2.1.

Also note that the subframe supporting the panels is always installed perpendicular to the wood grain.

In addition to this, it is also essential to take into account that the battens that serve as the support follow the recommended distances in the table below.

THICKNESS (mm)	DISTANCE BETWEEN BATTENS (mm)
10	≤ 600
12	≤ 800

• Each panel must have at least 3 support points in each direction.

3.3.2.3 CONCEALED FASTENING WITH HANGING PROFILES

Ceilings can also be installed as a concealed system. The instructions in section 3.2.3 must be followed without exception.

L60 / L100 BRACKET

L PROFILE

GUIDE RAIL

ProdEX PANEL

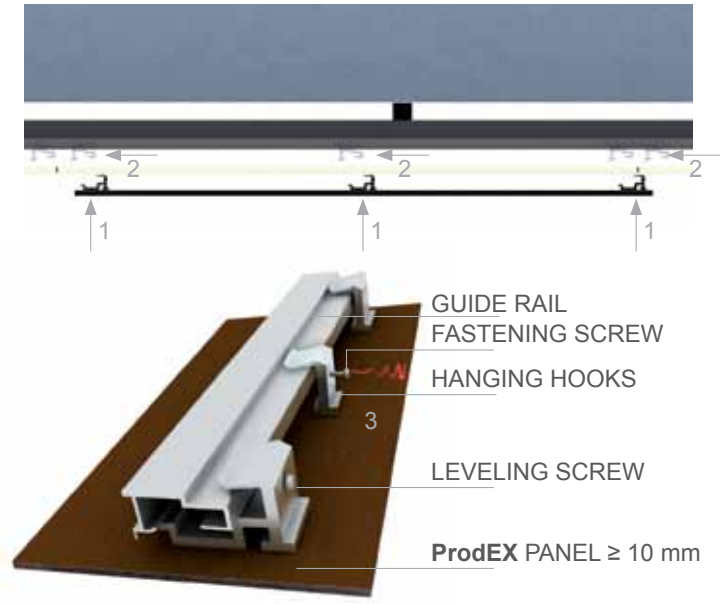
For further information on accessories, see chapter 6 of this catalogue.

Fastening panels

1. Fasten the hanging hooks on the back side of the panel to the guide rail by pressing upwards with even and continues pressure until hooks and rail anchor together.

2. Move the hanging hook until it is fitted to the guide rail.

3. Once the pieces anchor, are **aligned and in final position**, they must be fixed in place. We recommend using an austenitic stainless steel self-threading screw, inserting it into the central upper hanging hook and fastening it to the horizontal guide rail.



The recommended thickness of the **ProdEX** panels for this use is 10, 12 or 14mm and the distance between the hanging hooks is per the table below:

THICKNESS (mm)	DISTANCE BETWEEN HANGING HOOKS (mm)
10	≤ 600
12	≤ 800
14	≤ 1000

• Each panel must have at least 3 support points in each direction.

3.3.3 OPERABLE LOUVERS

In addition to our fixed louver system, **Prodema** offers a complete turnkey system for vertical operable louvers.

The system will adapt to each project's louver size and motorization requirements. We will review projects on a case by case basis before making recommendations.

An aluminium frame system will be designed by **Prodema** per project specifications.The louver slats will fasten at both ends with a concealed or exposed attachment system.

This system is fabricated to size and supplied as a complete kit, ready to install.

a: The maximum louver length using one continuous **ProdEX** panel is 2440mm. Longer lengths are possible by adjoining **ProdEX** panels.

b: Maximum width: 600mm.

The color, shape, etc. of the frame can be modified to meet the project's requirements. Contact **Prodema** (prodema@prodema.com) or your local representative.

The louvers can be designed to operate manually or by motor (synchronized or independently) using a variety of systems, such as automation centers, remote controls, sensors, etc.

3.3.4 CURVED SURFACES

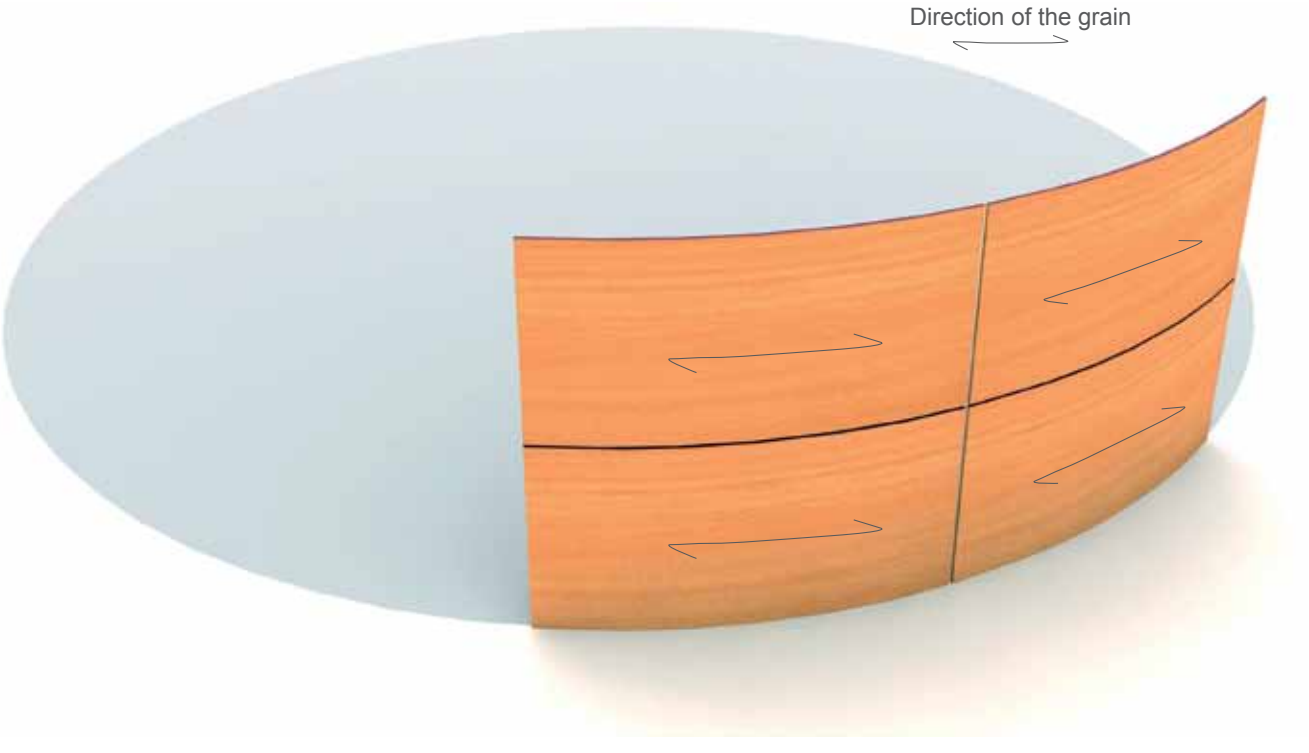
3.3.4.1 CURVED SURFACES WITH FACETED PANELS

The curving technique consists of using flat (standard) panels to create a faceted, curved surface. Select the installatlon method appropriate to the project and follow the technical instructions in this catalog.

3.3.4.2 CURVED SURFACES WITH FLAT PANELS

ProdEX has bending properties that allow the panel to follow the radius of a curved surface and maintain its position once fastened . To ensure the panel's performance and proper installation, the specifications on the table below must be followed.

The panels for curved façades are only fastened using the exposed fastening system with screws or rivets and are curved only along the direction of the grain.



Specifications for Panel Thicknesses and Fastening Distances

REQUIRED RADIUS	ProdEX PANELS THICKNESS	DISTANCE BETWEEN BATTENS
3,00 m - 10,00 m	6 mm	≤ 300 mm
10,00 m - 20,00 m	8 mm	≤ 400 mm
> 20,00 m	10 mm	≤ 450 mm

This table indicates the achievable radil of curvature for a panel measuring 2440 x 1220 mm. A lighter radius can be achieved when the width of the panel is reduced.

ProdEX panels fastened as a curved surface require additional supports and fastening points than that required for a flat surface.

3.3.4.3 PRECURVED **ProdEX**

ProdEX panels can be supplied pre-curved with different radil. Depending on the desired grain direction, the panel size options will vary.

Precurved ProdEX

Prodema NATURAL WOOD BEAUTY	TECHNICAL DATA SHEET	Doc.: FTPRODEXCU Rev.: 04 – Jun 16 Hoja: 1/1

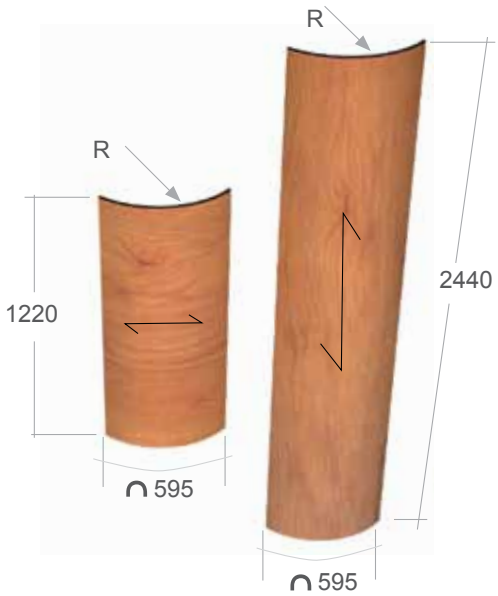
MATERIAL:	THICKNESS:	SURFACE FINISH:
CURVED PRODEX	6 mm	SMOOTH

TESTS	RESULTS	PROPERTY OR ATTRIBUTE	MEASURE UNIT	STANDARD
1. INSPECTION				
Colour, pattern and surface finish	Due to the fact that wood is a natural product, each veneer may be considered as unique. Slight colour and structure differences are considered as normal. Singularities such as knots and resin inclusions are not considered as defects, but as a part of the décor. There are differences in light fastness performances depending on the wood species and the source of the wood.			EN 438-6 Part 5.2.2.3
2. DIMENSIONS				
 Available on both, concave and convex curvatures		 Available on both, concave and convex curvatures		
Thickness	±0,4	6	mm	-
Curvature radius	±10%	300/500/1000/2000/4000	mm	-
Length and width	+10/-0	2440x595 595x1220	mm	-
3. PHYSICAL PROPERTIES				
Resistance to impact by large diameter ball	≥ 1.000	Maximum height for which no visible surface cracking or imprint greater than 10 mm	mm	EN 438-2 Part 21
Determination of graffiti resistance	Level 4 Level 4 Level 1 Level 2	Permanent blue marker Spray red paint Wax black crayon Water based ink black marker	Cleanability level	ASTM D 6578:2000
4. RESISTANCE TO WEATHER				
Resistance to UV light	≥ 3 ≥ 4	Contrast Aspect	Grey scale rating Rating	EN 438-2 Part 26 Rating according to EN 20105 – A02
Resistance to artificial weathering (including light fastness)	≥ 3 ≥ 4	Contrast Aspect	Grey scale rating Rating	EN 438-2 Part 29 Rating according to EN 20105 – A02
5. SAFETY REQUIREMENTS				
Reaction to fire	D-s2,d0 (1)	Euroclass	Classification	EN 13.501-1
Water vapour permeability	110 250	Wet cup method Dry cup method	μ	EN 438-7 Part 4.4
Resistance to fixings	> 2.000	Screw holding value	N	EN 438-7 Part 4.5
Density	≥ 1,35	Density	g/cm³	EN ISO 1.183
Resistance to wet conditions	≤ 5 ≥ 4	Moisture absorbed Appearance	% Rating	EN 438-2 Part 15

(1) CWFT CWFT (Classified Without Further Testing): in accordance with EN 438-7 Sect. 4.2.3. Screw or rivet based installation recommended. For other fastening systems consult the **Prodema** Technical Dept.

Selection of panels

1) Selection of the precurved **ProdEX** panel: these panels are offered based on the direction of the grain, the required radius of curvature and whether it is a concave or convex curve (see images below).



Formats depending on the direction of the grain.
Available Radius: 330, 500, 1000, 2000 and 4000 mm

Panels are offered in concave or convex format

2) Selection of radius: When selecting a radius option, consider the radius of curvature of the building surface, however, the panel radius does not need to match this exact measurement.

a. Consider the radius of curvature of the building.

b. Always use a standard panel radius, by selecting the one closest to the radius of curvature of the building but always greater than said radius.

Examples:

Building radius 3,700 mm → Precurved panel radius 4,000 mm

Building radius 1,400 mm → Precurved panel radius 2,000 mm

NOTE: In cases where the radius of the building is very similar to that of the panel, e.g. 1100 mm; the closest radius of curvature is selected, in other words, 1000 mm.

Installation systems

It is important to note that this type of **ProdEX** panel can only be installed using the exposed fastening method with screws and rivets, as described in section 3.2.1.

Given that in the majority of cases the radius of curvature of the panel will be slightly greater than the radius of curvature of the building, it is necessary to install each piece on three battens, as indicated below:

1. Support the center axis of the piece on the center support batten.
2. Fasten both panel edges with screws or rivets.

Minimum fastenings per piece and types of precurved corner panels

Depending on the type of precurved **ProdEX** panel to be installed, the minimum number of fasteners per piece varies. For this reason, below follows the required number of fastenings per precurved **ProdEX** model according to the type of curve, in other words, depending on whether the pieces are concave or convex. In turn, each model is assigned a different letter to facilitate identification.

CONVEX PIECES

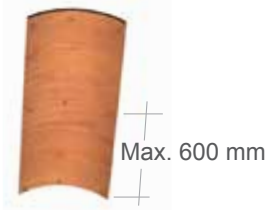
In this case, the central batten is only used as support, with the screws or rivets fastened only on the lateral battens of each piece:

TYPE A
Piece measuring 595 x 1220 mm 6 through fasteners

TYPE B
Piece measuring 2440 x 595 mm 10 through fasteners

CONCAVE PIECES

When installing concave pieces, fasteners must be included on the center batten to adjust each piece to the required radius, as detailed below:



TYPE C
Piece measuring 595 x 1220 mm 9 through fasteners

TYPE D
Piece measuring 2440 x 595 mm 15 through fasteners

3.3.4.4 PRECURVED **ProdEX** CORNER

The precurved **ProdEX** corner panels are curved at 90º for corner cladding. Depending on the direction of the grain selected, the formats of the panels will vary.

Precurved ProdEX Corner

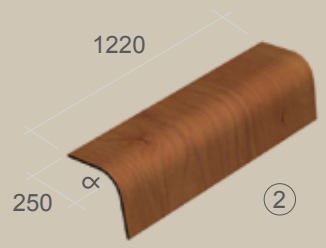
Prodema NATURAL WOOD BEAUTY	TECHNICAL DATA SHEET	Doc.: FTPRODEXCO Rev.: 01 – Jul 14 Hoja: 1/1

MATERIAL:	THICKNESS:	SURFACE FINISH:
CORNER PRODEX	6	SMOOTH

TESTS	RESULTS	PROPERTY OR ATTRIBUTE	MEASURE UNIT	STANDARD
1. INSPECTION				
Colour, pattern and surface finish	Due to the fact that wood is a natural product, each veneer may be considered as unique. Slight colour and structure differences are considered as normal. Singularities such as knots and resin inclusions are not considered as defects, but as a part of the décor. There are differences in light fastness performances depending on the wood species and the source of the wood.			EN 438-8 Part 5.2.2.3

2. DIMENSIONS

Thickness: 6 mm
Angle α: 90º
Curvature radius: 50 mm
Dimensional tolerances: ± 10%
Available on both, interior and exterior corner



Thickness: 6 mm
Angle α: 90º
Curvature radius: 50 mm
Dimensional tolerances: ± 10%
Available on both, interior and exterior corner

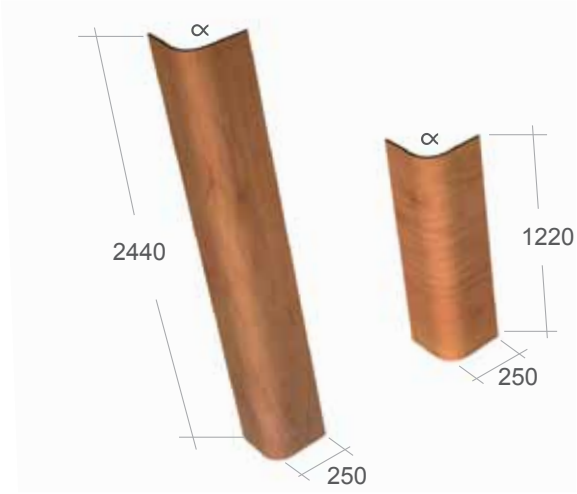
3. PHYSICAL PROPERTIES				
Resistance to impact by large diameter ball	≥ 1.800	Maximum height for which no visible surface cracking or imprint greater than 10 mm	mm	EN 438-2 Part 21
Determination of graffiti resistance	Level 4 Level 4 Level 1 Level 2	Permanent blue marker Spray red paint Wax black crayon Water based ink black marker	Cleanability level	ASTM D 6578:2000
4. RESISTANCE TO WEATHER				
Resistance to UV light	≥ 3 ≥ 4	Contrast Aspect	Grey scale rating Rating	EN 438-2 Part 28 Rating according to EN 20105 – A02
Resistance to artificial weathering (including light fastness)	≥ 3 ≥ 4	Contrast Aspect	Grey scale rating Rating	EN 438-2 Part 29 Rating according to EN 20105 – A02
5. SAFETY REQUIREMENTS				
Reaction to fire	D-s2,d0 (1)	Euroclass	Classification	EN 13.501-1
Water vapour permeability	110 250	Wet cup meted Dry cup method	μ	EN 438-7 Part 4.4
Resistance to fixings	> 2.000	Screw holding value	N	EN 438-7 Part 4.5
Density	≥ 1,35	Density	g/cm³	EN ISO 1.183
Resistance to wet conditions	≤ 5 ≥ 4	Moisture absorbed Appearance	% Rating	EN 438-2 Part15

(1) CWFT (Classified Without Further Testing): in accordance with EN 438-7 Sect. 4.2.3. Screw or rivet based installation recommended. For other fastening systems consult the **Prodema** Technical Dept.

(2) Format subject to minimum quantities; contact **Prodema**.

Selection of panels

When selecIting the corner pieces, first consider the desired direction of the grain and whether it is for a convex or concave corner. The options are detailed below.



Size varies according to direction of the grain.
∝ = 90º

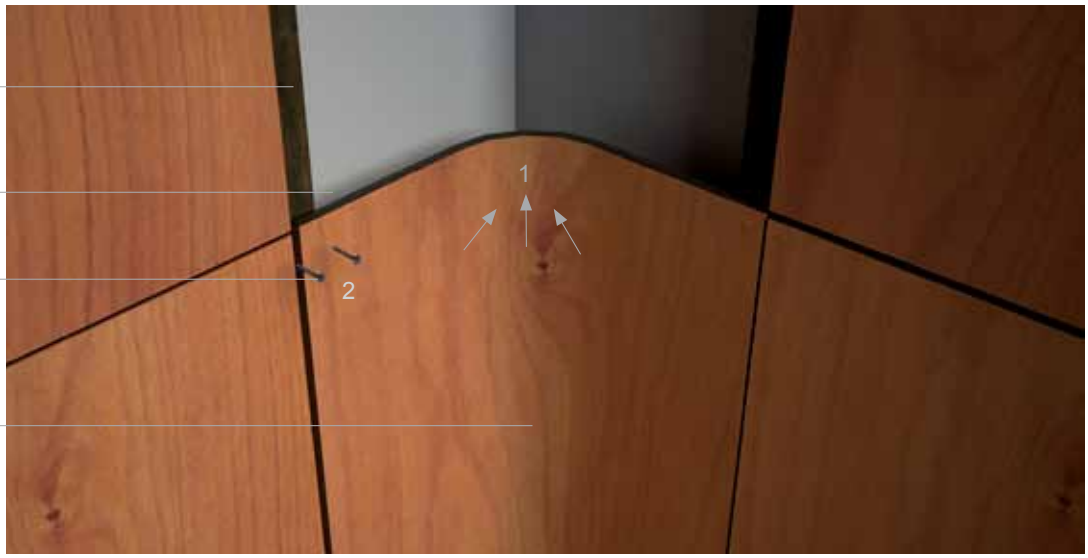
The precurved corners are offered in convex or concave format.

Installation systems

The installation of these panels, depends on the type of curvature.

CONVEX PIECES

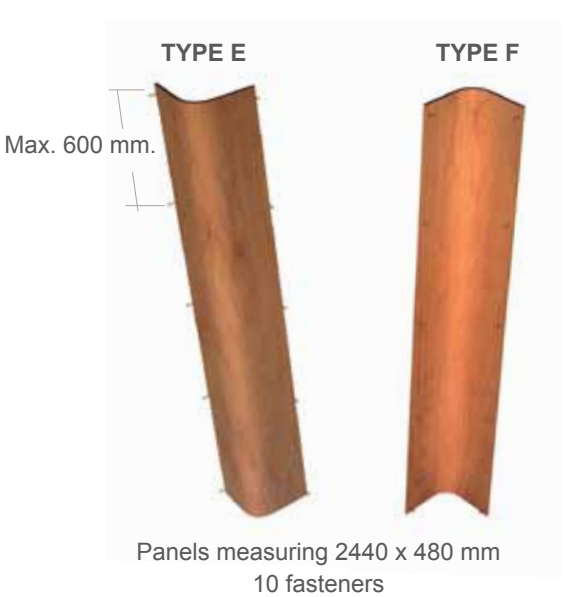
CONCAVE PANELS



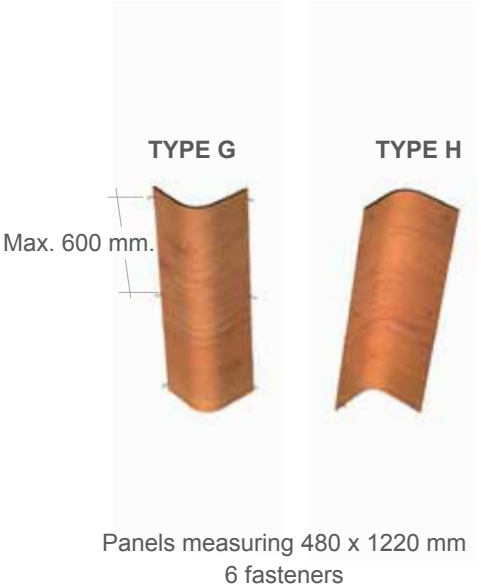
1. Press the central axis inwards.
2. Fasten both panel edges with screws or rivets.

Minimum Fasteners per piece and types of precurved corner panels

The minimum number of screws / rivets depends mainly on the corner panel dimensions (See below).



Panels measuring 2440 x 480 mm
10 fasteners



Panels measuring 480 x 1220 mm
6 fasteners

3.3.4.5 CUSTOM CURVED PIECES

Custom curved pieces can be created as long as the specifications and requirements contained in this catalogue are followed.

Below, for example, is the method in which to create a sphere using **ProdEX** panels with exposed fasteners.

Role of the pieces

Firstly, it is very important to determine the role of each piece of **ProdEX** so that they may later fit perfectly in the place where they are to be fastened.

In the case of the sphere, the role of each piece will be that displayed alongside this text.

When performing any fabrication of the different parts, the instructions detailed in section 2.4 of this technical catalogue must be followed.

Curved combinations

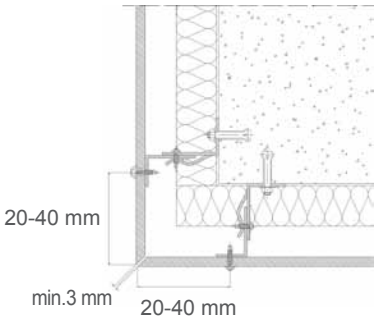
Once all of the panels have been fabricated, they can be installed on a subframe that complies with the requirements outlined in section 3.1.4.

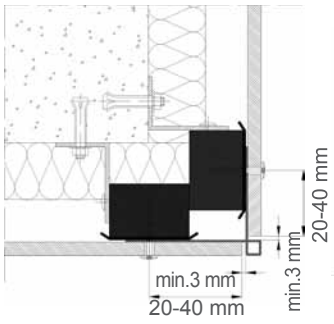
In order to create the sphere shape, it is necessary to determine the radius of curvature (in the direction of the grain) of each piece. To do so, it is necessary to follow the instructions in section 3.3.4.2 and follow them without exception. Whereas, the pieces do not curve in the direction perpendicular to the grain, although despite their reduced width, the curve is obtained in a polygonal shape as detailed in section 3.3.4.1 of this catalogue.

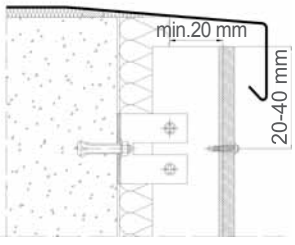
This example demostrates that it is possible to achieve unique shapes and appearances to fit each project.

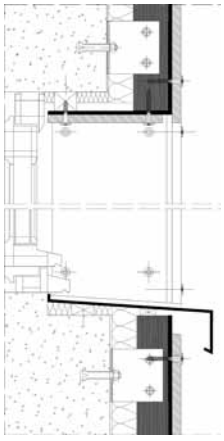
3.4 INSTALLATION DETAILS

Prodema has an extensive range of solutions showing all types of installation details to address corners, windows, crowns, etc.









4 POST-INSTALLATION

4.1 REMOVING THE PROTECTIVE SURFACE

The **ProdEX** panels are protected by a special film on the finished side. The protective film, applied at the factory must be removed from the panel surface as soon as the product has been installed. Never try to remove the film from the reverse side as this is not a protective film and is necessary for the stability of the panel.

Never leave an installed panel, or one exposed to the elements, with its protective film in place for more than 2–3 hours. This will prevent the film from leaving residue on the panel surface and avoid having to remove it using special products. It will also prevent the panel from warping.

4.2 CLEANING

• It is difficult for dirt to adhere to the ProdEX panel surface.

• If the surface becomes dirty or there are remains of the protective film adhesive, this can be cleaned with lukewarm water mixed with a liquid detergent using a soft cloth. Do not rub the surface when dry.

• Never use abrasive detergents.

• In the case of more resistant grime, the panel surface may be cleaned with a soft cloth (un-dyed) dampened with benzene-free petroleum ether (40–60ºC, light naphtha).

• Never use cloths or sponges with abrasive cleaning or sanding products, as this may damage the surface of the product.

• Nor should aggressive solvents such as acetone, ethyl acetate, MEC, nail polish, etc., be used, as these may cause permanent damage by partially or completely dissolving the protective film surface or cause cracks, which may not be evident at first glance. These products must not be used on the reverse face of the panels either.

• Surface drying is best performed using an absorbent, lint-free cloth.

• It is recommended to perform a cleaning test on a small area of the material for the purpose of verifying the efficacy of the procedure, and only then proceed with the remainder of the surface.

• There is no method for repairing scratched or dented panels.

• The use of solvents or chemical cleaning products must always be done according to the corresponding health and safety rules.

4.3 MAINTENANCE

• **ProdEX** panels do not require maintenance. In the case of dirt, refer to the Cleaning section.

4.4 REPAIR

• Natural wood is a delicate material. There is no prescribed repair method for **ProdEX** panels. Damaged panels must be replaced with new ones.

5 REMOVAL INFORMATION

5.1 REMOVAL

• The **ProdEX** product forms part of a ventilated facade system, the main components of which (aluminum, steel, wood and plastic) are easily separable and recyclable.

5.2 WASTE MANAGEMENT

• Reuse: reuse of the **ProdEX** panel for other applications with different requirements is encouraged.

• Recycling: the cellulose fibers of the core and the thermostable wooden sheet can be recycled. Recycling possibilities include its use for filler material for wood-based panels for construction use.

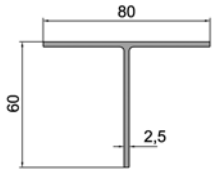
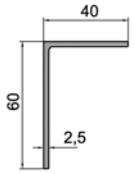
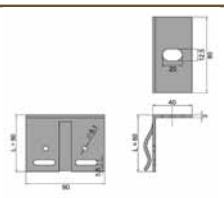
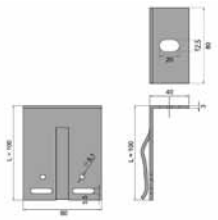
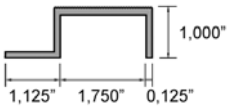
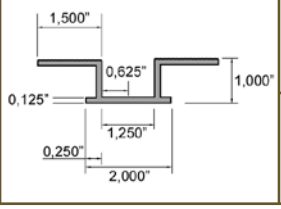
Dumping at landfill sites: the specifications that regulate and manage construction and demolition waste shall be followed, as well as any applicable local regulations. Disposal in industrial incinerators can also be considered.

• Sub-construction: the wood, aluminum or steel profiles may be reused for their original use, or recycled if the buildings have been carefully deconstructed.

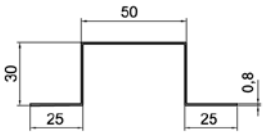
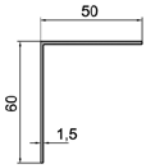
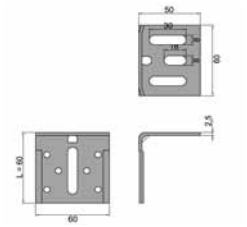
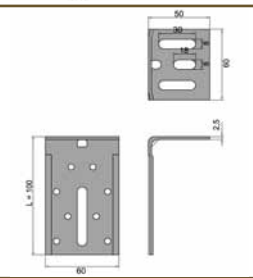
6 ACCESSORIES

6.1 GENERAL ELEMENTS FOR THE PRIMARY SUBFRAME

6.1.1 ALUMINUM:

REFERENCE	DESCRIPTION		MATERIAL / FINISH
PRAS001BRU		T profile 60/80 3000 mm long	Aluminum 6063 / Rough T5
PRAS002BRU		L profile 60/40 3000 mm long	Aluminum 6063 / Rough T5
PRAS003BRU		L 60 Bracket	Aluminum 6060 / Rough T5
PRAS004BRU		L 100 Bracket	Aluminum 6060 / Rough T5
PRAS005BRU *(only sold in the USA)*		Modified J profile 146" (3708 mm) long	Aluminum / Mill
PRAS005AND *(only sold in the USA)*		Modified J profile 146" (3708 mm) long	Aluminum / Black anodized
PRAS006BRU *(only sold in the USA)*		Inverted HAT profile 146" (3708 mm) long	Aluminum / Mill
PRAS006AND *(only sold in the USA)*		Inverted HAT profile 146" (3708 mm) long	Aluminum / Black anodized

6.1.2 GALVANIZED STEEL

REFERENCE	DESCRIPTION		MATERIAL / FINISH
PRSS001GLV		30 mm Omega profile 2500 mm long	Galvanized steel
PRSS002GLV		L 60/50 profile 2500 mm long	Galvanized steel
PRSS003GLV		L 60 Bracket	Galvanized steel
PRSS004GLV		L 100 Bracket	Galvanized steel

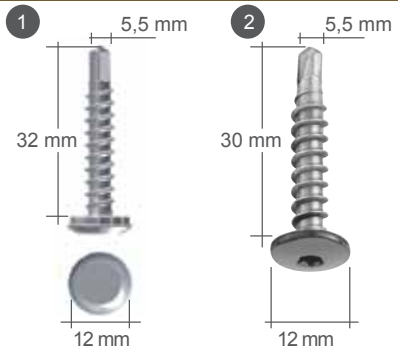
6.2 SPECIFIC ELEMENTS FOR THE EXPOSED FASTENING SYSTEM WITH SCREWS OR RIVETS

6.2.1 SCREWS

6.2.1.1 GENERAL ACCESSORIES FOR SCREWS

REFERENCE	DESCRIPTION		MATERIAL / FINISH
PRGA001EXF		SFS-SX Centering seat	Accessory to ensure the perpendicularity of the screw to the panel, as well as its concentric insertion.
PRGA002EXF		SFS-T25W Adapter	Accessory for SX3 with TORX heads
PRGA004EXF		SFS-T20W Adapter	Accessory for TW-S screws with TORX heads
PRGA003EXF		SFS-E 420 Setting tool - Federvision	Accessory for SX3 screws with IRIUS heads

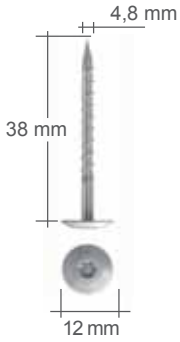
6.2.1.2 SCREWS FOR ALUMINUM AND/OR STEEL SUBFRAME

DESCRIPTION		MATERIAL / FINISH
	Self-drilling screws 1. SFS-SX3-L12-5,5x32 mm **IRIUS head** Thickness of assembly ≤ 17mm 2. SFS-SX3-D12-5,5x30 mm **TORX head** Thickness of assembly ≤ 15mm Dimensions: Ø cabeza: 12 mm Ø tornillo: 5,5 mm	Austenitic stainless steel 1.4567 / Lacquered and unlacquered (see table below)

FINISH	TYPE OF HEAD	REFERENCE
UNLACQUERED	IRIUS	PREF001IRI
	TORX	PREF001TRX
CREAM LACQUER	IRIUS	PREF002IRI
	TORX	PREF002TRX
ICE GREY LACQUER	IRIUS	PREF003IRI
	TORX	PREF003TRX
PALE LACQUER	IRIUS	PREF004IRI
	TORX	PREF004TRX
RUSTIK LACQUER	IRIUS	PREF005IRI
	TORX	PREF005TRX
LIGHT BROWN LACQUER	IRIUS	PREF006IRI
	TORX	PREF006TRX
MINT LACQUER	IRIUS	PREF007IRI
	TORX	PREF007TRX
DEEP BROWN LACQUER	IRIUS	PREF008IRI
	TORX	PREF008TRX
DARK BROWN LACQUER	IRIUS	PREF009IRI
	TORX	PREF009TRX
NUX LACQUER	IRIUS	PREF010IRI
	TORX	PREF010TRX
MOCCA LACQUER	IRIUS	PREF011IRI
	TORX	PREF011TRX

* Self-drilling fasteners are recommended for 2.5mm thick aluminum profiles or for 1.5mm thick steel profiles. For smaller thicknesses, rivets should be used.

6.2.1.3 SCREWS FOR WOOD SUBFRAME

DESCRIPTION		MATERIAL / FINISH
	SFS-TW-S-D12-4,8x38 mm screw **TORX head** Dimensiones: Ø head: 12 mm Ø screw: 4,8 mm L: 38 mm	Austenitic stainless steel 1.4567 / Lacquered and unlacquered (see table below)

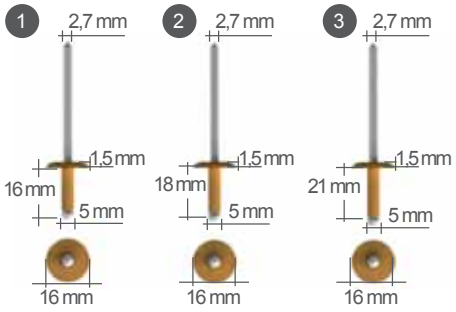
FINISH	TYPE OF HEAD	REFERENCE
UNLACQUERED	TORX	PREF012TRX
CREAM LACQUER	TORX	PREF013TRX
ICE GREY LACQUER	TORX	PREF014TRX
PALE LACQUER	TORX	PREF015TRX
RUSTIK LACQUER	TORX	PREF016TRX
LIGHT BROWN LACQUER	TORX	PREF017TRX
MINT LACQUER	TORX	PREF018TRX
DEEP BROWN LACQUER	TORX	PREF019TRX
DARK BROWN LACQUER	TORX	PREF020TRX
NUX LACQUER	TORX	PREF021TRX
MOCCA LACQUER	TORX	PREF022TRX

6.2.2 RIVETS

6.2.2.1 GENERAL ACCESSORIES FOR RIVETS

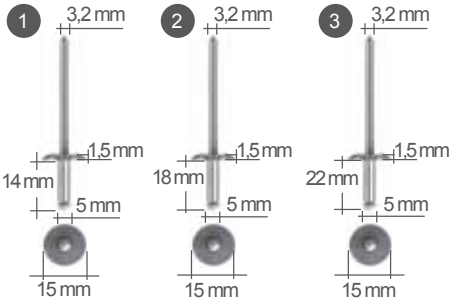
REFERENCE	DESCRIPTION		MATERIAL / FINISH
PRGA004EXF		SFS-ZL Centering seat	Accessory to perform the pre-drilling of the substructure concentrically to that of the wall
PRGA005EXF		SFS Centering seat with integrated bit	Recommended accessory to perform the pre-drilling of the substructure concentrically to that of the panel.
PRGA006EXF		SFS-AP nozzle	Accessory to be used only with SFS-AP16 rivets. This is fitted to the riveter for the installation of the rivets on floating points
PRGA007EXF		SFS-SSO-D15 nozzle	Accessory to be used only with SFS-SSO-D15 rivets. This is fitted to the riveter for the installation of the rivets on floating points

6.2.2.2 RIVETS FOR ALUMINUM SUBFRAME

DESCRIPTION		MATERIAL / FINISH
	Rivet 1. SFS-AP-16-50160 2. SFS-AP-16-50180 3. SFS-AP-16-50210 Dimensions: Ø head: 16 mm Ø rivet: 5 mm Ø head thickness 1,5 mm Ø shaft thickness 2,7 mm L: 16,18 or 21mm	Body: $AlMg_5$ Shaft: Stainless steel 1.4541 Lacquered and unlacquered (see table below)

FINISH	LENGTH OF RIVET(mm)	THICKNESS OF ASSEMBLY (mm)	REFERENCE
UNLACQUERED	16	8,0 - 12,0	PREF023AP016
	18	9,5 - 13,5	PREF023AP018
	21	12,5 - 16,0	PREF023AP021
CREAM LACQUER	16	8,0 - 12,0	PREF024AP016
	18	9,5 - 13,5	PREF024AP018
	21	12,5 - 16,0	PREF024AP021
ICE GREY LACQUER	16	8,0 - 12,0	PREF025AP016
	18	9,5 - 13,5	PREF025AP018
	21	12,5 - 16,0	PREF025AP021
PALE LACQUER	16	8,0 - 12,0	PREF026AP016
	18	9,5 - 13,5	PREF026AP018
	21	12,5 - 16,0	PREF026AP021
RUSTIK LACQUER	16	8,0 - 12,0	PREF027AP016
	18	9,5 - 13,5	PREF027AP018
	21	12,5 - 16,0	PREF027AP021
LIGHT BROWN LACQUER	16	8,0 - 12,0	PREF028AP016
	18	9,5 - 13,5	PREF028AP018
	21	12,5 - 16,0	PREF028AP021
MINT LACQUER	16	8,0 - 12,0	PREF029AP016
	18	9,5 - 13,5	PREF029AP018
	21	12,5 - 16,0	PREF029AP021
DEEP BROWN LACQUER	16	8,0 - 12,0	PREF030AP016
	18	9,5 - 13,5	PREF030AP018
	21	12,5 - 16,0	PREF030AP021
DARK BROWN LACQUER	16	8,0 - 12,0	PREF031AP016
	18	9,5 - 13,5	PREF031AP018
	21	12,5 - 16,0	PREF031AP021
NUX LACQUER	16	8,0 - 12,0	PREF032AP016
	18	9,5 - 13,5	PREF032AP018
	21	12,5 - 16,0	PREF032AP021
MOCCA LACQUER	16	8,0 - 12,0	PREF033AP016
	18	9,5 - 13,5	PREF033AP018
	21	12,5 - 16,0	PREF033AP021

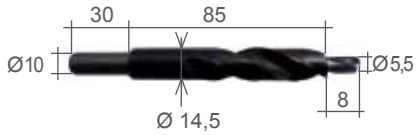
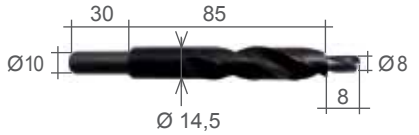
6.2.2.3 RIVETS FOR STEEL SUBSFRAME

DESCRIPCTION		MATERIAL / FINISH
	Rivet 1. SFS-SSO-D15-50140 2. SFS-SSO-D15-50180 3. SFS-SSO-D15-50220 Dimensions: Ø head: 15 mm Ø rivet: 5 mm Ø shaft thickness: 3,2 mm L: 14,18 o 22 mm	Body: Stainless steel A4, nº 1.4578 Shaft: Stainless steel A4, nº 1.4578 Lacquered and unlacquered (see table below)

FINISH	LENGTH OF RIVET(mm)	THICKNESS OF ASSEMBLY (mm)	REFERENCE
UNLACQUERED	14	6,0 - 9,5	PREF034AP014
	18	9,0 - 13,5	PREF034AP018
	22	13,0 - 18,0	PREF034AP022
CREAM LACQUER	14	6,0 - 9,5	PREF035AP014
	18	9,0 - 13,5	PREF035AP018
	22	13,0 - 18,0	PREF035AP022
ICE GREY LACQUER	14	6,0 - 9,5	PREF036AP014
	18	9,0 - 13,5	PREF036AP018
	22	13,0 - 18,0	PREF036AP022
PALE LACQUER	14	6,0 - 9,5	PREF037AP014
	18	9,0 - 13,5	PREF037AP018
	22	13,0 - 18,0	PREF037AP022
RUSTIK LACQUER	14	6,0 - 9,5	PREF038AP014
	18	9,0 - 13,5	PREF038AP018
	22	13,0 - 18,0	PREF038AP022
LIGHT BROWN LACQUER	14	6,0 - 9,5	PREF039AP014
	18	9,0 - 13,5	PREF039AP018
	22	13,0 - 18,0	PREF039AP022
MINT LACQUER	14	6,0 - 9,5	PREF040AP014
	18	9,0 - 13,5	PREF040AP018
	22	13,0 - 18,0	PREF040AP022
DEEP BROWN LACQUER	14	6,0 - 9,5	PREF041AP014
	18	9,0 - 13,5	PREF041AP018
	22	13,0 - 18,0	PREF041AP022
DARK BROWN LACQUER	14	6,0 - 9,5	PREF042AP014
	18	9,0 - 13,5	PREF042AP018
	22	13,0 - 18,0	PREF042AP022
NUX LACQUER	14	6,0 - 9,5	PREF043AP014
	18	9,0 - 13,5	PREF043AP018
	22	13,0 - 18,0	PREF043AP022
MOCCA LACQUER	14	6,0 - 9,5	PREF044AP014
	18	9,0 - 13,5	PREF044AP018
	22	13,0 - 18,0	PREF044AP022

6.3 SPECIFIC ELEMENTS FOR THE CONCEALED FASTENING WITH CAPS SYSTEM

6.3.1 GENERAL ACCESSORIES FOR THE CONCEALED FASTENING WITH CAPS SYSTEM

REFERENCE	DESCRIPTION		MATERIAL / FINISH
PRGA008BRC		Bit for fixed points	Steel 114 150 HSS
PRGA009BRC		Bit for floating points	Steel 114 150 HSS

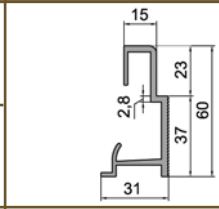
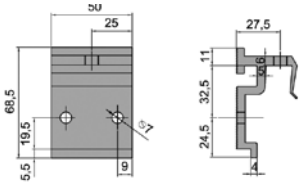
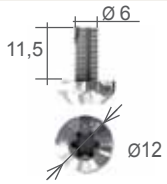
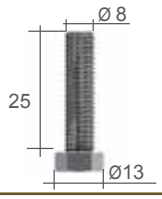
6.3.2 CAPS

DESCRIPTION		MATERIAL / FINISH
	**ProdEX** cap Ø 14,25 mm e: 2 mm	**ProdEX** (see table below)

FINISH	REFERENCE
ProdEX CREAM	PRCF001CAP
ProdEX ICE GREY	PRCF002CAP
ProdEX PALE	PRCF003CAP
ProdEX RUSTIK	PRCF004CAP
LIGHT BROWN	PRCF005CAP
ProdEX MINT	PRCF006CAP
ProdEX DEEP BROWN	PRCF007CAP
ProdEX DARK BROWN	PRCF008CAP
ProdEX NUX	PRCF009CAP
ProdEX MOCCA	PRCF010CAP

6.4 SPECIFIC ELEMENTS FOR THE CONCEALED FASTENING SYSTEM WITH HANGING PROFILES

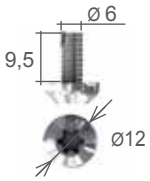
6.4.1 GENERAL ACCESSORIES FOR THE CONCEALED SYSTEM

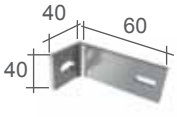
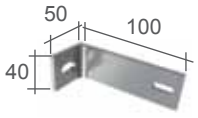
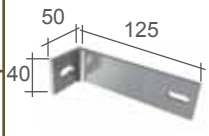
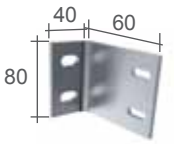
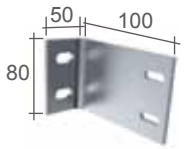
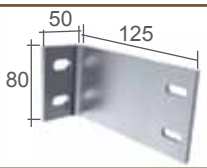
REFERENCE	DESCRIPTION		MATERIAL / FINISH
PRCF011BRU		Exterior guide rail. 3000 mm bar	Aluminium 6063 Rough T5
PRCF011AND		Exterior guide rail. 3000 mm bar	Aluminium 6063 Black lacquer
PRCF012BRU		Exterior hanging hook.	Aluminium 6063 Rough T5
PRCF013		Clip screw TB -A2 TX 30 Ø head 12 mm Ø screw 6 mm L: 11,5 mm	Stainless steel
PRCF014		Leveling pin T.H./INX A4 Ø head 13 mm Ø screw 8 mm L: 25 mm	Stainless steel A2

6.5 SPECIFIC ELEMENTS FOR THE FIXED LOUVER SYSTEM

6.5.1 GENERAL ACCESSORIES FOR THE FIXED LOUVER SYSTEM

REFERENCE	DESCRIPTION		MATERIAL / FINISH
PRFL001BRU		Perforated profile 20 mm wide 2000 mm long	Mill
PRFL001RAL		Perforated profile 20 mm wide 2000 mm long	Lacquered
PRFL002BRU		Perforated profile 20 mm wide 3000 mm long	Mill
PRFL002RAL		Perforated profile 20 mm wide 3000 mm long	Lacquered
PRFL003BRU		Non-perforated profile 2000 mm long	Mill
PRFL003RAL		Non-perforated profile 2000 mm long	Lacquered
PRFL004BRU		Non-perforated profile 3000 mm long	Mill
PRFL004RAL		Non-perforated profile 3000 mm long	Lacquered

REFERENCE		DESCRIPTION	MATERIAL / FINISH
PRFL005BRU		Base part for straight fixed louvers (0º)	Mill
PRFL005RAL		Base part for straight fixed louvers (0º)	Lacquered
PRFL006BRU		Double base part for straight fixed louvers (0º)	Mill
PRFL006RAL		Double base part for straight fixed louvers (0º)	Lacquered
PRFL007BRU		Base part for angled fixed louvers (30º)	Mill
PRFL007RAL		Base part for angled fixed louvers (30º)	Lacquered
PRFL008BRU		Double base part for angled fixed louvers (30º)	Mill
PRFL008RAL		Double base part for angled fixed louvers (30º)	Lacquered
PRFL009BRU		Base part for angled fixed louvers (60º)	Mill
PRFL009RAL		Base part for angled fixed louvers (60º)	Lacquered
PRFL010BRU		Double base part for angled fixed louvers (60º)	Mill
PRFL010RAL		Double base part for angled fixed louvers (60º)	Lacquered
PRFL011BRU		End louver clip	Mill
PRFL011RAL		End louver clip	Lacquered
PRFL012BRU		Center louver clip	Mill
PRFL012RAL		Center louver clip	Lacquered
PRFL013		Panel screw TB - A2 TX 30 Ø head 12 mm Ø screw 6 mm L: 9,5 mm	Stainless steel

REFERENCE	DESCRIPTION		MATERIAL / FINISH
PRFL014		Screw for perforated profile 55137981	Mill
PRFL015BRU		Single L-bracket 60 x 40 length 40	Mill
PRFL005RAL		Single L-bracket 60 x 40 length 40	Lacquered
PRFL016BRU		Single L-bracket 100 x 50 length 40	Mill
PRFL006RAL		Single L-bracket 100 x 50 length 40	Lacquered
PRFL017BRU		Single L-bracket 125 x 50 length 40	Mill
PRFL007RAL		Single L-bracket 125 x 50 length 40	Lacquered
PRFL018BRU		Double L-bracket 60 x 40 length 80	Mill
PRFL018RAL		Double L-bracket 60 x 40 length 80	Lacquered
PRFL019BRU		Double L-bracket 100 x 50 length 80	Mill
PRFL019RAL		Double L-bracket 100 x 50 length 80	Lacquered
PRFL020BRU		Double L-bracket 125 x 50 length 80	Mill
PRFL020RAL		Double L-bracket 125 x 50 length 80	Lacquered
PRFL021		T-M8 25 bolt	Stainless Steel
PRFL022		DIN 943 M8 stainless steel nut	Stainless Steel
PRFL023		8.3 DIN 125 A stainless steel washer	Stainless Steel

* All lacquered finishes are offered for selection in the following manner:

- Direct matt silver anodized / 15 microns
- RAL color chart
- FUTURA color chart

* Finishes available for each choice: GLOSS or MATTE.

6.6 SPECIFIC ELEMENTS FOR THE CLAPBOARD SYSTEM

6.6.1 GENERAL ACCESSORIES FOR THE CLAPBOARD SYSTEM

REFERENCE	DESCRIPTION		MATERIAL / FINISH
PRFA001AND		Anchor Clip	Steel A4 Black lacquer

Prodema

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3.000 EN 04/2017

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