Prodema®
Made to last wooden Products

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InTHELine 10.000-EN-02-2009

Prod**EX**

exteriors by Prodema®

Prod**EX**

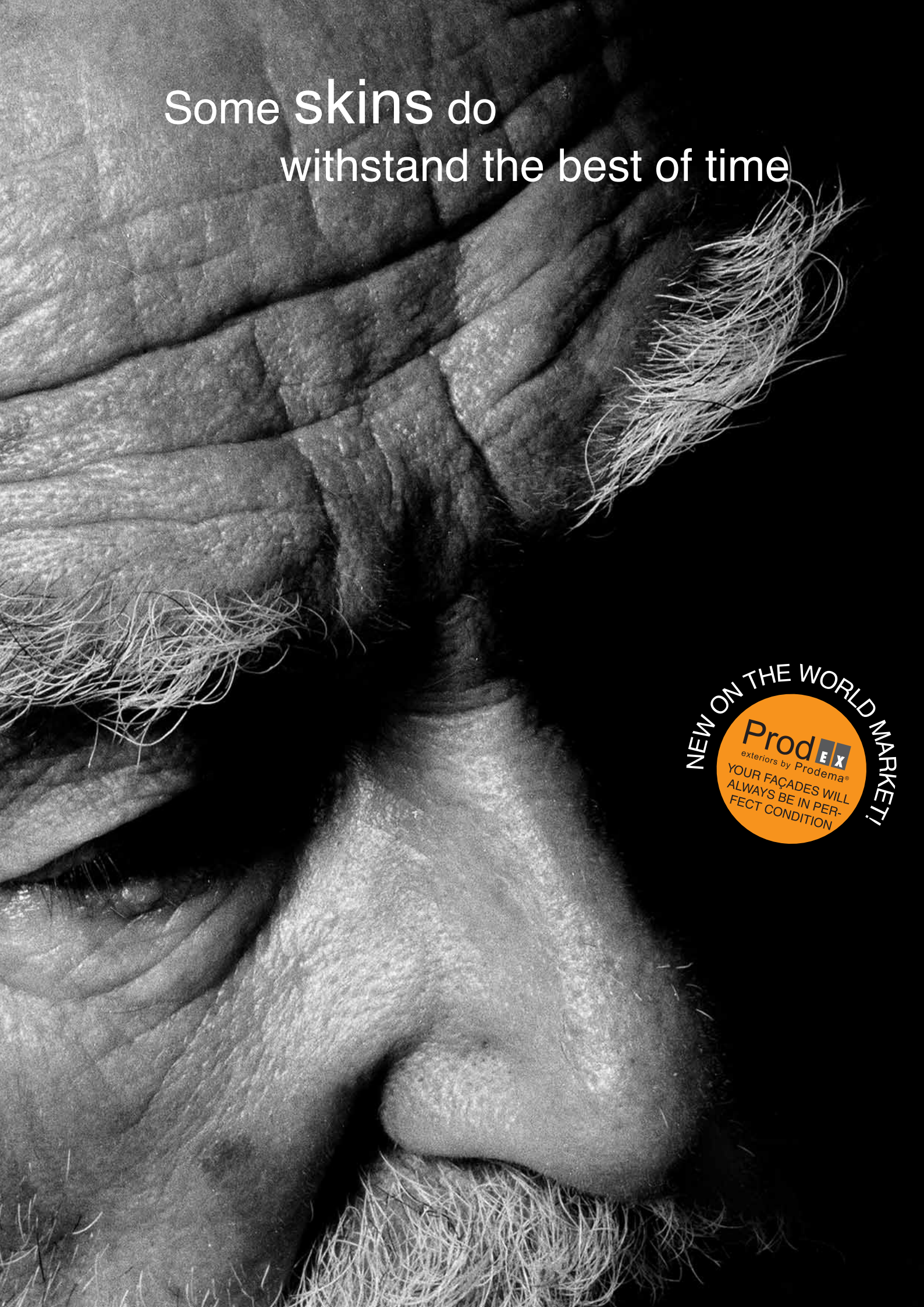
COMPOSITE PANELS
WITH NATURAL WOOD VENEER

Prodema®
Made to last wooden Products

Prodema®
Made to last wooden Products

ProdEX

exteriors by Prodema®


Some skins do
withstand the best of time
NEW ON THE WORLD MARKET!
Prodex
exteriors by Prodema®
YOUR FAÇADES WILL ALWAYS BE IN PERFECT CONDITION

ProdEX

exteriors by Prodema®

Clínica Pombaldial (Pombal - Portugal)
Arq. Filipe Sousa

We would like to present ProdEX by Prodema:

The new and revolutionary generation of natural wood composite products for covering façades by Prodema, the result of intensive R+D+I work, achieves unprecedented technical results:

- Solid colour and artificial climate resistance: according to standard EN 438 - 2:2005 (section 29).
  Passes 6000 hour Xenon test.
- Reaction to fire: according to standard EN 13501-1:2002.
- Graffiti resistance: according to standard ASTM D 6578: 2000.

And, of course, with the same spectacular aesthetic results that Prodema is famous for, and which have captivated thousands of architects the world over.

ProdEx

exteriors by Prodema®

Warm, Beautiful, Elegant…

These are just some of the words that spring to people's minds when they think of wood as a material for construction and decoration.

Wood, as a material that is widely available in nature, has been worked by man for thousands of years, and its applications have gradually been mastered over time.

At **Prodema** we have absorbed and concentrated all that age-old experience, we have updated it, adding a large dose of state-of-the-art technology, to create an original and avant-garde range of natural wood products for the world of architecture and decoration, which had been inconceivable up until recent years, for their appearance, quality, range and, above all, durability.

Only **Prodema** can offer this level of durability, thanks to its international patent that marks the exclusive composition of our products and awards them excellent properties.


Prodema®
Made to last wooden Products
We just
trees

At **Prodema** we have always been committed to the environment in general and specifically with forest sustainability.

Our compromise may seem selfish, and in fact it is. But above all it is sincere; because having worked with wood for over 100 years has led us to respect it and to be conscious of the importance to establish policies to protect it.

That is why we accepted the CITES convention so many years ago. We also obtained the **ISO 14001** certificate.

Now, we have taken a large step by obtaining the **PEFC** Certificate which guarantees that the wood and other products of wood origin used to manufacture **ProdEX** panels are from forests that are managed in an environmentally sustainable fashion.

PEFC™

PEFC/14-35-00025

prodema

exteriors by Prodema®

Homes in Canal Imperial
Arch. Jesús Marco Llombart
(Spain)

Let your style show

Clínica Pombaldial
Arch. Filipe Sousa
(Portugal)

ProdEX (by **Prodema**), our updated line of exterior coverings, is changing the way of thinking in the world of architecture across the globe.

At long last, **ProdEX** (by **Prodema**) provides a class of products called Wood Composites, which bring together all the good points of such a noble, beautiful and versatile material as wood, and the guarantee of performance and durability that our patented paper and resin-based formula provides.

A whole new world of possibilities for those architects or building technicians who are looking for a genuine alternative to other cold, grey and common materials to cover their building façades.

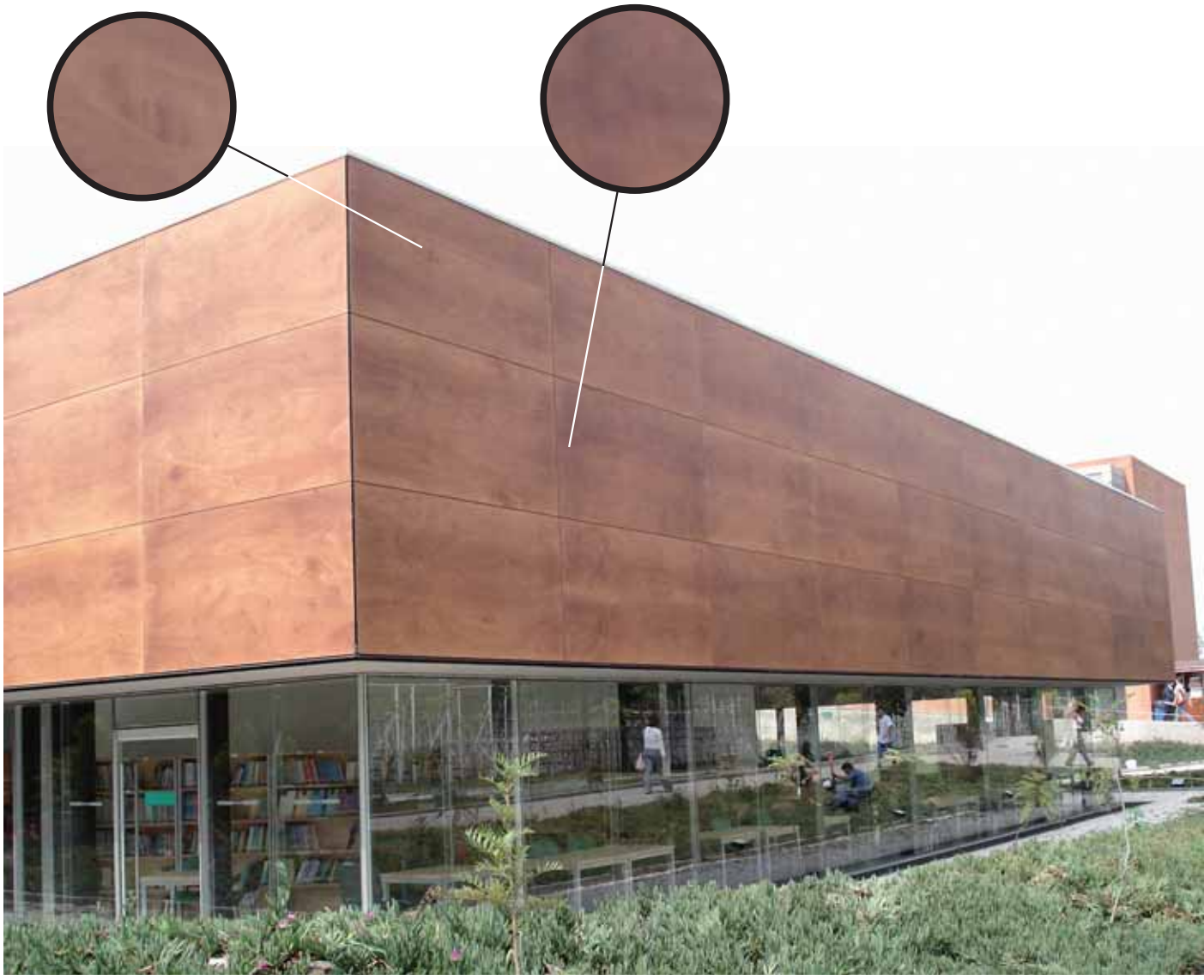
Lootsi House
Arch. Hanno Grossschmidt, HG Architecture
(Estonia)

1. Prod EX Material

1.1. Characteristics of natural wood

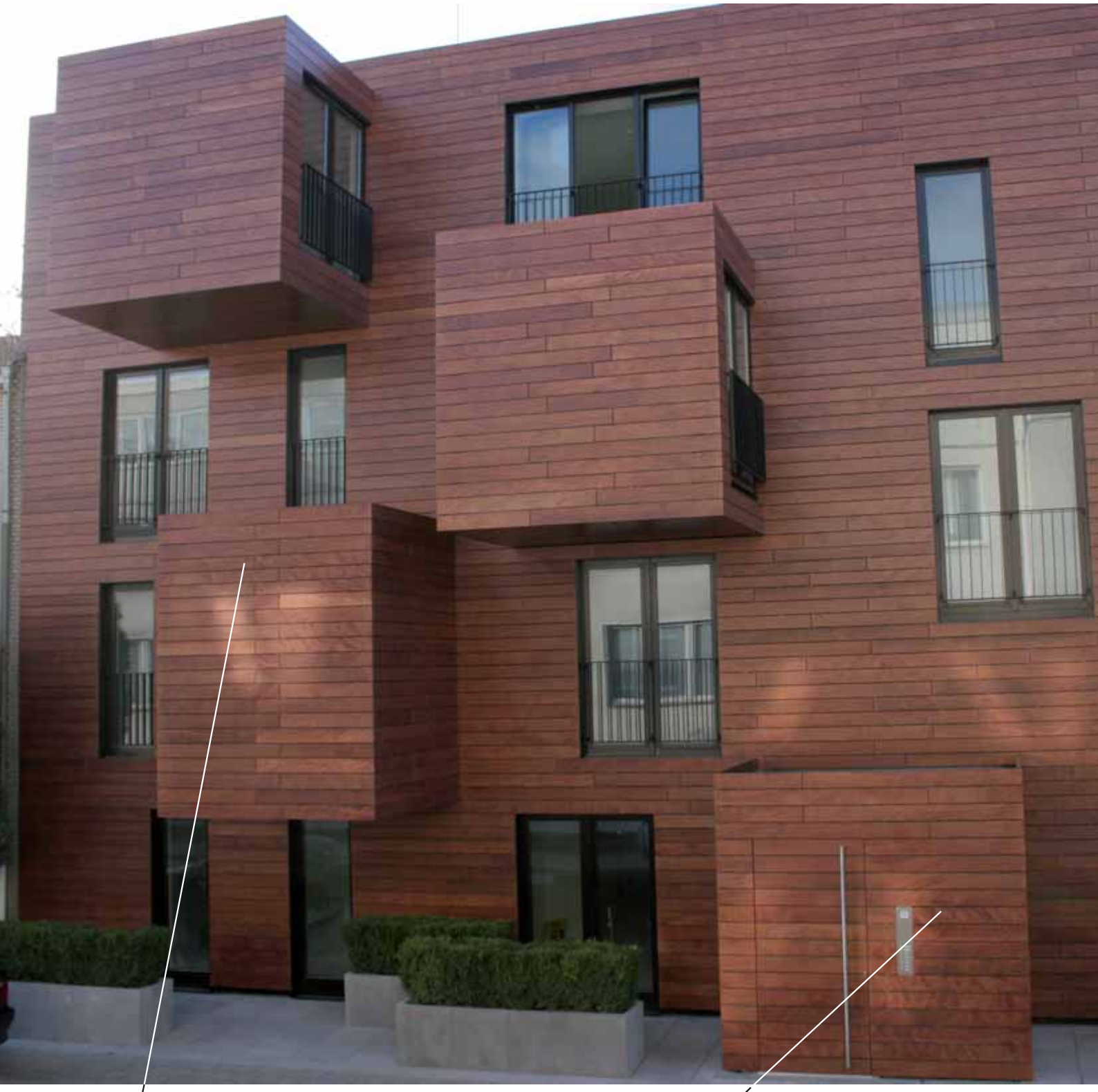
ProdEX belongs to a new generation of products, and **Prodema**, S.A. is one of the only companies on the market manufacturing exterior façade panels with wood veneer. **ProdEX** panels may show certain characteristics that are inherent of natural wood itself, such as those indicated in the following examples:

Specific darker areas in the wood itself.



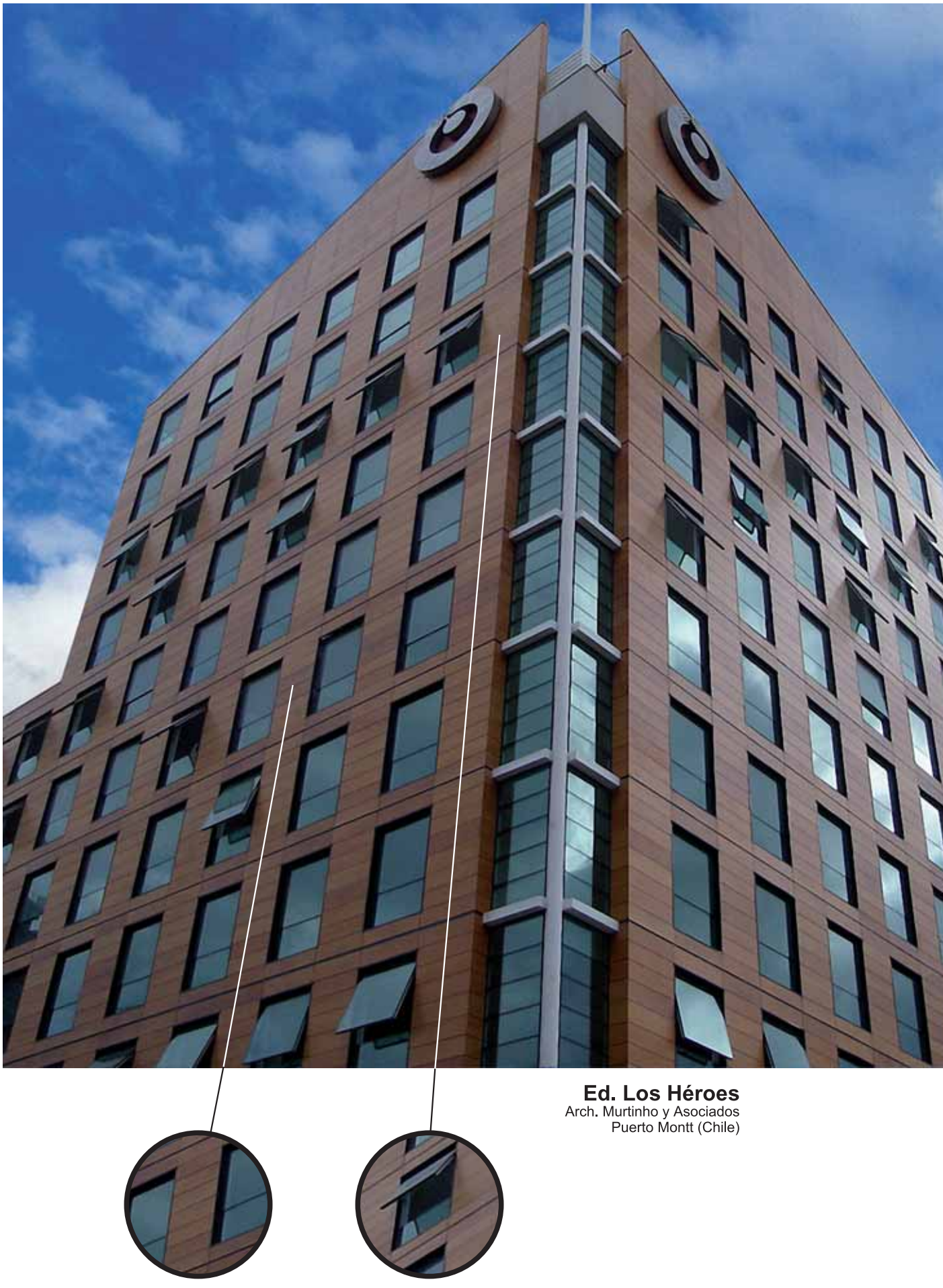
UDLA (Universidad de las Américas)
Arch. Rodrigo Betancourt
(Mexico)

Transversal mirror images in the wood.



Hamburg Bogenalle
Blauraum Architekten Hamburg
(Germany)

Variation in colour, shade and shine of different panels made of the same type of wood.



Ed. Los Héroes
Arch. Murtinho y Asociados
Puerto Montt (Chile)

Knots or holes in the wood coming from the trees themselves.

Schorghoper Home
Arch. Horst Lechner
(Austria)

1.2. Composition of **ProdEX** panels

ProdEX is a composite panel faced with a natural wood veneer and coated with a proprietary coating, based on synthetic resins and PVDF, which protect the panel from the effects of sunlight, chemical attack (anti-graffiti) and the damage caused by atmospheric agents.

1.3. Main features of **ProdEX**

The different layers of material give the panel its unique characteristics:

Appearance

- Attractive aesthetic qualities due to the nature of the product – natural wood.
- Solid colour according to EN 438-2 standard, section 28 and 29.

Resistance and durability

- Density ≥ 1'35 gr/cm^3.
- **High mechanical resistance**. Flexural strength > 80 MPa and modulus of elasticity > 9000 MPa.
- **High resistance to weather.** In the artificial ageing tests, **ProdEX** obtains a colour stability of = 3 after 6000 hours of exposure to xenon radiation compared with the 3000 hours required by the EN 438-2:2005 standard, section 29 (except **ProdEX** Light colour, which obtains a result of 3000 hours).
- **Long-lasting against wood-eating pests (termites):** with a Grade 0 result (no sign of infestation) according to EN 350-1:1994 test.
- **High resistance to sharp changes in temperature and moisture** (-20ºC to 80ºC) without loss of mechanical properties or changes in appearance, according to EN 438-2:1995 section 19.
- **Excellent dimensional stability.** See chapter 2.2.2.
- **High impact resistance against hard objects** with a small or large diameter.

Cleaning

- Easy to clean and maintain.
- The boards do not attract dust.

Graffiti resistance

- The exterior non-stick chemical sheet that impregnates the **ProdEX** panels prevents aerosol paint from sticking permanently to the board.

Fire-proof product (**ProdEX** IGN)

- All **ProdEX** boards can be supplied in a fire-proof format, according to EN 13.501-1 standard.
- This European standard provides the reaction to fire classification for all construction products.
- Construction combustible products can range from Class B to Class F, where Class B is the strictest of all classifications.
- Furthermore, the product may also hold an additional classification:

  - For smoke production: this can range from s1 to s3, where s1 is the strictest of the classifications.

  - For flaming droplets/particles: this can range from d0 to d2, where d0 is the strictest of the classifications.

Fire-proof material:

Thickness ≥ 6 mm	Clas.: B-s2, d0 (according EN 13.501-1)
Thickness ≥ 3 mm	Clas.: C-s2, d0 (according EN 13.501-1)

NONE Fire-proof material

Thickness ≥ 8 mm	Clas.: C-s1, d0 (according EN 13.501-1)
Thickness ≥ 3 mm	Clas.: D-s2, d0 (according EN 13.501-1)

1.4. Dimensions and weight

Board dimensions (and tolerances)

Length x Width

2.440 mm x 1.220 mm (tolerance approx. ± 2 mm)

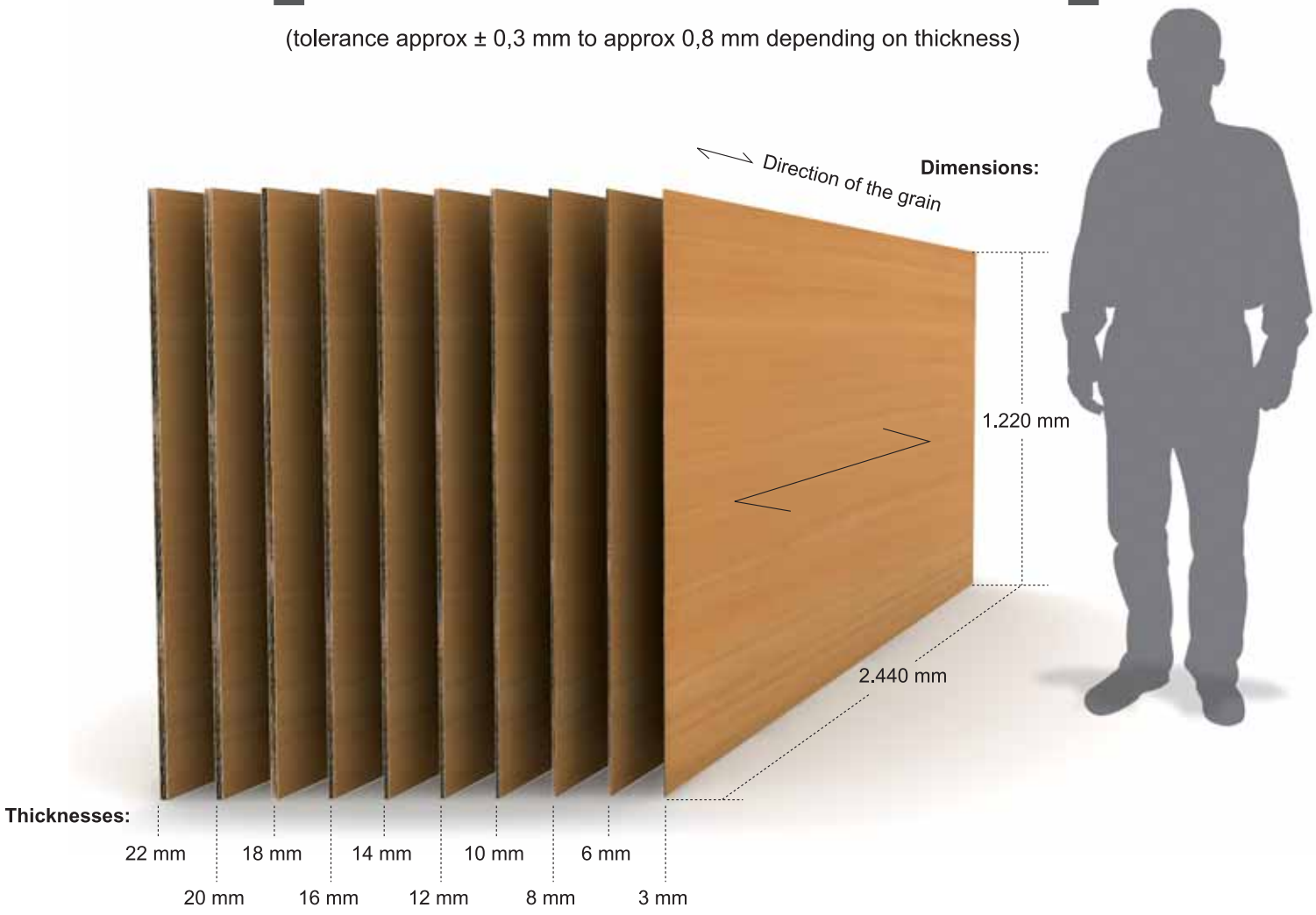
Thicknesses

3, 6, 8, 10, 12, 14, 16, 18, 20, 22 mm (tolerance approx ± 0,3 mm to approx 0,8 mm depending on thickness)

Board weight

Board thickness	3	6	8	10	12	14	16	18	20	22	(mm)
Weight / surface unit	4,05	8,10	10,80	13,50	16,20	18,90	21,60	24,30	27,00	29,70	(Kg / m^2)

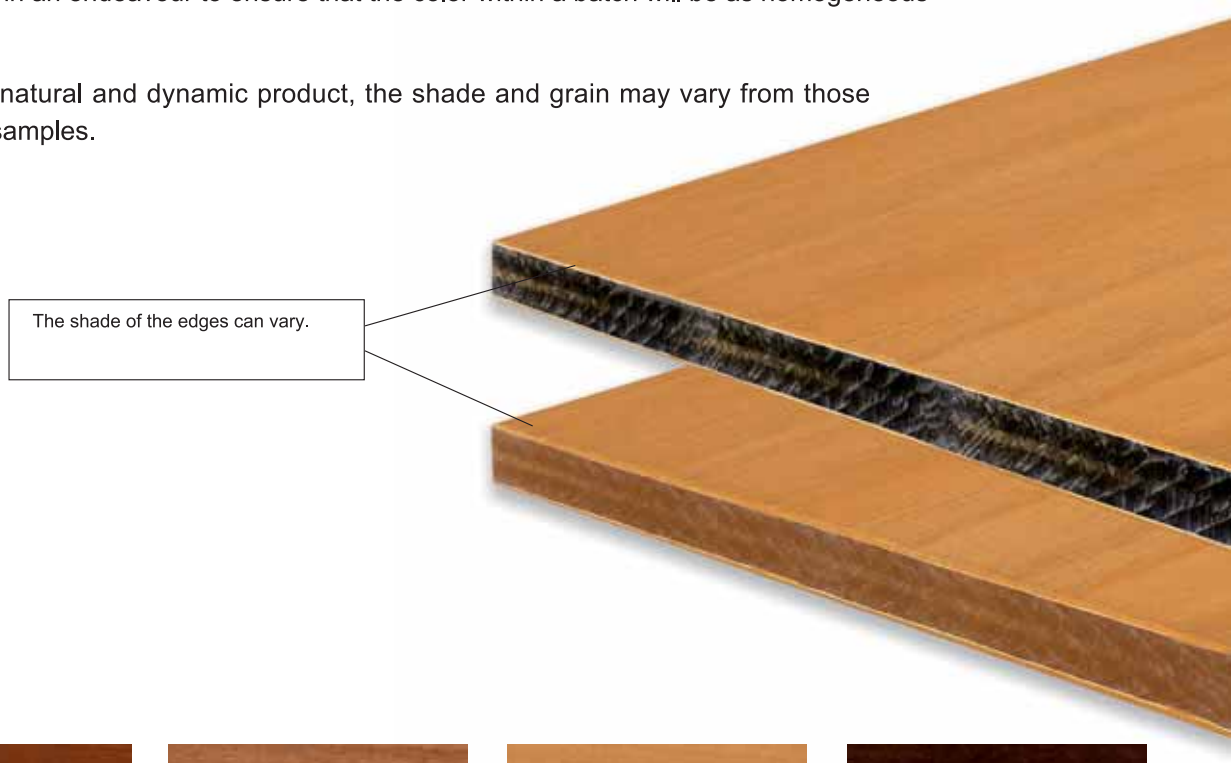
(tolerance approx ± 0,3 mm to approx 0,8 mm depending on thickness)



1.5. Colours

Each **Prodema**, S.A. panel is faced with a natural wood veneer, are each unique and will exhibit differences in grain and colour within the same supply. **Prodema** carefully selects the wood veneers in an endeavour to ensure that the color within a batch will be as homogeneous as possible.

As wood is a natural and dynamic product, the shade and grain may vary from those shown in the samples.



Light Brown*

Rustik**

Pale*

Mocca*

Cream*

Deep Brown**

Dark Brown*

Ice Grey**

*With Ayous veneer

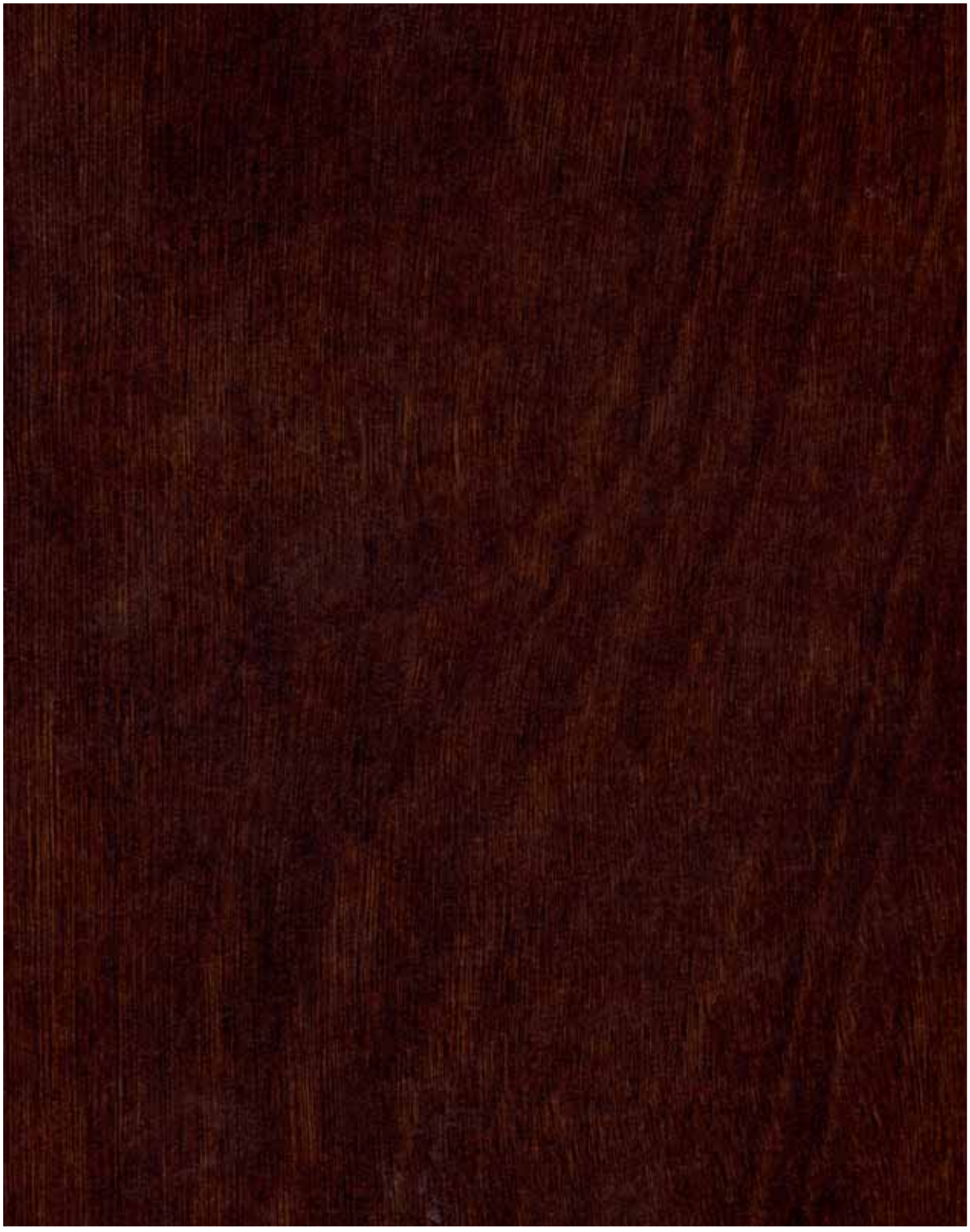
** With Okume veneer

Light Brown

Rustik

Pale

Mocca



Cream

Deep Brown

Dark Brown

Ice Grey

1.6. Technical specifications

TESTS	RESULTS	PROPERTY OR ATTRIBUTE	MEASURE UNIT	STANDARD
Inspection requirements				
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
Dimensional tolerances				
Thickness (t)	± 0,30	3,0 ≤ t < 5,0	mm	EN 438-2 Part. 5
	± 0,40	5,0 ≤ t < 8,0		
	± 0,50	8,0 ≤ t < 12,0		
	± 0,60	12,0 ≤ t < 16,0		
	± 0,70	16,0 ≤ t < 20,0		
	± 0,80	20,0 ≤ t < 25,0		
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
Physical properties				
Dimensional stability at elevated temperatures	0,30	Cumulative dimensional change (t ≥ 6 mm)	% max.	EN 438-2 Part 17
	0,60			
Resistance to impact	≥1.800	Maximun height for which no visible surface craking or imprint greater than 10 mm (t ≥ 6 mm)	mm	EN 438-2 Part 21
Tensile strength	>60	Longrain	MPa	EN ISO 527-2
		Crossgrain		
Determination of graffiti resistace	Level 4	Permanent blue maker	Cleanability level	ASTM D 6578:2000
	Level 4	Spray red paint		
	Level 1	Wax black crayon		
	Level 2	Water based ink black maker		
Weather resistance requirements				
Resistance to UV light	≥ 3	Contrast	Grey scale rating	EN 438-2 Part.28
			Rating	Rating
	≥ 4	Appearance		EN 20105 – A02
Resistance to artificial weathering	**Contrast**	Contrast	Grey scale rating	EN 438-2 Part.28
	Pale (3.000 Hours) ≥ 3	Appearance	Rating	Rating
	Light brown (6.000 Hours) ≥ 3			EN 20105 – A02
	Dark brown (6.000 Hours) ≥ 3			
	Rustik (6.000 Hours) ≥ 3			
	Deep brown (6.000 Hours) ≥ 3			
	Mocca (6.000 Hours) ≥ 3			
	Ice grey (3.000 Hours) ≥ 3			
	Cream (3.000 Hours) ≥ 3-4			
	Appearance			
	≥ 4			
CE safety requirements				
Reaction to fire	C-s2,d0	Euroclass t ≥ 3 mm	Classification	EN 13.501-1
	B-s2,d0	Euroclass t ≥ 6 mm		
Thermal resistance/Conductivity	0,263	Thermal conductivity (λ)	W/m K	EN 12664
Water vapour permeability	110	Wet cup meted	μ	EN 438-7 Part.4.4
	250	Dry cup method		
Résistance to fixings	> 2.000	Screw holding value	N	EN 438-7 Part.4.5
Flexural strength	> 80	Longrain	MPa	EN ISO 178
	> 80	Crossgrain		
Flexural Modulus	> 9.000	Longrain	MPa	EN ISO 178
	> 9.000	Crossgrain		
Resistance to climatic shock	≥ 4	Appearance	Rating	EN 438-2 Part.19
	≥ 0,95	Flexural strength	min	
	≥ 0,95	Elastic modulus	min	
Density	≥ 1,35	Density	gr/cc	EN ISO 1.183
Resistance to wet conditions	≤ 8	Moisture absorbed	%	EN 438-2 Part.15
	≥ 4	Appearance	Rating	

1.7. Certificates and guarantees

Prodema S.A., as part of its philosophy of constant improvement, relies on external companies of international renown to certify its products and processes.

Prodema S.A. is registered with the following standards:

- ISO 9001-2000 on quality management,
- ISO 14001 on the environment
- PEFC Chain of Custody upon request for ProdEX panels

The **ProdEX** material complies with the EN-438 standard and holds the following certificates:

- AVIS TECHNIQUE from the CSTB (France)
- ZULASSUNG (Germany)
- Q-MARK from BM-TRADA (United Kingdom)
- DIT Plus. Spain

Some of **ProdEX** excellent features have been tested in prestigious laboratories:

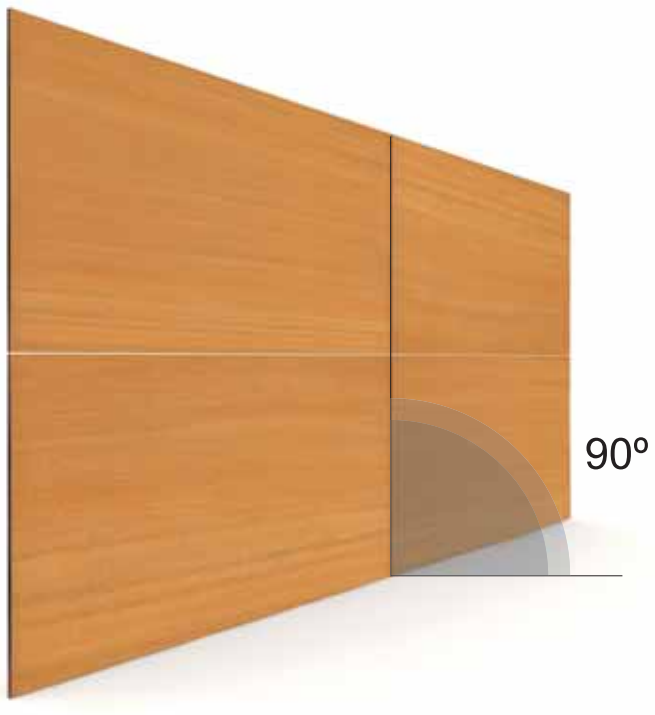
- Reaction to fire: EN-13501-1:2002
- Graffiti resistance: ASTM D 6578:2000

Prodema S.A. carries out a comprehensive quality control on **ProdEX** material and offers a 10-year guarantee* for this product.

PEFC
PEFC/14-35-00025

* The general guarantee conditions may be changed without prior notice.

For those panels that are not installed vertically, the guarantee will be reduced to 5 years, due to the fact that the surface may age faster as a consequence of the greater angle of incidence of the solar radiation and due to the fact that rainwater may remain on the surface.

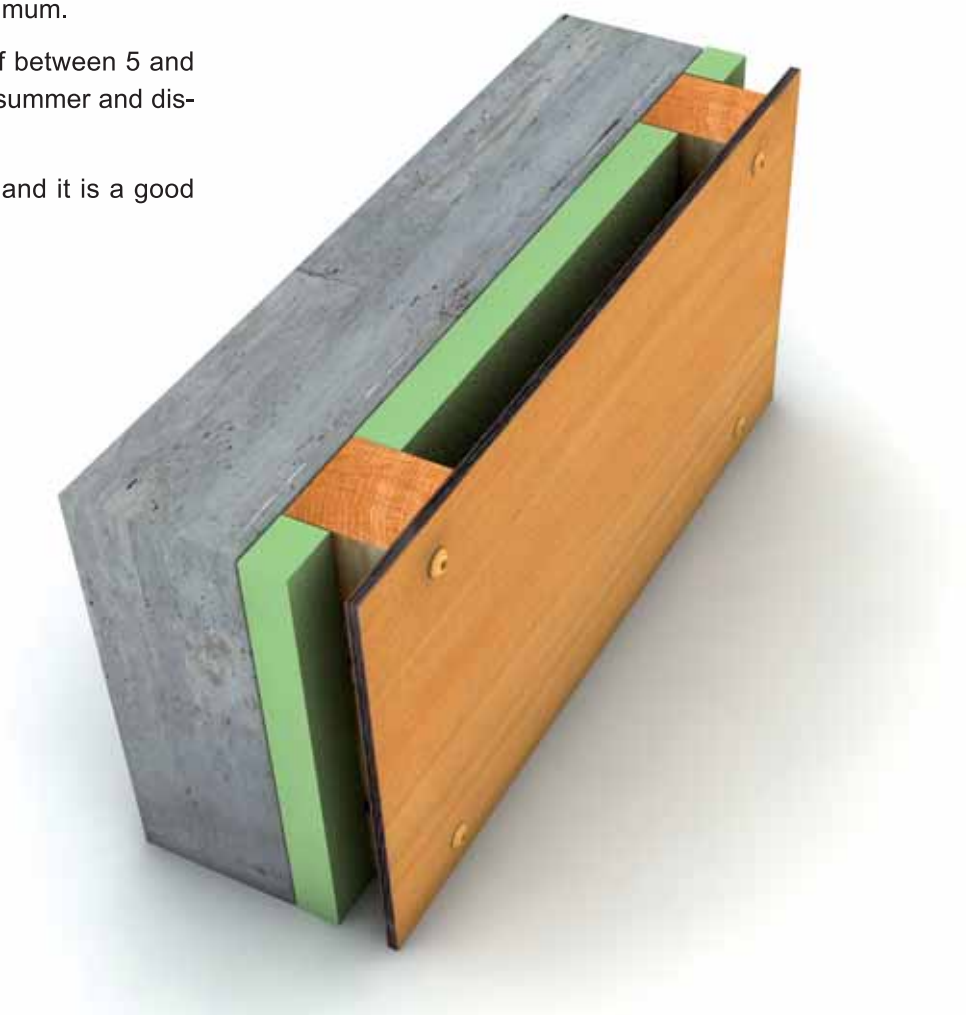


2. Mounting systems

2.1. Ventilated façade

It is essential to use a ventilated façade when mounting **ProdEX** panels. In order for this type of panel to perform correctly, it is very important that the differences in moisture and temperature between both sides of the panel be kept to a minimum. A ventilated façade has several advantages over a conventional façade:

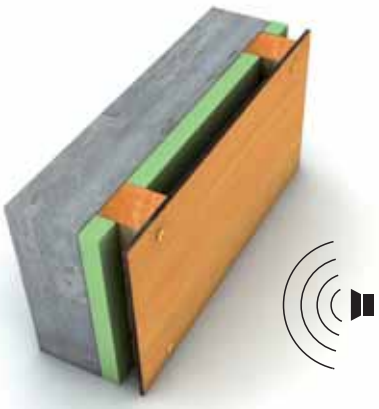
- A ventilated façade provides us with waterproofing against rain and prevents water from penetrating into the air space.
- It evenly spreads the water vapour from the building's interior to the exterior.
- A ventilated façade generates constant air ventilation and prevents moisture from getting trapped and dampening the insulation.
- It reduces movements of the building's structure due to the fact that, as it ventilates the façade, temperature changes are reduced.
- It reduces heat bridges to a minimum.
- It achieves an energy saving of between 5 and 10%, as it absorbs less heat in summer and disperses less heat in winter.
- Easy to mount and dismantle, and it is a good solution for restorations.
- It improves sound insulation.



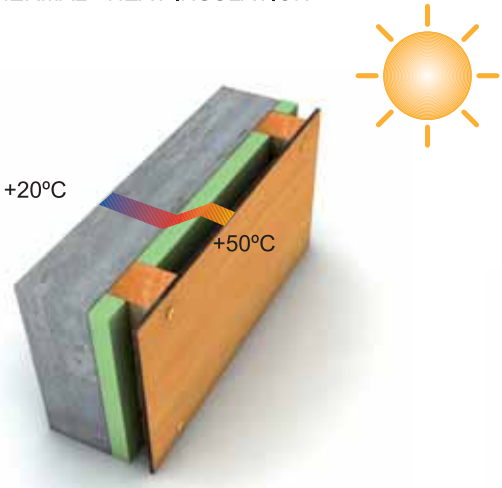
WATERPROOF AGAINST RAIN

IMPROVES REACTION AGAINST FIRE

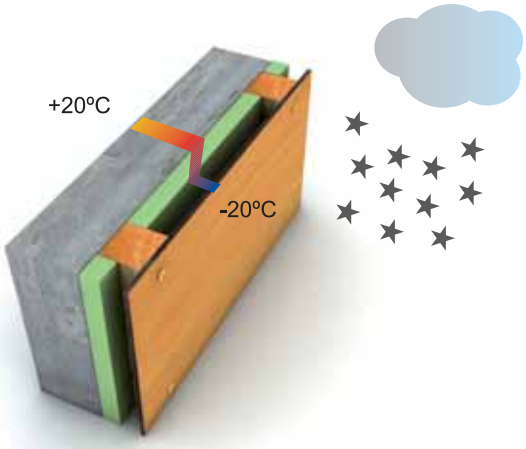
IMPROVES SOUND INSULATION



THERMAL - HEAT INSULATION

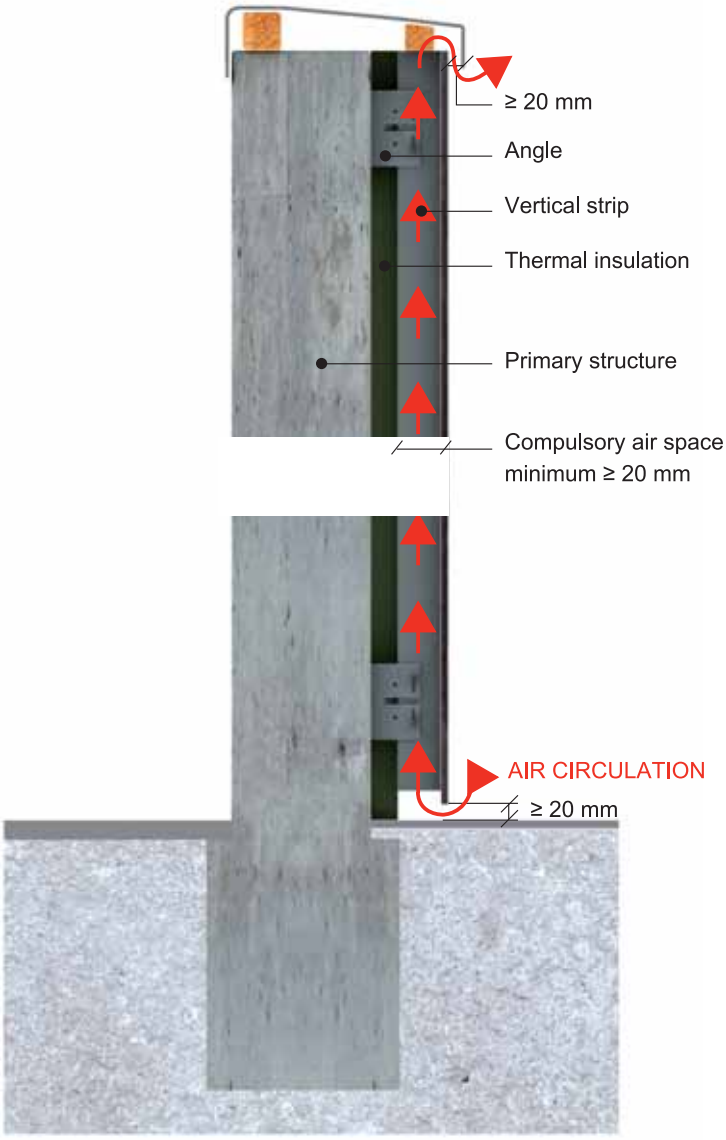


THERMAL - COLD INSULATION



In order for the **ProdEX** ventilated façade to function correctly, both sides of the board must be exposed to the air. To do so, it is important to bear in mind these main points:

- The air space between the panels and the insulation or closure must be at least 20 mm, and all national or local legislation indications must also be observed. For example, the Technical Building Code (CTE) in Spain indicates a space of 30 mm to 100 mm.

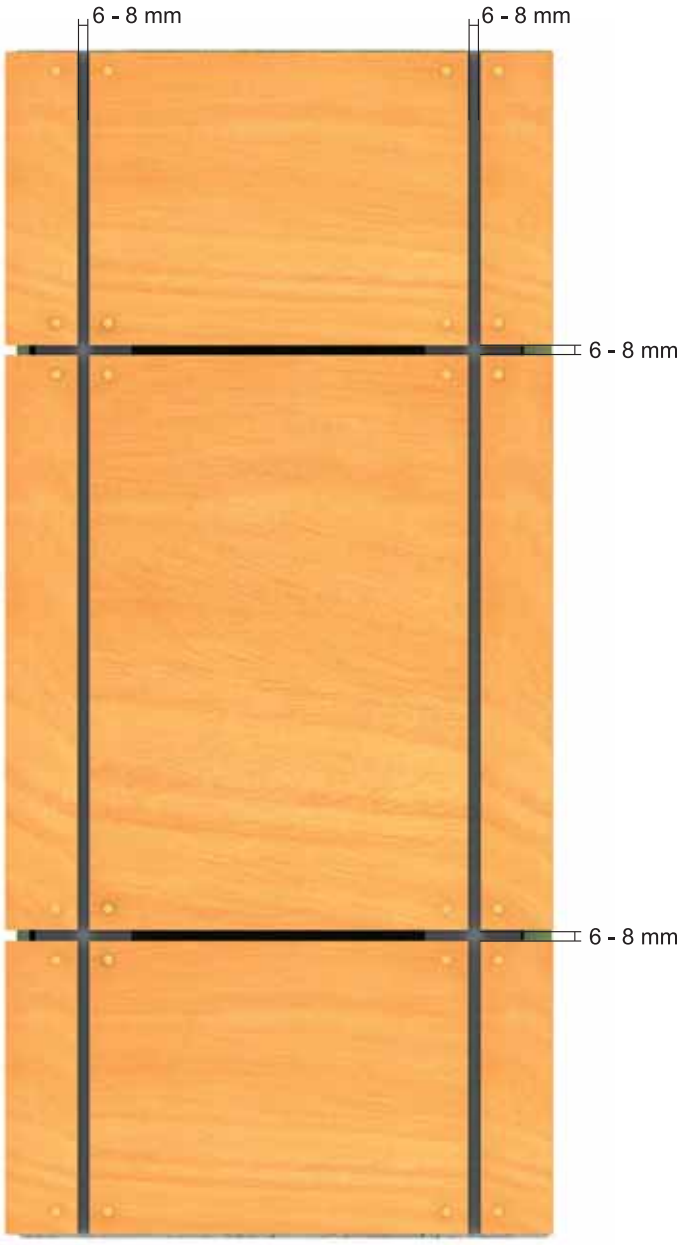


- Leave an opening of at least 20 mm in the lower and upper part of the façade, as well as in the doors and windows, so that air can circulate vertically.
- We recommend you use only vertical strips, as they do not interfere with air circulation. Should you use horizontal strips that make vertical ventilation difficult, there must be perforations in said strips to allow 20 cm^2/m of ventilation for coverings on façades with a height of up to 1 metre, and 50 cm^2/m for coverings on façades with a height of over 1 metre.

2.2. Joints and dimensional stability of the panel

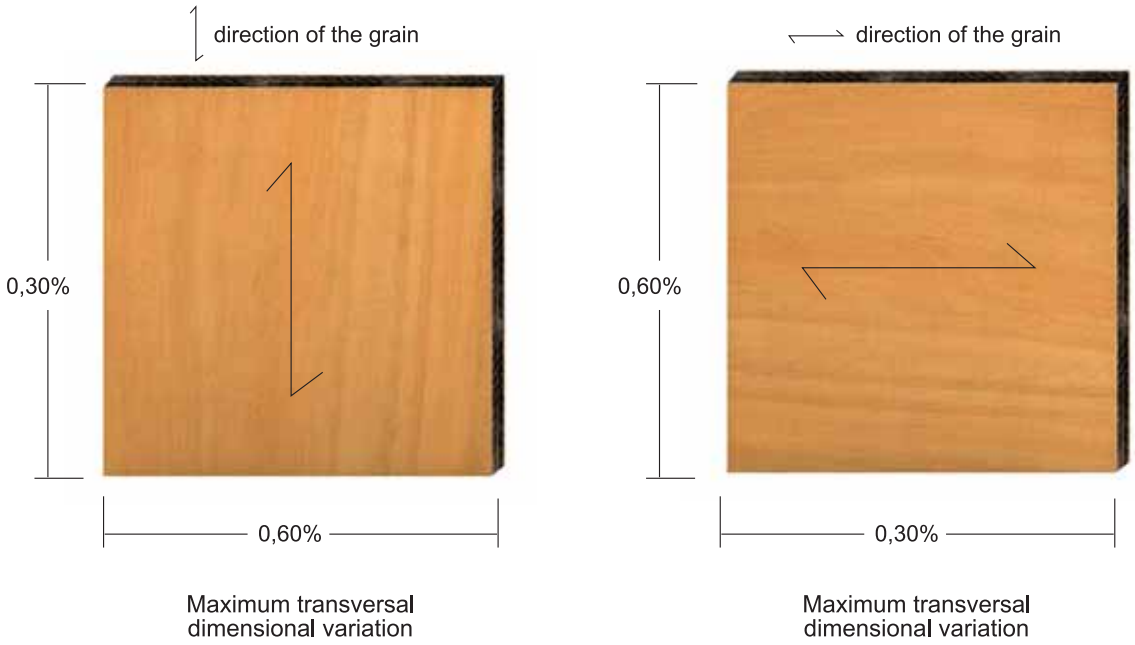
2.2.1 Expansion joints:

An expansion joint must be taken into account between the panels of 6-8 mm. The joint enables the **ProdEX** panels to have the necessary freedom of movement through the materials' expansion and compression, which is caused by movements of the material as a result of changes in temperature and moisture.



2.2.2 Dimensional stability:

ProdEX, because it is covered in natural wood, experiences small dimensional variations as a consequence of changes in environmental moisture and temperature. The maximum dimensional variation in a longitudinal direction is 0.60% and in a transversal direction to the board is 0.30%. These small dimensional variations do not affect the aesthetics or the functionality of the boards. For this reason it is essential to bear in mind the expansion joints indicated by **Prodema**.



ProdEX is a water-resistant material; resistant to vapour, water, snow and ice. However, you are advised not to immerse the edges in water permanently or for a prolonged period of time as extensive exposure over several months to high environmental moisture could lead to the appearance of areas of a darker colour on the edge of the board's surface.

2.3 Sub-structure

2.3.1 Different types of strips and auxiliary elements:

Different strip materials may be used to fix the **ProdEX** panels:

- Treated wood: pine, larch, tali, etc.
- Metal: aluminium and galvanised steel, or occasionally stainless steel or zinc-coated steel.

The choice of metal strip depends on the area on which the panels are to be applied and on the required characteristics.

- Aluminium: for wet or moist areas, sea environments and corrosive atmospheres. In highly corrosive environments, an anodised layer is usually applied to increase resistance.
- Galvanised steel: For wet or moist areas, non-corrosive atmospheres and non-sea environments. This material has better mechanical properties than aluminium.

The most common stripping methods for **ProdEX** façades are the following:

- Wood: square or rectangular profile.
- Aluminium: wide variety of forms (see chapter 4 – Accessories).
- Galvanised steel: “U”, “Z”, “L”, omega and tube profiles (see chapter 4 – Accessories).

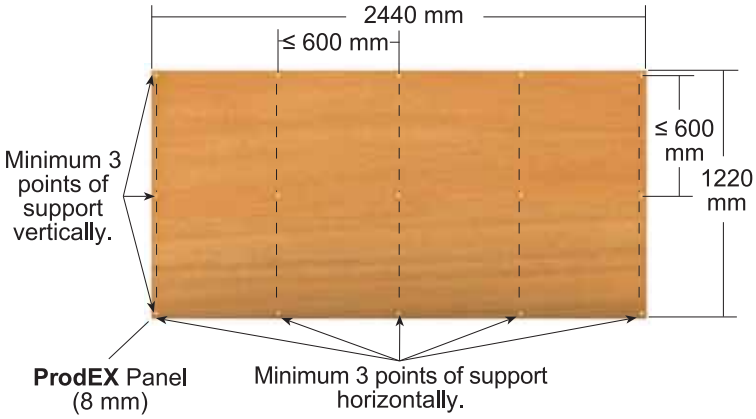
To get around the irregularities due to plumbing curvatures, adjustable auxiliary elements (angles, wedges, etc.) are used.

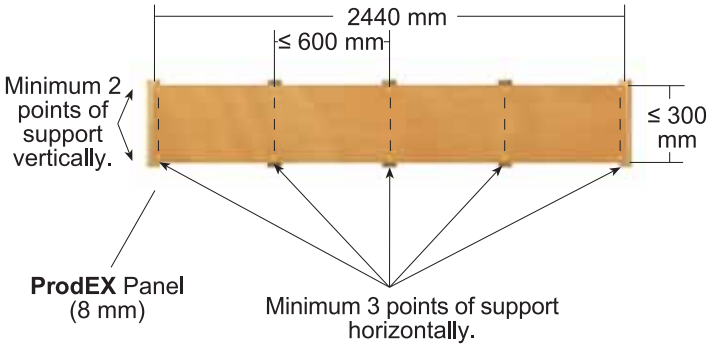
2.3.2 Distances between vertical posts:

Prodema recommends that each panel is supported all along its surface by strips or vertical posts for all mounting systems.

The panels may also be supported on a minimum of three points, both vertically and horizontally, providing the distances indicated on this page.

The distance between the axes of vertical posts depends on the thickness of the panel and the type of fixing system:





As an exception, for pieces between 150 mm. and 300 mm., two points of support in the same direction are sufficient.

- **Table for exposed fixing with screw or rivet:**
- **Table for concealed fixing with hanging profiles:**

THICKNESS (mm)	DISTANCE BETWEEN POSTS (mm)
3*	≤ 300
6*	≤ 400
8,10	≤ 600
12	≤ 800
14,16,18,20,22	≤ 1000

*only for special applications.
Contact **Prodema**.

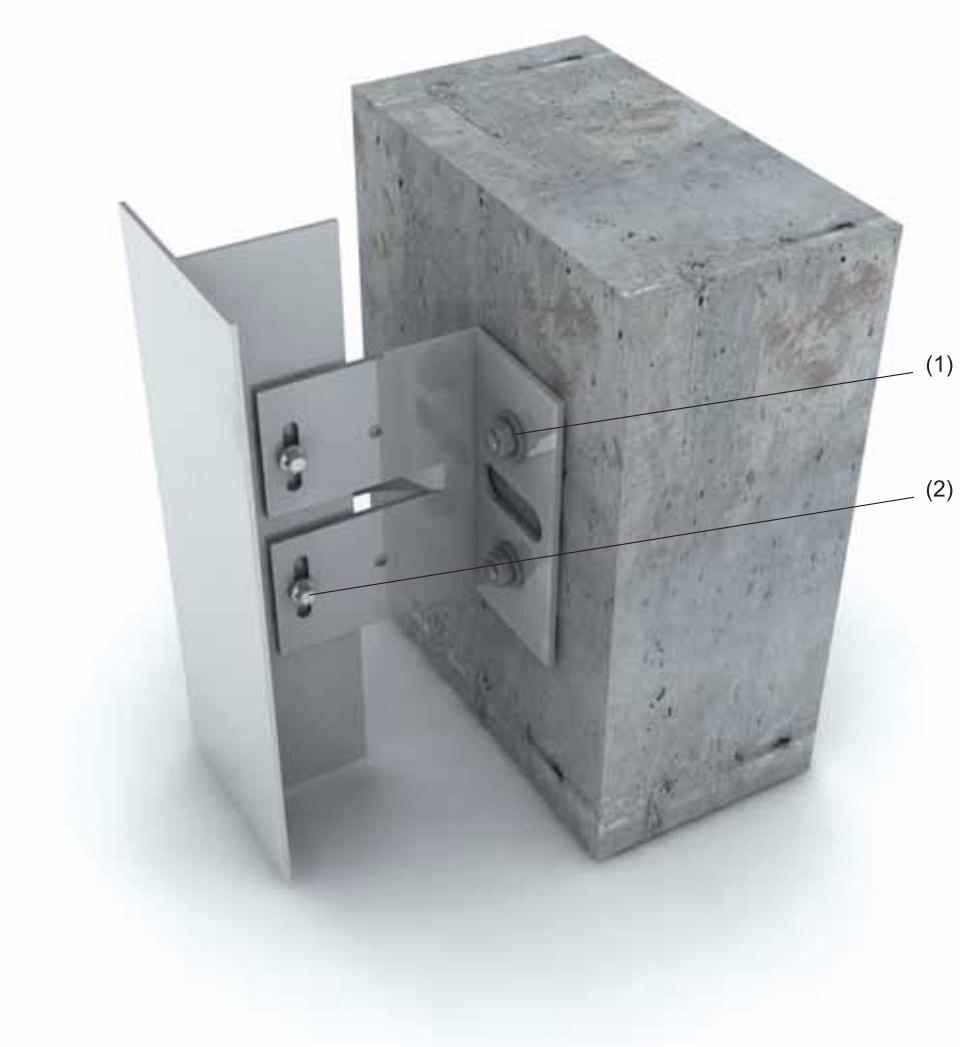
For concealed fixing with gluing system, the distances must be reduced according to the following table.

- **Table for concealed fixing with gluing system:**

THICKNESS (mm)	DISTANCE BETWEEN POSTS (mm)
8-12	≤ 400
14-22	≤ 600

2.3.3 Anchoring to the façade:

The strips must be fixed to the façade using suitable fixing elements according to the façade material and the strip material.



1) The supports are fixed to the façade with screws and their corresponding rawl plugs (made of steel or nylon).

2) The strip is fixed to the supports using stainless steel or bichromated self-drilling screws.

For further information on accessories, see chapter 4.

2.4. Types of fixing

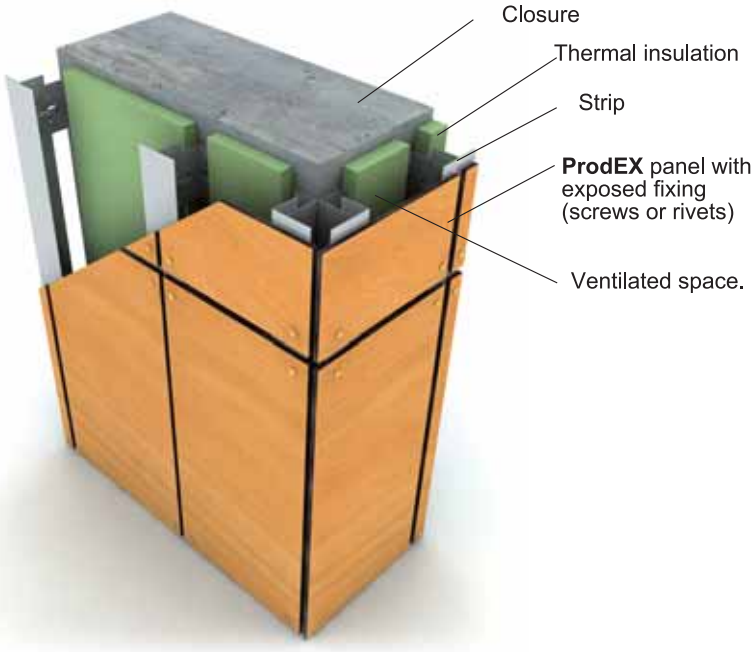
Prodema S.A. has two types of fixing method for façades:

1.) Exposed fixing with screws or rivets

2.) Concealed fixing. The concealed fixing may be:
2a.) with hanging profiles
2b.) glued

2.4.1 Exposed fixing:

A typical characteristic of this type of installation is the fixing of **ProdEX** panels using exposed rivets or screws. These screws and rivets* are made of metal and you can order them to be lacquered in the same colour as the panel.



• Distances between screws or rivets* on one single panel

The distance between the screws or rivets* both horizontally and vertically on a single line depends on the thickness of the panel.

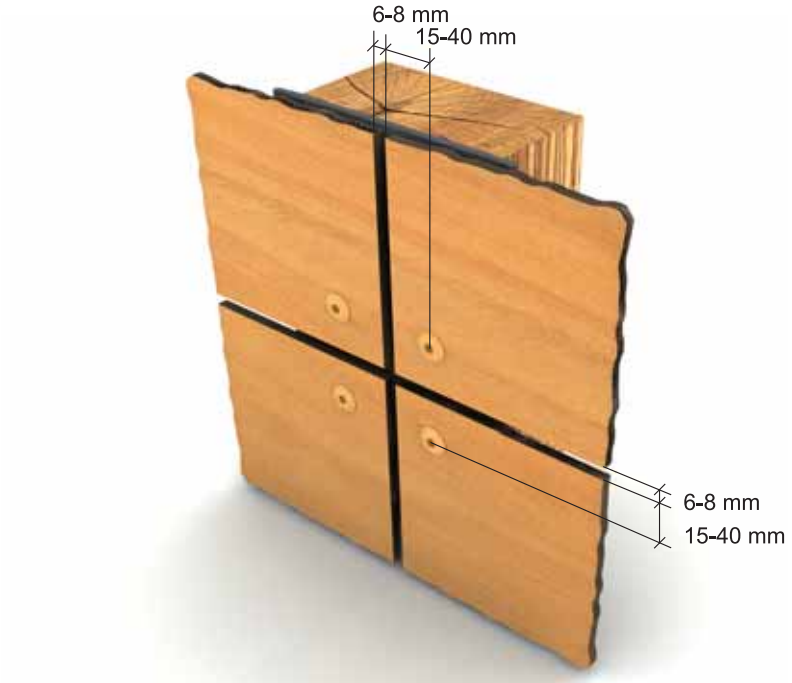
THICKNESS (mm)	DISTANCE BETWEEN POSTS (mm)
3 *	≤ 300
6 *	≤ 400
8,10	≤ 600
12	≤ 800
14, 16, 18, 20, 22	≤ 1000

* Only for special applications.
Contact **Prodema**.

See chapter 3.3.2. for hole diameter.
Never use countersunk screws to fix **ProdEX**.

*The rivets are only used with metal sub-structures, not with wooden sub-structures.

• **Distances between screws and rivets* and the corner of the panel**



The screws and rivets* on the corners of the panel must be between 15 and 40 mm from the edge of the panel.

• **Recommendation of screws or rivets* for fixing panels**

- For wooden strips:

Screw: SFS-TW-S-D12 - (4.8 x 38) (lacquered or unlacquered)
For further information, see chapter 4.3.2.

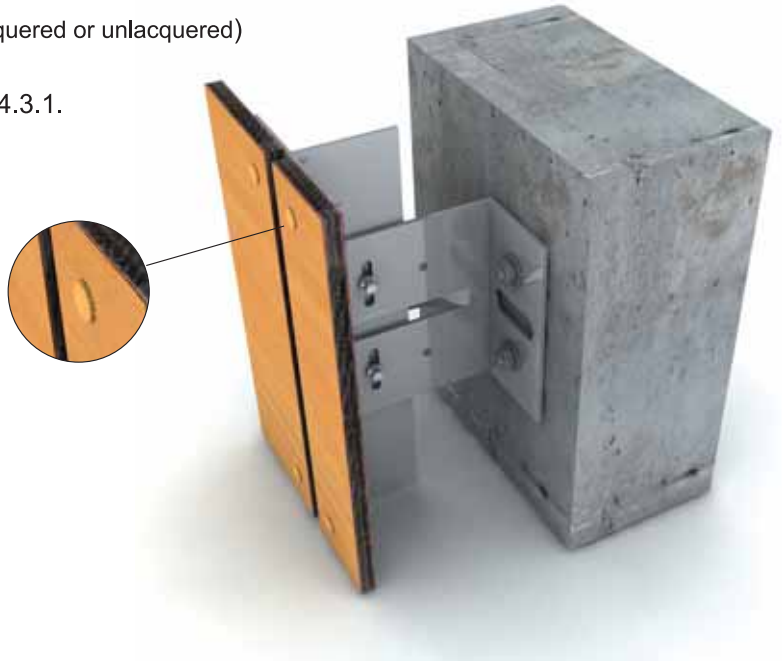
*The rivets are only used with metal sub-structures, not with wooden sub-structures.

- For metal strips:

· With screw:

Screw: SFS-SX3-L12 (5.5 x 28) (lacquered or unlacquered)

For further information, see chapter 4.3.1.



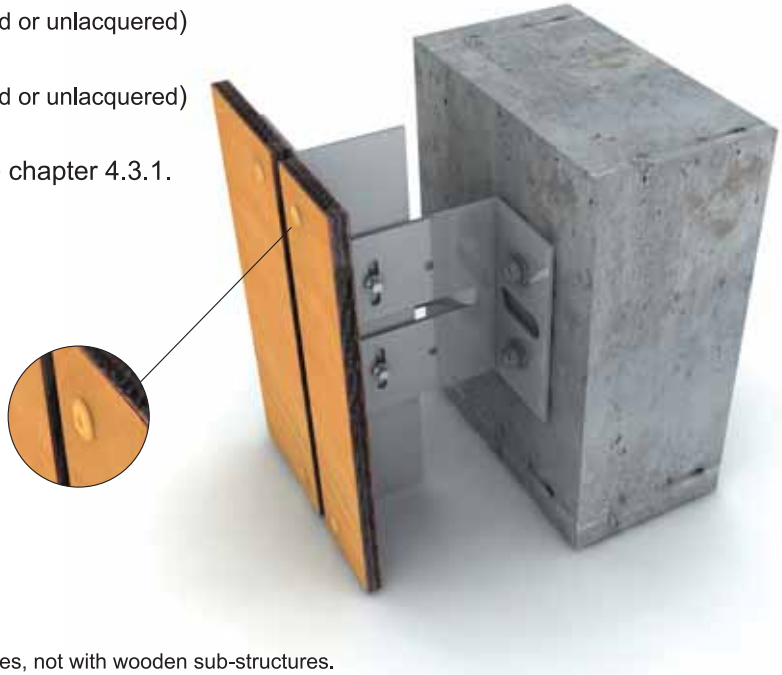
· With rivet*:

Rivets*: SFS-AP16-50160 (lacquered or unlacquered)

SFS-AP16-50180 (lacquered or unlacquered)

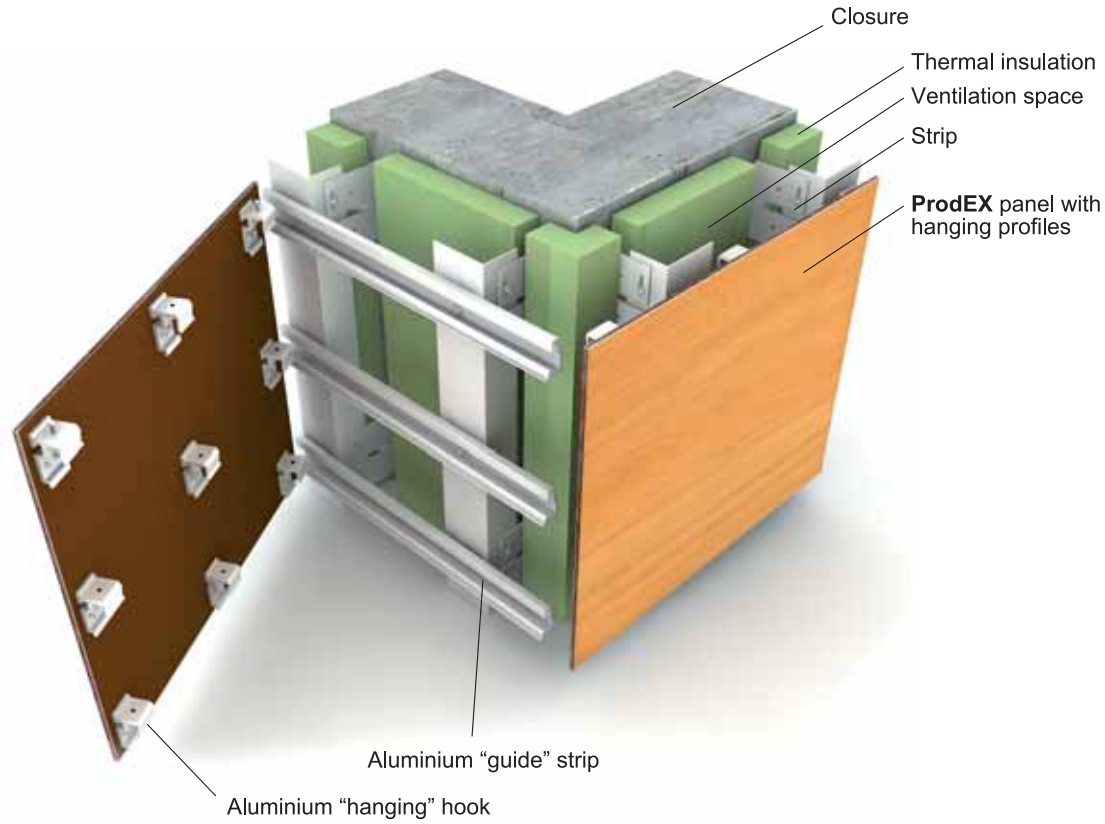
SFS-AP16-50210 (lacquered or unlacquered)

For further information on rivets, see chapter 4.3.1.



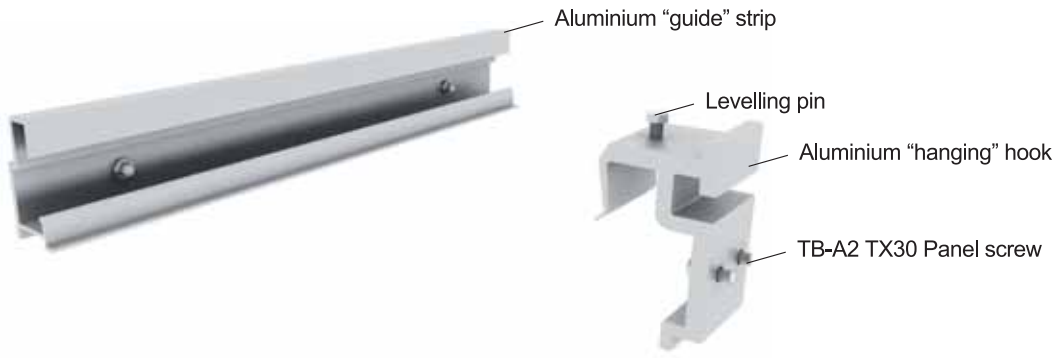
*The rivets are only used with metal sub-structures, not with wooden sub-structures.

2.4.2 Concealed fixing with hanging profiles:



Concealed fixing with hanging profiles enables the **ProdEX** panels to be installed using screws that cannot be seen from the outside. This fixing system is only possible when using panels with a thickness ≥ 10 mm.

This system comprises aluminium profiles (guide profile) and hanging hooks.



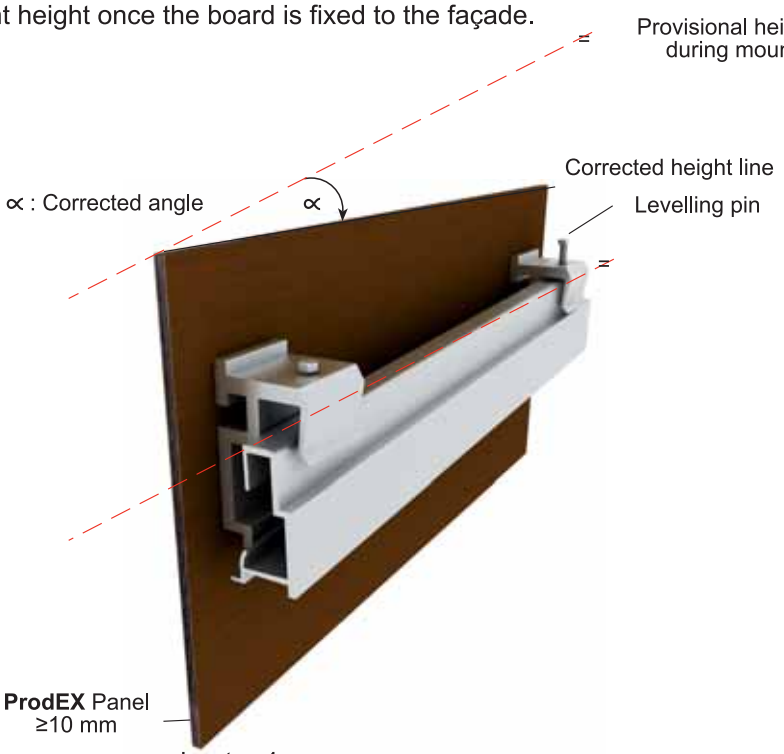
For further information on accessories, see chapter 4.

The guide profiles are horizontal posts that are placed on top of the primary aluminium sub-structure. To fix the guide profile to the sub-structure, self-threading screws are used.

The hanging hooks are aluminium pieces that are fixed to the back of the boards with TB-A2 TX 30 Panel Screws.

Given that **ProdEX** material is a very hard material, you will have to make a blind perforation on the board beforehand so as to be able to screw in this screw. The hole must have a diameter of 5 – 5.1 mm. and it must be 1.5 mm deeper than the screw once it has been adjusted. The distances between these screws must be measured exactly and they must be at a certain height from the edge of the board.

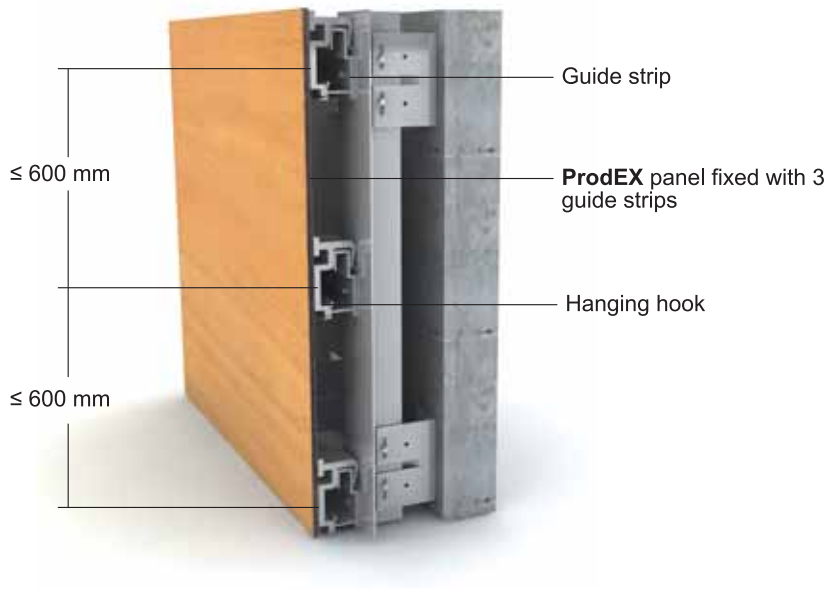
The main difficulty in the installation of panels with hanging profiles lies in the alignment of the board at the right height. The hanging hooks allow a regulating screw to be added, which allows the panel to be easily levelled at the right height once the board is fixed to the façade.



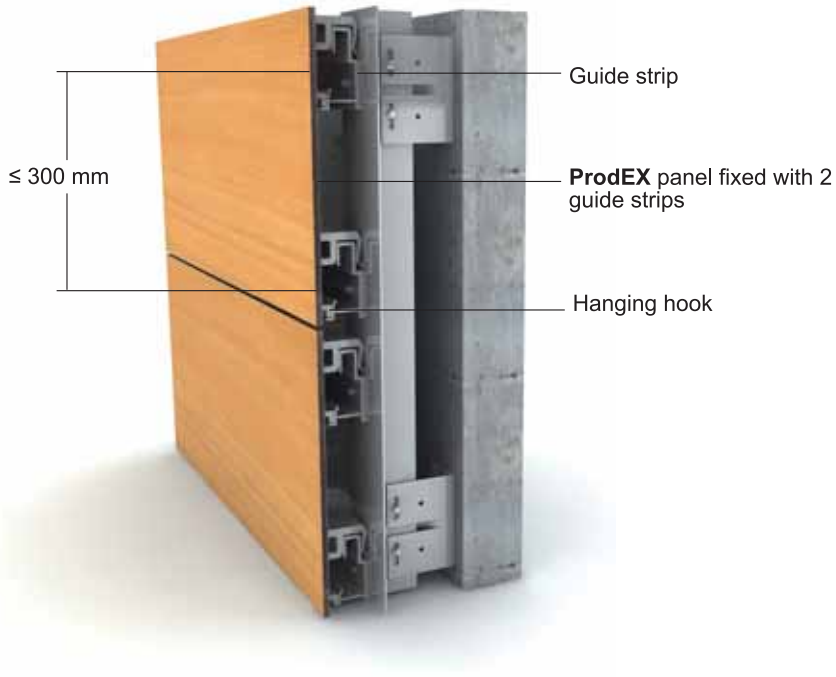
For further information on screws, see chapter 4.

• Mounting horizontal guides:

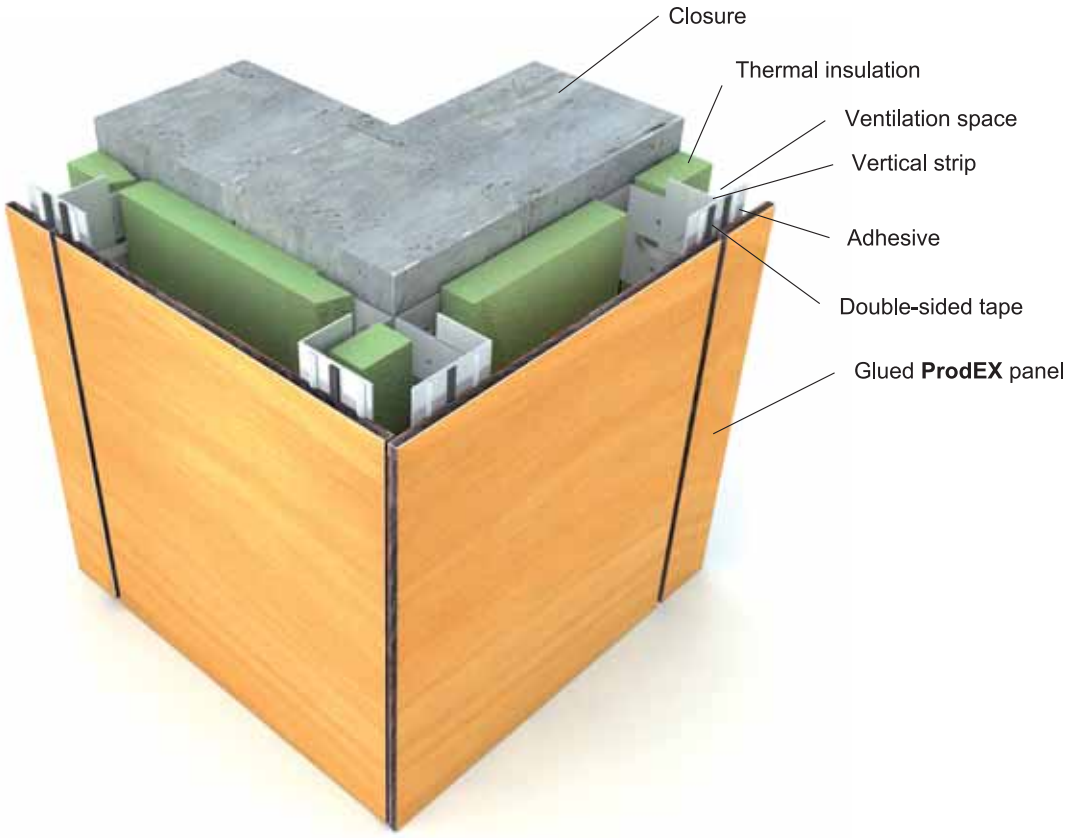
The aluminium 'guide' strips are placed horizontally onto the aluminium sub-structure at a distance from the axis ≤ 600 mm, providing that there are at least three aluminium 'guide' strips per panel.



As an exception, for pieces between 150 mm and 400 mm, two guide strips are sufficient. The distance between the axes of the strips must always be ≤ 300 mm.



2.4.3 Concealed fixing with gluing system:

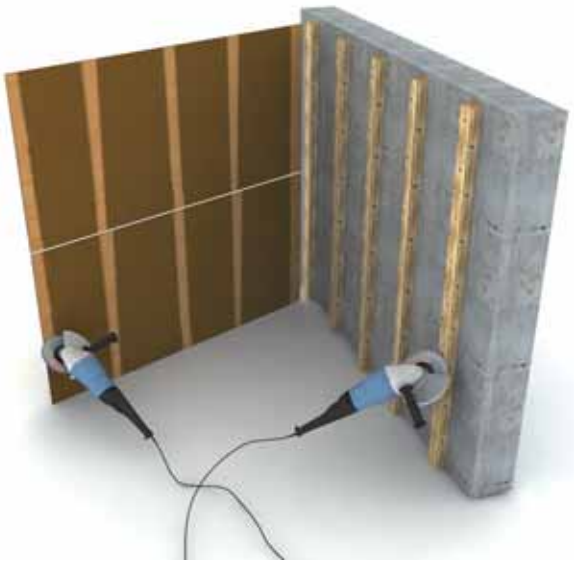


The minimum thickness to use in the gluing system is 8 mm.

Fixing using the gluing system is a delicate process which requires an appropriate procedure to be strictly followed, always respecting the gluing manufacturer's explicit instructions.

· Indications for the gluing procedure:

1.) Carefully sand down the **ProdEX** panel in the area to be glued, before the gluing application itself. This operation should be carried out using coarse grit sandpaper. The panel should only be sanded down in the area where the adhesive is to be applied, coinciding with the position of the strips. The sanding should reach the layer of wood, without damaging it.



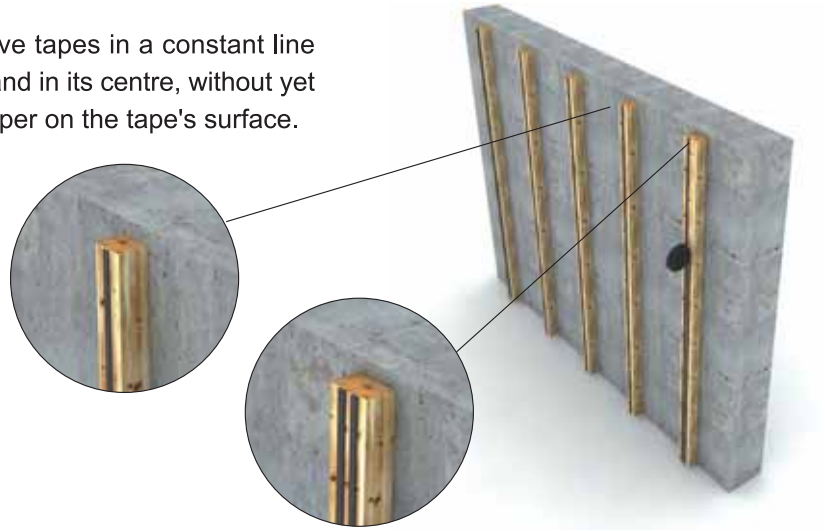
2.) Clean the sanded areas of the panel with a brush, air or a special liquid from the same manufacturer as the adhesive.

3.) Also sand the strip on the surface that supports the panel. Wooden and aluminium strips must be sanded and you must ensure that the strip is thoroughly dust-free and that the gluing surface is completely dry. Steel strips should not be sanded, so as not to damage their rust protection layer and any grease on them should be cleaned off with a liquid.

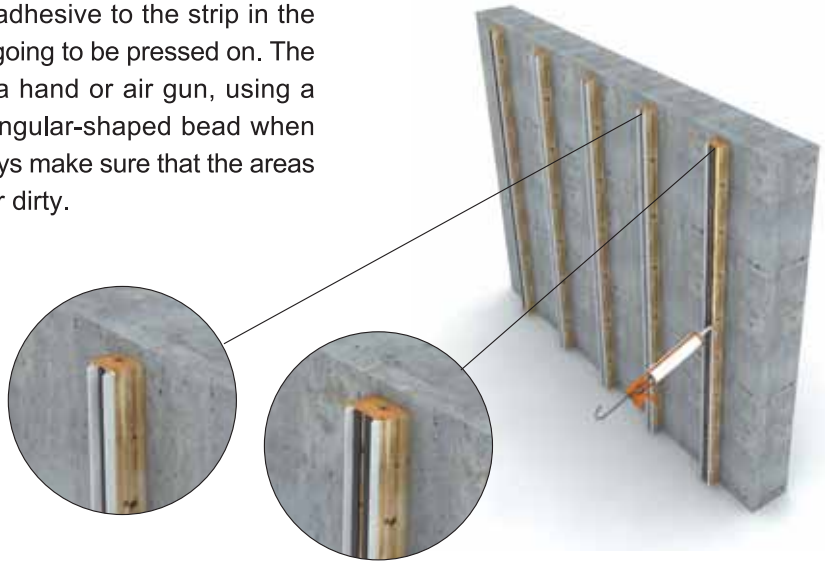
4.) Shake the primer well before use and apply it to the sanded, clean and dry areas on the panels and strips, taking care not to prime any further than the area to be glued in the following 6 hours. You should use a specific primer for each material (wooden strip, metal strip, panel, etc.) indicated by the adhesive manufacturer.

5.) Follow the instructions regarding the primer's minimum and maximum drying times according to the printed material. After drying, proceed with the gluing procedure.

6.) Stick two double-side adhesive tapes in a constant line parallel to the length of the strip and in its centre, without yet removing the protective cover paper on the tape's surface.



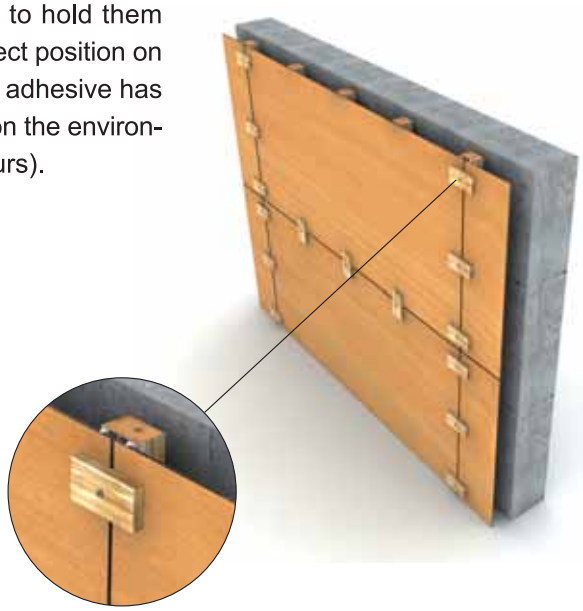
7.) Apply the bead of one-pack adhesive to the strip in the area where the **ProdEX** panel is going to be pressed on. The adhesive must be applied with a hand or air gun, using a special nozzle that leaves a triangular-shaped bead when seen as a section. You must always make sure that the areas of adhesion are neither damp nor dirty.



8.) Remove the adhesive tape’s protective cover paper.

9.) After the first 10 minutes of applying the adhesive, carefully put the panels in place, taking care not to press too hard as this could cause the adhesive bead to spread too much and the façade would be left uneven. With the help of the double-sided adhesive tape, the panels will be held tight on their three dimensions in the required place on the strip.

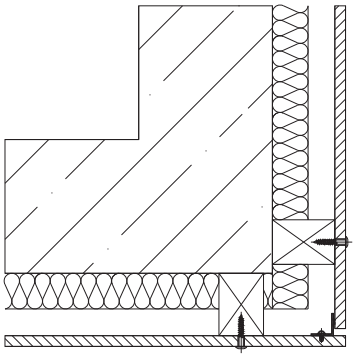
10.) We recommend you fix the boards with the help of several ties (fastened to the strips with screws), just to hold them together, not to force the boards into an incorrect position on the strip. These ties can be removed once the adhesive has polymerised, and this time period will depend on the environmental moisture level (between 17 and 24 hours).



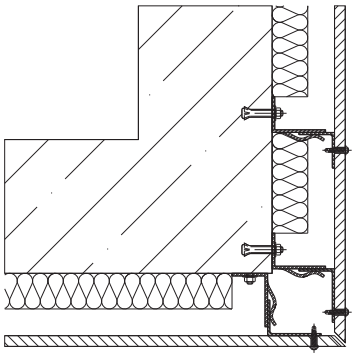
This gluing process by **Prodema** is a brief and general indication that by no means replaces the gluing manufacturer's full instructions, which explain each case in particular.

2.5. Solutions to corners

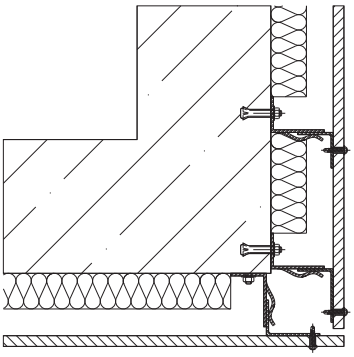
ProdEX can be machined on site in order to create all types of rivets that are usually used with wood, which means that they can be quickly and easily assembled onto any type of surface.



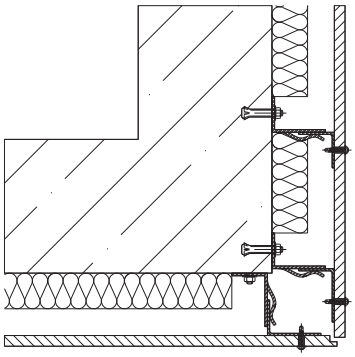
angle



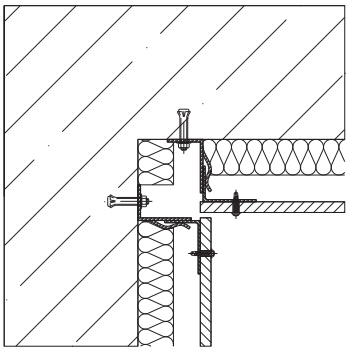
mitre



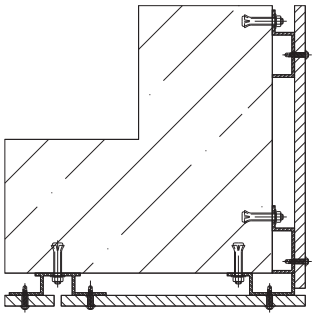
overlaped



revealed

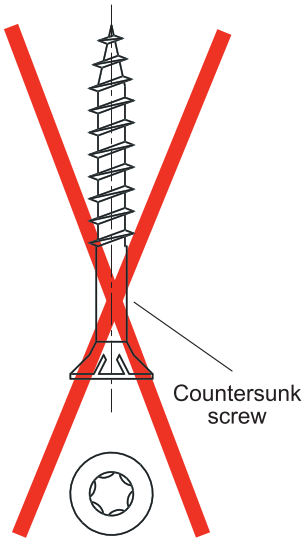


interior



overlaped (battens os USA)

Prodema does not recommend using tongue-and-groove panel systems for exterior façades. This system is fixed with countersunk screws that do not allow the panels to move, and besides, they are only screwed down on the groove perimeter and not on the tongue perimeter, which is insufficient for the **ProdEX** panels to function correctly according to our recommendations.



2.6. Unusual façades

ProdEX material also makes it possible to create unusual façades, such as:

• Façades with unique modules

Clínica Pombaldial
Filipe Sousa
(Portugal)

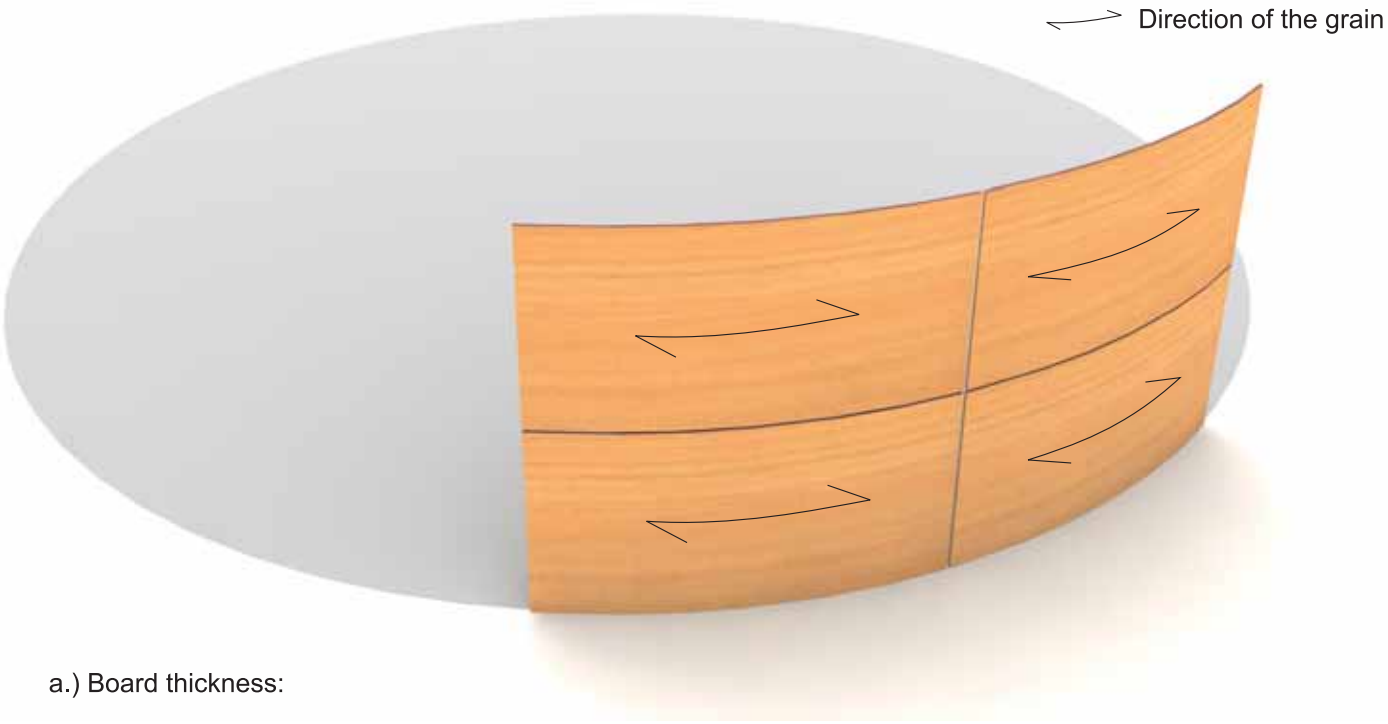
• Curved façades

ProdEX material is sufficiently flexible to enable it to adjust to a curved sub-structure and be installed in the required position. In order for the material to adjust perfectly to the curvature, and to ensure that the board's tension is irrelevant for the façade once it has been finished, we would recommend a few factors that should be taken into account during the mounting stage:

Stockton arena
360 Architecture
(USA)

The panels for curved façades shall only be fixed using the exposed fixing system with screws or rivets.

The panels shall only be curved along the direction of the grain (see image).



a.) Board thickness:

The thickness of the board will be selected according to the attached table.

CURVATURE REQUIRED IN THE PROJECT	THICKNESS OF PRODEX PANELS TO BE USED	DISTANCE BETWEEN STRIPS
< 1,00 m	We recommend you use polygonal structures and do not curve the material	--
1,00 m – 5,00 m	3 mm*	≤ 150 mm
5,00 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

*only for special applications. Contact Prodema.

b.) Material fixing distances between vertical posts:

It is very important to bear in mind that ProdEX boards fixed in curved areas must be fastened and supported on many more strips than the sub-structure recommended for straight façades (see table on this page).

3. Care and handling of the product

3.1. Transport

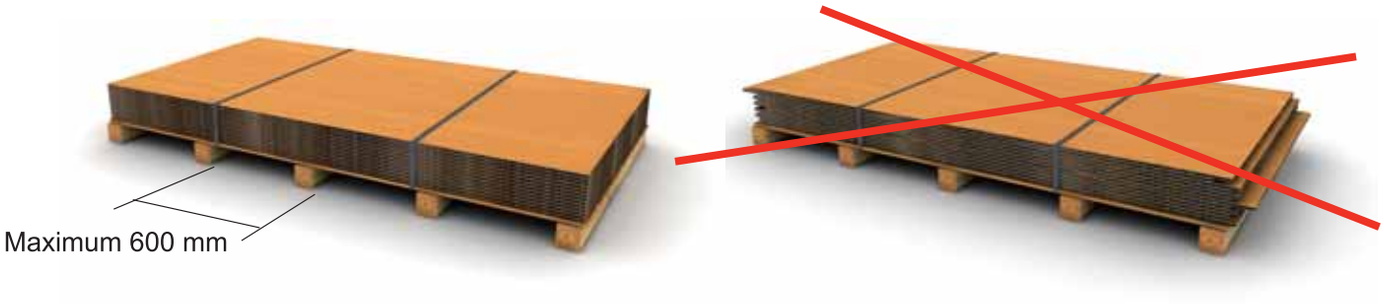
To transport the ProdEX by Prodema boards for covering façades, you must use stable, flat pallets that have at least the same dimensions as the board.

To prevent any possible damage to the decorative layer due to rubbing, you must ensure that the boards do not rub against each other.

3.2. Storage

During storage, the boards must be protected from damp, heat, dirt and any possible damage, and at all times you should prevent the boards from becoming distorted, as the damage caused is irreversible.

The panels must be stored in a closed, ventilated place, at an approximate environmental temperature of 10–25ºC and an approximate level of air moisture of between 30 and 70%. After placement and storage, the (metallic) bands from the transport packaging must be cut and removed. In horizontal storage, the boards must be kept flat and supported along their entire surface area. This is the most recommended storage method.



The panels may not be stored vertically; they shall only be supported vertically as a temporary measure and for a short period of time that should always be less than 8 hours.

The floor that supports the pallet must be free of any materials that could damage them.

Prodema will send the boards on a pallet. A protection layer or sheet shall be placed between the pallet and the bottom board, and the boards must be protected with a PVC film.

The storage time should never exceed five months as from the date of issue indicated on the delivery note.

3.3. Machining

3.3.1 Cutting recommendations:

Before preparing a board for modules, verify its perpendicularity, dimensions and straightness.

The exterior panels must be cut using well-sharpened, hard tools (tungsten carbide/Widia), and at all times you should prevent said tools from heating.

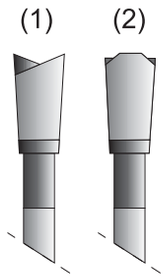
• Types of blade:

- Wood-cutting saw blades.

- Hard material (Widia tip).

Approximate parameters for saw blades, according to the type of tool:

Diameter (mm)	Teeth (z)	Speed (rpm)	Blade thickness (mm)	Types of teeth
300	48	4000-6000	3,2	slanted alternating teeth (1) and trapezoidal flat teeth (2).
250	40/48	4000-6000	3,2	
190	30	3000-3500	2,2	



• Placing the board:

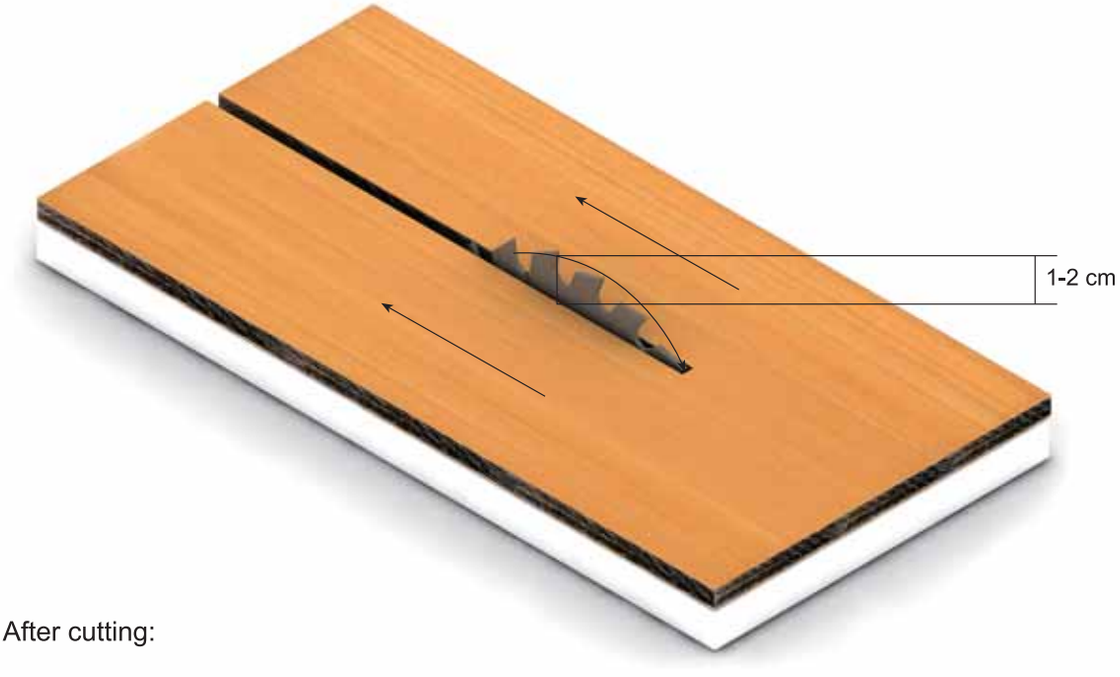
The cutting blade must always enter from the board's good side.

- Table-mounted saw: the visible side of the board must be facing upwards.

- Hand-held saw: the visible side of the board must be facing downwards.

Height of the cutting blade:

In order to achieve a clean cut on the exposed side, we recommend the cutting blade stands out approximately 1-2 cm from the material to be sawn.



After cutting:

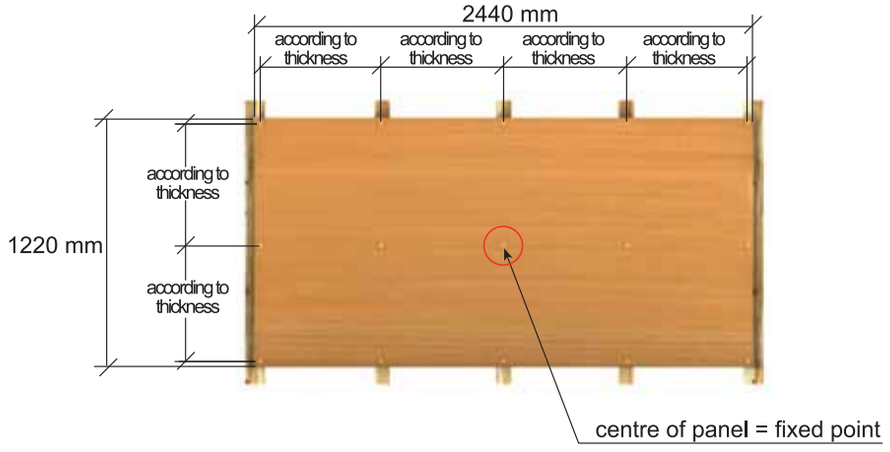
After machining (sawing, drilling, milling, bevelling, sanding, and maybe polishing) there is no need for the obtained surfaces to undergo any finishing or protection treatment. Sharp edges may be smoothed down with sandpaper.

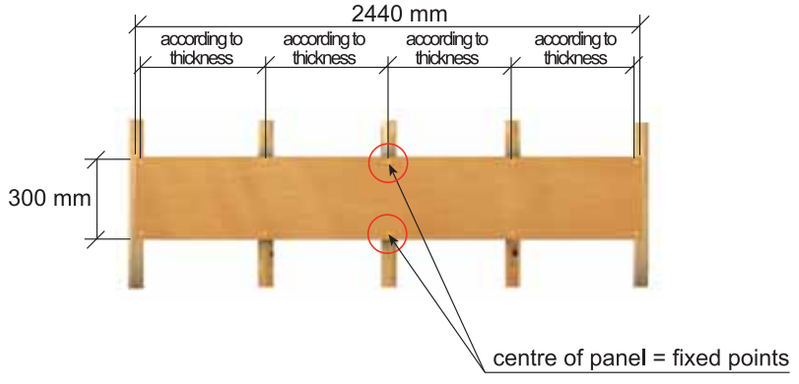
3.3.2 Drilling recommendations:

ProdEX panels are drilled using whole hard metal bits or steel bits with tungsten carbide tips (Widia) with an angle over 100º. Support sheets must be placed under the board to achieve a clean hole.

• Clearance of holes for screws

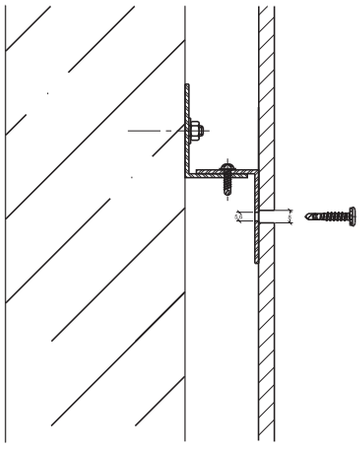
All the holes for the exposed fixing board's holding screws must be 1-2 mm greater than the diameter of the screw used, except the hole at the board's geometric centre, which may be the same size as the screw. The screws' clearance enables the board to expand and contract freely, without the screw being forced at any time in a perpendicular direction to its axis.

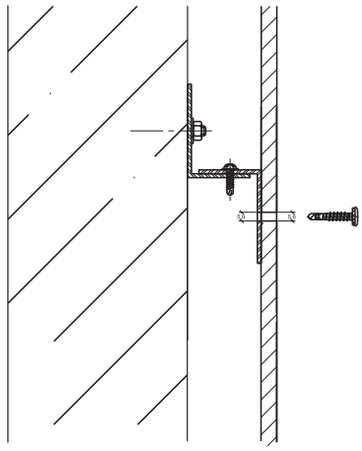




The rest of the points are floating points.

Metal sub-structure with SFS-SX3-L12-5.5x28mm screw

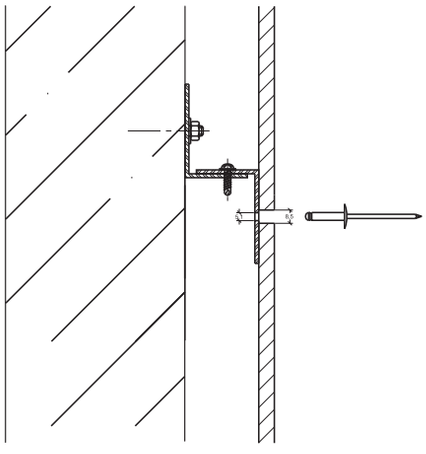


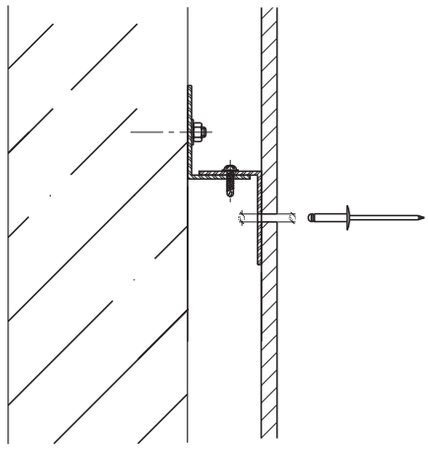


- Floating points
  Pre-drilling of board with 8 mm
  Pre-drilling of profile with 5.6 mm

- Fixed points
  Pre-drilling of board with 5.6 mm
  Pre-drilling of profile with 5.6 mm

Metal sub-structure with SFS-AP-16-I-S rivet

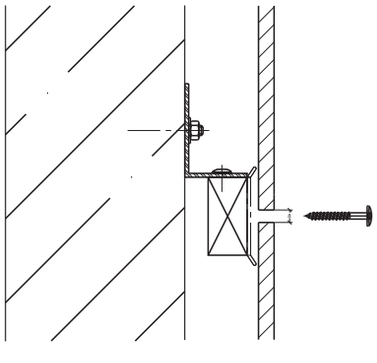


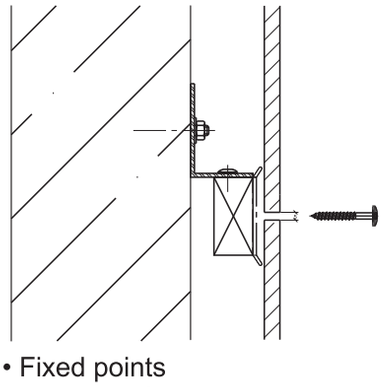


- Floating points
  Pre-drilling of board with 8.5 mm
  Pre-drilling of profile with 5.6 mm

- Fixed points
  Pre-drilling of board with 5.1 mm
  Pre-drilling of profile with 5.1 mm

Wooden sub-structure with SFS-TW-S-D12-4.8x38mm screws





- Floating points
  Pre-drilling of board with 8 mm

- Fixed points
  Pre-drilling of board with 5 mm

3.4. Remove surface protection film

ProdEX boards come protected by a special film on the exposed side. This protection film is applied in the factory and must be removed from the board's surface once the product has been mounted. Never attempt to remove the film from the back of the board, as this is not a protection film and is necessary for the board's stability.

The panel must not be left installed or exposed to the elements with the exterior protection film still in place for more than 2-3 hours, to prevent the film from becoming too firmly stuck to the panel which would mean it would need to be subsequently removed with special products, and to prevent the board from warping.

3.5. Maintenance and cleaning

The ProdEX surface is a dirt repellent, but despite that, over time it may be necessary to clean the surface to bring back the boards' initial beauty and appearance.

Cleaning the ProdEX boards is the only maintenance process necessary. The formula patented by Prodema that covers the ProdEX boards' surface means it needs no other preventive wood treatment.

- The following general indications for periodic cleaning are recommended:

  • Always use NON-ABRASIVE household detergents diluted in water.

  • Never use abrasive cleaning powder or cream that could scratch the surface.

  • Always rinse with plenty of clean water to prevent the appearance of marks.

  • Use a soft, clean cloth or sponge that will not damage the surface. Do not use steel wool pads that can scratch the surface.

  • Removing stains from the product:

Most stains can be easily removed with water and household detergents. However, when necessary, a universal solvent may be used but the surface should be gently rubbed with water and a NON-ABRASIVE household detergent immediately afterwards, and then rinsed with clean water. Do not use abrasive products or cleaning products with heavily alkaline and/or acid components. You are advised not to use nitrocellulose-based thinners as they may cause stripes to appear on the boards.

We recommend you always carry out a cleaning test on a small area of the material to verify that the procedure is effective, and only then should you go on to clean the rest of the surface in the same way.

- Some of the most common stains that may be produced on site can be cleaned in the following way:

• Cement stains: If the cement is still fresh, it can be easily removed with water. However, if the cement has started to set, you must wait for it to completely dry before removing it with a cloth. It is important NOT TO SCRATCH the surface, as this will damage the panel; dry stains come off easily without scrubbing. Rinse with plenty of water.

• Remains of glue or adhesive: These can be removed with a multi-use solvent or alcohol. In any case, you should always follow this process by cleaning with soap and water.

• Paint and primer: Check with the manufacturer. Always clean with soap and water at the end.

• Oil stains: Use warm water and a non-abrasive household detergent; there is no need for solvents.

• Scratches and dents: There is no repair method for scratched or dented panels.

Important Note: Always follow the appropriate health and safety rules when using solvents and chemical cleaning products.

• Cleaning graffiti:

ProdEX panels undergo a process that makes them resistant to graffiti. Nevertheless, specific products may be required to clean this type of paintwork. We recommend that you clean with soap and water after this process and rinse with plenty of clean water to remove any traces of the product. Panels with stubborn stains caused by remnants of glue, paint, lipstick, etc., can be cleaned with an organic solvent.

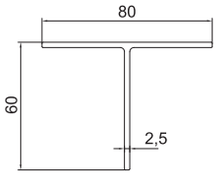
3.6. Repairing a damaged panel

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

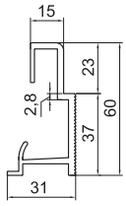
4. Accessories

4.1. Strips

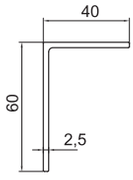
4.1.1 Aluminium:



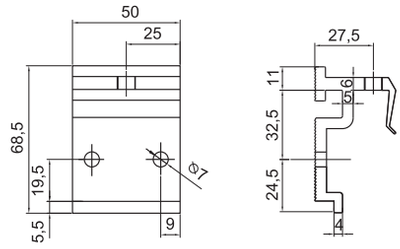
Ref: Aluminium “T” strip
Material: Aluminium
Length: 3000 mm bar



Ref: Aluminium “guide” strip
Material: Aluminium
Length: 3000 mm bar

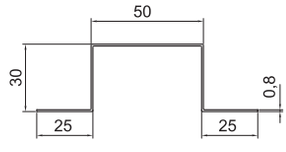


Ref: Aluminium “L” strip
Material: Aluminium
Length: 3000 mm bar

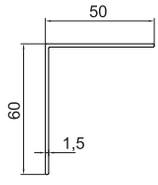


Ref: Aluminium “hanging hooks”
Material: Aluminium
Length: 50 mm piece

4.1.2 Steel:

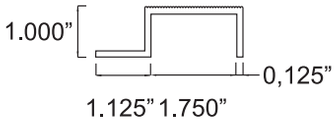


Ref: Steel “Omega” strip
Material: Steel
Length: 2500 mm bar

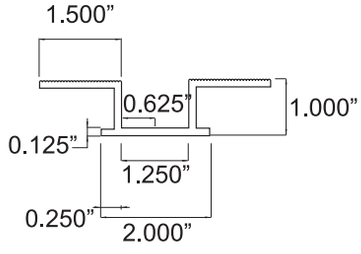


Ref: Steel “Omega” strip
Material: Steel
Length: 2500mm bar

4.1.3 From USA:



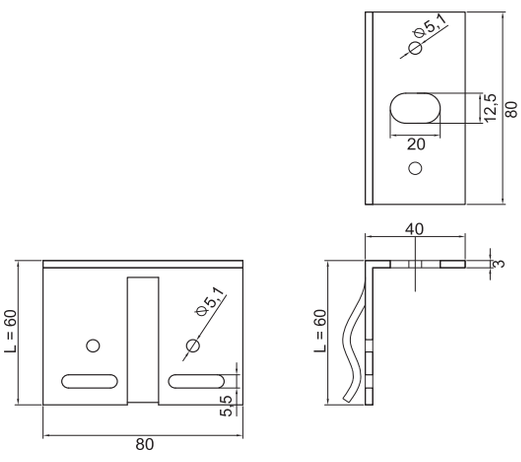
Ref: Aluminium “Modified Z-Channel”
Material: Aluminium or anodised in black
Length: 146” bar



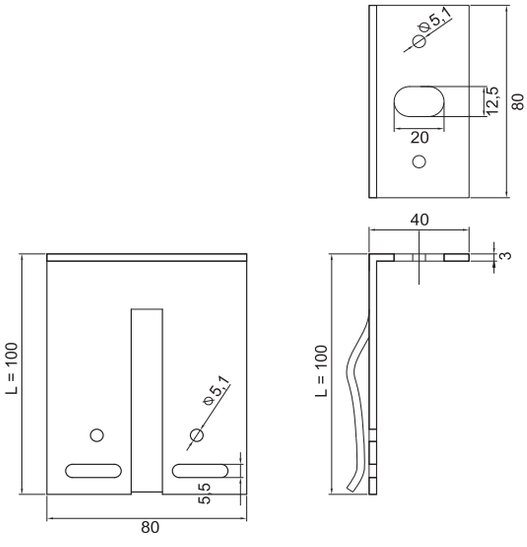
Ref: Aluminium “Inverted Hat-Channel”
Material: Aluminium or anodised in black
Length: 146” bar

4.2. Elements for fixing to the closure

4.2.1 Aluminium:

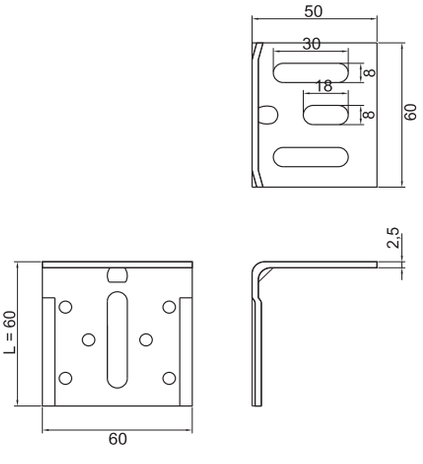


Ref: Aluminium L60 angle
Material: Aluminium

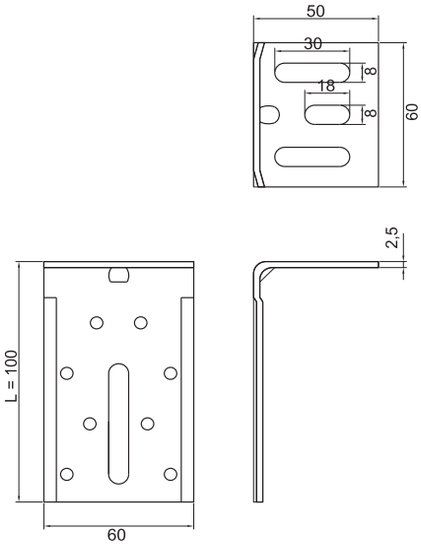


Ref: Aluminium L100 angle
Material: Aluminium

4.2.2 Steel:



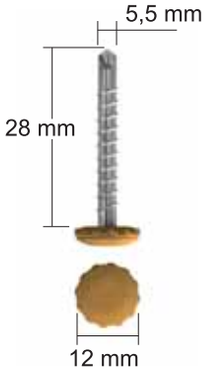
Ref: Steel L60 angle
Material: Steel



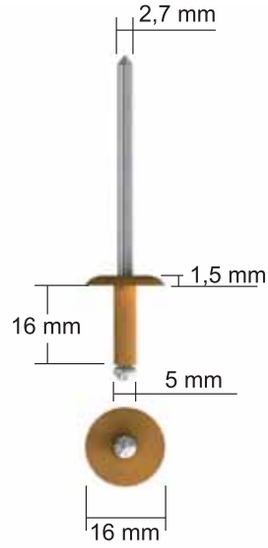
Ref: Steel L100 angle
Material: Steel

4.3. Screws and rivets

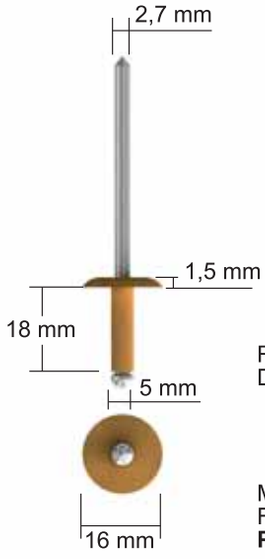
4.3.1 Fixing the board to the metal strip:



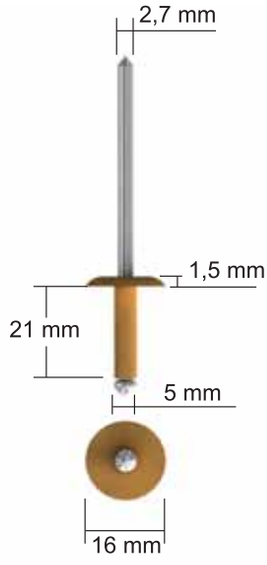
Ref: SFS-SX3-L12 self-threading screw
Dimensions: ø head: 12 mm
ø screw (d1): 5.5 mm
L: 28 mm
Material: Stainless steel
Finishes: Steel or lacquered in a choice of **ProdEX** colours



Ref: SFS-AP-16-50160-S Rivet
Dimensions: ø head (d2): 16 mm
ø rivet (d1): 5 mm
head thickness: 1.5 mm
"shaft" thickness: 2.7 mm
L: 16 mm
Material: Stainless steel
Finishes: Steel or lacquered in a choice of **ProdEX** colours

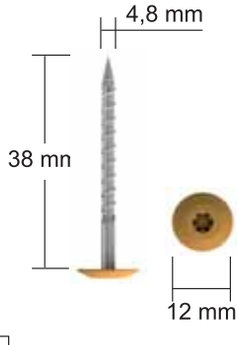


Ref: SFS-AP-16-50180-S Rivet
Dimensions: ø head (d2): 16 mm
ø rivet (d1): 5 mm
head thickness: 1.5 mm
"shaft" thickness: 2.7 mm
L: 18 mm
Material: Stainless steel
Finishes: Steel or lacquered in a choice of **ProdEX** colours



Ref: SFS-AP-16-50210-S Rivet
Dimensions: ø head (d2): 16 mm
ø rivet (d1): 5 mm
head thickness: 1.5 mm
"shaft" thickness: 2.7 mm
L: 21 mm
Material: Stainless steel
Finishes: Steel or lacquered in a choice of **ProdEX** colours

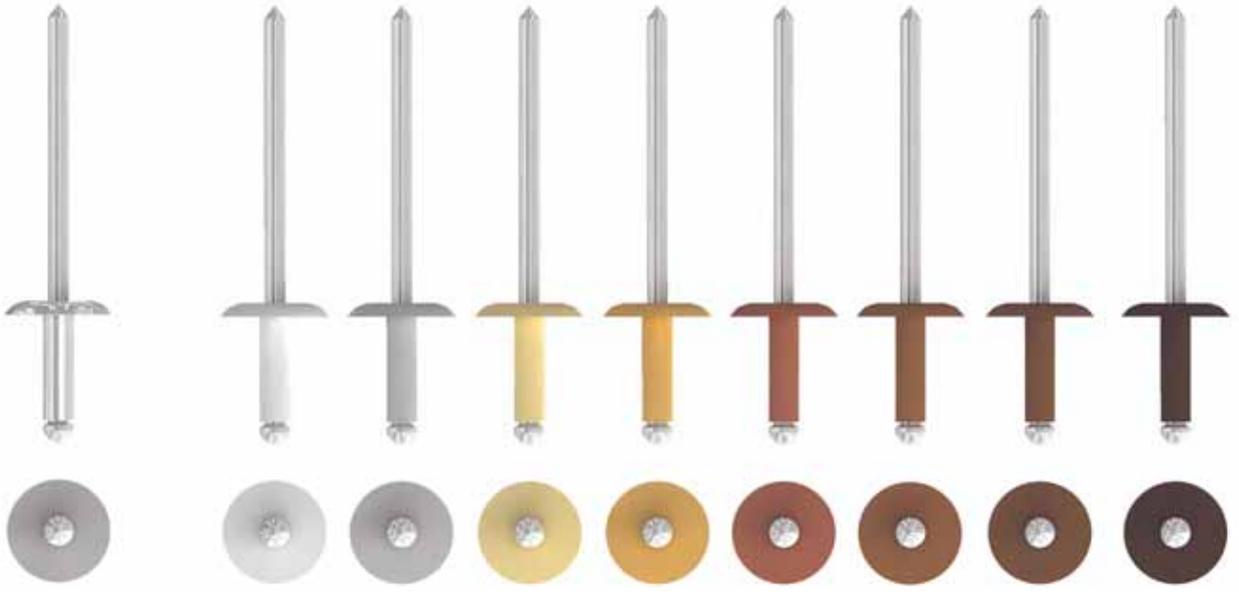
4.3.2 Fixing the board to the wooden strip:



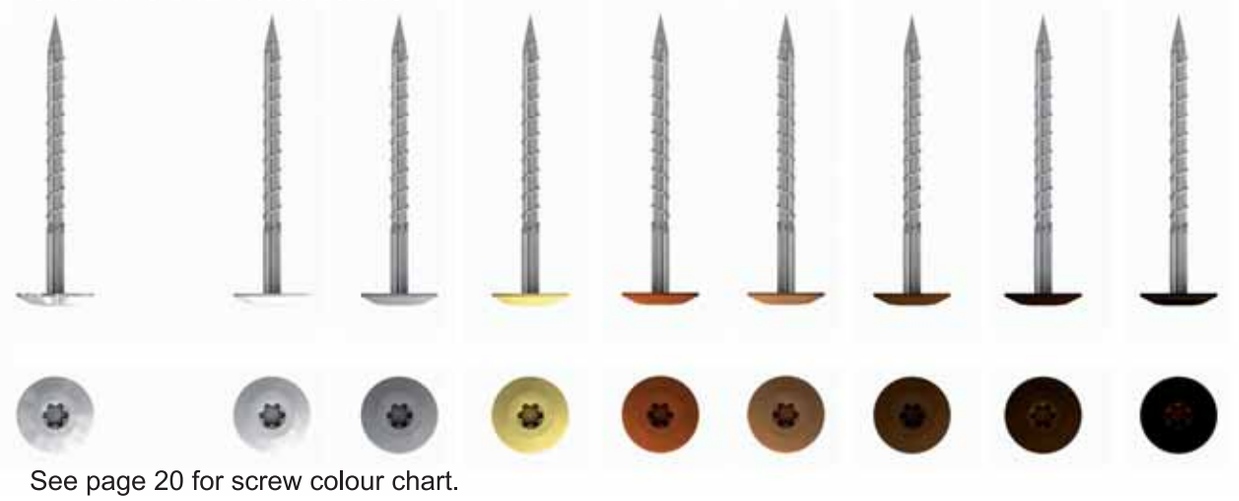
Ref: SFS-TW-S-D12 - 4.8 x 38 Screw
Dimensions: ø head: 12 mm
ø screw: 4.8 mm
L: 38 mm
Material: Stainless steel
Finishes: Steel or lacquered in the same colour as the **ProdEX**

SFS-SX3-L-12 self-threading screws

SFS-AP-16-L-S rivets

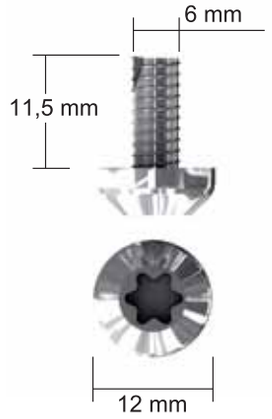


SFS-TW-S-D12-4.8x38 screws



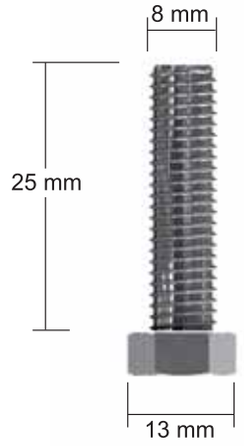
See page 20 for screw colour chart.

4.3.3 Fixing the board to the hanging hook:



Ref: TB-A2 TX30 Panel screw
Dimensions: ø head: 12 mm
ø screw: 6 mm
L: 11.5 mm
Material: Stainless steel
Finishes: Stainless steel

4.3.4 Levelling pin:



Ref: T.H Pin. / INX A2
Dimensions: ø head: 13 mm
ø screw: 8 mm
L: 25 mm
Material: Stainless steel
Finishes: Stainless steel

4.4. Auxiliary elements

4.4.1 Screwdriver:

Ref: E 420-Federversion Screwdriver.

For further information on accessories, please contact **Prodema** S.A.

5. Other **Prodema** products

True beauty is inside.

And this is no exception, as the true beauty of ProdIN (by Prodema) products is found inside. Inside, deep in their core.

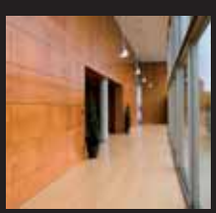
Because all ProdIN (by Prodema) products have a special core designed for each specific use, awarding them unique technical properties.

Cores that, together with the natural wood surface protected with the specially formulated protective film that characterises all Prodema products, guarantee excellent performance and incredible interior design and architectural possibilities.

ProdIN
interiors by Prodema®

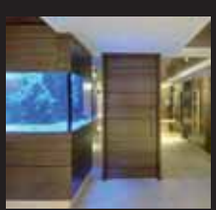
Proligna

The widest variety of colours and finishes for interior coverings.



Neptuno

Damp is not a problem, with its fibre core panels that have been specially designed for damp or humid environments.

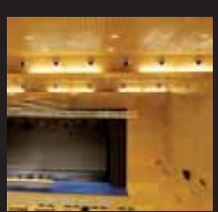


Supra

The super wooden flooring solution that is specially designed for commercial surfaces or those subject to heavy use.

Auditorium

The solution that combines the beauty of natural wood with an excellent level of acoustic absorption, thanks to its perforated composition.

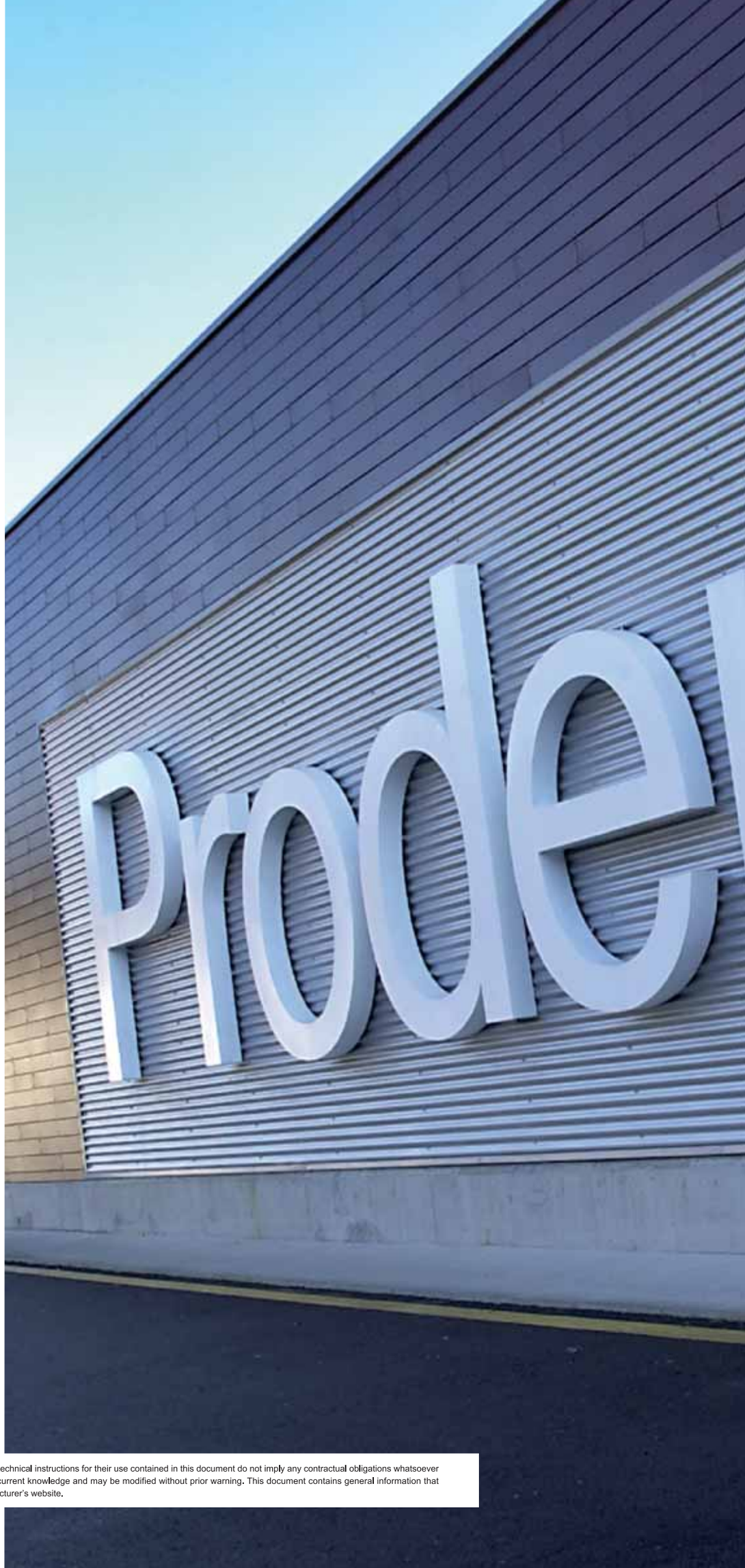


Laminium

The ideal range of laminates to cover raised technical floors, doors, etc.

Prodex

exteriors by Prodema®



6. **Prodema** the company

Our corporate brand is built around 3 basic mainstays:

Class and comfort

Here at Prodema we are convinced that it's not really a question of selling our wooden products, but rather the added value that the class, elegance, design and comfort that our products bring to our clients' architectural and decoration projects. That is why we are committed to innovation and to continue our quest to find wood-based architectural solutions.

R+D+I Dept.

Quality

Prodema

What's left to say about quality? However, at Prodema we are particularly sensitive to this concept, as we are aware of how demanding our clients are and, above all, how demanding our clients' clients are. For that reason we make twice the effort.

We understand quality to be an intrinsic part of the product as well as the service we offer.

Prodema has a management system certified with the ISO 9001:2000 standard.

AENOR ER Empresa Registrada ER-0119/1999

CERTIFIED IQNet MANAGEMENT SYSTEM

Corporate Social Responsibility

At Prodema we love wood, because it is our life and livelihood.

This is why, apart from strictly meeting all international standards, we have also launched a plan that we have called “Friends with nature” in which we will heighten our support for all matters related to sustainable forest management.

Hence, Prodema products are manufactured in line with the strictest environmental requirements of the UNE-EN ISO 14.001:2004 standard, and this also explains why Prodema does not market any wood species listed in appendices 1, 2 and 3 of the CITES convention.

In addition, upon request, certificates can be requested with the PEFC for ProdEX panels which guarantees that the wood and other products of wood origin used to manufacture the ProdEX panels are from forests that are managed in an environmentally sustainable fashion.

PEFC
PEFC/14-35-00025

AENOR
Gestión Ambiental
CGM-02/070

CERTIFIED IQNet MANAGEMENT SYSTEM

7. **Prodema** around the world

Prodema means beauty, warmth and experience in wooden floors and coverings.

We have been working in this field for over 100 years, and this experience has enabled us to become what we are today: a reputable brand respected by architects around the world, who have found in our products the breath of fresh air they had been looking for to meet their creative needs.

With over 75 regional offices all over the world, Prodema is now a global trademark and can be seen in many of the large-scale architectural projects in a wide range of countries.












exteriors by Prodema®

exteriors by Prodema®

ProdEX