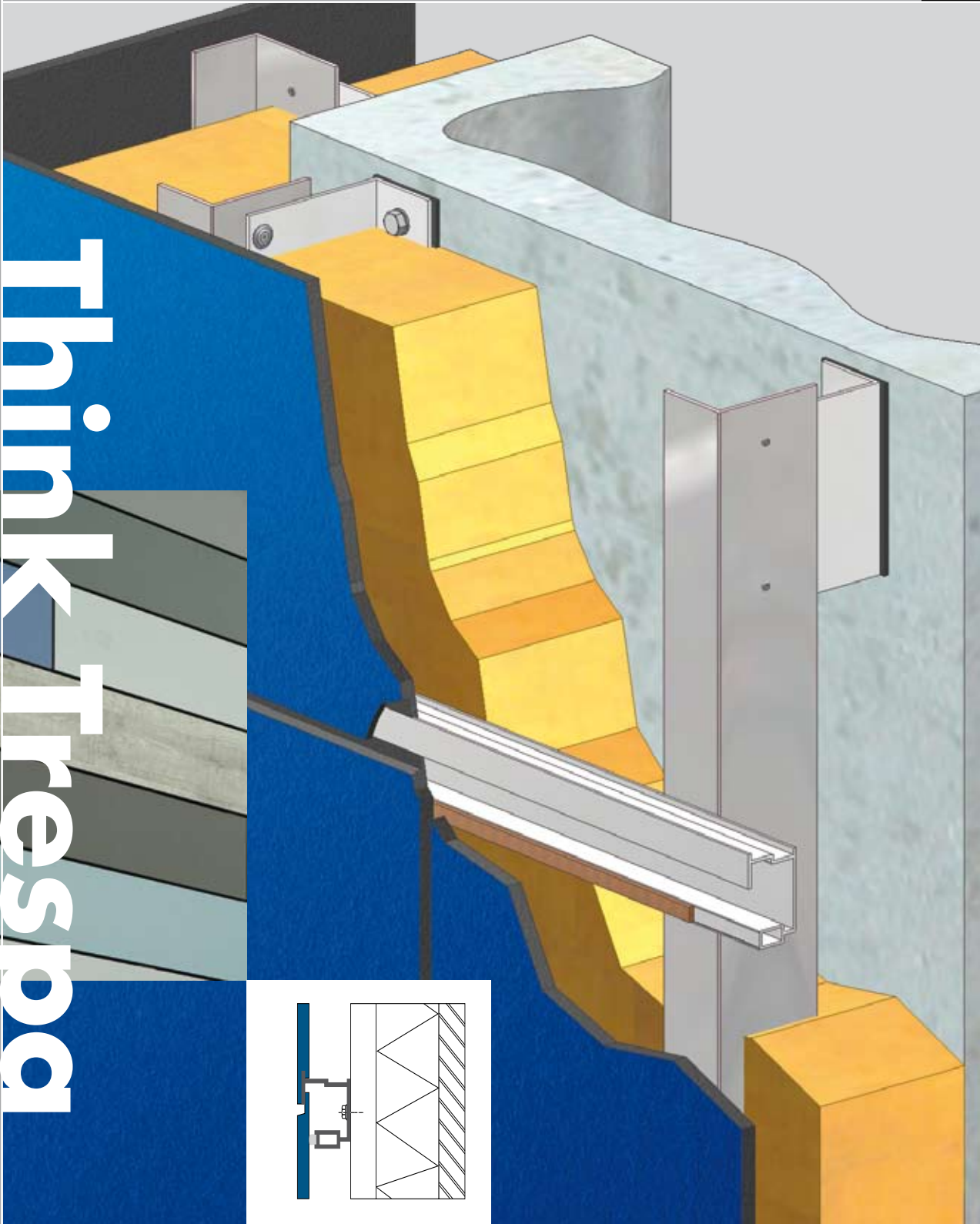


EXTERIOR SOLUTIONS

Think Trespa



TRES|PA®



ref. Mosclaro, Spain



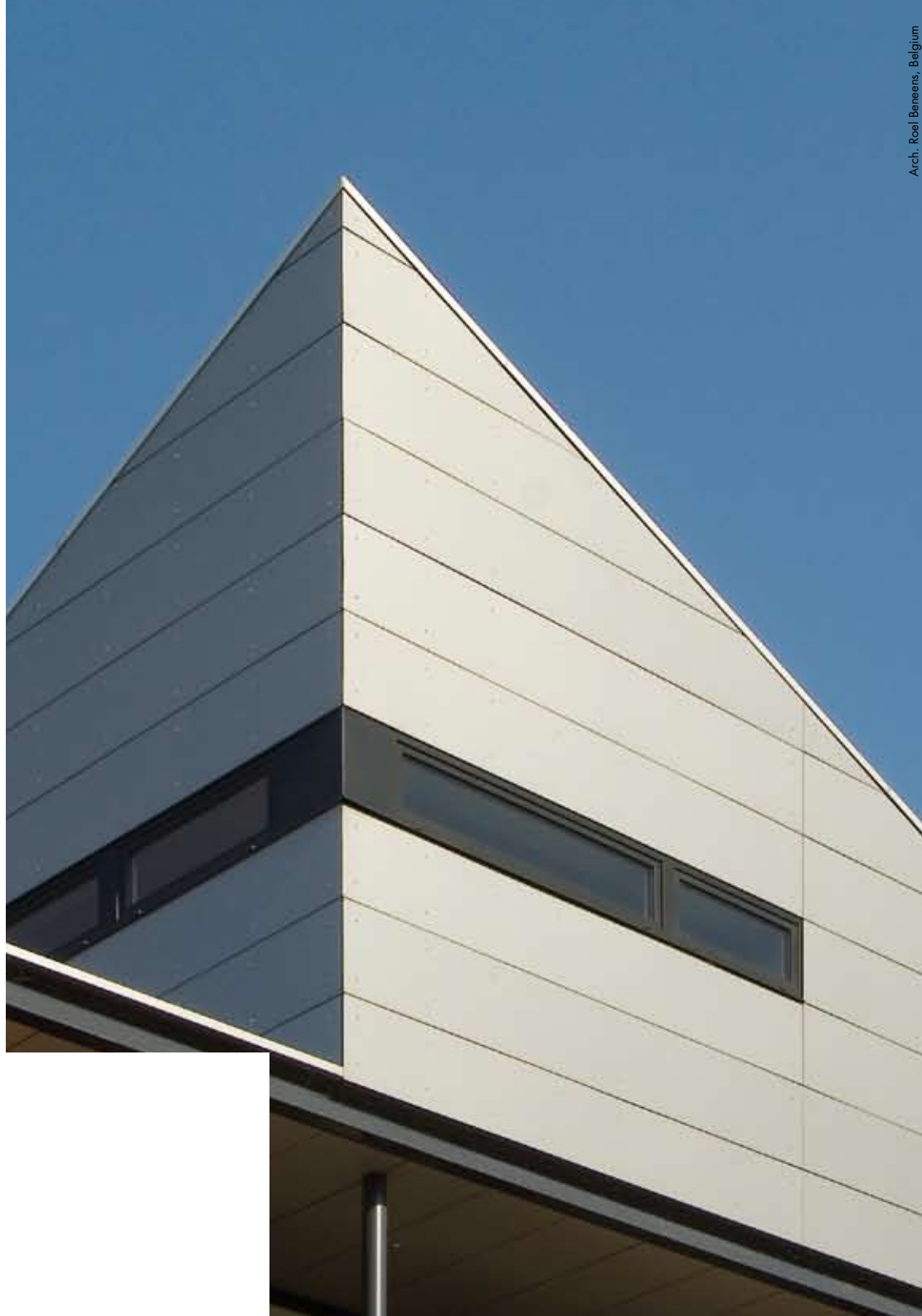
Arch. Enrico Mossgrode, Italy

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Disclaimer

Trespa International B.V. in Weert (the Netherlands), hereinafter referred to as “Trespa” shall not be liable for any direct and/or indirect damage suffered by the buyer or his customers and/or users as a consequence of disregarding or incorrectly using the instructions, standards and admission requirements for storage, manipulation or processing, use or implementation. Neither shall Trespa be liable in case the buyer or his customers and/or users do not comply with the applicable government regulations or in the event that the delivered goods are applied in violation with the applicable government regulations. The advice and recommendations by Trespa have an advisory nature only and shall be provided by the the seller, to the best of its ability and understanding in conformity with the requirements of good workmanship. The advice and recommendations given do not contain any guarantees. In no way is the buyer or his customers and/or users released from any obligation to investigate the soundness of any advice and recommendations for the intended application. Advice and recommendations by Trespa only relate to Trespa products, except when Trespa states otherwise, explicitly and in writing.



UNIQUE AND SPECIAL: TRESPA METEON

Trespa Meteon architectural panels are available in a wide choice of standard colours, effects and finishes – or they can be custom-made. These panels have the ability to transform, enhance or even add new dimensions to your design. Literally thousands of applications around the world bear testimony to the material's versatility. Trespa Meteon is not just beautiful – it is exceedingly robust and durable so today's vision will remain tomorrow's reality.

Proprietary technology

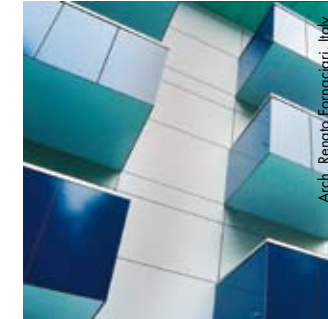
Trespa Meteon is a flat panel, based on thermosetting resins, homogeneously reinforced with wood based fibres and manufactured under high pressure and at high temperatures. The panels have an integrated decorative surface using proprietary EBC technology.

Trespa Meteon is used for vertical applications like façade cladding, balcony panelling and a wide range of other exterior applications. With a strong reputation for design and innovation, Trespa has also developed curved elements to help create extra depth to façades.

Trespa's proprietary technology ensures that Meteon panels are unique in the market today.

Healthier buildings

Trespa Meteon is highly suited for ventilated facade systems. These "breathing" or envelope systems offer possibilities for high insulation values, perfect building physics and contribute to a healthy indoor climate. In hot conditions, excessive solar heat can be vented away through the ventilation between the panels and the insulation materials. This provides a living environment for sustainable building applications.



Design possibilities

Trespa gives architects an inspiring view of the future. Its Perspectives platform provides a source of ideas, new techniques, colours and shapes. Themes like Character, Rhythm and Depth give new impulses to façade design.

Trespa Meteon panels can be adapted, changed, moulded and fixed in different ways. This allows the creation of aesthetically different façades. Changing the surface of the panels adds interest, depth and movement and this is accentuated by the ever changing play of sunlight and shadow. Trespa curved elements can be used to create extra depth in façades. The use of light adds a further dimension: straight lines become curves and colours undergo a true metamorphosis, by illuminating the façade's panels or joints by means of the latest LED technology.

Thanks to their versatility, Trespa panels offer architects near limitless design possibilities.

Weather resistant

Trespa Meteon is extremely weather resistant. Neither sun, rain – including acid rain – nor moisture have any effect on the panel's surface. Both the UV resistance and colour stability of the vertically applied decorative surface comply with the highest score classification 4-5 measured with the grey scale according to ISO 105 A02. Therefore colours will not change significantly for at least ten years, even under the most severe climatic conditions, or in heavily polluted industrial areas. Large or rapid temperature fluctuations from -20°C to +80°C do not affect the properties, stability or appearance of the panel. Trespa panels are able to stand up to their environment.

Easy to keep clean

The smooth panel has a pore free surface, ensuring that practically no dirt accumulates. Neither the surface nor the sawn edges need to be painted or provided with a protective cover. Trespa Meteon is completely unaffected by non-abrasive household cleaning agents or strong organic solvents. Thanks to these characteristics, Trespa Meteon is easy to clean and will help to create low-maintenance exterior applications.

Tough

The modulus of elasticity and high tensile and flexural strength guarantee Trespa Meteon's high impact resistance. The homogeneity and density of the core ensure that the panel has a high pull-out strength for fixings or fasteners. This is especially important when the panel is invisibly fixed with screws or inserts.

The dimensional stability and workability of Trespa Meteon are comparable to those of hardwood, however, Trespa Meteon panels are not affected by moisture and are not susceptible to weathering, mould or rot.

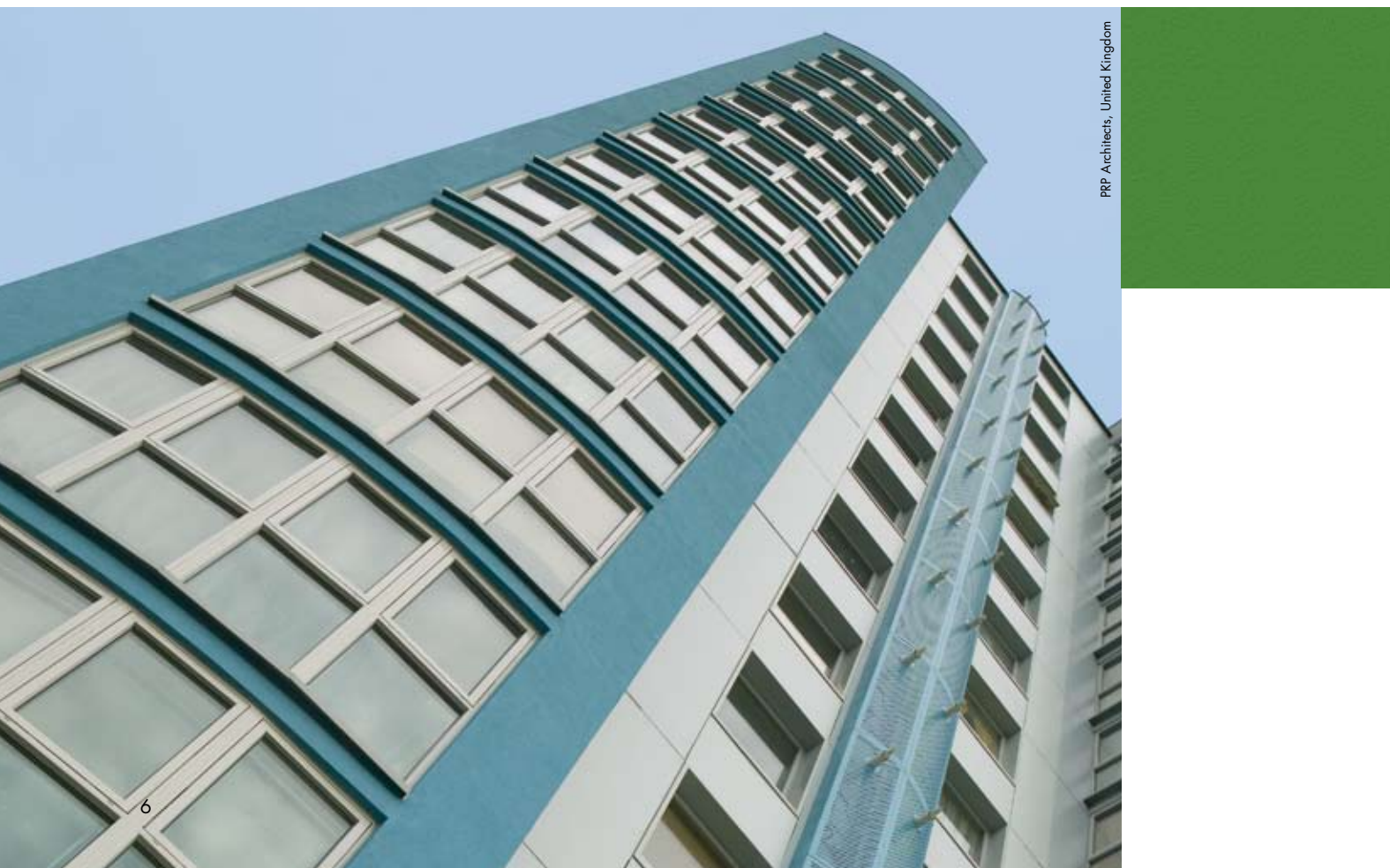
This combination of strengths will ensure that Trespa panels retain their good looks for many years to come.

Environmental considerations

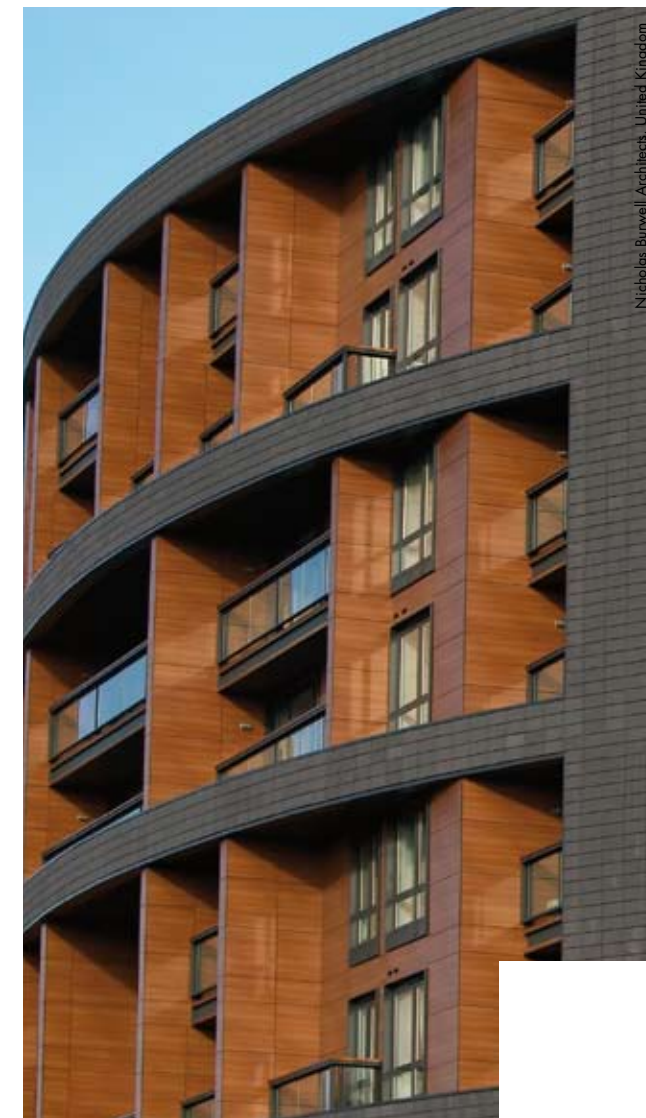
Environmental considerations play a significant role in the development and manufacture of Trespa Meteon. Panels consist of thermosetting resins, homogeneously reinforced with up to 70% wood based fibres. Therefore the majority of the used raw materials are rapidly renewable. In addition new Trespa panels can comprise up to 10% residual materials from production. Trespa International was one of the first producers of panel material to be certified according to ISO 14001, awarded by Lloyd's Register. The ISO 14001 standard describes the steps required for setting up, implementing, maintaining and improving a completely integrated environmental management system.

Safe fire behaviour

In a fire, Trespa Meteon does not melt, drip or explode and retains its stability for a long time. Authorised testing bodies throughout the world have confirmed that Trespa Meteon Fire Retardant grade (FR) panels fall within one of the most favourable fire classes.



PRP Architects, United Kingdom



Nicholas Bewell Architects, United Kingdom



Arch. Fred Moutijn, The Netherlands

Building certificates

Major European certification institutes who are members of the “European Union of Agrément (UEATC)” have certified both Trespa Meteon and its recommended fixing systems. Certificates are issued by amongst others: KOMO; DIBt; BUtgb; BBA; CSTB and TORROJA. This makes Trespa a reliable partner and Meteon panels an excellent choice for long-lasting buildings.

CE Marking

Trespa International has introduced the new CE marking for its products. Trespa Meteon fully complies with the requirements of the new EU standard.

Warranties

Thanks to practical experience over many years and the high quality of Trespa Meteon panels, warranties are available both for the product range in general and for specific projects. More information can be obtained from your local Trespa office or representative.



Matrix Architekten, Austria

MATERIAL PROPERTIES TRESPA METEON

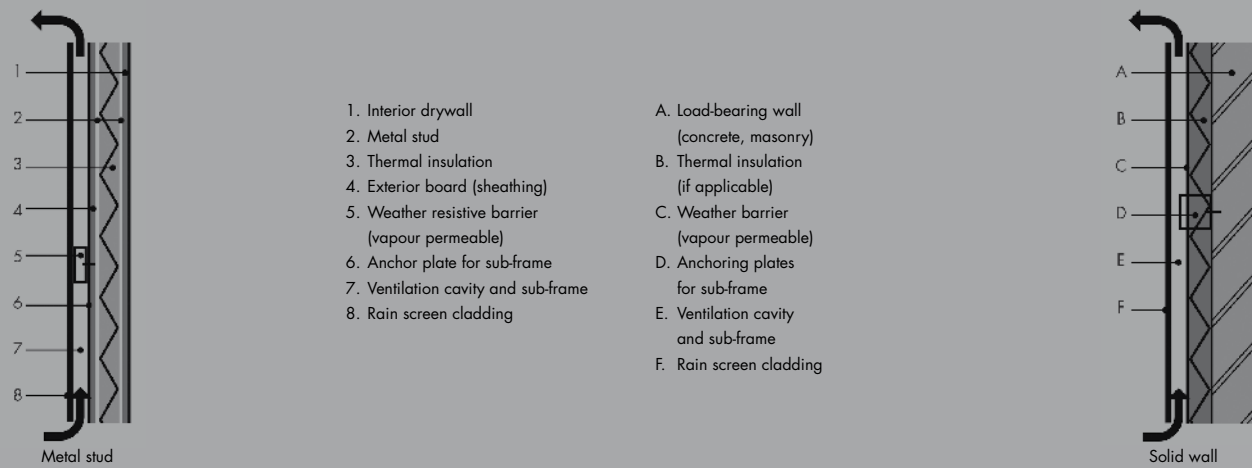
Properties	Value	Unit	Standard
Physical properties			
Specific gravity	≥ 1.350	kg/m ³	ISO 1183
Dimensional stability	≤ 2,5	mm/m	EN 438
Resistance to wet conditions in water of 65°C after 48 hours			EN 438
Mass increase	≤ 3	%	
Appearance	≥ 4	Rating	
Optical properties			
Colour stability	4-5 (3000 hrs; Xenon test)	Grey Scale	ISO 105 A02-93
Mechanical properties			
Modulus of elasticity	≥ 9.000	N/mm ²	ISO 178
Tensile strength	≥ 70	N/mm ²	ISO 527-2
Flexural strength	≥ 120	N/mm ²	ISO 178
Resistance to impact by large diameter ball			EN 438
Drop height	1800	mm	
Diameter of indentation	≤ 10	mm	
Chemical properties			
SO ₂ -resistance	4-5 (50 cycles; approx. 0.0067%)	Grey Scale	DIN 50018

Region	Fire classification	Standard
European Union	Type FR: Euroclass B-s2, d0 Type Standard: Euroclass D-s2, d0	EN 13501-1
Germany	Typ FR: Klasse B1 Baustoffklasse: Typ Standard: Klasse B2	DIN 4102-1
France	Type FR: Classement M1 Réaction au feu: Type Standard: Classement M3	NF P 92-501

Please note:

Due to the CE-marking HPL panels have to be tested in accordance with EN 13501-1. National authorities decide on (the moment of) introduction of this standard in its building codes.

Please check www.trespa.com for the latest version of the material properties and delivery programme.



Comfortable and healthy

Residents and users not only find themselves in a low-maintenance-environment, the dry and comfortable conditions of the building will make a positive contribution to wellness and overall comfort.

A perfect fit

Trespa International produces Trespa Meteon – an architectural panel ideally suited for ventilated façades. Light-weight, durable and weather resistant, the panel’s surface and core are impermeable and therefore not affected by rain and condensation. Moreover the unique Trespa Meteon surface is extremely resistant to exposure to sunlight, making this a panel with a perfect fit for façade applications.



Richard Rogers Partnership, United Kingdom

TRIED AND TRUSTED: VENTILATED FAÇADES

Today, ventilated façades are applied worldwide because they enable architects to meet every requirement in any climate. By creating a two leaf construction for the external wall, the ventilated air space between the two leaves serves to maintain a healthy indoor climate.

Ventilated façades help to control moisture – in any climate

No matter what climate you find yourself in, moisture is always an issue and can seriously affect the overall performance of a building. The answer is a ventilated façade, which is designed to breathe. Penetration of rain is minimised and condensation water is drained out through ventilation inlets and outlets. The ventilated air space serves multiple functions. The air in the designed cavity will circulate due to air pressure differentials and thermal differentials over the height of the building. In a cold climate this causes the condensation water at the rear of the cladding to dry. In a warm climate the moving air will cool the inner layers of the construction, thus reducing the demand for cooling energy.

Insulated and dry

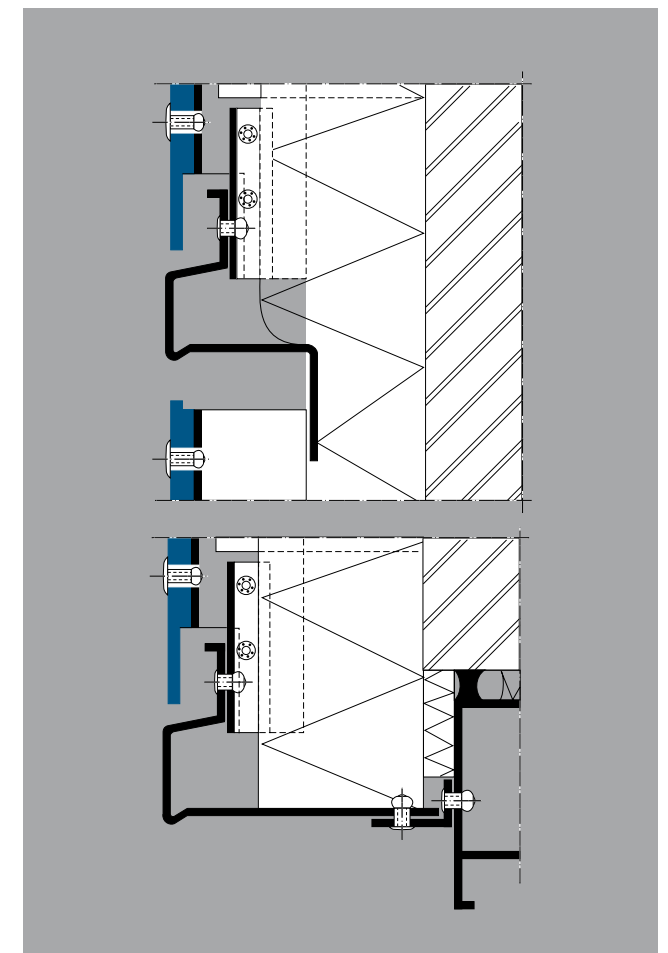
Ventilated façades have a space between the cladding and the outer wall - an ideal location for insulation materials. Rain water and condensation are removed naturally by air flowing through the cavity -so that the insulation material remains in good condition and remains effective over time.

Cavity

The recommended minimum depth for a continuous ventilated cavity is 20 mm, however a depth of 40 mm is preferable. The relationship of the ventilation openings to the length of the rainscreen cladding should be at least 50 square cm per linear metre for façade cladding heights exceeding 1 metre. For façade cladding less than 1 metre in height, the ventilation openings should be at least 20 square cm per linear metre.

FIRE SAFETY FACILITIES

If façade cladding covers several storeys, there is a risk of fire propagating via the cavity. This can be prevented by installing a horizontal fire-break assembly provided by specialist manufacturers.



GENERAL GUIDELINES FAÇADE CLADDING

The following aspects should receive attention when a façade construction consisting of Trespa panels, subframes and fixings are dimensioned:

- The panels should be suitable for use as self-supporting, façade cladding.
- When combined with the subframe the panel strength and rigidity should be sufficient to withstand normal loads such as wind, dead weight and/or impact, without being damaged.
- The façade cladding should not have a structural function.
- If heavy objects are to be suspended from the panels, additional supports are usually required.
- The maximum permissible impact loads on the panels and subframes can be determined by means of specific tests (usually the sandbag swing test).



Dipl.-Ing. Rolf Weber, Architekturbüro, Germany



AGS Architekten & Planners
BV BNA, The Netherlands

GENERAL GUIDELINES FIXING SYSTEMS

Trespa is assembled with corrosion resistant fixings on a suitable subframe in such a way that the panels are not under tension and are able to move freely. When determining the subframe the following should be kept in mind:

- wind loading
- the maximum fixing centres for the panels
- the required ventilation provisions
- unimpeded movement of the panels
- the available panel dimensions
- thickness of insulation material used, if any
- the anchoring possibilities in the structural (wall) construction
- legal requirements



Zhu Yuzi, China



Arch. Mr. Carlos Francesch de Herrada, Spain

TRESPA METEON METALLICS

Trespa Meteor Metallics panels feature a directional coloured surface.

Optimizing

Arrows on the reverse side of the fullsize panels have been applied by Trespa to indicate the direction in which the sheets have been produced (figure 1) When cutting the sheets, temporarily mark the original production direction on the visible side of the individual panels. This will make the fixing of the panels in the same direction easier.

Fixing

Special effects can be created by placing Trespa Meteor Metallics panels on the façade with random orientation (figure 2 and illustration). On the other hand, to achieve the same appearance of the façade place the panels in the same orientation (figure 3). All other instructions for processing and fixing are as standard Trespa Meteor panels.

Trespa Meteor Metallics corner profiles

Length direction of corner profile and sheet have the same directional coloured surface.

Ordering Trespa Meteor Metallics

The quantity of Trespa Meteor Metallics sheets required for a project should be ordered and supplied as a single instruction.



Arch. De Boer, de Witte, The Netherlands

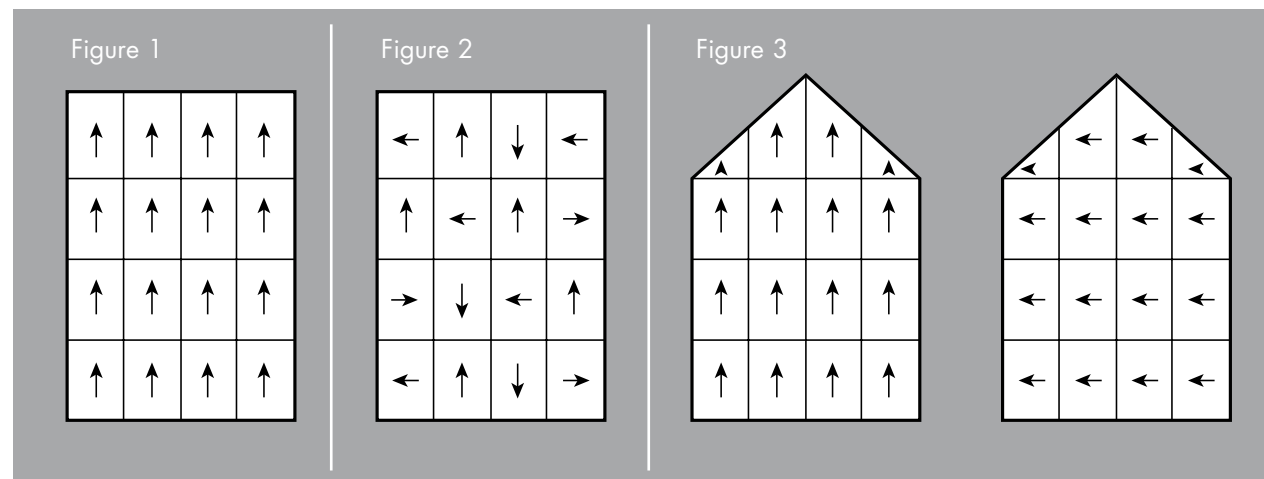


Arch. NBBJ, United States

JOINTS

The following guidelines apply to joints and panel connections:

- The panels should be able to move 2.5 mm per metre in the length and the width. Therefore sufficient space should be allowed for around the panels.
- Panel, assembly and building tolerances play an important role in the joint details. The panels should also be able to move. Therefore a minimum joint width of 10 mm is required.
- The joints should be such that sufficient ventilation and/or drainage is ensured in order to prevent damage as a result of retained moisture.
- Insects and vermin may nestle behind the façade cladding. Joints that are larger than 10 mm should therefore be fitted with grilles, insect mesh, etc.



Open joints

The panel connections may either be open or closed. If an open joint system is used for vertical and/or horizontal joints, specific attention should be paid to possible rain or moisture penetration. When the insulation becomes wet the insulation value decreases so no longer complies with standards. Moisture resistant insulation materials and subframes are therefore required. A vapour open foil can be used as a second water barrier.

Closed joints

Tongued-and-grooved and halved joints:

With a minimum of 8 mm thick panel it is possible to have tongued-and-grooved joints on vertical edges or halved joints on the horizontal edges. This effects a closed joint system. The minimum dimensions for the joints are:

- groove: 2.2 x 15 mm for closed aluminium tongues (panel thickness ≥ 8 mm)
3.2 x 15 mm for Trespa tongues (panel thickness ≥ 10 mm)
- tongue: 2 x 30 mm for aluminium tongues
3 x 30 mm for Trespa tongues
- height of halved joint: 20 mm

Joint profiles:

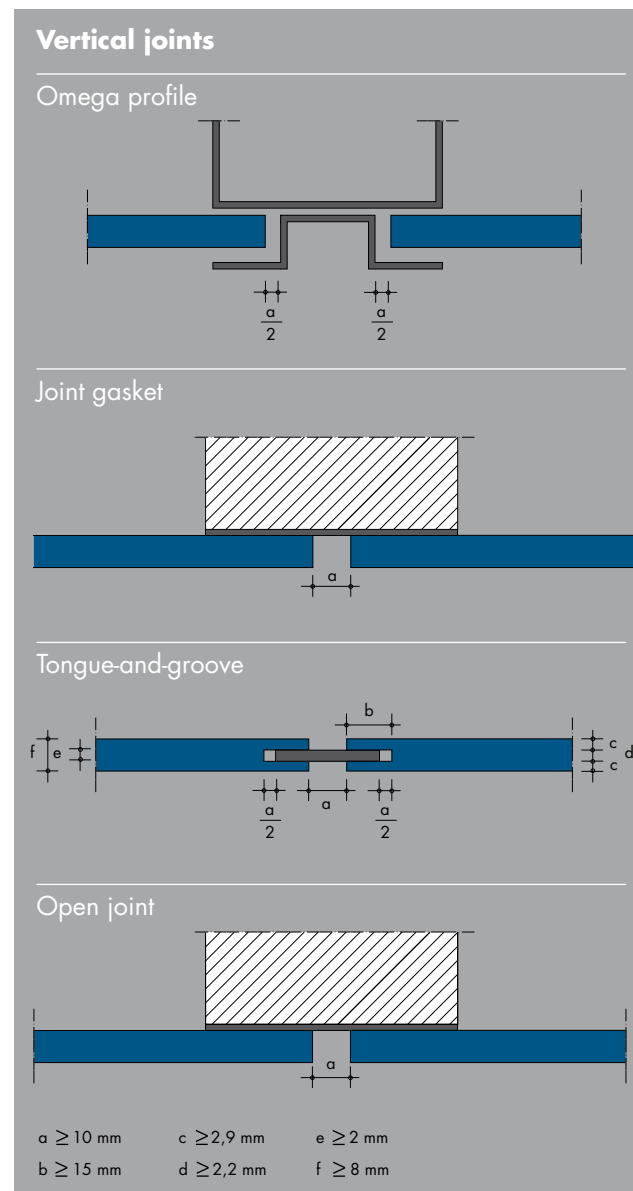
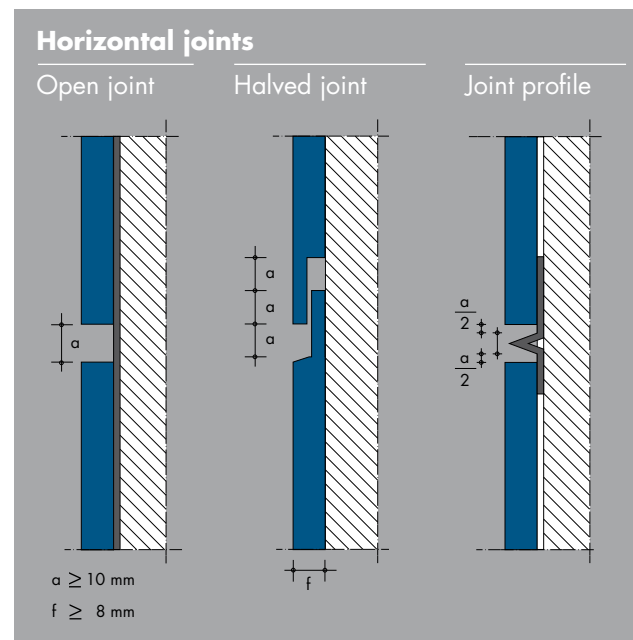
Joints may be closed by fixing metal, plastic or rubber profiles. The profiles should not impede the movement of the panels and should be fixed free of tension.

Joint sealing strip:

The joint sealing strip must be flat and its width must be equal to that of the upright. It must be durably weather-resistant.

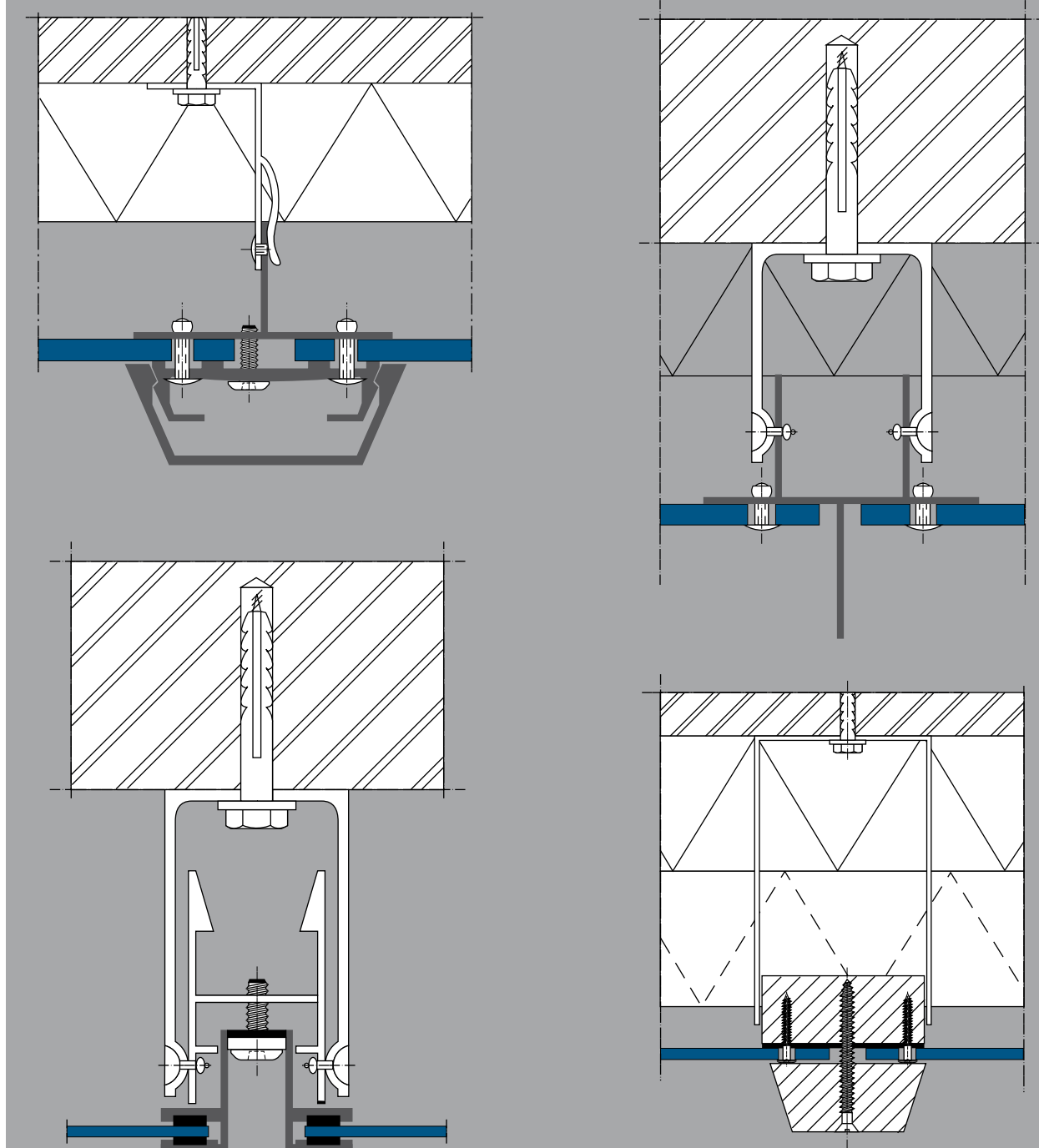
Mastic joints:

Mastic joints impede the movement of the panels and may lead to excessive dirt on the panel edges. This type of joint sealing is therefore specifically not recommended.



SPECIAL FIXINGS

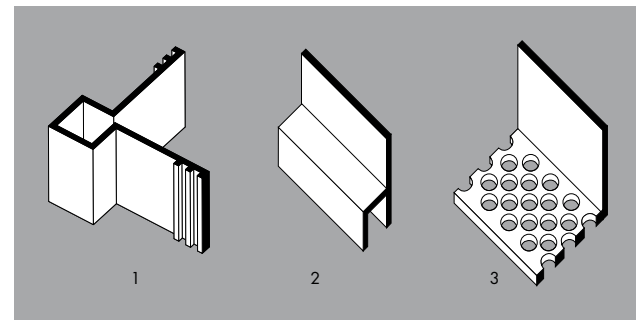
Alternative jointing solutions using special elements



AUXILIARY PROFILES

Auxiliary profiles are available to close the joints in between the Trespa panels. The most common are pictured below. The profiles can be supplied by third parties in various colours and dimensions. The addresses of suppliers will be supplied on request.

1. Plastic or aluminium corner profile
2. Plastic or aluminium H profile for horizontal joints
(please note that dirt marks are easily made)
3. Plastic or metal ventilation profile

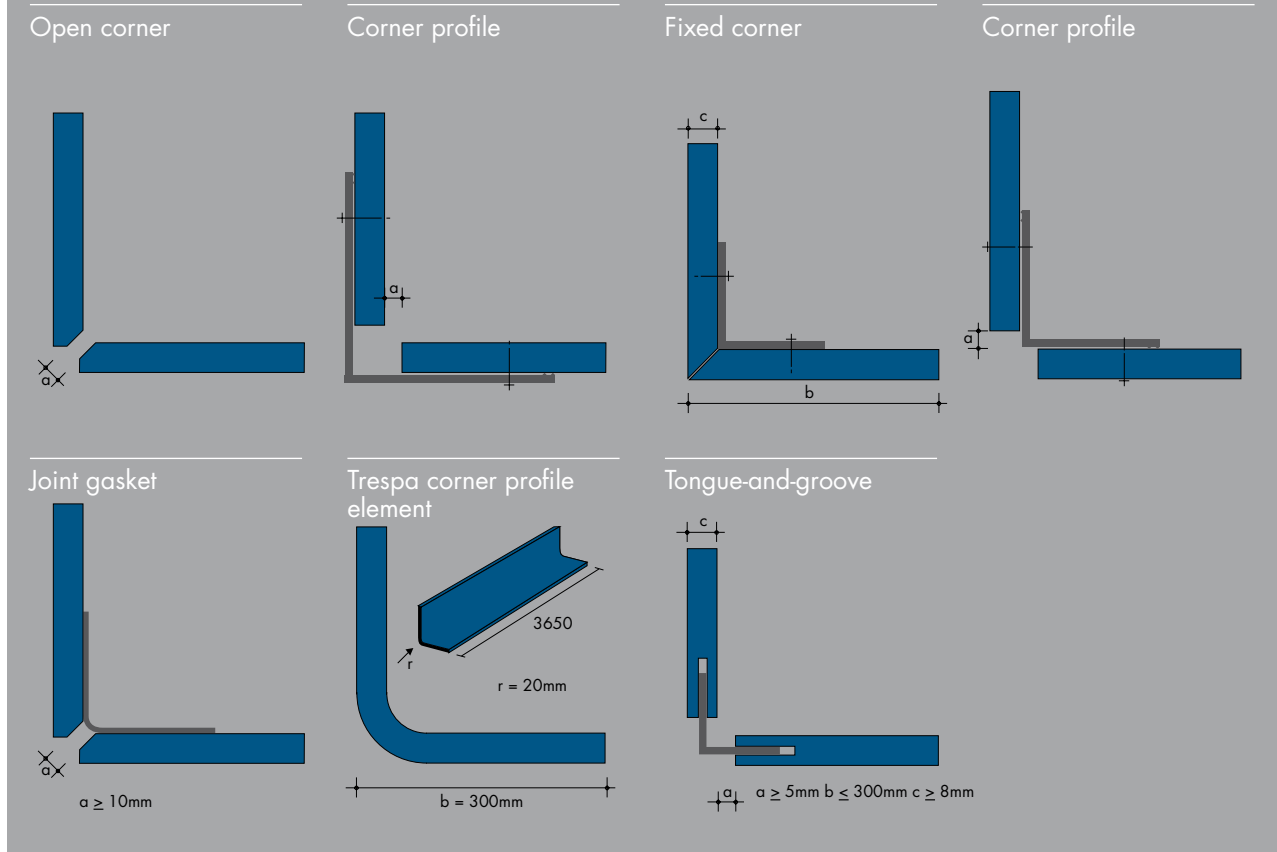


CORNER SOLUTIONS

Panel connections at the corners of buildings may have either open or closed joints. Panels from 8 mm thickness are suitable for a fixed corner connection where a metal corner profile is fixed to the back of the panel with screws or inserts. Special allowances should be made for the differences in length. If one of the panels is then not able to move in one or more directions the width of the section in question may not exceed 300 mm. The delivery programme offers a Trespa corner profile element which can be used for a smooth corner detail.



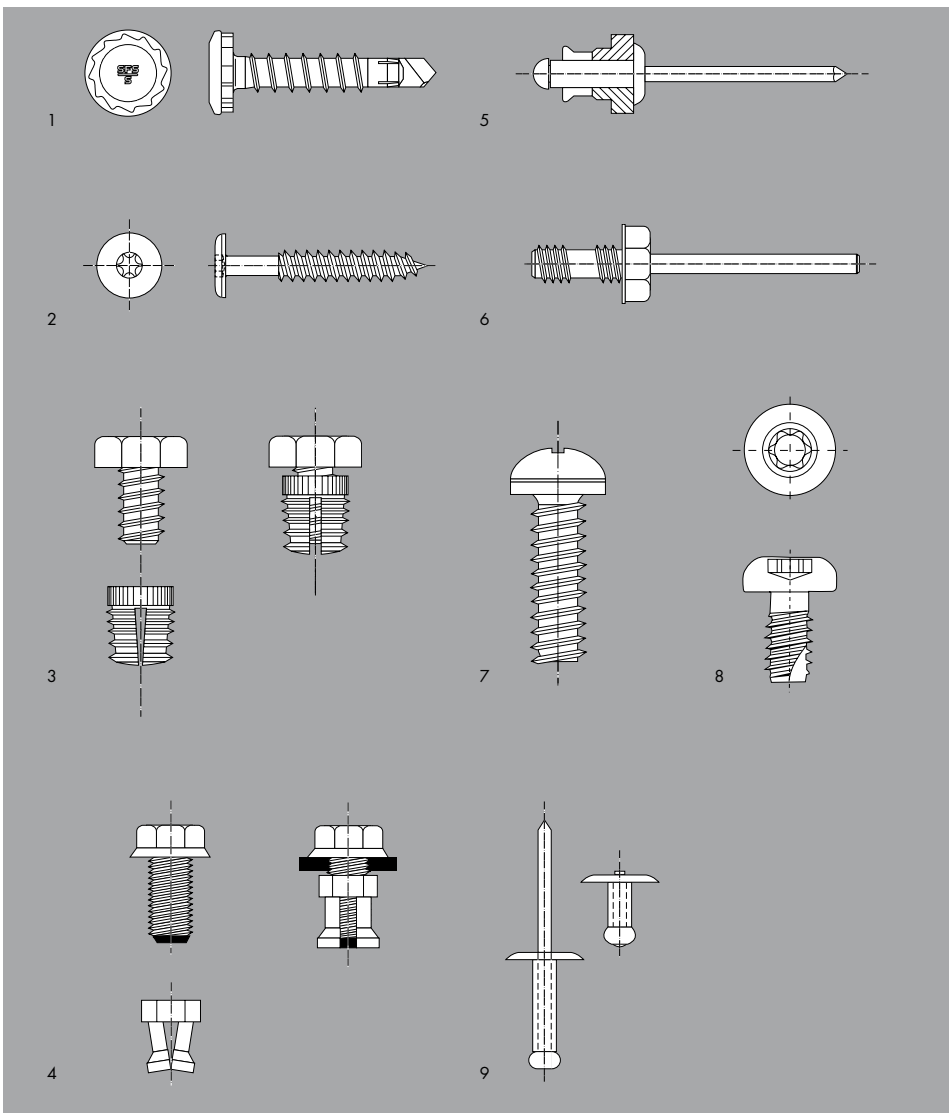
Corner solutions



FIXINGS

Fixings for Trespa Meteon facade cladding systems. Choice of fixings and availability per country is dependant on national certifications:

Fixing	Countries								
	Netherlands	Belgium	Germany	France	UK	Spain	Italy	USA	China/APAC
1. Selfdrilling screw				■					
2. Fast fixing screw	■	■	■	■	■	■	■	■	
3. Insert	■				■	■			
4. Keil Hinterschnittanker			■		■	■			
5. Fischer-Zykon Anker			■		■				
6. Vis aveugles (FR) / Panel Rivet (USA)				■	■			■	■
7. Taptite		■							
8. Thread cutting screw	■	■			■	■	■		■
9. Rivet	■	■	■	■	■	■	■		■



Kassar and Garry Architects, United States

DEFLECTION

The maximum flexure (f) limit, measured at the horizontal surface of a façade panel between two fixing points (L), has been laid down. A minimum (wind) load should be taken into account to prevent the façade structure from not being strong enough.

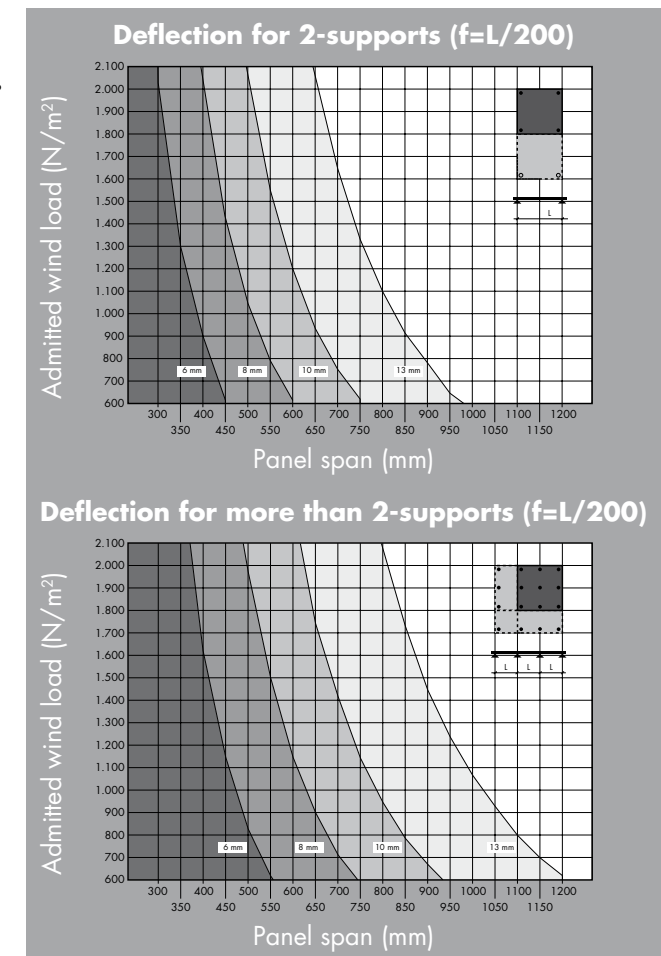
Façade cladding flexure: $f \leq L/200$

Wind loads may be multiplied with 0.70 for calculating panel deflections, with respect to a minimum (wind) load of $p \geq 600 \text{ N/m}^2$.

Four sided supported panels

The graphs can be used for determining the thickness of a four sided supported panel. Determining the thickness, the shortest panel length (lx) may be multiplied by correction factors below after reading the graph:

Relation $\frac{l_y}{l_x}$	Correction factor for l_x
1.0	1.4
1.2	1.3
1.4	1.2
1.6	1.15
1.8	1.10
2.0	1.05
≥ 2.5	1.0



WIND LOADS AND LOAD BEARING

Wind loads

$$P_w = c * v^2 / 1.6$$

p = wind pressure

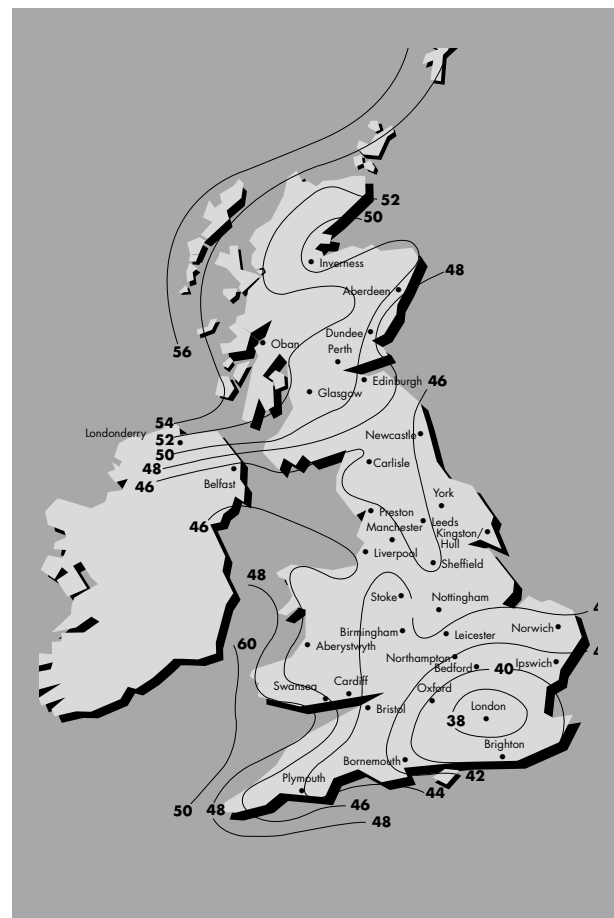
c = pressure coefficient

v = wind speed

Load bearing

Load bearing of panels, supports and fixings included, has to take place in such a way that maximum loads do not exceed admitted strengths.

The weight of a panel will be spread over several fixings and can be ignored in the calculation when a minimum (wind) load of 600 N/m² is respected.



Visible fixing

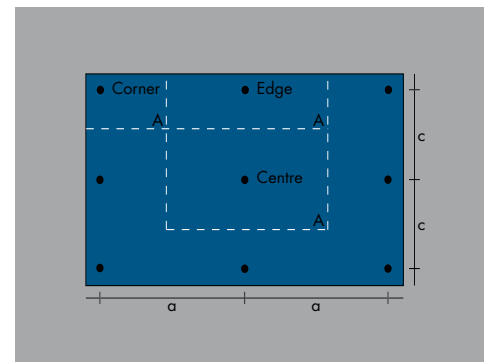
Maximum admissible pull-out strength for visible fixing with screws and rivets, depending on fixing position in panel:

Pull-out strength

Panel thickness	Fixing position in panel		
	centre	edge	corner
6 mm	480N	300N	240N
8 mm	500N*	500N*	430N*
10 mm	500N*	500N*	500N*

* maximum pull-out strength for pine wood respectively aluminium rivet

- including safety factor = 3; for screw, rivet and Trespa panel
- safety factor = 4 for pull-out strength in wood



Blind fixing

Maximum admissible pull-out strength for blind fixing with inserts.

Pull-out strength

Panel thickness	straight insert	threadcutting screw	conical insert
	8 mm	250N	350N
10 mm	350N	650N	400N
13 mm	550N	1150N	950N

- including safety factor = 3; for insert and Trespa panel
- including excentricity factor = 2; for brackets (leverage effect)

BUILDING REGULATIONS

The Building Regulations 2000 (as amended)

- A1; Loading
- A3 & A4; Disproportionate collapse
- B1; Means of escape
- B4; External fire spread
- C4; Resistance to weather and ground moisture
- D1; Cavity insulation
- E1; Airborne sound (walls)
- F1; Means of ventilation
- F2; Condensation
- L; Conservation of fuel and power
- K2; Protection from falling
- REG 7; Materials and workmanship
- BS 5268 part 2; Structural use of timber
- BS 5268 part 5; Preservative treatment of structural timber
- BS 6180; Protective barriers in and about buildings
- BS 6206; Impact performance requirements for flat safety glass and safety plastics for use in buildings
- BS 6399 part 2; Code of practice for wind loads
- BS 8200; Design of non-loadbearing external vertical enclosures of buildings
- PD 6484; Commentary on corrosion at bimetallic contact and its alleviation

TS150 VISIBLE FIXING

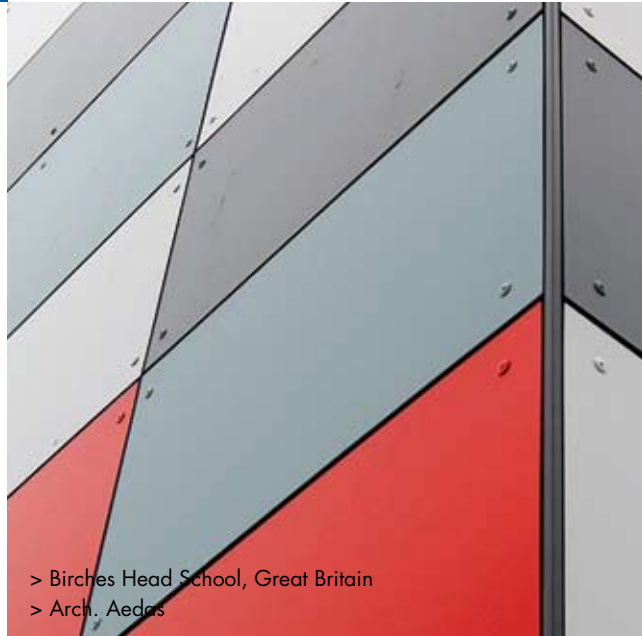
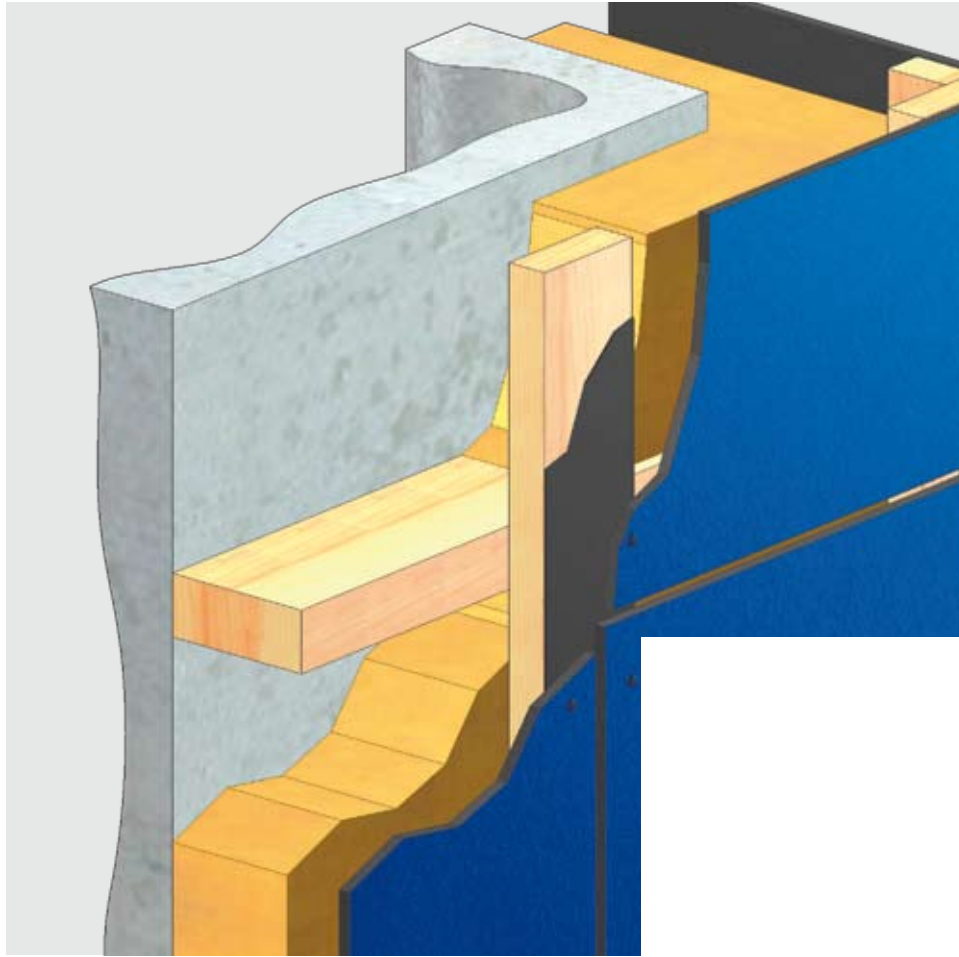
with screws on a timber subframe

Panels with a thickness of 6 mm or more can be fixed onto a timber subframe. This subframe must consist of battens of sufficient strength and permanent durability.* Powdercoated screws are available in all standard Trespa colours.

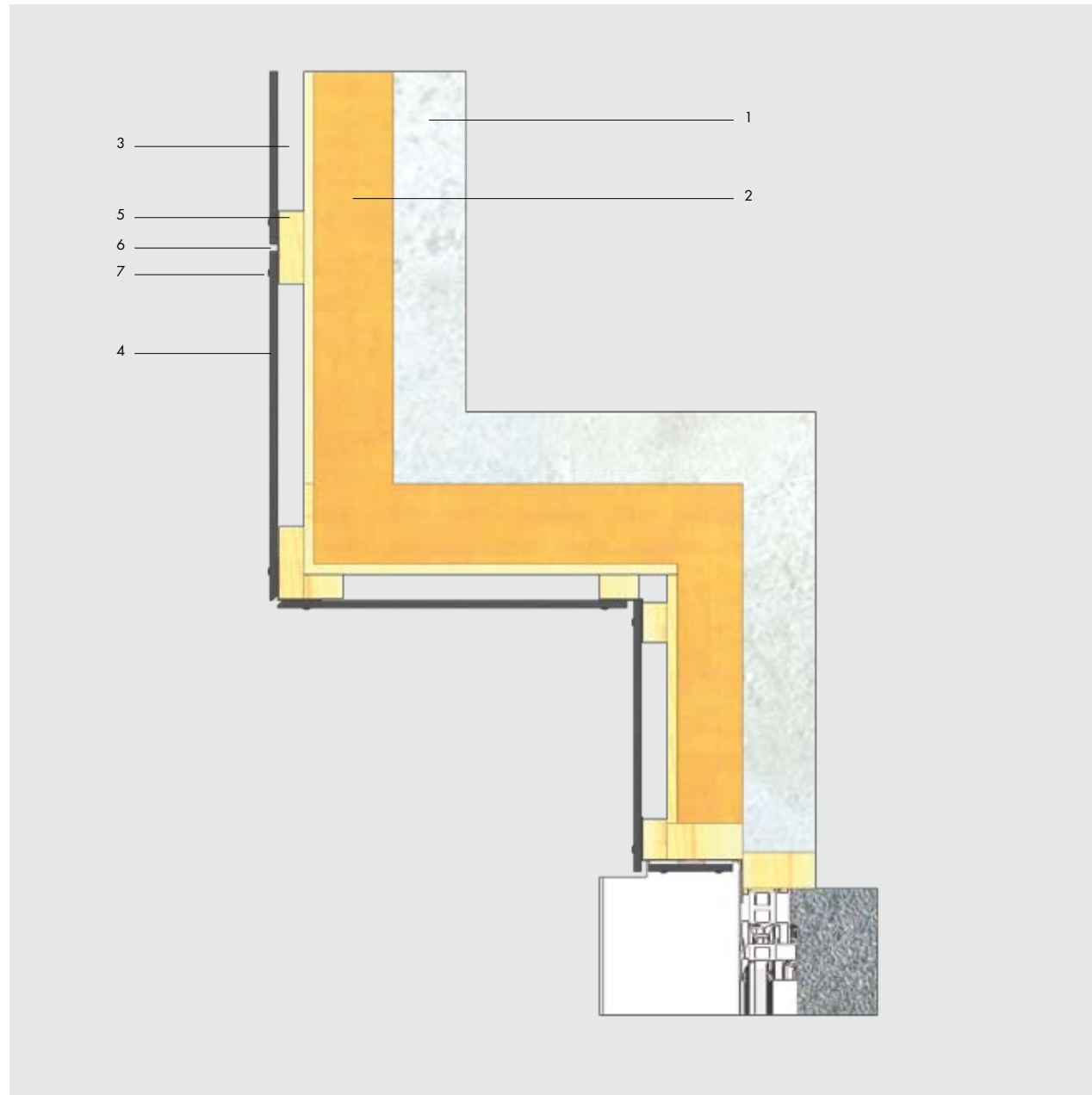
* See chapter 'Building regulations'



Prof. Arch. Mariarita Mariani, Italy

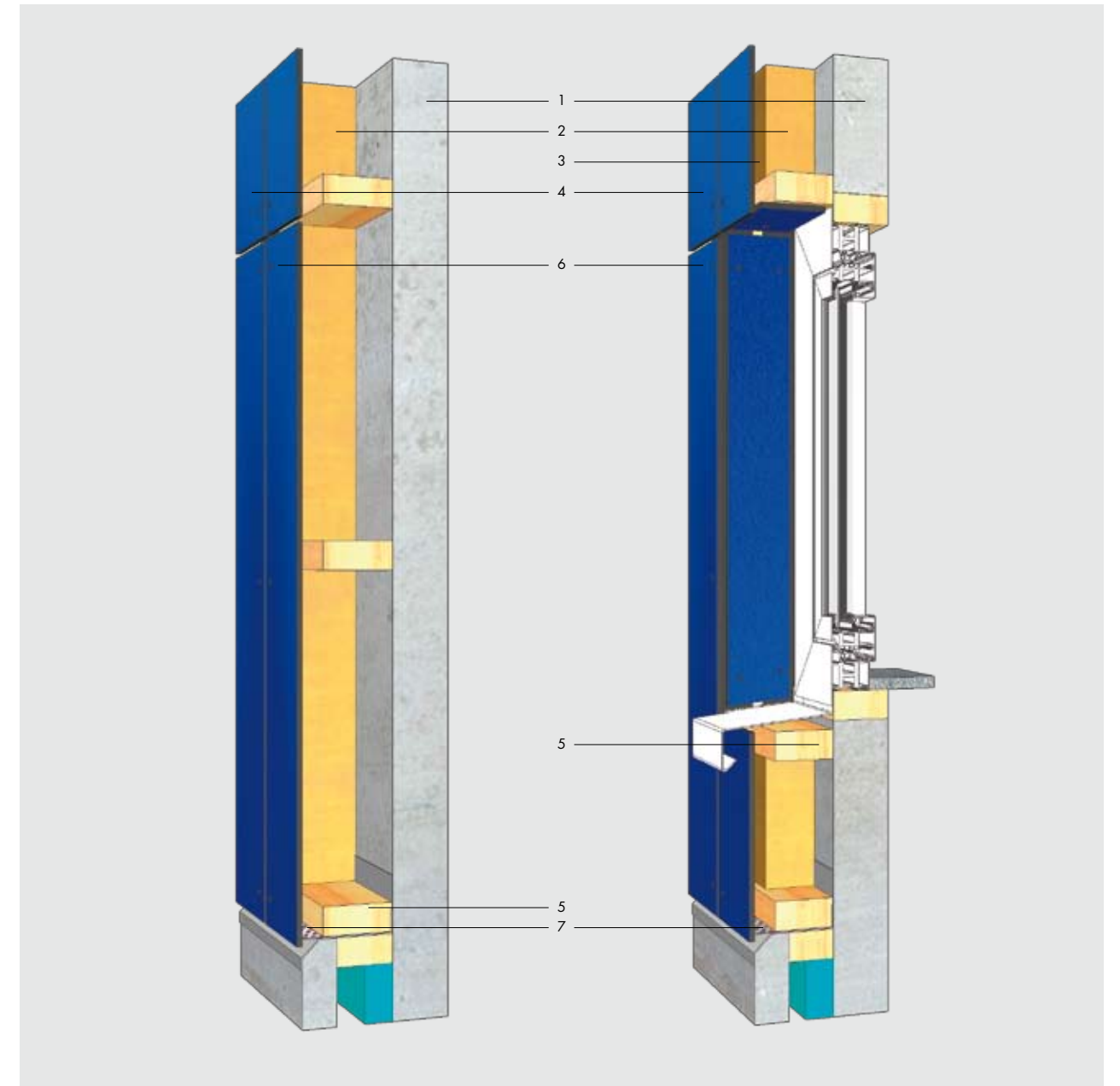


> Birches Head School, Great Britain
> Arch. Aedas



Horizontal cross-section

- 1. internal construction
- 2. insulation
- 3. ventilated cavity
- 4. Trespa Meteor panel
- 5. vertical timber batten
- 6. gasket
- 7. Trespa fast fixing screw



Vertical cross-section

- 1. internal construction
- 2. insulation
- 3. ventilated cavity
- 4. Trespa Meteor panel
- 5. horizontal timber counter batten
- 6. Trespa fast fixing screw
- 7. ventilation profile

TS150 VISIBLE FIXING

with screws on a timber subframe

General

Joints: at least 10 mm

Panel thickness: from 6 mm

Fixing centres and edge clearances

a = horizontal fixing centre (see table)

b = edge clearance

- minimum 20 mm
- maximum 10 x panel thickness

c = vertical fixing centre (see table)

maximum fixing centres (mm)*	panel thickness (mm)			
	6	8	10	13
2 fixings in one direction	450	600	750	950
3 or more fixings in one direction	550	750	900	1200

* To be calculated in accordance with applicable standard / regulations.

Fixing detail

Fast fixing screw for Trespa for 6 mm to 10 mm panels.

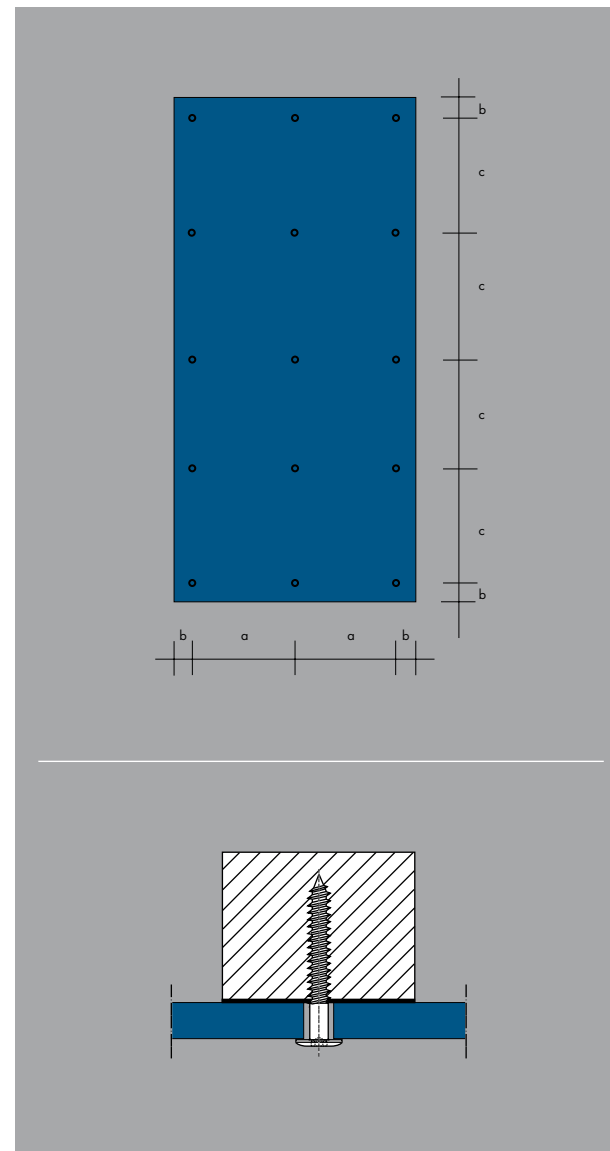
Diameter of the hole for all fixing points:

- 8 mm for fast fixing screw for Trespa
- shank diameter of the screw + 3 mm for other screws

Timber battens should be at least:

- 34 x 75 mm for joints between two panels
- 34 x 45 mm for inner and end battens

Screws should be centered in the holes and not be overtightened.

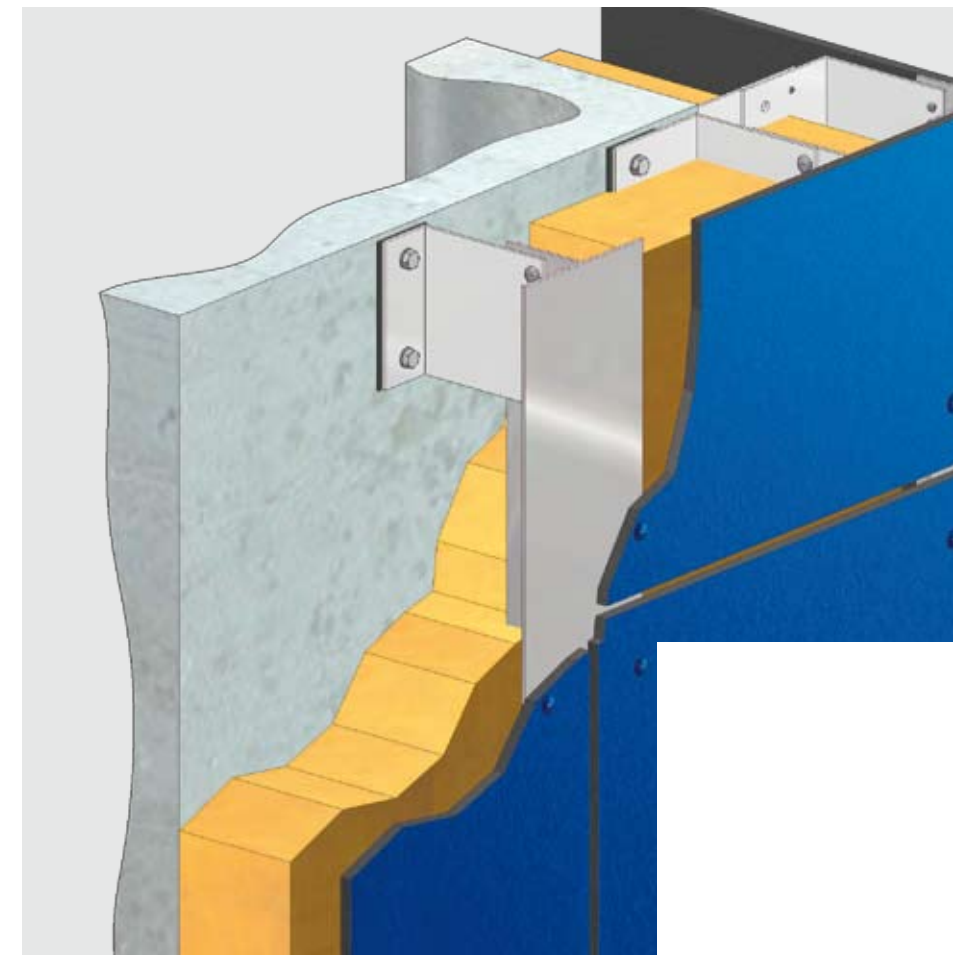


TS700 VISIBLE FIXING

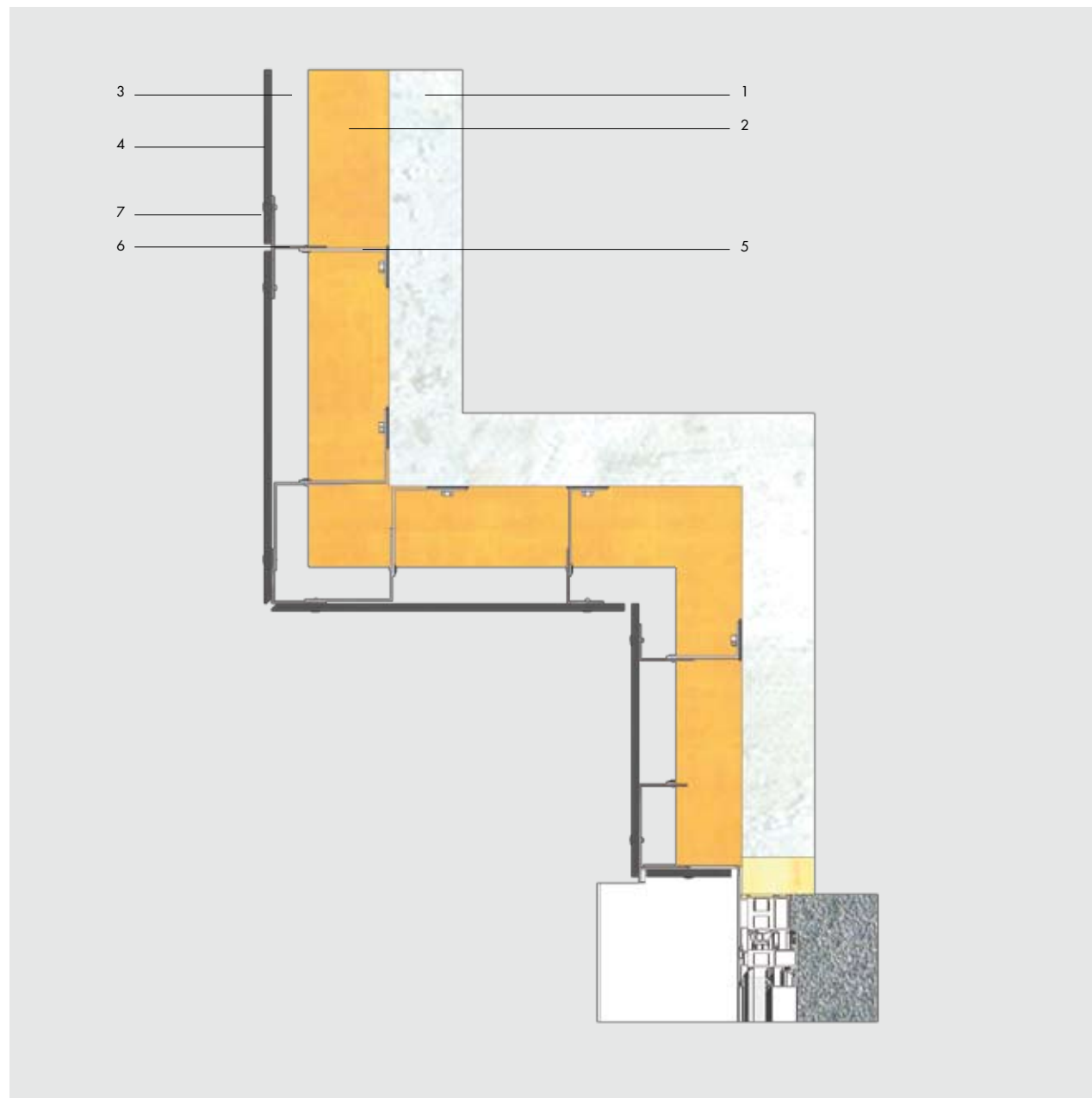
with rivets on an aluminium subframe

Panels that are of minimum 6 mm thickness may be fixed with rivets. The subframe should preferably consist of vertical profiles which are fixed to the structure with special wall brackets.* Horizontal and/or vertical adjusting tolerances are essential.

* See chapter 'Building regulations'

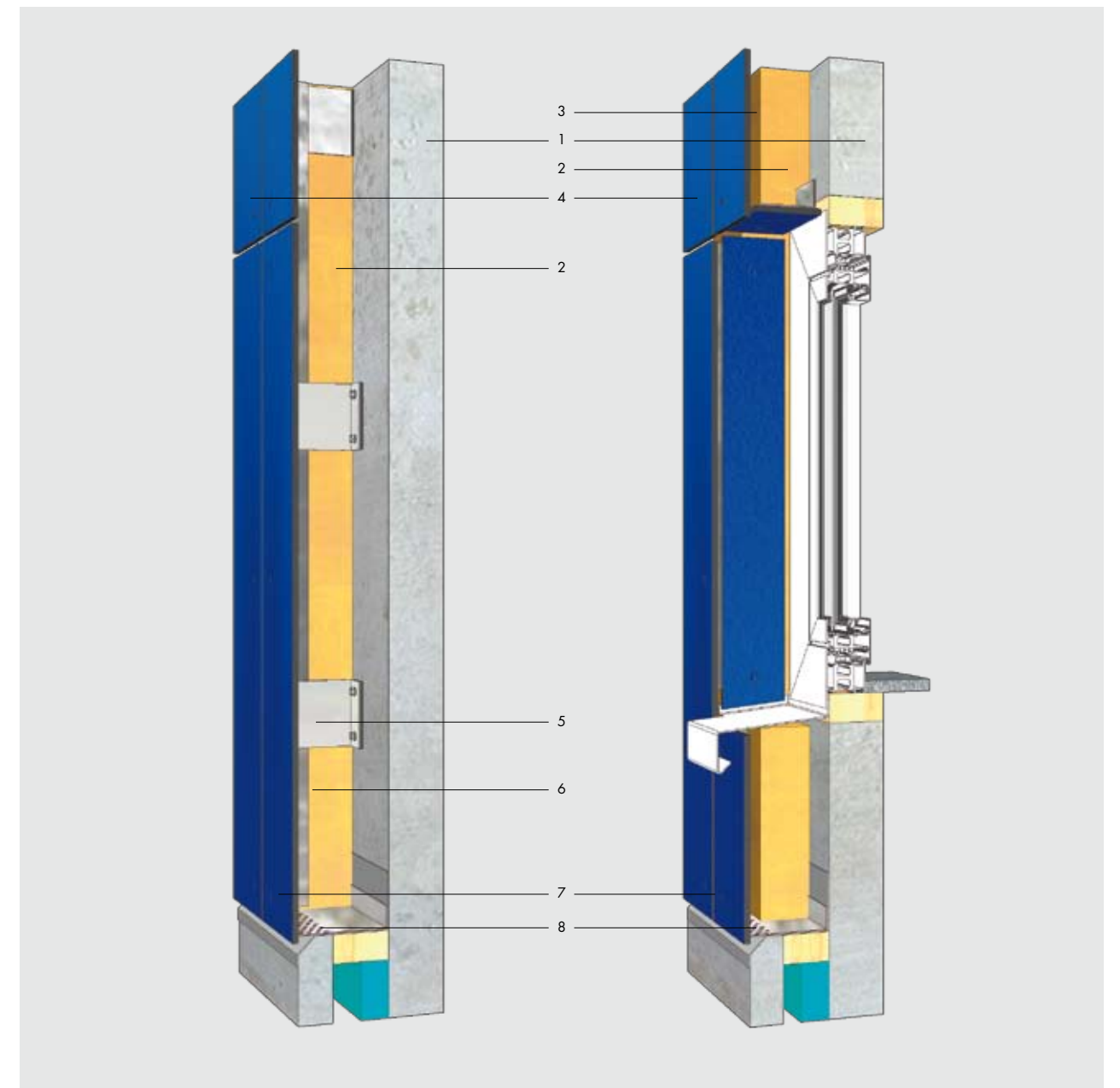


> Kindergarten Gabersdorf, Austria
> Zinterl Architekten ZT GmbH



Horizontal cross-section

- | | |
|--------------------------|----------------------------|
| 1. internal construction | 5. wall bracket |
| 2. insulation | 6. vertical aluminium rail |
| 3. ventilated cavity | 7. aluminium rivet |
| 4. Trespa Meteon panel | |



Vertical cross-section

- | | |
|--------------------------|-------------------------------|
| 1. internal construction | 5. wall bracket |
| 2. insulation | 6. vertical sub-frame profile |
| 3. ventilated cavity | 7. aluminium rivet |
| 4. Trespa Meteon panel | 8. ventilation profile |

TS700 VISIBLE FIXING

with rivets on an aluminium subframe

General

Joints: at least 10 mm

Panel thickness: from 6 mm

Fixing centres and edge clearances

a = horizontal fixing centre (see table)

b = edge clearance

- minimum 20 mm

- maximum 10 x panel thickness

c = vertical fixing centre (see table)

x = maximum 3050 mm

y = maximum 3050 mm

⊙ = fixed point in panel centre

○ = sliding point

maximum fixing centres (mm)*	panel thickness (mm)			
	6	8	10	13
2 fixings in one direction	450	600	750	950
3 or more fixings in one direction	550	750	900	1200

* To be calculated in accordance with applicable standard / regulations.

Fixing detail

Diameter of the hole:

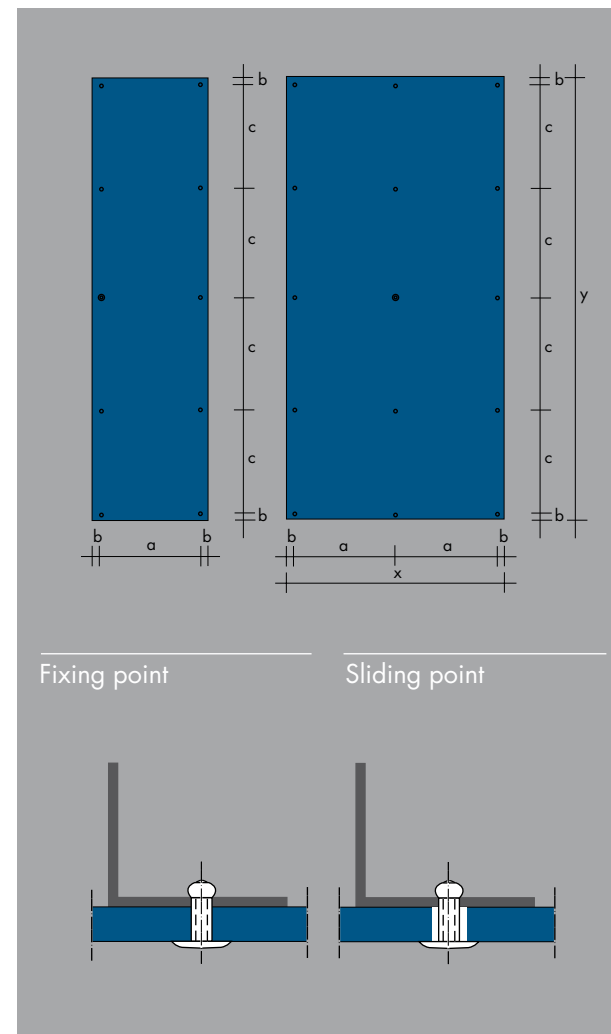
- fixed point = 5.1 mm

- sliding points = 10 mm

If the fixed point cannot be placed at the centre of the panel, 2 fixed points may be made next to each other. The associated diameter of the hole should then be 1 mm larger than the rivet diameter.

A neoprene gasket of 1.5 mm thickness on the subframe can also be used when the fixed point is not in the centre of the panel.

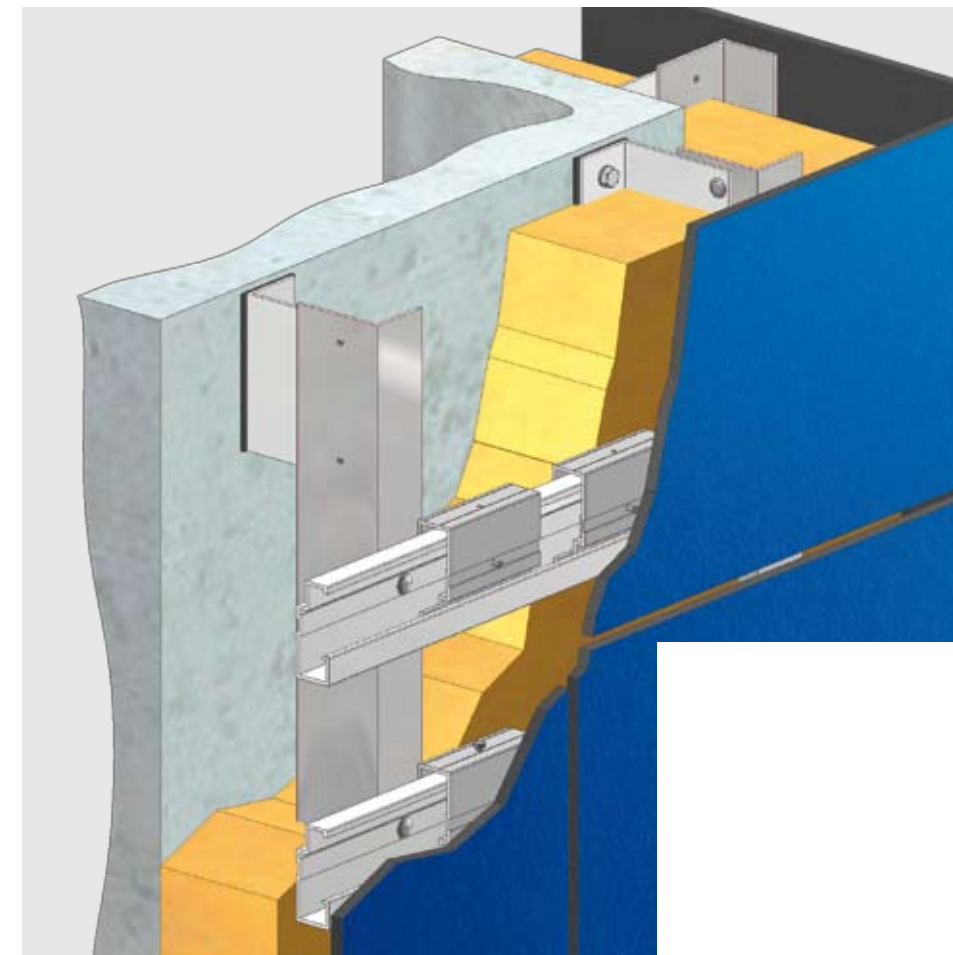
The rivet head should be 0.3 mm free from the panel surface by using a special tool.



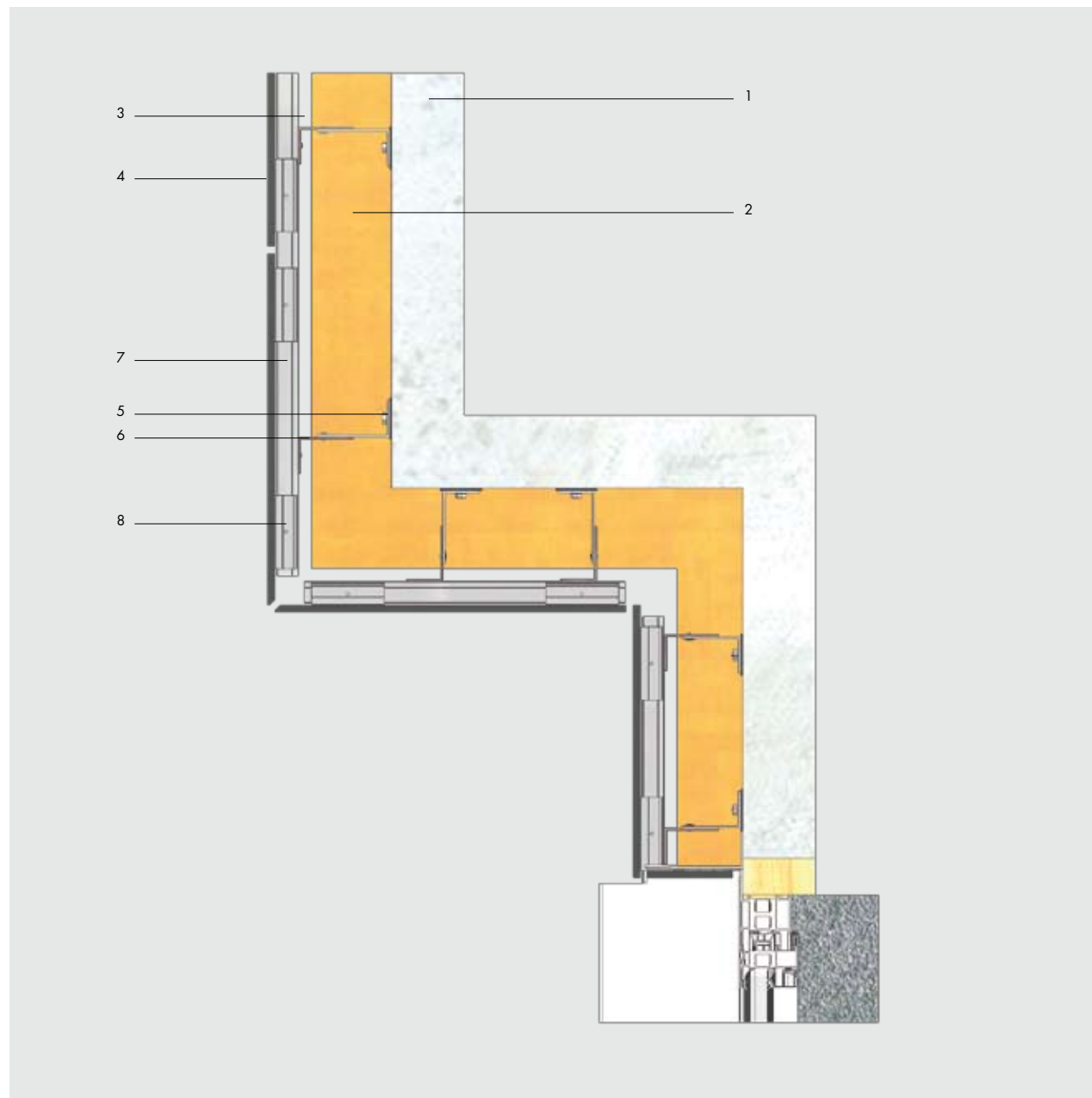
TS200 INVISIBLE FIXING

with brackets on rails

Panels of minimum 8 mm thickness may be fixed invisibly by fixing metal hanging brackets with inserts or screws to the back of the panel. Invisible fixings for 8 mm panels are possible to a limited extent. The panels are fixed to metal subframe. Each panel has two adjusting points and a fixed point at the top; so adjusting is possible and unwanted movement of the whole panel can not happen.

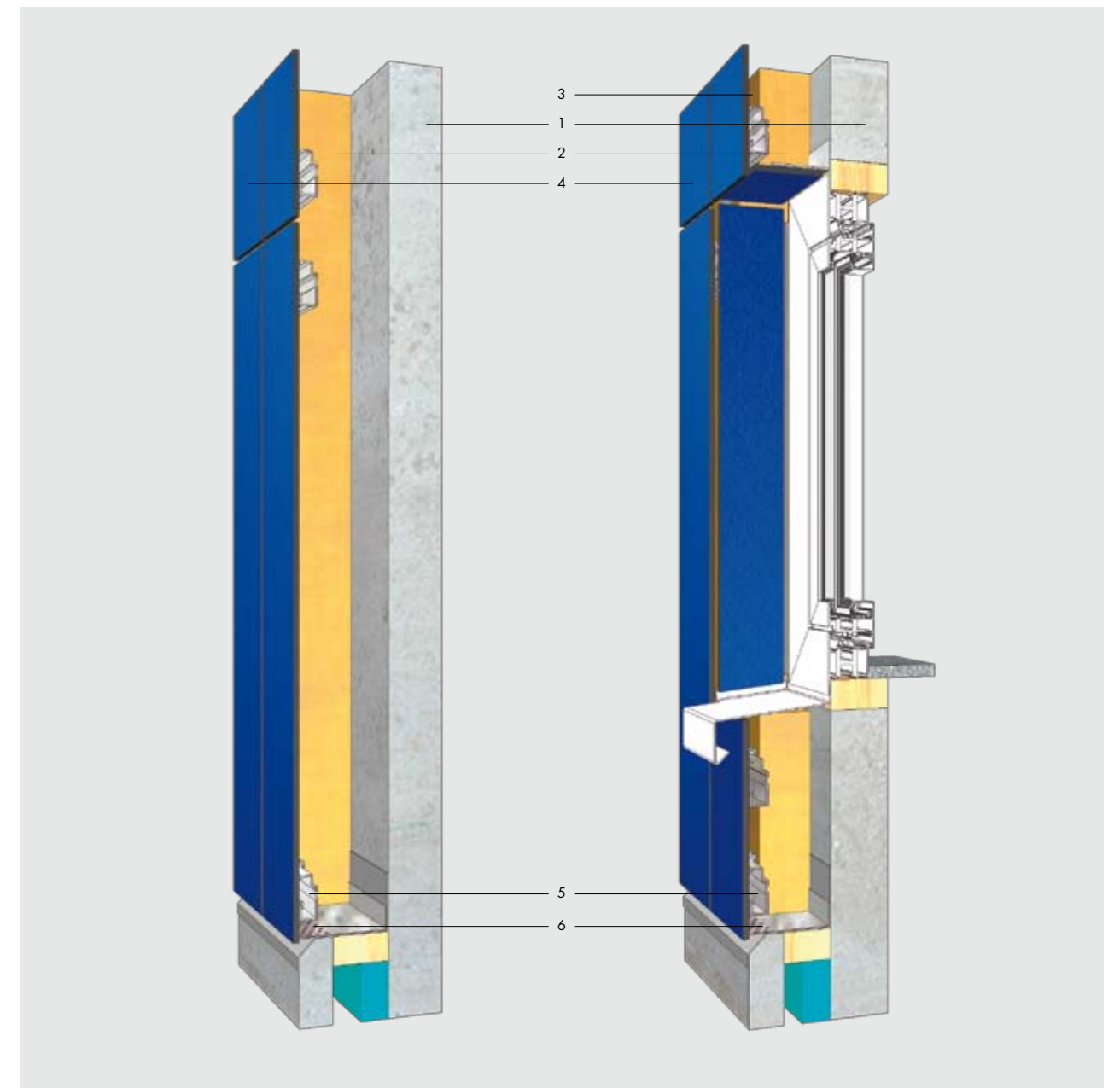


> Ecole de musique, France
> SIZIX Architectes



Horizontal cross-section

- 1. internal construction
- 2. insulation
- 3. ventilated cavity
- 4. Trespa Meteoron panel
- 5. wall bracket
- 6. vertical aluminium rail
- 7. horizontal aluminium rail
- 8. aluminium hanging bracket



Vertical cross-section

- 1. internal construction
- 2. insulation
- 3. ventilated cavity
- 4. Trespa Meteoron panel
- 5. horizontal aluminium rail
- 6. ventilation profile

TS200 INVISIBLE FIXING

with brackets on rails

General

Joints: at least 10 mm

Panel thickness: from 8 mm

Shortest panel leg of assembled corner panels may not exceed 300 mm if not, a fixed point in the angle is necessary.

Fixing and edge clearances

a = horizontal fixing centre (see table)

b = edge clearance

- minimum 80 mm
- maximum 10 x panel thickness

c = vertical fixing centre (see table)

⊙ = fixed point

✕ = adjusting point

○ = sliding point:

Lower brackets fixed higher at such a level as to facilitate downward panel movement (2.5 mm/m¹)

maximum fixing centres (mm)*	panel thickness (mm)		
	8	10	13
2 fixings in one direction	600	750	950
3 or more fixings in one direction	750	900	1200

* To be calculated in accordance with applicable standard / regulations.

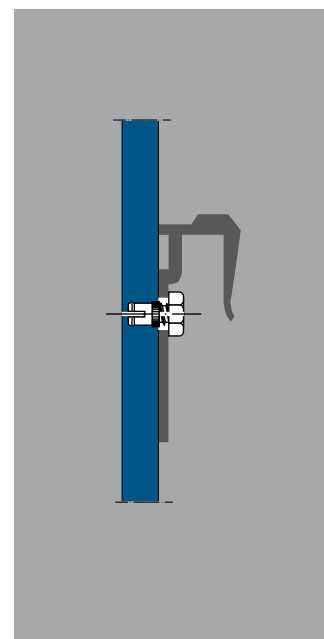
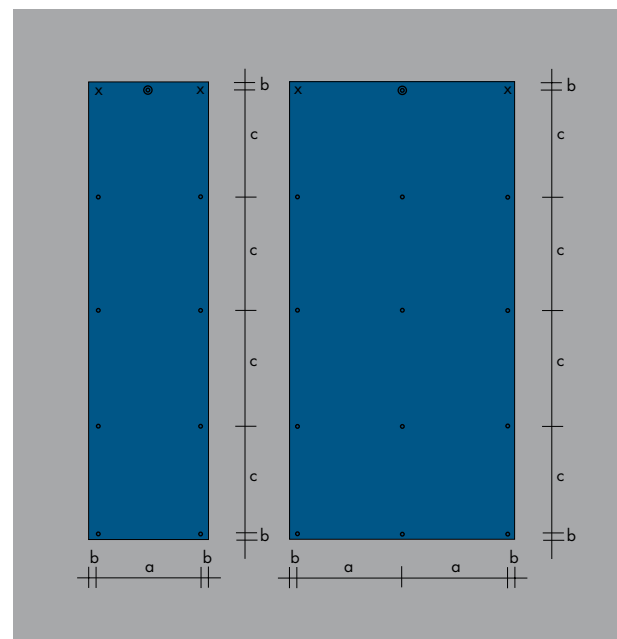
Fixing detail

Fixing method

- straight insert
- thread cutting screw
- conical insert

Remaining panel thickness: at least 2.5 mm.

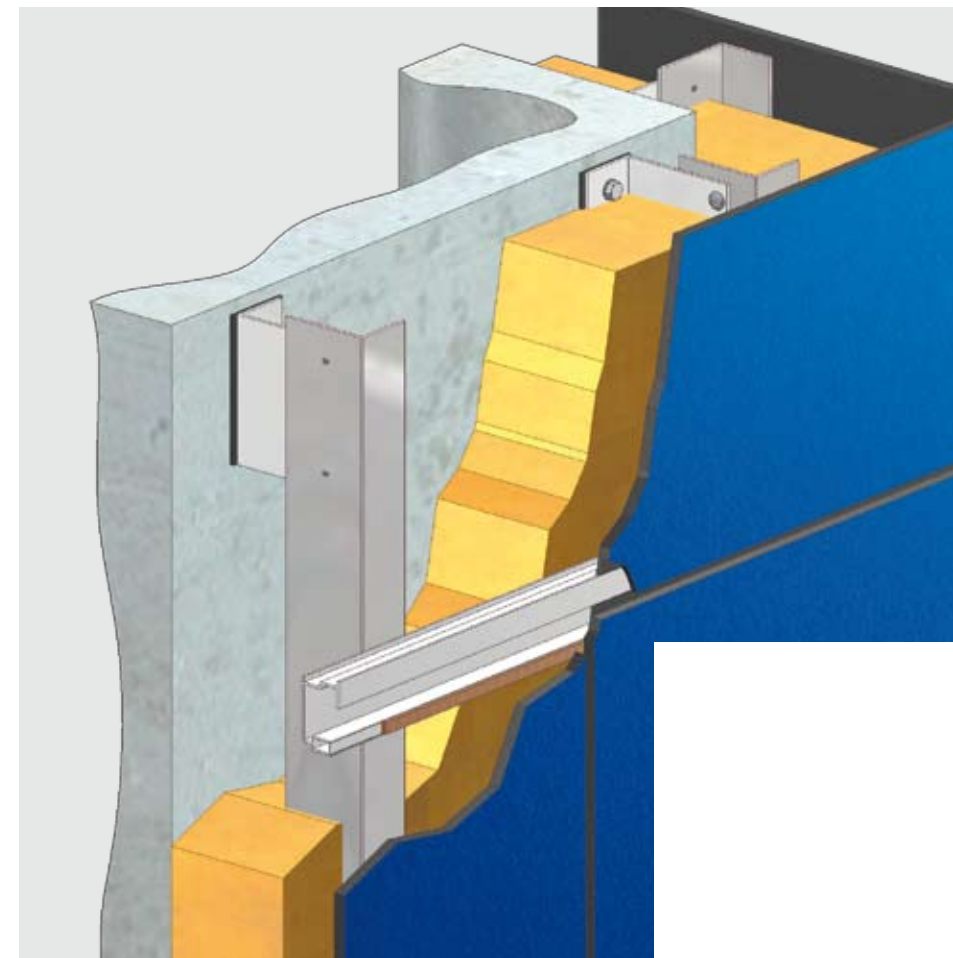
Anchoring depth: panel thickness - 3 mm.



TS300 INVISIBLE FIXING

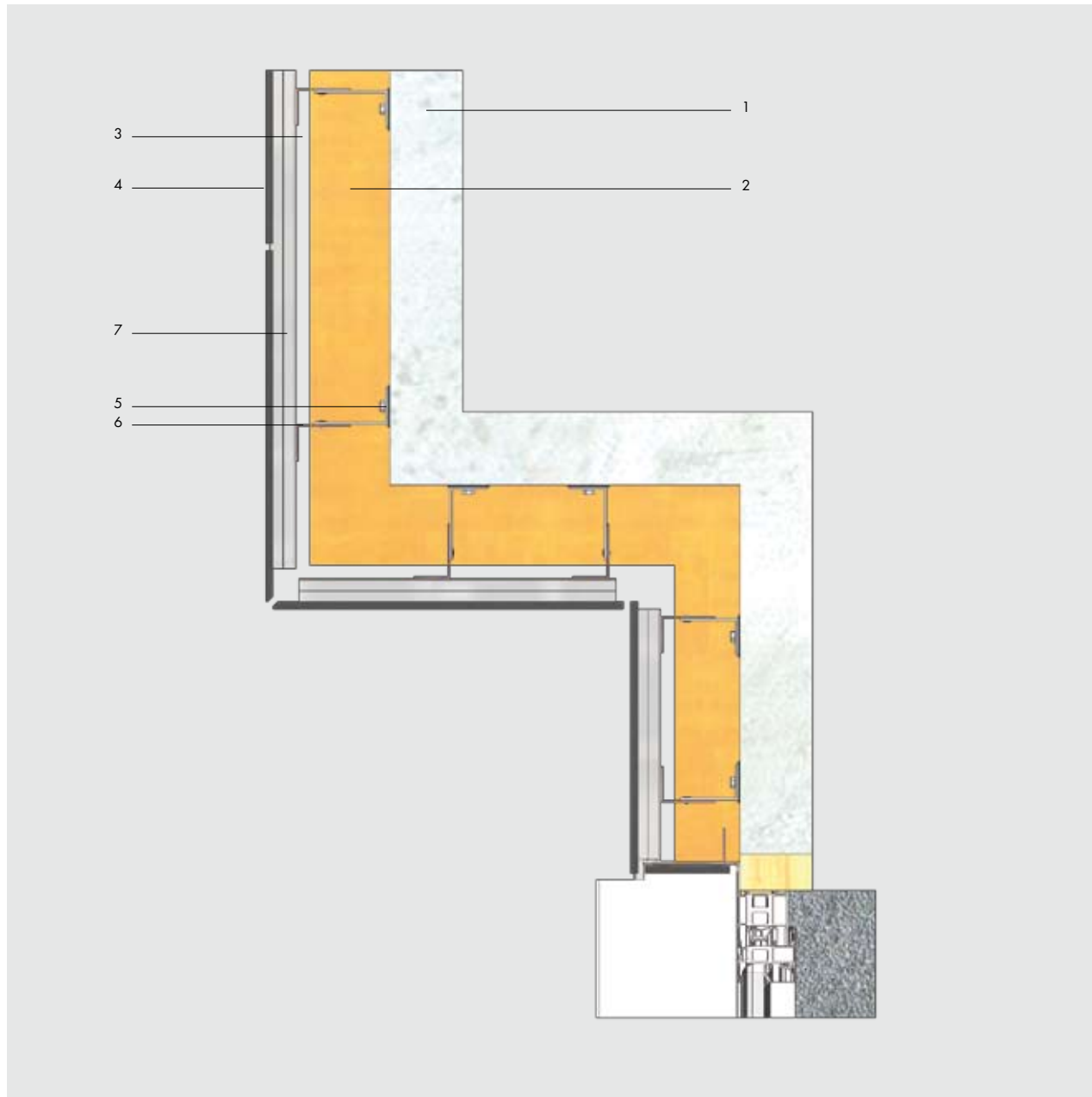
using profiled edges

8, 10 and 13mm thick panels can be installed by fitting their specially grooved horizontal edges into continuous aluminium TS300 rails. The horizontal aluminium TS300 rails can be fixed to a vertical timber or aluminium support construction. The grooved horizontal edges enable the panels to be attached to the aluminium rails, while hiding the rails from sight. The TS300 fixing method is typically suited to install large uninterrupted façade surfaces with horizontal lines.



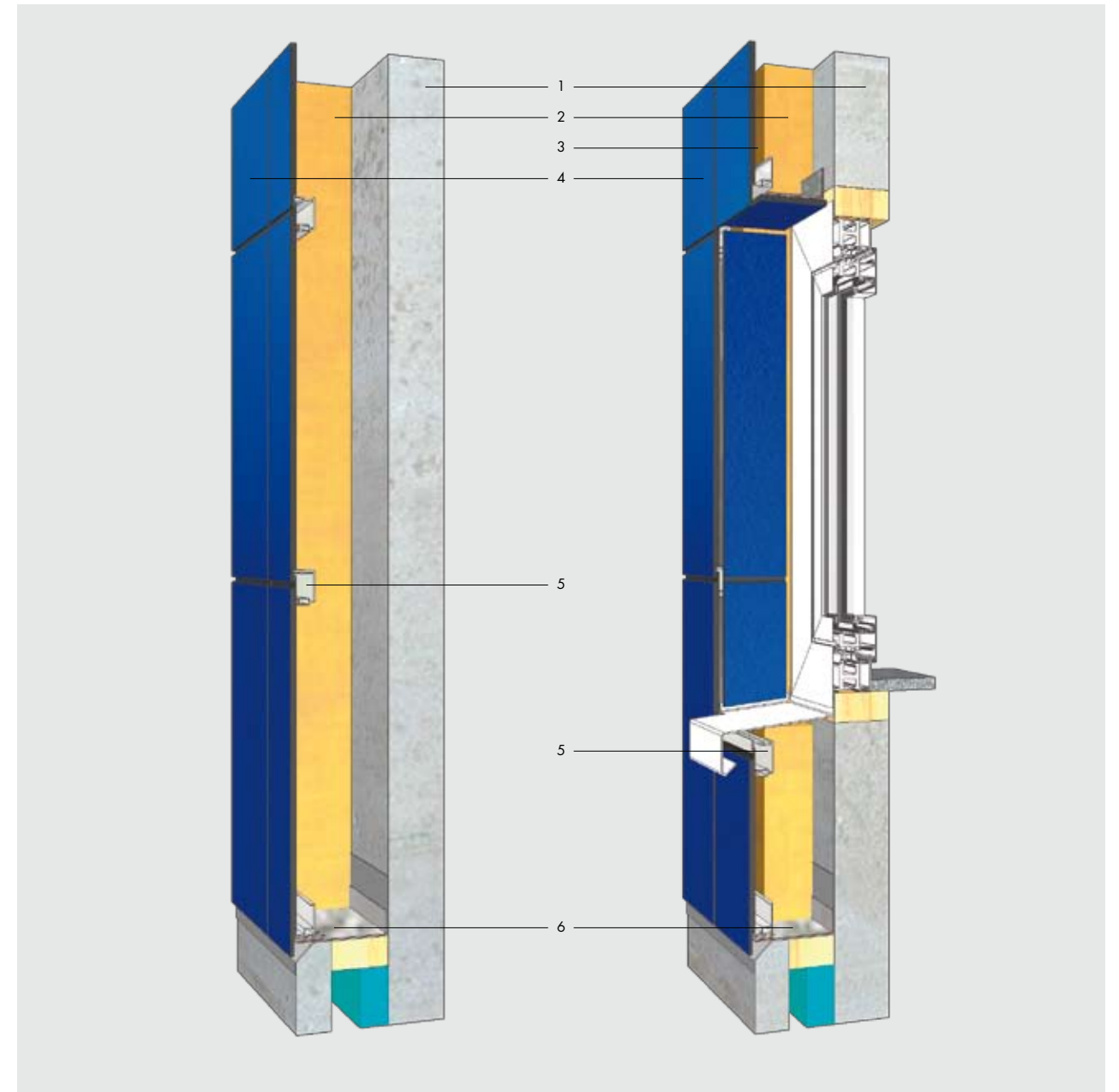
> Kantoor van de Meerakker, The Netherlands
> Anomalie Architects





Horizontal cross-section

- 1. internal construction
- 2. insulation
- 3. ventilated cavity
- 4. Trespa Meteon panel
- 5. wall bracket
- 6. vertical aluminium rail
- 7. horizontal TS300 profile



Vertical cross-section

- 1. internal construction
- 2. insulation
- 3. ventilated cavity
- 4. Trespa Meteon panel
- 5. horizontal TS300 profile
- 6. ventilation profile

TS300 INVISIBLE FIXING

using profiled edges

General

Joints: at least 10 mm

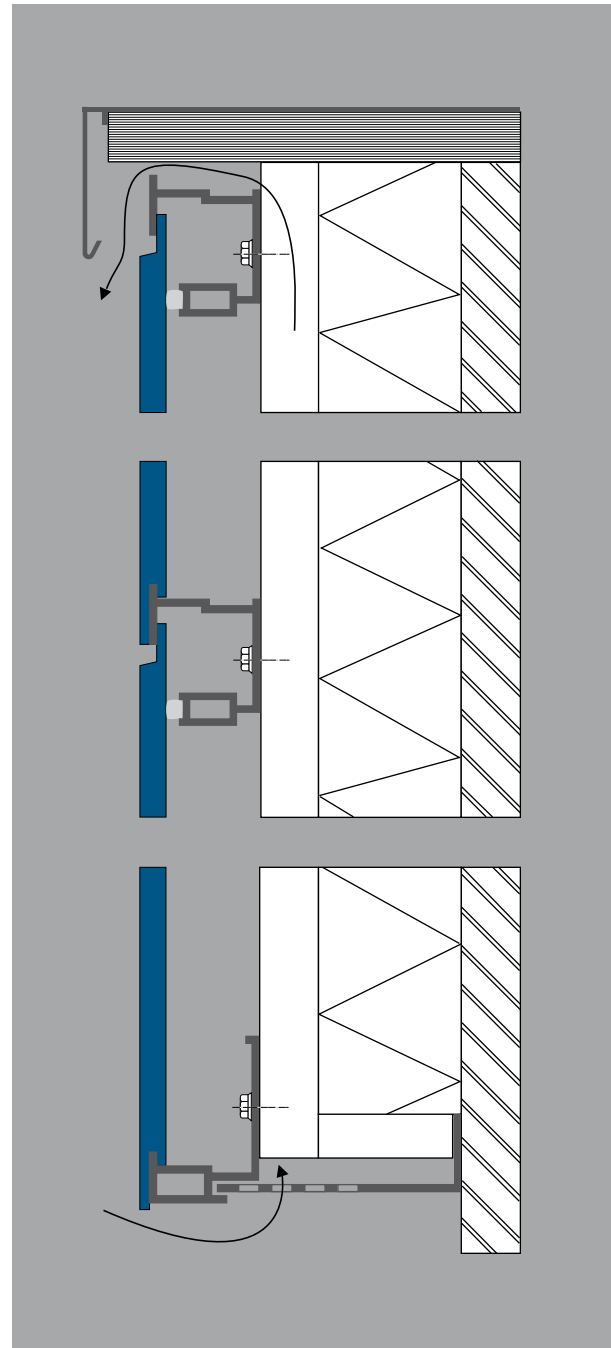
Panel thickness: from 8 mm

Panel size

The TS300 fixing method can only be used for single-field spans. As a result, the maximum panel height is limited as indicated in the table below. The maximum panel width is 3650 mm.

panel thickness (mm)	maximum panel height (mm)*
8	600
10	750
13	900

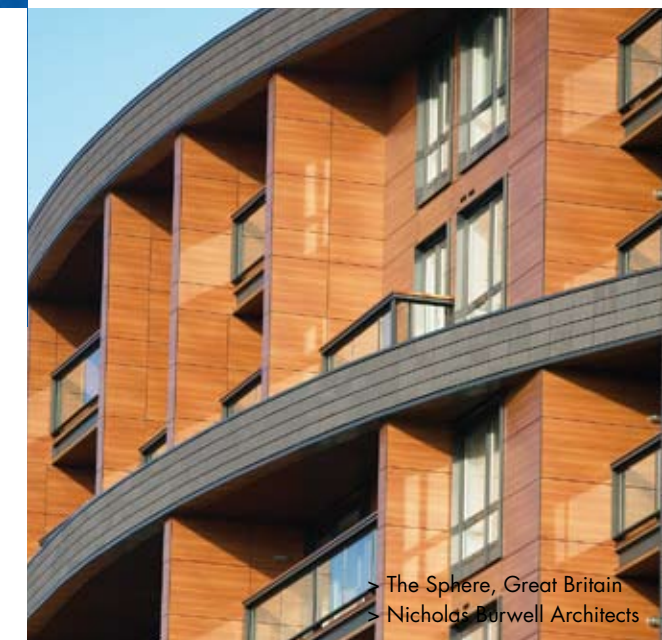
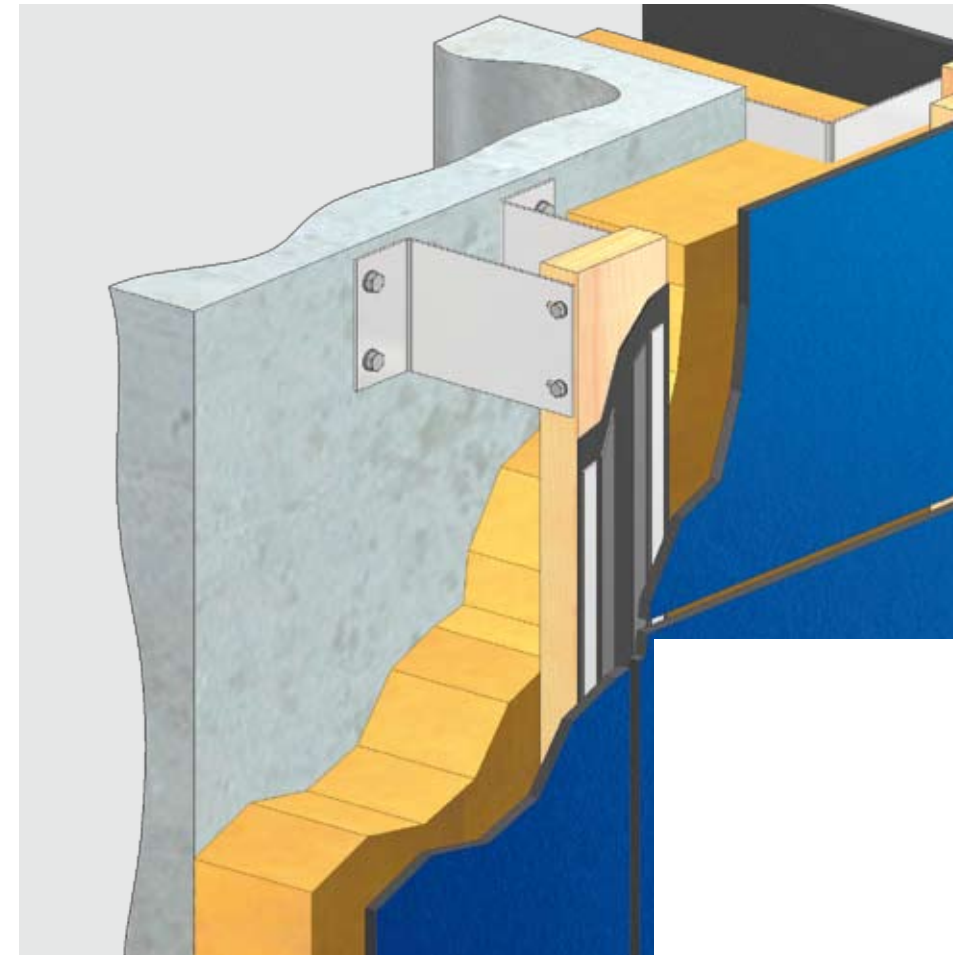
* To be calculated in accordance with applicable standard / regulations.



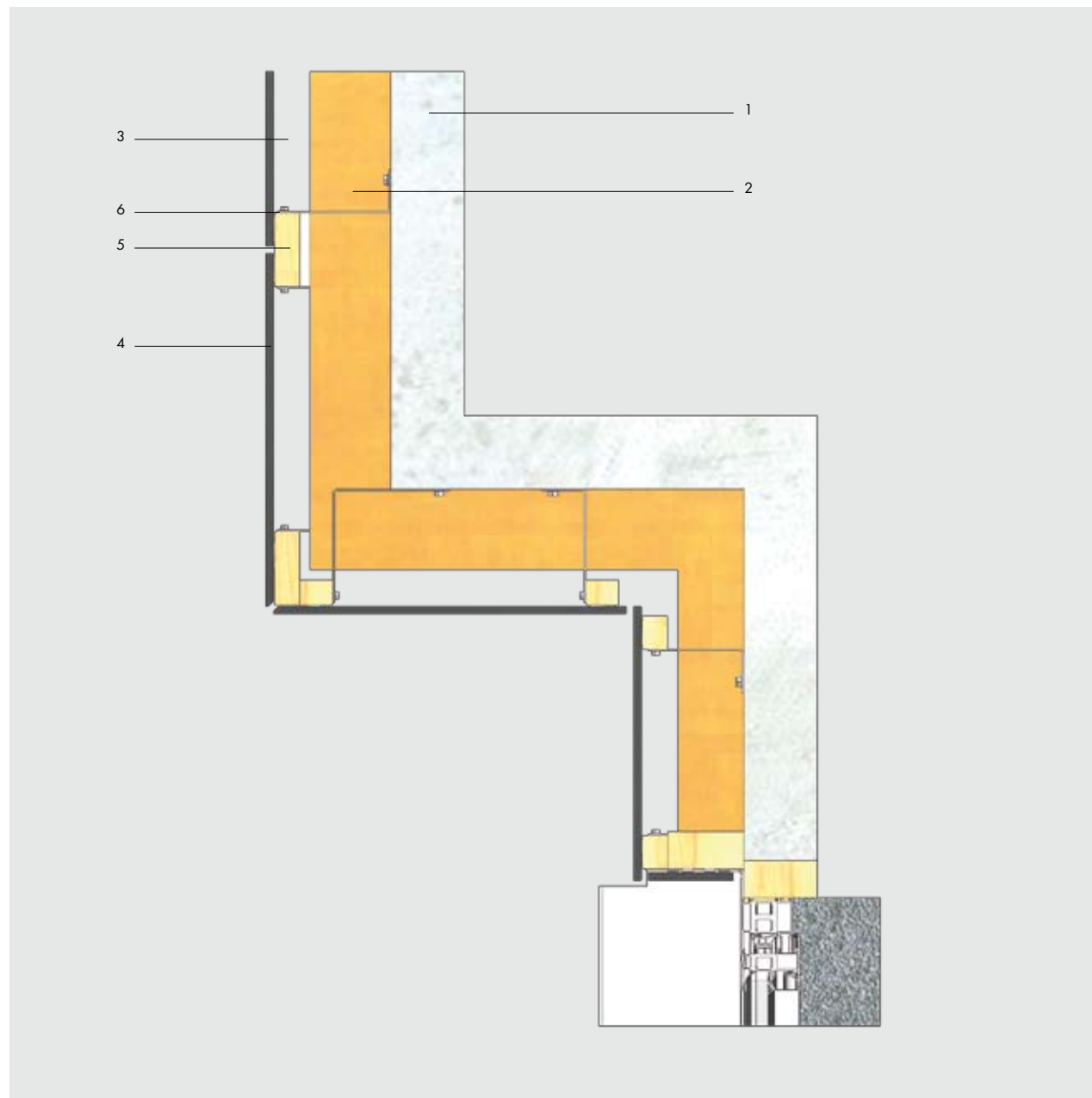
TS450 INVISIBLE FIXING

with adhesive

Panels of a thickness of 6 mm minimum can be fixed to a vertical timber subframe using a permanently flexible adhesive system. The subframe has to comply with the applicable durability, strength and stability requirements.

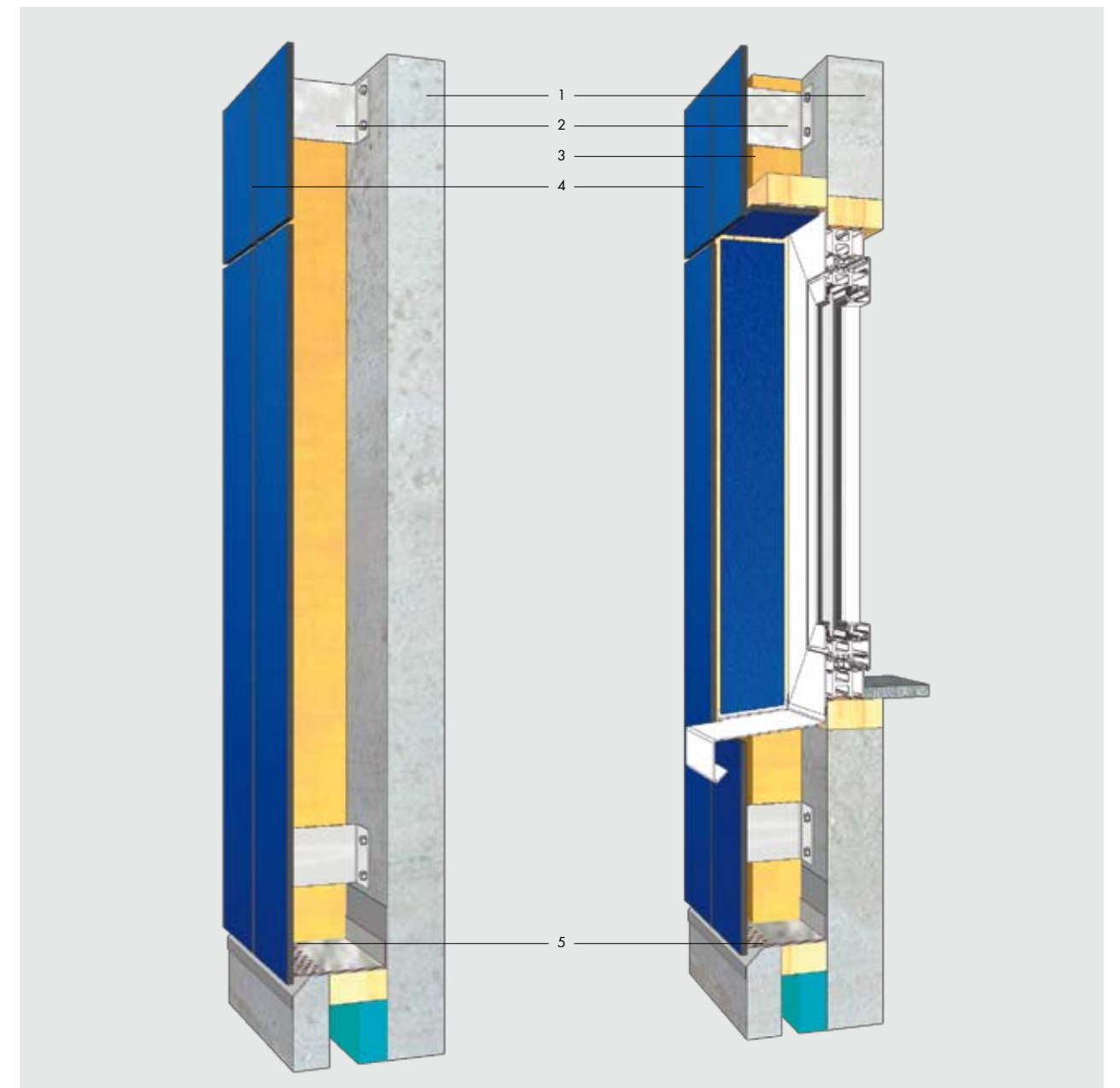


> The Sphere, Great Britain
> Nicholas Burwell Architects



Horizontal cross-section

- 1. internal construction
- 2. insulation
- 3. ventilated cavity
- 4. Trespa Meteon panel
- 5. vertical timber batten
- 6. adhesive system



Vertical cross-section

- 1. internal construction
- 2. insulation
- 3. ventilated cavity
- 4. Trespa Meteon panel
- 5. ventilation profile

TS450 INVISIBLE FIXING with adhesive

General

Joints: minimum 10 mm

Panel thickness: from 6 mm

Panel dimensions: maximum length 2550 mm,
maximum surface 2.5 m².

Fixing and distances from the edge

a = horizontal fixing centre (see table)

d = edge clearance: minimum 20 mm

x = panel width

y = panel height

maximum fixing centres (mm)*	panel thickness (mm)		
	6	8	10
2 fixings in one direction	450	600	650
3 or more fixings in one direction	550	650	650

* To be calculated in accordance with applicable standard / regulations.

Fixing detail

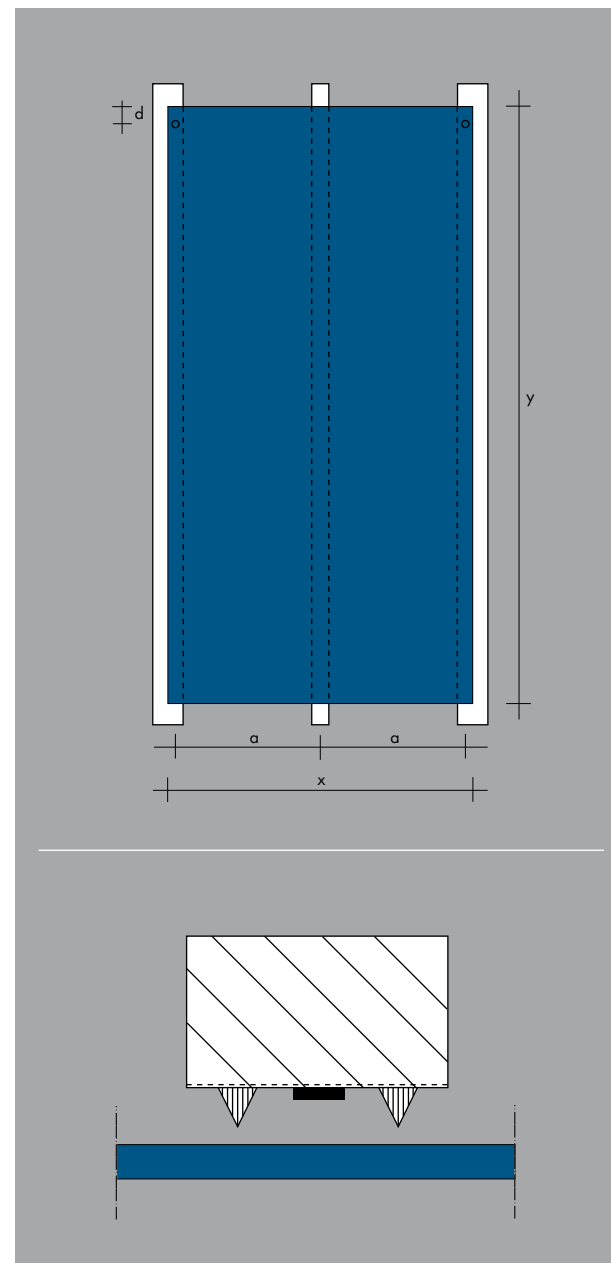
At least two mechanical fixings (screws) in the upper edge of the panel.

Diameter of the hole for the screws:

- 8 mm for fast fixing screw for Trespa
- shank diameter of the screw + 3 mm for other screws

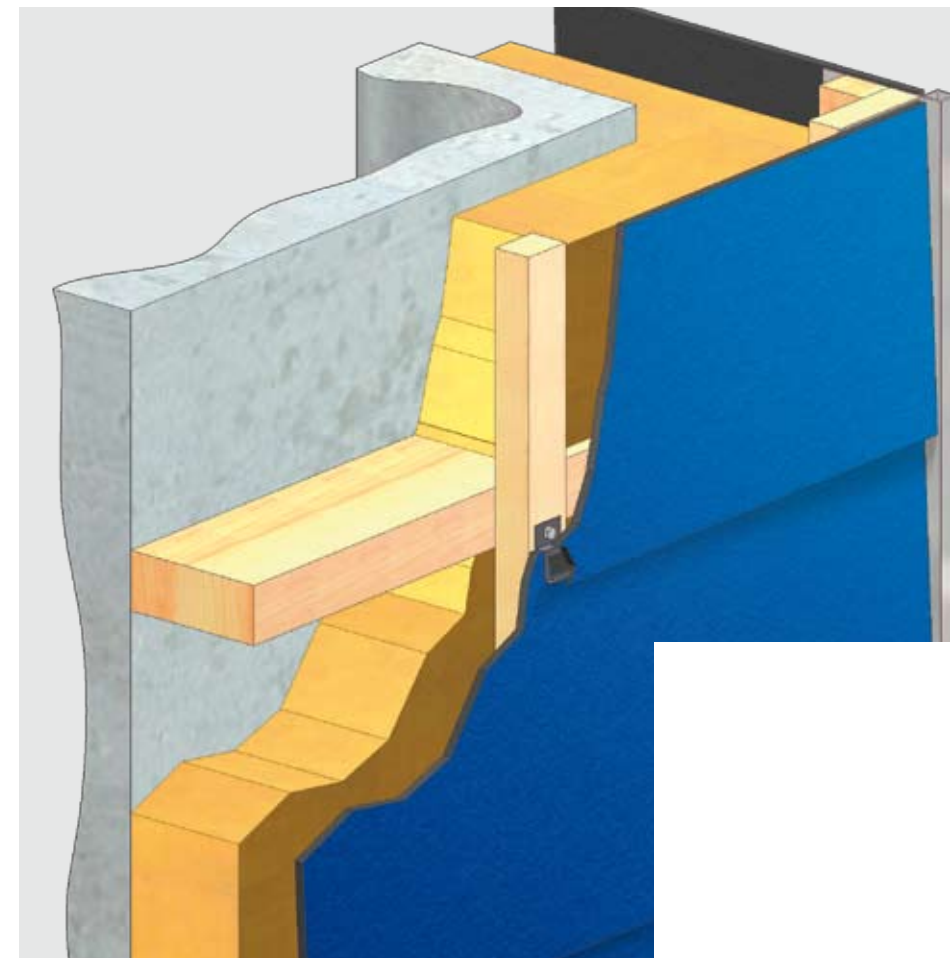
Planed timber battens minimum:

- end battens: 45 x 28 mm
- intermediate battens: 55 x 28 mm
- intermediate panel jointing battens: 85 x 28 mm

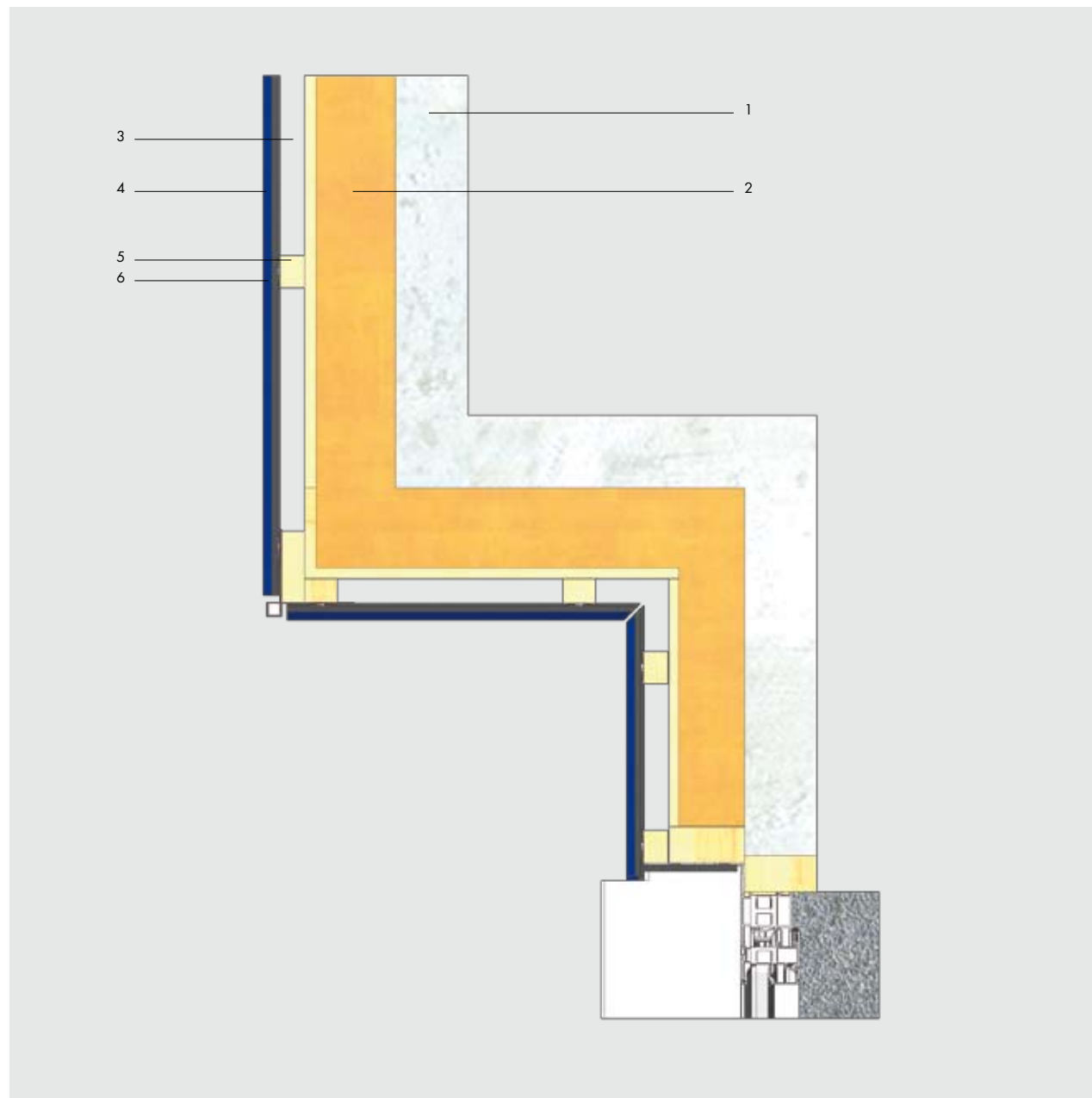


TS650 INVISIBLE FIXING of sidings

8mm thick Trespa panels have a groove in their bottom edge enabling them to be attached using special stainless steel fixing clamps. The panels are installed from the bottom upwards, with the first line of clamps being fixed to adjusting blocks or to an 8mm thick adjusting batten (see details). The panels in the top row are screwed at their top edge.

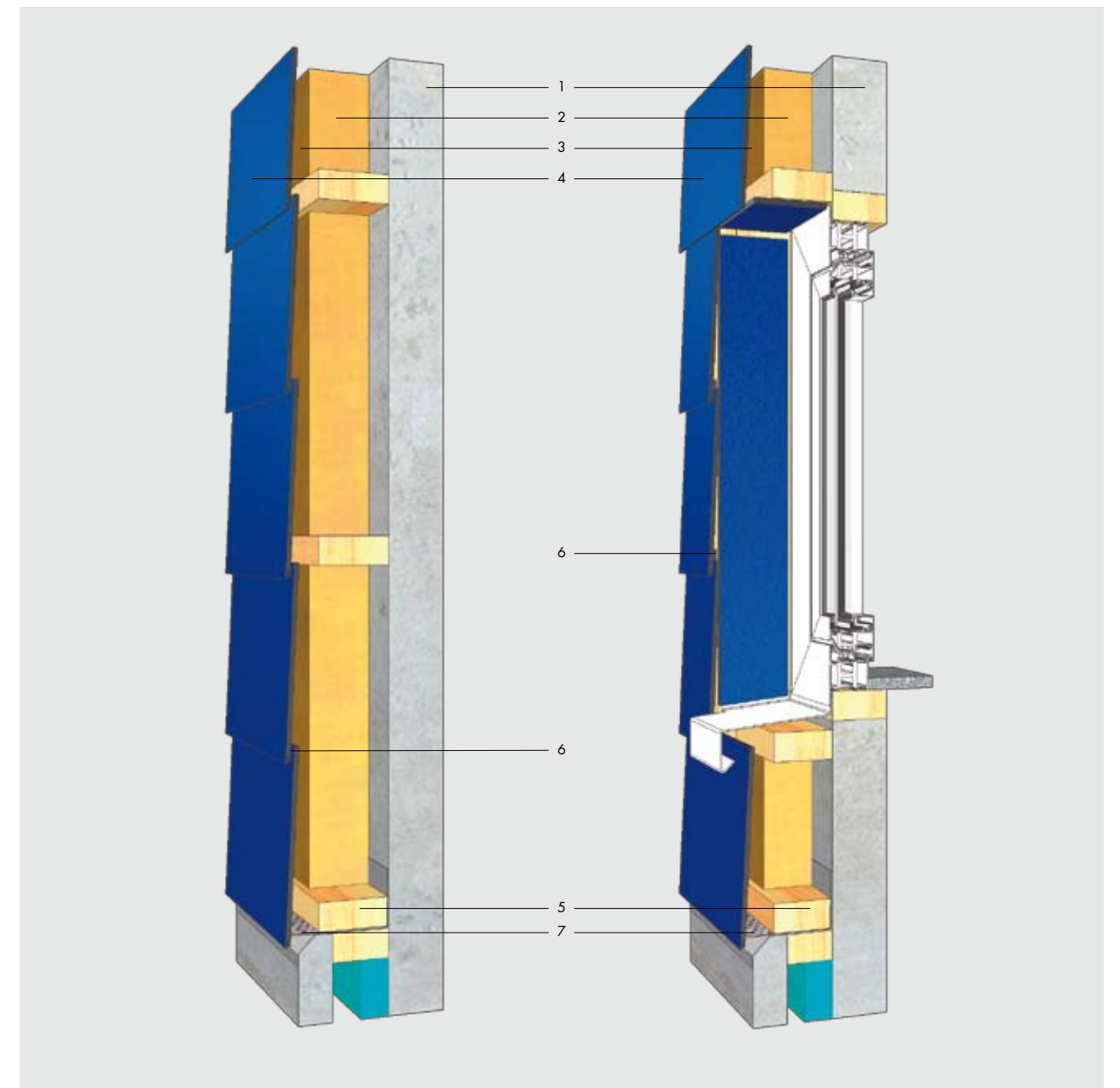


> Rozengaard, The Netherlands
> K3 Architectuur



Horizontal cross-section

- 1. internal construction
- 2. insulation
- 3. ventilated cavity
- 4. Trespa Meteoron panel
- 5. vertical timber batten
- 6. stainless steel supporting clip



Vertical cross-section

- 1. internal construction
- 2. insulation
- 3. ventilated cavity
- 4. Trespa Meteoron panel
- 5. horizontal timber batten
- 6. stainless steel supporting clip
- 7. ventilation profile

TS650 INVISIBLE FIXING of sidings

General

Joints: minimum 10 mm

Panel thickness: 8 mm

Fixing and edge distances

The panel overlap is approx. 25 mm.

The panel height can vary from 200 to 350 mm; the max. panel length is 3650 mm. The horizontal clamp fixing distance is max. 600 mm centre-to-centre.

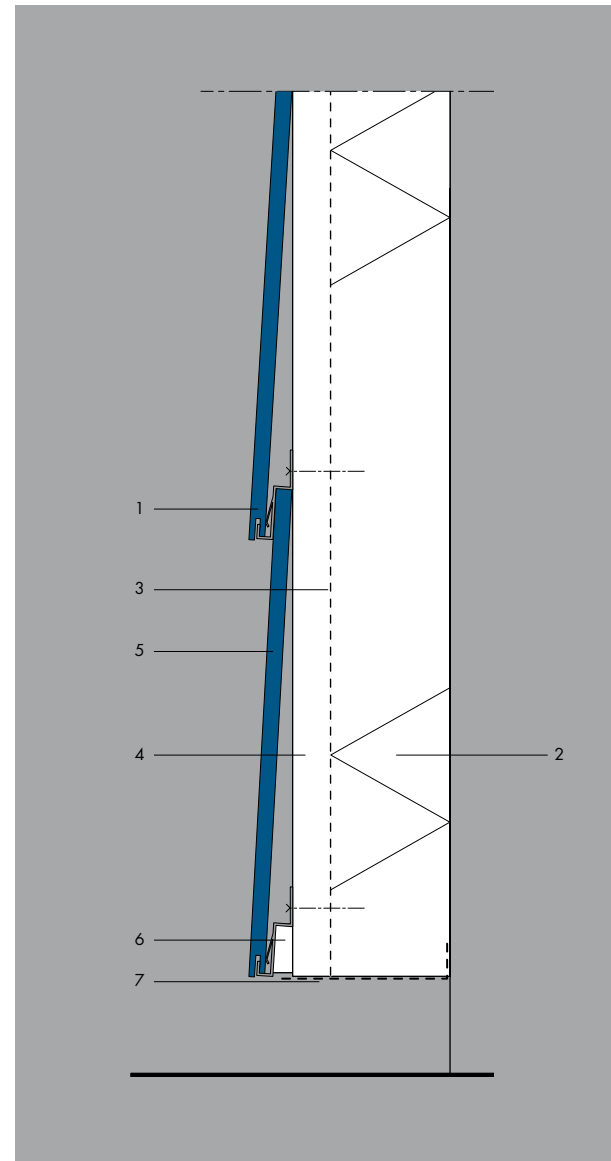
maximum building height 8 m

Panel thickness	Hor. fixing distance	Panel height
8 mm	600 mm	200 - 350 mm

Fixing detail

The Trespa panels are fixed to vertical timber battens with centre-to-centre distances of max. 600 mm. The minimum batten width at the joints must be 75 mm. A width of 50 mm is sufficient for the other battens.

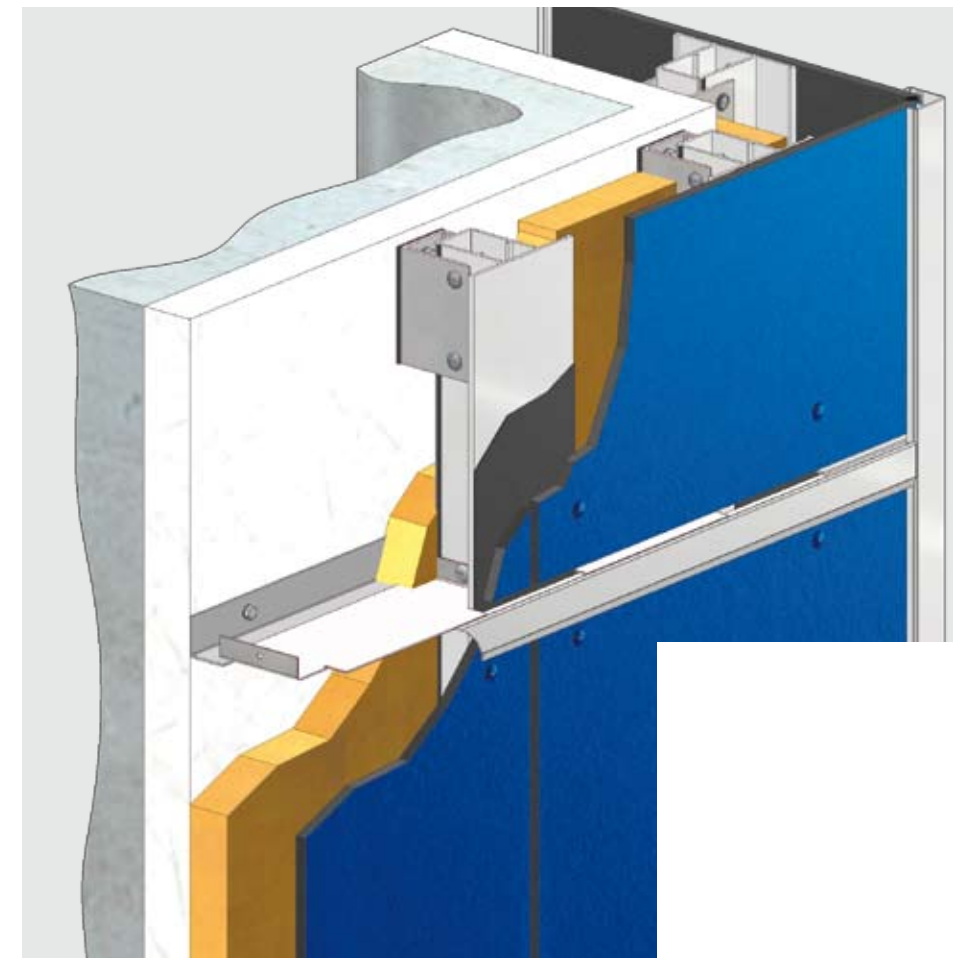
Every panel is secured in the centre once to prevent it shifting horizontally.



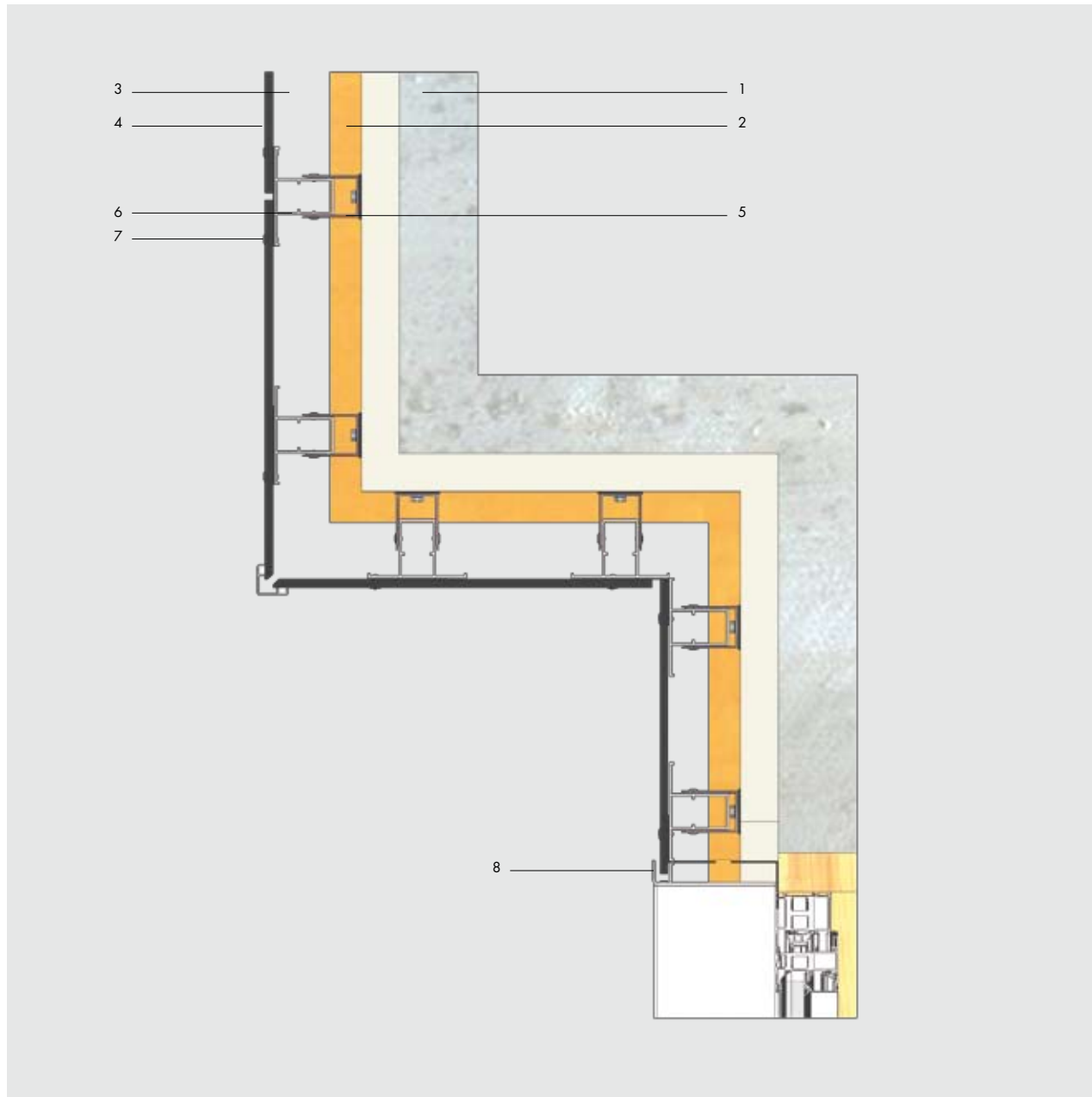
1. Stainless steel clamp screwed onto timber
2. Thermal insulation
3. Breather foil
4. Ventilated cavity
5. Trespa 8 mm
6. Adjustment block thickness 8 mm
7. Ventilation strip

System 700 SPECIAL FIXING floor / floor spanning solution with rivets on a specific aluminium subframe

Panels that are normally 8 mm thick may be fixed to an aluminium bracket and vertical box rail system offering floor to floor spanning characteristics. The system is individually designed and fabricated for each project, offering detailing flexibility and integrated fire breaking, making it ideal for the overclad of medium and high rise buildings.

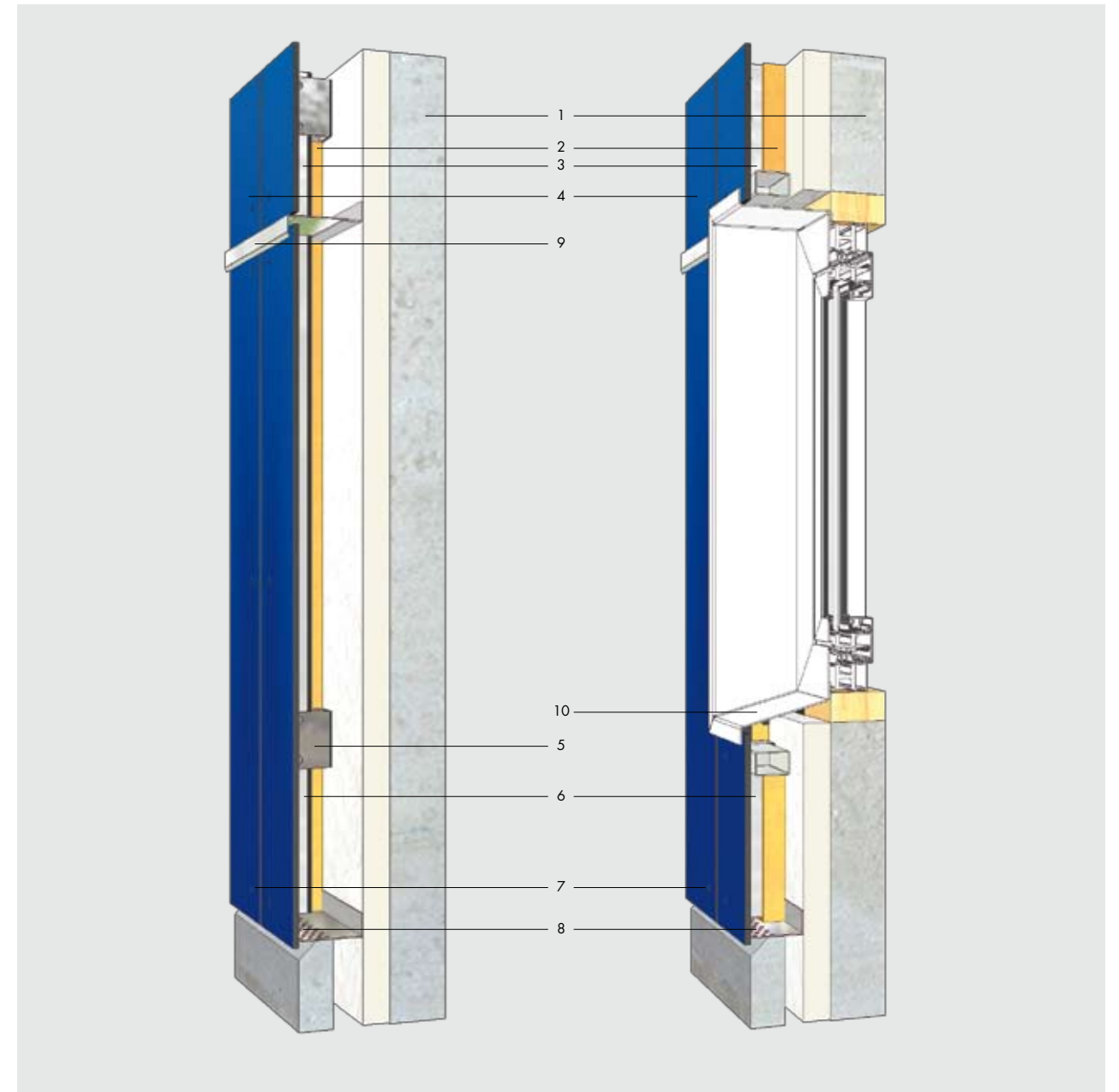


> Smiths Point, Great Britain
> PRP Architects



Horizontal cross-section

- | | |
|--------------------------|--|
| 1. internal construction | 5. wall bracket (at floor level only) |
| 2. insulation | 6. vertical aluminium box section rail |
| 3. ventilated cavity | 7. aluminium panel rivet |
| 4. Trespa Meteon panel | 8. window pod |



Vertical cross-section

- | | |
|---------------------------------------|--|
| 1. internal construction | 6. vertical aluminium box section rail |
| 2. insulation | 7. aluminium panel rivet |
| 3. ventilated cavity | 8. ventilation profile |
| 4. Trespa Meteon panel | 9. fire break |
| 5. wall bracket (at floor level only) | 10. window pod |

System 700 SPECIAL FIXING

floor / floor spanning solution with rivets on a specific aluminium subframe

General

Joints: at least 10 mm

Panel thickness: from 8 mm

Fixing centres and edge clearances

a = horizontal fixing centre (see table)

b = edge clearance

- minimum 20 mm

- maximum 10 x panel thickness

c = vertical fixing centre (see table)

x = maximum 3050 mm

y = maximum 3050 mm

⊙ = fixed point in panel centre

○ = sliding point

maximum fixing centres (mm)*	panel thickness (mm)		
	8	10	13
2 fixings in one direction	600	750	950
3 or more fixings in one direction	750	900	1200

* To be calculated in accordance with applicable standard / regulations.

Fixing detail

Diameter of the hole:

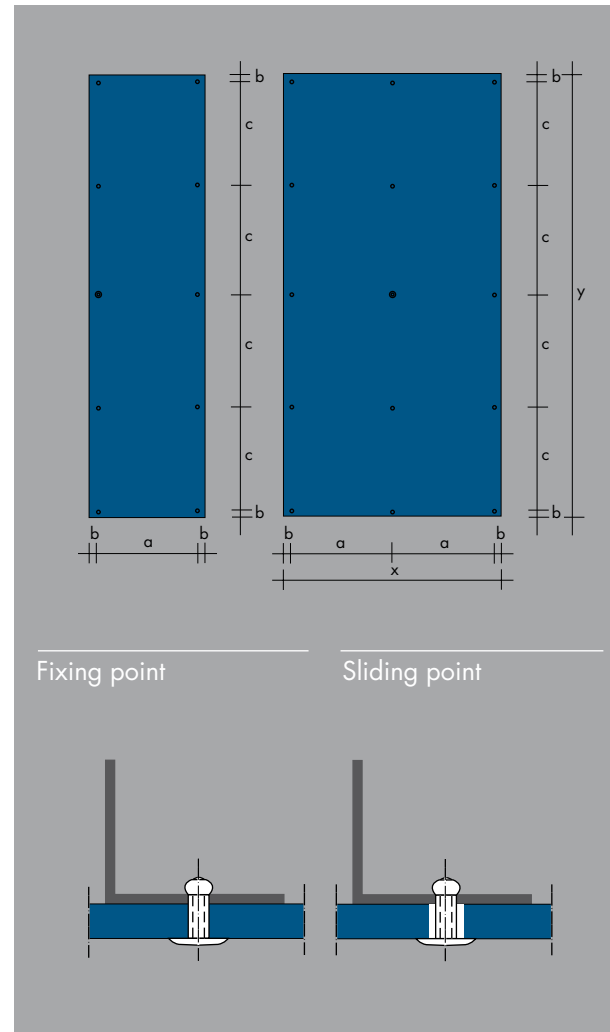
- fixed point = 5.1 mm

- sliding points = 10 mm

If the fixed point cannot be placed at the centre of the panel, 2 fixed points may be made next to each other. The associated diameter of the hole should then be 1 mm larger than the rivet diameter.

A neoprene gasket of 1.5 mm thickness on the subframe can also be used when the fixed point is not in the centre of the panel.

The rivet head should be 0.3 mm free from the panel surface by using a special tool.



PANELS IN FRAMES

Single-skin panels in frames

Panels with a thickness from 6 mm can be placed into wood, metal and plastic frames. Single-skin panels are suitable for insulated as well as non-insulated walls.

Ventilation behind the panel is always required.

Therefore, cavities are made in the lower and upper horizontal profile. Water drains are also necessary in the lower horizontal profile. Durable EPDM gaskets close the gap between profile and panel, mastic and tape are not allowed for this.

General

Panel thickness: from 6 mm.

Panel edge: 6 mm free from the frame at three sides.

Fixing centres

x = smallest panel span.

y = largest panel span.

Maximum spans x (in mm)

relation $\frac{y}{x}$	panel thickness (in mm)			
	6	8	10	13
1.0	620	830	1040	1350
1.2	580	780	970	1260
1.4	550	730	910	1190
1.6	520	690	860	1130
1.8	490	660	820	1070
2.0	470	630	780	1020
≥2.5	450	600	750	980

Fixing detail

Groove in profile: 20 mm deep.

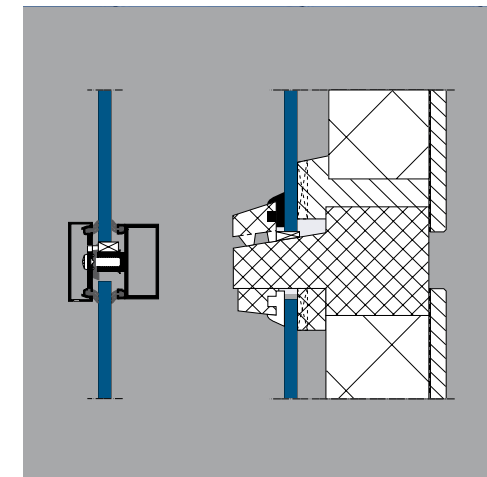
EPDM gasket: minimum 4 mm after installation.

Water drains / ventilation horizontal profiles:

- hole diameter 8 mm

- slotted holes 5 x 25 mm; total 20 cm²/m²

Two supports per panel: minimum 5 x 50 mm.



Sandwich panels in frames

Trespa sandwich panels are composed of a core of insulating material and Trespa sheets glued on both sides. Panels can be placed into wood, metal and plastic frames. Sandwich panels are very suitable for thermal insulation, fire retardant and acoustical use.

Water drains are necessary in the lower horizontal profile always. Durable EPDM gaskets close the gap between profile and panel; mastic and tape are not recommended for this.

General

Panel thickness: minimum 16 mm.

Panel edge: 6 mm free from the frame at three sides.

Composition: 3mm Trespa decor; PUR or PS as insulation. Maximum spans on request.

Total thickness (mm)	U-value with PUR-insulation (l = 0.030 W/mK)
16	1.91
21	1.45
26	1.17
31	0.98
36	0.84
46	0.66
56	0.54
66	0.46

Fixing detail

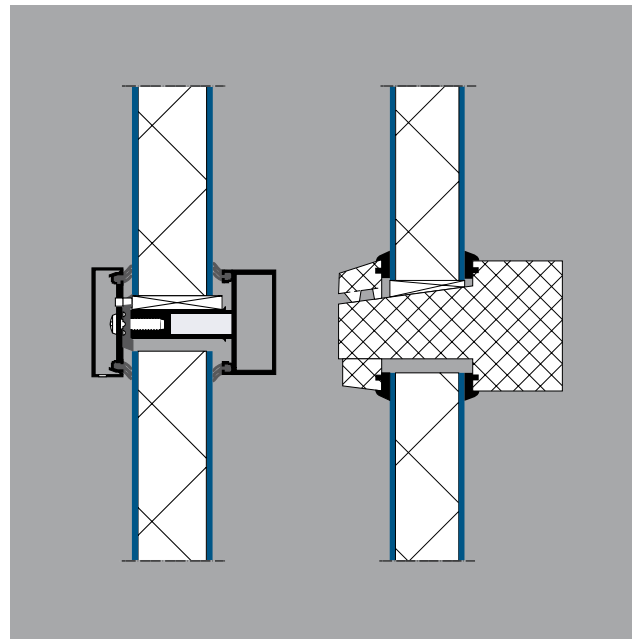
Groove in profile: 20 mm deep.

EPDM gasket: minimum 4 mm thickness after installation.

Water drains horizontal profiles:

- hole diameter 8 mm
- slotted holes 5 x 25 mm

Two supports per panel: minimum 5 x 50 mm.



SUN BLINDS

General guidelines

Panels with a thickness of 8 mm or more can be used as exterior sun blinds. The following general guidelines apply:

- The minimum width (b) of the blinds is 100 mm. The blinds should be fixed with at least 2 fixings per support, with a minimum of 3 supports per panel (totals 6 fixings minimum).
- Both front and back of the panel must be ventilated with outside air. It is not recommended to glue the Trespa over the whole surface onto a sub frame.
- The fixing distances stated in table 1 need to be decreased when holes or grooves are machined into the panel, dependant on the size and number thereof.
- For sunblinds the use of double-sided Trespa Meteoron is recommended.

Venetian blinds

The most common way for using Trespa as sun blinds, is to install strips of Trespa horizontally in front of a window, usually at an angle.

The maximum fixing centres are derived from the panel thickness, the wind load and the angle of the panel with the horizontal plane, and are stated in table 1. As the minimum number of supports per panel is 3, only the fixing distances for 3 or more fixings in one direction are given.

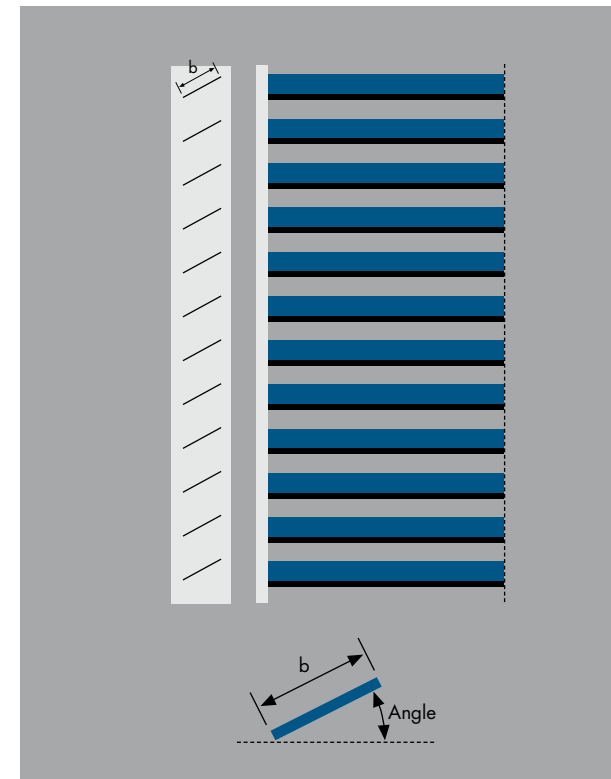
Table 1: maximum fixing distances for Venetian blinds

Angle* of the blinds	Panel thickness (mm)		
	8	10	13
< 40°	800	1000	1300
40° - 50°	850	1050	1350
> 50°	800	1000	1000

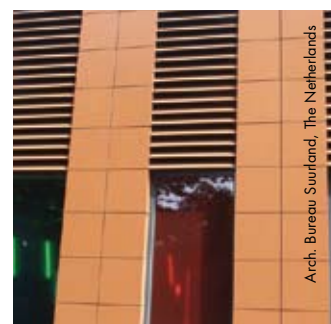
* angle of the blinds with the horizontal plane.

These fixing distances are valid up to a wind load of 0,6 kN/m². If the wind load on the sun blinds is higher, the fixing distances should be decreased.

In case the panels are framed or have metal profiles fastened to the side or back, the fixing distances stated above can be increased, depending on the added stiffness.



Arch. Van den Bergh groep, The Netherlands



Arch. Bureau Suijland, The Netherlands

SHUTTERS

General guidelines

Panels with a thickness of 10 mm or more can be used as a shutter. The following general guidelines apply:

- The shutters need to be ventilated sufficiently with outside air on both sides, either in closed or opened position (but preferably both). This should also be taken into account in the case of ornamental shutters.
- The fixing distances stated in table 2 and 3 need to be decreased when holes or grooves are machined into the panel, dependant on the size and number thereof.
- For shutters the use of double-sided Trespa Meteon is recommended.

Hinged

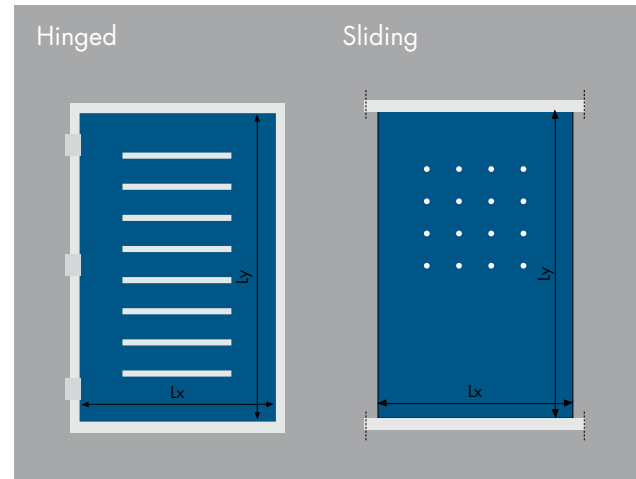
In the case of hinge fastening, the Trespa panel should always have a metal frame. A minimum of three hinges per panel is recommended.

Frame

- The metal frame around the Trespa panel should be weather resistant.
- The frame should be of sufficient strength and stiffness to withstand the wind and other forces without impermissible deflection.
- The frame should be kept free from the Trespa panel for at least 6 mm at three sides.
- Durable EPDM gaskets should be used to close the gap between the profile and the panel, preventing the panel from rattling. Mastic and/or tape are not allowed for this.
- Water drains are necessary in the lower horizontal profile: hole diameter 8 mm or slotted holes 5 x 25 mm.
- The panel should be placed on support blocks: two per panel, minimum 5 x 50 mm.

Table 2: maximum Lx for hinged shutters

ly/Lx	Panel thickness (mm)	
	10	13
≥ 2,5	650	900
2,0	700	950
1,5	800	1050
1,0	950	1250



Sliding

- The panel should be held by a metal frame at the top and bottom that have wheels fastened to it that can slide over the shutter construction.
- The sliding rails should be of sufficient strength and stiffness to withstand the wind and other forces without impermissible deflection.
- In case the Trespa panel is framed on 4 sides with a metal frame (guidelines: see 'sun blinds') the fixing distances can be increased according to table 3.

Table 3: maximum fixing distances for sliding shutters

Vertical span ly max. (mm)	Panel thickness (mm)	
	10	13
Without frame	950	1250
With 4-sided frame	1200	1500

Horizontal span Lx is not limited.



Adnan Džudo, Bosnia & Herzegovina



Arch. Pook, Leiska & Partner, Germany

Trespa International B.V.

Trespa International B.V. specialises in high quality panel material for façade cladding and interior use. Trespa has both the expertise and the means to develop products for specific segments of the market. Trespa is continually looking for ways to protect the environment even more effectively.

Trespa guarantees quality of both products and services. We offer our customers optimal technical support as well as straightforward documentation. Proof of this approach is the award of the ISO 9001 and ISO 14001 certificates.



Whatever your requirements, Trespa offers a full support service. Please contact us for further information.

Conditions of Sale

To all our offers, quotations, sales, deliveries and supplies and/or agreements, and to all related services and activities the

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