

TENTAL

THE CIRCULAR FACADE



By  Hydro

TENTAL

/ THE CIRCULAR FAÇADE

A NEW ALUMINIUM SYSTEM FOR DESIGNING BUILDING ENVELOPS WITH MULTIPLE CREATIVE OPTIONS, LARGE GLAZING UNITS AND THE LOWEST ENVIRONMENTAL IMPACT.

MORE POSSIBILITIES

TENTAL is a platform, with 50 mm and 60 mm wide aluminium profiles, that allows for designing modular curtain walls with large-sized glazing units; seeking the maximum sensation of transparency along with the minimum view of profiles.

TENTAL offers a wide range of aesthetic solutions from the capped to the semi-capped design, with emphasizes either the horizontal lines of the transoms or the vertical lines of the mullions, to the flat cap, creating a smooth look of the profiles and glazing. A wide range of caps designs are available for these configurations. TENTAL also includes the structural silicone glazing option and bead glazing option.

Users can access through an extensive range of windows, doors and sliding doors compatible with this curtain wall system. Safety is guaranteed with a burglary resistance that meets the highest standards, in accordance with international regulations.

LESS IMPACT

Solar shading systems can be integrated into the curtain wall, which, along with reduced thermal transmittance.

Using Hydro CIRCAL, a range of prime quality aluminium made with a minimum of 75% recycled end-of-life aluminium (post-consumer scrap), allows tons of scrap that would otherwise become solid waste to be reintroduced into the system. TENTAL's thermal break elements are made from recycled xPET, a material that gives a second life to everyday water and beverage bottles.

Four new patents allow for optimizing materials, simplifying manufacture, and facilitating installation, which is carried out dry, with no glue or sealants used on-site, no packaging and no waste.

TENTAL is under certification to obtain Cradle to Cradle label. The specific characteristics contributes to constructing sustainable buildings that are eligible to be awarded the environmental certifications such as LEED, BREAM, WELL, VERDE, and LEVEL (s).

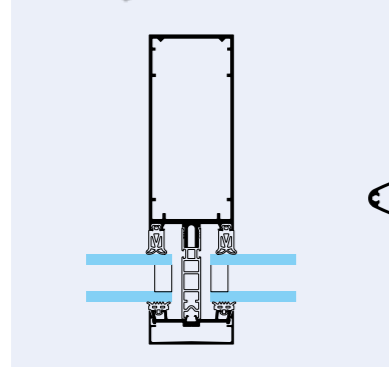
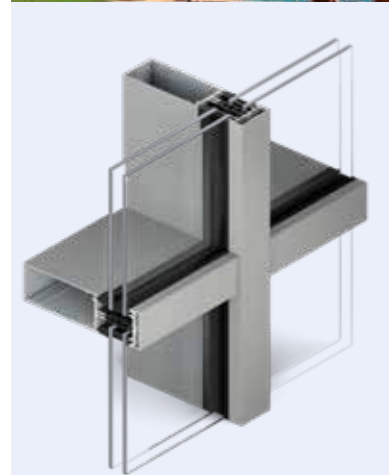
The TENTAL curtain wall is the perfect solution for current needs in terms of design and sustainability in the building industry.

TENTAL

/ THE WIDEST POSSIBLE RANGE OF FAÇADE SOLUTIONS

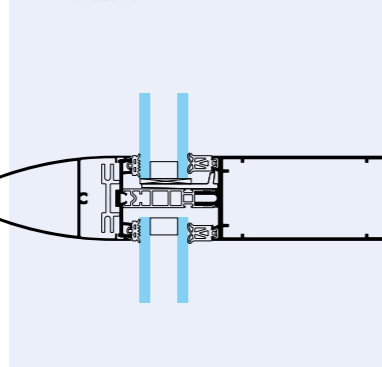
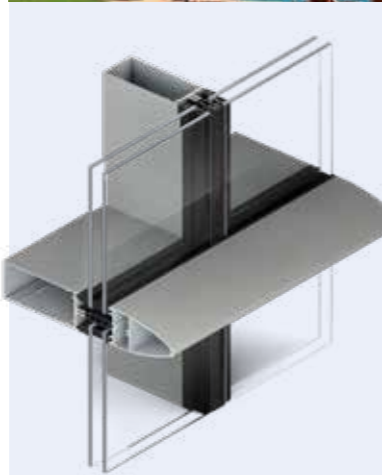
TENTAL FEATURE CAPS

- Sightline: 50 or 60 mm
- Infill: 6 to 62 mm
- Standard or high insulation level
- Pane drainage or mullion drainage
- Facet solution up to +/- 10°
- 90° corner solution
- Anti-burglary: RC2, RC3



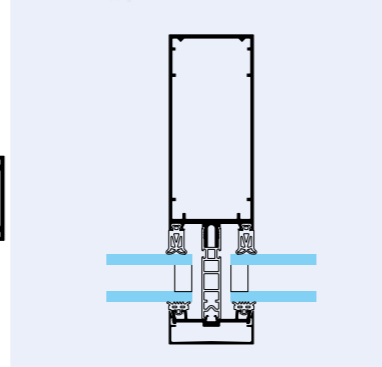
TENTAL HORIZONTAL LINE

- Sightline: 50 or 60 mm
- Infill: 6 to 62 mm
- Standard insulation level
- Pane drainage or mullion drainage



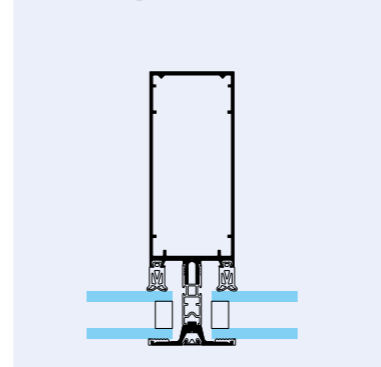
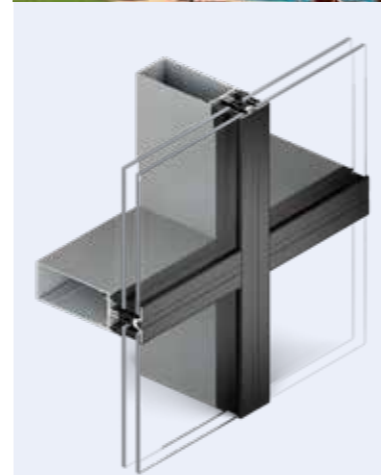
TENTAL VERTICAL LINE

- Sightline: 50 or 60 mm
- Infill: from 6 to 62 mm
- Standard insulation level
- Pane drainage or mullion drainage
- Facet solution up to +/- 10°



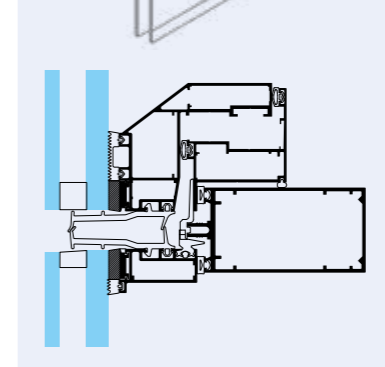
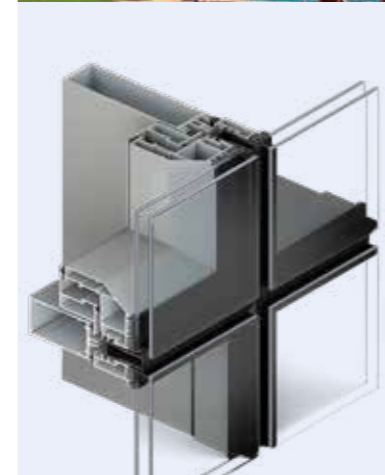
TENTAL FLAT CAP

- Sightline: 50 or 60 mm
- Infill: from 6 to 62 mm
- Standard or high insulation level
- Pane drainage or mullion drainage



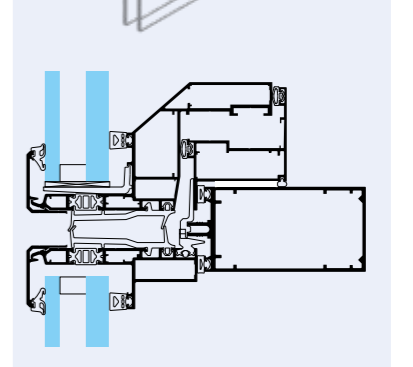
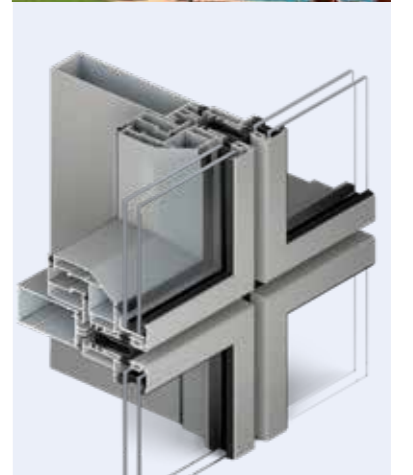
TENTAL SSG

- Sightline: 50 or 60 mm
- Infill: from 28 to 44 mm
- Standard insulation level
- Pane drainage



TENTAL BG

- Sightline: 50 or 60 mm
- Infill: from 28 to 44 mm
- Standard insulation level
- Pane drainage



TENTAL

/ MORE POSSIBILITIES. LESS IMPACT.



TENTAL

/ KEY FEATURES & INNOVATIONS

AESTHETICS AND MODULARITY

- Multiple exterior aspects:
 - Feature cap aspect
 - Horizontal line aspect
 - Vertical line aspect
 - Flat cap aspect
 - Structural silicone glazed aspect
 - Bead glazed aspect
- Collection of caps that mark the identity of each façade
- A full pallet of exclusive colours
- Facet solution up to +/- 10 degrees
- 90° corner post
- Concealed drainage with a central seal for panel drainage or mullion drainage

EXTERNAL CLADDING

- The fixing bracket allows elements to be incorporated onto the outside of the façade for enhanced thermal comfort (management of solar gain):
- Envelope cladding: variety of decorative elements

INTERIOR AND EXTERIOR OPENINGS

- Compatible with a full range of present and future window, door and sliding systems
- High weather-tightness performances, for openings:
 - Air permeability: up to Class 4
 - Water tightness: up to E1500 Pa
 - Resistance to wind pressure: up to C5
 - Mechanical resistance: up to Class 3

LARGE DIMENSIONS

- Large infills up to 12,25 m²
- Maximum infill weight: up to 850 kg according to EN 13830, up to 720 kg according to NF DTU 33.1
- Maximum glazing thickness 62 mm

PERFORMANCES

(according to EN standards)

- Air permeability: up to class 4
- Water tightness: up to RE 1500 Pa
- Wind pressure resistance:
 - Service pressure: 2000 Pa
 - Security pressure: 3000 Pa
- Burglar resistance: RC2 and RC3
- Impact resistance: up to I5/E5
- Thermal performance:
 - U_f: ... W/m²K
 - U_{cw}: ... W/m²K
- Performances for openings:
 - Air permeability: up to Class 4
 - Water tightness: up to E 1500 Pa
 - Resistance to wind pressure: up to C5
 - Mechanical resistance: up to class 3

INSTALLATION AND ASSEMBLY

- 3 glazing installation techniques:
 - Continuous pressure plate
 - Punctual pressure plate
 - Structural glazing
- Patented dry connection method

SOFTWARE

- Available in TechDesign
- Available BIM models

SUSTAINABLE CIRCULAR FACADE

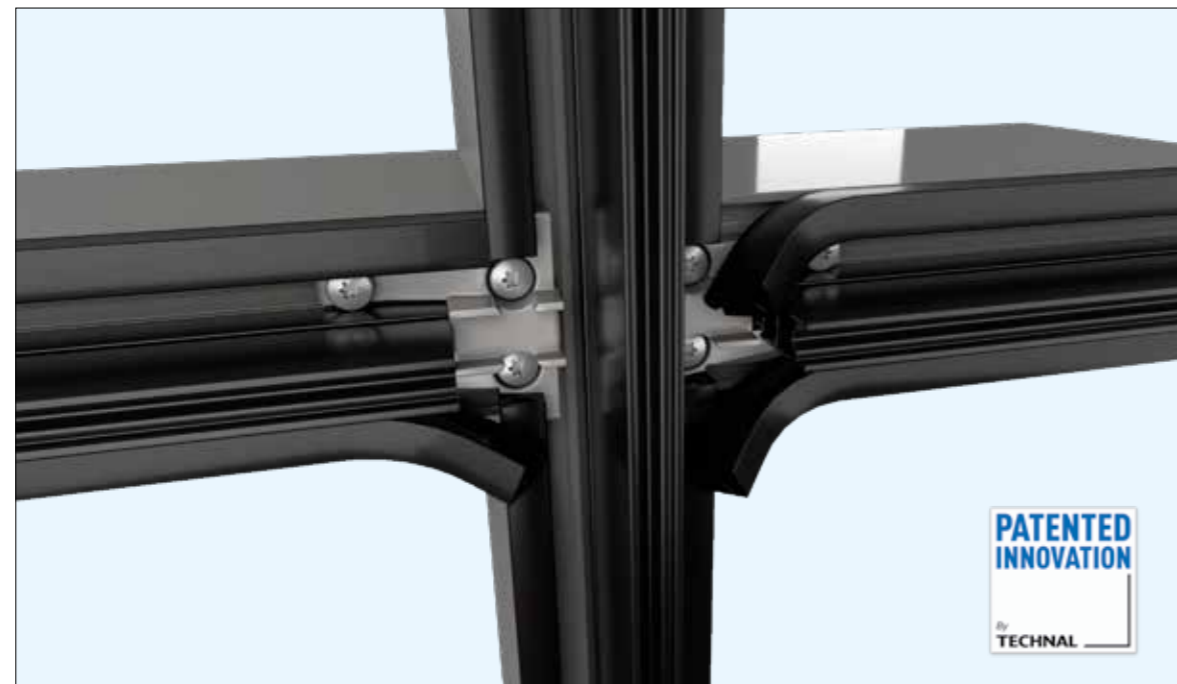
- Designed for assembly and disassembly
- Components are made of recycled material Cradle to Cradle® certified
- Available in Hydro CIRCAL®, aluminium made with a minimum of 75% recycled end-of-life aluminium. This aluminium has one of the lowest CO₂ footprints worldwide: 2.3 kg of CO₂ / kg aluminium.

TENTAL

/ MORE INNOVATION

INNOVATION WITH TENTAL

- Simple and quick to manufacture:
 - Patented dry connection internal glazing gaskets
 - Patented dry transom/transom connection
 - NO glues, NO sealants, NO packaging, NO waste
- Maximum infill weight: up to 850 kg according to EN 13830, up to 720 kg according to NF DTU 33.1
- Improved and reliable assembly in a controlled workshop environment



Dry connection of inner gaskets

TENTAL

/ MORE DESIGN

COLLECTION OF CAPS

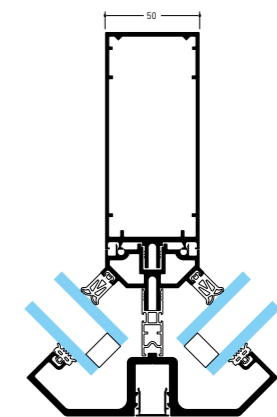
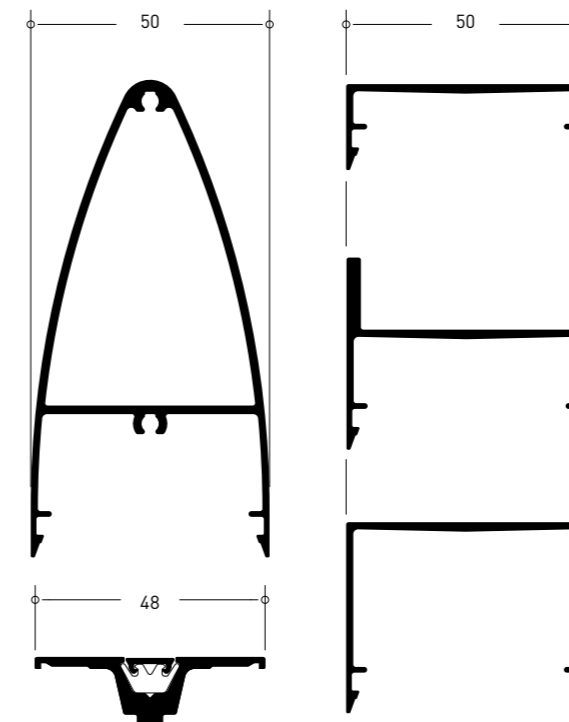
TECHNAL offers a complete collection of caps that marks the identity of each facade. A flat and discrete design for providing a crystal-clear envelope, an "Aero", "H" shape or "U" shape for accentuating lines. These shapes can also be combined for reinforcing the original character of the building in order to meet the specific requirements of specifiers.

90° ANGLE, THIN ALUMINIUM VIEW

With corner post implementation it allows to make 90° angles with less aluminium seen from inside.

They contribute to the fineness of the structure while supporting the construction of large glazed surfaces.

TENTAL also enables 90° convex angles to be created with edge-to-edge glazing in accordance with French building regulation P39 1-1.



TENTAL

/ MORE POSSIBILITIES

LARGE DIMENSIONS

Based on the 62 mm module and featuring a patented assembly system, SPINAL curtain walling optimises grids on non-residential buildings, new builds or renovations. It offers large glazed surfaces with dimensions of up to W 3 x H 4 m, which equates to a surface area of 12 m², and weighing up to 680 kg.

VARIETY OF SHAPES

- Visual consistency between the transoms and mullions to create a continuous line
- Possibility of a continuous or asymmetric grid
- Façade can be faceted + or - 10°
- Angles of 112°, 135° or 157° with pressure plates and angled groove glazing beads for creating curved façades
- Structure suitable for wood or steel frames* for elegant and minimalist architectural solutions that provide user comfort.

* The junction of the 2 materials must meet specific requirements - please contact us for more information

TENTAL

/ OPENING INTEGRATIONS

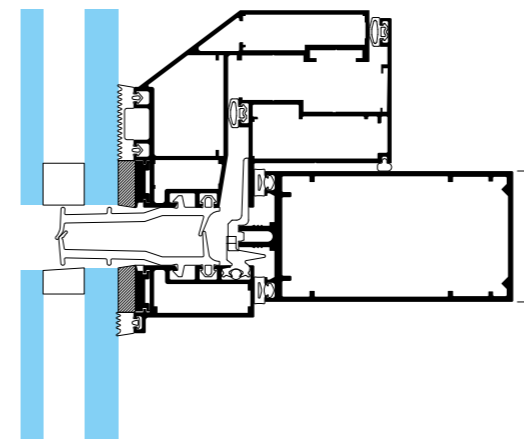
INTERIOR AND EXTERIOR OPENINGS

Concealed windows specially designed for SPINAL façade allowing inward openings (side hung, tilt and turn or turn and tilt) or outward openings (top hung or parallel). Innovative solution of fixed frames with thermal barrier created, enabling juxtaposition of 2 openings side by side or in alternation with a fixe frame.

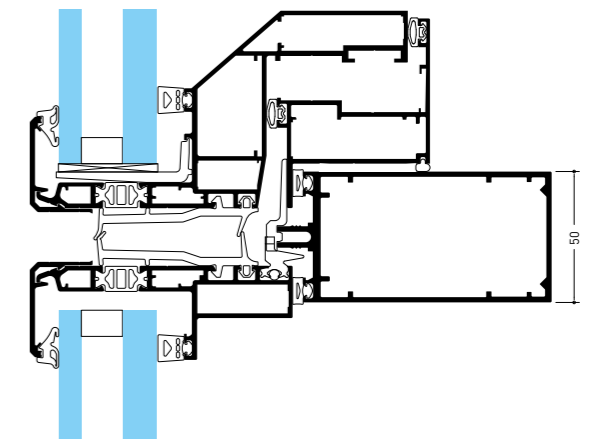
The concealed opening aspect is made by using SSG type openings.

Integration is possible with grid, horizontal aspect and flat cap exterior designs. Inward opening thermal break is available in grey or black, with hollow bottom for a subtle efficiency.

Powder coated or anodised, an aluminium cover clipped in the hollow bottom of the frame allows to outline, as desired, openings edges.



Structural silicone glazing:
Tophung frame and parallel opening structure with horizontal frame aspect.



Bead Glazing:
Inward opening aluminium clip on trim option

TENTAL

/ MORE COMFORT

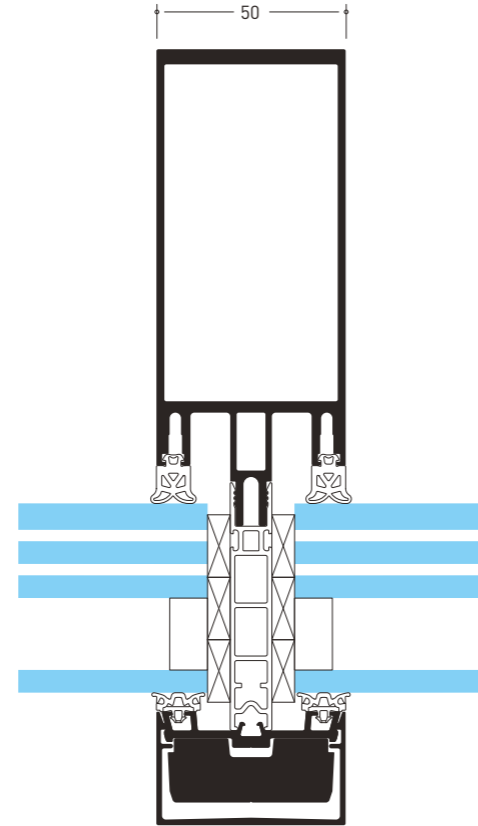
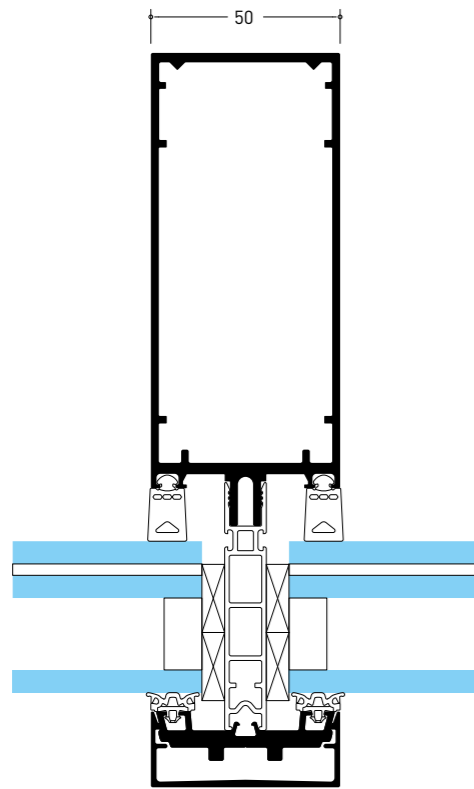
TENTAL offers an elevated level of comfort:

- Compatibility with full range of windows, doors and sliders...
- Tested burglary resistance
- Complying to the highest international standards
- Integration of solar control

Façade TENTAL grid aspect is burglary resistant according to the EN 1628 -2011, EN1629 - 2011 and EN 1630 -2011 standards.

Ideal for car dealerships, banks, jewellers, luxury brands, police stations, etc.

- Resistance class level 3* with glazing P5A
- Resistance class level 2* with glazing P4A



A SOLUTION TO MEET YOUR NEEDS

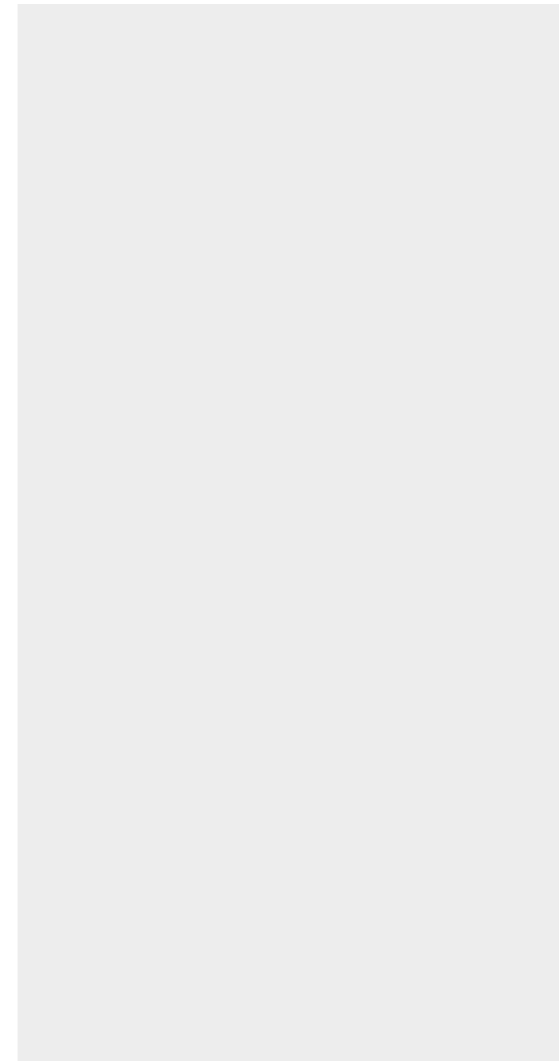
To meet the diverse requirements of building envelopes and more especially glass façades such as solar control, optimisation of natural light, customisation. Technal has developed fixing brackets which are positioned on the mullion of SPINAL curtain walling and allow for the integration of brise-soleil blades or a stretched canvas solution whilst maintaining the overall performance - a perfect combination of aesthetics and efficiency.

This range enables you to personalise the design and to optimise comfort with a wide choice of solutions: vertical or horizontal sun blinds, fixed or motorised with many possibilities.

BRISE-SOLEIL : DESIGN AND RESISTANCE

The SUNEAL brise-soleil can be integrated with all aspects of SPINAL curtain walling: grid or vertical frames as well as independent structure. This SUNEAL brise-soleil allows you to customise the design and optimise comfort with a wide choice of solutions: vertical or horizontal, fixed or moveable, manual or motorised brise-soleil. 100 mm and 150 mm fixed blades are adaptable and the multitude of available shapes (ogive, rectangular, louvre or perforated sheets) increase the wall cladding options.

Interior comfort is optimised and you can enjoy warmth from the sun in the winter and solar protection in the summer, as well as energy savings by adjusting the amount of natural light entering the rooms.



COMMITMENT & SUSTAINABILITY

WICONA demonstrates its strong commitment to the environment in all areas: by using recycled and low-carbon materials, with a product design that is adapted to a circular economy, and produced within a responsible supply chain. In addition, these statements are certified by external organisations to ensure maximum transparency.

HYDRO CIRCAL

We are demonstrating our focus on sustainability by using Hydro CIRCAL for our system solutions, one of the most sustainable aluminium alloys in our sector. Hydro CIRCAL is a range of prime quality aluminium made with a minimum of 75% recycled end-of-life aluminium (post-consumer scrap). The production process is verified by an independent third party (DNV-GL), and confirmed by an EPD (Environmental Product Declaration). Hydro CIRCAL also has one of the smallest CO2 footprint worldwide: 2.3 kg CO2 per kilo of aluminium – 4.5 times less than the world global primary average.

HYDRO REDUXA

Hydro REDUXA is a low-carbon aluminium, which is made by using renewable energy sources like hydro power. The result is aluminum with a maximum carbon footprint of 4.0 kg CO2e per kg aluminum, which is one of the world's lowest carbon footprint. Hydro REDUXA is verified by an independent third party (DNV-GL), covering all carbon emissions from bauxite mining and alumina refining to the production of aluminum in electrolysis and casting. It is also confirmed by an EPD (Environmental Product Declaration).

100% RECYCLED POLYAMIDE

WICONA is one of the first suppliers worldwide to use thermal insulation strips made from

recycled polyamide for the thermal insulation of its systems. Available as standard right away, no extra cost, with outstanding mechanical and physical properties and an excellent environmental performance. At the same time there is a large gain in sustainability due to low consumption of energy and resources. Therefore the recycled version features a considerably improved production ecobalance.

CRADLE TO CRADLE (C2C) CERTIFICATIONS – SILVER AND BRONZE FOR WICONA

Sustainability has always played a key role at WICONA. At the beginning of 2017, WICONA system solutions were awarded the Bronze Cradle to Cradle (C2C) certificate, a leading multi-attribute, multi-industry science-based standard for verifying products for the circular economy with integration of beneficial Environment, Social and Governance features. Since then, 14 WICONA systems have been awarded the Silver certification level and four other systems the Bronze certification level. In order to achieve one of the five levels of certification (from Basic up to Platinum), a product must satisfy the minimum requirements of the relevant level in all five categories. These categories are: material health, material reutilisation, renewable energy and carbon management, water stewardship, social fairness and biodiversity.

ENVIRONMENTAL PRODUCT DECLARATION (EPD)

An Environmental Product Declaration (EPD) is an independently third party-verified document that communicates precise, transparent and comparable information about the life-cycle environmental impacts of a product. But it is not only limited to products, such as a window, but can also be applied to materials (an aluminium billet), assembly parts of products or even for services (like maintenance). This document is

used for many different applications, e.g. public procurement or green building rating schemes (i.e. BREEAM, LEED, DGNB). In addition, WICONA offers the opportunity to obtain the EPD certificate for exactly the desired product and design automatically from the WICTOP software in a simple and intuitive way.

ALUMINIUM STEWARD INITIATIVE (ASI)

ASI is a multi-stakeholder, non-profit, standards-setting and certification organisation. It is the most internationally recognised standard, which addresses the environmental, social and governance (ESG) aspects of the entire aluminium value chain. The assessment is based around the sustainable production of aluminium, from bauxite or mining to the production of semi-fabricated products, taking into account the recycling of pre- and post-consumer scrap. Hydro was one of the first companies, that received this recognition, in accordance with its commitment to a more sustainable future.

FURTHER CERTIFICATIONS FOR THE DECLARATION OF SUSTAINABLE BUILDINGS

WICONA offers certifications of materials, products and manufacturing processes, which are helpful to certify the sustainability of buildings, with seals such as LEED, BREEAM, DGNB, WELL, etc.

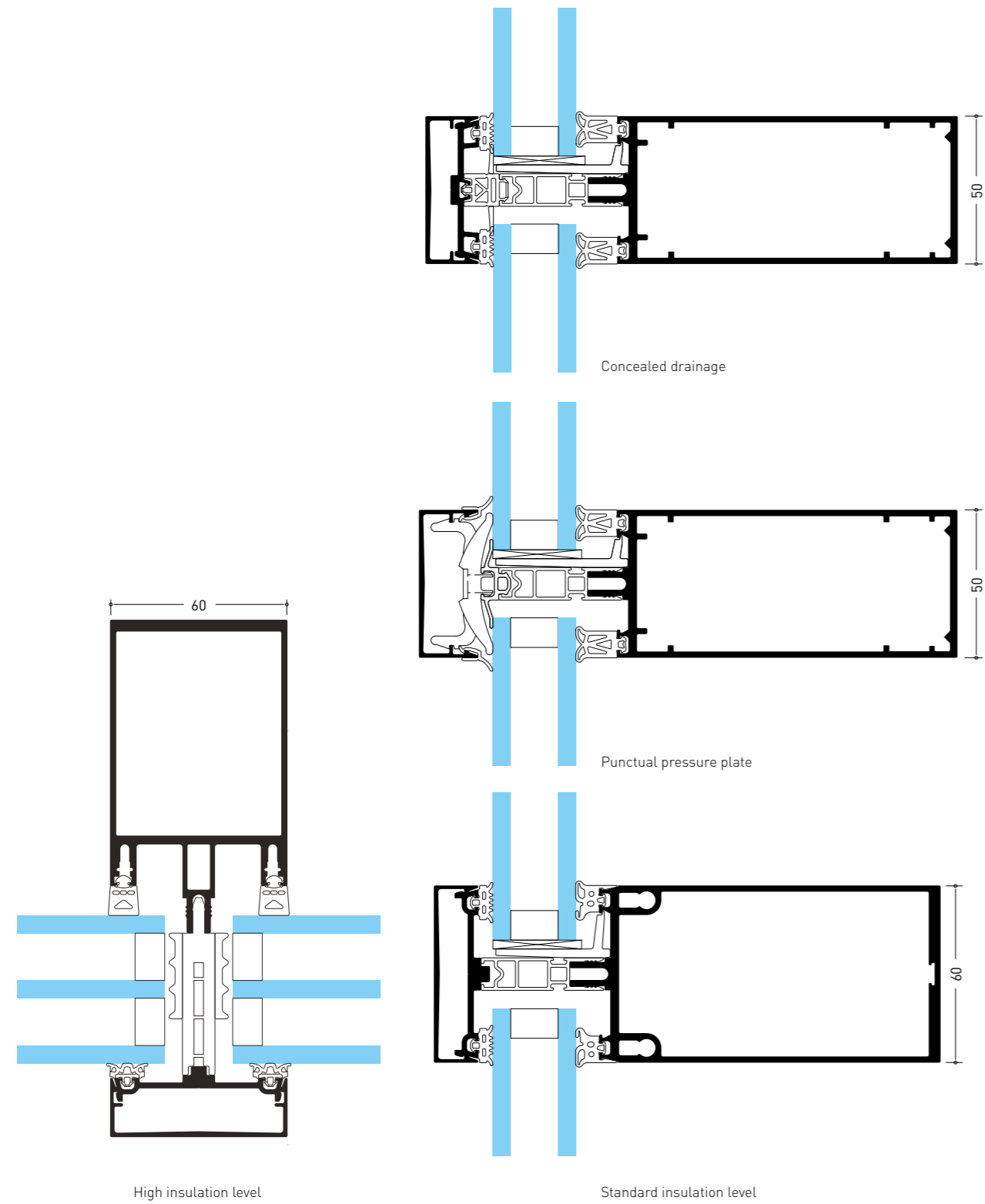
Following the tradition of all WICONA systems, only the best materials and accessories are used to ensure the least possible maintenance expenditure and greatest possible durability.

- Extruded aluminium profiles in Hydro CIRCAL 75R in accordance with EN 12020, EN 573-3, EN 515 and EN 775-1 - 9
- Fittings in die-cast zinc in accordance with EN 12844
- All gaskets EPDM or TPE (thermoplastic elastomer)
- Thermal break made of PA66-GF25 and ABS
- Stainless steel screws

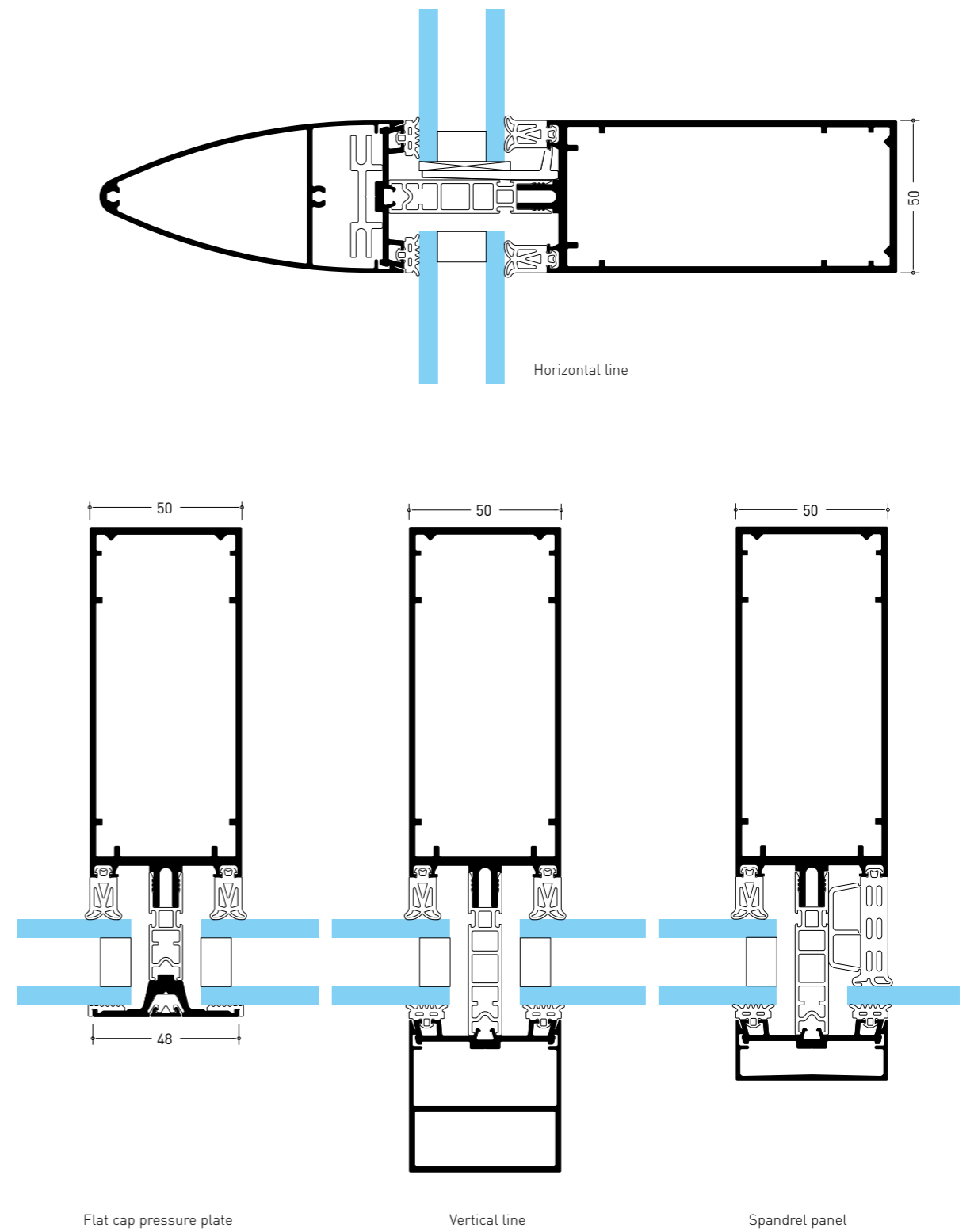
SURFACES AND COLOURS

Whether anodised or powder-coated – almost all optical requirements can be met thanks to the exclusive shades of WICONA's extensive colour range. Exclusive shades and coatings with antibacterial, antiviral, high scratch resistance and heat reflecting properties mean that architects and designers/planners have more design freedom to bring out the individual look of the building.

CROSS SECTIONS



CROSS SECTIONS



TENTAL

/ WEATHER PERFORMANCES AND TIGHTNESSES

The curtain wall system has been tested in accordance with the requirements of the European standard EN 13830. Further information is available upon request.

TENTAL 50 WEATHER PERFORMANCES (A.E.V.) & IMPACT RESISTANCE				
	Air permeability	Water tightness	Resistance to wind pressure	Impact resistance
Grid aspect (panel drainage)	AE 1500 Pa	RE 1500 Pa	Service 1600 Pa Security 2400 Pa	I5/E5
Grid aspect (mullion drainage)	AE 1500 Pa	RE 1500 Pa	Service 2000 Pa Security 3000 Pa	I5/E5
1-leaf, inward opening	Class 4	RE 1500 Pa	Class C5	I5/E5
Top hung opening	Class 4	RE 1500 Pa	Class C5	I5/E5

TENTAL 50 THERMAL PERFORMANCES - linear pressure or ponctual pressure plate	
	U_{cw} [W/(m ² .K)]
Triple glazing + high insulation crossbar / $U_g = 0.5$ W/(m ² .K)	0.61
Triple glazing + standard insulation crossbar / $U_g = 0.5$ W/(m ² .K)	0.80
Double glazing / $U_g = 1.1$ W/(m ² .K)	1.20

TENTAL 60 WEATHER PERFORMANCES (A.E.V.) & IMPACT RESISTANCE				
	Air permeability	Water tightness	Resistance to wind pressure	Impact resistance
Grid aspect (panel drainage)	AE 1500 Pa	RE 1500 Pa	Service 1600 Pa Security 2400 Pa	I5/E5
Grid aspect (mullion drainage)	AE 1500 Pa	RE 1500 Pa	Service 2000 Pa Security 3000 Pa	I5/E5
1-leaf, inward opening	Class 4	RE 1500 Pa	Class C5	I5/E5
Top hung opening	Class 4	RE 1500 Pa	Class C5	I5/E5

TENTAL 60 THERMAL PERFORMANCES - linear pressure or ponctual pressure plate	
	U_{cw} [W/(m ² .K)]
Triple glazing + high insulation crossbar / $U_g = 0.5$ W/(m ² .K)	0.61
Triple glazing + standard insulation crossbar / $U_g = 0.5$ W/(m ² .K)	0.80
Double glazing / $U_g = 1.1$ W/(m ² .K)	1.20

TENTAL

/ THERMAL PERFORMANCES

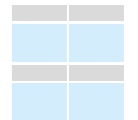
The precise performance depends on a combination of the size of the frames, the thickness of the glass, the type of infill and the options chosen. The values below are provided for indicative purposes only. Further information is available upon request

U_{cw} COEFFICIENT OF CURTAIN WALLING WITHOUT PROTECTION (W/M².K)

U _g insulation coefficient of glazing (W/m ² K)											
	Triple glazing			Double glazing							
	0.6 + int. insulating	0.6	0.8	1.0 + int. insulating	1.1 + int. insulating	1.0	1.1	1.3	1.5	1.7	1.9
Trame: Grid				1.2	1.3	1.3	1.4	1.5	1.6	1.8	1.9
Trame: Grid > 32 mm	0.9	1.0	1.1	1.2	1.3	1.3	1.4	1.5	1.6	1.8	1.9
Trame: Horizontal				1.2	1.3	1.3	1.4	1.5	1.6	1.8	1.9
Trame: Horizontal > 32 mm	0.9	1.0	1.1	1.2	1.3	1.3	1.4	1.5	1.6	1.8	1.9
Structural glazing: MXm*				1.4	1.5	1.5	1.6	1.7	1.8	2.0	2.1

* insulator ACERMI 40 mm (Up = 0.66)

100% glazed on the inside: transparent glazed section + opaque spandrel panel 2 frames per level: W = 1.35 m x H spandrel = 0.70 m + transparent glazing = 2.50 m. insulating, extruded polystyrene, 50 mm thick (Up = 0.54)



U_{cw} COEFFICIENT OF CURTAIN WALLING WITHOUT PROTECTION (W/M².K)

U _g insulation coefficient of glazing (W/m ² K)											
	Triple glazing			Double glazing							
	0.6 + int. insulating	0.6	0.8	1.0 + int. insulating	1.1 + int. insulating	1.0	1.1	1.3	1.5	1.7	1.9
Trame: Grid				1.1	1.1	1.1	1.2	1.3	1.3	1.4	1.5
Trame: Grid > 32 mm	0.9	1.0	1.0	1.1	1.1	1.1	1.2	1.3	1.3	1.4	1.5
Trame: Horizontal				1.1	1.2	1.2	1.2	1.3	1.4	1.5	1.6
Trame: Horizontal > 32 mm	0.9	1.0	1.1	1.1	1.1	1.2	1.2	1.3	1.4	1.4	1.5
Structural glazing: MXm*				1.3	1.4	1.4	1.4	1.5	1.6	1.7	1.7

* insulator ACERMI 40 mm (Up = 0.66)

60% glazed on the inside: glazed transparent section + opaque curtain wall 2 frames per level W = 1.35 m x H transparent glazing = 1.50 m + curtain wall = 1.00 m. 50 mm thick extruded polystyrene insulator (Up = 0.54)





SUSTAINABILITY

MATERIALS AND PARTS

As with all TECHNAL systems, only the best materials and parts are used to minimise maintenance and ensure long-term performance.

- Fittings are cast from EN 12844 compliant Zamak 5.
- All seals are EPDM or TPE (Thermoplastic elastomer).
- The polyamide thermal breaks are extruded from pA6-6 (0.25 FV).
- Screws are made from stainless steel.

FINISHES AND COLOURS

A wide range of finishes and colours is available to meet individual project requirements, enhancing existing buildings and offering architects and designers greater design freedom:
Natural anodised in accordance with EN 123731: 2001.

- Polyester coating finishes in a wide range of colours in accordance with "QUALICOAT" instructions.
- TENTAL is also available in lacquered finishes with exclusive TECHNAL colours for a stylish and contemporary look.

PROFILES

- TENTAL is made from Hydro CIRCAL[®], recycled low carbon aluminium. That means it's prime quality aluminium made with a minimum of 75% recycled end-of-life aluminium (post-consumer scrap). Hydro CIRCAL[®] has one of the smallest CO₂ footprint worldwide: 2.3 kg of CO₂ per kilo of aluminium.
- The aluminium profiles are extruded from alloys 6060 Building compliant with EN 12020, EN 573-3, EN 515 and EN 775-1 to 9.



IMAGINE WHAT'S NEXT

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