



TENSILE MEMBRANE
STRUCTURES,
CITIES OF THE FUTURE

CIDELSA



CIDELSA

CITIES OF THE FUTURE.

EACH WORK GIVES US THE
OPPORTUNITY TO GENERATE
AN URBAN LANDMARK.

Through design, innovation and the pursuit of excellence, we are helping to build the cities of the future, offering our clients customized solutions and unique designs.

We are a company with over 30 years of experience in the design and implementation of tensile membrane structures and over 50 years offering technological solutions in the field of geosynthetics to various productive sectors.

Our works are located in different Latin American countries such as Argentina, Chile, Peru and Colombia.



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TENSILE MEMBRANE STRUCTURES



WE DESIGN, MANUFACTURE
AND IMPLEMENT
TENSILE MEMBRANE STRUCTURES.

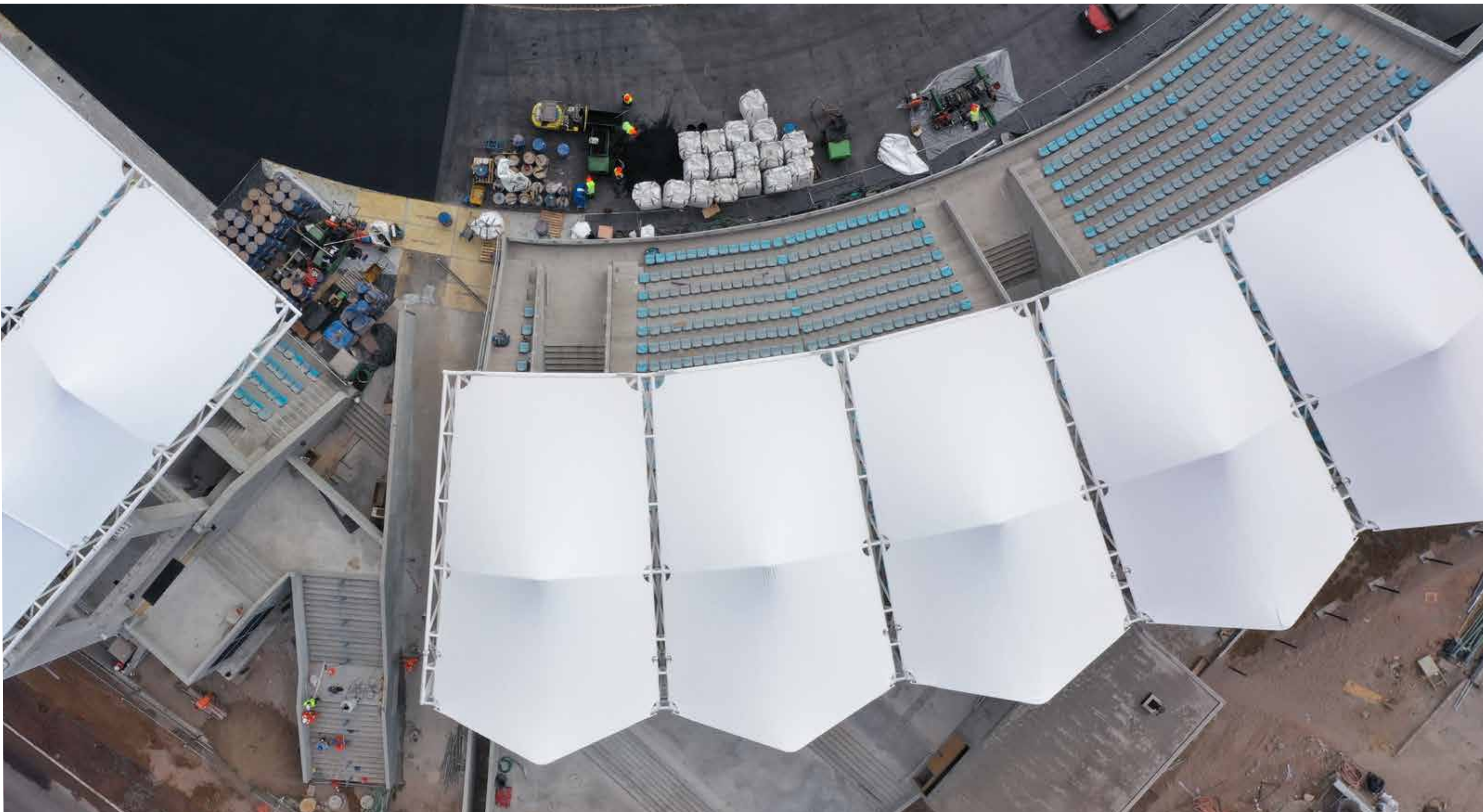
It is a structural system composed of lightweight membranes and metal support structures; it combines the strength of rigid elements (posts, arches, beams) with the versatility of flexible elements (membranes and cables).

Our service is integral and contemplates all the processes and stages in charge of a highly qualified professional staff:

COMMERCIAL TECHNICAL SUPPORT.
DESIGN & STRUCTURAL CALCULATION.
PLANNING.
EXECUTION: MANUFACTURE & ASSEMBLY.

We have a production plant with the capacity to manufacture 26,000m² per month.





HOMOGENEOUS TENSION
TRANSLATES INTO
LOAD CAPACITY

ARCHITECTURAL:

- Specialized state-of-the-art software in the textile industry.
- An architectural reference is conceived through design.

FUNCTIONAL:

- Flexibility and adaptability in regular areas.
- Possibility of covering large spans.

LIGHTNESS:

- Optimization of materials.

LIGHTING:

- Entrance of transversal or longitudinal light.

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MEMBRANE



WE USE TOP QUALITY MEMBRANES

Our membranes comply with all standards regarding safety, protection and resistance to external agents.

We have alliances with the most recognized membrane suppliers worldwide. We take care of the production and manufacture of the finished material based on the design previously approved by the customer.

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MEMBRANE



IT GOES THROUGH A TRANSFORMATION PROCESS BEFORE REACHING THE CUSTOMER

The membrane is manufactured under strict quality control and validation by our specialists.

This process comprises the following stages:

- 1. INTERPRETATION OF PLANS AND DETAILS**
- 2. CUT**
- 3. ORGANIZATION OF MATERIALS**
- 4. HIGH-FREQUENCY WELDING**
- 5. PACKAGING**

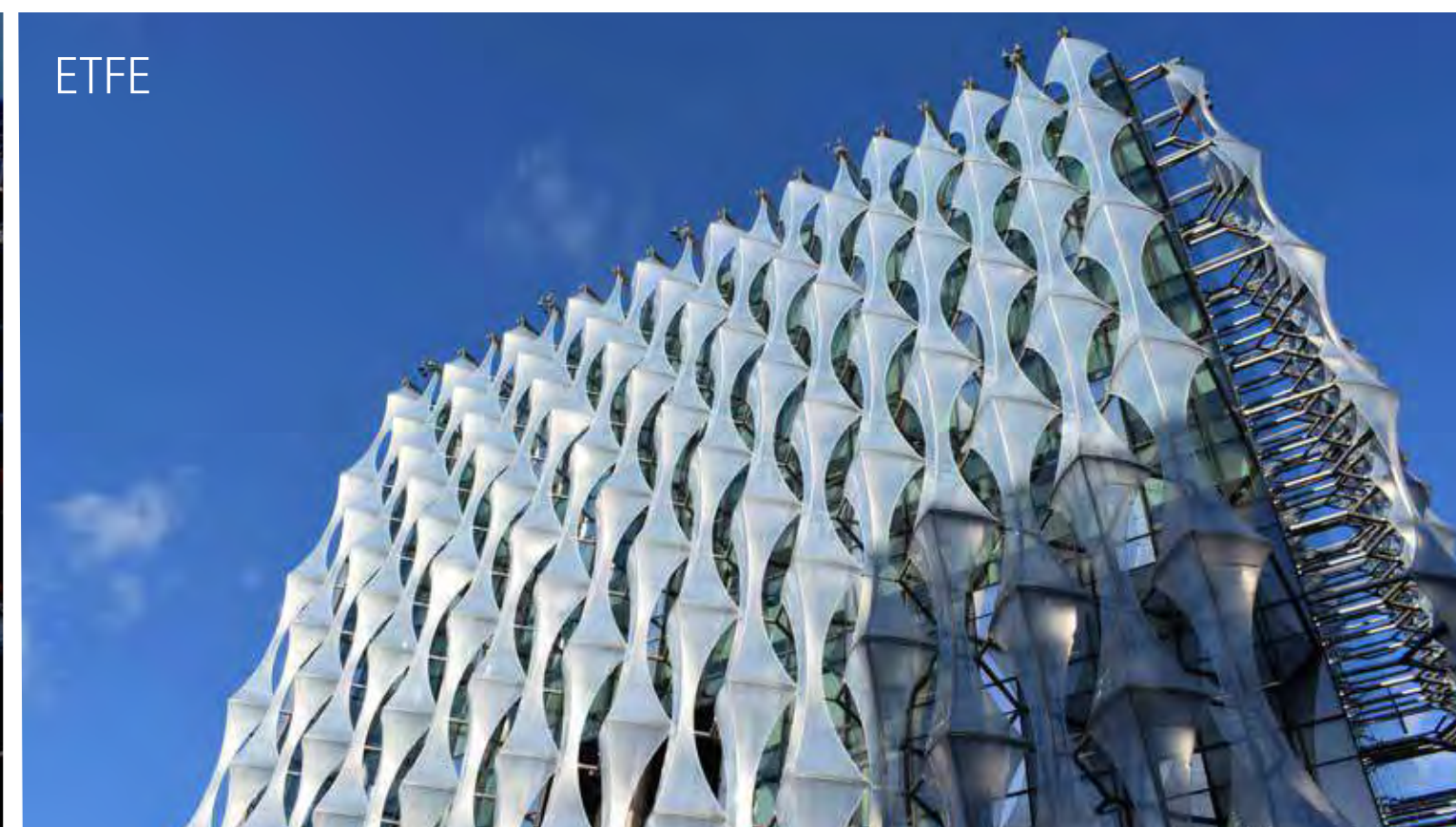




PVC IS NOT THE ONLY MATERIAL COMPATIBLE WITH TENSILE MEMBRANE STRUCTURES

The tensile membrane structures are not exempt from diversity; there are different materials that provide different properties to the work.

1. PVC
2. MESH
3. PTFE
4. ETFE

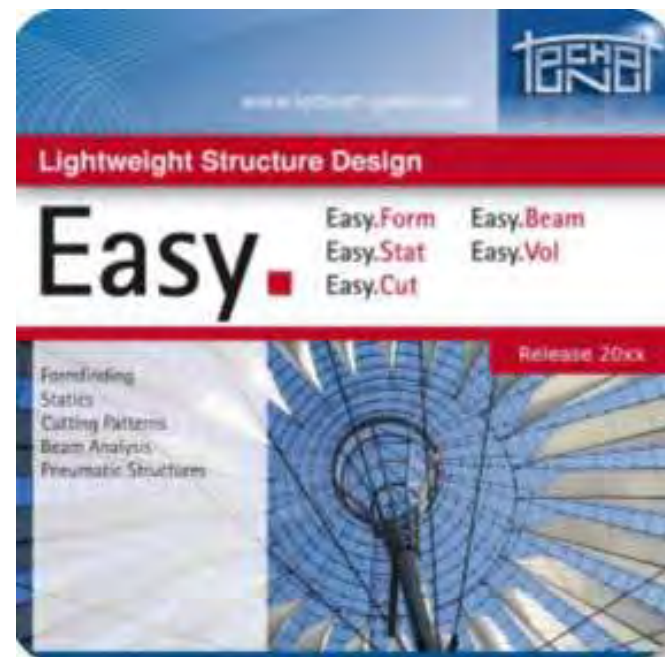


*The PTFE and ETFE works presented do not belong to Cidelsa, they are referential.

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SPECIALIZED SOFTWARE

WE USE SPECIALIZED
SOFTWARE IN THE SECTOR



SAP2000® 3S SOLIDWORKS

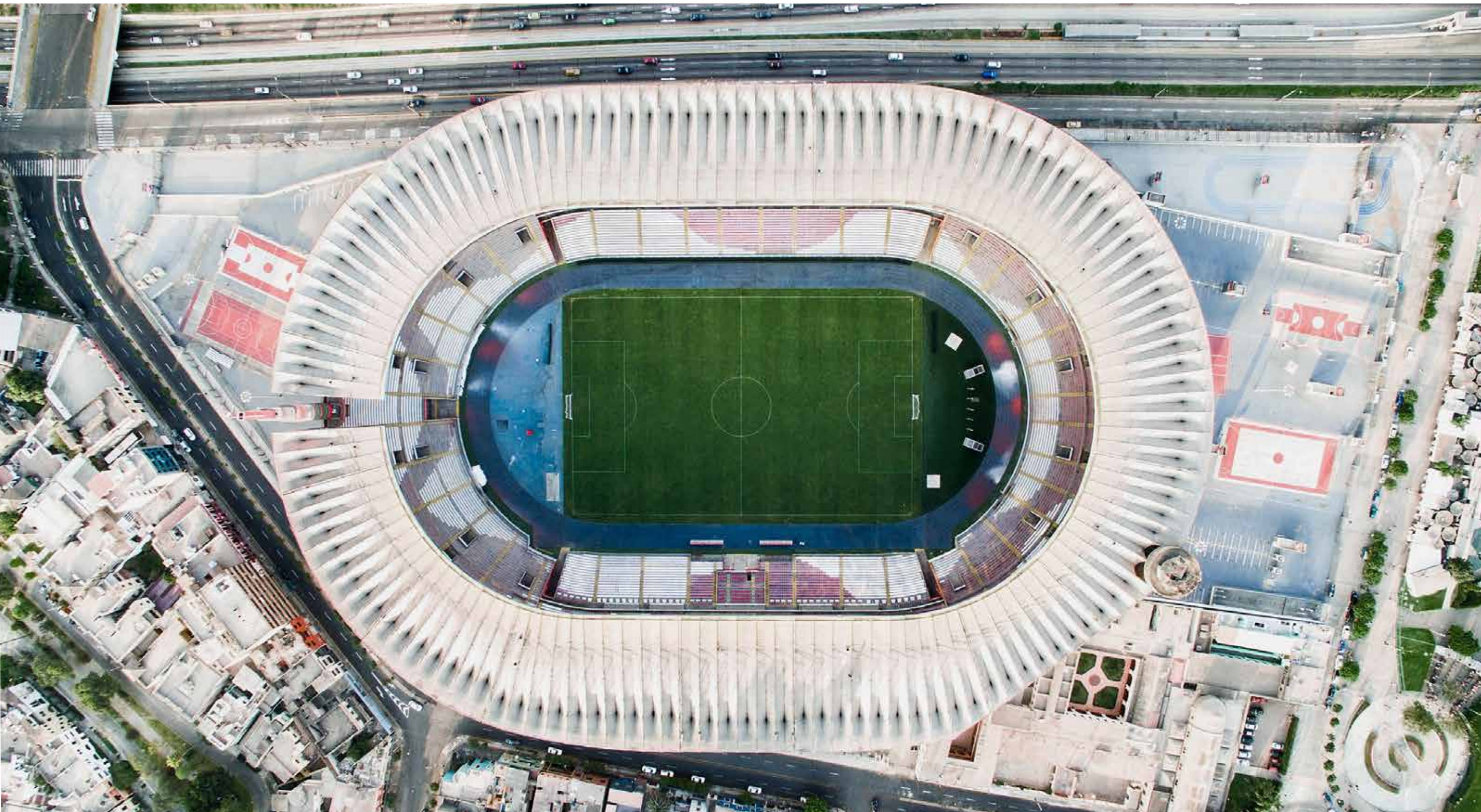
RSTAB8 Tekla

Software specialized in architectural design, structural calculation and membrane pattern are part of the technological support that guarantees that Cidelsa is a company in constant innovation.

FORMFINDING
STATICAL ANALYSIS
EASY BEAM
CUTTING PATTERN

CIDELSA

QUALITY CONTROL



THOROUGH REVIEW OF EACH PRODUCTION PROCESS

RIGOROUS CONTROL throughout the manufacturing process.

SPECIALIZED LABORATORY allows to perform tension and seal resistance tests.

VALIDATION AND COMPATIBILITY between the plans and manufacture of the membrane through a cut and finish control of patterns and fabrics.

CIDELSA

INSTALLATION



INCLUDED IN OUR
FULL-SERVICE OFFERING

PERMANENT QUALIFIED SUPERVISION
throughout the assembly process.

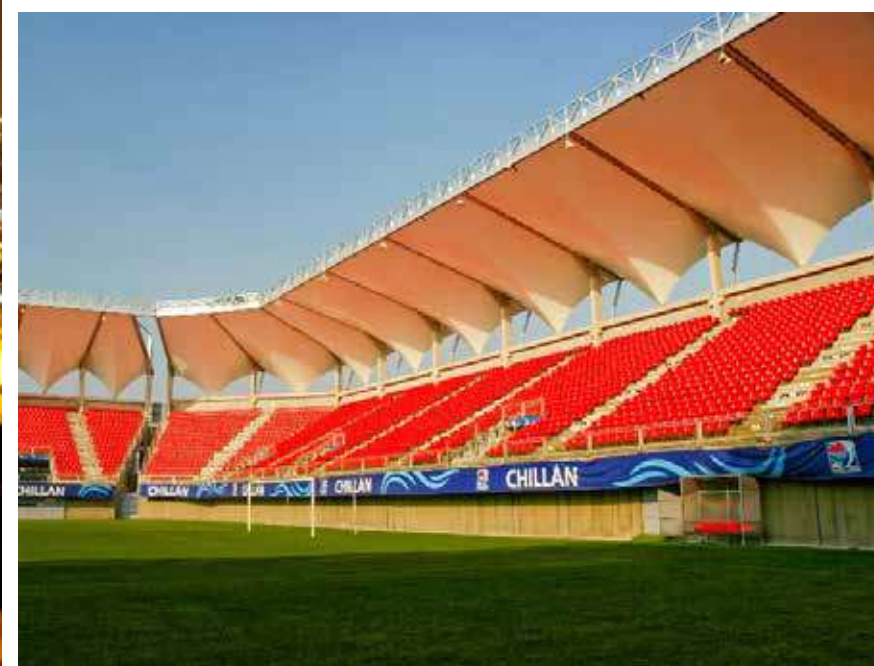
TEAM OF SPECIALISTS with vast experience
in assembly and tensioning operations at
great heights.

CONSTRUCTION AND ASSEMBLY



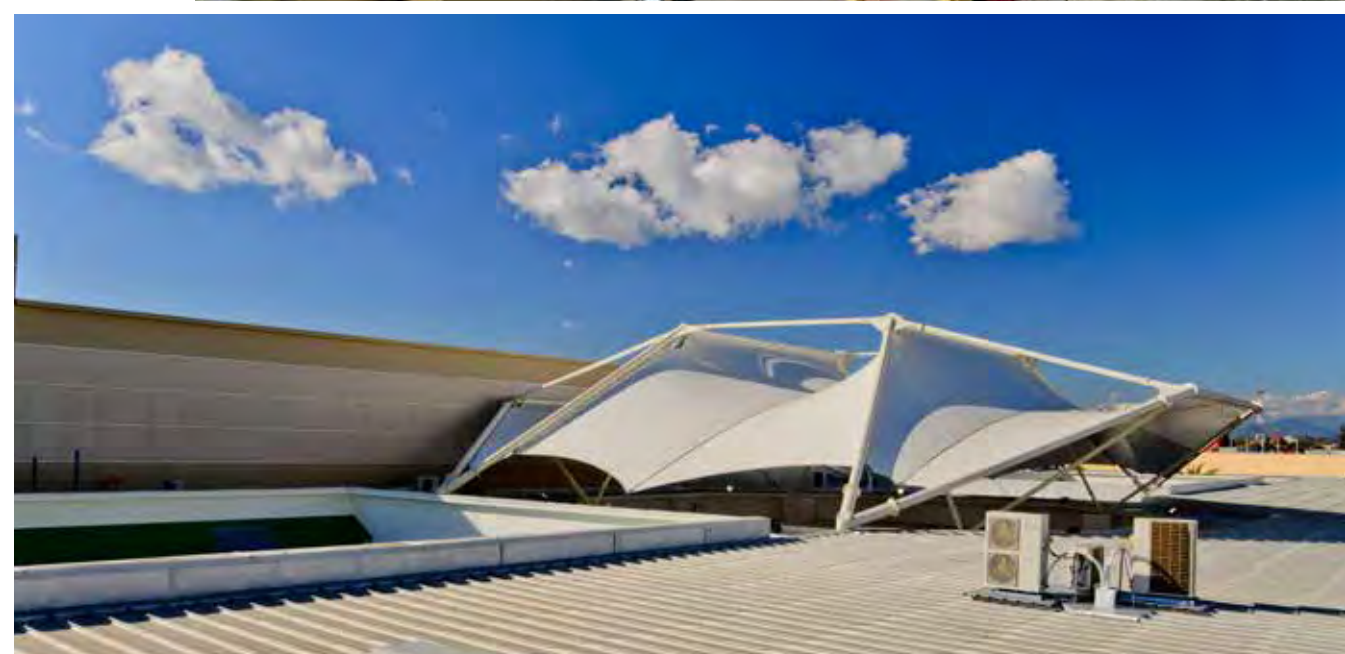
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SPORTS VENUES



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ENTERTAINMENT AND CULTURE



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TRANSPORT



CIDELSA

EDUCATIONAL ESTABLISHMENTS





THE CITIES OF THE FUTURE
NEED MATERIALS
OF TOMORROW.

ETFE.
The reinvention
of glass.



DESPITE ITS AESTHETICS,
IT HAS MANY LIMITATIONS.

EXPENSIVE PRODUCTION:

It is obtained by melting silica sand, sodium carbonate and limestone in furnaces at temperatures of approximately 1500 °C.

HEAVY MATERIAL:

Each 10mm-thick 1.00m² sheet of tempered glass weighs 26 kg.

NOT VERY ECO-FRIENDLY



NOT VERY PRACTICAL,
COST-EFFECTIVE OR FUNCTIONAL

MODULATION : The maximum recommended dimensions for the sheets are 3m x 2m.

INSTALLATION: Due to its weight and fragility, it must be installed individually and with specialized equipment.

LUMINOSITY: The light transmittance of glass does not exceed 90%.

SAFETY : Tempered glasses must have additional certifications that accredit its resistance to fire.

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ETFE. THE REINVENTION OF GLASS.



INTRODUCING AN
INNOVATIVE SOLUTION
FOR ROOFS AND FACADES

A CLEAR MATERIAL.

Available in a variety of shades and printed designs.

A HIGHLY RESISTANT THERMOPLASTIC POLYMER.

Mechanical and chemical; resistant to heat, corrosion and UV rays.

CAN BE APPLIED IN MANY TYPES OF BUILDINGS.

Stadiums, Shopping Centers, Sports Centers, Museums, Building Restorations.

PLASTIC MATERIAL
RESISTANT TO HEAT,
CORROSION AND UV RAYS.

ETHYLENE.

Provides mechanical strength.

TETRAFLUOROETHYLENE.

Provides thermal stability, weather and chemical resistance.

To obtain ETFE, the resin is heated to temperatures above 380 °C, where it reaches the molten state.

The films are created by extrusion, which consists of passing the resin through rollers to create a thin film.



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ETFE: A MATERIAL OF TOMORROW



TO BUILD THE
CITIES OF THE FUTURE

ETFE ALLOWS:

- Lightweight systems
- Unlimited designs
- High light transmittance

ETFE IS ECO-FRIENDLY:

- Optimized material
- Optimized light distribution
- Lower carbon footprint

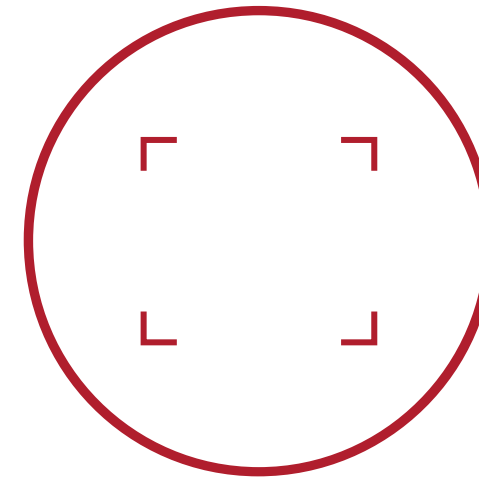
ETFE HAS MULTIPLE ADVANTAGES:

- Energy saving
- Resistance to impact
- Non-flammable

| High light quality | Light transmission (can be controlled) | High performance features | | Excellent tensile properties | Excellent performance properties |
|---|--|---------------------------|---|------------------------------|---|
| Good values across the entire wavelength spectrum | Over 90% | Melting point at 260 °c | Long lifespan (no impact of UV degradation) | High strength and elongation | Long-term stability - weather and chemical resistance |
| Long-term stability of light transmission | Reflective frit printing options; color film options; IR absorbing films | Non-stick surface | Non-combustible and self-extinguishing. | High resistance to tearing | Flexibility |



ENERGY SAVING



TRANSPARENCY



IMPACT RESISTANCE



INCOMBUSTIBILITY



UNLIMITED DESIGNS



LIGHTNESS

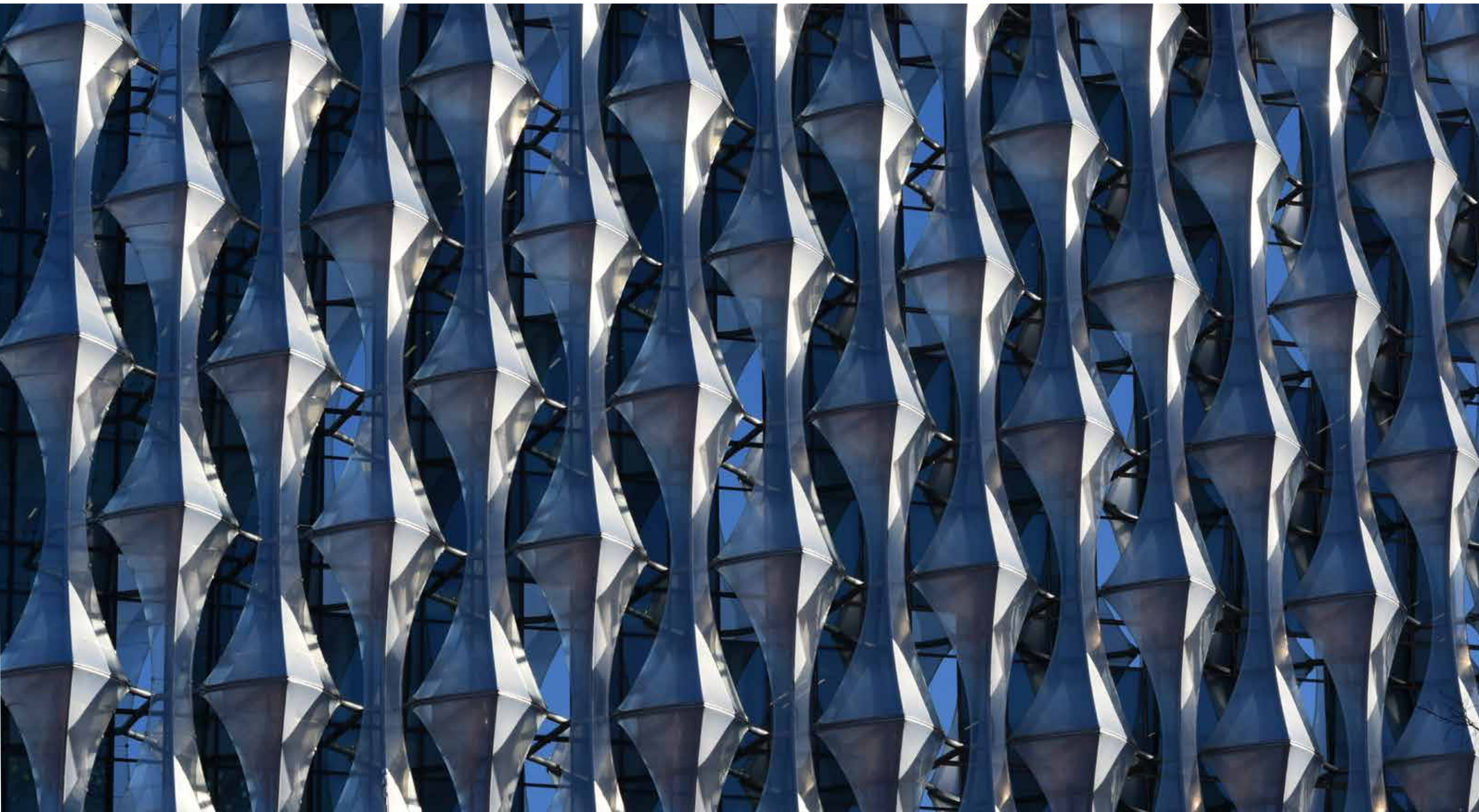


LESS THAN 1% OF THE WEIGHT OF GLASS

The standardized thickness of ETFE is between 0.25 and 0.5 mm and the roll width ranges from 1.52 to 1.55m.

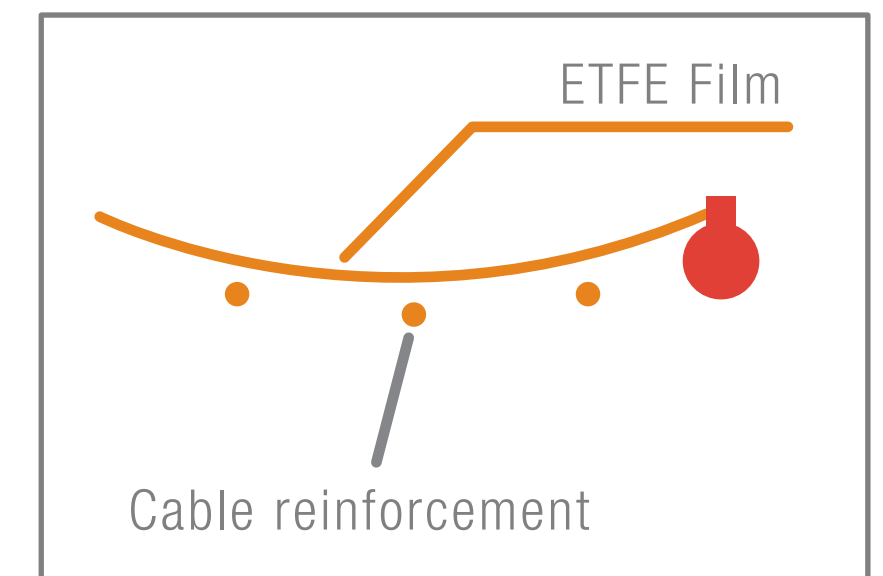
1 m² of 3mm-thick ETFE weighs:
0.50 kg.

The weight of glass (m²):
25kg.



A SINGLE LAYER REINFORCED WITH STEEL CABLES

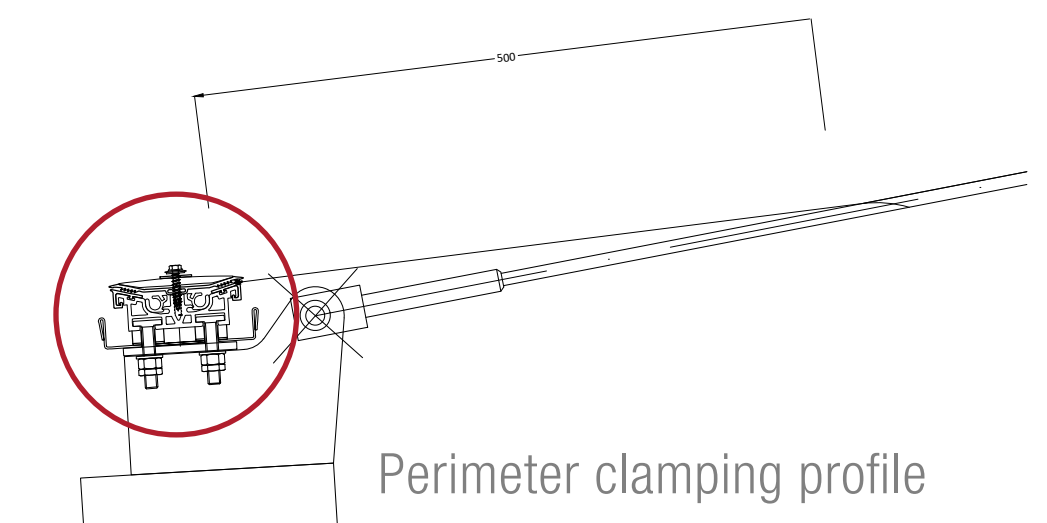
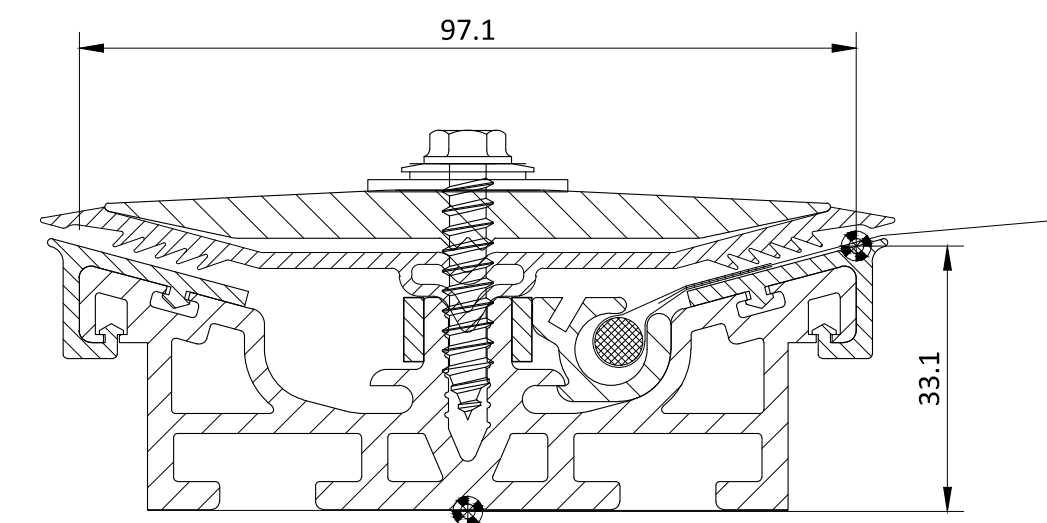
It offers the possibility of preserving the shape and stability of the surface.



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ETFE. INSTALLATION

A MORE EFFICIENT
AND EFFECTIVE ASSEMBLY



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ETFE. LIGHT ARCHITECTURE



VARIOUS LIGHTING OPTIONS

CLEAR ETFE.

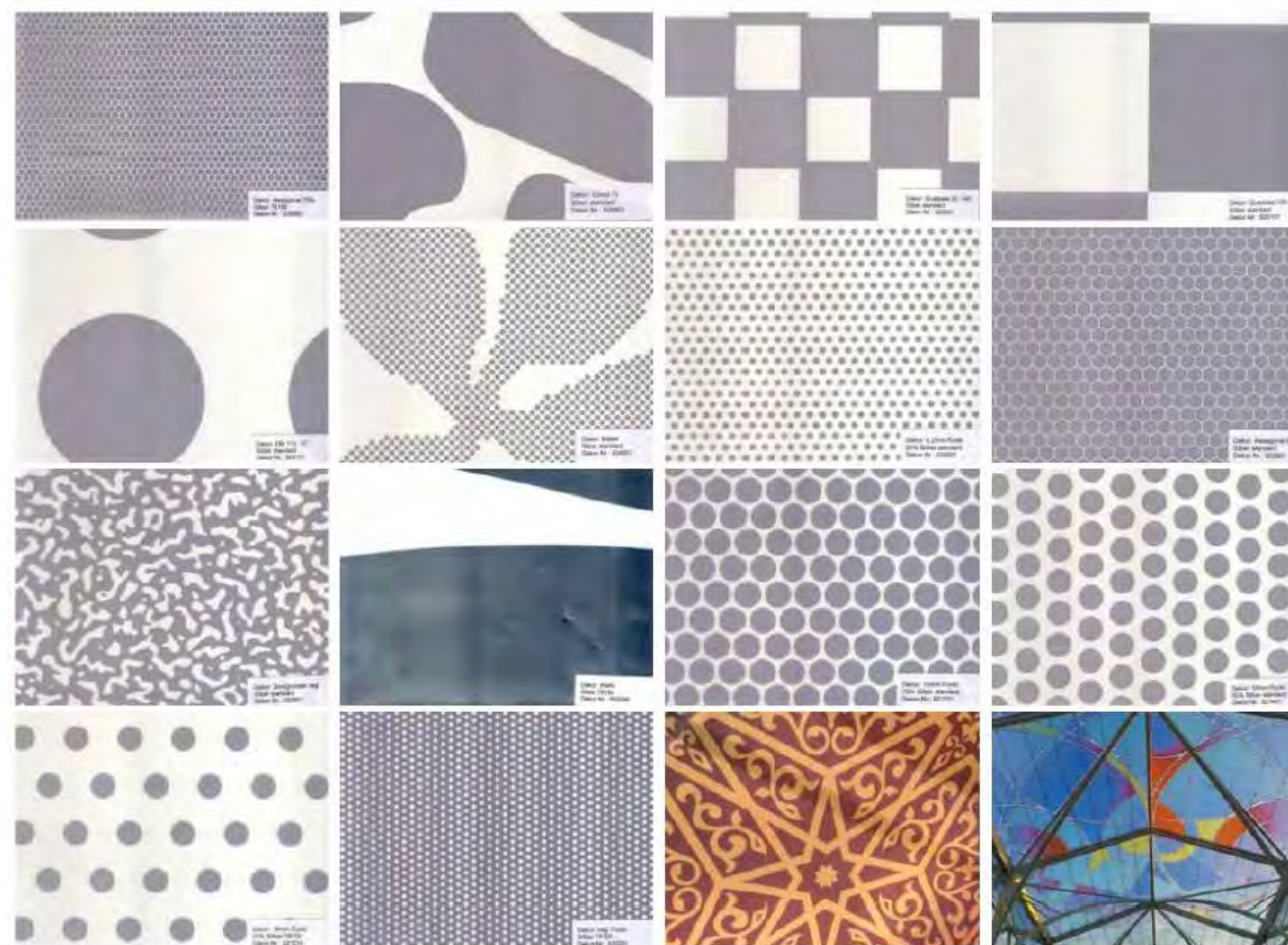
Allows greater passage of light,
protecting the interior space from UV rays.

DIFFUSED / MATTE ETFE.

Better luminosity control.

| ETFE | TYPE | THICKNESS μ m | Visible light (%) | | Sunlight (%) | | UV light (%) | |
|-------|----------|-------------------|-------------------|---------------|--------------|---------------|---------------------|---------------|
| | | | Reflectivity | Transmittance | Reflectivity | Transmittance | Reflectivity | Transmittance |
| | 100NJ | 100 | 6 | 94 | 5 | 95 | 10 | 90 |
| | 200NJ | 200 | 7 | 92 | 6 | 93 | 15 | 85 |
| GLASS | 300NJ | 300 | 9 | 89 | 7 | 91 | 20 | 78 |
| | TYPE | THICKNESS mm | Visible light (%) | | Sunlight (%) | | UV transmission (%) | |
| | | | Reflectivity | Transmittance | Reflectivity | Transmittance | | |
| | TEMPERED | 10 | 8 | 87 | 7 | 80 | 60 | |
| | TEMPERED | 12 | 7 | 85 | 7 | 79 | 60 | |





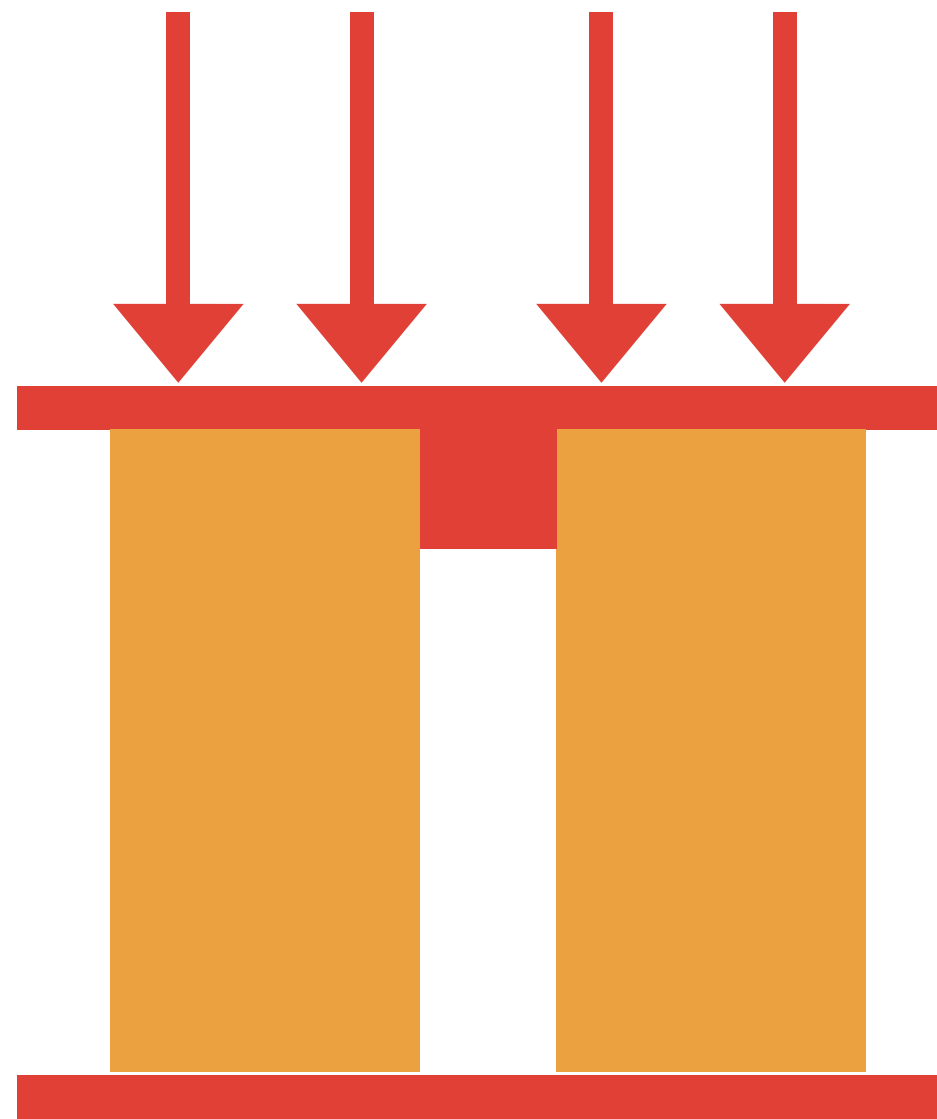
Possibility of different patterns based on the required lighting control.



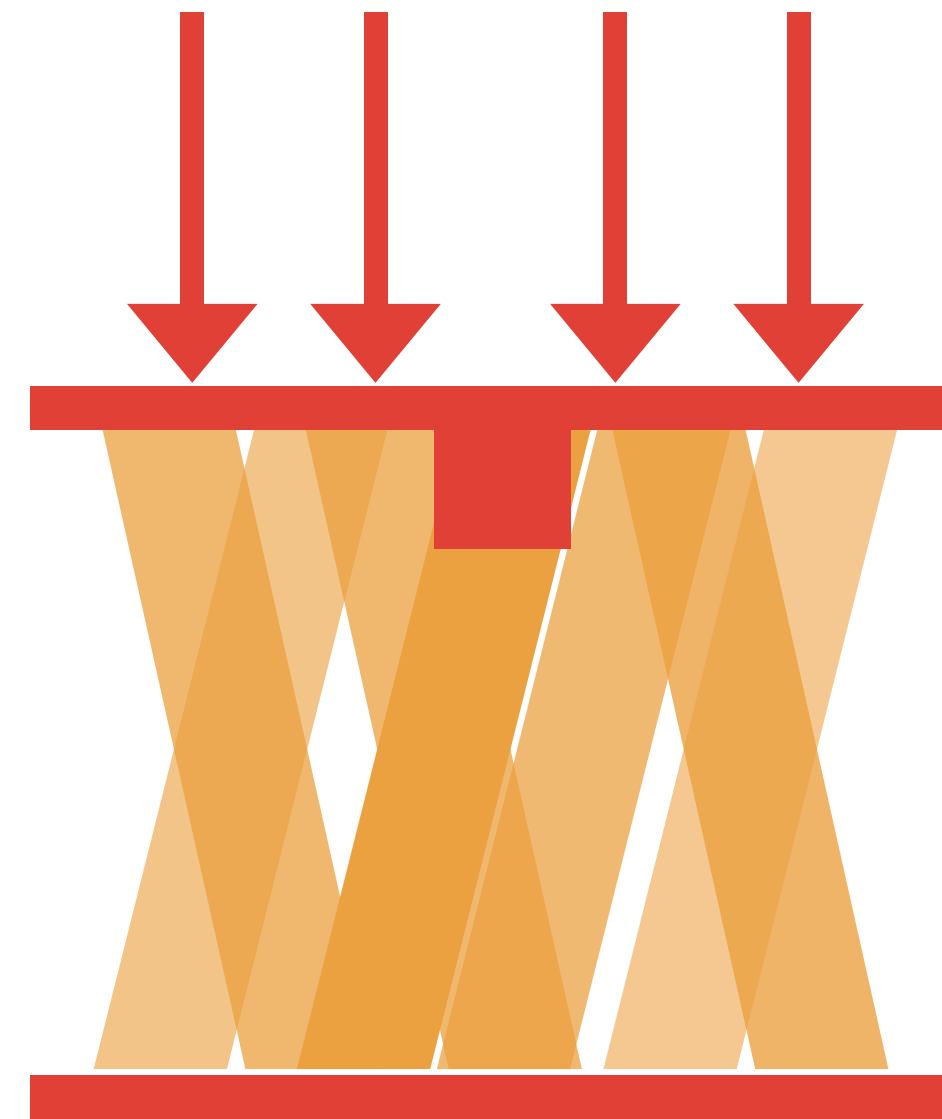
CLEAR ETFE



DIFFUSED / MATTE ETFE



CLEAR ETFE



DIFFUSED / MATTE ETFE

SELF-CLEANING



FIRE RESISTANCE



RESISTANCE TO IMPACTS



TOP-LEVEL
RESISTANCE

PTFE

CIDELSA

PTFE



WE PROVIDE THE BEST
SOLUTION IN DURABILITY
FOR ROOFS AND FACADES

HIGHLY RESISTANT MATERIAL

PTFE gives the building a balance between lightness, design and maximum durability.

SIMPLE AND FAST INSTALLATION

Just like PVC membranes, the installation of PTFE is achieved efficiently and effectively due to its low weight and malleability. However, it is important to emphasize that the quality of PTFE is far superior to that of PVC.

*The photos and works presented are referential and do not belong to Cidelsa.



TEFLON® AT ITS BEST FOR THE BUILDING INDUSTRY

PTFE or polytetrafluoroethylene is a woven glass membrane coated with Teflon®. It is extremely durable and weather resistant.

Fluoropolymers are the highest quality base composition for membranes in terms of their superior durability properties, fire rating and visual appearance.

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DESIGNING DECADES-LONG
LIFESPANS FOR YOUR PROJECTS

PTFE ALLOWS:

- Lightweight systems
- Unlimited designs
- Top quality resistance

PTFE IS ECO-FRIENDLY:

- Optimized material
- Optimized light distribution
- Lower carbon footprint
- Optimized installation

PTFE HAS MULTIPLE ADVANTAGES:

- Energy saving
- Resistance to impact
- Non-flammable
- Resistance to most chemicals

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SUSTAINABILITY



ANTI-CORROSION



IMPACT RESISTANCE



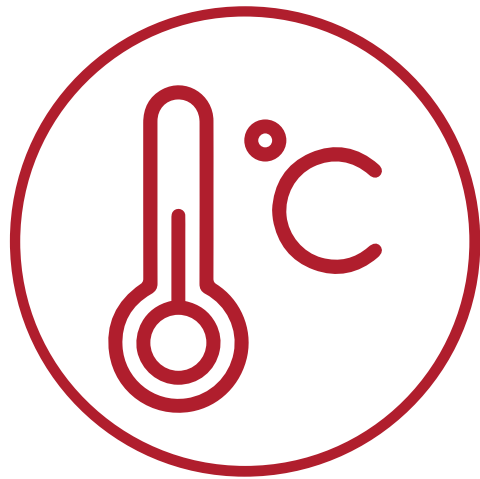
INCOMBUSTIBILITY



UNLIMITED DESIGNS



LIGHTNESS



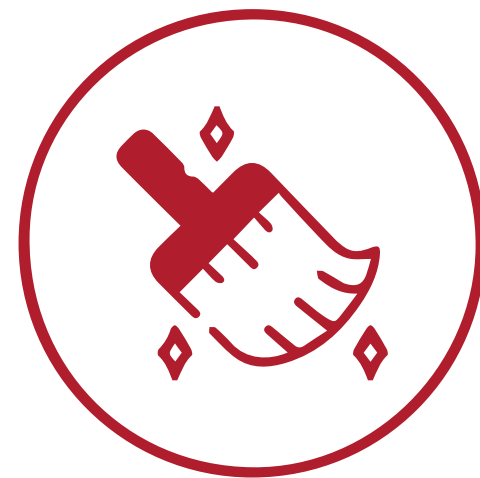
THERMAL



CHEMICAL



MECHANICAL



ANTI-ADHESIVE

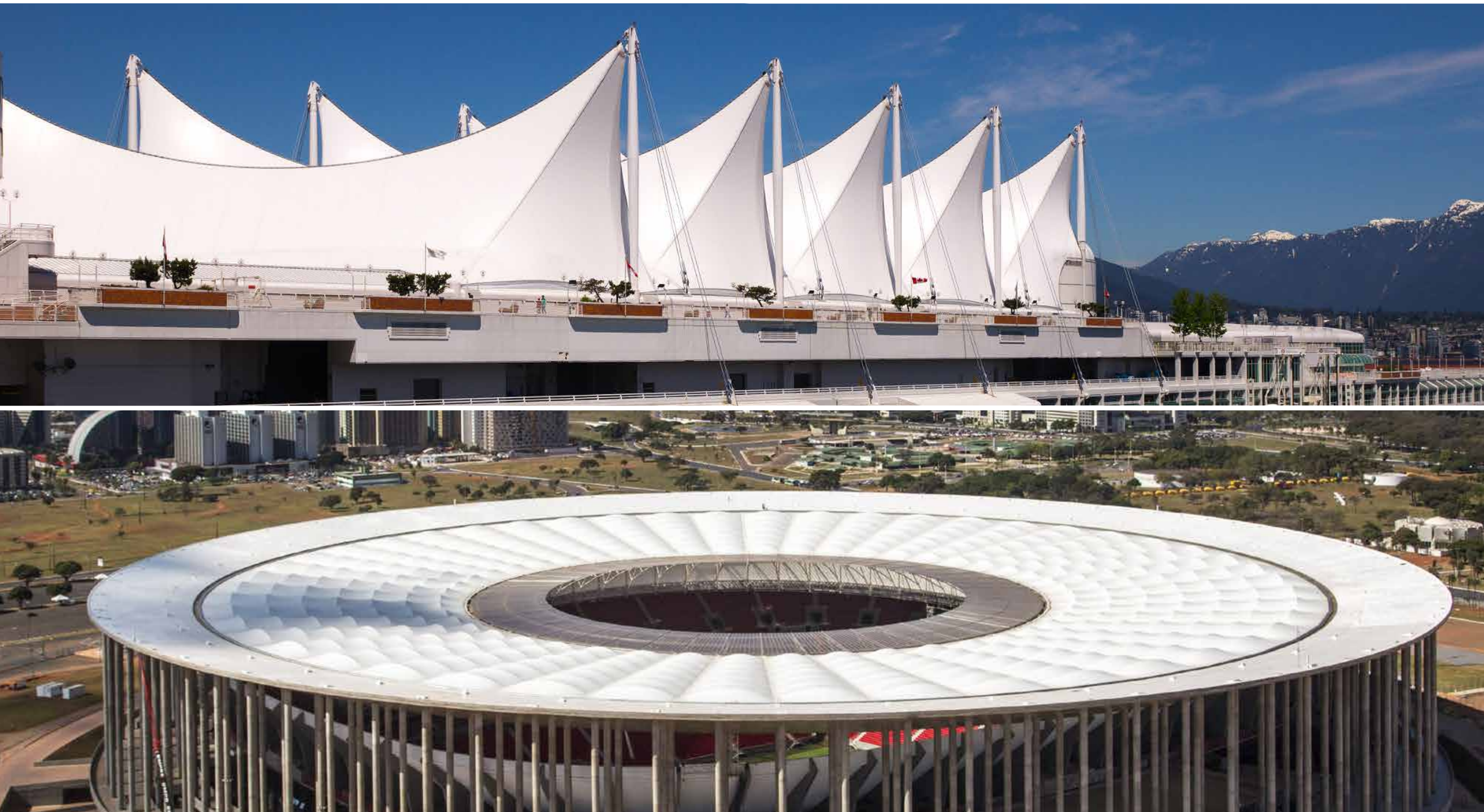


HYDROPHOBIC

| PROPERTY | VALUE | TEST METHOD |
|---|----------------|-----------------------|
| Additive + membrane weight (g/m2) | ca. 1015 | DIN 53352 |
| Tensile strength (N/5cm) | | |
| Wrap | 4555 min. Avg. | DIN 53354 |
| Fill | 5160 min. Avg. | |
| Tear resistance (N) | | |
| Wrap | 100 min avg. | DIN 53363 |
| Fill | 200 min. Avg. | |
| Adhesion (N/5 cm) | 75 min. Avg. | DIN 53357 |
| Transparency | ca. 16 | |
| Sunlight Reflectance | 74 nominal | |
| Reaction to fire test | B-s1-d0 | EN 13501 |
| Burning characteristics | | ASTM E84 Tunnel Test |
| Flame propagation | 0 max | |
| Smoke generation | 0 max | |
| Incombustibility | Approved | ASTM E136 |
| Roof fire resistance, flame propagation and intermittent fire | Class A | ASTM E108 |
| Fire resistance | Approved | NFPA 701, Small scale |

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PTFE: SHEERFILL with EVERCLEAN



THE TREATMENT THAT
OPTIMIZES THE GENERAL
CONSUMPTION OF PTFE

Everclean is a special treatment applied to the PTFE membrane to:

REDUCE ITS MAINTENANCE FREQUENCY
REDUCE THE ENVIRONMENTAL IMPACT
REDUCE OPERATING COSTS
KEEP THE MEMBRANE FREE OF POLLUTION

It keeps the membrane in perfect condition over a considerable period of time, even in climates that would be challenging for some membranes.

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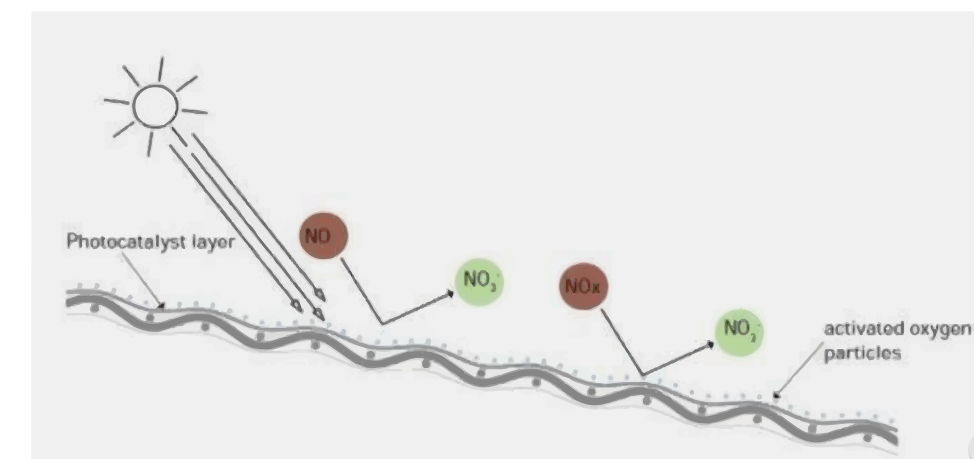
PTFE: SHEERFILL with EVERCLEAN



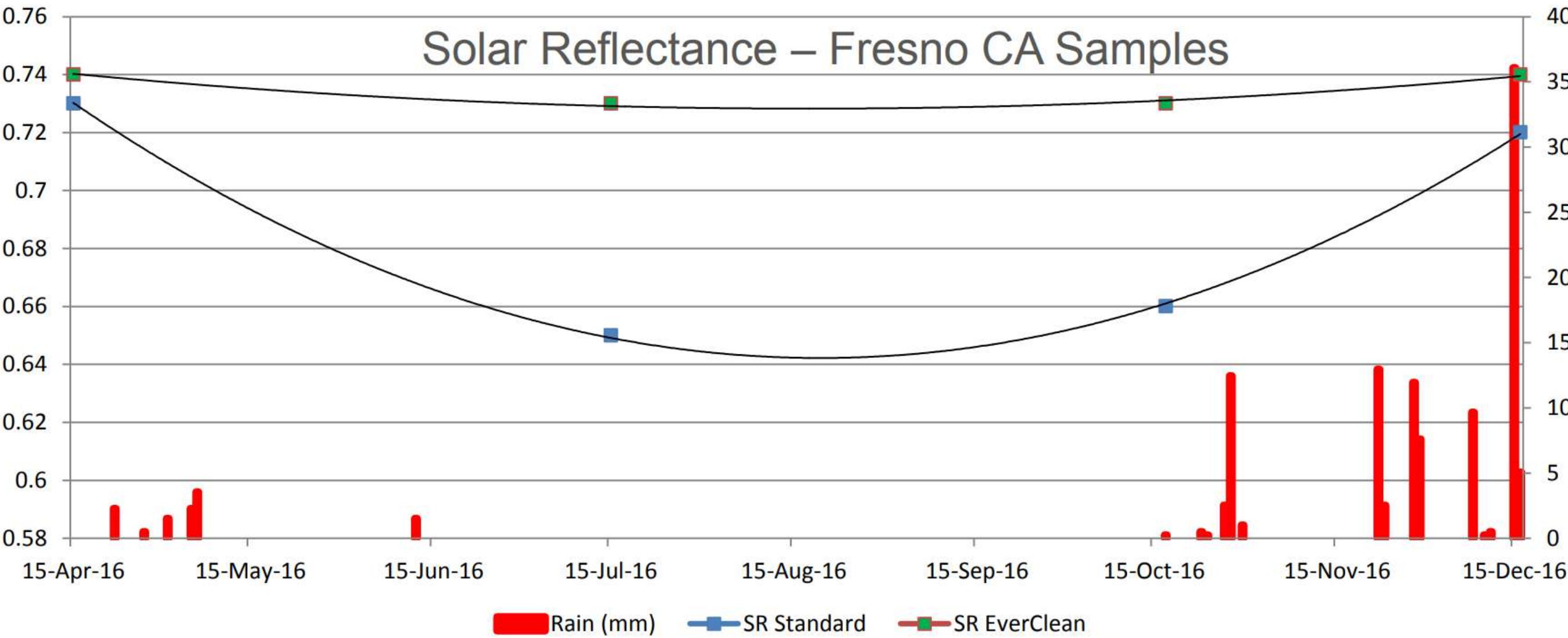
LESS ENVIRONMENTAL IMPACT WITH EVERCLEAN

Significantly reduces pollution thanks to the photocatalytic layer of TiO_2 , which helps eliminate NO_x and other pollutants.

This property allows a daily cleaning of the environment equivalent to 90 trees per 1000m² installed of PTFE coated with Sheerfill.

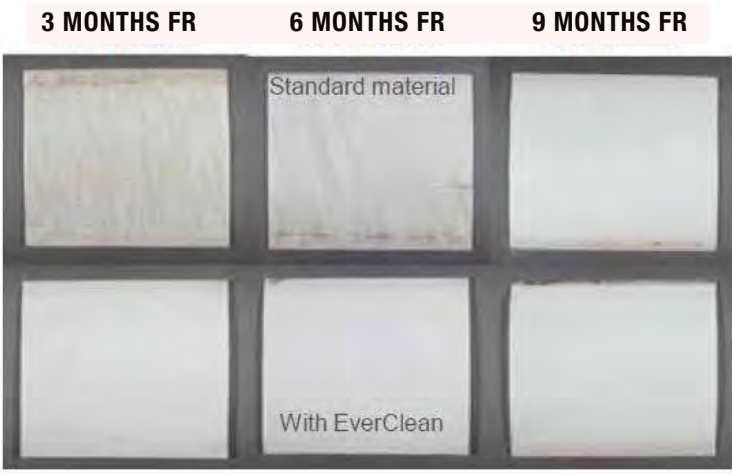


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SUNLIGHT
REFLECTANCE TRANSLATES
INTO ENERGY SAVINGS

Even on rain-free days (without cleaning), it reflects more sunlight than a material without Everclean.



Everclean keeps the membrane white and shiny even in dusty environments. The images are examples installed in Fresno, California, USA with a semi-arid and dusty wind environment.



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CIDELSA

OUR PROVIDERS



SAINT-GOBAIN

Works with SHEERFILL Membranes for different types of buildings, including outstanding work in sports facilities and transport terminals for over 40 years.

Exclusive Everclean provider.

Has works in every continent.



CIDELSA

OUR PROVIDERS



VERSEIDAG

The company's long history and experience allows them to provide the highest quality PTFE membranes.





AGC

Main Supplier of Raw Material - ETFE in its different thicknesses and printed patterns

AGC

CIDELSA

OUR ON-SITE CONSULTANT



FLONTEX

Our main European ETFE supplier company that, in addition to its great trajectory, supports us with consultancy in design and manufacture.

Our on-site consultant for the integral project is WALTER WEISSINGER.



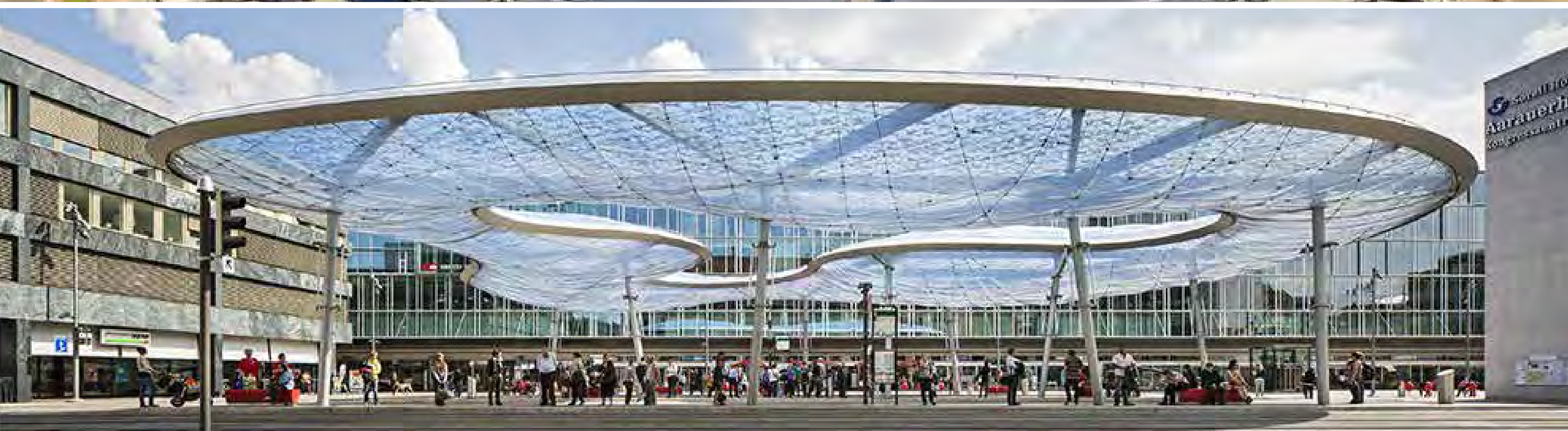
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OUR ON-SITE CONSULTANT



Z3RCH

z3rch advises architects and builders in the development of projects with tensile membrane structures and free form structures, such as stadium roofs, sports facilities, booths for events and fairs, atrium roofs, sculptures and facades.





www.tensoestructuras.cidelsa.com



Notice:
The buildings and/or projects presented have not been built by Cidelsa. Images from the different sites of the architects and builders have been compiled to show the different scopes of PTFE application.