Serge Ferrari
architecture

Tenseo

Xtrem range

TX30 series



BUITINK TECHNOLOGY
Advanced Lightweight Structures

Tenseo Xtrem TX30

Long term service life and durable aesthetics for demanding translucent roofs

Main advantages

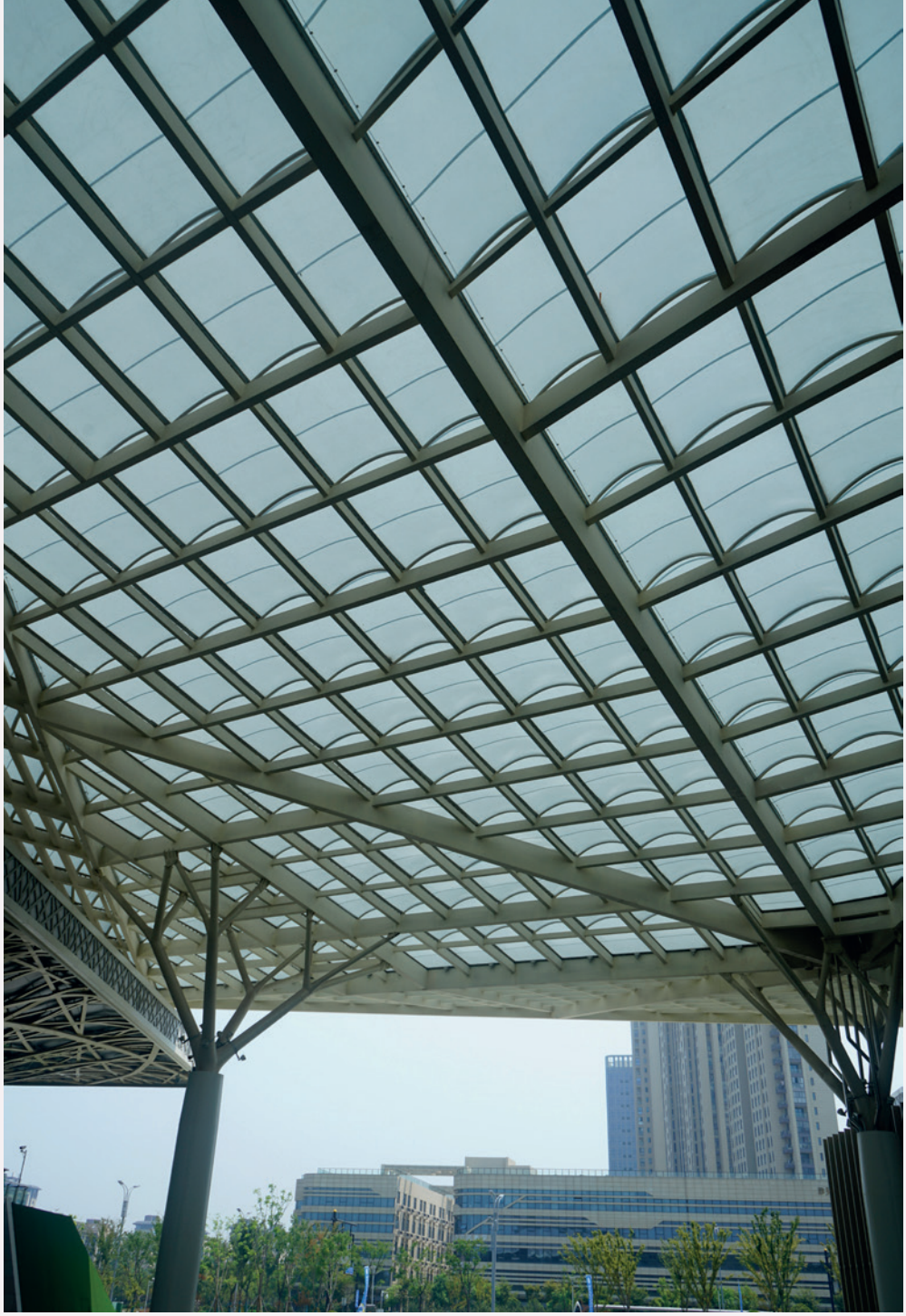
- Proven design life > 30 years
- Durability clean & easy maintenance
- High dimensional stability due to Précontraint® technology
- High translucency & consistent color (visu service)

Main applications

- High-end & large roofs
- Stadium roofs & sport hall envelopes
- Static & permanent structures







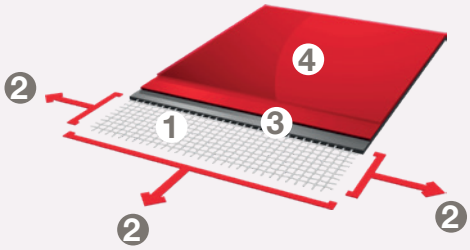
TX30

Excellent longevity & natural light input

Base cloth

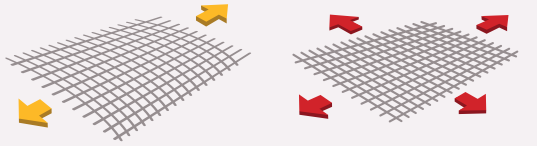
Exclusive **Précontraint®** technology

This unique, world-patented technology involves maintaining the composite in bi-axial tension throughout the manufacturing cycle. It ensures our materials' exceptional performance characteristics, which ensure they exceed market standards in terms of long-term stability, strength, coating thickness and flatness.



1	**High-tenacity polyester micro-yarn reinforcing mesh**	Higher resistance to elongation and tearing
2	**Coating under bi-axial, warp and weft tension**	No deformation during installation and usage
3	**Coating thickness covering top of yarns and dirt repellent surface treatment**	Enhanced aesthetic and structural durability
4	**Extremely flat and robust**	Easy-to-clean, smooth surface.

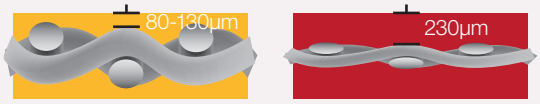
Unique properties



Slack is removed from base-cloth yarn and tension equalised in both warp and weft



The tension maintained and locked into the base-cloth provides a flatter base-cloth profile

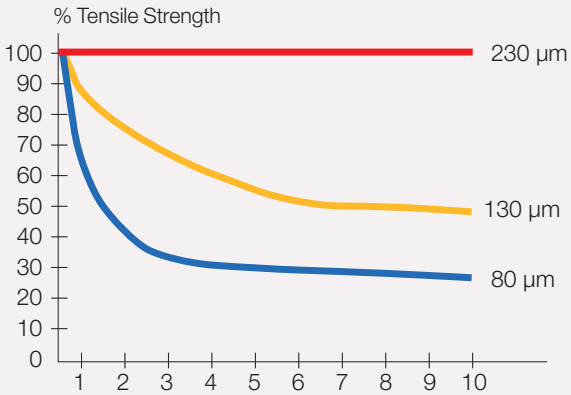


A flatter base-cloth profile offers significantly more PVC protective coating over the crest of the weft yarn

Conventional (80 to 130 µm) *Serge Ferrari Précontraint®*

Tangible benefits

- Unsurpassed dimensional stability in both warp & weft
- Higher abrasion resistance during manufacture, transportation and installation
- Increased UV protection
- Increased batch consistency
- Reduced requirement for post-install re-tensioning
- More consistent patterning compensations



More UV protection means longer retention of tensile strength

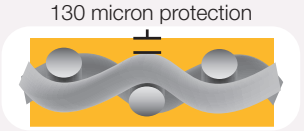
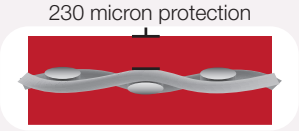
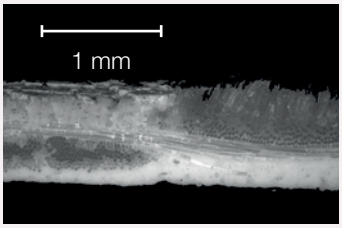
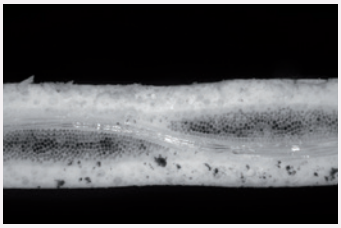
1µm = 0.001mm
Miami - Florida USA - Enka AG



Coating that stands the test of time

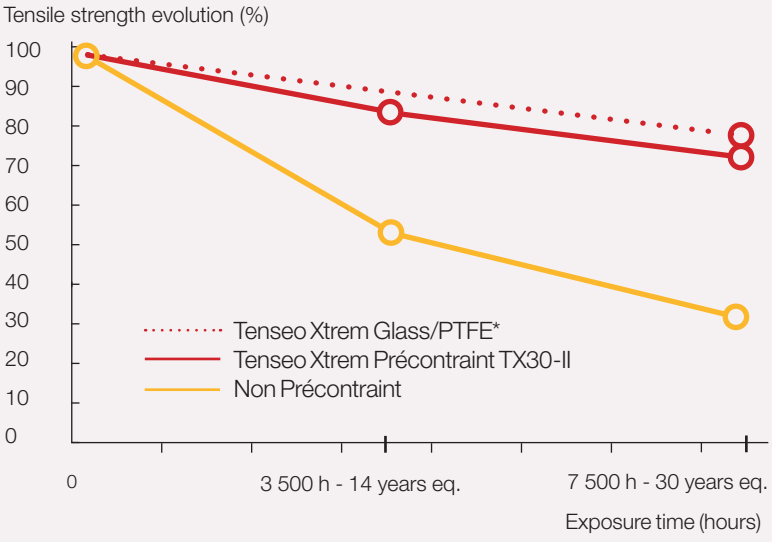
The mechanical longevity is directly linked to the quality and thickness of the coating which protects the yarns from the UV.
The Tenseo Xtrem TX30 longevity is served by:

- A 30 year coating formula that is highly resistant to the erosion generated by weather aggressions (UV, rain…),
- A thicker coating protection at the top of the flat micro-cables resulting from the Serge Ferrari Précontraint® technology.

Product reference	Non Précontraint® fabric	Précontraint® TX30
Before weathering	130 micron protection 	230 micron protection 
	■ Less protection of the polyester micro-cables against UV	■ Greater protection of the polyester micro-cables against UV
After weathering 7500 h – 30 Year Florida Eq		
	Erosion of the coating – Polyester micro-cables are naked and exposed to UV degradation.	Limited erosion – Polyester micro-cables are still well protected against UV by the coating.
	■ Drop of mechanical properties (see below)	■ Better mechanical longevity (see below)

Mechanical strength evolution

The mechanical strength has been measured at different intervals during the accelerated weathering. Précontraint TX30 maintains a better mechanical resistance after 30 years thanks to a better protection of the polyester micro-cables.



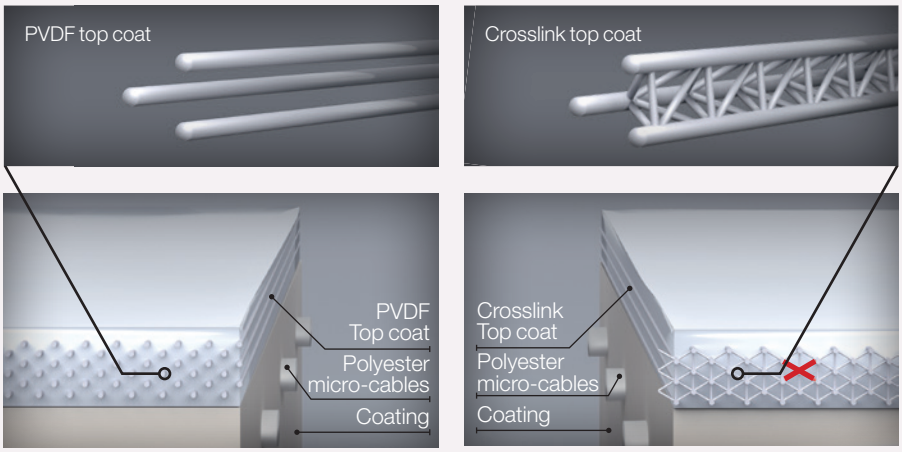
*natural weathering

The above data are extracts from a long term accelerated weathering test based on ISO 10640. The weathering protocol was validated by comparing outdoor exposed and artificially weathered materials.

TX30 Crosslink

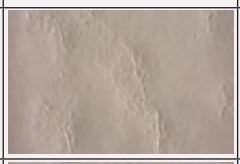
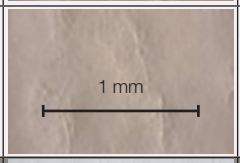
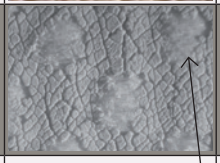
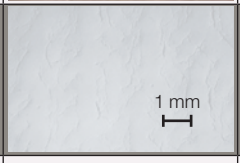
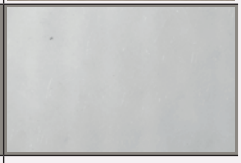
The crosslink top coat formula generates irreversible links between molecular chains.
This three-dimensional network provides long term benefits:

- durable aspect due to higher resistance to photo oxidation and micro-cracks
- smoother surface to minimise ingrained dirt,
- easier and more efficient cleaning of the even surface.



Conventional *Serge Ferrari*

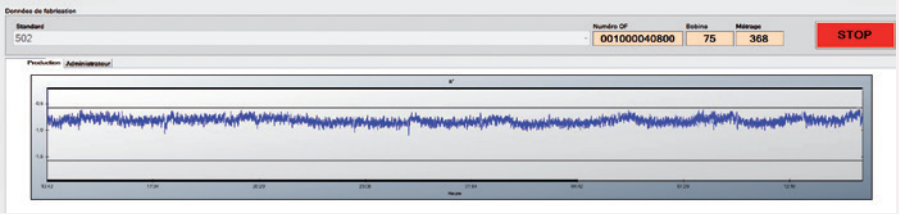
Extreme surface resistance

Product	Standard	High end & durable composites	
Top coat	Non Précontraint Weldable PVDF	**Tenseo Xtrem TX30** Crosslink Weldable after abrasion	Tenseo Xtrem G/PTFE Weldable with additional tape
Friction coefficient*	0.59	0.27	0.23
Accelerated weathering 4.500 H - 18 year Florida Eq.			
Accelerated weathering 7.500 H - 30 year Florida Eq.			
Close up Yarn protection 7.500 H – 30 year Florida Eq			
	Lots of micro cracks and exposed yarns. Irreversible degradation	*No micro cracks, aesthetics is preserved, easy cleaning*	*No micro cracks, aesthetics is preserved, easy cleaning*

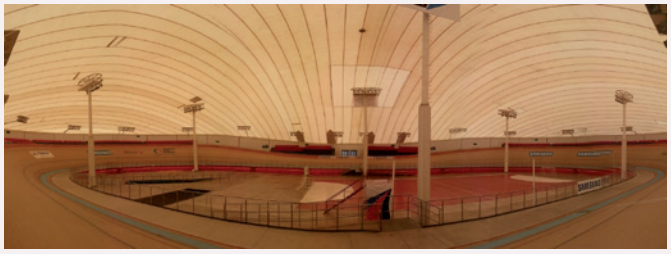
** a lower friction coefficient minimises the accumulation of dirt and pollution resulting in self cleaning properties.*

Visu Service

Natural light is a key criterion of tensile architecture, so it is essential to obtain a perfect homogeneity of color through transparency. Aware of this imperative, Serge Ferrari has developed a bespoke spectrophotometer embedded within production lines to precisely measure, control and adjust the color by transparency.



- Beautiful end result: assurance of measured, calibrated and traced homogeneity allowing the assembly of different batches.
- Time savings allowed by assembling material from different sources: fabricator stock, distributor stock, factory stock, new production batches No need to systematically wait for a new production.
- Material savings: the ends of productions or end of jumbo rolls are no longer discarded and take their place harmoniously in the next project.



Without Visu Service



With Visu Service



Dimentional stability _____ Low maintenance



Tenseo Xtrem TX30 has been developed to meet the mechanical and aesthetical longevity requirements of the most demanding projects. In addition to the proprietary Précontraint® technology benefits, the Tenseo Xtrem TX30 material combines an ultra resistant 30-year coating formula and a crosslink PVDF top coat.

Natural light for architecture

TX30



Translucent white **TX30**

Options:

Opaque, LowE, Color, *on demand after validation and MOQ written by Serge Ferrari*

	Tenseo Xtrem		
	TX30-II	**TX30-III**	**TX30-III HTL**
	Mechanical properties		
Tensile strength (warp/weft) EN ISO 1421	430/430 daN/5 cm 967/967 lbs/2 in	560/560 daN/5 cm 1259/1259 lbs/2 in	560/560 daN/5 cm 1,259/1,259 lbs/2 in
Tear strength (warp/weft) DIN 53.363	55/50 daN 124/112 lbs	80/65 daN 180/146 lbs	80/65 daN 180/146 lbs
Adhesion EN ISO 2411	12 daN/5 cm • 27 lbs/2 in	12 daN/5 cm • 27 lbs/2 in	12 daN/5 cm • 27 lbs/2 in
	Flame retardancy		
Rating - International fire certificate available, such as*	NFPA 701 Method 2 — CSFM T19 AS/NZS 1530.3 — AS/NZS 3837 **B-s2,d0**/EN 13501-1	NFPA 701 Method 2 — CSFM T19 AS/NZS 1530.3 — AS/NZS 3837 **B-s2,d0**/EN 13501-1	NFPA 701 Method 2 — CSFM T19 — AS/NZS 1530.3 — AS/NZS 3837 **B-s2,d0**/EN 13501-1
	Dimensions		
Weight EN ISO 2286-2	1050 g/m² • 31 oz/sq. yd	1,050 g/m² • 31 oz/sq. yd	1,050 g/m² • 31 oz/yd²
Thickness EN ISO 5084	0.78 mm • 780 microns	0.78 mm • 780 microns	0.78 mm • 780 microns
Width	178 cm • 70.1 in	178 cm • 70.1 in	178 cm • 70.1 in
Roll length	250 lm • 273.40 yd	220 lm • 240.59 yd	220 lm • 240.59 yd
	Complementary information		
Surface treatment (top/back)	CROSSLINK PVDF/PVDF	CROSSLINK PVDF/PVDF	CROSSLINK PVDF/PVDF
Micro organism resistance EN ISO 846 Method A	Degree 0, excellent	Degree 0, excellent	Degree 0, excellent
Assembly	Weldable after abrasion	Weldable after abrasion	-
Yarn	High tenacity Polyester 1100 Dtex Low wick treatment for anticapillarity	High tenacity Polyester 1100/1670 Dtex Low wick treatment for anticapillarity	High tenacity Polyester 1100/1670 Dtex Low wick treatment for anticapillarity
Elongation 24 h -10 daN/5 cm (warp/weft) EN 15977	<1%/<1%	<1% / <1%	<1% / <1%
Residual elongation EN 15977	<0.4%/<0.4%	<0.4% / <0.4%	<0.4% / <0.4%
	Thermal, optical and acoustic values		
Heat transfer coefficient (vertical/horizontal) Calculated	U=5.6 / 6.4 W/sqm/°C	U=5.6 / 6.4 W/sqm/°C	U=5.6 / 6.4 W/sqm/°C
Visible light Transmittance (Tv) NFP 38511	13%	12.5%	21%
Visible light Transmittance (Tv) EN 410	8%	7.5%	14%
Visible light Reflexion (Rv) EN 410	84%	84%	72%
Solar Transmittance (Ts) EN 410	10%	10%	16%
Solar Reflexion (Rs) EN 410	75%	75%	67%
Solar factor (g) EN 410	14%	13%	20%
UV transmittance EN 410	0%	0%	0%
Solar Reflectance Index (SRI) ASTM E1980-01 (Approach II)	>95%	>95%	>78%
Acoustic weakening index ISO 140-3 & ISO 717-1	14 dBA	14 dBA	14 dBA
	Management system		
	Quality: ISO 9001 • **Environment**: ISO 14001 • **Energy**: ISO 50001		
	Certifications, labels, warranty		
Précontraint® Technology	20-year warranty *15-year warranty (TX30-III HTL)*		

* Contact us for latest certificate updates & validities

[1] Summarizes the group's CSR project focused on human, to align economic performance and positive impact.

Mechanical properties are average values with a +/-5% tolerance, variance of +/-10% for weight given.

The purchaser of our products is responsible for their application or transformation in relation to possible third party rights. The purchaser of our products is responsible for their installation in compliance with the standards, working practices and safety regulations of their destination country. Please refer to our warranty document with regard to contractual liability. Values quoted in this document are commonly used test results for design purposes. They are given for information only in order to offer our customers optimum usage of our products. Our products are subject to improvements resulting from technical developments and we reserve the right to modify their characteristics at any time. The purchaser of our products is responsible for checking the above data.

The colours and textures presented are included for information only.

	Tenseo Xtrem	
	TX30-IV	**TX30-V**
	Mechanical properties	
Tensile strength (warp/weft) EN ISO 1421	800/700 daN/5 cm 1,798/1,574 lbs/2 in	1,000/800 daN/5 cm 2,248/1,798 lbs/2 in
Tear strength (warp/weft) DIN 53.363	120/110 daN 270/247 lbs	160/140 daN 360/315 lbs
Adhesion EN ISO 2411	13 daN/5 cm • 29 lbs/2 in	15 daN/5 cm • 34 lbs/2 in
	Flame retardancy	
Rating - International fire certificate available, such as*	NFPA 701 Method 2 — AS/NZS 1530.3 AS/NZS 3837 **C-s2,d0**/EN 13501-1	NFPA 701 Method 2 — CSFM T19 **C-s2,d0**/EN 13501-1
	Dimensions	
Weight EN ISO 2286-2	1,350 g/m² • 39.8 oz/sq. yd	1,500 g/m² • 44.2 oz/sq. yd
Thickness EN ISO 5084	1.02 mm • 1,020 microns	1.14 mm • 1140 microns
Width	178 cm • 70.1 in	178 cm • 70.1 in
Roll length	250 lm • 273.40 yd	200 lm • 218.72 yd
	Complementary information	
Surface treatment (top/back)	CROSSLINK PVDF/PVDF	CROSSLINK PVDF/PVDF
Micro organism resistance EN ISO 846 Method A	Degree 0, excellent	Degree 0, excellent
Assembly	Weldable after abrasion	Weldable after abrasion
Yarn	High tenacity Polyester 1100/2200 Dtex Low wick treatmaent for anticapillarity	High tenacity Polyester 1100/2200 Dtex Low wick treatment for anticapillarity
Elongation 24 h -10 daN/5 cm (warp/weft) EN 15977	<1% / <1%	<1% / <1%
Residual elongation EN 15977	<0.4% / <0.4%	<0.4% / <0.4%
	Thermal, optical and acoustic values	
Heat transfer coefficient (vertical/horizontal) Calculated	U=5.6 / 6.4 W/sqm/°C	U=5.6 / 6.4 W/sqm/°C
Visible light Transmittance (Tv) NFP 38511	9.5%	9%
Visible light Transmittance (Tv) EN 410	5.5%	5%
Visible light Reflexion (Rv) EN 410	85%	85%
Solar Transmittance (Ts) EN 410	10%	10%
Solar Reflexion (Rs) EN 410	75%	75%
Solar factor (g) EN 410	11.5%	10.5%
UV transmittance EN 410	0%	0%
Solar Reflectance Index (SRI) ASTM E1980-01 (Approach II)	>95%	>95%
Acoustic weakening index ISO 140-3 & ISO 717-1	15 dBA	16 dBA
	Management system	
	Quality: ISO 9001 • **Environment**: ISO 14001 • **Energy**: ISO 50001	
	Certifications, labels, warranty	
Précontraint® Technology	20-year warranty *15-year warranty (TX30-III HTL)*	

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Also available in Tenseo:

Xtrem - Long-term durability and lasting aesthetics for demanding building envelopes.

PTFE

- Verseidag multi-layer single pass IR coating technology
- ProShieldMax protection layer for ultimate durability
- PFOA free chemicals

PVC

- Proven design life > 30 years
- Durability clean & easy maintenance
- High dimensional stability due to Précontraint® technology
- High translucency & consistent color (visu service)

STFE

- Transparency & sunglass effect
- Structural & lightweight

Advanced - Longevity and easy maintenance.

PTFE

- Verseidag multi-layer single pass IR coating technology
- Excellent UV & weather stability
- Easy weldability due to FEP finish

PVC

- Long lasting ans low maintenance
- Controled color per translucency (visu service)
- High dimensional stability due to Précontraint® technology

Edition - Consistent and reliable performances for shading structures.

PTFE

- Long term aesthetics
- High natural light input
- High fire resistance

PVC

- Operational performance
- UV protection
- Lightweight

Frontside - Solar and glare control with perfect outward visibility for building envelopes.

PTFE

- High fire resistance
- Range of openess factors to suit every architectural requirement
- Excellent UV & weather stability
- Long-lasting mechanical performance

PVC

- Range of openess factors to suit every architectural requirement
- Excellent UV & weather stability
- Long-lasting mechanical performance

Comfort - Designed to pair with innovative Serge Ferrari fabrics or the six traditional building materials.

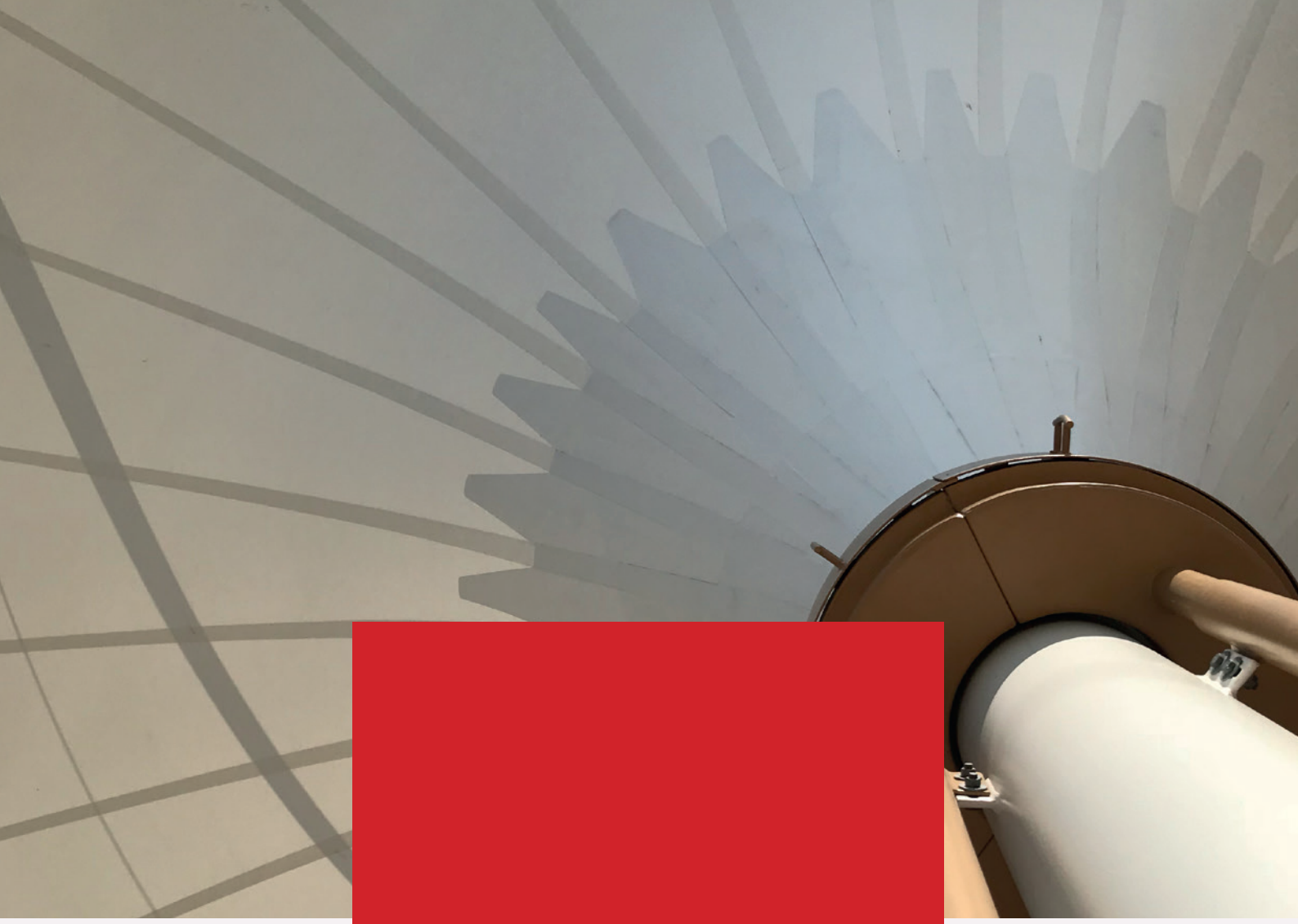
- Acoustic
- Visual
- Thermal comfort interior solutions
- Including non-combustible options

Product details



The tensile architecture reference membrane

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