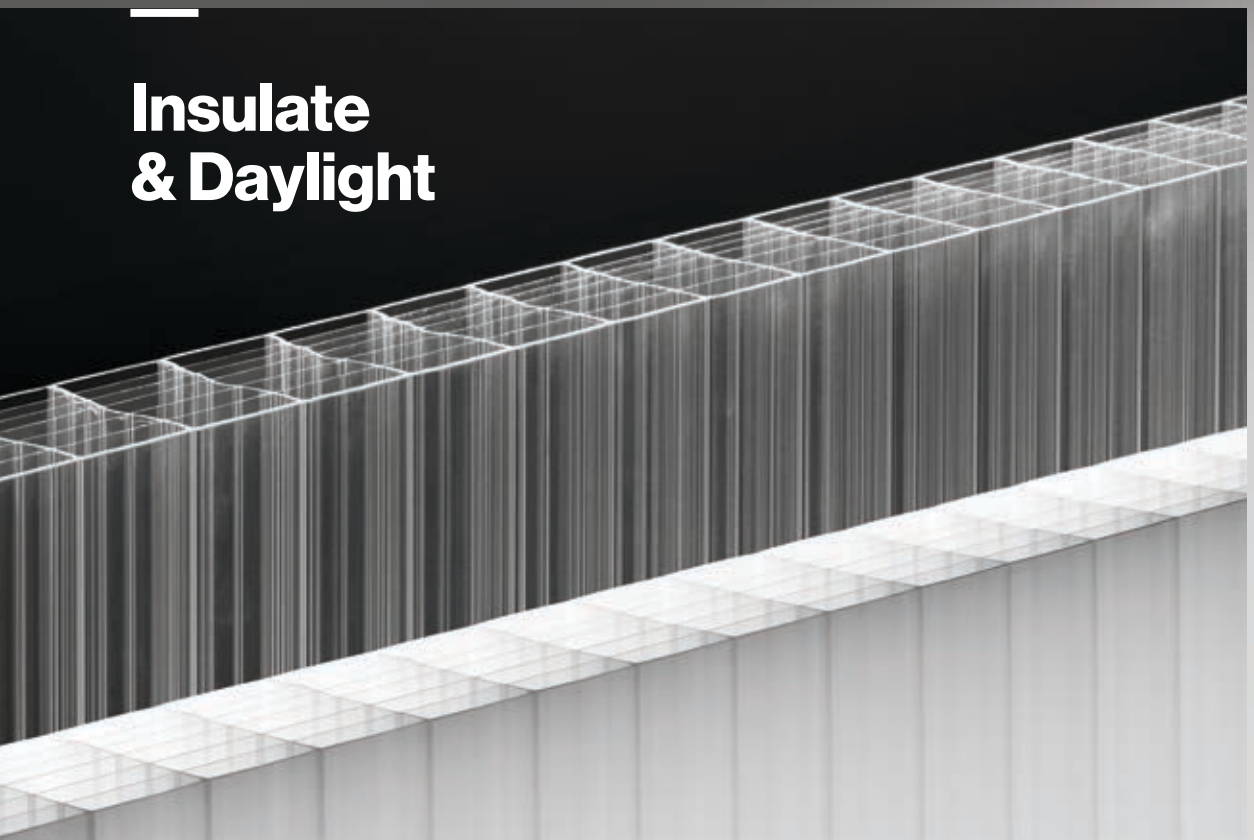
MULTIWALL
POLYCARBONATE
SHEET

Marlon ST

Insulate & Daylight



Brett Martin

Marlon ST

Marlon ST | Marlon ST BioPlus

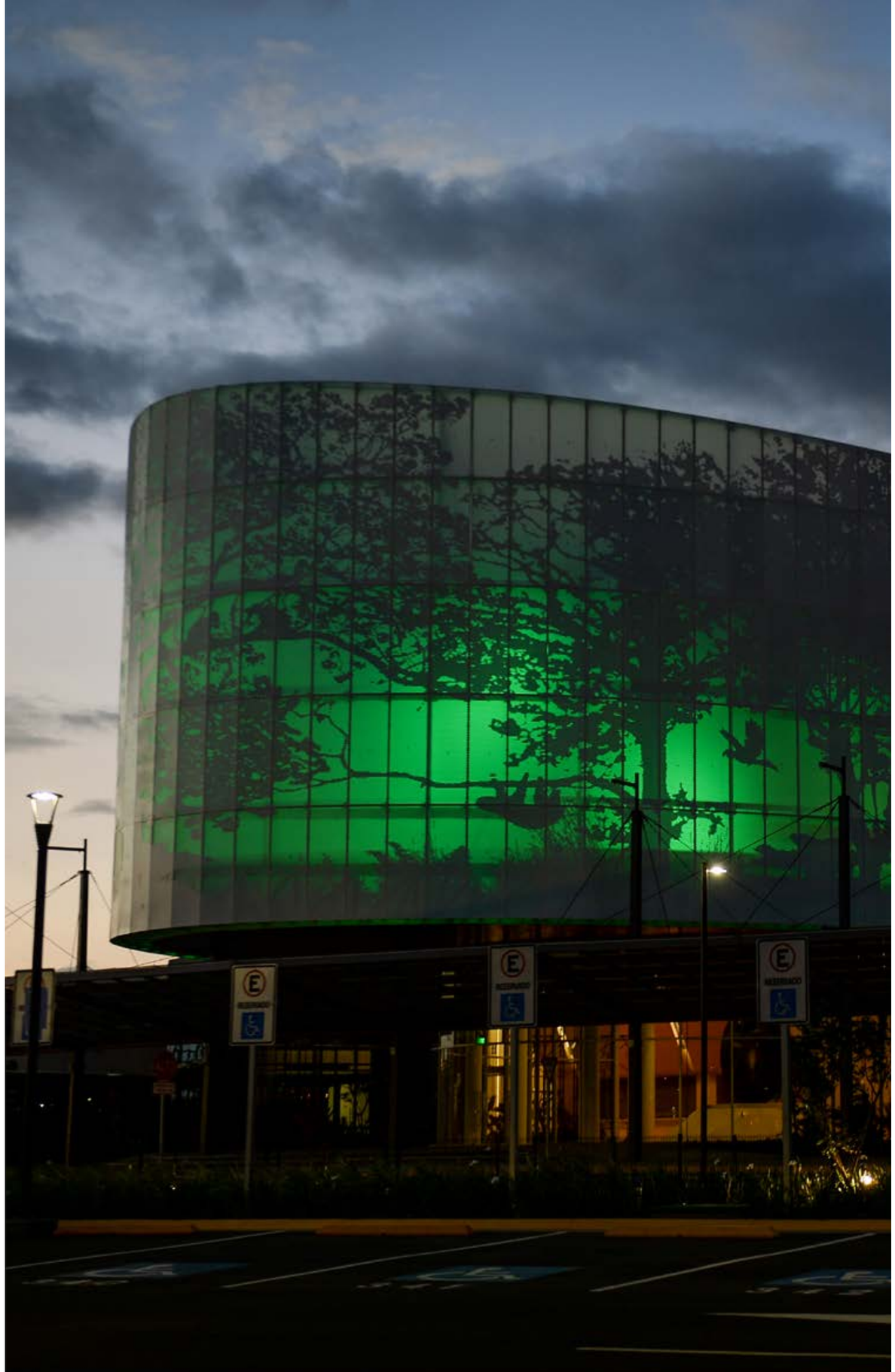
Marlon ST is the range of high performance multiwall glazing sheets manufactured from damage resistant polycarbonate with co-extruded UV protection.

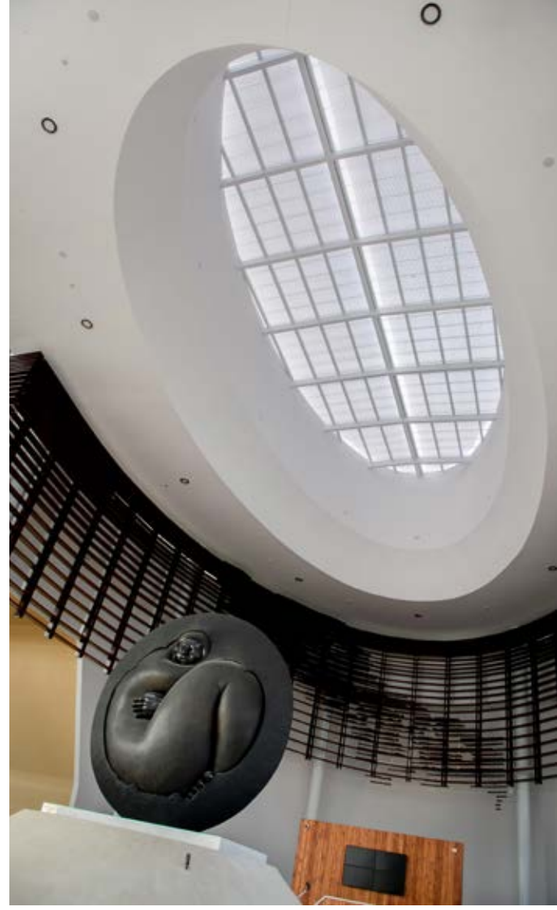
With 60 years' industry experience Brett Martin has used its expertise to develop this extensive and growing range of multiwall polycarbonate sheet which has become the preferred choice for professionals in construction, horticulture, agriculture and DIY worldwide.

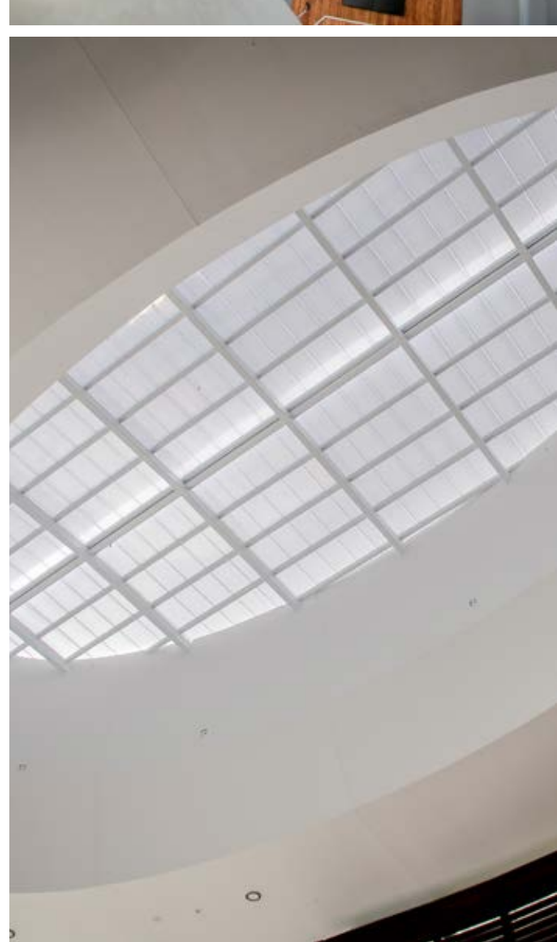
- Excellent light transmission
- Co-extruded UV protection
- Thermal insulation
- Exceptional impact resistance
- Outstanding strength to weight ratio
- Excellent fire performance

CONTENTS

Brett Martin



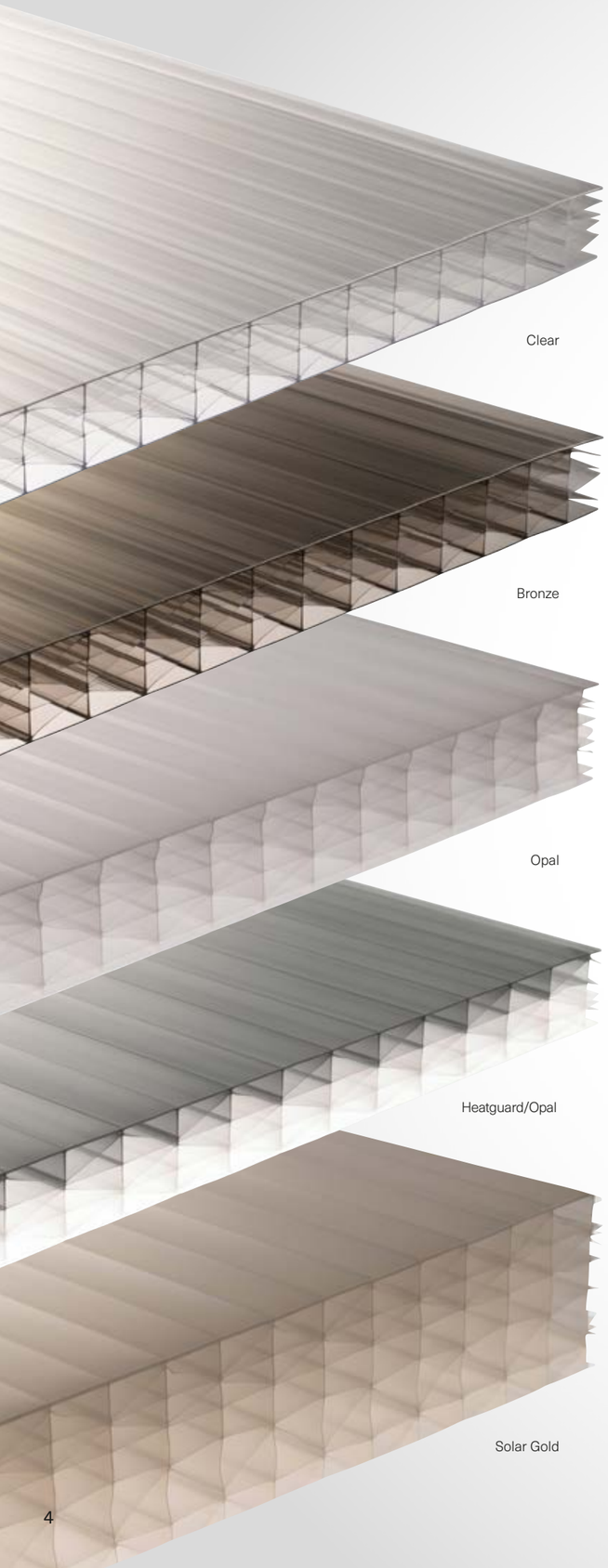




MARLON ST RANGE

Thicknesses
4mm – 55mm

Specials
Dual sided UV protection / Anti-drip / Special Tints



Marlon ST

STANDARD TINTS


Clear


Bronze


Pearlescent


Opal

DUAL TINTS


Bronze/Opal


Heatguard/Opal

SOLAR CONTROL TINTS


Solar Gold


IR Blue


Heatguard

OPAQUE SHEET


White/Black/White

ANTI-FOG SHEET

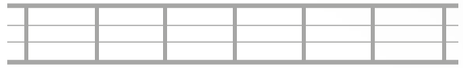

Clear

Full range available in
Marlon BioPlus

STRUCTURES

Twinwall (Twin) Thicknesses 4, 6, 8, 10 & 30mm

Fourwall (Four) Thicknesses 8mm & 10mm

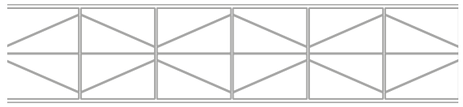


Triplewall (Triple) Thickness 16mm

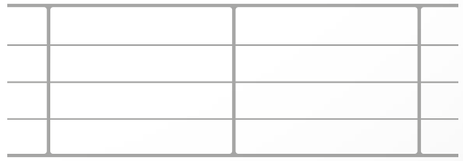
M Wall (M) Thickness 16mm

16x32mm M Wall (M) Improved Clarity

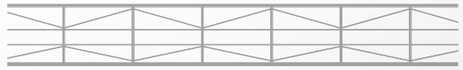
X Wall (X) Thickness 16mm



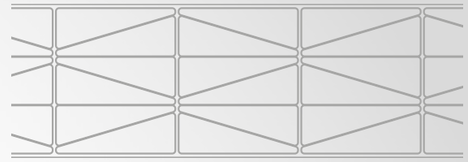
Fivewall (Five) Thicknesses 16 & 25mm



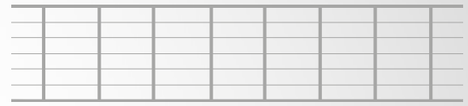
Sixwall (Six) Thickness 10mm



7X Wall (7X) Thicknesses 20mm & 25mm

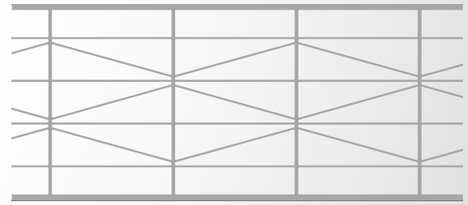


Sevenwall (Seven) Thicknesses 16, 32 & 35mm

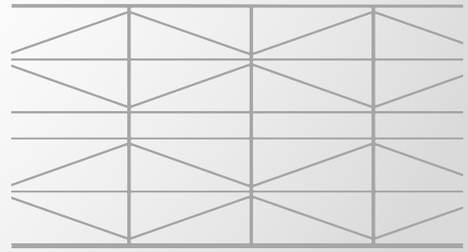


XX wall (XX) Thicknesses 32 & 35mm

Ninewall Thickness 32mm



Tenwall Thickness 35, 40 & 55mm



Marlon BioPlus

Next level sustainability

Specify the Marlon BioPlus option to reduce the embodied carbon in your project.

By switching from fossil based PC to resins certified as being produced from 89% bio-circular attributed material via mass balancing, we can offer Polycarbonate sheets with dramatically reduced impact on the environment.

The effect of using climate neutral resins in sheet manufactured with 100% renewable energy significantly reduces the embodied carbon associated with these sheets.

ISCC PLUS certified. Climate neutral, bio-circular attributed resin

89%

Replacement of fossil based raw material*

100%

Renewable energy used in resin and sheet production

Mass balancing explained

Mass Balancing is the plastic industry's innovative approach to deliver the next level of renewable resins.

It overcomes the practical production barriers to the substitution of fossil resources with bio-based recycled materials, e.g. used cooking oil, and accelerates the reduction in carbon emissions.

Mass balancing introduces measured amounts of bio-based materials early in the resin production process and allocates exactly the same amount to the finished resin. This allocation carries through to the Marlon sheet, which is identified and sold as a bio-circular attributed product.

Certified Sustainability
Each order of Marlon Bioplus is covered by our ISCC plus certification to confirm that the bio based material has been sourced sustainably and allocated via our mass balancing system.

ISCC International Sustainability & Carbon Certification

Feedstock		Resin		Sheet
100t Recycled bio material	=	**100t** Bio-circular attributed resin	=	**100t** Bio-circular attributed Marlon BioPlus sheet
+		+		+
900t Fossil material		**900t** Standard resin		**900t** Standard Marlon sheet

Incredible Strength to Weight Ratio

Polycarbonate's strength to weight ratio makes it an ideal material for roofing and glazing applications and an excellent alternative to heavier building materials.

Features & Benefits

- 200 times stronger than glass at only a fraction of the weight
- Excellent impact resistance
- Superb glazing solution suitable for even the most extreme of climates
- Rigid and self supporting allowing architectural spanning applications
- Weight allows for architectural designs that could not be realised with heavier materials
- Light weight for reduced transport energy and ease of handling
- Long term durability means lower maintenance
- Reduces the need for costly repairs

Outstanding Technical Performance

Polycarbonate offers a wide range of technical properties that make it an ideal solution in even the most challenging environments.

Features & Benefits

Service temperature up to 100°C - suitable for high temperature internal or external environments

Excellent fire performance with certification available from Brett Martin's Technical Department

Co-extruded UV protection layer filters out over 98% of UV rays for enhanced weatherability, preventing yellowing and loss of strength

Double sided UV protection option available for applications in which both sides of the sheet are exposed to the sun

UV protective glazing protects everything underneath from the damaging effects of the sun – people, livestock & plants

WARRANTY

Limited warranty, contact our Technical Department for further details

The multiwall structure of Marlon ST sheet provides a thermally insulating glazing solution. Achieve U-values as low as 0.83W/m^{2}K

Excellent Light Transmission

Polycarbonate's optical qualities make it ideal for applications requiring maximum daylight.

Features & Benefits

Achieves light transmission in excess of 80%

Reduced need for artificial light cuts building energy costs

Range of tints offering differing levels of light transmission and light diffusion to meet the designer's requirements

Natural daylight has been proven to promote health and wellbeing and improves mood

Natural daylight increases productivity and performance in schools, workplaces and sports facilities

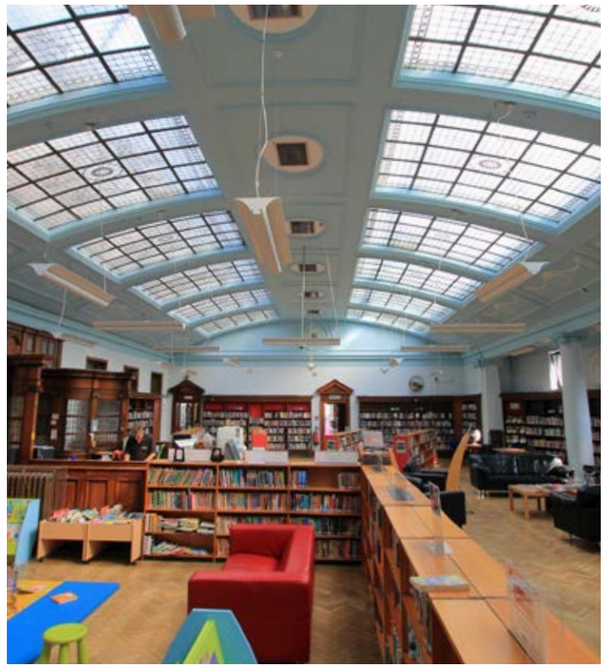
Applications

Marlon's incredible strength to weight ratio, outstanding technical performance and excellent light transmission make it the ideal choice for a range of construction, horticulture, agriculture and DIY applications.

Construction & Architecture

High light transmission combined with thermal insulation from the multiwall structure makes Marlon ST an ideal material for rooflights and vertical glazing. Natural light and U-values as low as 0.83W/m^{2}K contribute to a more energy efficient building whilst the attractive appearance of the sheet enhances design capabilities for a stunning architectural feature.

- Rooflights
- Vertical Glazing
- Facades
- Rainscreens
- Canopies
- Walkways



Horticulture & Agriculture

Marlon ST lightweight yet robust and durable glazing sheets are easy to install and reduce the need for frequent costly repairs. The range of light transmitting and solar controlling tints provides maximum daylight for growing crops or controlled natural light for creating a comfortable environment for livestock. Natural light reduces the need for artificial lighting. The co-extruded UV protection layer, which blocks over 98% of harmful UV rays, prolongs the life of the glazing sheet and protects the livestock and plants from the harmful effects of the sun.

- Commercial greenhouses
- Garden centres
- Domestic greenhouses
- Cow sheds
- Milking parlours
- Barns

House & Garden

Marlon ST is light in weight, easy to handle and easy to install with standard DIY tools making it the ideal solution for home improvement projects around the house and garden. Choose from a wide range of products suitable for DIYer's planning simple projects such as greenhouse glazing replacement, shed windows and gazebos to tradesmen undertaking more complex projects such as carports, sun canopies and conservatories.

- Conservatories
- Sun rooms
- Swimming pool covers
- Lean-to extensions
- Pergolas
- Sun screens

Marlon ST

AVAILABLE IN
Marlon BioPlus

Extensive range of structures, thickness and tints options.

Marlon ST multiwall polycarbonate sheet is a lightweight insulating glazing material manufactured from damage resistant polycarbonate. Co-extruded UV protection provides resistance against the effects of UV weathering. Marlon ST multiwall sheets are available in a range of thicknesses, structures and options for a wide range of roofing, cladding and glazing applications.

Marlon ST BioPlus, made with bio-circular attributed resin, is available across the entire Marlon ST range. Its material and processing properties are identical to the standard product.

Applications

- Rooflights and vertical glazing
- Canopies and walkways
- Conservatories and greenhouses
- Signage & display

Key Features

- Light weight yet rigid and structurally strong
- Thermally insulating multiwall structure
- Options for maximum light transmission or solar control
- Extensive range of structures and thicknesses

Product Range

Thicknesses
4mm – 55mm

Structures
Twinwall, Triplewall, Fourwall, Mwall, Xwall, Fivewall, Sixwall, 7Xwall, Sevenwall, XXwall, Ninewall, Tenwall

Specials
Double sided UV protection / Anti-drip

Standard Tints


Clear


Bronze


Opal


Pearlescent

Marlon ST Dual

AVAILABLE IN

Marlon BioPlus

Dual tinted multiwall sheet for the perfect aesthetic inside and outside conservatories and sun rooms.

Marlon ST dual tinted multiwall polycarbonate sheets offer dual-layer colour combinations in the same sheet to reduce heat build-up and solar glare while providing soft, diffused natural daylight. The heat controlling outer layer is effective in reducing solar heat gain through the roof by up to 50% and by combining this with a light diffusing opal interior, adds to the aesthetics and ambience of any conservatory, lean-to or veranda. Dual tint options include Heatguard Opal and Bronze Opal providing a comfortable cool and naturally daylit interior space.

Marlon ST BioPlus, made with bio-circular attributed resin, is available across the entire Marlon ST range. Its material and processing properties are identical to the standard product.

Applications

- Rooflights
- Conservatories
- Sunrooms

Key Features

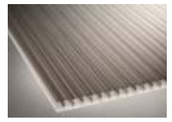
- Solar controlling outer layer with and attractive opal inner layer
- Soft, diffused natural light
- Reduces heat gain by up to 50%

Product Range

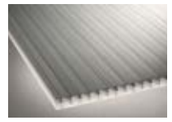
Structures
8mm 4wall, 10mm 6wall, 25mm Fivewall, 25mm 7Xwall, 32mm Sevenwall, 35mm Sevenwall

Specials
Double sided UV protection / Anti-drip

Dual Tints



Bronze Opal



Heatguard Opal

Marlon ST Solar Control

AVAILABLE IN
Marlon BioPlus

Solar controlling tints reduce heat build up by up to 50% compared to clear glazing sheet.

Marlon ST solar controlling multiwall polycarbonate sheet with heat reflecting technology provides cool naturally daylit interiors without the heat build-up normally associated with large areas of glazing.
The advanced heat controlling technology cleverly blocks the heat transmitting near-infra red solar energy whilst allowing high levels of natural light to penetrate the sheet without compromising light transmission.

Marlon ST BioPlus, made with bio-circular attributed resin, is available across the entire Marlon ST range. Its material and processing properties are identical to the standard product.

Applications

- Rooflights
- Conservatories
- Sunrooms

Key Features

- Reduces temperatures by up to 13°C*
- Cool naturally daylit interiors
- Tints options for maximum light transmission or diffused light

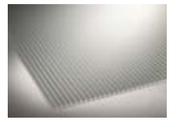
*Compared to clear material

Product Range

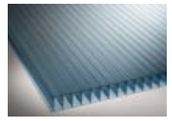
Structures
10mm 4wall, 16mm Sevenwall, 32mm Ninewall, 35mm Sevenwall

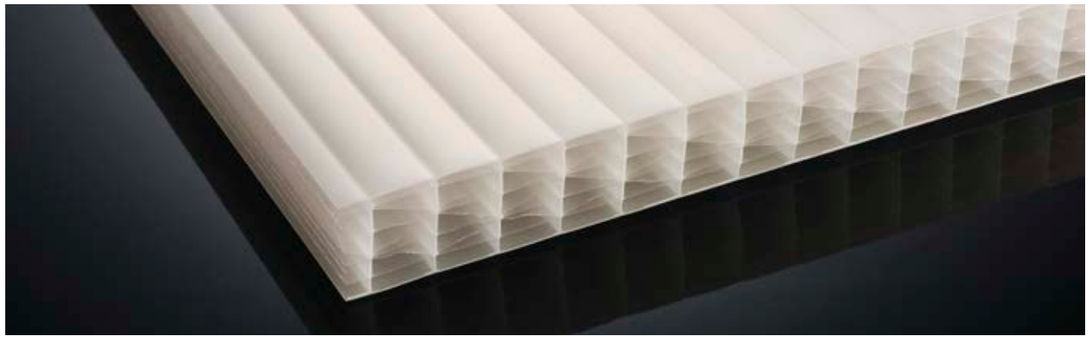
Specials
Dual sided UV protection

Solar Controlling Tints


Heatguard


Solar Gold


IR Blue



Marlon ST Anti-fog

AVAILABLE IN
Marlon BioPlus

Anti-fog layer eliminates condensation for maximum daylight and reduced water damage to plants.

Marlon ST with Condensation Control is an exceptional greenhouse glazing material which complements modern horticultural technology to provide the optimum environment for the controlled development of healthy seedlings and young plants for maximum yields. The anti-drip surface layer prevents the formation of water droplets and reduces condensation and associated fogging. This technically superior product achieves the high levels of photosynthetic light transmission necessary for healthy plant growth and combines high impact resistance, condensation control and UV protection.

Marlon ST BioPlus, made with bio-circular attributed resin, is available across the entire Marlon ST range. Its material and processing properties are identical to the standard product.

Applications

- Commercial Greenhouses
- Garden Greenhouses
- Garden Centres

Key Features

- Condensation control reduces crop spoilage caused by dripping
- High light transmission for healthy plant development
- Blocks damaging UV radiation

Product Range

Thicknesses
4mm – 16mm

Structures
Twinwall, Triplewall, Fourwall

Specials
Double sided UV protection

Colour & Tints

Clear

Marlon ST Opaque

Opaque sheet comprising a black core with a white surface providing 0% light transmission and maximum light reflection.

Marlon ST Opaque multiwall polycarbonate combines a black core with a highly reflective white outer surface for 0% light transmission through the sheet and maximum reflection of light from the sheet surface. This makes Marlon ST opaque the ideal solution for the walls of medical cannabis greenhouses as it aides control over day/night light cycles. Marlon ST Opaque also provides complete privacy and security for the crop. In addition to this the thermally insulating multiwall structure of the sheet helps to maintain the internal temperature of the greenhouse.

Applications

- Sides and walls
- Greenhouses
- Storage Facilities

Key Features

- Completely opaque for 0% light transmission
- Highly reflective white surface maximises light for photosynthesis
- Provides privacy and security for the walls of medical cannabis greenhouses

Product Range

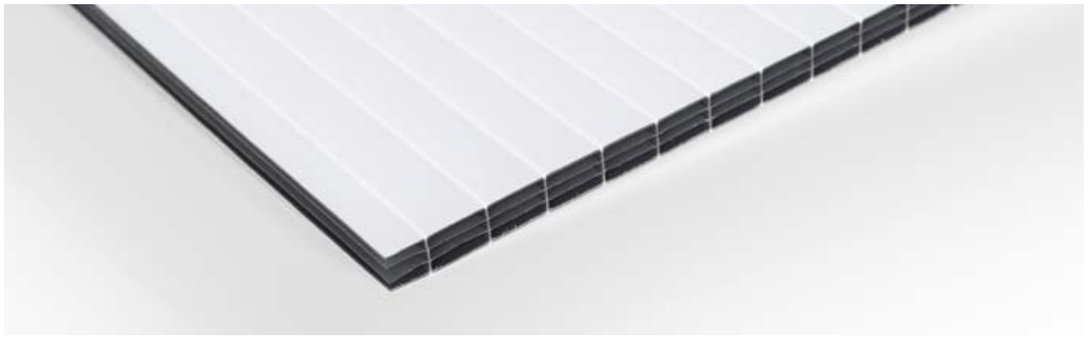
Thicknesses
8mm

Structures
Fourwall

Specials
Dual sided UV protection

Colours & Tints

White/black/white



Polycarbonate Profiles

Our range of polycarbonate connection profiles and sheet end closure profiles for use with Marlon ST multiwall polycarbonate sheet are manufactured from damage resistant Marlon polycarbonate with UV protection. Choose from a range of sizes to suit 4 – 16mm multiwall polycarbonate sheet. Light in weight yet robust our range of polycarbonate profiles are quick and easy to install. A full colour range is available to match any Marlon ST multiwall polycarbonate sheet.

Applications

- Greenhouses
- Carports
- DIY canopies

Key Features

- Manufactured from premium Marlon polycarbonate
- Options to suit 4mm, 6mm, 8mm, 10mm & 16mm sheet
- Co-extruded UV protection layer
- Light in weight and easy to install

Product Range

Cap & Base Profile
Suitable for use with 6mm, 8mm & 10mm sheet

H Profile
Options for 4mm, 6mm, 8mm, 10mm & 16mm sheet

U Profile
Options for 4mm, 6mm, 8mm, 10mm & 16mm sheet

Specials
Dual sided UV protection

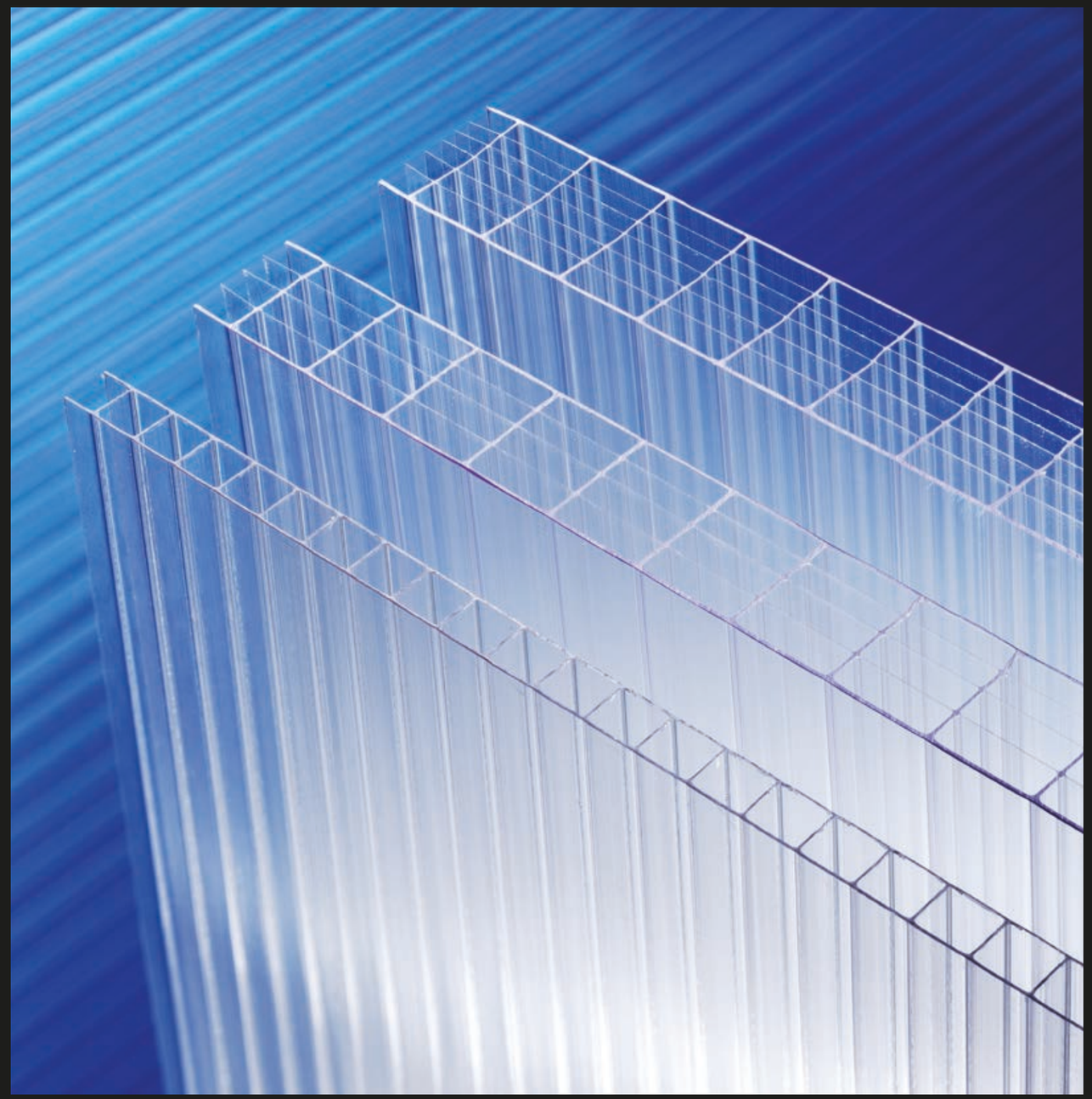
Sheet Connection Profiles

Cap & Base Profile

H profile

Sheet End Closure

U profile



TECHNICAL INFORMATION & INSTALLATION GUIDELINES

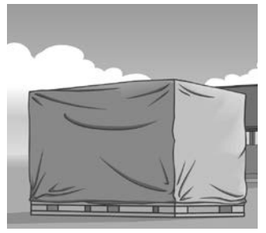
Marlon ST Longlife is robust yet lightweight. Installation is straightforward but it is imperative that the following rules are applied to every installation.

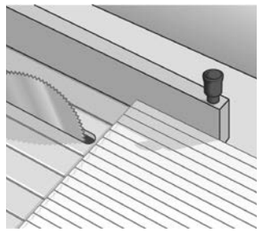
For Technical advice on your specific project please contact technical@brettmartin.com

Installation Guidelines

Storage & Sheet Preparation

- Store sheets on a flat surface. Use an opaque cover, tightly secured, to protect from wind, rain and sun. Storage is always preferable indoors.
- Ensure that the clearly marked UV protected surface of the Marlon ST sheet is to the outside.
- Marlon ST sheets must always be installed with the ribs running vertically, or up-slope.
- Roofs should always be designed with a minimum slope of 5° to allow adequate rainwater run-off.
- Marlon ST sheet can be cut with a fine tooth circular saw or hand saw at a shallow angle.
- Use aluminium sealing tape at the top of the sheet to prevent ingress of moisture, dust and insects.
- Use breather tape at the bottom end of the sheet to minimise condensation and prevent dust or insects entering the sheet.

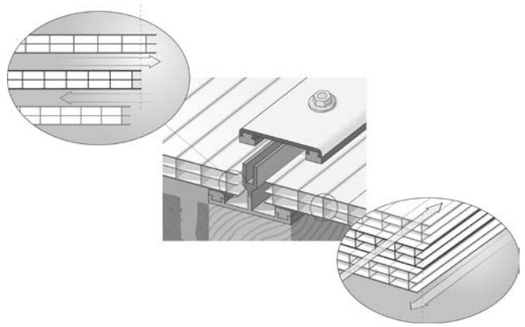




Thermal Movement

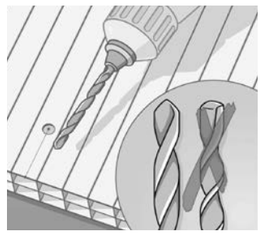
IMPORTANT
Polycarbonate sheet will expand in the heat and contract in the cold.

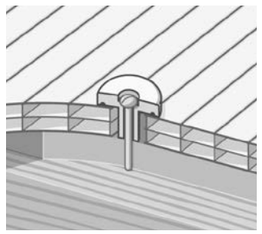
Sufficient allowance for thermal movement must be made in all:
- Glazing bars
- Side and end closures
- Fixing holes



Drilling & Fixing

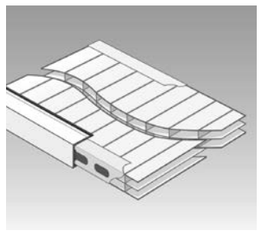
- When drilling fixing holes they must be oversized (18mm) to allow the sheet to move.
- Drill between ribs and at least 40mm from the edge of the sheet.
- Fixings must not be overtightened, again this allows the natural movement of the sheet and will avoid unnecessary damage to the sheet.





Finishing

Cover breather tape with a ‘U’ profile sealed to the top face of the sheet with a small silicone bead.
- Use a low-modulus neutral silicone as an all-purpose silicone will cause polycarbonates to crack and disintegrate.
- Ensure all film is completely removed immediately after installation.



Installation Accessories

A full range of fully compatible accessories including connection profiles, sheet end closure, fixings, tapes and silicone sealant are available for the complete roofing solution.

It is important when installing any Marlon ST sheet that accessories are compatible for use with polycarbonate.

Marlon ST Sheet Thickness (mm)

	4	6	8		10			16						20	25	30	32			35		40	55
Structure	Twin	Twin	Twin	Four	Twin	Four	Six	Triple	Five	M	M	X	Seven	7 X	7 X	Five	Twin	XX	Seven	Nine	XX	Seven	Ten	Ten	Ten
Sheet thickness mm (±0.5)	4	6	8	8	10	10	10	16	16	16	16	16	16	20	25	25	30	32	32	32	35	35	35	40	55
Rib spacing (nominal) mm	6	6	10	12.5	10	12.5	11.3	20	20	17.5	32	12.4	14	20	20	20	35	16	20	20	16	20	20	20	20
Maximum Sheet width mm	2100	2100	2100	2100	2100	2100	2100	2100	2100	1250	1220	2100	2100	2100	2100	2100	1250	1250	2100	1250	980	2100	1250	1250	1250
Approx weight g/m²	800	1300	1500	1500	1700	1700	1700	2700	2700	2800	4000	2500	2500	2800	3100	3400	3500	3800	3600	3600	4200	3900	3900	4200	5000
Light transmission %																									
Clear S	85	82	82	74	82	74	70	77	69	73	74	66	64	62	62	68	77	64	64	57	67	63	54	54	52
Bronze B	28	26	20	21	20	20	–	18	16	–	–	–	–	–	7	11	18	11	7	–	11	7	–	–	–
Opal V	39	39	39	39	40	34	–	42	39	35	39	–	–	28	28	30	37	40	33	–	33	31	35	33	32
U-value W/M²k	3.9	3.7	3.4	2.8	3.2	2.5	2.4	2.4	1.9	2.2	2.5	2.0	1.78	1.6	1.4	1.6	2.6	1.4	1.25	1.2	1.4	1.2	1.08	0.99	0.83
Falling dart Gardiner impact at 23°C Nm	21.3	27	>27	>27	>27	>27	>27	>27	>27	>27	>27	>27	>27	>27	>27	>27	>27	>27	>27	>27	>27	>27	>27	>27	>27

The typical properties table includes some non-standard items which may be subject to minimum order quantities and extended lead times.

Polycarbonate Mechanical Properties

Strength & Damage Resistance

Damage to glazing can be hazardous and expensive but our Marlon ST multiwall polycarbonate sheets offer excellent protection against hailstones, vandalism and accidental damage with an impact resistance up to 200 times greater than glass. This characteristic is maintained over a broad temperature range and prolonged service life. The Marlon ST sheets will retain their physical properties in extreme weather conditions making them the ideal glazing solution for projects throughout the world. Marlon ST polycarbonate can withstand temperature extremes from -40ºC to 100ºC (-40 to 212ºF) long term and up to 130ºC short term. No other glazing material can offer this combination of impact resistance and wide working temperature range.

UV Protection

Our Marlon ST polycarbonate sheets are co-extruded with a UV absorption layer. This protective layer prevents damaging UV radiation from penetrating the sheet for long term optical clarity and mechanical strength.

Chemical Resistance

Polycarbonate has good resistance to many chemicals (with the exception of solvents and strong alkalis) so is often suitable for use in aggressive environments.

Fire Performance

Our Marlon ST sheets exhibit excellent fire performance and in the event of a fire will soften and open, allowing smoke, heat and gases produced by the fire to escape. This 'venting' property means that damage within buildings can be limited. For details of fire ratings please contact our Technical department.

Warranty

Marlon ST sheets are manufactured under Quality Management Systems registered to BS EN ISO 9001:2015. The sheets carry limited warranty. For full warranty details please contact our Technical department.

Testing

Marlon ST sheets are designed and tested to the relevant industry standards and performance criteria. For further information please contact our Technical department.

Marlon ST BioPlus

Marlon ST BioPlus, made with bio-circular attributed resin, is available across the entire Marlon ST range. Its material and processing properties are identical to the standard product.

Properties		Test Method	Value	Units
Mechanical	Tensile strength at yield	DIN 53455	>60	MPa
	Tensile strength at break	DIN 53455	>70	MPa
	Modulus of elasticity	DIN 53457	>2300	MPa
Physical	Specific gravity	DIN 53479	1.20	g/m^3
Thermal	Softening temperature - Vicat 'B'	DIN53460	148	ºC
	Linear thermal expansion	DIN53752	6.8×10^{-5}	m/m.K
	Maximum service temperature	Permanent	100	ºC
	- no loading	Short term	130	ºC

Polycarbonate General Guidelines

Accessories

It is recommended that the ends of the Marlon ST sheets are sealed to minimise the build-up of moisture or dust contamination within the channels. A sealing tape, preferably aluminium, is applied at the top of the sheet to prevent ingress of moisture, dust and insects. A breather tape applied to the bottom end of the sheet permits air to move freely in and out of the sheet, helping minimise condensation.

Thermal Expansion

In practical terms it is necessary to allow 3.5mm per linear metre between the top edge of the panel and the glazing profile.

Cleaning

As a condition of ensuring that Marlon ST sheets perform at optimum throughout their service life, it is recommended that the sheets be cleaned periodically using suitable household cleaning agents as follows:

- Use lukewarm water to rinse the sheet and soften dirt.
- Make up a solution of lukewarm water and ordinary household cleaner or a mild soap and use this to wash the sheet.
- A sponge or soft cloth should then be used to gently remove dirt and grime.
- The cleaning process should then be repeated and the sheet rinsed and dried with a soft cloth.
- For larger areas clean the surface with a high-pressure water cleaner.

Warning

Care should be taken to observe the following precautions:

1. Do not scrub Marlon ST sheet with brushes or sharp instruments.
2. Avoid any abrasives or cleaners of a highly alkaline composition.
3. It is generally advisable in all instances to test any cleaner on a sample piece of the Marlon ST sheet first and it should also be remembered that cleaners and solvents which state that they are suitable for cleaning polycarbonate may not be safe for use on the UV protective surface of the sheet.

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