

# TECHNICAL INFORMATION & INSTALLATION GUIDELINES

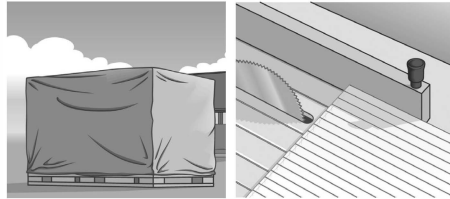
Marlon ST Longlife is robust yet lightweight. Installation is straightforward but it is imperative that the following rules are applied to every installation.

# 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.



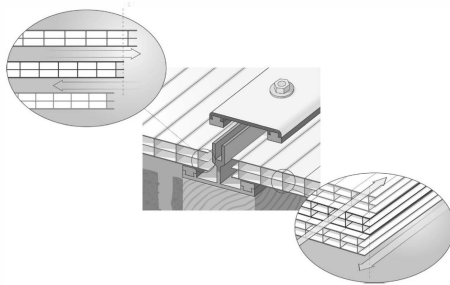
## Thermal Movement

### IMPORTANT

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

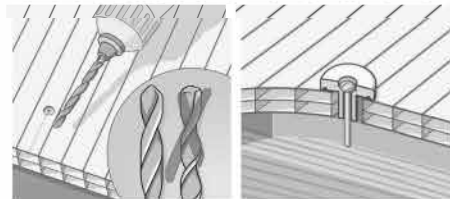
Sufficient allowance for thermal movement must be made in all:

- Glazing bars
- Side and end closures
- Fixing holes



## Drilling & Fixing

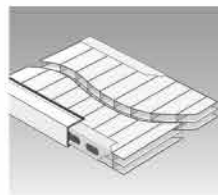
- When drilling fixing holes they must be oversized (18mm) to allow the sheet to move.
- Drill between ribs and at least 40mm from the edge of the sheet.
- Fixings must not be overtightened, again this allows the natural movement of the sheet and will avoid unnecessary damage to the sheet.



## 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	10	16	20	25	30	32	35	40	55	4	6	8	10	10	16	20	25	30	32	35	40	55	
Structure	Twin	Twin	Twin	Four	Twin	Four	Six	Triple	Five	M	M	X	Seven	7X	7X	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/m <sup>2</sup>	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/M <sup>2</sup> K	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	2.13	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 -40°C to 100°C (-40 to 212°F) long term and up to 130°C 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.

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 <sup>3</sup>
Thermal	Softening temperature - Vicat 'B'	DIN53460	148 °C
	Linear thermal expansion	DIN53752	6.8 x 10 <sup>-5</sup> m/m.K
	Maximum service temperature	Permanent	100 °C
	- no loading	Short term	130 °C

# 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.

