



POLYCARBONATE  
SHEET

# Corrugated Polycarbonate Glazing

**marlon****cs**  
LONGLIFE

**marlon****cst**  
LONGLIFE

**marlon****cs***diamond*



Plastic Sheets



Marlon CS is a range of high performance corrugated glazing sheets manufactured from damage resistant polycarbonate with co-extruded Longlife UV protection. The sheets are light in weight yet robust and resistant to impact. The extensive range of profiles and thicknesses as well as heavier weight embossed sheets and corrugated multiwall sheets provide the ideal glazing solution for a wide range of applications.

**marlon cs**  
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**marlon cs diamond**



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# Corrugated Polycarbonate Sheet

**MARLON CS LONGLIFE** IS A RANGE OF HIGH PERFORMANCE CORRUGATED POLYCARBONATE SHEET OFFERING SUPERIOR LIGHT TRANSMISSION, EXCELLENT IMPACT RESISTANCE AND IS 200 TIMES STRONGER THAN GLASS.

THE EXTENSIVE CHOICE OF PROFILES AVAILABLE IN A RANGE OF THICKNESSES MAKE MARLON CS THE IDEAL SOLUTION FOR A WIDE VARIETY OF ROOFLIGHTING AND GLAZING APPLICATIONS. MARLON CS CAN BE USED TO FORM COMPLETE ROOF COVERINGS OR CAN BE INCORPORATED INTO PROFILED METAL ROOFING AND CLADDING SYSTEMS RANGING FROM SINGLE SKIN TO ADVANCED COMPOSITE PANEL.



**Marlon CS Longlife** available in thicknesses up to 2mm, is light in weight yet robust at 200 times stronger than glass and can be profile matched to any metal roofing profile.

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**Marlon CST Longlife** corrugated multiwall polycarbonate sheets have the added benefit of a triplewall structure for increased thermal insulation properties and increased load capabilities.

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**Marlon CS Diamond** is a heavier weight sheet available in 2.6mm and 2.8mm thicknesses providing superior spanning and load bearing capabilities. Its attractive diamond cut embossed surface enhances design capabilities.

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# Material benefits

## STRENGTH & IMPACT RESISTANCE

Marlon CS Longlife corrugated polycarbonate glazing is 200 times stronger than glass and highly resistant to impact damage making it the ideal glazing material in a wide range of applications where the sheet may be exposed to risk of hail, vandalism or accidental damage.

Its strength is maintained over a broad temperature range (-40 to +130°C) making Marlon CS Longlife suitable for use in climates that experience hot or cold temperature extremes.



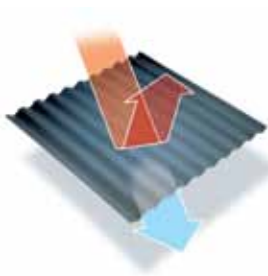
- Strong and resistant to impact damage, 200 times stronger than glass
- Reduces the need for costly repairs and maintains safety on buildings with access to the roof
- Ideal for a wide range of applications including factories and industrial buildings, greenhouses and agricultural buildings or buildings and roof structures in extreme climates



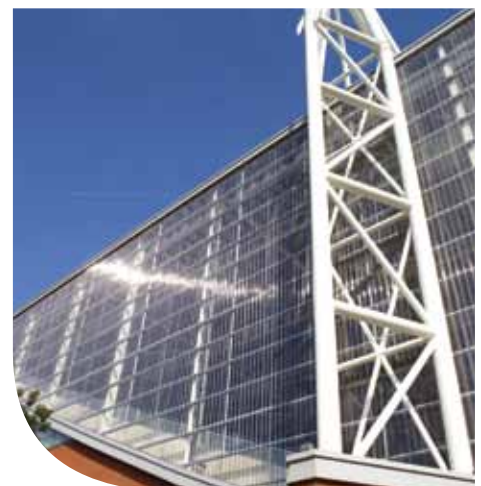
## UV PROTECTION & WEATHERABILITY

Marlon CS Longlife has a high performance co-extruded UV protection layer. The layer prevents UV rays from penetrating the sheet, shielding people, animals and plants by filtering out over 98% of damaging UV radiation and protecting the sheet against the effects of weathering.

Marlon CS Longlife is suitable for external applications and even in extreme weather climates the sheet will retain its properties and colour. Double sided UV protection is available for applications in which both sides of the sheet will be exposed to the sun.



- UV protection barrier filters out over 98% of harmful UV radiation protecting the people underneath the sheet from the sun
- UV Longlife protection barrier protects the sheets from weathering and yellowing under the sun and prolongs the life of the sheet
- Double sided UV protection available for applications in which both sides of the sheet may be exposed to the sun



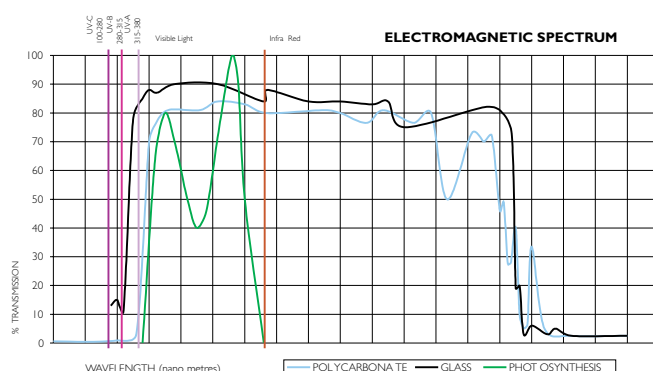


# Material benefits

## EXCELLENT LIGHT TRANSMISSION & SOLAR CONTROL

Natural daylight has been proven to have a positive effect on the internal environment of many buildings. It can contribute towards a more productive environment in retail stores, maximise crop yields in horticultural applications and promote healthy grass growth on the pitches of stadia and sporting arena.

Clear Marlon CS Longlife can achieve almost 90% light transmission making it ideal for applications requiring maximum daylight. A range of tints is also available for varying degrees of solar control. Diffuser Opal with clever light diffusing technology minimises shadowing and glare.



- Clear Marlon CS Longlife can achieve almost 90% light transmission
- Marlon CS is available in a range of tints for varying degrees of solar control
- Diffuser Opal offers diffused light transmission to minimise shadows and glare

## FIRE PERFORMANCE

Marlon CS polycarbonate meets the highest classification of European testing (EN13501) and in the event of a fire it 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 more details on fire ratings please contact our technical department.



## WARRANTY

Marlon CS Longlife and Marlon CST Longlife both carry a 10 year light transmission warranty and a three year weather breakage warranty. Marlon CS Diamond carries a 10 year light transmission warranty and a 10 year weather breakage warranty.



# Product Range

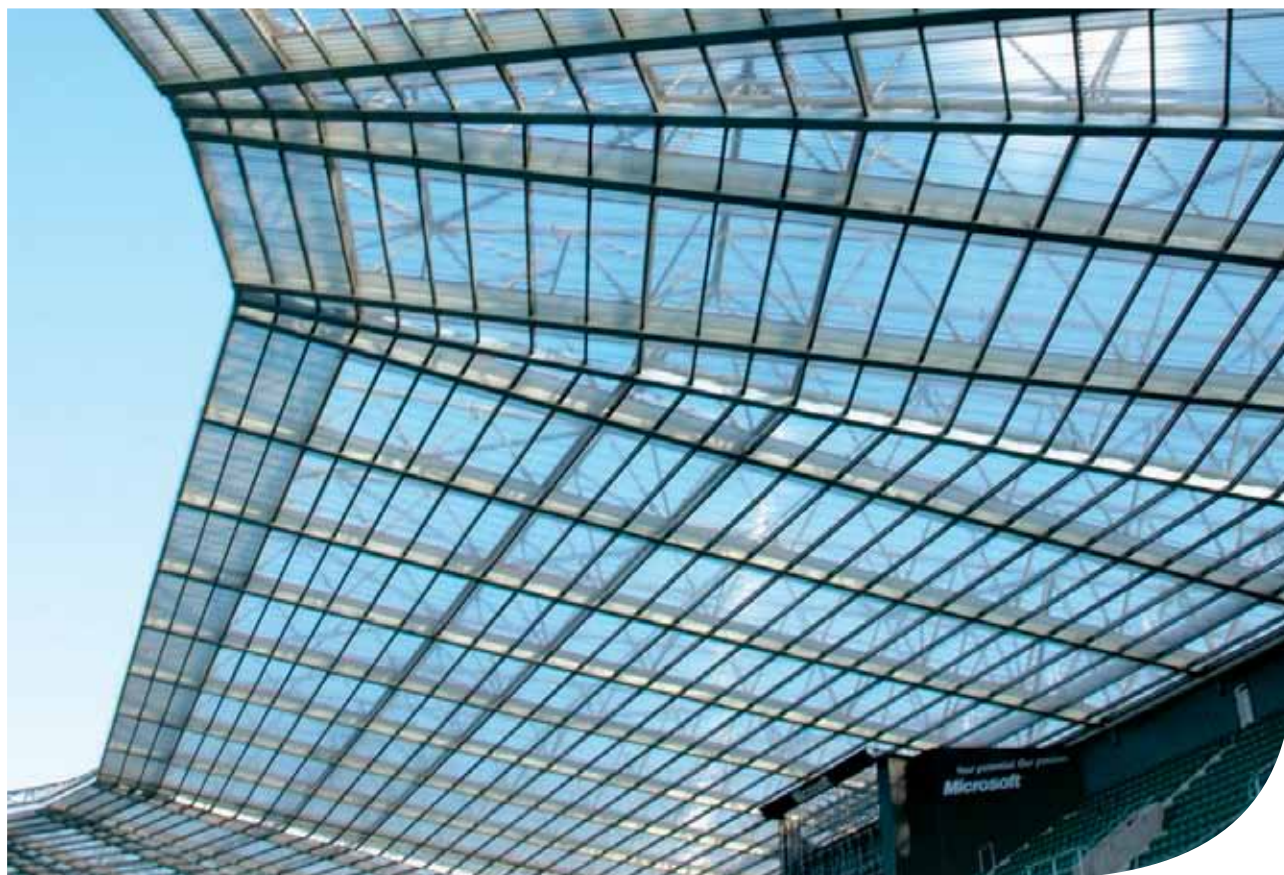
**Marlon CS Longlife** is available in a range of profiles and thicknesses as well as heavier weight embossed sheets and corrugated multiwall sheets. The extensive range provides the ideal glazing solution for a wide range of applications including Stadia, Agriculture, Horticulture, Industrial and DIY.

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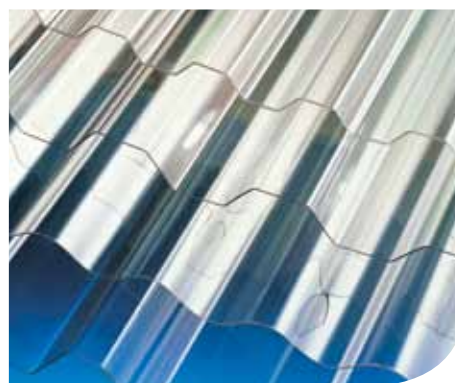




## marlon **CS** LONGLIFE

### CORRUGATED POLYCARBONATE SHEET

Marlon CS Longlife corrugated polycarbonate sheet is a high performance rooflighting and glazing material with co-extruded Longlife UV protection. The sheet is light in weight yet strong and durable with better impact resistance than other glazing materials. Marlon CS Longlife can be used to form complete roof coverings or can be incorporated into any corrugated metal roofing and cladding system, ranging from simple single skin to advanced composite panel.



Colours and tints:	Clear, Bronze, Opal, Diffuser Opal, Solar Grey, Heatguard
Widths:	Widths up to 1260mm
Thicknesses:	0.8mm to 2mm
Profiles:	Extensive range of standard profiles, profile matching service*
Specials:	Double sided UV protection, Condensation control**
Sheet weight:	1.2kg/m <sup>2</sup> (1mm)
U-value:	5.7 W/m <sup>2</sup> °K

\* Minimum order quantities apply.

\*\* Available on selected profiles, minimum order quantities apply. Contact the technical department for more details.



Marlon CS Longlife carries a 10 year light transmission warranty and a 3 year weather breakage warranty.







## marlon **cs** diamond

### ADVANCED CORRUGATED POLYCARBONATE SHEET

Marlon CS Diamond is a superior corrugated polycarbonate glazing sheet. At 2.6mm and 2.8mm thicknesses the sheets are stronger and more rigid, providing exceptional spanning and load bearing capabilities. Available in clear for glass like light transmission or bronze for solar control, the striking prismatic embossed surface of the sheet creates a more diffused light and enhances design capabilities. Marlon CS Diamond can withstand temperature extremes more readily than other materials. Longlife UV protection protects the sheet from the long-term effects of weathering.



Colours:	Clear, Bronze
Widths:	1045mm
Thicknesses:	2.6mm and 2.8mm
Profiles:	PX1944
Specials:	Special transparent, translucent and opaque options are available on request*
Sheet weight:	2.93kg/m <sup>2</sup> (2.8mm)
U-value:	5.6 W/m <sup>2</sup> °K

\* Minimum order quantities apply.



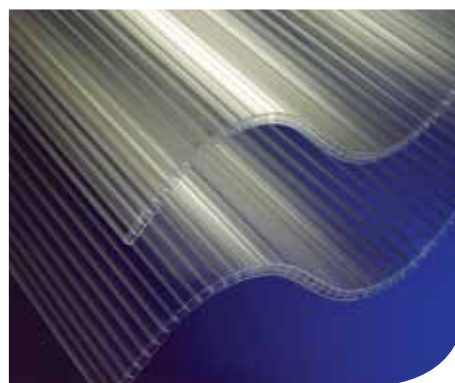
Marlon CS Diamond carries a 10 year light transmission warranty and a 10 year weather breakage warranty.



## marlon **cst** LONGLIFE

### CORRUGATED MULTIWALL POLYCARBONATE SHEET

Marlon CST Longlife corrugated multiwall polycarbonate sheet provides all of the characteristics of standard corrugated sheet with the added benefit of insulation from the multiwall structure. The sheets are co-extruded with Longlife UV protection which protects the sheet from the damaging effects of UV radiation. Marlon CST Longlife can be used with fibre cement sheets or as a complete roof and wall sheeting material.



Colours and tints:	Clear, Glass Clear, Pearlescent Glass, Opal
Widths:	Widths up to 1152mm
Thicknesses:	6mm Triplewall
Profiles:	Fibre Cement 177/51
Specials:	Double sided UV protection*, mitred corner option
Sheet weight:	2.0kg/m <sup>2</sup>
U-value:	3.3 W/m <sup>2</sup> °K

\* Minimum order quantities apply.



Marlon CST Longlife carries a 10 year light transmission warranty and a 3 year weather breakage warranty.





# Product Options

THE UNRIVALLED RANGE OF MARLON CS OPTIONS OFFER SOLUTIONS FOR A WIDE RANGE OF LIGHTING, INSULATION AND AESTHETIC SPECIFICATIONS.

## PROFILES

Brett Martin holds the biggest profile database for corrugated plastic sheet and can profile match to any corrugated metal and fibre cement roofing and cladding system. See pages 12 & 13 for more details.

## DOUBLE SIDED UV

Marlon CS is available with double sided UV protection for applications in which both sides of the sheet will be exposed.

## THICKNESSES

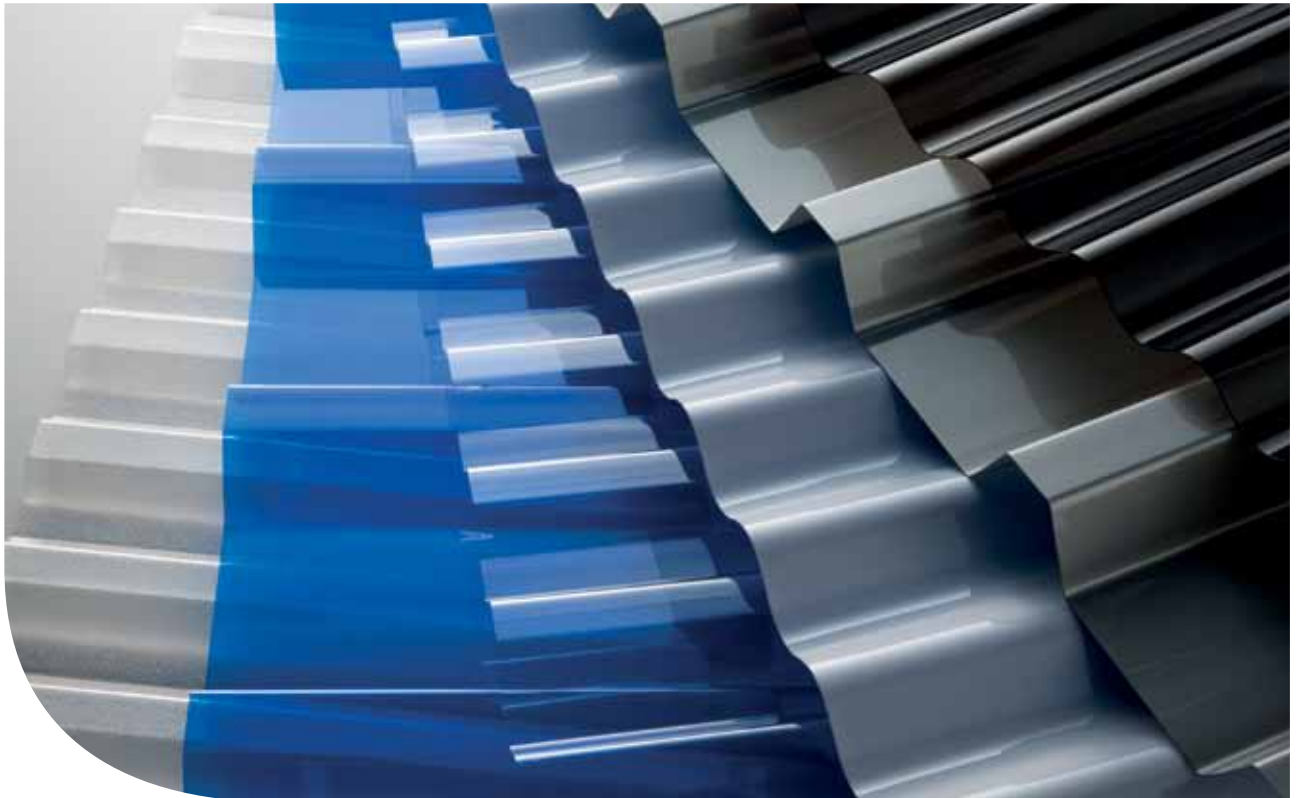
Marlon CS Longlife is available in sheet thicknesses up to 2mm and Marlon CS Diamond is available in thicknesses up to 2.8mm. The thicker sheet options are significant for high wind load or snow load applications, exceptionally high impact resistance and for wider support centres. Marlon CST Longlife corrugated multiwall sheet is also available in a 6mm Triplewall option.

## ANTI-DRIP

Specifically designed for horticultural applications, an optional anti-drip surface layer will prevent the formation of water droplets in high humidity environments. This innovative technology can be applied to selected profiles to increase productivity by maintaining high levels of light transmission and assisting in minimising fruit and flower spoilage in greenhouse facilities.

## TINT OPTIONS

Rooflights and vertical glazing provide natural daylight into a building reducing the need for artificial light which can help to reduce running costs. Various tint options are available to create different lighting effects, reduce heat build or add to the aesthetics of the structure. For details of tint options and light transmission see page 14.



*Minimum order quantities may apply.*

# Profile Matching

Brett Martin holds the biggest profile database for corrugated rooflight and glazing sheet including all of the commonly used stadia, industrial, horticultural, agricultural and DIY profiles.

In addition to this we can profile match to any corrugated metal and fibre cement roofing and cladding system.

Minimum order quantities apply. Speak to your sales representative to discuss your specific requirements.





# Common Profiles

## MARLON CS LONGLIFE

PROFILE	PROFILE DRAWING	TYPICAL USE
PI080 (Mini)		DIY
PI032 (Iron)		DIY, Horticulture, Agriculture
PI027 (Greca)		DIY, Horticulture, Agriculture
PI172 (Omega)		Horticulture, Agriculture
P0007 (Fibre Cement)		Agriculture
P0206 (Industrial)		Industrial, Stadia
PI836 (Industrial)		Industrial, Stadia

## MARLON CS DIAMOND

PROFILE	PROFILE DRAWING	TYPICAL USE
PXI944 (Iron)		Industrial

## MARLON CST LONGLIFE

PROFILE	PROFILE DRAWING	TYPICAL USE
P0007 (Fibre Cement)		Industrial, Horticulture, Agriculture

Minimum order quantities may apply. Speak to your sales representative for more details.

# Tints & Colours

Clear Marlon CS Longlife can achieve almost 90% light transmission making it an ideal material for applications requiring maximum light transmission. A range of tints are also available for varying degrees of solar control.

## LIGHT TRANSMISSION

	COLOUR	LIGHT TRANSMISSION		
		MARLON CS LONGLIFE	MARLON CST LONGLIFE	MARLON CS DIAMOND
Maximum Light	Clear	88%	79%	70%
	Glass Clear (g)	—	77%	—
Diffused Light	Diffuser Opal	73%	—	—
	Pearlescent (g)	—	53%	—
Solar Control	Opal	46%	38%	—
	Bronze	32%	—	56%
	Solar Grey	29%	—	—
Temperature Control	Heatguard	7%	—	—

(g) Glass Fibre Filled

## EMBOSSING & GLASS FILLED

Embossing on one side of the sheet or the addition of glass fibre to the formulation are options available on selected profiles for applications where low light diffusion and privacy may be required.

**DIFFUSER OPAL**

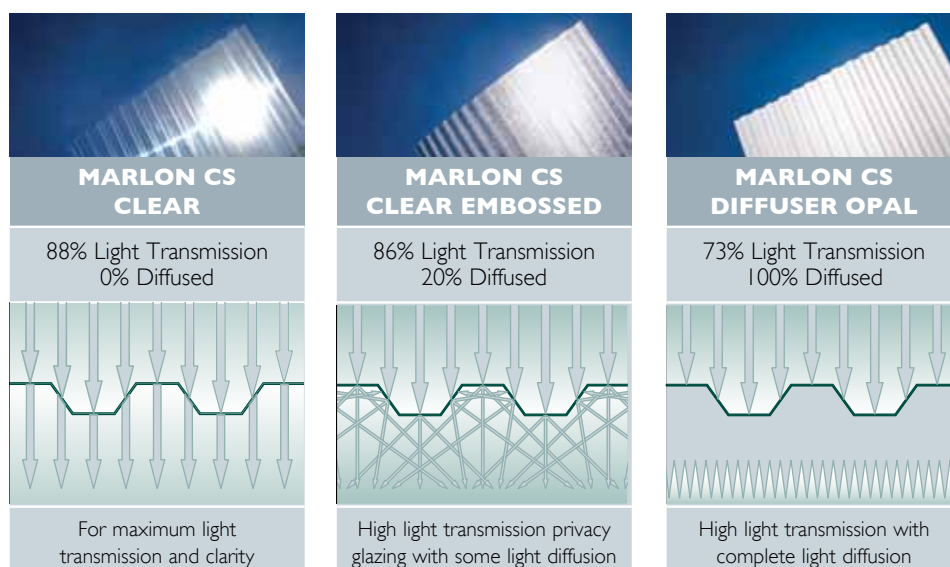
Softer, diffused natural light.  
Minimises shadows and glare.

## HEATGUARD

Marlon CS Heatguard's specially developed pigment allows light to enter through the roof at the same time as deflecting solar radiation. Tests have shown that it can reduce solar transmission through the roof by over 50%.

## DIFFUSER OPAL

Diffuser Opal's clever technology dissipates daylight as it travels through the sheet creating a much softer diffused light inside the building with minimal shadowing and glare.



Minimum order quantities may apply. Speak to your sales representative for more details.





# Applications

Applications:

Factories  
Warehouses  
Retail Units  
Storage Facilities  
Train Sheds  
Aircraft Hangers

## Industrial Rooflights

Marlon CS Longlife can be profile matched to most corrugated roofing and cladding systems and can be installed as single skin or insulating factory assembled units to provide natural daylight and reduce the energy consumption of a building.





# Applications



## STADIA & SPORTS FACILITIES

Marlon CS Longlife is widely used in stadia and sporting facilities. The sheet provides high levels of natural light transmission reducing shadows over the pitch and promoting healthy grass for an optimum playing surface and a pitch that looks good for televised matches.

Marlon CS Longlife not only provides cover for spectators from the wind and rain but cuts out over 98% of harmful UV radiation from the sun, creating outdoor seating and viewing areas that are sheltered from the elements.

Applications:

Stadia

Arena

Sporting Facilities

Training Grounds





## VERTICAL GLAZING

Marlon CS Longlife is strong and robust and can be profiled matched and incorporated into profiled metal cladding systems as sidelights or used on its own as vertical glazing to bring natural daylight into a wide variety of industrial and commercial applications.

Applications:

Factories

Warehouses

Storage Facilities

Loading Docks

Sheds

To download a datasheet on any of our Marlon CS Longlife ranges please visit our website [www.brettmartin.com](http://www.brettmartin.com)



# Applications



## HORTICULTURE & AGRICULTURE

Marlon CS agrisheet can be incorporated into corrugated metal and fibre cement roofing and cladding systems to provide natural daylight into farm buildings and sheds and reduce the running costs and energy consumption of the building.

The commonly used horticultural profiles are available with an optional anti-drip layer to reduce condensation and spoilage to young plants caused by water droplets making Marlon CS hortisheet a superb greenhouse glazing material.

It can be used for:

**Agricultural Rooflights  
and Side Lights**

**Barns**

**Sheds**

**Commercial Greenhouses**

**Chicken Houses**

**Cattle Sheds**

**Garden Centres**





## HOUSE & HOME

Marlon CS Longlife is light in weight, easily handled and durable making it an ideal solution for a number of applications in and around the house and garden. Its wide service temperature range makes it suitable for use in climates which are exposed to hot or cold temperature extremes.

Applications:

Rooflights

Sheds

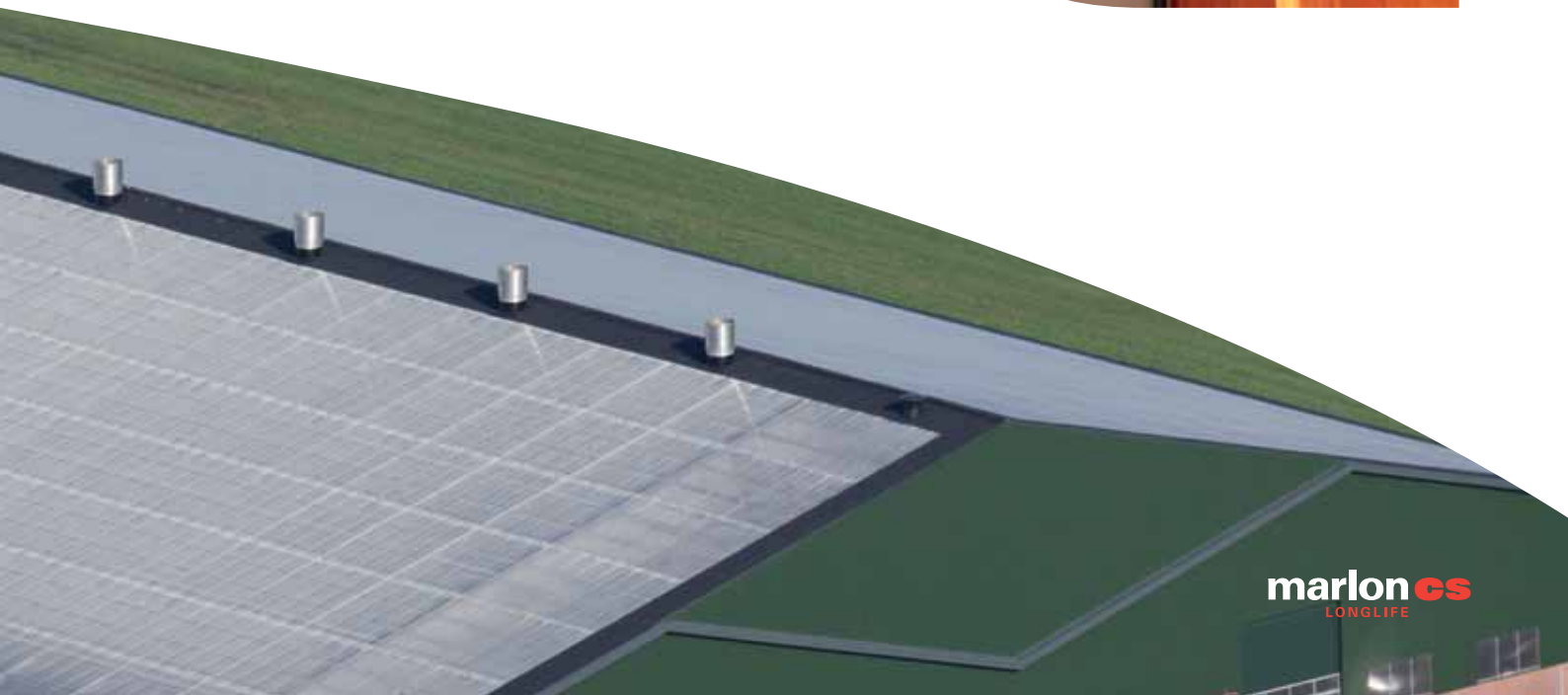
Swimming Pool Covers

Awnings

Partitions

Greenhouses

To download a datasheet on any of our Marlon CS Longlife ranges please visit our website [www.brettmartin.com](http://www.brettmartin.com)





# Working with Marlon CS

**Marlon CS Longlife** sheets are resilient and highly resistant to impact damage. However, as with all other glazing materials care must be taken to handle, store and install the sheets properly to ensure best performance.



# Storage & Handling

## STORAGE

Store Marlon CS Longlife sheets on a flat, horizontal and dry surface. Stack height should not exceed 1m. It is recommended that sheets are stored indoors where possible. If sheets are being stored outdoors they must be covered with an opaque cover, tightly secured, to protect from wind, rain and sun.

## CUTTING

Marlon CS Longlife can be cut with a hand saw and a variety of powered saws. Always ensure that the sheet is well supported and cannot vibrate. Please refer to the Marlon CS product guide for more details.

## DRILLING

Metal drill bits are suitable for drilling Marlon CS Longlife. Hand or power drills can be used. If using a power drill, set to a slow speed. Support the sheet underneath the hole position to avoid vibration. When drilling holes always allow for thermal movement (see page 22).

## CLEANING

To maintain the light transmission of any glazing material, periodic cleaning is necessary. Marlon CS Longlife must be cleaned with care as it is not resistant to all cleaners and the surface can be marked easily.

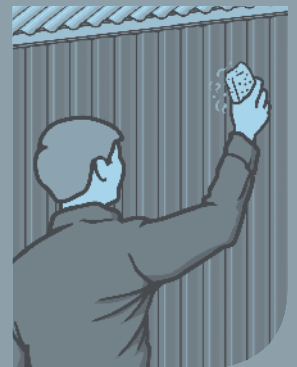
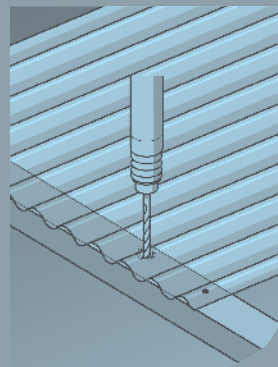
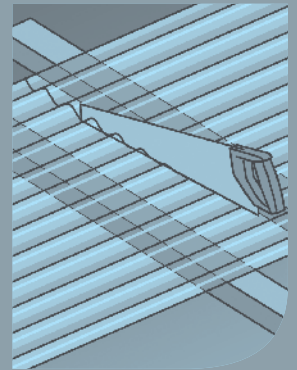
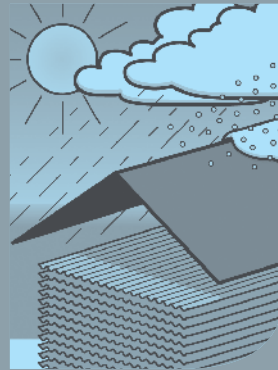
Use lukewarm water to rinse the sheet and soften hardened debris. Wash the sheet using a solution of lukewarm water and ordinary non-abrasive household cleaner or a mild soap and a sponge or soft cloth. Rinse with lukewarm water and dry off with a soft cloth.

**Avoid any strong alkali or abrasive cleaners.  
Do not scrub Marlon CS sheet with brushes  
or sharp instruments.**

**Never steam clean, use low pressures for  
pressure washing.**

**Never use acetone, petrol, benzene or solvents  
containing Butyl Cellosolve or Isopropanol.**

It is advisable to test the suitability of any cleaner on a sample piece of Marlon CS Longlife first. After installation, labels, glazing compounds etc. can be removed using petroleum spirit which must then be washed off using the cleaning method above.



## SAFETY

Marlon CS Longlife is a glazing material and should therefore be handled with due care at all times. NEVER walk on Marlon CS Longlife sheets. Where access across a Marlon CS covered roof is necessary, use walking boards placed across at least three purlins to spread the load.

# Installation Guidelines

## THERMAL MOVEMENT

Accommodating the thermal expansion of Marlon CS Longlife sheet cannot be over emphasised as this is generally greater than that of other popular glazing materials and affects both length and width.

### IMPORTANT:

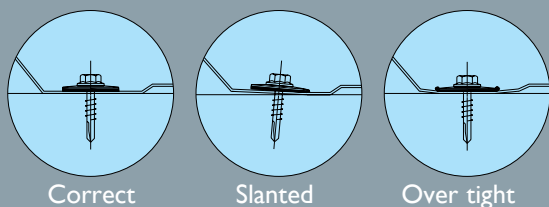
POLYCARBONATE SHEET **EXPANDS** WITH HEAT AND **CONTRACTS** WITH COLD.

## HOLE SIZE

Holes must be oversized to allow for thermal movement. Holes for fixings should be drilled 6mm greater in diameter than the fixing shank for sheet lengths up to 2m and an additional 3mm per additional meter length of sheet. E.g. for a 4m long sheet, holes should be over drilled by 12mm. Failure to accommodate for thermal movement will cause buckling of the sheet.

## SECURING THE SHEET

Fasteners must not be over tightened as this will prevent thermal movement of the Marlon CS Longlife sheet with changes in temperature. Marlon CS Longlife sheet must be isolated from plastisol coatings using an aluminium barrier tape.



As well as making sufficient allowance for thermal movement the following installation points must also be followed.

- Ensure that the clearly marked UV protected surface of the Marlon CS Longlife sheet is to the outside.
- Marlon CS Longlife sheets must always be installed with the corrugation running vertically, or up-slope.
- Roofs should always be designed with a minimum slope of 5° to allow adequate rainwater run-off.
- Ensure that all sealants and tapes are compatible with Polycarbonate.
- All accessory product should be light coloured, preferably white.
- Sheets which span up to two purlin spacings are of optimum length to cope with thermal movement.
- Maximum recommended sheet length for Marlon CS is 4m.

When installing any roofing material, including rooflights, ensure that safe working methods are adopted and appropriate safety equipment is used.

## CONDENSATION

Condensation will form on the underside of a roof made from any thin sheeting material. To minimise condensation within an enclosed structure, sources of moisture should be minimised and good ventilation should be provided.

## INSTALLING MARLON CST LONGLIFE

In addition to all of the guidelines above the following considerations apply when installing Marlon CST Longlife:

- Ensure mitres on Marlon CST and fibre cement sheets correspond.
- Use Marlon CST sheets of equal length to the fibre cement sheets on a roof.
- Proper purlin spaces MUST be maintained appropriate to loading.
- Sealants and washers on fasteners MUST be compatible with polycarbonate and should preferably be white in colour.
- The sheet should be supported with foam fillers at each purlin position.
- Marlon CST is NOT suitable for curved roof applications.
- Fasteners must be fitted with a 25mm EPDM bonded washer (BAZ washer).
- Clean away all dust created when drilling holes in fibre cement sheets.
- Primary fasteners must be fixed through each crown at top and bottom end laps, and through alternative crowns on intermediate purlins.



# Properties

## CHEMICAL RESISTANCE

Marlon CS Longlife has, in general, excellent resistance to most chemicals; resistance to specific compounds depends on concentration and temperature, duration of exposure and stress within the sheet. Contact with plastic coated metal sheets, wet wood preservatives, solvents and alkali cleaners should be avoided. For details on the chemical resistance of Marlon CS Longlife to a range of chemicals please refer to the Marlon CS Longlife product guide.

## IMPACT RESISTANCE

Polycarbonate exhibits greater resistance to impact than any other glazing material over a temperature range of -40 to +130°C. It is up to 200 times more resistant to impact than glass. High impact resistance means that Marlon CS Longlife is suitable for use in areas with a high risk of glazing breakage, such as areas prone to vandalism or hail storms, where other glazing materials might be inappropriate.

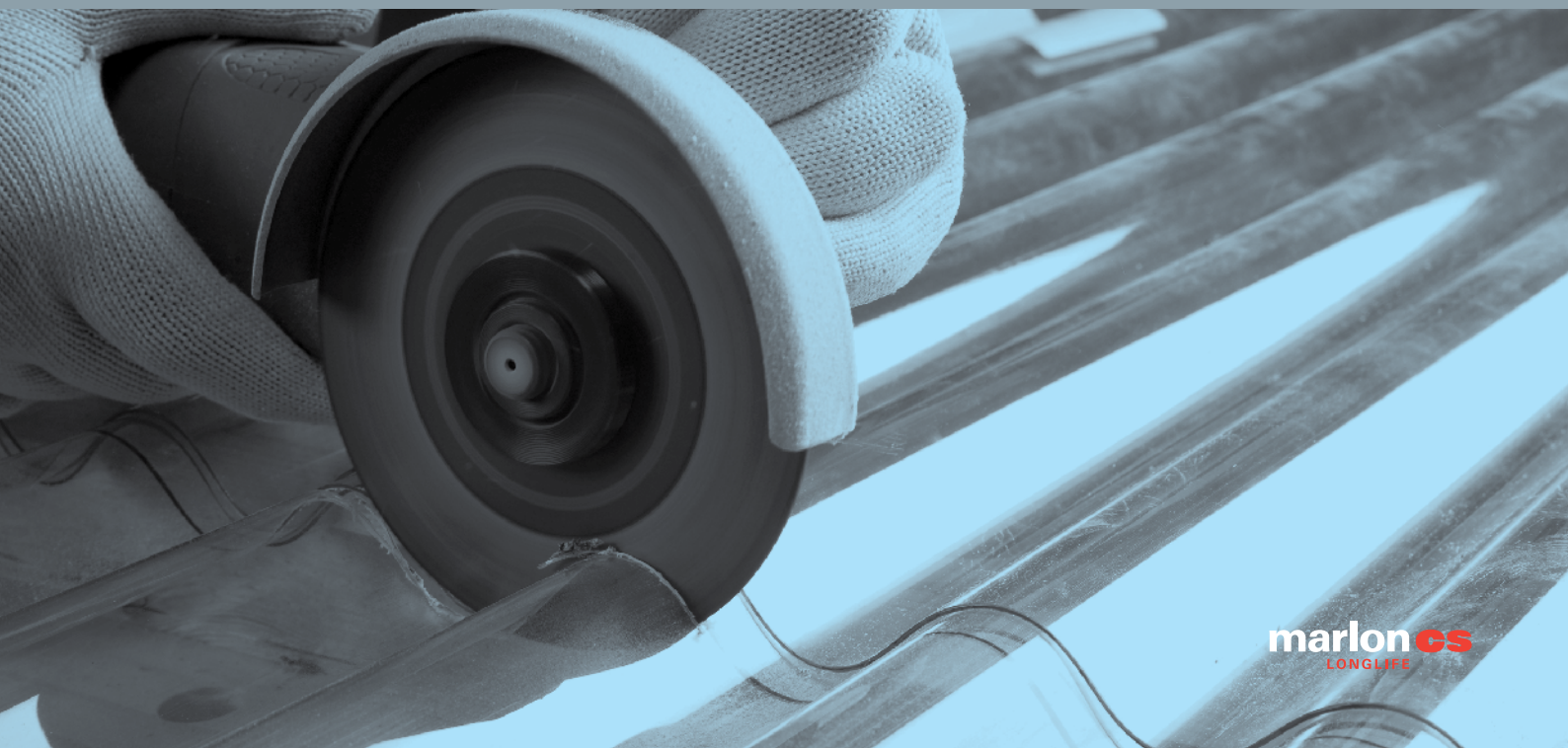
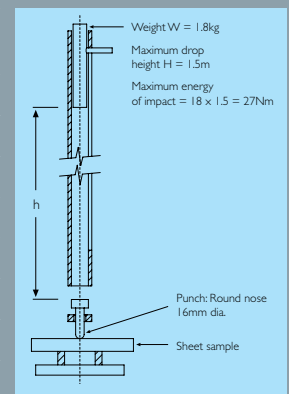
## FALLING DART

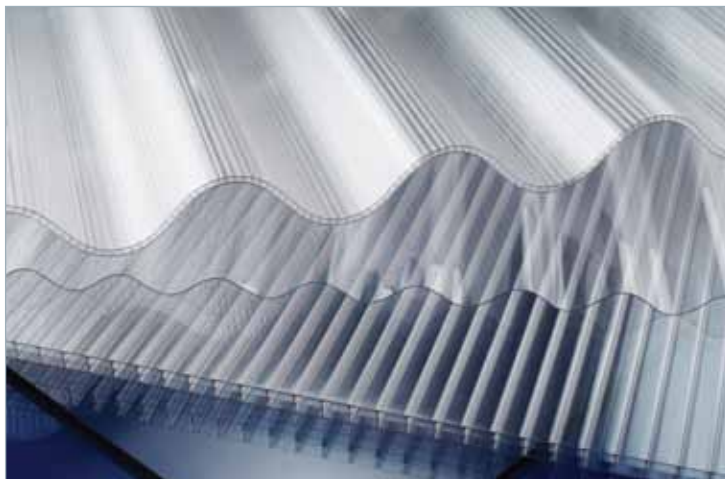
The impact test illustrated demonstrates the impact resistance of Marlon CS Longlife. A striker of diameter 16mm contacts a sample of sheet placed on a support ring with inner diameter 38mm. A weight of 1.8kg is dropped on to the striker from a height of 1.5m. The resulting impact energy of 27Nm only dents the sample: it does not crack or penetrate.

Marlon CS Diamond, tested by Method ISO6603 using 12.5mm punch, withstands impact of >1kg with no cracking or penetration of the sheet (cf corrugated acrylic sheet <200g).

PROPERTIES		TEST METHOD	VALUE	UNITS
Mechanical	Tensile strength at yield	DIN 53455	>60	MPa
	Tensile strength at break	DIN 53455	>70	MPa
	Elongation at yield	DIN 53455	6-8	%
	Elongation at break	DIN 53455	>100	%
	Modulus of elasticity	DIN 53457	>2300	MPa
	Charpy notched impact strength	DIN 53453	>50	kJ/m <sup>2</sup>
Physical	Specific gravity	DIN 53479	1.20	g/cm <sup>3</sup>
	Refractive index nD5	DIN 53491	1.586	
	Water absorption, 4h @ 23°C	DIN 53495	0.35	%
	Water permeability (thickness 1mm)	DIN 5322	<2.28	g/m <sup>2</sup>
Thermal	Softening temperature - Vicat 'B'	DIN53460	148	°C
	Deflection temperature (load 1.81MPa)	DIN53461	142	°C
	Linear thermal expansion	DIN53752	6.8x10 <sup>-5</sup>	m/m.K
	Thermal conductivity	DIN52612	0.2	W/m.K
	Maximum service temperature	Permanent	100	°C
	- no loading	Short term	130	°C

COLOUR	LIGHT TRANSMISSION		
	CS LONGLIFE	CST LONGLIFE	CS DIAMOND
Clear	88%	79%	70%
Glass Clear (g)	—	77%	—
Diffuser Opal	73%	—	—
Pearlescent (g)	—	53%	—
Opal	46%	38%	—
Bronze	32%	—	56%
Solar Grey	29%	—	—
Heatguard	7%	—	—





Brett Martin's plastic sheets product range includes extensive options in foam PVC, polycarbonate, PVC, acrylic, aPET, PETg, SAN and styrene.

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