

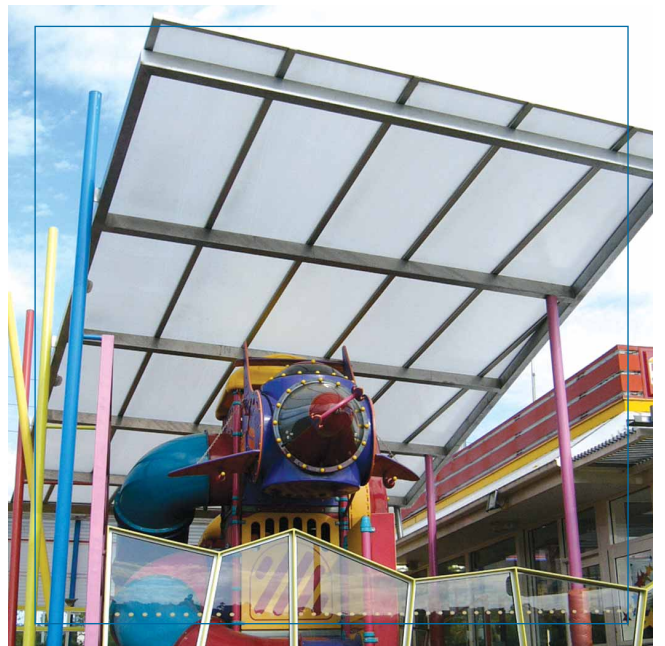
 **makrolon<sup>®</sup> Sheet**  
multiwall

# Versatile polycarbonate glazing system



# Applications

Makrolon® Multiwall is an advanced polycarbonate glazing system, offering design freedom for a wide range of **commercial, industrial** and **domestic** applications. Domestic applications include pergolas, patios, carports, verandahs, skylights, gazebos, sunrooms or pool covers. Shopping centres, sports complexes, screens, walls or greenhouses are just some of a multitude of commercial and industrial applications for which Makrolon® Multiwall is most commonly used.



# Makrolon® Multiwall

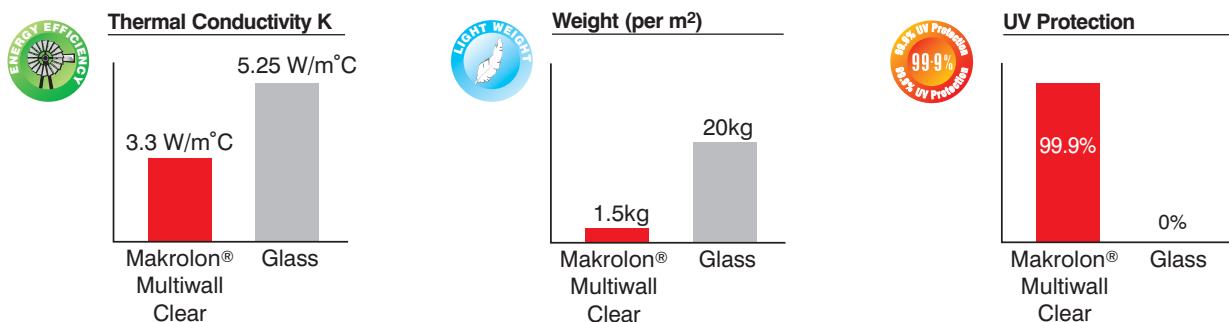
## The most versatile polycarbonate glazing system

Makrolon® Multiwall polycarbonate glazing system provides outstanding flexibility in design and advanced heat reflecting and light transmitting performance. An advanced construction of internal walls and chambers gives excellent insulation properties and impact strength. Both sides of the sheet have a co-extruded UV barrier which provides protection from 99.9% of harmful UV radiation, giving superior resistance to outdoor weathering. Made from Makrolon® polycarbonate resin, Makrolon® Multiwall ensures high impact strength, clarity and excellent weather resistance.

	<b>VERSATILE</b>	Can be used for a multitude of applications including roofing or glazing on horizontal, vertical or sloped surfaces
	<b>HAIL IMPACT RESISTANCE</b>	Breakage will not occur as a result of hailstones measuring up to 25mm in diameter for a period of 5 years
	<b>LIGHT WEIGHT</b>	Easy to lift and manoeuvre
	<b>LIGHT &amp; HEAT TRANSMISSION</b>	Lets the light in while keeping the heat out for maximum comfort
	<b>99.9% UV PROTECTION</b>	A co-extruded UV barrier on both sides of the sheet protects you from harmful UV radiation and Makrolon® Multiwall from UV degradation and yellowing
	<b>FIRE PERFORMANCE</b>	Suitable for use in bush fire prone areas, backed by CSIRO appraisal. Also designed for fire resistance and to self extinguish
	<b>BOUNDARY CONDITIONS</b>	Suitable for use when boundary conditions apply, backed by CSIRO appraisal
	<b>WIND LOAD</b>	Suitable for use in high wind load areas and tested to wind code AS/NZS 1170.2:2002. (Conditions apply)
	<b>BAYER MAKROLON® RESIN</b>	Made from high quality Bayer Makrolon® polycarbonate resin designed for high impact resistance and excellent transparency
	<b>CHEMICAL RESISTANCE</b>	Resistant to harsh chemicals and materials, including several mineral and organic acids, oxidising agents and many others
	<b>EASY INSTALLATION</b>	Easy slot in installation with a versatile One Piece H-Bar System and ease of sheet replacement with a Two Piece H-Bar system
	<b>ENERGY EFFICIENCY</b>	Excellent insulation properties saves on air-conditioning and heating costs
	<b>WEATHER RESISTANCE</b>	Stands up to extreme outdoor exposure conditions, maintaining its normal mechanical properties at temperatures from -40°C to +120°C
	<b>WARRANTY</b>	Backed by a 10 year warranty

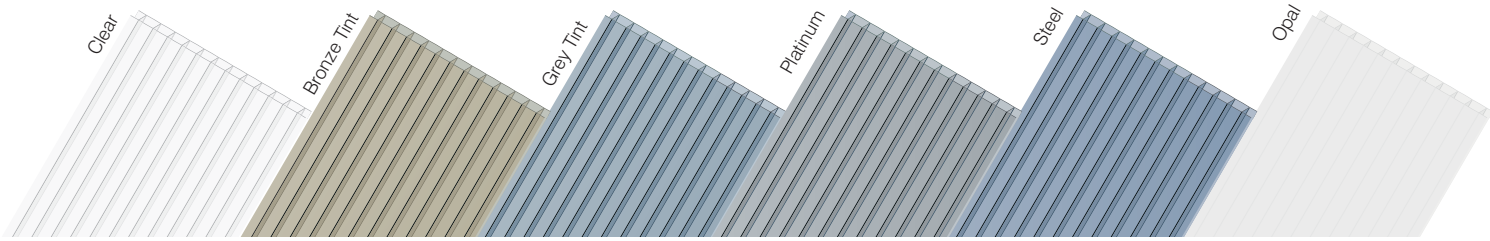
## Comparison to Glass

Based on 8mm clear Makrolon® Multiwall vs 8mm clear standard glass.



# The Product Range

## Colours



### Standard Widths

8mm – 700mm  
8mm – 1050mm  
10mm – 980mm

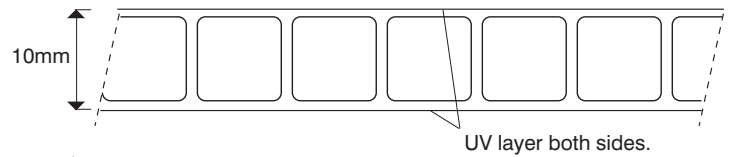
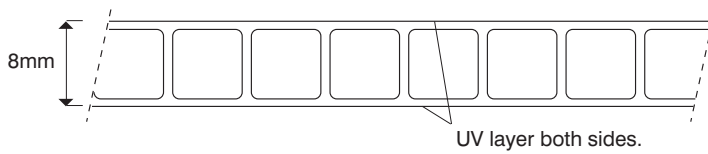
### Standard Lengths

2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0,  
6.0, 7.0, 9.0 metres

### Sheet Weight

8mm – 1.5 kg/m<sup>2</sup>  
10mm – 1.7 kg/m<sup>2</sup>

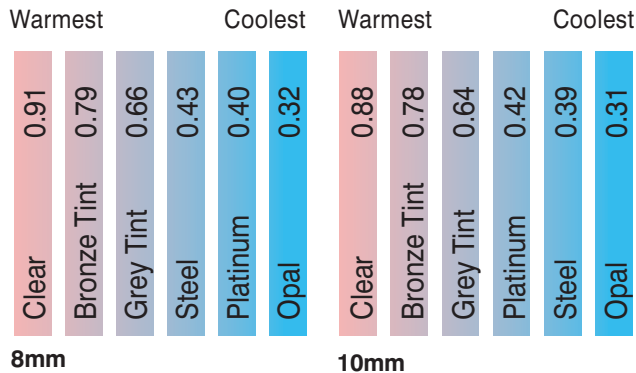
## Gauges - 8mm and 10mm



Other colours, gauges, widths and lengths available. Lead times may apply.

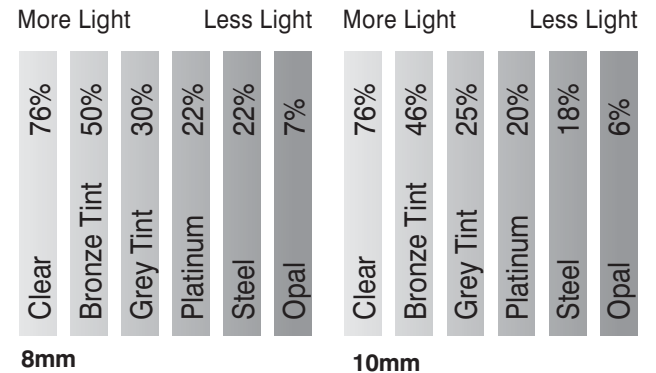
## Light and Heat Transmission

### Shading Co-efficient Ratio (SC)



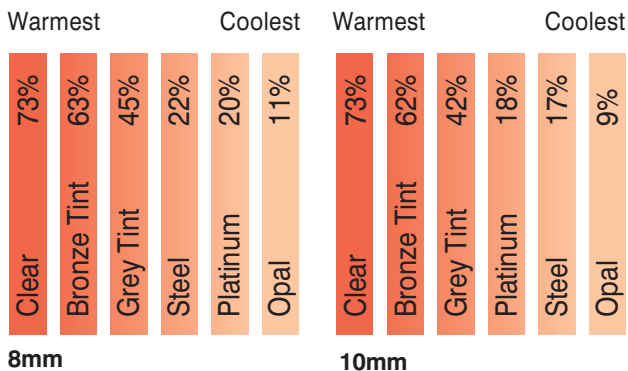
Shading Co-efficient (SC): A ratio of the warming effect of the sun's rays through a sheet divided by the sun's warming effect through 3mm float glass (300-2500nm). **The lower the figure the cooler it is under the sheet.**

### Light Transmission (LT)



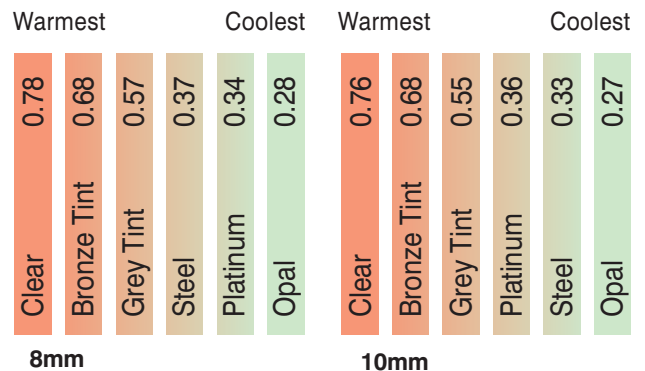
Light Transmission (LT): % of visible light transmission (400-700nm) that passes through the sheet. **The lower the figure the less light passes through the sheet.**

### Heat Transmission (HT)



Heat Transmission (HT): % of total solar radiation transmission (300-2800nm). This value describes the ability of the sheet to conduct heat. **The lower the figure the greater the heat resistance, the cooler it is under the sheet.**

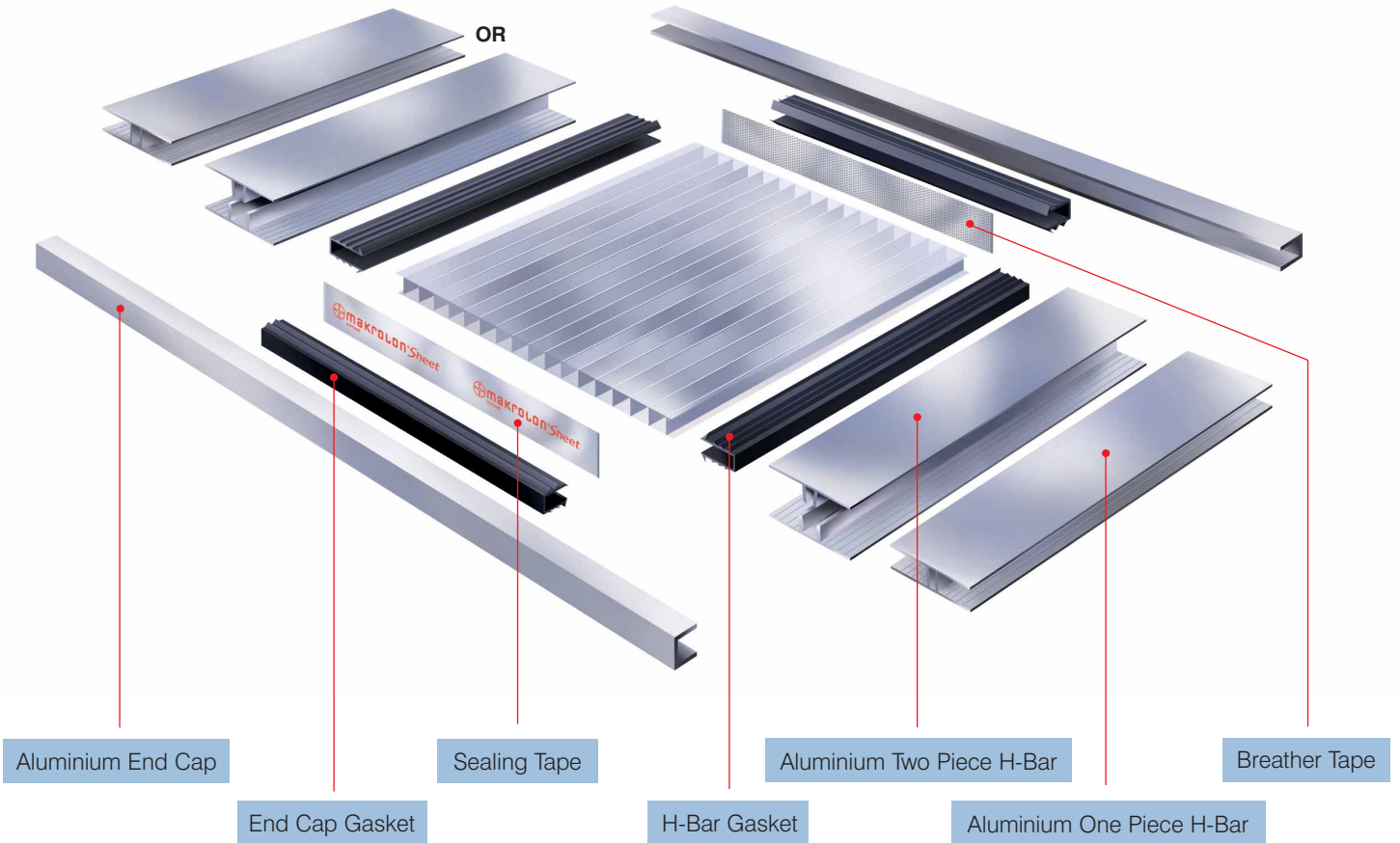
### Solar Heat Gain Co-efficient (SHGC)



Solar Heat Gain Coefficient (SHGC): Total solar energy transmitted or absorbed and re-radiated under the sheet (300-2500nm). **The lower the figure the cooler it is under the sheet.**

# The Glazing System Explained

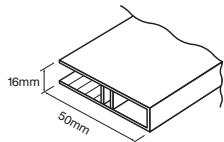
The H-Bar system makes handling and installation easy and flexible. The Makrolon® Multiwall sheets simply slot into the H-Bar ready for fixing to the structure. The glazing bar system allows for thermal expansion and eliminates the need for penetrations through the sheet, hence the structure is watertight.



## Accessories

### Aluminium Edge Bar

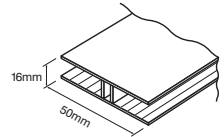
**Standard Colours:** Mill Finish, Black, Pearl White, Anodised Bronze  
**Standard Length:** 5m



Easy slot in installation.  
 Use to start and finish H-Bar assembly.

### Aluminium One Piece H-Bar

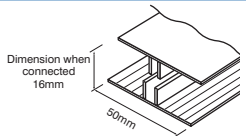
**Standard Colours:** Mill Finish, Black, Pearl White, Anodised Bronze  
**Standard Length:** 5m



Easy slot in installation.  
 Recommended for high wind areas.

### Aluminium Two Piece H-Bar

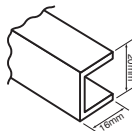
**Standard Colours:** Mill Finish, Black, Pearl White, Anodised Bronze  
**Standard Length:** 5m



Join and Cover edges of Multiwall sheets.  
 Enables ease of sheet replacement.

### Aluminium End Cap

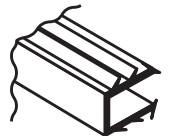
**Standard Colours:** Mill Finish, Black, Pearl White, Anodised Bronze  
**Standard Length:** 5m



Cover ends of Multiwall sheets.  
 To be used in conjunction with End Cap Gasket.

### End Cap Gasket

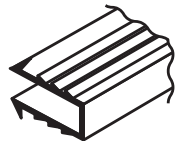
**Colour:** Black  
**Standard Gauges:** 8mm and 10mm  
**Standard Length:** 10m rolls



Seal and secure ends of Multiwall sheets.  
 To be used in conjunction with Aluminium End Cap.

### H-Bar Gasket

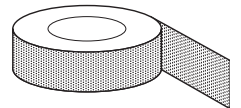
**Colour:** Black  
**Standard Gauges:** 8mm and 10mm  
**Standard Length:** 20m rolls



Seal and secure edges of Multiwall sheets.  
 To be used in conjunction with H-Bars and Edge Bars.

### Breather Tape

**Length:** 24m



Allow ventilation and reduce condensation.

### Sealing Tape

**Length:** 50m



Prevent moisture and dust from entering Multiwall flutes.

# Technical Data

## UV Protection



Makrolon® Multiwall prevents the transmission of more than 99.9% of harmful UV radiation, measured to standard ISO 9050:2003.

Its co-extruded UV barrier protects the sheet from UV degradation and discoloration. It remains stable under extreme climatic conditions (-40°C to +120°C).

## Wind Load



Makrolon® Multiwall is suitable for use in high wind load areas and tested to wind code AS/NZS 1170.2:2002. The tests have been conducted according to AS4040.2-1992 conditions (methods

of testing sheet roof and wall cladding, method 2: resistance to wind pressures for non-cyclone regions). Makrolon® Multiwall 700mm wide, 8mm gauge meets 2.5kPa at a span of 1200mm. 980mm wide, 10mm gauge meets 2.12kPa at a span of 1200mm. Please visit our website for further details and specific installation instructions.

## Fire Performance



Makrolon® Multiwall is suitable for use in bushfire prone areas, backed by CSIRO appraisal.

It's also self extinguishing, stopping the spread of flame and has excellent fire resistant properties.

Therefore, this product complies with many fire related tests. They include: AS/NZS 1530.3:1999 for simultaneous determination of ignitability, flame propagation, heat release and smoke release; AS/NZS 3837:1998 for heat and smoke release rates for materials and products using an oxygen consumption calorimeter.

## Boundary Conditions



Makrolon® Multiwall is suitable for use when boundary conditions apply, backed by CSIRO appraisal. Conditions apply, contact your nearest Bayer MaterialScience office for further details.

## Handling and Storage and Cleaning

- Refer to Safety Recommendations.
- Store sheets on a flat surface (longest length on the bottom) in a shaded area, out of direct sunlight. Stacked sheets stored in the sun will cause heat build-up and possibly distortion, even if covered. Masking film may be difficult to remove. Please also ensure that sheets are protected from atmospheric conditions. If damage occurs in this situation, warranty is void.
- Do not allow moisture to enter the flutes. This may cause sheet discoloration.
- Avoid contact with chemicals, paints, solvents, abrasive cleaners and sealants (especially silicone) as many of these are incompatible with polycarbonate.
- Clean with warm soapy water (mild detergent) and a soft sponge or soft brush. Rinse down thoroughly. Dry with a soft cloth to prevent water marks.

## Chemical Resistance

Makrolon® Multiwall is affected by: Benzene, petrol, ketones, acetone, phenols, chlorinated and aromatic hydrocarbons, and petroleum based paints, abrasive cleaners and solvents. For more information, contact your local Bayer MaterialScience office.

## Typical Mechanical Properties

Hail Impact Strength Breakage will not occur as a result of hailstones measuring up to 25mm in diameter for a period of 5 years.

Long Service Temp. -40°C to +120°C

Coefficient of Thermal Expansion 0.065mm/m°C (2.1mm per 3m per 10°C)

Thermal Conductivity K 8mm – 3.3 W/m°C  
10mm – 3.4 W/m°C

U<sub>g</sub> – value in W/m<sup>2</sup>K 8mm – 3.6 W/m<sup>2</sup>K  
10mm – 3.1 W/m<sup>2</sup>K

Minimum Cold Bending Radius 8mm – 1400mm  
10mm – 1750mm

## Test Compliances

Design and Installation<sup>1</sup> AS/NZS 1562.3:2006

Early Fire Hazard Test AS/NZS 1530.3:1999

Heat and Smoke Release Rates AS/NZS 3837:1998

99.9% UV Resistant ISO 9050:2003

SAA Loading Code AS/NZS 1170.2:2002  
Part 2 – Wind Loads

Resistance to Wind Pressures AS 4040.2:1992  
for Non-Cyclone Regions

<sup>1</sup> Installation must comply to the Building Code of Australia. Local council approval may be required. Standard installation instructions apply as indicated in this brochure.

# Installation Instructions

- Refer to Safety Recommendations.
- Installations must comply with the applicable building code.
- **For Safety precautions we recommend the use of safety mesh for installations above 3m.**
- We do not recommend the collection of drinking water from any roof without appropriate precautions and filtration. Check with your local water authority for further advice.

**Table 1.**  
**Rafter and Purlin Nominal Spacing (mm)**

Gauge	Sheet Width	Rafter Centres	Purlin Centres
8mm	700	720	1200*
8mm	1050	1070	1200*
10mm	980	1000	1200*

**\*Required for high wind areas only.<sup>2</sup>**

<sup>2</sup> Special High Wind installation instructions apply. Please refer to Makrolon® Sheet website or customer service for further details.

**1** Install sheets with the ribs (flutes) running vertically in the direction of the fall on a roof with a minimum pitch of 5°. Having sufficient fall allows natural weather action to assist in keeping the sheets clean and minimises leaking.

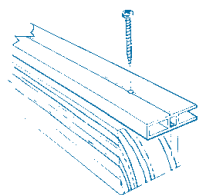
**2** Check recommendation for rafter and purlin spacing in Table 1.

**3** Makrolon® Multiwall sheets can be cut using a sharp knife, hand saw or circular saw with a fine tooth blade suitable for plastics. Sawdust (swarf) should be cleared from the channels with compressed air (or vacuumed) and edges should be free of notches.

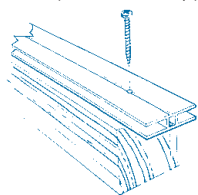
If the width of the Makrolon® Multiwall sheets needs to be reduced, trim them as close as possible to the last rib so that optimum clamping action of the glazing bar is ensured.

**4** Peel some of the masking back from the ends of the sheet and apply Breather Tape to the top and Sealing Tape to the bottom ends.

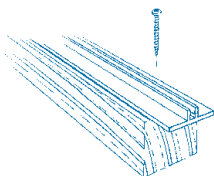
**5** Place the first measured and cut Edge Bar down squarely on the structure (screw side up).



**One Piece H-Bar System**  
Place the first measured and cut H-Bar down squarely on the structure (screw side up).



**Two Piece H-Bar System**  
Place the first measured and cut base glazing bar on the structure.

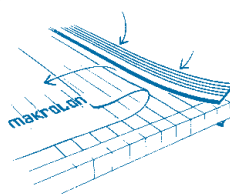


**The maximum end overhang is 50mm.**

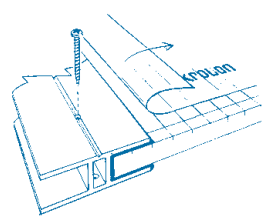
**6 One Piece H-Bar System**  
Secure the H-Bar to the rafter with a screw (gauge not exceeding 12g) at no greater than 1200mm apart.

**Two Piece H-Bar System**  
Fasten the Base Glazing Bars to the rafter with Ripple Tek screws (10 gauge - 16 tpi) at no greater than 500mm apart by fixing through the centre of the base glazing bar and securing it firmly onto the supporting structure. (Ripple Tek's for Wood are 30mm long; Ripple Tek's for Metal are 21mm in length)

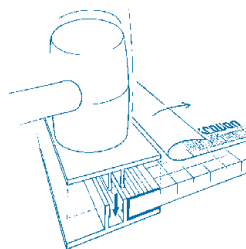
**7** Pull the masking back on the sides of the sheet and place the H-Bar gasket along the whole length of both sides of the sheet.



**8 One Piece H-Bar System**  
Place the next H-Bar on the other side and secure it to the support structure.



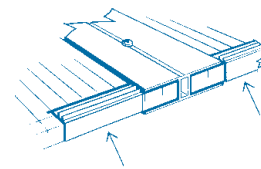
**Two Piece H-Bar System**  
Place the sheet between the secured glazing bars. Position the first top glazing bar in line with the base. Secure the two bars using a rubber mallet.



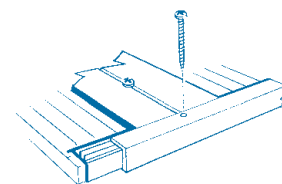
It is recommended that the top glazing bar is secured to the rafter with a screw (gauge not exceeding 12g) at no greater than 1200mm apart. Once the next sheet is installed the second and subsequent top glazing bars can be fitted.

**9** Repeat steps 6-8 until all sheets are in position.

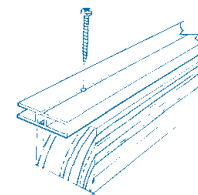
**10** When using Aluminium End Caps, place the end gasket along the end of the Multiwall sheet only, stopping at the H-Bar.



**11** Fasten the Aluminium End Cap with a screw to the H-Bar. On the underneath of the Aluminium End Cap drill a small weep hole where it meets the H-Bar.



**12** Use the Edge Bar to finish the assembly on the final rafter.



## Safety Recommendations

- **Never walk on or apply a load or your weight directly to sheeting. Use walking boards along rafters at all times.**
- Always exercise extreme care when walking on a roof.
- Consider all safety requirements when working at heights above 2m.
- Use appropriate personal protective equipment (PPE) such as safety footwear, safety glasses and gloves.
- All safety practices must comply with the applicable building and/or work cover code(s).

## Important:

**Sealants** – These instructions are designed to prevent leaking and alleviate the requirement for sealants. Sealants, especially silicone, are incompatible with polycarbonate. They will damage the sheet, restrict expansion and contraction, and void the warranty. Use the appropriate Makrolon® Multiwall accessories to complete your project and help protect your structure, without the need for sealants.

**Thermal Expansion** – When inserting sheet into glazing sections allowance must be made for expansion.

# Warranty



## Loss of Light Transmission – 10 Year Warranty

The product will not lose more than 10% from its initial value (when tested in accordance with ASTM D 1003-2000).

## Weather Breakage – 5 Year Warranty

From the date of purchase the product will not break as a result of hailstones measuring up to 25mm in diameter. Damage caused by objects other than hail is excluded from this warranty.

This warranty applies from the date of original purchase and is valid only to the original purchaser of the product (claims must be accompanied by original purchase receipt). The product must have been installed and cleaned in accordance with Bayer's recommendations.

Full details on the warranty are available from any Bayer MaterialScience office or website.

It is the responsibility of the purchaser to obtain a copy of the full warranty conditions.

Any claim should be made in writing to:  
*Bayer MaterialScience Pty Ltd.*  
*Private Bag 10*  
*Cheltenham Victoria 3192.*

Tel



**Bayer MaterialScience**

SOLD BY:

POLYCARBONATE ROOFING  
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Ph 07 3245 1301 Fax 3245 1354  
Email: [sales@polycarbonate.com.au](mailto:sales@polycarbonate.com.au)  
Web: [www.polycarbonate.com.au](http://www.polycarbonate.com.au)

Quality  
Endorsed  
Company

ISO 9001



All Makrolon® Multiwall sheets are manufactured from high-tech, high quality Bayer **Makrolon**® polycarbonate resin for high impact resistance, light weight, excellent transparency, UV stability and excellent fire resistance.

Colours depicted in this brochure are representations offered only as a guide and should not form the basis of a colour selection. Slight colour variation may occur between production runs. Transmitted light and colour may vary in intensity depending on weather conditions.

The information contained in this brochure is to the best of our knowledge accurate, but all recommendations are made without any warranty whatsoever, since the conditions of use are beyond our control. This brochure cancels and supersedes all previous publicised information. The company reserves the right to alter and revise, without notice, the information contained herein.

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