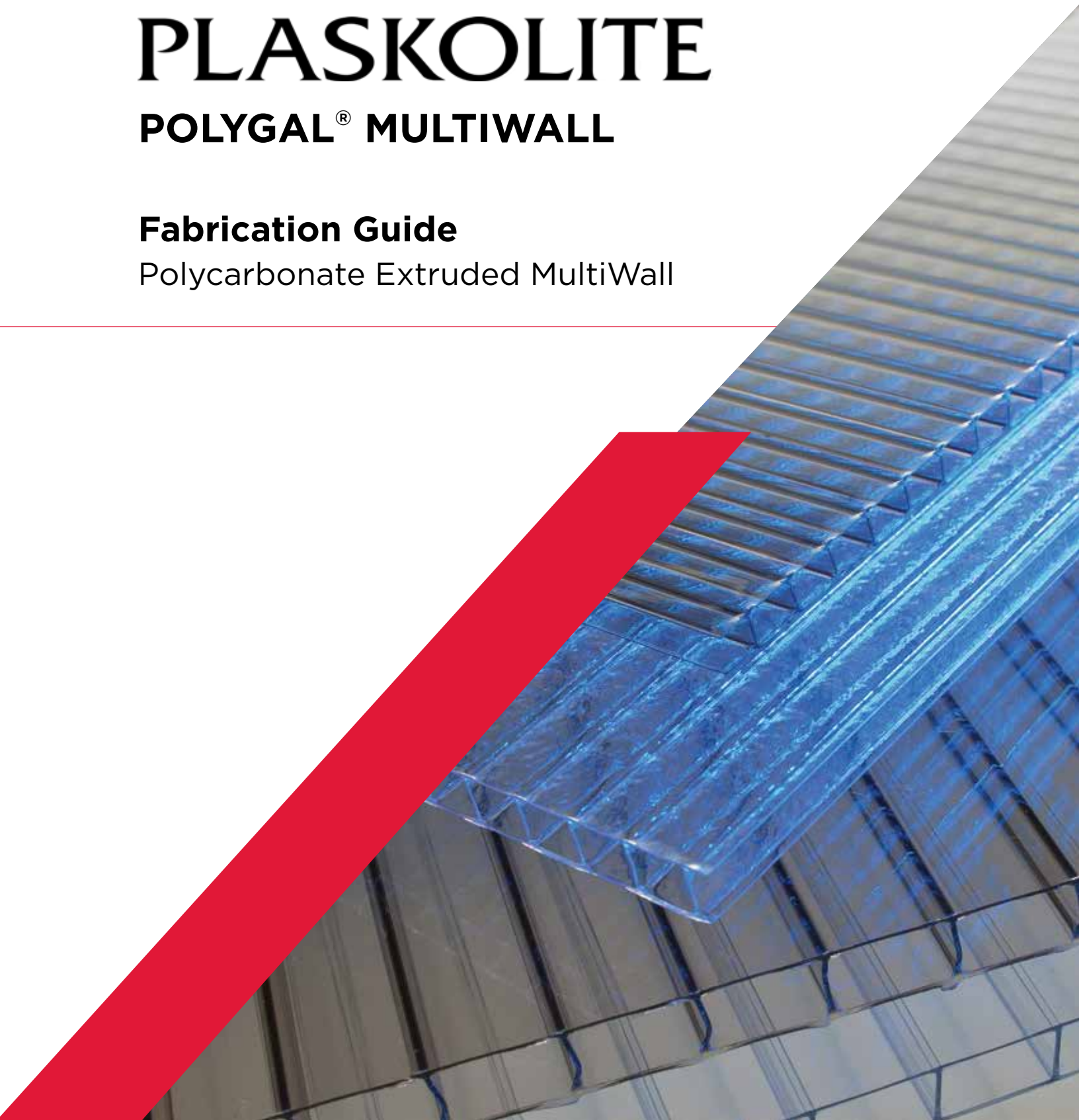
PLASKOLITE

POLYGAL® MULTIWALL

Fabrication Guide

Polycarbonate Extruded MultiWall



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INTRODUCTION



MultiWall Polycarbonate is a unique engineered thermoplastic which combines a high level of mechanical, optical, and thermal properties. It can be UV enhanced, 1 or 2 sides, for high resistance to sunlight and environmental degradation. It also has excellent electrical properties and it is self-extinguishing.

This versatile sheet can be modified by different additives to perform in specific applications: light reflection, diffusion, and IR blocking and it is suitable for many engineered applications.

Extruded MultiWall sheets offers high visible light transmission and mechanical properties. This material is ideally suited for many roofing applications.

POLYGAL Extruded MultiWall polycarbonate sheets, with a standing seam system, is produced by PLASKOLITE. Easy to fabricate MultiWall sheets are available in a broad range of thicknesses, colors, and specialty coatings.

FEATURES AND BENEFITS

MultiWall, manufactured by PLASKOLITE, is ideal for installation in public buildings, sports facilities, transportation hubs, and interior spaces of industrial and commercial buildings:

- High light transmission
- Outstanding impact strength
- Lightweight
- UV protection on one side or two sides
- Excellent weathering and resistance to degradation
- Available in standard colors as well as custom options
- Rigid structure provides strength under wind and snow loads
- Cold bending capability
- Engineered watertight system
- Good chemical resistance to a wide range of substances
- Covered by 10 year limited product warranty



INTRODUCTION

APPLICATIONS



SWIMMING POOLS



CAR PARKING STRUCTURES



VERANDAS, PERGOLAS



PARTITIONS



CANOPIES



INTERIOR DESIGN - LIGHTING



STADIUMS, INDUSTRIAL ROOFING, CLADDING AND PUBLIC AREAS



ARCHITECTURAL CLADDING

PRODUCTS



PRODUCTS

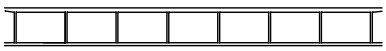
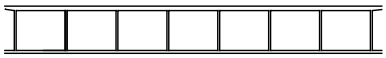
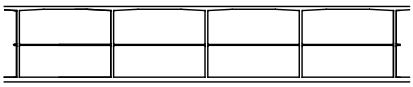
DIMENSIONS, WEIGHTS AND COLORS

MultiWall polycarbonate is a unique engineering thermoplastic which combines a high level of mechanical, optical and thermal properties. The versatility of this material makes it suitable for many applications. MultiWall sheets are optically clear with high impact resistance making it the ideal product in a wide range of roofing and glazing applications.

DOUBLE AND TRIPLE LAYERED

Double and triple layered multiwall sheets are manufactured in many colors and different light transmissions. Standard sheets are manufactured with different thickness, ranging from 4 - 16 mm, (0.157-0.630″).

STANDARD DIMENSIONS AND WEIGHTS

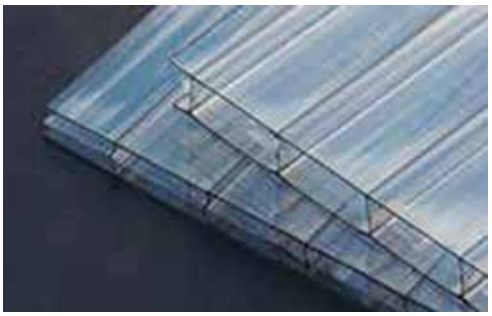
Structure	Thickness mm,in	Standard Weight g/m²,lb/ft²	Standard width mm,in
	4, 0.158	800, 0.16	980, 39 1050, 41 1200, 47 1220, 48* 1250, 49 1829, 72* 2100, 83
	6, 0.236	1300, 0.27	
	8, 0.315	1500, 0.31	
	10, 0.394	1700, 0.35	
	16, 0.630	2700, 0.55	

* **Standard US Sizes**

SPECIALTY STRUCTURED SHEETS

Specialty structured sheets are developed to emphasize different characteristics of multiwall sheet such as, load resistance and thermal properties.

TRIPLE-CLEAR (PC3) is specially manufactured with a clear tint appearance. It has excellent thermal insulation, highly flexible, yet it is virtually unbreakable. Anti-Fog coating prevents condensation build up and falling droplets, rigid sheet structure provides extra strength under wind and snow loads. TRIPLE-CLEAR sheets are manufactured with different thickness, sheets are available in 8 and 10mm (0.135 and 0.394″).



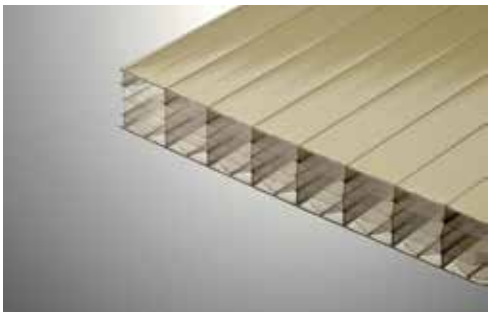
TITAN SKY has an internal cross-brace structure gives these sheets twice the strength and rigidity of equivalent standard polycarbonate sheets. It provides an advanced solution that withstands heavy loads where required. TITAN SKY sheets are available in 10 and 16mm (0.394 and 0.630″).



SELECTOGAL (RFX) controls heat and light transmission through the sheet into a building while reducing energy costs. SELECTOGAL's sophisticated prismatic structure reflects most of the sun's heat in the summer, yet allows increased penetration of solar heat in the winter. Selectogal sheets are available in 16mm (0.630″).



THERMOGAL has a unique inner X-brace structure that provides extra- strength, rigidity and thermal insulation. THERMOGAL sheets are available in a range of colors, widths and thickness from 20 - 32mm (0.787-1.26″).

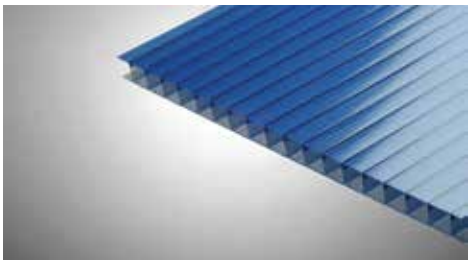


PRODUCTS

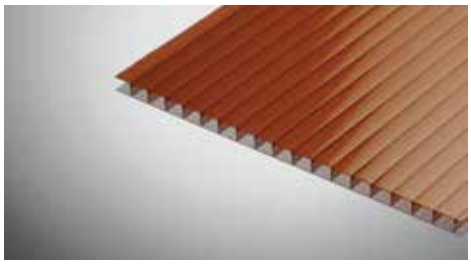
The **POLYSHADE** layer of polycarbonate multiwall sheets produces a special metallic shading effect. This layer contains a special pigment that adds metallic luster to the surface and provides an optimal level of solar radiation reflection to prevent overheating of a room. POLYSHADE sheets are available in silver, metallic blue, metallic green and copper from 8 - 16mm (0.315-1.26″).



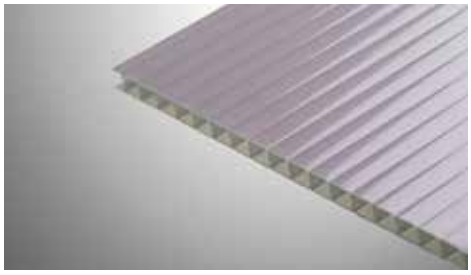
POLYSHADE SILVER



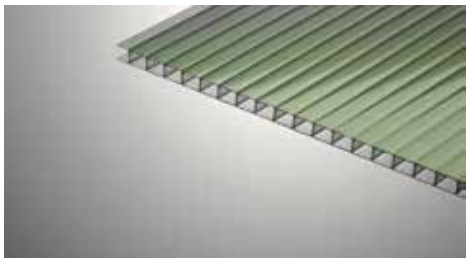
POLYSHADE BLUE



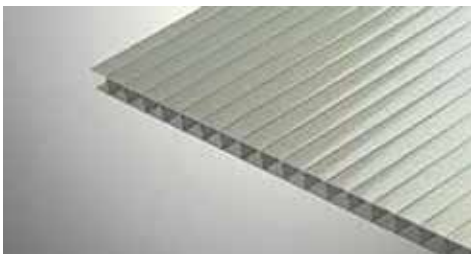
POLYSHADE COPPER



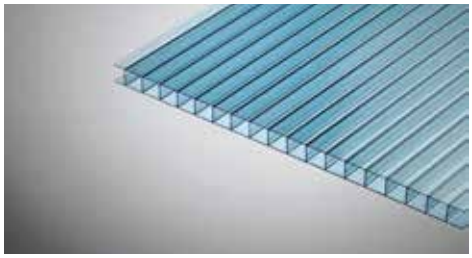
PRIMALITE has a unique layer that selectively reflects a large portion of the near infra-red solar radiation, while transmitting more of the visible light. PRIMALITE layered sheets are available in 8-32mm (0.315-1.26″).



POLYCOOLITE



SILHOUETTE GOLD

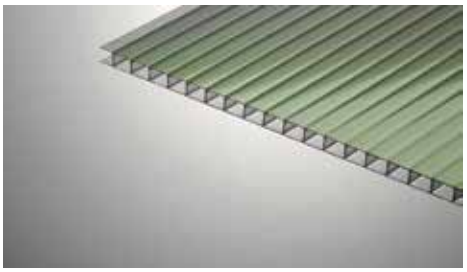


SPRING BLUE

POLYCOOLITE Silhouette has a lustrous surface and features outstanding reflective qualities making it an excellent choice for daylight coverings. Silhouette sheets are available in thicknesses from 8-32mm (0.315-1.26″).

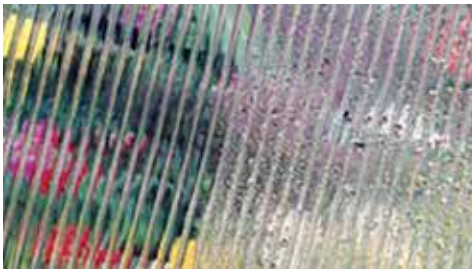
SILHOUETTE Gold is a transparent layer. It blocks invisible IR solar radiation and heat which results in a lower temperature. It still offers high light transmission. Gold MultiWall sheets are available in blue and green colors and 8-32mm (0.315-1.26″).

SPRING MultiWall sheets combine the angle of the light to change the sheet color, (e.g. from purple to green). RAINBOW MultiWall sheet presents a unique and dynamic design element to a building. building resulting in lower temperatures while still allowing maximum light to enter the structure.
The SPRING layered sheets are manufactured with different colors: blue and green, and different thickness, ranging from 8 to 32 mm (0.315-1.26″)



RAINBOW

RAINBOW is a co-extruded silicon-based coating which combines long lasting anti-fog properties with excellent adhesion and great stability in harsh environments. When used in greenhouse applications, RAINBOW MultiWall sheets increase light transmission while eliminating condensation of water dripping onto plants.



ANTI-FOG

ANTI-FOG sheet is available on request. This factory applied, silicon-based coating, combines long lasting anti-fogging properties with excellent adhesion and great stability in environmental chemicals.

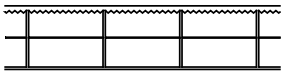
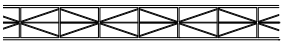
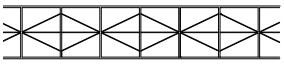
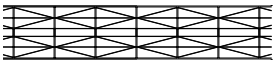
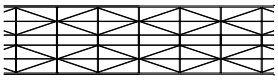
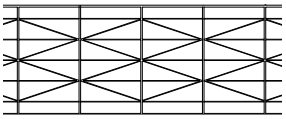
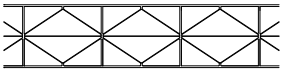
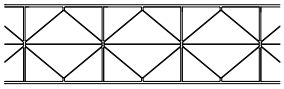
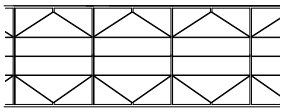
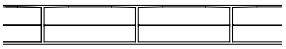
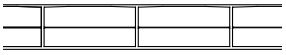


THERMOGAL SUPER

THERMOGAL SUPER is a 32 mm (1.26″) sheet with 11 walls and a 16 and 20 mm (0.630-0.787″)sheet with-10 walls, specially manufactured with a clear tint appearance. This product provides excellent thermal insulation and is highly flexible yet virtually unbreakable. With a unique inner X-brace multi-layer structure, the sheet provides extra strength, rigidity and outstanding insulation. Ideal for low pitched roofs, cladding and glazing in closed structures with large span openings and high insulation requirements.

PRODUCTS

PROFILE STRUCTURE DATA

Name	Structure	Thickness mm,in	Standard Weight g/m²,lb/ft²	Standard width mm,in
SELECTOGAL (RFX)		16, 0.630	3000, 0.61	1050, 41 1200, 47
TITAN SKY		10, 0.394	1750, 0.36	1050, 41 1200, 47 2100, 83
		16, 0.630	2500, 0.51	
THERMOGAL SUPER		16, 0.630	2700, 0.55	1250, 49
		20, 0.787	3200, 0.66	
		32, 1.26	3800, 0.78	1250, 49
THERMOGAL		20, 0.787	3000, 0.61	1200, 47 2100, 83
		25, 0.984	3500, 0.72	
		32, 1.26	3800, 0.78	980, 39 1200, 47
TRIPLE CLEAR (PC3)		8, 0.135	1650, 0.34	1830, 72 2100, 83
		10, 0.94	1750, 0.36	

Special selective layers of polycarbonate multiwall are one of the most advanced achievements in this field. The layers make it possible to control the quality of light penetrating and absorbing and reflecting some part of solar radiation.

TYPICAL METRIC PROPERTIES*

Property	Test Method	Units	Values
Physical			
Density	ISO 1183	g/cm^3	1.2
Light Transmission - Thickness dependant	ASTM D 1003	%	81-90
Water Absorption	ISO		1585
Mechanical			
Tensile Strength@ yield	ISO 527-2	MPa	60
Tensile Modulus	ISO 527-2	MPa	2300
Elongation at break	ISO 527-2	%	>100
Elongation at yield	ISO 527-2	%	6
Flexural Modulus	ISO 178	MPa	2330
Charpy Un-notched	ISO 179	kJ/m^2	No Break
Izod Impact notched	ISO 180a	kJ/m^2	>65
Thermal			
Deflection Temperature @ 1.8 MPa	ISO 75-1	°C	144
Vicat softening temp (50°C/h 50N)	ISO 306	°C	1130
Thermal conductivity	DIN52612	W/m x °C	65
Coefficient of linear thermal expansion 0-50°C	ISO 11359	cm/cm-°C	$6.6x10^{-5}$
GWFI (Glow-Wire Flammability index)	IEC60695-2	°C	120
Electrical			
Volume Resistivity	IES 60093	Ohms - cm	3×10^{14}
Surface Resistivity, dry	IEC 60093	Ohms	6×10^{15}
Dissipation Factor 1Mhz	IEC 60250		0.009
Dissipation Factor 100Hz	IEC 60250		0.006

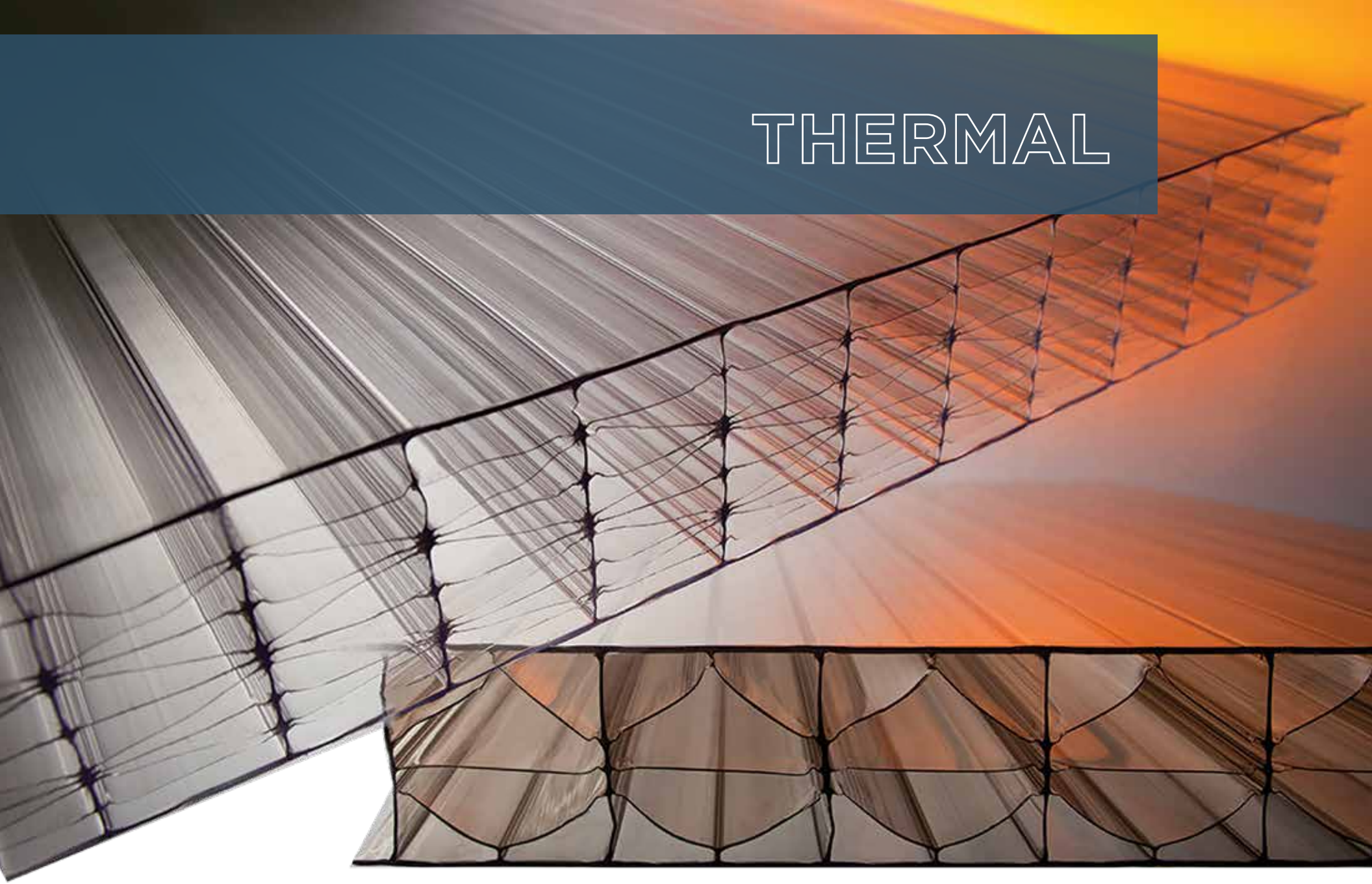
* **Typical properties are not intended for specification purposes**

TYPICAL IMPERIAL PROPERTIES*

Property	Test Method	Units	Values
Physical			
Density	ASTM D1505	ft/lb^3	75
Light Transmission - Thickness dependent	ASTM D 1003	%	81-90
Water Absorption	ASTM D570		.15
Mechanical			
Tensile Strength @ yield	ASTM D638	psi	8700
Tensile Modulus	ASTM D638	psi	333,000
Elongation at break	ASTM D638	%	>100
Elongation at yield	ASTM D638	%	6
Flexural Modulus	ASTM D790	psi	338,000
Charpy Un-notched	ASMT D256		No Break
Izod Impact notched	ASMT D256	ft*lbf/in	15
Thermal			
Deflection Temperature @ 264 psi	ASTM D648	°F	144
Vicat softening temp (122°F/h 50N)	ASTM D1525	°F	1130
Thermal conductivity	DIN 2612	BTU/ft-hr-°F	38
Coefficient of Linear Expansion 122°F	ASTM D696	in/in-°F	$3.7x\ 10^{-5}$
Electrical			
Volume Resistivity	ASTM D257	Ohms - cm	3×10^{14}
Dissipation Factor 60Hz	ASTM D150		0.004

* **Typical properties are not intended for specification purposes**

THERMAL



SERVICE TEMPERATURE AND THERMAL EXPANSION

TOPGAL MultiWall polycarbonate sheets and profiles can be installed in a variety of applications, with varying temperatures. However, the material's mechanical performance is known to remain stable in prolonged service in temperatures ranging from -25°C (-13°F) to +85°C (185°F) (according to EN 13650). Polycarbonate has a maximum service temperature of 120°C (248°F).

THERMAL EXPANSION/CONTRACTION

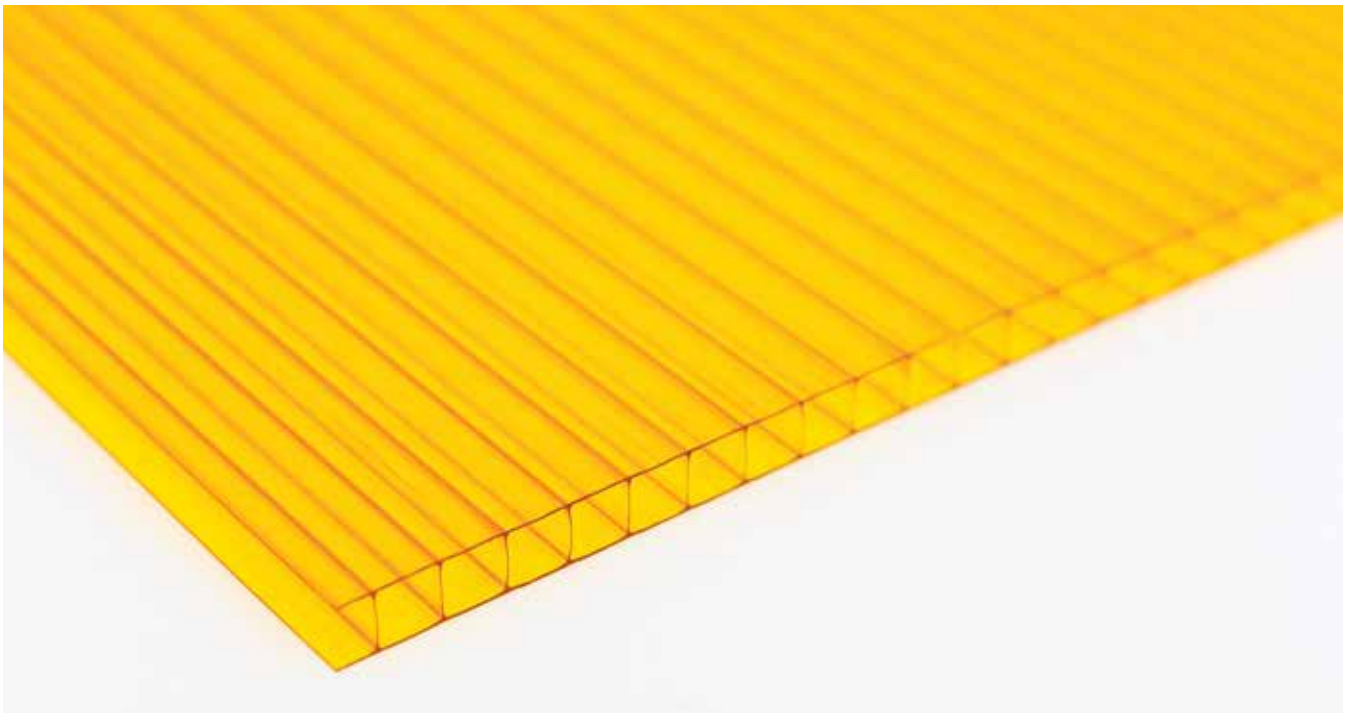
The coefficient of linear expansion of polycarbonate material is $6.6x10^{-5}$ cm/cm-°C, $3.75•10^{-5}$ in/in•°F. It is necessary to allow for 1/16th inch (0.063", 1.6mm per 12") from a change in room temperature +/- 70°C (total delta 140°F, 0°F to 140°F). Where those applications that have a greater temperature swing, a higher expansion allowance is needed to accommodate the thermal expansion of the material. Example: 1) 1/16" per foot: 12" x 0.0000375 x 140°F= 0.063".2) 12" x 0.0000375 x 180°F (+/- 90°C) = 0.081"

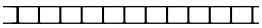
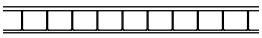
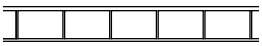
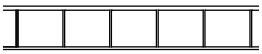
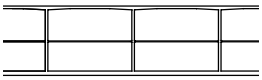
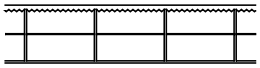
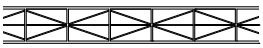
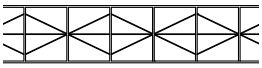
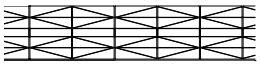
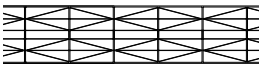
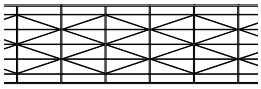
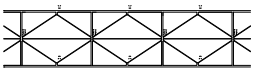
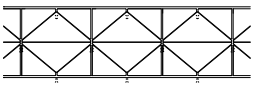
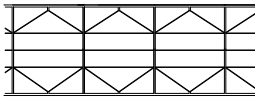
THERMAL INSULATION AND U-VALUE

Thermal Insulation is the reduction to heat transfer (i.e. the transfer of thermal energy between objects of differing temperature) between objects in thermal contact or in range of radiative influence.

The importance of thermal insulation can be seen in applications with closed structures, such as sunrooms and swimming pools.

U or K-Value is the coefficient which determines heat loss in the glazing of a building. As the U-Value decrease the thermal insulation increase.



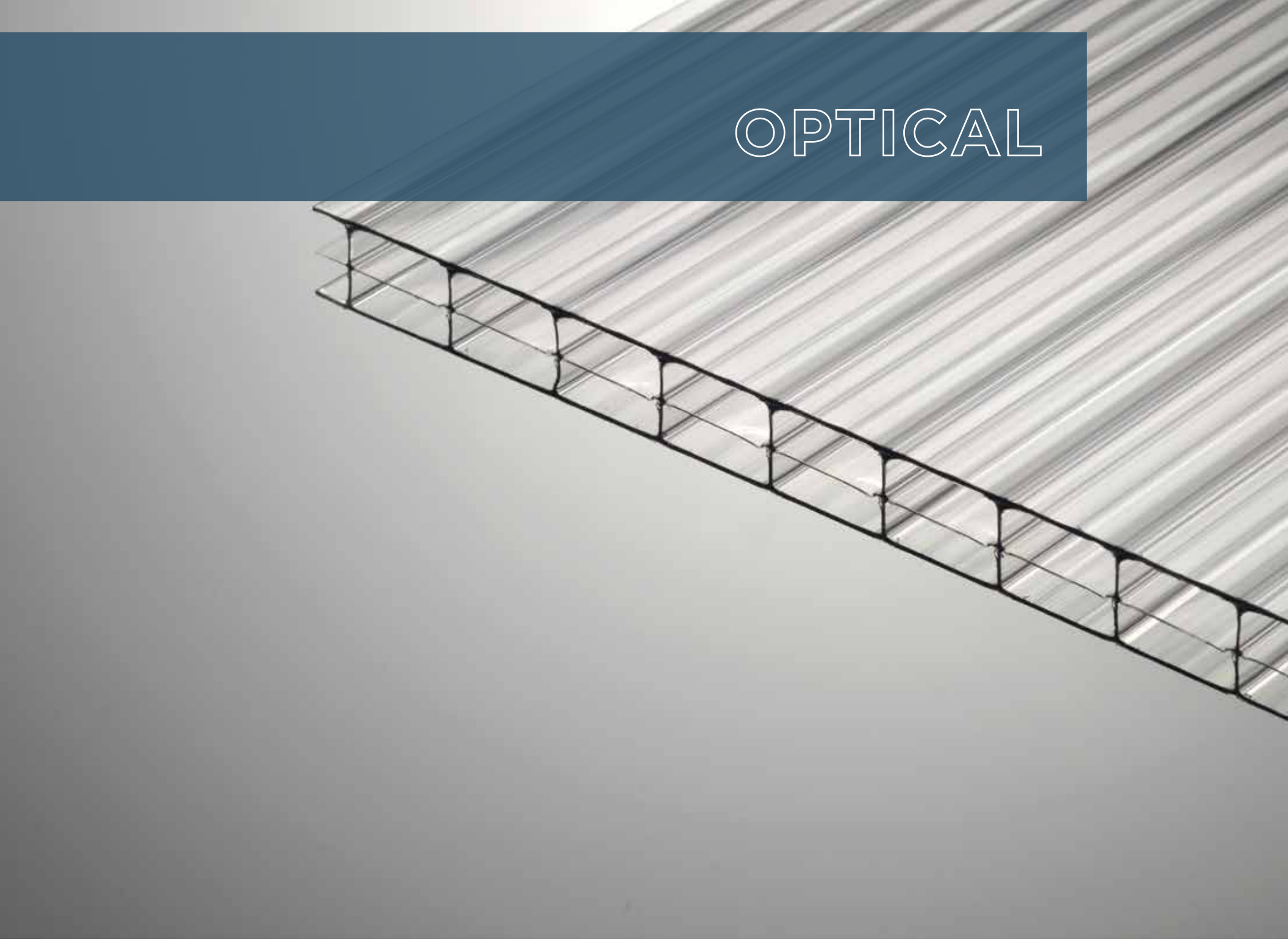
Product	Structure	Thickness mm, in	U-Value W/(m² • °C, Btu/h/ft2/°F)
Double and triple sheets		4, 0.157	3.9, 0.69
		6, 0.236	3.6, 0.63
		8, 0.315	3.3, 0.58
		10, 0.394	3.0, 0.53
		16, 0.630	2.3, .040
SELECTOGAL (RFX)		16, 0.630	2.3, 0.40
TITAN SKY		10, 0.394	2.4, 0.42
		16, 0.630	2.1, 0.37
THERMOGAL Super		16, 0.630	1.7, 0.30
		20, 0.787	1.5, 0.26
		32, 1.26	1.0, 0.18
THERMOGAL		20, 0.787	1.9, 0.33
		25, 0.984	1.7, 0.30
		32, 1.26	1.3, 0.23

THERMAL





OPTICAL



OPTICAL

ELECTRO-MAGNETIC WAVES

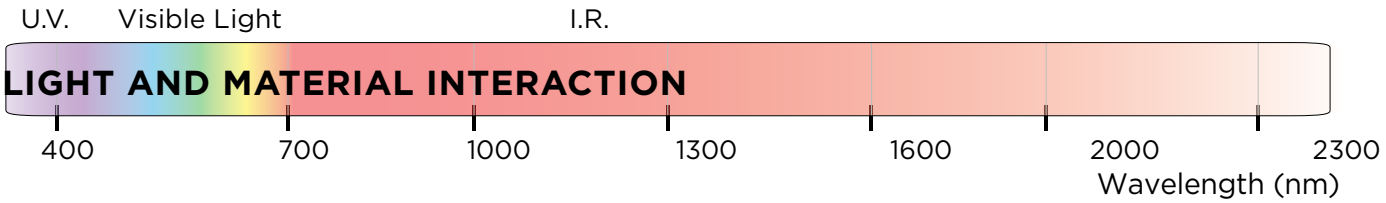
Electromagnetic wave is a physical phenomenon in which energy advances in the space through alternating electric and magnetic fields. The properties of the waves are largely dependent on its wavelength and spans a broad spectrum from very long radio waves to very short gamma rays.

SOLAR RADIATION

There is interest in the range of the electro-magnetic called Light which includes the IR, the visible light, and the UV. The IR radiation is emitted from hot bodies; it is invisible, which can be felt as heat.

Although not sharply defined, visible light is the waves at the range of 400-780 nanometers (nm). When we go through the wavelength from 400 nm and up, gradually all the rainbow colors are visible, starting with violet, blue, and finish with red. The light below the violet is called ultra-violet (UV) and beyond red called infrared, (IR) and are invisible to the human eye.

The solar radiation of the sun includes IR, visible light and UV. About half of its energy is in the visible range, 45% is in the IR range and 5% is in the UV range.



When a light ray impinges the surface of material, part of it is reflected from the material's surface. The rest of it penetrates into the material. If the material is opaque to light, the entire penetrating light is absorbed within the material and transforms to heat. However, if the material is transparent the light is absorbed and becomes heat while the rest impinges the second surface and is reflected back into the material. Therefore, the light that impinges the material is partially reflected, absorbed and transmitted and the sum of the energy is equal to the light.

LIGHT SOURCES

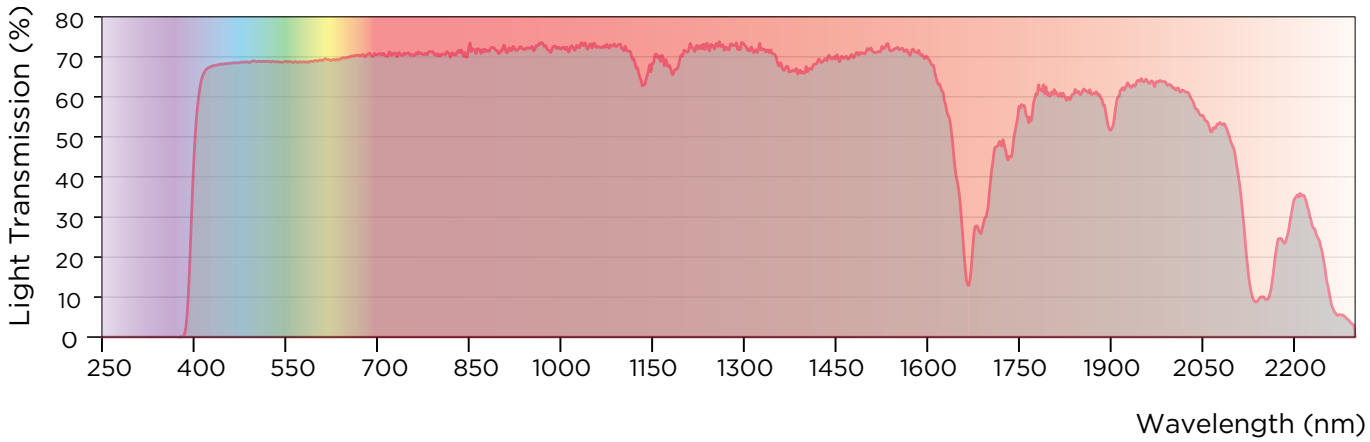
Different light sources have different characteristics. The sun's light reaches the earth after passing through the atmosphere where certain parts of it are absorbed. This is the main light source but it is not the only one. There are artificial light sources such as electric lighting with different characteristics. Per EN 16153 there are two applicable transmission properties: τe is the solar transmission of the product τv is the visible transmission. The light sources for the two are different. The light source for τe is similar to the sun's light in the range of 350-2400 nm, while the light for τv is a standard source designated D65, in the range of 350-750 nm.

PROPERTIES OF TRANSPARENT MULTIWALL

POLYGAL MultiWall sheet is a clear, transparent plastic material with excellent mechanical properties. The material is transparent to visible light, partially absorbs IR light and totally absorbs (opaque) to UV light. The UV blocking property protects MultiWall sheets from harmful UV radiation.

Below is the Spectral Graph for 8mm, (0.314") TOPGAL MultiWall polycarbonate sheet.

8 SG Clear mm, (0.314): Spectral Values



GEOMETRY OF TRANSMISSION AND POLYCARBONATE'S REFLECTION

Light that impinges the polycarbonate surface is reflected, partially in a specular reflection (as mirror) and partially in a diffused reflection at various directions. Also, the light that passes the polycarbonate and transmitted through the far surface, is partially specular (continue the original ray direction) and partially diffused. The ratio between the diffused light and the total (diffused + specular) light, in both transmission and reflection, the Haze property which describes the light diffusing property of the sheet.

THE SHEET COLOR INFLUENCE

Colored sheet changes the reflected and the transmitted light. The spectral curves of the transmitted and the reflected light are different from the source spectral curve. Also, the total values τv and τe are changed by the color. When the color exists in the volume of the sheet, the absorption is taking place in the entire sheet which results in temperature increase in the absorption sites. The more color concentration and sheet weight, more energy is absorbed and less energy pass the remote surface

COLORS WITH SPECIAL SPECTRAL PROPERTIES

Special selective layers of MultiWall polycarbonate sheets are one of the most advanced achievements in this field. These layers control the quality of light penetrating an enclosed space, by absorbing and reflecting some part of solar radiation.

- The POLYSHADE layer contains a special pigment that adds a metallic luster to the surface and provides an optimal level of solar reflection to prevent overheating of a room. POLYSHADE layered sheets are manufactured in different colors: silver, metallic blue, and metallic green.
- Silhouette (PNL) is a pearl color layer sheet with a gentle silk appearance, sophisticated and lustrous exterior surface. It is available in a variety of thicknesses and features outstanding reflective qualities making it an excellent choice for all daylight coverings.
- Primalite (PRL) is a unique color layered sheet that reflects a large portion of the near infra-red solar radiation while transmitting more visible light. The transmitted light converts to a greenish tint, while the reflected light has a pink tint.

OPTICAL

COLOR OPTICAL PROPERTIES

CLEAR SHEETS

Thickness, mm/in	Width, mm/in	SC**	SHGC***	Light Transmission (%) by ASTM D1003
TPGL 6, 0.236	600/23.6	0.8	0.7	65
TPGL 8, 0.315	600/23.6	0.7	0.6	65
TPGL 10, 0.394	600/23.6	0.7	0.6	65
TPGL 16, 0.630	998/39.3	0.6	0.51	50
TPGL 16, 0.630	600/23.6	0.65	0.55	60
TPGL 20, 0.787	998/39.3	0.6	0.51	47

****SC - SHADING COEFFICIENT**

BRONZE SHEETS

Type / Thickness, mm/in	Width, mm/in	SC**	SHGC***	Light Transmission (%) by ASTM D1003
TPGL 6, 0.236	600/23.6	0.6	0.51	30
TPGL 8, 0.315	600/23.6	0.58	0.5	30
TPGL 10, 0.394	600/23.6	0.58	0.5	30
TPGL 16, 0.630	998/39.3	0.46	0.39	20
TPGL 16, 0.630	600/23.6	0.49	0.42	20
TPGL 20, 0.787	998/39.3	0.46	0.39	20

WHITE SHEETS

Type / Thickness, mm/in	Width, mm/in	SC**	SHGC***	Light Transmission (%) by ASTM D1003
TPGL 6 ICE , 0.236	600/23.6	0.42	0.37	20
TPGL 8 ICE. , 0.315	600/23.6	0.41	0.36	20
TPGL 10 ICE, 0.394	600/23.6	0.4	0.35	20
TPGL 16 ICE, 0.630	998/39.3	0.37	0.32	20
TPGL 16 ICE 0.630	600/23.6	0.4	0.35	20

****SHGC - SOLAR HEAT GAIN COEFFICIENT**

Type / Thickness, mm/in	Width, mm/in	SC**	SHGC***	Light Transmission (%) by ASTM D1003
TPGL 20 ICE, 0.787	998/39.3	0.37	0.32	20
TPGL 16 NGR. 0.630	998/39.3	0.35	0.3	12
TPGL 20 HWT, 0.787	998/39.3	0.19	0.16	2

TURQUOISE, BLUE, GREEN AND GREY SHEETS

Type / Thickness, mm/in	Width, mm/in	SC**	SHGC***	Light Transmission (%) by ASTM D1003
TPGL 8 BLU, 0.315	600/23.6	0.65	0.59	30
TPGL 8 GRY, 0.315	600/23.6	0.51	0.45	15
TPGL 10 BLU, 0.394	600/23.6	0.65	0.59	30
TPGL 10 TRQ, 0.394	600/23.6	0.58	0.53	30
TPGL 16 BLU, 0.630	988/39.3	0.49	0.43	20
TPGL 20 BLU, 0.787	998/39.3	0.49	0.43	20

SELECTIVE LAYERED SHEETS - OPTICAL PROPERTIES

Thickness (mm/in)	Color	Structure	SHGC***	Light Transmission (%) by ASTM D1003
6mm/0.236"	PSD silver (volume)	Double and triple sheets	0.3	18
8mm/0315"	PSD silver (volume)	Double and triple sheets	0.32	18
8mm/0315"	PSD silver	Double and triple sheets	0.29	18 (24*)
10mm/0.394"	PSD silver	Double and triple sheets	0.3	18 (24*)
16mm/0.630"	PSD silver (volume)	Double and triple sheets	0.23	18 (20*)
10mm/0.394"	PSD silver (PSH)	TITAN SKY	0.14	2 (6*)
16mm/0.630"	PSD silver (PSH)	TITAN SKY	0.1	2 (5*)
32mm/1.26"	PSD silver	THERMOGAL	0.33	10
10mm/0.394"	PSB (blue)	Double and triple sheets	0.41	18
8mm/0315"	PSB (blue-Volume)	Double and triple sheets	0.45	18
10mm/0.394"	PSG (green)	Double and triple sheets	0.32	18
8mm/0315"	PSC (copper)	Double and triple sheets	0.45	18
8mm/0315"	Rainbow	Double and triple sheets	0.43	15
8mm/0315"	IR green	Double and triple sheets	0.52	70
8mm/0315"	IR blue	Double and triple sheets	0.48	50

***SHGC - SOLAR HEAT GAIN COEFFICIENT**

OPTICAL

Thickness (mm/in)	Color	Structure	SHGC***	Light Transmission (%) by ASTM D1003
6mm/0.236"	IR blue (volume)	Double and triple sheets	0.6	55
8mm/0315"	IR blue (volume)	Double and triple sheets	0.54	48
8mm/0315"	IR green (volume)	Double and triple sheets	0.64	70
32mm/1.26"	IR green	THERMOGAL	0.36	44 (47*)
32mm/1.26"	IR blue	THERMOGAL SUPER	0.29	30
16mm/0.630"	IR green	TITAN SKY	0.27	48 (55*)
16mm/0.630"	IR blue	TITAN SKY	0.42	48
8mm/0315"	Primalite	Double and triple sheets	0.39	45 (68*)
10mm/0.394"	Primalite	Double and triple sheets	0.38	45 (66*)
16mm/0.630"	Primalite	Double and triple sheets	0.27	32
16mm/0.630"	PRL	TITAN SKY	0.19	18
16mm/0.630"	PNL	TITAN SKY	0.32	20
25mm/0.984"	Primalite	THERMOGAL	0.29	18
32mm/1.26"	Primalite	THERMOGAL	0.24	15
8mm/0315"	Polycoolite	Double and triple sheets	0.53	45 (63*)
10mm/0.394"	Polycoolite	Double and triple sheets	0.48	45
16mm/0.630"	Polycoolite	Double and triple sheets	0.43	32
16mm/0.630"	Polycoolite	TITAN SKY	0.27	25
8mm/0.315"	Silhouette PRL	Double and triple sheets	0.5	40
32mm/1.26"	Silhouette PRL	THERMOGAL	0.34	10 (45*)
32mm/1.26"	Silhouette PRL	THERMOGAL SUPER	0.27	8
8mm/0.315"	Silhouette Gold	Double and triple sheets	0.37	35 (63*)
6mm/0.236"	Silhouette Gold (volume)	Double and triple sheets	0.44	42
8mm/0.315"	Silhouette Gold	Double and triple sheets	0.4	35
10mm/0.394"	Silhouette Gold	Double and triple sheets	0.36	35 (61*)
32mm/1.26"	Silhouette Gold	THERMOGAL	0.27	10 (43*)
32mm/1.26"	Silhouette Gold	THERMOGAL SUPER	0.27	8
6mm/0.236"	PNL (Volume)	Double and triple sheets	0.42	35
8mm/0.315"	PNL (Volume)	Double and triple sheets	0.45	32
10mm/0.394"	PNL (Volume)	Double and triple sheets	0.47	35
8mm/0.315"	PLM (Polymatt)	Double and triple sheets	0.73	75

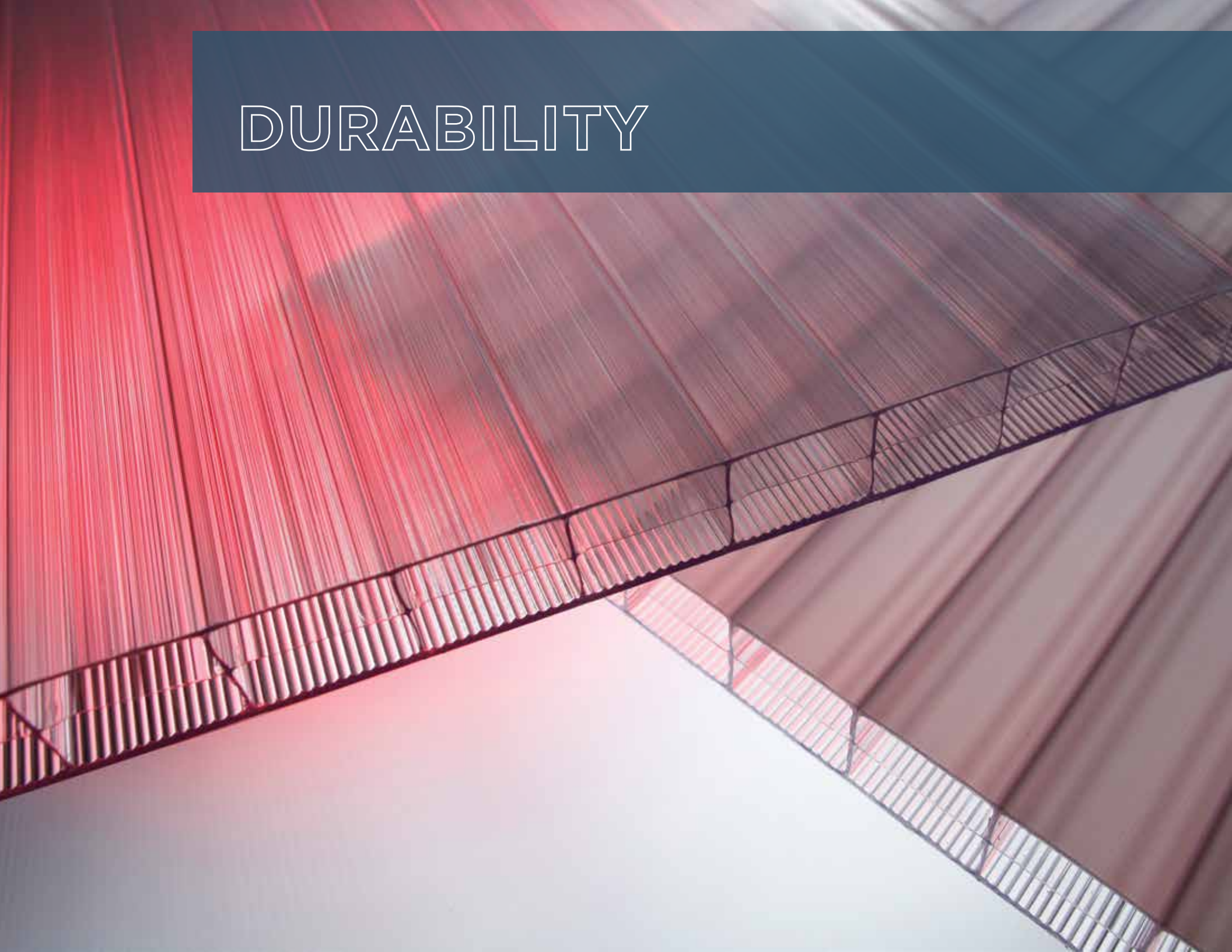
***LIGHT TRANSMISSION BY ASTM D1494** ****SHGC - SOLAR HEAT GAIN COEFFICIENT**

SELECTIVE LAYERED SHEETS

Type / Thickness, mm/in	Width, mm/in	SC**	SHGC***	Light Transmission (%) by ASTM D1003
TPGL 8 PSD Silver	600/23.6	0.31	0.27	12
TPGL 8 PNL	600/23.6	0.5	0.44	35
TPGL 10 PSD Silver	600/23.6	0.31	0.27	12
TPGL 10 PSD metallic blue	600/23.6	0.38	0.32	12
TPGL 16 PSD Silver	998/39.3	0.3	0.26	10
TPGL 16 PRL	998/39.3	0.35	0.3	18
TPGL 16 PNL	998/39.3	0.42	0.37	18
TPGL 20 PSD Silver	998/39.3	0.3	0.26	10



DURABILITY



FIRE PERFORMANCE

POLYGAL MultiWall sheets have received the following flammability ratings in Europe and the United States.

FLAMMABILITY

Method	Classification*
ASTM D635	CC-1
ASTM E84	Class A
EN 13501	B, s1, d0

***CLASSIFICATIONS DEPEND ON THICKNESS**

IMPACT STRENGTH - HAIL RESISTANCE

A free-falling dart (tup) according to ASTM D5628 (equivalent to ISO 6603-1) is allowed to strike a supported specimen directly. Either a dart having a fixed mass may be dropped from various heights, or a dart having an adjustable mass may be dropped from a fixed height.

The procedure determines the energy (mass x height) that will cause 50% of the specimens tested to fail (mean failure energy). Impact energy results are expressed in Joules.

Loss of impact strength in the event of hail shall be determined by an impact test according to ASTM D5628-95 geometry FE (tup diameter 20mm/0.787"). In this test, failure is determined when the upper wall of the sheet is penetrated by the tup. The sheet does not reach the required standard if the mean failure energy obtained in the test is less than 0.831J, 0.61 ft-lb. This energy is equal to the energy generated by a 20mm/0.787" in diameter ice ball at a speed of 21 m/s, 68.9 ft/s.

UV PROTECTION

MultiWall polycarbonate sheets are a perfect material for construction. However, they are lightweight, durable, aesthetically pleasing, and easy to install. MultiWall polycarbonate sheet is sensitive to UV degradation which can cause yellowing, blushing and reduced impact strength. MultiWall polycarbonate sheet is sensitive to ultraviolet radiation from sunlight. One of the properties of the polymer is its ability to absorb ultraviolet radiation. The Limited Product Warranty offered by PLASKOLITE is for loss of, light transmission and breakage. Contact a representative for more details. ***It is important to remember: One side is enhanced with a UV protective coating, this side is labeled so that it is placed facing the sun. See the manufacturer's recommendations for correct installation.***

DURABILITY

UV RESISTANCE TESTING

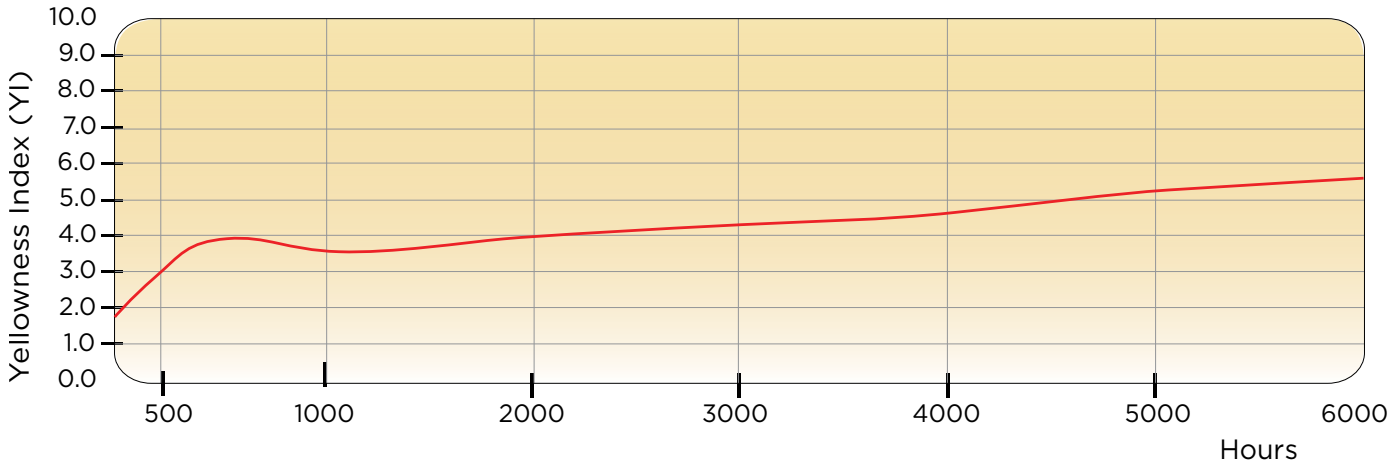
The UV resistance of the sheet is demonstrated, according to EN 16153 by testing the sheet properties before, during and after artificial aging. The properties to test are the Yellowness Index (YI) and the Light Transmission (LT). There are two levels of radiant exposure in the total daylight range (300nm to 2500nm) to consider:) to

» 18 GJ/m² (5000 kWh/m²) which is 30% more than the highest Direct Normal Irradiation occurrence on the globe.

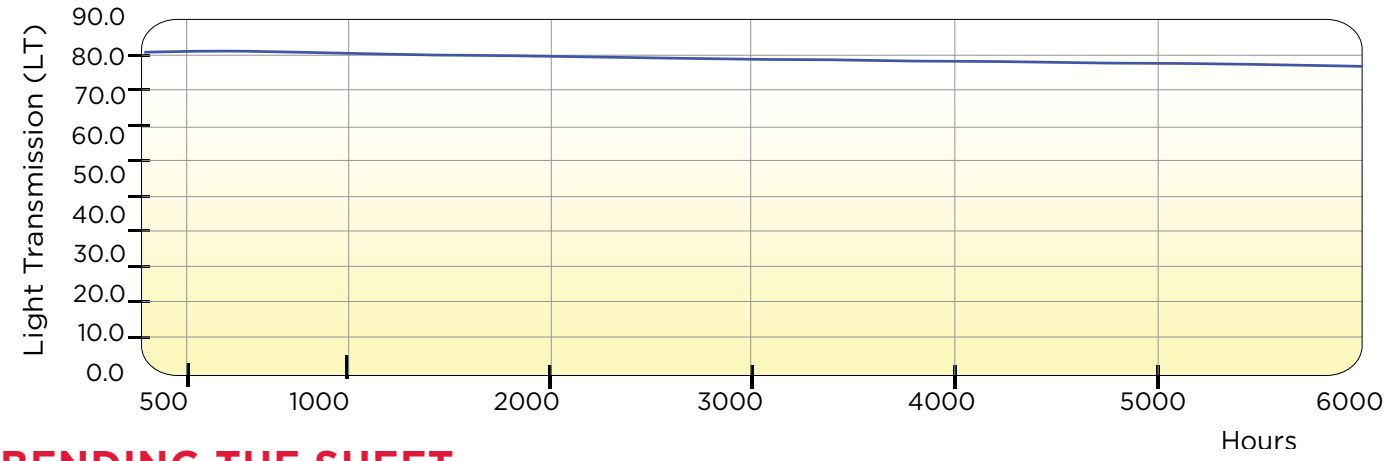
» 10 GJ/m² (2778 kWh/m²) which is reached in Australia, South Africa, South-West USA, North Chile, and Argentina.

For safety reasons, all PLASKOLITE Polycarbonate product data relates to the 18 GJ/m² (5000 kWh/m²) radiant exposure level. For the purpose of durability assessment, sheet samples are measured for YI and LT and placed in a Xenon ageing tester. Both properties are measured in intervals, until the 18 GJ/m² level is reached. A clear product is classified ΔA when the variation in YI is less than 10 units and the variation in LT is less than 5% of the unexposed sample. A colored product which has the same polycarbonate material as the clear product and the same UV protection, is classified ΔD without further testing. Regarding the mechanical properties (E-Modulus and tensile strength), a sample which has been classified according to the above, is assumed to lose less than 10% of its original value. See below a typical graph of YI and LT vs exposure time:

YELLOWNESS INDEX



LIGHT TRANSMISSIONS

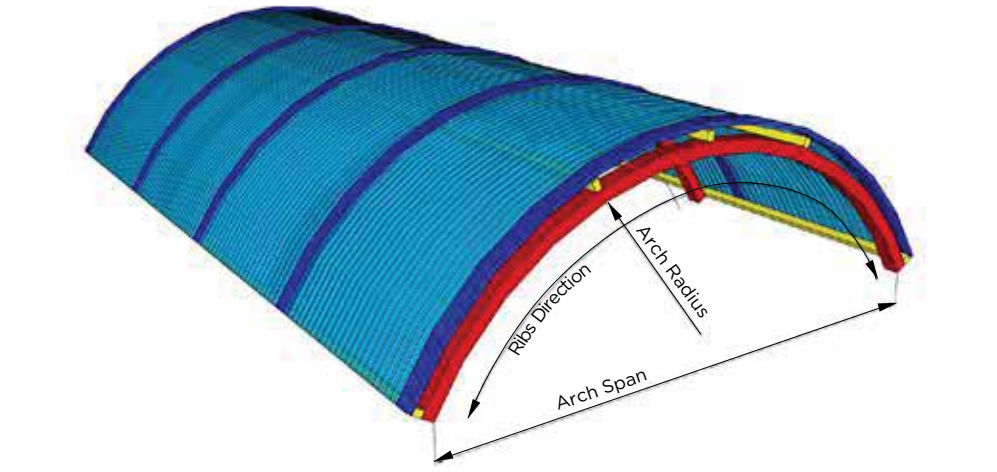


BENDING THE SHEET

TOPGAL MultiWall sheets can be cold bent over curved support profiles, to suit many glazing applications, e.g. domes, roof lights, etc. Providing the radius must not go below the minimum recommended value, then the introduced stress by cold curving will not have any adverse effect upon the mechanical performance of the sheet. Sheets must always be bent with the length, never across the width of the sheet.

Sheet Thickness (mm, in)	Minimum cold bending radius* (mm, in)
6, 0.236″	1200, 42″
8, 0.315″	1800, 71″
10, 0.394″	2000, 79″
16, 0.630″	3200, 126″
20, 0.787″	4000, 157″

*** Valid for sheets with standard weight only**



DURABILITY

ACOUSTIC

Accordance with DIN 52210-75, the maximum obtainable sound transmission class for a particular thickness is listed below.

Sheet Thickness (mm/in)	Sound reduction Values (dB)
6 - 8/0.236"-0.315"	18
10/0.394"	19
16/0.630"	21
20/ 0.787"	22

Outlined below is an overview of its primary outside influencers, and common types of potential damage. A summary of laboratory tests designed to meet its practical requirements, as well as its resistance to a wide range of chemicals and substances is provided.



CHEMICAL RESISTANCE



CHEMICAL RESISTANCE

The chemical and environmental resistance of MultiWall polycarbonate sheets depend on the unique combination of factors and variables it encounters in its application. Your PLASKOLITE representative, with the support of our Technical Service Group, is available to work with you to evaluate your specific application. Influencing parameters:

- The composition of chemical ingredients
- Temperature
- Duration of exposure
- The level of internal or applied stress and strain

TYPES OF DAMAGE

Multiwall Polycarbonate can sustain several distinct types of damage, including swelling, dissolution, and molecular degradation. Circumstances under which these potential types of damage can occur are detailed below. Different chemicals may act simultaneously on TOPGAL MultiWall sheet causing one or more types of damage.

SWELLING OR DISSOLUTION

When low-molecular aromatic, halogenated and polar components migrate into the sheet, the damage can range from a tacky surface, to swelling, to complete dissolution.

MOLECULAR DEGRADATION

Many POLYGAL properties are determined by the size of its molecules. If an incompatible chemical causes a reduction in molecular weight, mechanical property degradation can occur. The molecular weight has virtually no influence on electrical properties and only a slight influence on thermal properties. Solutions with a high pH (bases) can act to lower the molecular weight of polycarbonate. Low pH (acids) solutions typically do no degrade the molecular weight. Ammonia and amines are aggressive toward polycarbonate. PLASKOLITE laboratories have tested a series of chemical and commercial products to determine their compatibility with polycarbonate. The results of POLYGAL sheet resistance to substances are included in the following table (pages 34-35). Laboratory tests supply information on the formulation tested. The composition of many commercial products can change over time.

OXIDATIVE DAMAGE

POLYGAL is relatively stable toward oxidizing agents such as oxygen, nitric acid, and hydrogen peroxide. MultiWall's resistance to chemicals, common industrial cleaners, pharmaceuticals, household, and cosmetic substance is dependent on the ingredients in the product, as well as the temperature and duration of exposure. The following section provides a general overview of resistance to these commonly used materials. If you require additional information, please contact your PLASKOLITE representative.

RESISTANCE TO SEALING COMPOUNDS, ADHESIVES AND PLASTICS

POLYGAL sheet's resistance to sealants, adhesives and plastics is largely dependent on the presence of aggressive components, such as plasticizers, (e.g. phthalates) or solvents, which can migrate into polycarbonate.

RESISTANCE TO PAINTS

Solvents in paints may cause stress cracking or swelling depending upon the solvent and the flash-off and drying conditions. It is possible to formulate paints with solvents that do not cause damage. In some applications, painting can increase the chemical resistance of the finished part. Two component paints are resistant if the individual components do not cause damage to POLYGAL sheet in the short period between application and curing. The Safety Data Sheets (SDS) can be used to identify the chemical composition of the paint.

RESISTANCE TO CLEANING AND WASHING AGENTS

POLYGAL sheet is resistant to most household soaps but not those containing amines, ammonia, and sodium hydroxide as they will cause damage to the sheet. If the product ingredients are known, it is possible to estimate the compatibility with MultiWall. However, it is recommended to put the finished part through a practical test if no data is available. Refer to the compatibility table (pages 34-37) for resistance levels.

TESTING TO MEET PRACTICAL REQUIREMENTS

The compatibility information presented in this section should be used as a starting point for determining the integrity and durability of your application. Testing is essential if finished POLYGAL sheet components are likely to encounter aggressive chemicals during fabrication or use. The internal and applied stress in a formed part, as well as duration of chemical exposure can lead to very different results.

COMPATIBILITY ASSESSMENT METHODS

The data shown in the compatibility table (pages 34-35) was generated using DIN 53449-3. This method uses test pieces of 80 x 10 x 4 mm (3.14 x 0.39 x 0.16″) of POLYGAL sheet clamped into a curved fixture. The fixture applies a graduated strain ranging from 1 – 2%.

ASSESSMENT CRITERIA

The information in the compatibility table is based on exposure to chemical at 23°F (-5°C) and a range from 0-2% strain. Components that lead to damage with a strain of < 1.0% are classified as incompatible.

The results shown in the following tables are based on a one-time test. Change in the composition by the producers of these substances can change the results. Contact your PLASKOLITE representative or the Technical Service Group at 800-848-9124 with questions.

PACKAGING

POLYGAL sheets can be shipped in crates, on wood pallets or handloaded into enclosed trailers and are packaged to protect against scratching and damage during shipment. The panel ends are sealed with masking tape to prevent dust and insects from entering into the flutes of the panels.

The maximum panel length is 11.8 meters, (39′) for a 40′ container. It is recommended to unload the containers by hand using a slanted roller conveyor with adjustable height. MultiWall sheets must be stored away from exposure to sunlight. The maximum sheet length is 5.8 meters for a 20′ container and 11.8 meters for a 40′ container. Shipping of sheets of different lengths should be coordinated in advance with the regional sales manager. It is recommended to unload the containers by hand using a slanted roller conveyor with adjustable height. MultiWall sheet products must be stored away from exposure to sunlight and according to the company's storage guidelines.

CHEMICAL RESISTANCE

CHEMICAL COMPATIBILITY CHART*

CHEMICALS

- \- Acetaldehyde
+ Acetic acid, up to 10%
- \- Acetone
+ Acetylene
- \- Acrylonitrile
+ Alumen
+ Aluminum chloride anhydrous, saturated solution in water
+ Aluminum alumen potash, saturated solution in water
+ Aluminium oxalate
+ Aluminium sulfate, saturated solution in water
± Allyl alcohol
- \- Ammonia
- \- Ammonia water
- \- Ammonium sulphide, saturated solution in water
- \- Amyl acetate
+ Ammonium chloride, saturated solution in water
+ Ammonium fluoride, saturated solution in water
+ Ammonium nitrate, saturated solution in water
+ Ammonium sulphate, saturated solution in water
- \- Aniline
+ Antimony chloride, saturated solution in water
+ Arsenic acid, 20%
+ Benzine (Petroleum Benzin) (non-aromatic)
- \- Benzaldehyde
- \- Benzoic acid
- \- Benzene
- \- Benzyl alcohol
+ Borax, saturated solution in water
+ Boric acid
- \- Bromine
- \- Brombenzene
- \- Butyric acid
- \- Butyl acid
- \- Butyl acetate
+ Butane (liquid and gaseous)
+ Butyl alcohol
+ Butylene glycol
+ Cyclohexanal
+ Cyclohexane
+ Calcium chloride, saturated solution in water
+ Chloric gas, moist
+ Calcium nitrate, saturated solution in water
Trichloro - acetic acid, 10%
+ Calcium soap fat, pure
+ Calcium hypochloride
+ Carbon dioxide, moist
+ Carbon monoxide
+ Chloride of lime magma
+ Chloride of lime solution, 2% in water
+ Chromic alum, saturated solution in water
+ Chromic acid, 20% in water
+ Citric acid 10%
+ Copper chloride, saturated solution in water
+ Cupric sulphate, saturated solution in water
- \- Carbon bisulphide
- \- Chloric gas, dry
- \- Chloroform
- \- Caustic potash
- \- Caustic potash solution
- \- Caustic soda
- \- Cresol
± Chlorobenzene
- \- Cyclohexanone
± Dinonyl phtalate (softener)
± Dioctyl phtalate (softener)
± Diphyl 5.3
+ Decalin
+ Diethylene glycol
+ Diglycol acid, saturated solution in water
- \- Diamyl phtalate
- \- Diethyl ether
- \- Dibutyl phtalate (softener)
± Dimethyl formamide
± Dioxan
+ Ethyl alcohol, 96% pure
+ Ethylene glycol
- \- Ethyl amine
- \- Ethyl bromide
- \- Ethylene chlorohydrine
- \- Ethyl dichloride
± Ether
- \- Hydrochloride acid, concentrated
- \- Hydrofluoric acid, concentrated
+ Heptane
+ Hexane
+ Hydrochloride acid, 20%
+ Hydrosilicofluoric acid, 30%
+ Hydrofluoric acid, 5%
+ Hydrogen superoxide, 30%
- \- Formic acid
- \- Glycerin
- \- Iodine

+ compatible **+/- limited use** **- not compatible**

-	Isopropyl alcohol
+	Ferric chloride, saturated solution in water
+	Ferrous sulphate
+	Glycol
+	Illuminating gas
-	Lead tetraethyl, 10% in benzine
+	Lactic acid, 10% solution in water
+	Ligroine (cardon-hydrogen mixture)
+	Magnesium chloride, saturated solution in water
+	Magnesium sulphate, saturated solution in water
+	Manganese sulphate, saturated solution in water
+	Mercury
+	Mercury chloride, saturated
+	Methane
-	Milk of lime, 30% slurry in water
+	Nitric acid, 10%
-	Nitric acid, 10-20%
+	Oxalic acid, 10% in water
+	Oxide of zine
+	Oxygen
+	Ozone
-	Perchloric acid, concentrated
±	Petroleum ether (cardon hydrogen mixture)
±	Petroleum
±	Potato-spirit oil
+	Pentane
+	Perchloric acid, 10% in water
+	Perhydrol 30%
+	Potassium bichromate, saturated solution in water
+	Potassium bromate, saturated solution in water
+	Potassium carbonate, saturated solution in water
+	Potassium chloride, saturated solution in water
+	Potassium nitrate, saturated solution in water
+	Potassium metabisulphite, 4% in water
-	Methyl methacrylate
-	Methanol
-	Methyl amine
-	Methyl ethyl ketone
-	Methylene chloride
-	Narton solution
-	Nitric acid, 20%
-	Nitro benzene
-	Nitrous fumes, dry
-	Perchlorethylene
-	Phenol
-	Pyridine
±	Phenyl ethyl alcohol
±	Phosphorus oxychloride
±	Potassium cyanide
+	Potassium rhodanide, saturated in water
+	Potassium perchlorate, 10% in water
+	Potassium permanganate, 10% in water
+	Potassium persulphate, 10% in water
+	Potassium sulphate, saturated solution in water
+	Propane gas
+	Propanyl alcohol
+	Propionic acid, concentrated
+	Propyl alcohol
+	Resorcin solution, 1%
-	Styrene
-	Sulphuric acid, concentrated
-	Sulphurous acid, 10%
-	Sulphury chloride
+	Soda
+	Sodium bicarbonate, saturated solution in water
+	Sodium bisulphate, saturated solution in water
+	Sodium bisulphite, saturated solution in water
+	Sodium carbonate, saturated solution in water
+	Sodium chlorate, saturated solution in water
+	Sodium chloride, saturated solution in water
+	Sodium hypochloride, 0.5% solution in water
+	Sodium sulphate, saturated solution in water
+	Spirit, pure
+	Sublimate, saturated solution in water
+	Sulphur
+	Sulphuric acid, 50%
+	Sulphuretted hydrogen
±	Sodium sulphite, saturated solution in water
±	Sulphur dioxide
±	Sulphuric acid, 70%
+	Tartaric acid, 10%
-	Tetrachloroethane
-	Tetrahydrofurane
-	Tetraline
-	Thiophene
-	Toluol
-	Trichloroethylamine
±	Trichloroethylene
±	Tricresylol phosphate (softener)
+	Trichloroethyl phosphate (softener)
+	Urea, saturated solution in water
+	Water
±	Xylol
+	Zinc chloride, saturated solution in water
+	Zinc sulphate, saturated solution in water

+ compatible **+/- limited use** **- not compatible**

CHEMICAL RESISTANCE

GERMICIDES

+ Baktol, 5%	+ Oktozon, 1%
- Carbolic acid	+ Perhydrol
+ Chloramine	+ Resorcin solution 1%
- DDT	+ Spirit, pure
+ Delegol, 5%	+ Sublimate
± Dimamine T, 5%	- TB-Lysoform
+ Hydrogen superoxide	+ Trosilon G extra, 1.5%
+ Lysoform, 2%	± Sagrotan, 5%
+ Maktol	± Tincture of iodine
+ Merfen, 2%	± Zephirol

DETERGENTS

+ Ajax	+ Silicone fluid-emulsion
+ Javel water	+ Soft soap
+ Laundry soap	

TECHNICAL OILS & LUBRICANTS

+ Aral BG®58	+ Mobil DTE oil light®
+ Automatic switch grease	+ Mobil special oil 10 w 30®
+ Baysilon®-silicone oils	+ Molikote®-paste
+ BP Energol HL 100®	+ Molikote®-powder
+ BP Energol EM 100®	+ Nato-turbine oil 0-250
+ BP H LR 65®	+ Naphtenic lubricating oil
+ Brake fluid (ATE)	+ Paraffin oil
+ Burnishing oil Brunofix®	+ Polyran® MM25 (lubricating oil)
- Camphor oil	+ Rape seed oil
+ Cable insulating oil IG 1402	+ Renocalor N®
+ Cable insulating oil KH 190	+ Sewing machine oil
+ Calcium soap fat	+ Shell Spriax 90 EP®
+ Castor oil	+ Shell Tellus 33®
+ Contact oil 611	+ Silicone fluid
± Diesel oil	+ Sodium soap fat
- Drilling oil	+ Texaco Regal oil BRUO®
+ Esso Estic 42-45®	+ Texaco Regal oil CRUO®
+ Fish oil	+ Train oil
+ Grease R Z Darina®	+ Turbo oil 29
± Heating fuel oil	± Shell Tellus 11-33®
+ Hydraulic oil Vac HLP 16	± Turpentine oil
± Jet propulsion fuel JP4 (kp 97-209°C)	± Valvoline WA 4-7
Skydrol 500 A®	± Varnish

+ compatible **+/- limited use** **- not compatible**

TECHNICAL OILS & LUBRICANTS

+ Aral BG®58	+ Mobil DTE oil light®
Automatic switch grease Baysilon®-silicone oils	Mobil special oil 10 w 30® Molikote®-paste
+ BP Energol HL 100®	+ Molikote®-powder
+ BP Energol EM 100®	+ Nato-turbine oil 0-250
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+ Hydraulic oil Vac HLP 16	± Turpentine oil
± Jet propulsion fuel JP4 (kp 97-209°C)	± Valvoline WA 4-7
Skydrol 500 A®	± Varnish

ADHESIVES & SEALING MATERIALS

± All-purpose glue	+ Silpruf
+ Cellux® - adhesive film	+ Serbaseal MP
+ Gypsum	+ Dow Corning 917
+ Insulating tape	+ Dow Corning 3793 (w.)
+ Perbunan C®	+ Dow Corning 7098
+ Putty	+ Dow Corning 791
+ Rubber (softener-free)	+ Parasilico PL (cl.)
+ Terostat®	+ Proglaze
+ Tesafilm	+ 3M 431 -aluminum tape
+ Tesamoll®	+ Gerlinger 712 -aluminum tape
+ Sea 210	

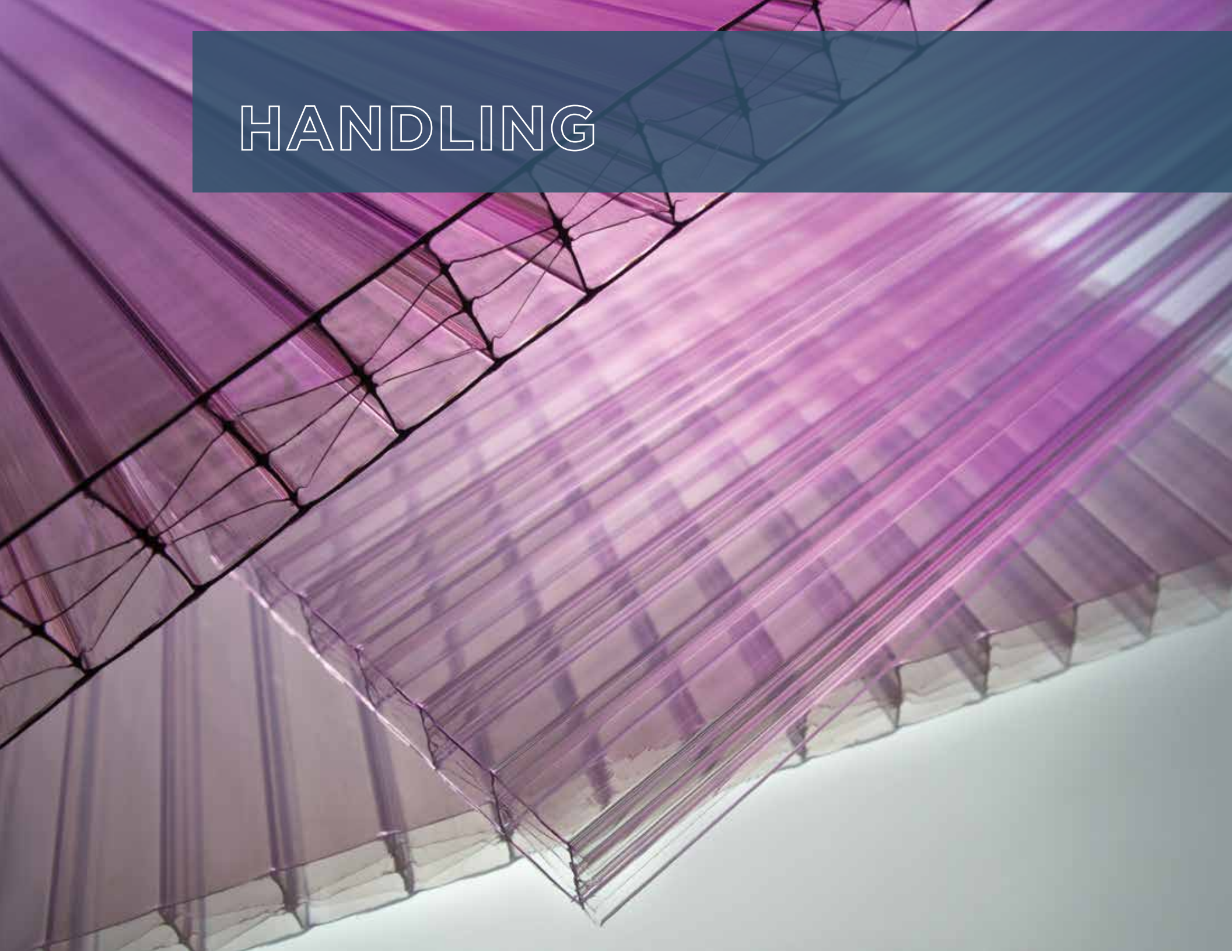
POLISHING AGENTS & ANTISTATICS

± Antistaticum 58	+ Delu-Antistatic solution®
- Antistatic C, 5%	+ Persoftal®, 2%
± Arquad 18®, 50%	

***TESTING PERFORMED AT ROOM TEMPERATURE WITH ZERO STRAIN**

+ compatible **+/- limited use** **- not compatible**

HANDLING



STORAGE

» Store in dry, dark & well-ventilated area, with NO EXPOSURE to sunlight, wind, dirt or hard objects to prevent damage.
» Store on a flat clean raised surface and placed on a soft material (cardboard) to prevent damage. Supported, sloped stacking is recommended. If stacked flat, stack to a maximum height of 1 meter (3 feet).
» Outdoors, multiwall products should be covered with an opaque material (cardboard, wood, EPDM sheet etc.) that provides protection from the sun.
» Outdoors, DO NOT store multiwall products under flexible PVC coverings.
» Outdoors, storage of polycarbonate products exposed to sun light will cause the protective polyethylene film to bake onto the sheet, and it WILL NOT BE ABLE TO BE REMOVED.

CLEANING

POLYGAL MultiWall will give longer and better service life with simple cleaning:

» Rinse sheet with water
» Use warm soapy (mild liquid dish soap) water to clean sheets. If any dirt remains, gently wipe off with a soft cloth.
» Apply final rinse and dry with soft cloth, if possible, to prevent water spotting.

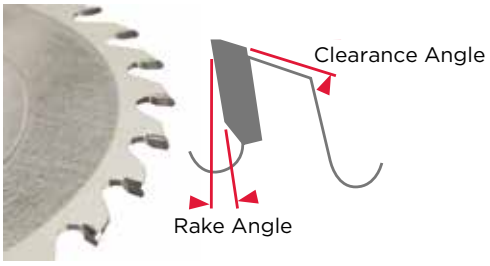
DO NOT use sponges, squeegees, brushes or sharp instruments as they may damage the UV protective coating and surface.

CUTTING

POLYGAL MultiWall sheet can be cut easily and accurately with standard workshop equipment. This includes standard circular, jig, or table saw with a blade having 8-12 teeth per inch (mm). Saw dust should be blown out of the channels using clean compressed air. Circular saws should have fine-tooth sheet blades. Thinner, (4-6mm), gauges can be cut with a box knife. It is important that the knife is a sharp, standard box cutting tool.

Trimming standard box cutting knife. Sawing recommendations:

	Circular saw	Bandsaw
Clearance angle	20° - 30°	327
Rake angle	15°	0.5°
Cutting speed	180 - 250 m/min	200 - 250 m/min
Blade or hand speed	1800 - 2400 m/min	-



DRILLING Holes can be drilled using standard high-speed sharp steel angular wedged bit. When drilling, support should be given immediately beneath the drill to avoid vibration. Very clean holes are easily obtained. All holes should be drilled at least 1.57" (40mm) from the edge of the sheet. The clearance angle should be 15° whereas the rake angle should be 0° - 5°. The use of liquid cooling media is not recommended.

LOAD BEARING CAPACITY

WIND AND SNOW LOAD

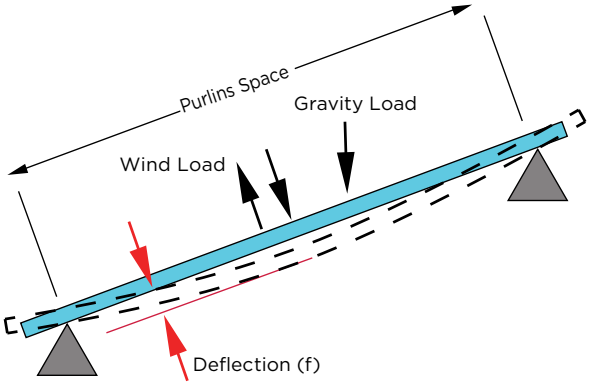
The information contained in the wind-load charts has been drafted based on our best knowledge.

PLASKOLITE reserves the right to change specifications and data, without notice, if deemed necessary in the evolution of its products.

It is the sole responsibility of the customer to confirm with an architect, engineer or other professional consultant that PLASKOLITE materials meet the requirements and specifications of the particular project. It is your responsibility to ensure that you act in compliance with any local legislation or requirements applicable.

Consider the following factors for load data of POLYGAL MultiWall sheets:

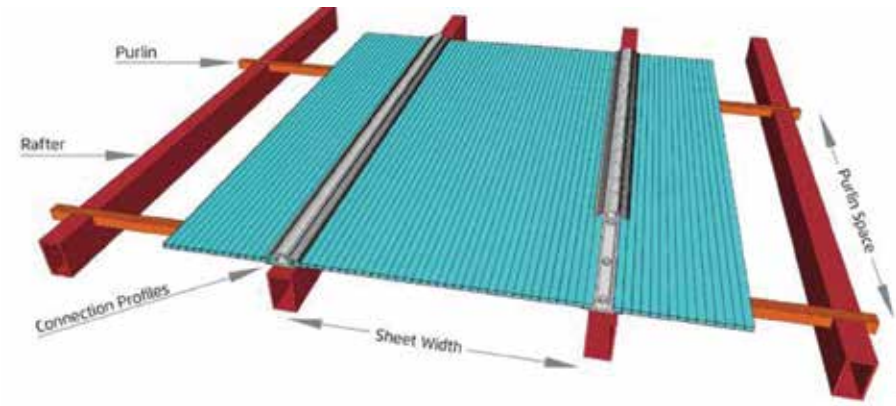
- Roof type: flat, arched, purlin / rafter supported distance and point fastening means
- Load direction: positive and negative
- The required local design load
- The allowed deflection of the sheet - usually 1.97″ (50mm)
- After considering the factors above choose:
  - The specific sheet to use
  - The distance (span) between supports / point fastening means



POLYGAL MultiWall coverings are highly resistant to the forces of nature (conditional upon correct structure design and sheet installation).

TYPES OF GLAZING The sheets should be connected to each other by rigid connecting profiles and fastened by fasteners to the supported structure. The following tables show the dimensions and loads of various sheets, considering the expected deflection, the buckling moment and the edge translations.

FOUR SIDES FRAME FLAT GLAZING (intermediate fields):
The sheets are clamped to the purlins (perpendicular support) and simply supported on the rafters (sides support), while being connected to each other by rigid connecting profiles. The base of the profiles should be fastened to the rafters. The maximum allowed deflection is 50mm (1.97″).



WINDLOAD TABLES



WINDLOAD TABLES

POLYGAL STANDARD SHEET (PCSS)
6mm. 0.236˝, 1300 g/m², 0.26 lbs/ft²

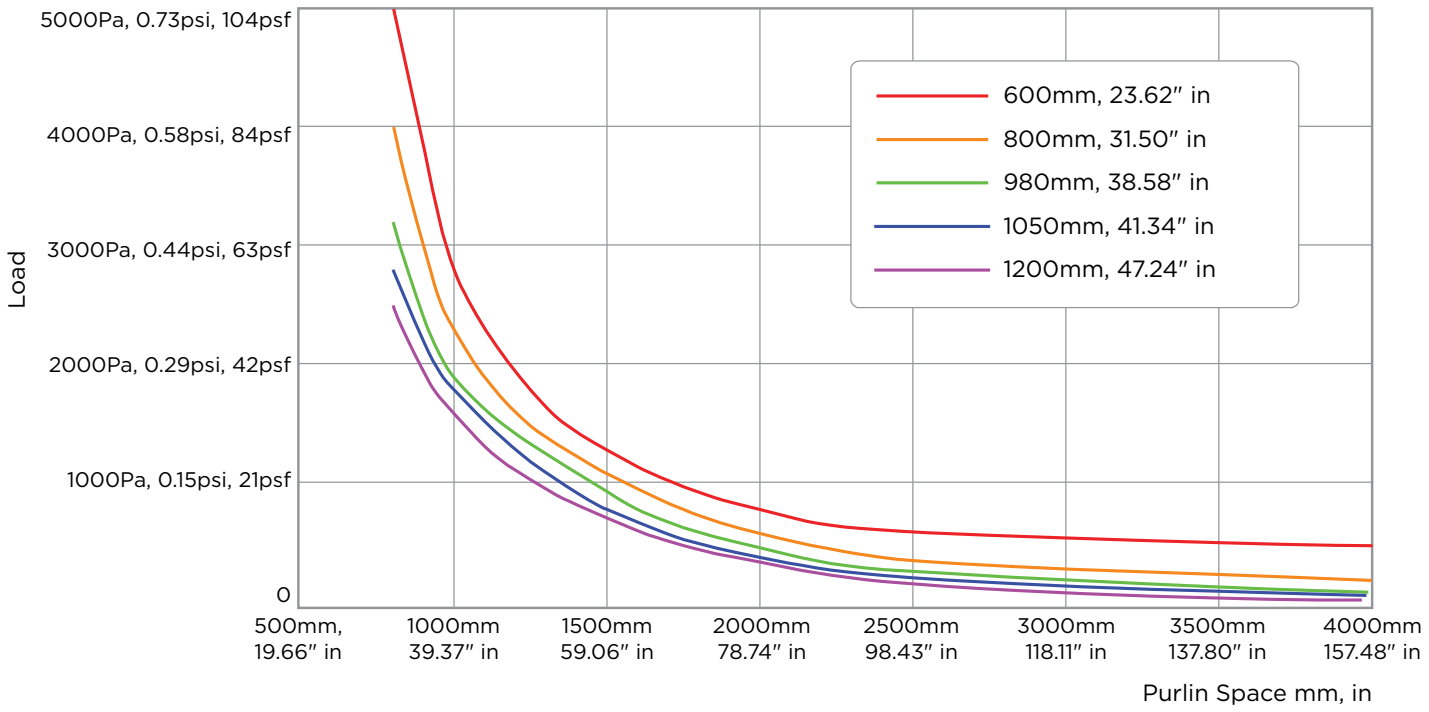
Positive Load (Pa) vs Purlin Space for various widths (f max=50mm. 1.97″ in)

Purlin Space (mm, in)	Sheet Width Units (Pa, psf)				
	600mm 23.62″	800mm, 31.5″	980mm, 38.58″	1050mm, 41.34″	1200mm, 47.25″
800mm, 31.50″ in	5000Pa, 104psf	4000Pa, 84psf	3200Pa, 67psf	2800Pa, 58psf	2500Pa, 52psf
900mm, 35.43″ in	3800Pa, 79psf	3000Pa, 63psf	2400Pa, 50psf	2200Pa, 46psf	1950Pa, 41psf
1000mm, 39.37″ in	2800Pa, 58psf	2300Pa, 48psf	1900Pa, 40psf	1800Pa, 38psf	1600Pa, 33psf
1250mm, 49.21″ in	1800Pa, 38psf	1500Pa, 31psf	1350Pa, 28psf	1200Pa, 25psf	1050Pa, 22psf
1500mm, 59.06″ in	1300Pa, 27psf	1100Pa, 23psf	950Pa, 20psf	800Pa, 17psf	730Pa, 15psf
1750mm, 68.90″ in	800Pa, 17psf	800Pa, 17psf	650Pa, 14psf	550Pa, 11psf	500Pa, 10psf
2000mm, 78.74″ in	630Pa, 13psf	600Pa, 13psf	480Pa, 10psf	400Pa, 8.4psf	360Pa, 7.5psf
2400mm, 94.49″ in	630Pa, 13psf	400Pa, 8.4psf	300Pa, 6.3psf	250Pa 6.3psf	200Pa 4.2psf

Maximum negative (wind) load (2 sides simply supported)

	500Pa, 10psf	200Pa, 4.2psf	96Pa, 2.0psf	75Pa, 1.6psf	48Pa, 1.0psf

Load vs Purlin Space 6mm. 0.236″ in, 1300 g/m², 0.26 lbs/ft²



POLYGAL STANDARD SHEET (PCSS)
8mm. 0.31″ in., 1500 g/m², 0.31 lbs/ft²

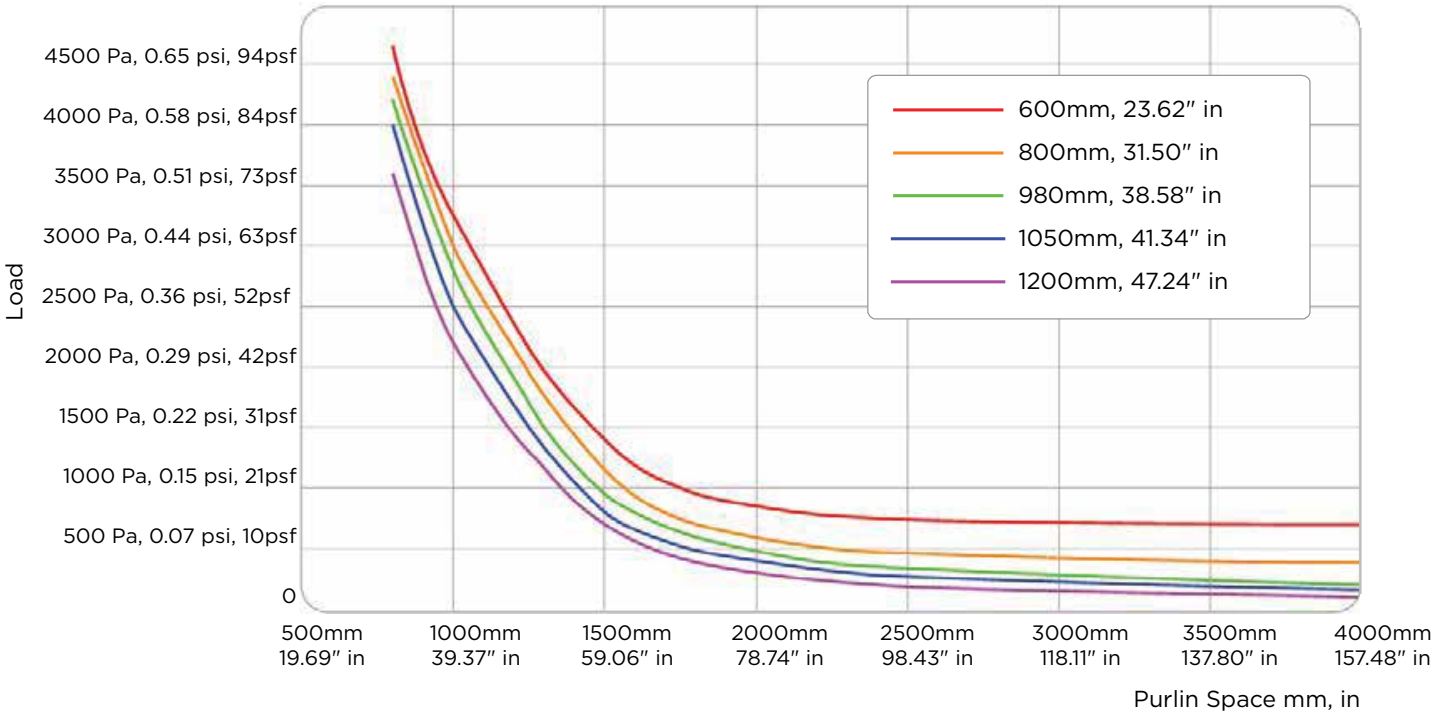
Positive Load (Pa) vs Purlin Space for various widths (f max=50mm. 1.97″ in)

Purlin Space (mm, in)	Sheet Width Units (Pa, psf)				
	600mm 23.62″	800mm, 31.5″	980mm, 38.58″	1050mm, 41.34″	1200mm, 47.25″
800mm, 31.50″ in	4650Pa, 97psf	4400Pa, 92psf	4200Pa, 88psf	4000Pa, 84psf	3600Pa, 75psf
900mm, 35.43″ in	3800Pa, 79psf	3700Pa, 77psf	3500Pa, 73psf	3200Ps, 67psf	2800Pa, 58psf
1000mm, 39.37″ in	3250Pa, 68psf	3000Pa, 63psf	2800Pa, 58psf	2500Pa, 52psf	2200Pa, 46psf
1250mm, 49.21″ in	2150Pa, 45psf	1950Pa, 41psf	1700Pa, 36pdf	1500Pa, 31psf	1300Pa, 27psf
1500mm, 59.06″ in	1400Pa, 29psf	1150Pa, 24psf	950Pa, 20psf	800Pa, 17psf	700Pa, 15psf
1750mm, 68.90″ in	1000Pa, 21psf	750Pa, 16psf	650Pa, 14psf	520Pa, 11psf	420Pa, 8.8psf
2000mm, 78.74″ in	850Pa, 18psf	600Pa, 13psf	480Pa, 10psf	400Pa, 8.4psf	300Pa, 6.3psf
2400mm, 94.49″ in	750Pa, 16psf	470Pa, 9.8psf	350Pa, 7.3psf	280Pa, 5.8psf	200Pa, 4.2psf

Maximum negative (wind) load (2 sides simply supported)

	700Pa, 15psf	385Pa, 7.6psf	200Pa, 4.2psf	160Pa, 3.3psf	100Pa, 2.1psf

Load vs Purlin Space PCSS 8mm. 0.31″ in, 1500 g/m², 0.31 lbs/ft²



WINDLOAD TABLES

POLYGAL STANDARD SHEET (PCSS)
10mm. 0.39″ in, 1700 g/m², 0.35 lbs/ft²

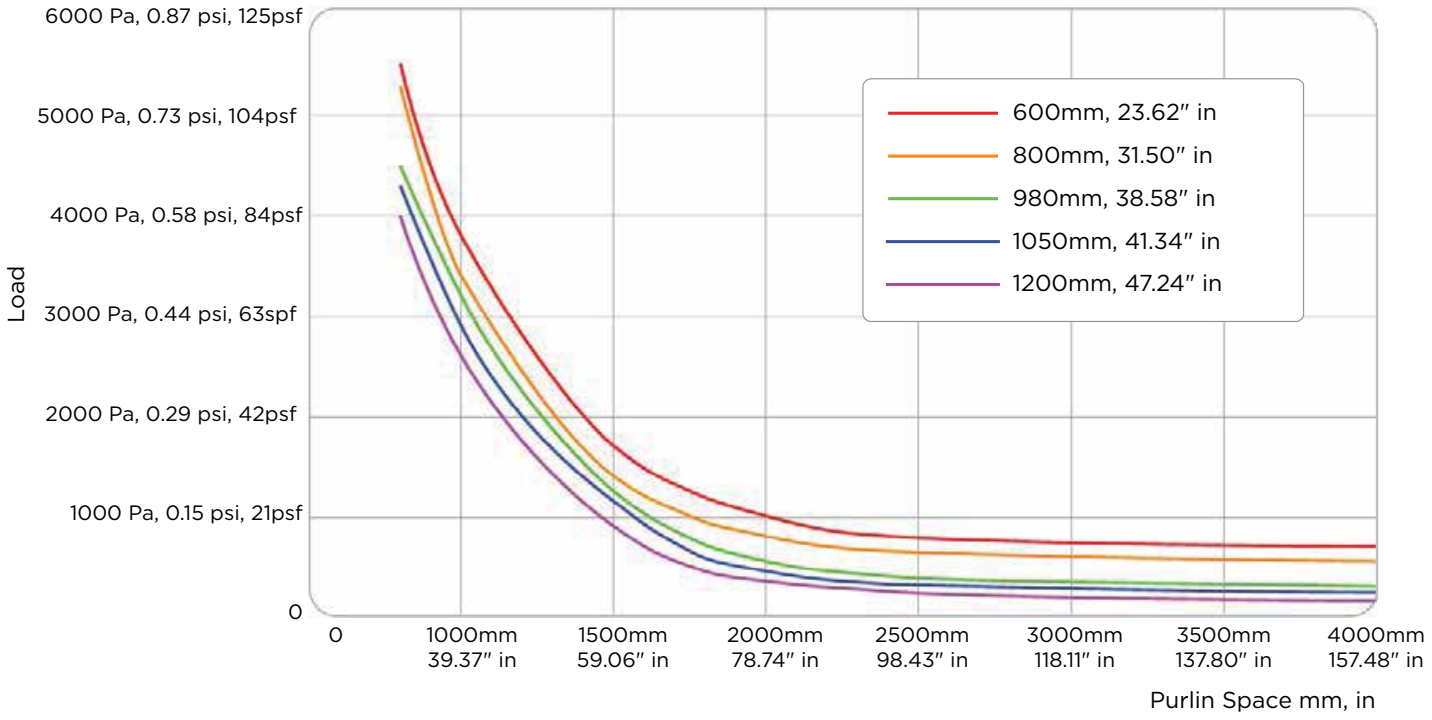
Positive Load (Pa) vs Purlin Space for various widths (f max=50mm. 1.97″ in)

Purlin Space (mm, in)	Sheet Width Units (Pa, psf)				
	600mm 23.62″	800mm, 31.5″	980mm, 38.58″	1050mm, 41.34″	1200mm, 47.25″
800mm, 31.50” in	5500Pa, 115psf	5300Pa, 111psf	4500Pa, 94psf	4300Pa, 90pdf	4000Pa, 84psf
900mm, 35.43” in	4500Pa, 94psf	4250Pa, 89psf	3800Pa, 79psf	3600Pa, 75psf	3250Pa, 68psf
1000mm, 39.37” in	3800Pa, 79psf	3400Pa, 71psf	3200Pa, 67psf	2900Pa, 61psf	2600Pa, 54psf
1250mm, 49.21” in	2600Pa, 54psf	2200Pa, 46psf	2050Pa, 43psf	1800Pa, 38psf	1500Pa, 31psf
1500mm, 59.06” in	1700Pa, 36psf	1400Pa, 29psf	1250Pa, 26psf	1150Pa, 24psf	900Pa, 19psf
1750mm, 68.90” in	1250Pa, 26psf	1000Pa, 21psf	780Pa, 16psf	650Pa, 14psf	500Pa, 10psf
2000mm, 78.74” in	1000Pa, 21psf	800Pa, 17psf	550Pa, 11psf	450Pa, 9.4psf	350Pa, 7.3psf
2400mm, 94.49” in	800Pa, 17psf	650Pa, 14psf	400Pa, 8.4psf	320Pa, 6.7psf	250Pa, 5.2psf

Maximum negative (wind) load (2 sides simply supported)

	700Pa, 15psf	550Pa, 11psf	300Pa, 6.3psf	240Pa, 5.0psf	160Pa, 3.3psf

Load vs Purlin Space PCSS 10mm. 0.39″ in, 1700 g/m², 0.35 lbs/ft²



POLYGAL STANDARD SHEET (PCSS)
16mm. 0.63″ in, 2700 g/m², 0.55 lbs/ft²

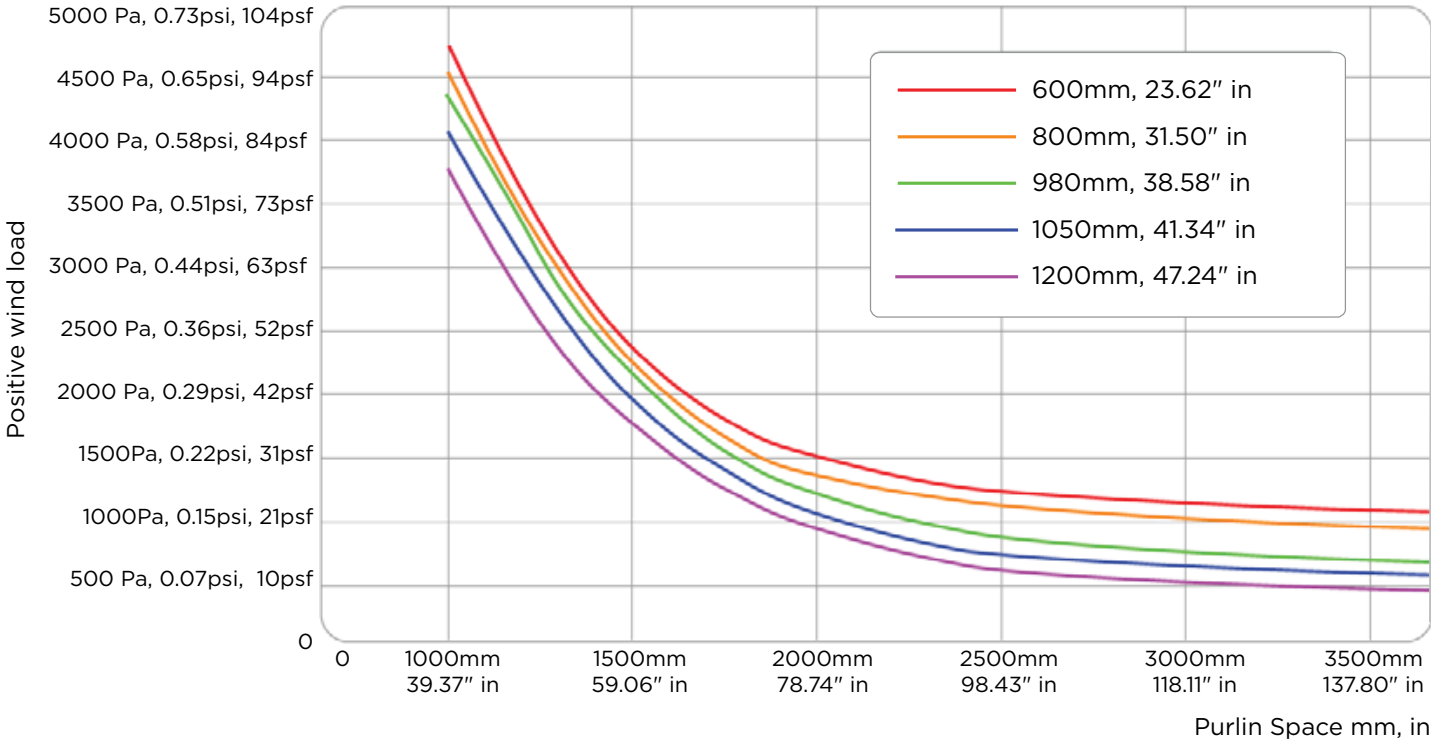
Positive Load (Pa) vs Purlin Space for various widths (f max=50mm. 1.97″ in)

Purlin Space (mm, in)	Sheet Width Units (Pa, psf)				
	600mm 23.62″	800mm, 31.5″	980mm, 38.58″	1050mm, 41.34″	1200mm, 47.25″
1000mm, 39.37″ in	4700Pa, 98psf	4500Pa, 94psf	4300Pa, 90psf	4000Pa, 84psf	3700Pa, 77psf
1250mm, 49.21″ in	3300Pa, 79psf	3100Pa, 65psf	3100Pa, 65psf	2800Pa, 58psf	2500Pa, 52psf
1500mm, 59.06″ in	2300Pa, 48psf	2200Pa, 46psf	2100Pa, 44psf	1900Pa, 40psf	1700Pa, 36psf
1750mm, 68.90″ in	1750Pa, 37psf	1600Pa, 33psf	1500Pa, 31psf	1350Pa, 28psf	1200Pa, 25psf
2000mm, 78.74″ in	1450Pa, 30psf	1300Pa, 27psf	1150Pa, 24psf	1000Pa, 21psf	900Pa, 19psf
2400mm, 94.49″ in	1200Pa, 25psf	1080Pa, 23psf	850Pa, 18psf	700Pa, 15psf	600Pa, 13psf

Maximum negative (wind) load (2 sides simply supported)

	1000Ps, 21psf	870Pa, 18psf	600Pa, 13psf	500Pa, 10psf	390Pa, 8.1psf

LOAD VS PURLIN SPACE PCSS 16mm. 0.63″ in, 2700 g/m², 0.55 lbs/ft²



WINDLOAD TABLES

TITAN SKY (TSK)
10mm. 0.39″ in, 1750 g/m², 0.36 lbs/ft²

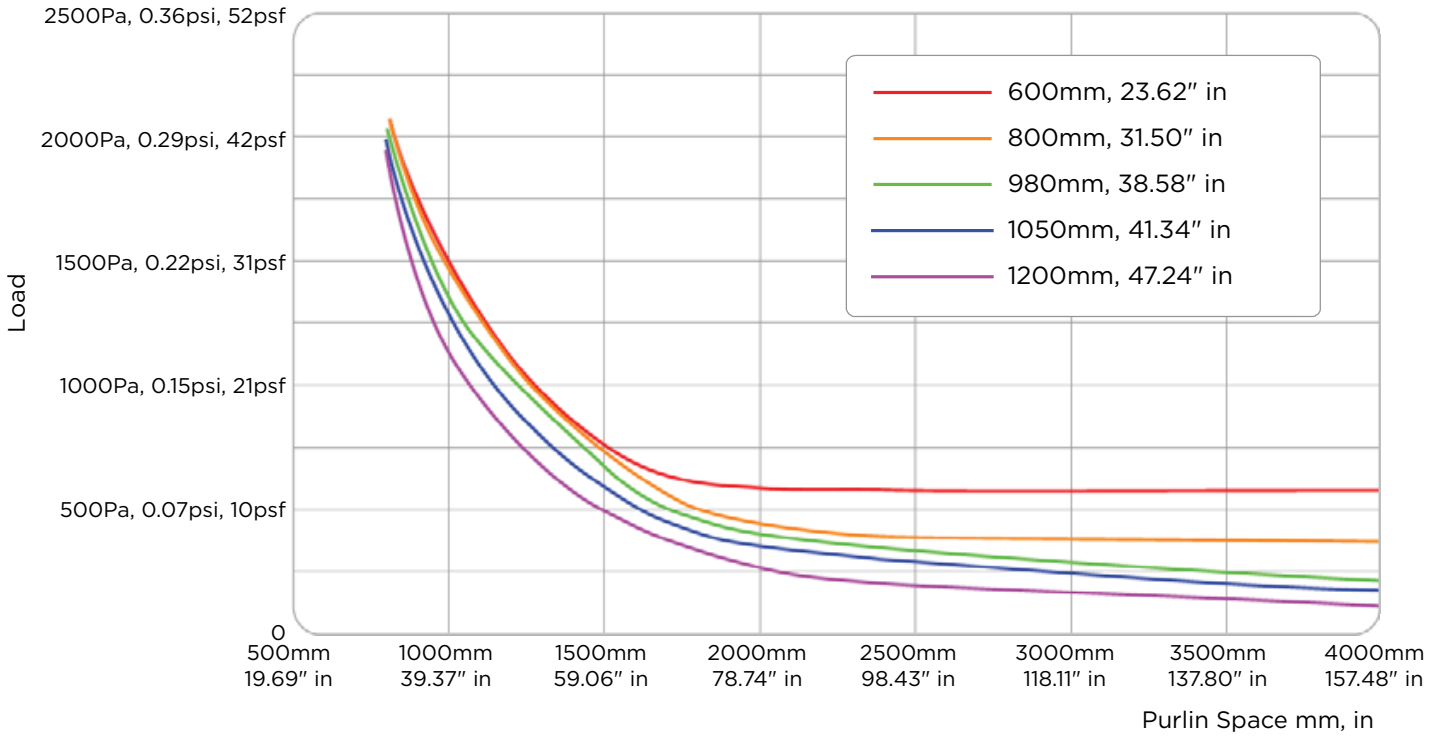
Positive Load (Pa) vs Purlin Space for various widths (f max=50mm. 1.97″ in)

Purlin Space (mm, in)	Sheet Width Units (Pa, psf)				
	600mm 23.62″	800mm, 31.5″	980mm, 38.58″	1050mm, 41.34″	1200mm, 47.25″
800mm, 31.50″ in	2070Pa, 43psf	2050Pa, 43psf	2030Pa, 42psf	2000Pa, 42psf	1950Pa, 41psf
900mm, 35.43″ in	1650Pa, 34psf	1700Pa, 36psf	1650Pa, 34psf	1650Pa, 34psf	1500Pa, 31psf
1000mm, 39.37″ in	1300Pa, 27psf	1400Pa, 29psf	1350Pa, 28psf	1250Pa 26psf	1150Pa, 24psf
1250mm, 49.21″ in	900Pa, 19psf	980Pa, 20psf	930Pa, 19psf	850Pa, 18psf	740Pa, 15psf
1500mm, 59.06″ in	700Pa, 15psf	670Pa, 14psf	640Pa, 13psf	590Pa, 12psf	490Pa, 10psf
1750mm, 68.90″ in	630Pa, 13psf	500Pa, 10psf	470Pa, 9.8psf	430Pa, 9.0psf	350Pa, 7.3psf
2000mm, 78.74″ in	600Pa, 13psf	420Pa, 8.8psf	390Pa, 8.1psf	360Pa, 7.5psf	270Pa, 5.6psf
2400mm, 94.49″ in	580Pa, 12psf	370Pa, 7.7psf	330Pa, 6.9psf	300Pa, 6.3psf	200Pa, 4.2psf

Maximum negative (wind) load (2 sides simply supported)

	560Pa, 12psf	340Pa, 7.1psf	210Pa, 4.4psf	160Pa, 3.3psf	100Pa, 2.1psf

LOAD VS PURLIN SPACE TITAN SKY (TSK) 10mm. 0.39″ in, 1750 g/m², 0.36 lbs/ft²



TITAN SKY (TSK)
16mm. 0.63″ in, 2500 g/m², 0.51 lbs/ft²

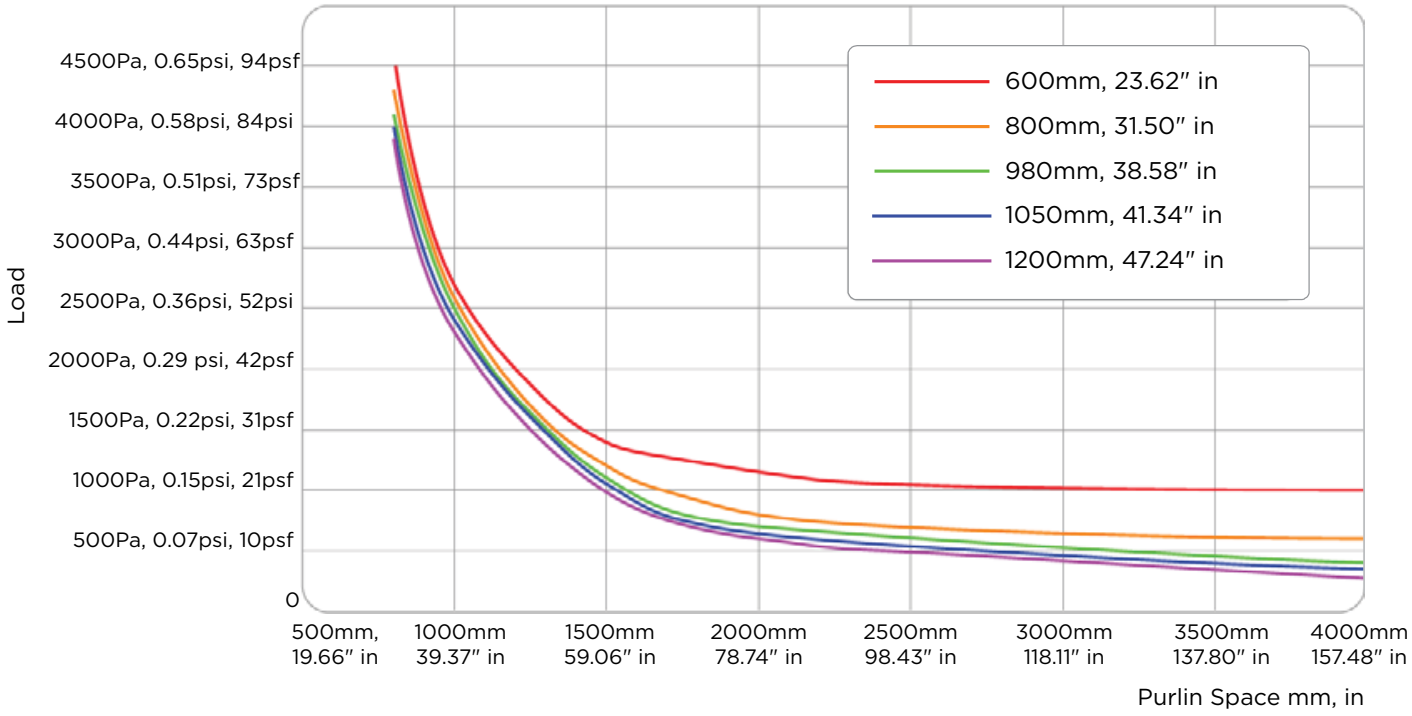
Positive Load (Pa) vs Purlin Space for various widths (f max=50mm. 1.97″ in)

Purlin Space (mm, in)	Sheet Width Units (Pa, psf)				
	600mm 23.62″	800mm, 31.5″	980mm, 38.58″	1050mm, 41.34″	1200mm, 47.25″
800mm, 31.50″ in	4500Pa, 94psf	4300Pa, 90psf	4100Pa, 86psf	4000Pa, 84psf	3900Pa, 81psf
900mm, 35.43″ in	3250Pa, 68psf	3150Pa, 66psf	3000Pa, 63psf	2900Pa, 61psf	2800Pa, 58psf
1000mm, 39.37″ in	2650Pa, 55psf	2580Pa, 54psf	2500Pa, 52psf	2400Pa, 50psf	2300Pa, 48psf
1250mm, 49.21″ in	1850Pa, 39psf	1690Pa, 35psf	1650Pa, 34psf	1600Pa, 33psf	1500Pa, 31psf
1500mm, 59.06″ in	1400Pa, 29psf	1200Pa, 25psf	1100Pa, 23psf	1050Pa, 22psf	1000Pa, 21psf
1750mm, 68.90″ in	1250Pa, 26psf	950Pa, 20psf	800Pa, 17psf	750Pa, 16psf	700Pa, 15psf
2000mm, 78.74″ in	1150Pa, 24psf	800Pa, 17psf	700Pa, 15psf	650Pa, 14psf	600Pa, 13psf
2400mm, 94.49″ in	1050Pa, 22psf	700Pa, 15psf	600Pa, 13psf	550Pa, 11psf	500Pa, 10psf

Maximum negative (wind) load (2 sides simply supported)

	1000Pa, 21psf	600Pa, 13psf	400Pa, 8.4psf	350Pa, 7.3psf	270Pa, 5.6psf

Load vs Purlin Space TITAN SKY (TSK) 16mm. 0.63″ in, 2500 g/m², 0.51 lbs/ft²



WINDLOAD TABLES

SELECTOGAL (RFX) STW
16mm. 0.63″ in, 3000 g/m², 0.61 lbs/ft²

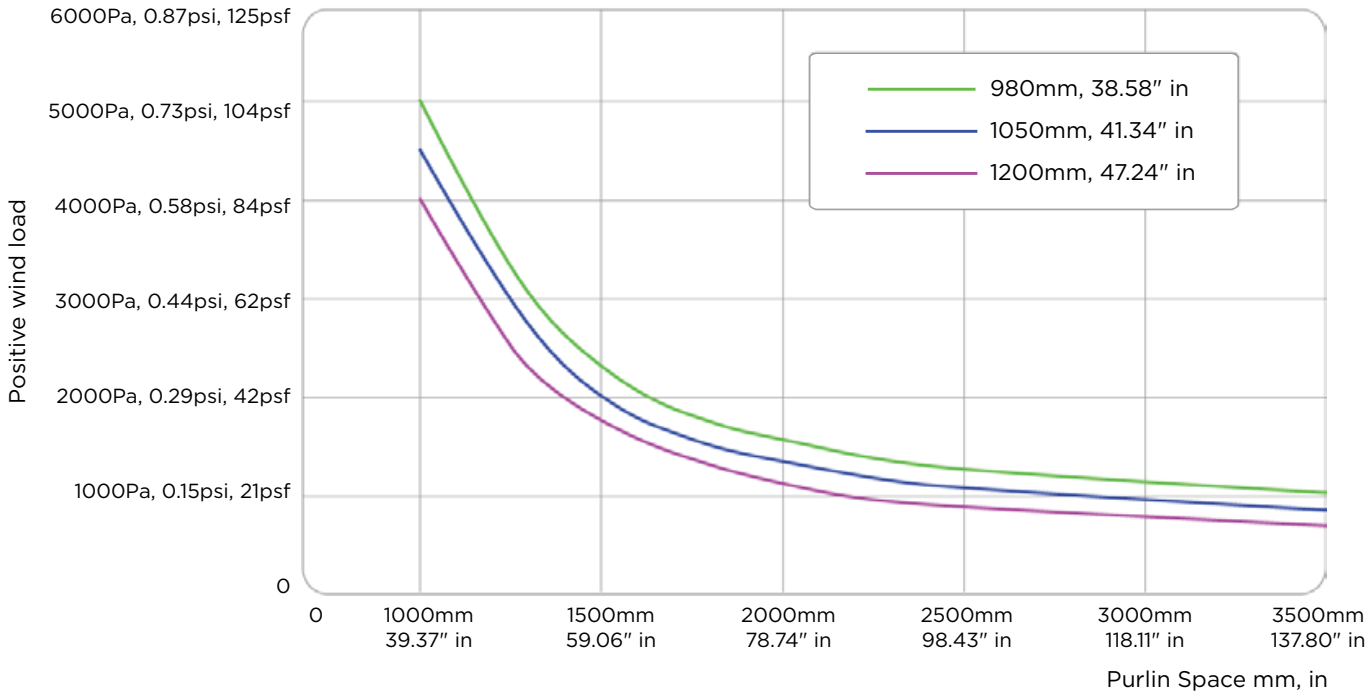
Positive Load (Pa) vs Purlin Space for various widths (f max=50mm. 1.97″ in)

Purlin Space (mm, in)	Sheet Width Units (Pa, psf)		
	980mm, 38.58″	1050mm, 41.34″	1200mm, 47.25″
1000mm, 39.37″ in	5000Pa, 104psf	4500Pa, 94psf	4000Pa, 84psf
1250mm, 49.21″ in	3300Pa, 60psf	2950Pa, 62psf	2500Pa, 52psf
1500mm, 59.06″ in	2300Pa, 48psf	2000Pa, 42psf	1760Pa, 37psf
1750mm, 68.90″ in	1800Pa, 38psf	1560Pa, 33psf	1350Pa, 28psf
2000mm, 78.74″ in	1550Pa, 32psf	1350Pa, 28psf	1120Pa, 23psf
2400mm, 94.49″ in	1300Pa, 27psf	1100Pa, 23psf	900Pa, 19psf

Maximum negative (wind) load (2 sides simply supported)

	900Pa, 19psf	750Pa, 16psf	600Pa, 13psf

Load vs Purlin Space SELECTOGAL (RFX) STW 16mm, 0.63″ in, 3000 g/m², 0.61 lbs/ft²



THERMOGAL (TRM)
25mm. 0.98″ in, 3500 g/m², 0.72 lbs/ft²

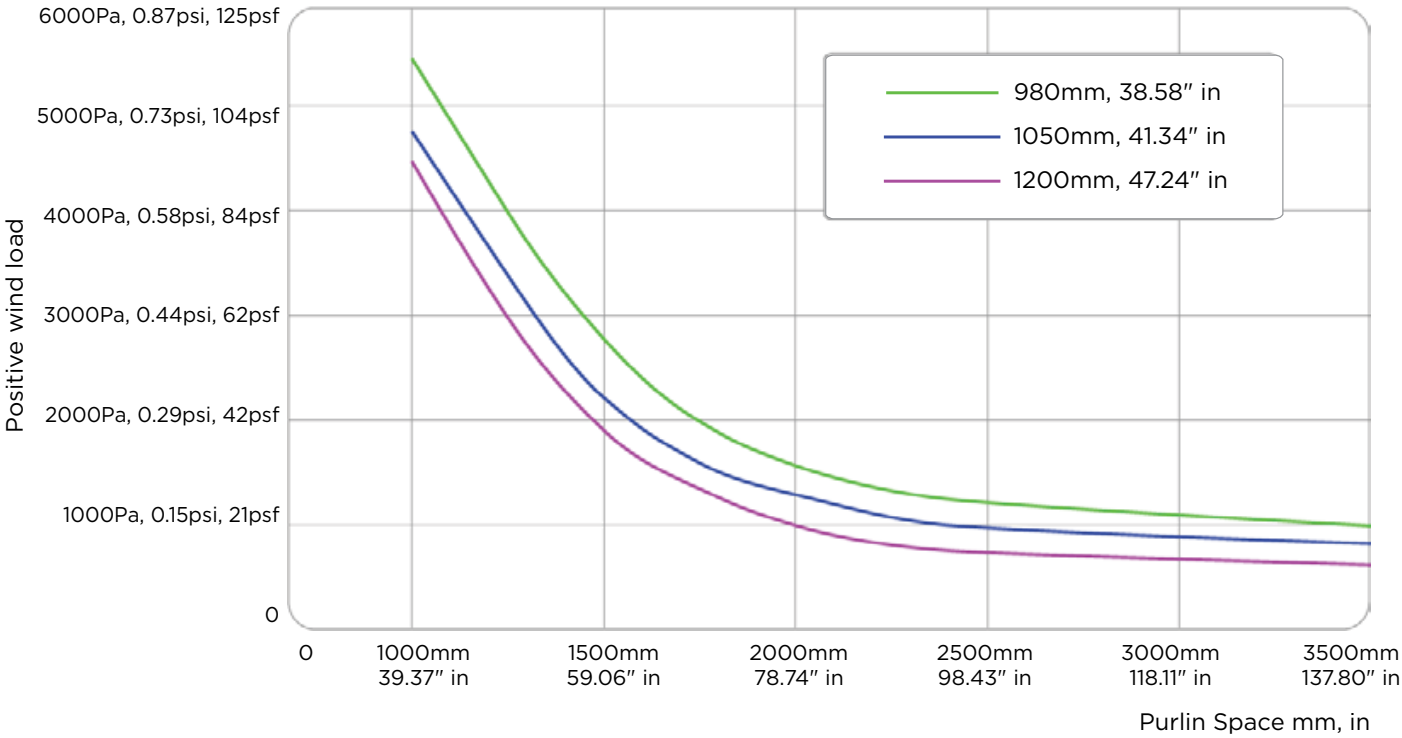
Positive Load (Pa) vs Purlin Space for various widths (f max=50mm. 1.97″ in)

Purlin Space (mm, in)	Sheet Width Units (Pa, psf)		
	980mm, 38.58″	**1050mm, 41.34″**	**1200mm, 47.25″**
1000mm, 39.37″ in	5500Pa, 115psf	4800Pa, 100psf	4500Pa, 94psf
1250mm, 49.21″ in	4000Pa, 84psf	3400Pa, 71psf	3000Pa, 63psf
1500mm, 59.06″ in	2800Pa, 58psf	2200Pa, 46psf	1900Pa, 40psf
1750mm, 68.90″ in	2000Pa, 42psf	1600Pa, 33psf	1350Pa, 28psf
2000mm, 78.74″ in	1600Pa, 33psf	1300Pa, 27psf	1000Pa, 21psf
2400mm, 94.49″ in	1250Pa, 26psf	1000Pa, 21psf	750Pa, 16psf

Maximum negative (wind) load (2 sides simply supported)

	880Pa, 17psf	700Pa, 15psf	550Pa, 11psf

Load vs Purlin Space THERMOGAL (TRM) 25mm. 0.98″ in, 3500 g/m², 0.72 lbs/ft



WINDLOAD TABLES

THERMOGAL (TRM)
32mm. 1.26″ in, 3800 g/m², 0.78 lbs/ft²

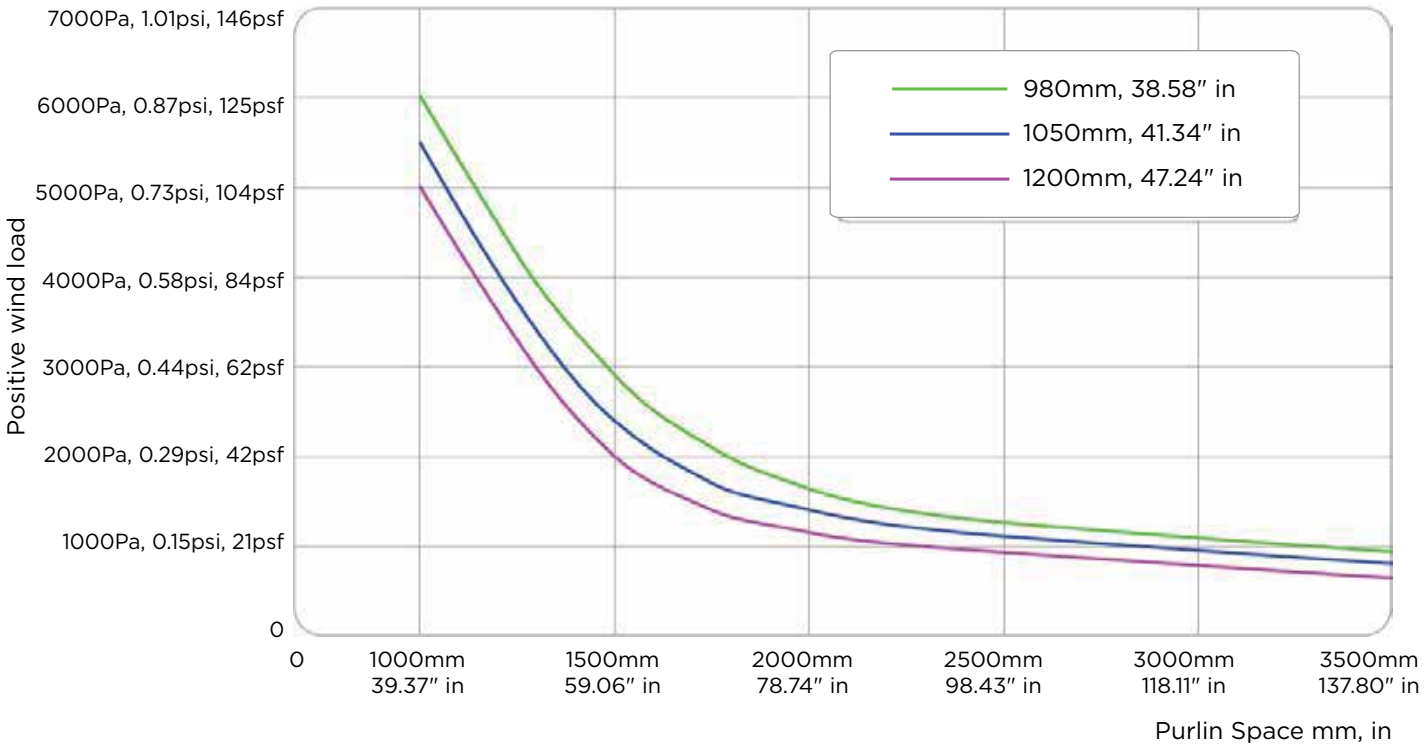
Positive Load (Pa) vs Purlin Space for various widths (f max=50mm. 1.97″in)

Purlin Space (mm, in)	Sheet Width Units (Pa, psf)		
	980mm, 38.58″	1050mm, 41.34″	1200mm, 47.25″
1000mm, 39.37″ in	6000Pa, 125psf	5500Pa, 115psf	5000Pa, 104psf
1250mm, 49.21″ in	4250Pa, 89psf	3700Pa, 77psf	3300Pa, 69psf
1500mm, 59.06″ in	2900Pa, 61psf	2400Pa, 50psf	2000Pa, 42psf
1750mm, 68.90″ in	2100Pa, 44psf	1700Pa, 36psf	1400Pa, 29psf
2000mm, 78.74″ in	1650Pa, 34psf	1400Pa, 29psf	1150Pa, 24psf
2400mm, 94.49″ in	1300Pa, 27psf	1140Pa, 24psf	950Pa, 20psf

Maximum negative (wind) load (2 sides simply supported)

	780Pa, 16psf	680Pa, 14psf	520Pa, 11psf

Load vs Purlin Space THERMOGAL (TRM) 32mm. 1.26″ in, 3800 g/m², 0.78 lbs/ft²



THERMOGAL SUPER (TRMS)
32mm. 1.26″ in, 3800 g/m², 0.78 lbs/ft²

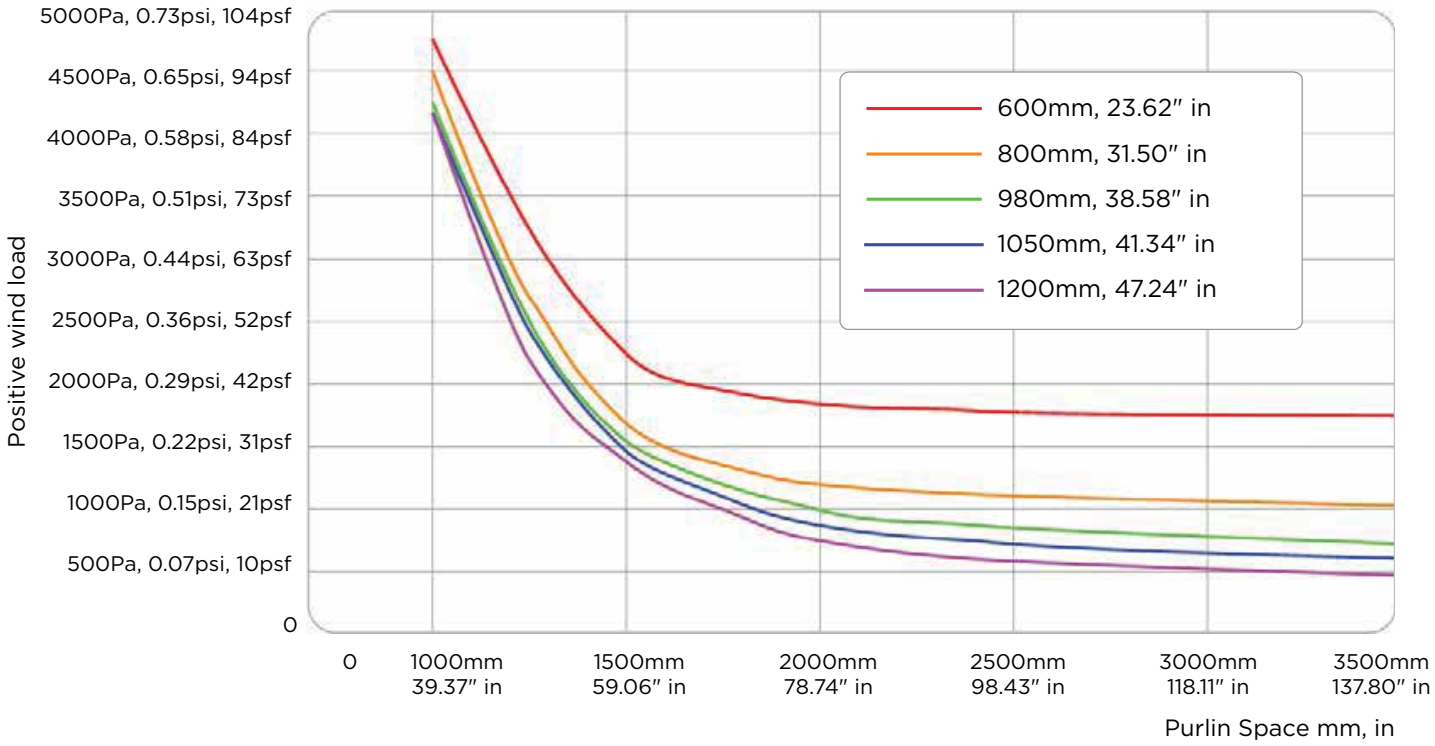
Positive Load (Pa) vs Purlin Space for various widths (f max=50mm. 1.97″ in)

Purlin Space (mm, in)	Sheet Width Units (Pa, psf)				
	600mm 23.62″	800mm, 31.5″	980mm, 38.58″	1050mm, 41.34″	1200mm, 47.25″
1000mm, 39.37″ in	4750Pa, 99psf	4500Pa, 94psf	4250Pa, 89psf	4200Pa, 88psf	4200Pa, 88psf
1250mm, 49.21″ in	3250Pa, 68psf	2700Pa, 56psf	2500Pa, 52psf	2450Pa, 50psf	2200Pa, 46psf
1500mm, 59.06″ in	2250Pa, 47psf	1700Pa, 34psf	1550Pa, 32psf	1475Pa, 31psf	1400Pa, 29psf
1750mm, 68.90″in	1950Pa, 41psf	1350Pa, 28psf	1200Pa, 25psf	1100Pa, 23psf	1000Pa, 21psf
2000mm, 78.74″ in	1850Pa, 39psf	1200Pa, 25psf	1000a, 21psf	875Pa, 18psf	750Pa, 16psf
2400mm, 94.49″ in	1800Pa, 38psf	1125Pa, 23psf	870Pa, 18psf	750Pa, 16psf	600Pa, 13psf

Maximum negative (wind) load (2 sides simply supported)

	1750Pa, 37psf	990Pa, 21psf	660Pa, 14psf	570Pa, 12psf	440Pa, 9.2psf

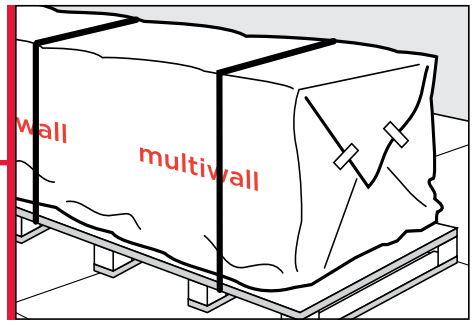
Load vs Purlin Space Thermogal Super (TRMS) 32mm. 1.26″ in, 3800 g/m², 0.78 lbs/ft²



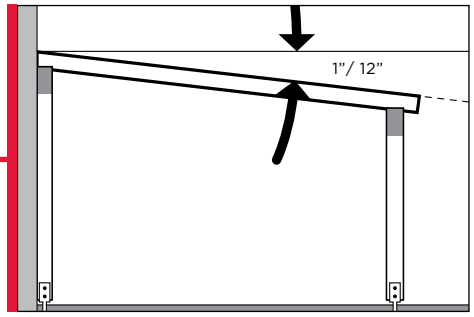
INSTALLATION



ROOF INSTALLATION

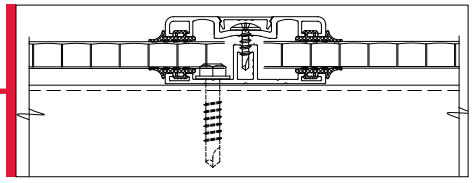


1) Sheet storage recommendation: Store in dry, dark & well ventilate area, with NO EXPOSURE to sunlight, wind, dirt or hard objects to prevent damage. Outdoors sheets should be covered with an opaque material that provides protection from the sun. Storage of sheets exposed to sunlight will cause the protective polyethylene film to bake onto the sheet, and it will not be able to be removed.

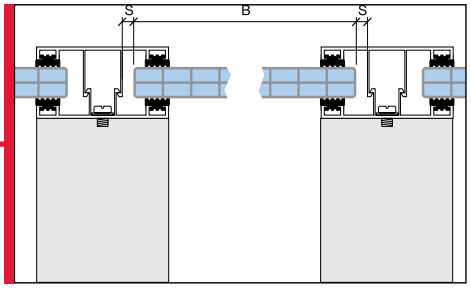


2) We recommend 1" for 12" (25.4 for 305mm) of slope to allow rainwater runoff. This has the added benefit of maintaining seal integrity and the glazing is naturally cleaned by rainwater. The chosen supporting structure must be non- warping.

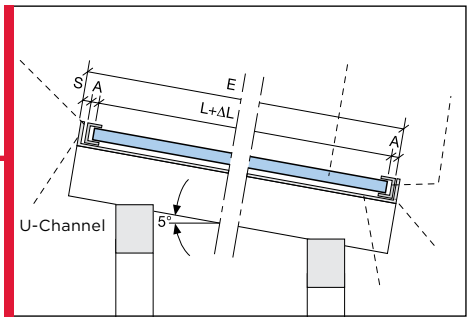
Please note:* *The flutes must run in the direction of the slope.



3) Place the sheets with the UV protected side toward the sun. Install the base section of the connecting profiles to the rafter.The glazing bar edge seals against the rafter and the sheet.



4) The sheet width (B) is calculated as the total of the rafter spacing, glazing bar dimensions, and sheet expansion allowance. (1/30"/ foot , 0.838mm/0.3m for polycarbonate).

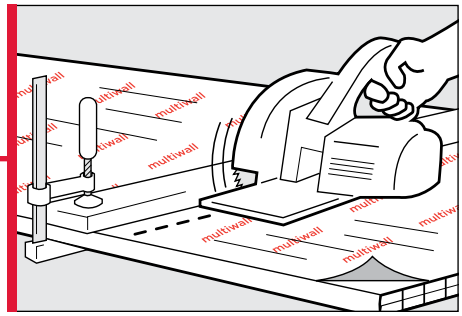


5) The sheet length (L) is defined as:
E = the span
A = sheet edge engagement
S = allowance for expansion
DELTA L = sheet lengths available for sale

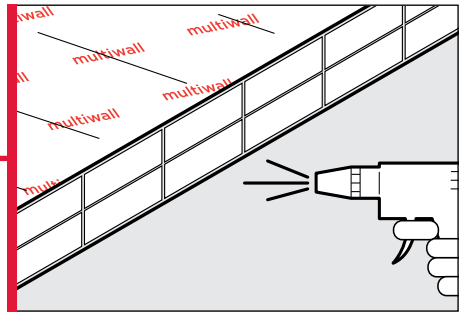
CALCULATION EXAMPLE
Sheet size: 4′ x 8′
Expected high temperature: 100°F, 38°C
Expected low temperature: -10°F, -23°C
Temperature difference: delta T. 110°F, 43°C
Expansion in width: a. delta T.
W = 0.0000375 x 110°F x 48" = 0.198", 5.0mm
Expansion in length: a. delta T.
L = 0.0000375 x 110°F x 96" = 0.396", 10mm

INSTALLATION

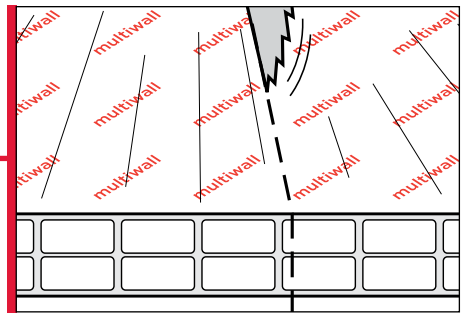
ROOF INSTALLATION *CONTINUED*



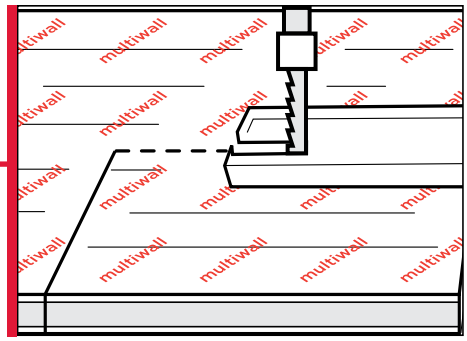
6) Mark dimensions on the masking which should not be removed until completing all fabrication work and after installation. Cut sheets using a conventional circular saw or table saw equipped with a carbide tip blade. For more information, refer to the :
TUFFAK Polycarbonate Fabrication Guide.



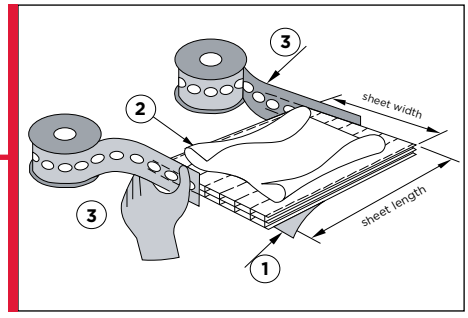
7) Plastic chips and dust that collect in the channels, as a result of cutting, can be blown out with clean, compressed air.



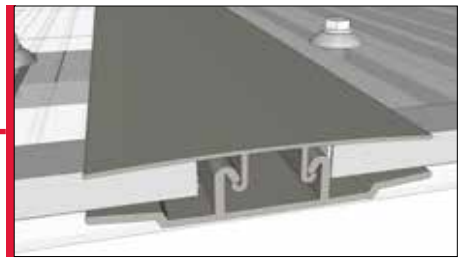
8) Where the sheet needs to be trimmed, cut as close to the next rib to ensure a rigid clamping profile.



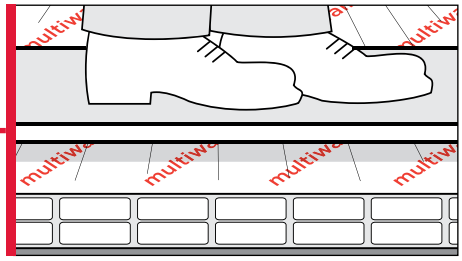
9) Corner cutouts are often required (e.g. for pipes, ventilation, etc.). Use a jig saw (without pendulum stroke). Drilling can be performed with twist drills (point angle at 110°-130°), conical or step drills.



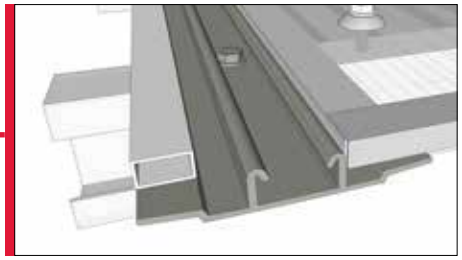
10) AntiDUST™ tape is a non-woven system used for sealing the top and bottom edges of MultiWall sheets. It is specifically designed to stop mold, algae, insects and dust from accumulating within multiwall sheets. Advantages of AntiDUST tape over competitive products: Ease of application, proper drainage of condensation, maintains clarity, durable and long life of tape materials.



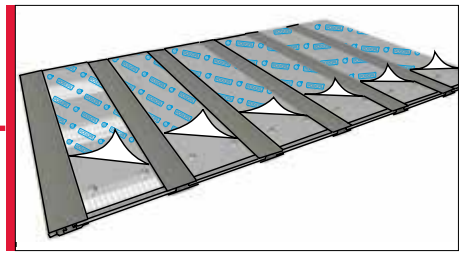
11) Position the connecting profile cap in place with a shock absorbing support under the sheet. Use a rubber mallet to connect it to the base. For Aluminum Glazing Systems, anchor the cap profile to the base with approved screws.



12) Avoid walking on the sheets. If necessary, place a thick plank across the sheet.



13) Slide the base connection profile underneath the sheet edge. This profile is fastened in the center with screws. Depending on the glazing system, a cover section is then clipped on.



14) Finally, remove the masking from the MultiWall sheets. The masking should not be exposed to weathering for more than 24 hours.

MULTIWALL COMPATIBLE PRODUCTS

RECOMMENDED SEALANTS, GASKETS, AND TAPES

Product Type	Product	Manufacturer
Silicone	DOW 775, DOW 995, DOW 999	Dow Corning; Midland, WI
Silicone	SLIPRUF	Momentive Performance Materials; Waterford, NY
Gasket	EPDM (60, 70D)	Tremco; Columbus, OH

Many other glazing materials are commercially available which are compatible with MultiWall Polycarbonate Sheet. Please contact those manufacturers for their recommended products.

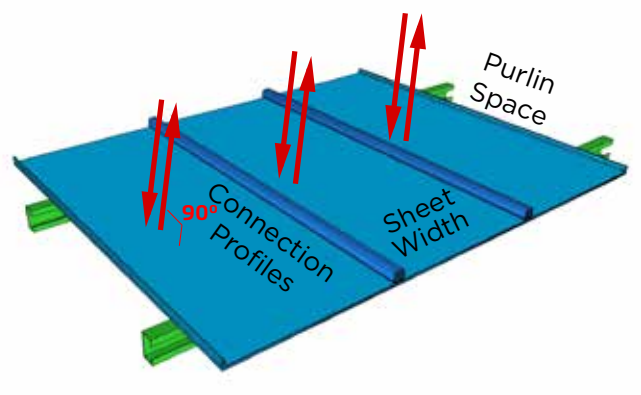
TOPGAL INSTALLATION



TOPGAL SNOW AND WINDLOAD TABLE

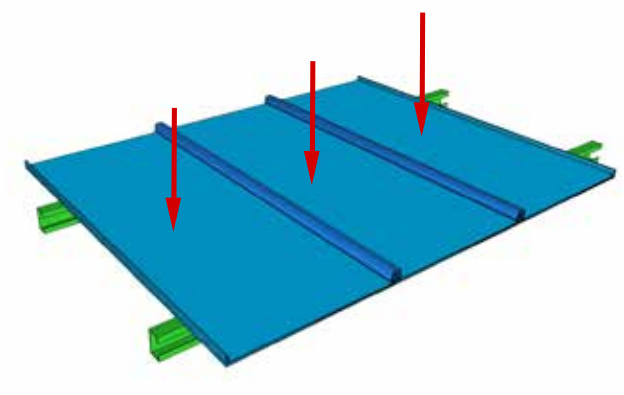
WIND LOAD

Perpendicular to the plane of the roof



GRAVITY LOAD

Perpendicular to the sea surface



The tables show recommended span between purlins (intermediate fields) in flat structures depending on type of various sheets and loads, the expected deflection, the buckling moment, and the edge translations.

RECOMMENDED SPAN BETWEEN PURLINS IN FLAT STRUCTURES (m, ft)

Thk/ Width/ mm, in	Direction	750Pa, 16 psf	1000Pa 20 psf	1250Pa 26 psf	1500Pa 32 psf	1750Pa 36 psf	2000Pa 42 psf
8/600 0.315/23.6	Wind load	1.1, 3.6	1, 3.3	0.85, 2.8	0.7, 2.3	0.6, 2.0	0.5, 1.6
	Gravity load	1.4, 4.6	1.3, 4.3	1.2, 3.9	1.1, 3.6	1, 3.3	0.9, 3.0
10/600 0.394/23.6	Wind load	1.3, 4.3	1.15, 3.8	0.95, 3.1	0.85, 2.8	0.8, 2.6	0.7, 2.3
	Gravity load	1.5, 4.9	1.4, 4.6	1.3, 4.3	1.2, 3.9	1.1, 3.6	1, 3.3
16/600 0.630/23.6	Wind load	1.4, 4.6	1.25, 4.1	1.1, 3.6	1, 3.3	0.9, 3.0	0.8, 2.6
	Gravity load	1.65, 5.4	1.6, 5.2	1.55, 5.1	1.5, 4.9	1.45, 4.8	1.4, 4.6
16/1000 0.630/39.4	Wind load	0.9, 3.0	0.6, 2.0				
	Gravity load	1.5, 4.9	1.4, 4.6	1.35, 4.4	1.3, 4.2	1.25, 4.1	1.2, 3.9
20/1000 0.787/39.4	Wind load	1.2, 3.9	0.8, 2.6	0.6, 2.8			
	Gravity load	1.6, 5.4	1.5, 4.9	1.45, 4.8	1.4, 4.6	1.35, 4.4	1.3, 4.3

- Pa - Pascal. It is a measure of force per unit area, defined as one newton per square meter. Allowed deflection of ≤50 mm. ≤1.97"in- The calculations were made for Stainless Steel Fasteners

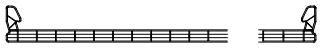
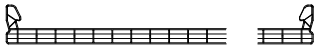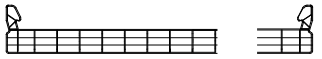
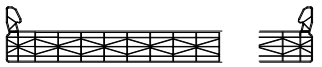
- For more specific load calculation please contact PLASKOLITE Technical Support

TOPGAL INSTALLATION

Sheet Thickness	Color	Pressure Direction	6mm, 8mm, 10mm/ 0.236, 0.315, 0.395 Light Transmission%	16mm, 20mm/ 0.630, 0.787 Light Transmission%
Clear –	Clr- standard		65	49
Opal –	ICE standard		30	20
Bronze -	BRZ standard		20	20
Blue –	BLU standard		30	20
Polyshade Gray –	SLV standard		12	12



TECHNICAL SPECIFICATION OF TOPGAL SYSTEM

Structure	Thickness / Width, mm, in	Weight / Dead Load*, g/m², lbs/ft2	K-Value, W/m² ·°C Btu (IT)/hour/ft/°F	Min. Radius for Cold Bending*, m, ft
	6/600, 0.236/23.6	1600/2000, 0.33/0.41	3.1, 0.55	1.2, 3.9
	8/600, 0.315/23.6	1900/2200, 0.39/0.45	2.4, 0.42	1.8, 5.9
	10/600, 0.394/23.6	2200/2500, 0.45/0.51	2.1, 0.37	2.0, 6.6
	16/600, 0.630/23.6	3000/3300, 0.61/0.68	1.9, 0.33	3.2, 10.5
	16/998, 0.630/39.3	3000/3300, 0.61/0.68	1.8, 0.32	3.2, 10.5
	20/998, 0.787/39.3	3200/3500, 0.66/0.72	1.5, 0.26	4.0, 13.1

Standard Sheet Lengths: Max length 39′

Service Temperature Range: -40°C–+120°C (-40°F to +248°F) for short time service, -25°C to +85°C (-13°F to 185°F) for prolonged service

Coefficient of linear expansion: $6.65 \cdot 10^{-5}$ cm/cm•°C, $3.75 \cdot 10^{-5}$ in/in•°F

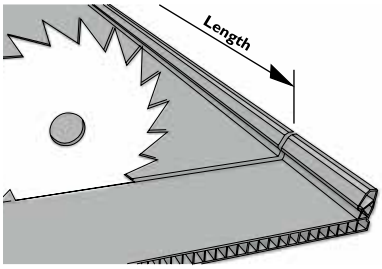
* **Dead Load is a weight of 1m² of TOPGAL system, includes installation accessories**

COLOR DESCRIPTION AND LIGHT TRANSMISSION CHART

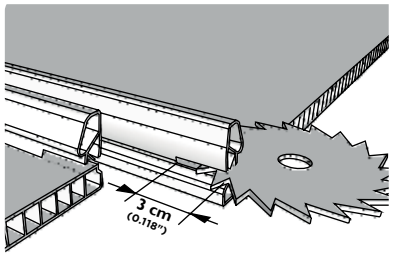
Color		6mm, 8mm, 10mm/ 0.236, 0.315, 0.395 Light Transmission%	16mm, 20mm/ 0.630, 0.787 Light Transmission%
Clear –	Clr- standard	65	49
Opal –	ICE standard	30	20
Bronze -	BRZ standard	20	20
Blue –	BLU standard	30	20
Polyshade Gray –	SLV standard	12	12

TOPGAL INSTALLATION

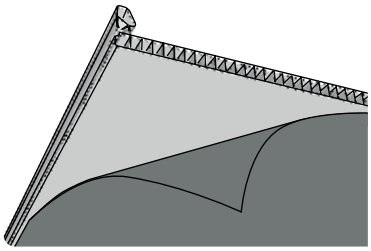
TOPGAL INSTALLATION



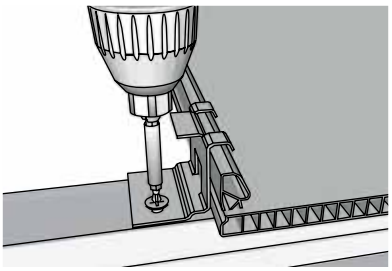
1. Cut the size



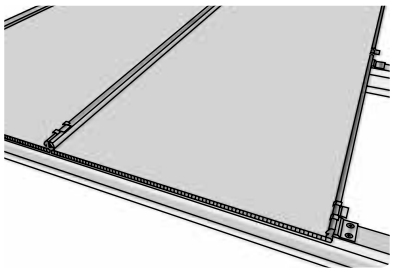
2. Slit for edge profile



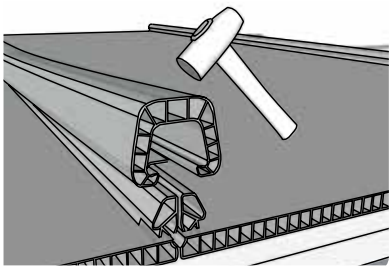
3. Remove inner film



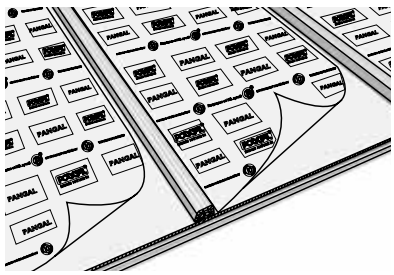
4. Install fastener



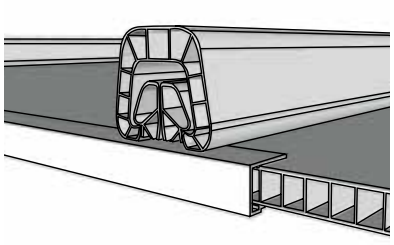
5. Place next sheet



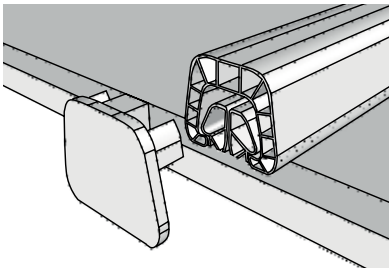
6. Install connector



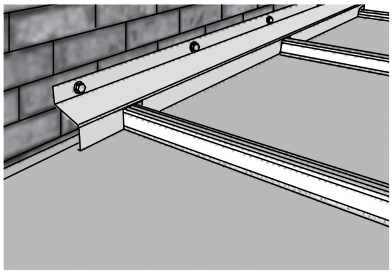
7. Remove outer film



8. Install edge profile



9. Install end cap



10. Complete installation

IMPORTANT NOTE ***For best results always use PLASKOLITE accessories, designed especially for use with TOPGAL SYSTEM. Use of materials not recommended by the manufacturer may lead to damage of MultiWall sheets. Such damage is not covered by the PLASKOLITE MultiWall Limited Product Warranty.***

PLEASE NOTE ***It is not recommended to drill holes in the sheet. Rather the use of aluminum or polycarbonate profiles to affix the sheets to the structure is recommended.***

DRILLING RECOMMENDATIONS

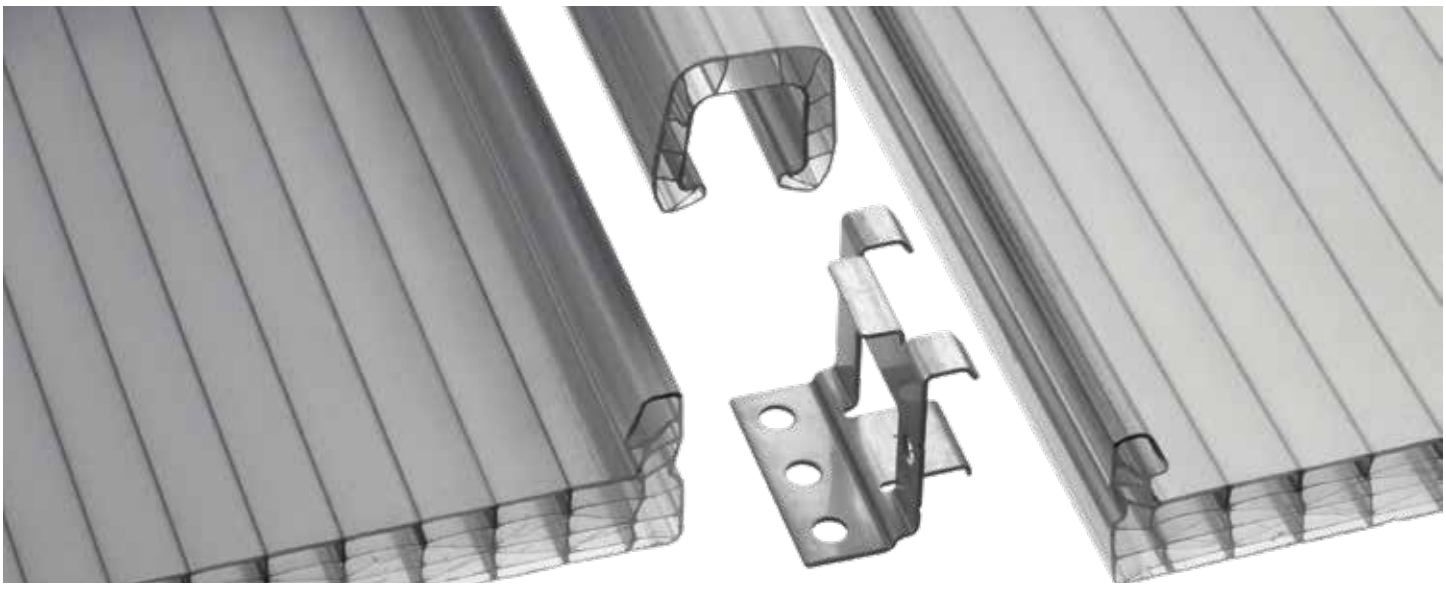
	Hole diameter (mm)	Speed (rev/min)
Clearance angle	20° - 30°	327
Rake angle	15°	0.5°
Cutting speed	180 - 250 m/min	200 - 250 m/min
Blade or hand speed	1800 - 2400 m/min	-
Tooth spacing	2 - 5 mm	1.5 - 2.5 mm

BONDING Adhesive bonding can be accomplished by using compatible elastomeric adhesives typically by use of neutral, solvent-free silicones and polyurethane adhesive.
MultiWall sheets can be bonded to plastics, glass and metals. Choice of the bonding agent depends on flexibility, heat resistance, and desired appearance.

COLD FORMING POLYGAL MultiWall sheets can be formed into arches. The arch must be parallel to the ribs. (See page 29 for minimum radius).

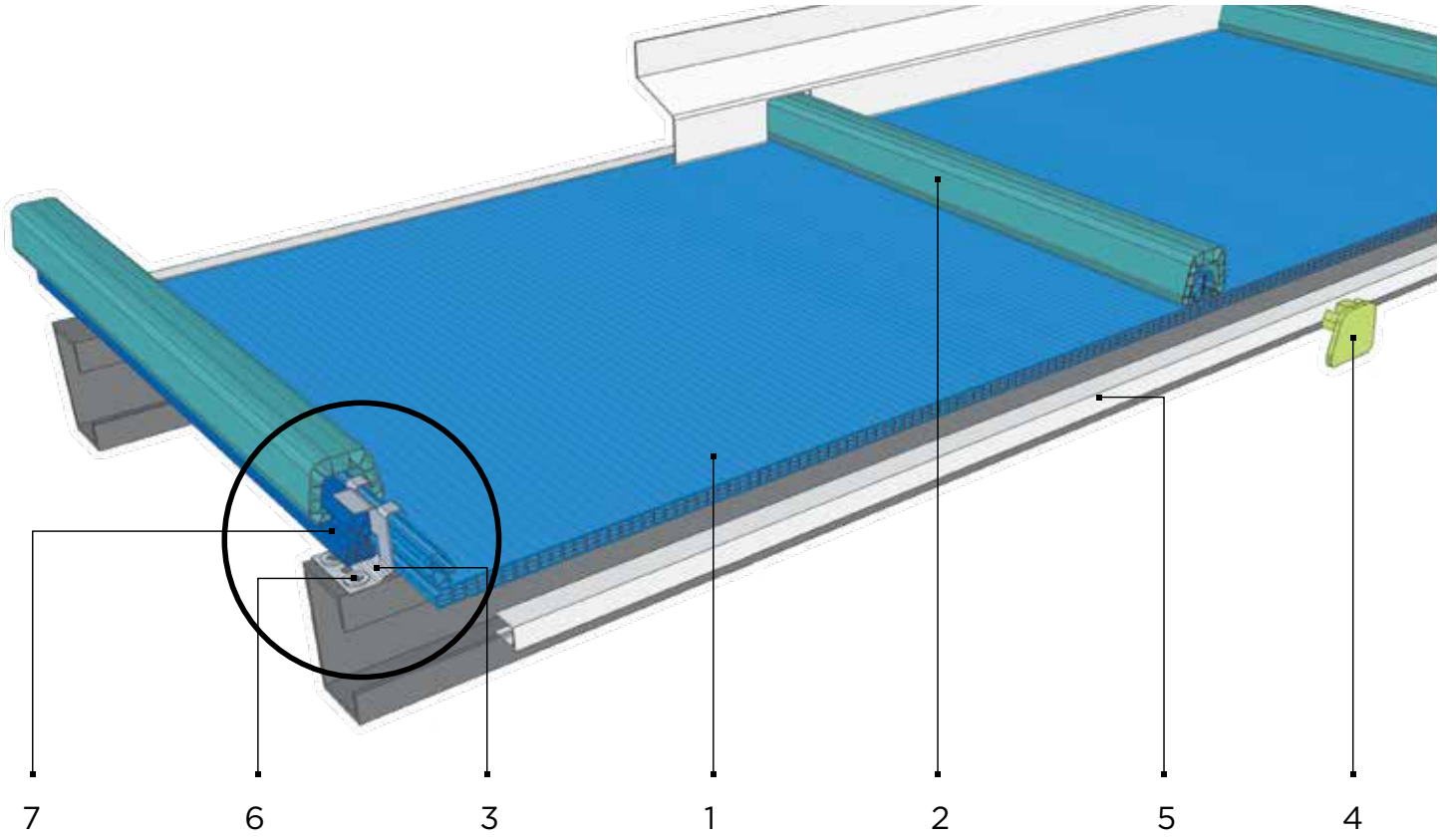
PLANNING THE SUPPORTING STRUCTURE

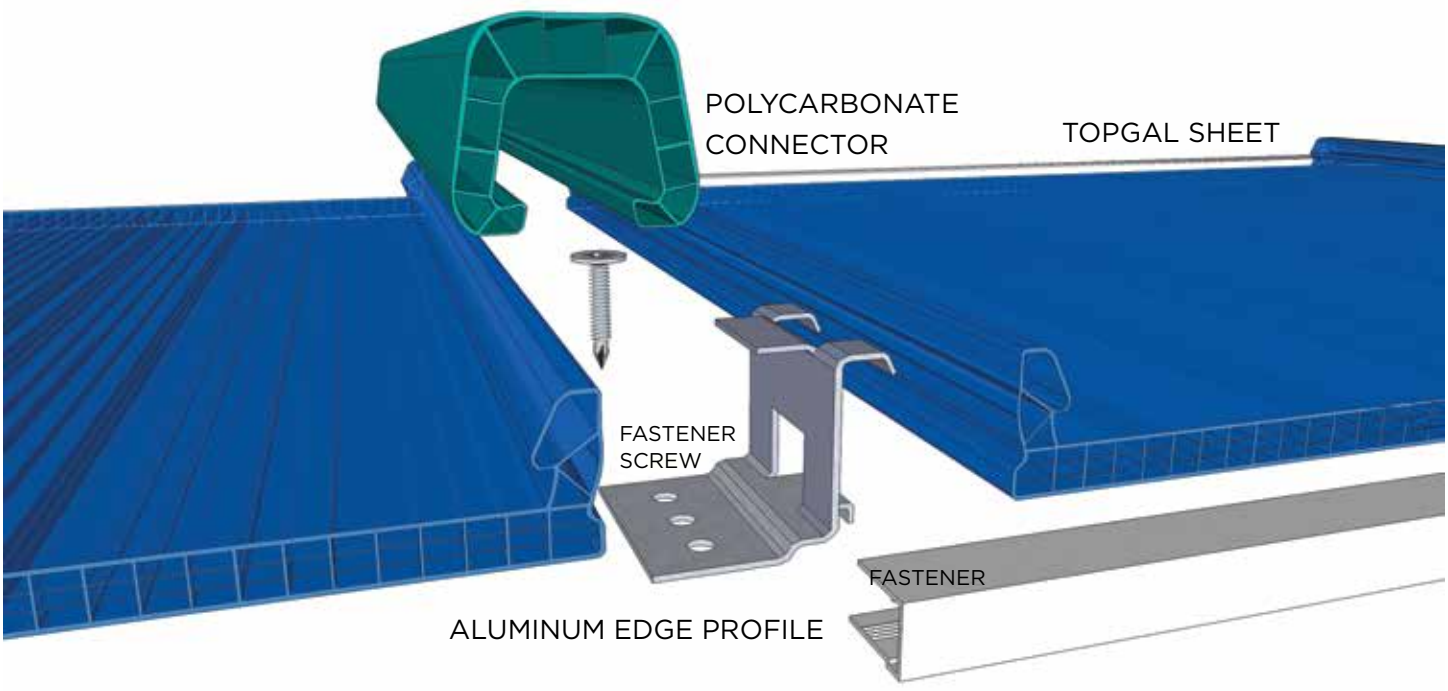
- Install the panels with the flutes parallel to slope direction at minimum 5%. In wall and gable applications always ensure that the flutes are positioned vertically.
- Supporting beams must be at least 40 mm (1.5″ inches) wide to ensure good anchorage of panels and fastening accessories.
- When considering arched structures, check the smallest permissible cold bending radius (R) according to the panels thickness.
- Ensure that a qualified professional reviews and approves the structure before execution.



TOPGAL INSTALLATION

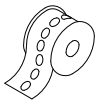
TOPGAL SYSTEM





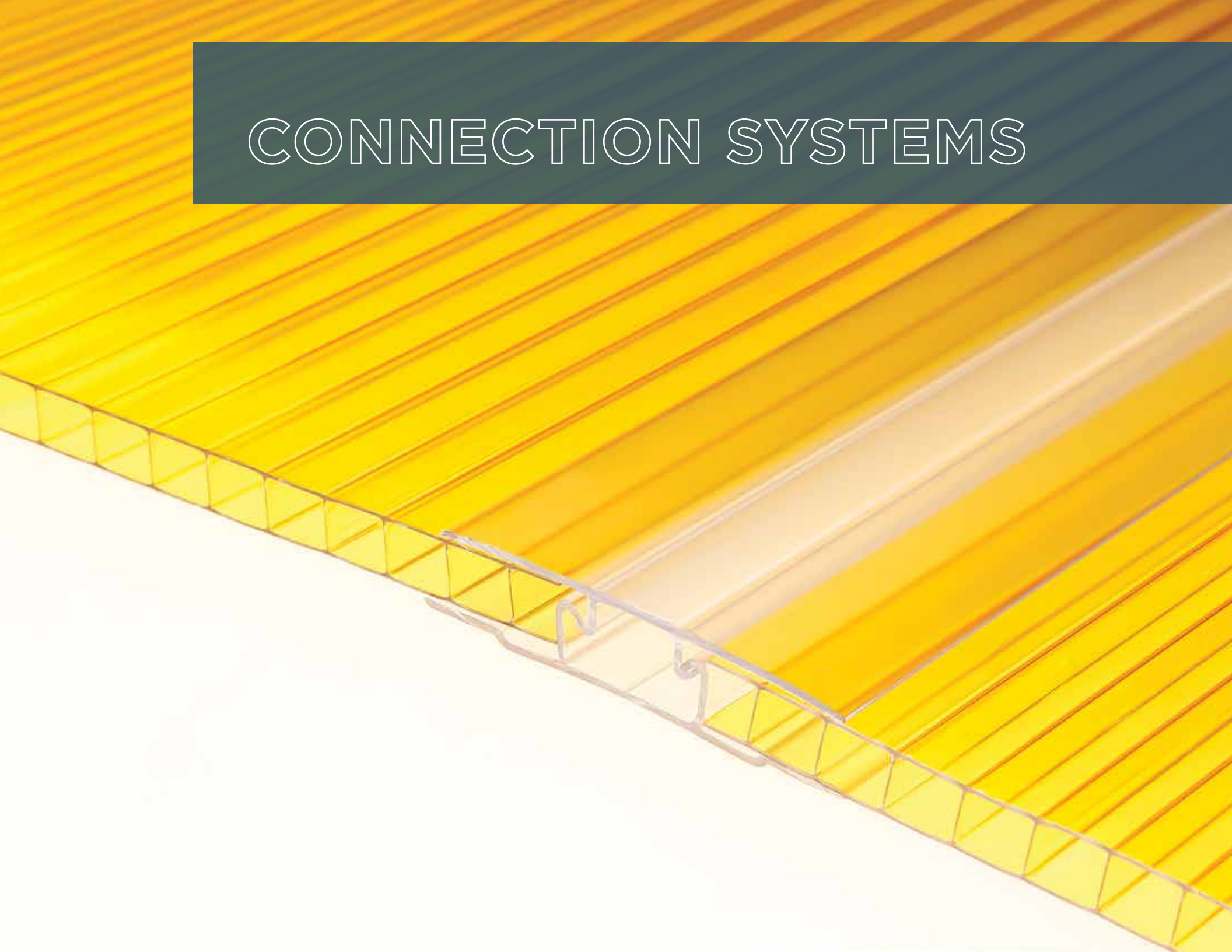
*See page 62 for parts list

TOPGAL SYSTEM ACCESSORIES

NN	Item	Function	Cat. No	Description
1		TOPGAL SHEET		Maximum sheet length for export is 11.90m
2		Polycarbonate CONNECTOR	#240	Color: sheets matched
3		FASTENER	#534 – 6 mm #530 – 8 mm #531 – 10 mm #532 – 16 mm #533 – 20 mm	Stainless Steel
4		CONNECTOR END CAP	#525	Polycarbonate Color: clear
5		ALUMINUM EDGE PROFILE	#327 – 6 mm #311 – 8 mm #312 – 10 mm #313 – 16 mm #328 - 20 mm	Length 6 m
6		FASTENER SCREW	#431 -(for metal structures) #436 -(for wood structures)	Philips #10 / 5/8" Philips #10 / 1"
7		POLYCARBONATE SIDE PROFILE	#245 – 6 mm #241 – 8 mm #242 – 10 mm #243 – 16 mm #244 - 20 mm	Color: sheets matched
8		STOPPER	#554 – 6 mm #550 – 8 mm #551 – 10 mm #552 – 16 mm #553 – 20 mm	Stainless Steel
9*		ALUMINUM CONNECTOR	#360	Length 6m
10		ANTIDUST TAPE	#508 - 6-8 mm #509 - 10-16 mm #510 - 20 mm	Roll length 33m
11		ALUMINUM SIDE PROFILE	#361	Length 6m
12		GAP SEALING FOAM	#41525 - 6-10 mm #41526 - 16-20 mm	600 mm length (6-10 mm) 1000 mm length (16-20mm)

***NOT USED IN USA**

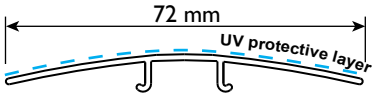
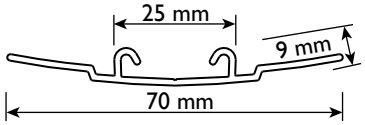
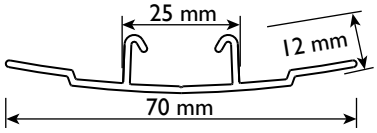
CONNECTION SYSTEMS

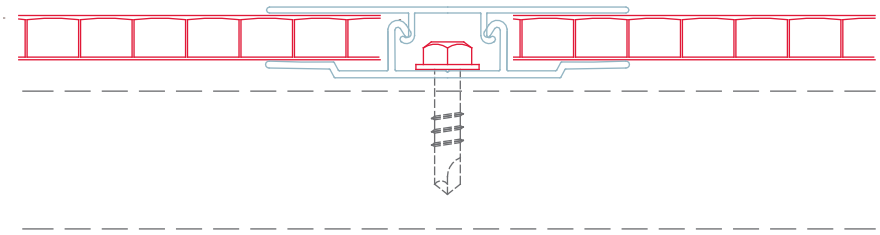


POLYCARBONATE CONNECTION PROFILES

EASY CLIP (ECP) CONNECTION PROFILES - 6 to 10 mm, 0.236 to 0.394", sheets connection. For wide range of architectural projects. The system includes screws for attaching the base profile to the support structure - #411 for steel structures and #421 for wooden structures.

TECHNICAL SPECIFICATIONS

# 232 PC Cap Profile (all thicknesses)	# 233 PC Base Profile for 6 mm, 0.236"	# 234 PC Base Profile for 8 and 10 mm, 0.315", 0.394"
		

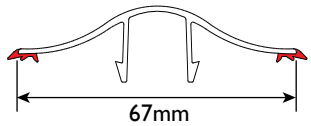
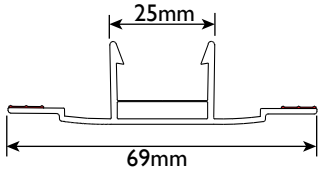
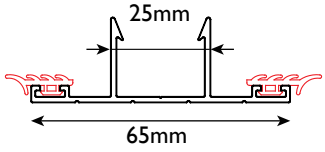




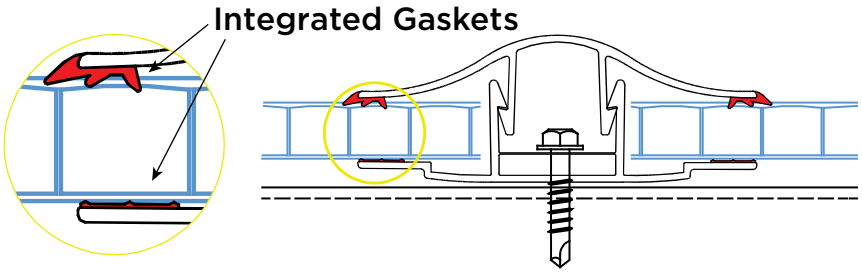
GASKET CLIP (GCP) CONNECTION PROFILES WITH INTEGRATED GASKETS for connection of 6, 8, 10 mm /0.236,0.315,0.394", sheets, for wide range of architectural projects. Enables simple installation and a waterproof method for roofing.

Available with polycarbonate or aluminum base profiles. The system includes screws for attaching the base profile to the support structure - #411 for steel structures and #421 for wooden structures.

TECHNICAL SPECIFICATIONS

# 251 PC Cap Profile (for 6, 8 and 10 mm)	# 252 PC Base Profile (all thicknesses)	# 331 Aluminum Base Profile* (all thicknesses)
		

* **WITH EPDM GLAZING GASKETS (# 524)**





CONNECTION SYSTEMS

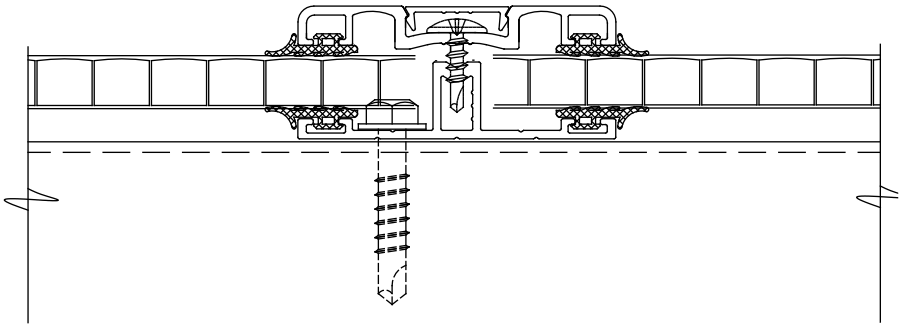
ALUMINUM GLAZING SYSTEM

MEGA LOCK (MGL) GLAZING SYSTEM is specially designed for use in glazing with 6 - 16 mm, 0.236 - 0.630", polycarbonate multi wall sheets. The system has a rabbet depth of 20mm, 0.787", which enhances its fastening properties and prevents glazing failures due to wind and snow loads or thermal expansion. The profiles are interconnected by means of self drilling screws of different lengths. The system includes screws for attaching the base profile to the support structure - #411 for steel structures and #421 for wooden structures. Wide range of architectural projects.

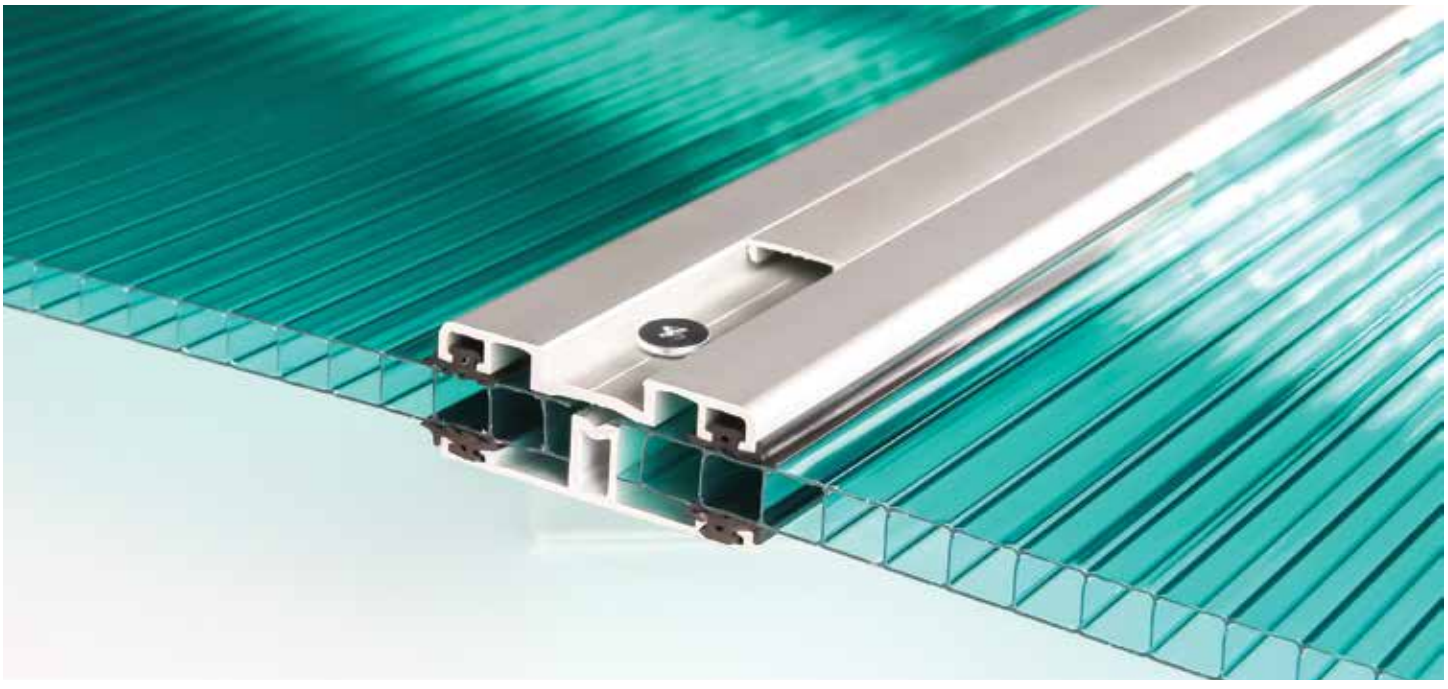
TECHNICAL SPECIFICATIONS

# 352 AL Cap Profile* (all thicknesses)	# 353 AL Base Profile* (all thicknesses)	#308 AL Cover Profile (all thicknesses)	#524 EPDM Glazing Gasket (all thicknesses)
			

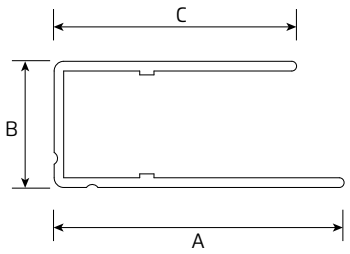
* **With EPDM Glazing gaskets (# 524)**

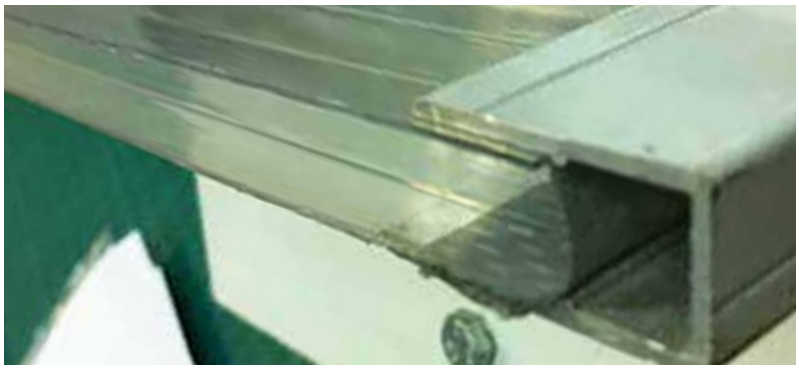




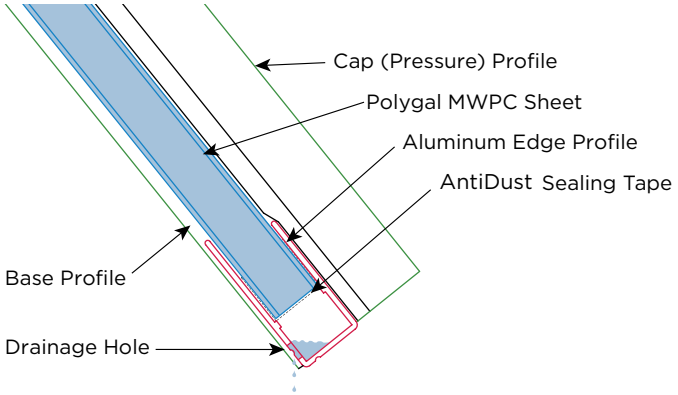


ALUMINUM EDGE PROFILES



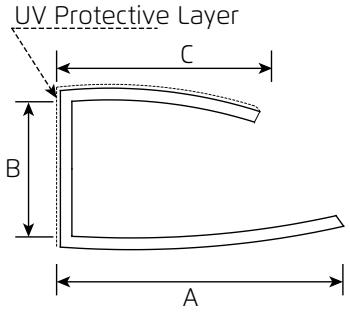


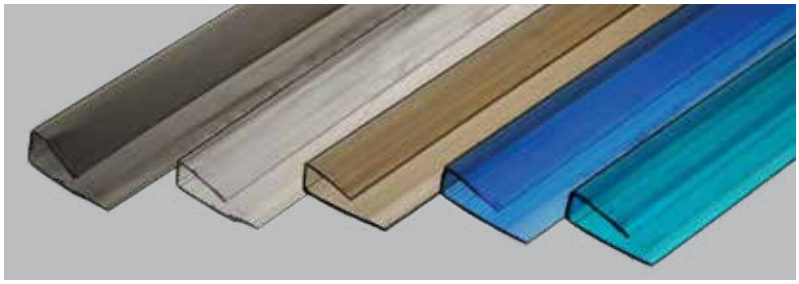
Suitable for sheets thickness mm/in	Cat #
6/0.236	327
8/0.315	311
10/0.394	312
16/0.630	313
20/0.787	328
25/0.984	314
32-1.25	320



POLYCARBONATE U-SHAPE EDGE PROFILES

For trimming the sheets upper and lower edges, U-shape aluminium or polycarbonate profiles should be used. (***See drawing of edge detail in Appendix 4***).



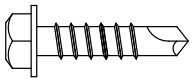
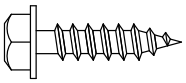


EDGE PROFILE TECHNICAL SPECIFICATIONS

Suitable for sheets thickness mm/in	Profile Dimensions			Cat #
	A	B	C	
4/0.157	24.5	4.4	16.5	229
6/0.236	24.5	6.4	17.5	212
8/0.315	24.0	8.5	18.0	213
10/0.394	25.0	10.6	18.0	214
16/0.630	20.5	16.6	16.5	215
20/0.787	29	19	18	230

CONNECTION SYSTEMS

SCREW SPECIFICATIONS

Cat. #	Screw	Description	Dimensions mm/in
400		Self drilling screw for connection of MWPC sheet to supporting structure	6.35-50.8/ ¼" - 2"
411		Self drilling screw for connection of base profiles to supporting structure	6.35-25.4/ ¼" - 1"
421		Wood screw for connection of base profiles to supporting structure	6.35-32.75/¼" - 1¼"
422		Wood screw for connection of MWPC sheet to supporting structure	6.35-50.8/ ¼" - 2"

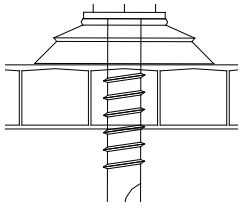
EPDM + INOX ATTACHING DOME

EPDM dome gasket and metal washer together with self drilling screws provide a high-performance, trouble free fastening system with highly effective dual point sealing between the EPDM gasket and the screw and between screw head and metal washer. It is strongly recommended to use self drilling, special coated, corrosion resistant screws.

SEALING TAPES

AntiDUST™ tape by Multifoil is non-woven tape system used for sealing the top and bottom edges of MultiWall polycarbonate and acrylic sheets. AntiDUST tape is specifically designed to stop mold, algae, insects and dust from accumulating within the walls of MultiWall polycarbonate sheets.



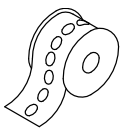


Advantages of AntiDUST tape over other products include:

- Ease of application
- Proper drainage of condensation
- Maintains clarity of multiwall polycarbonate sheets
- Extra durable construction and long life of tape materials

AntiDUST tape is made of a strong non-woven material which is designed to adapt to the expansion and contraction of MultiWall sheets.

SEAL SPECIFICATIONS

Cat. #	Screw	Description	Dimensions
476		EPDM+INOX attached to dome (for using with screws #400 and #422)	width 25mm
508		AntiDUST sealing tape for sheets edges (for 4, 6 and 8 mm/ 0.157, 0.236, 0.315"	width 25mm
509		AntiDUST sealing tape for sheets edges for 10 and 16 mm/ 0.394, 0.630"	width 38mm
510		AntiDUST sealing tape for sheets edges for 20, 25 and 32 mm/ 0.787, 0.984, 1.26"	width 50mm
507		Silicone for sealing of polycarbonate sheets	

While sealing polycarbonate sheets it is not recommended to use sealants that have not been tested in the laboratory of the manufacturer. Such sealants can result in damage. Such damage is not covered by the Limited Product Warranty issued by PLASKOLITE.

PLASKOLITE

A GLOBAL LEADER IN THE PRODUCTION OF THERMOPLASTIC SHEET

FOUNDED IN 1950

MISSION - TO DELIVER SUPERIOR THERMOPLASTIC SHEET, COATINGS AND POLYMERS TO THE WORLD THROUGH LONG-LASTING CUSTOMER RELATIONSHIPS AND HANDS-ON CUSTOMER SERVICE

MANUFACTURING LOCATIONS



From our founding, PLASKOLITE strives to treat our employees, our customers, our community and the world, with kindness, dignity and respect. This drives our continuing effort to create sustainable products, in a sustainable manner, for future generations. This on-going commitment is expressed in the

PLASKOLITE Sustainable Ecosystem:

QUICK FACTS

STATUS: Privately held

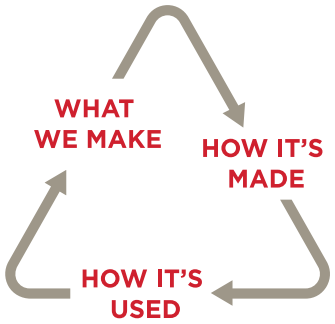
GLOBAL HEADQUARTERS: Columbus, OH

EMPLOYEES: 1900 Worldwide

MARKETS SERVED: Signage, Lighting, Retail Display, Construction, Transportation, Security, Bath & Spa, Industrial, Architecture, Green Houses

OUR PILLARS OF SUSTAINABILITY

EACH CONTRIBUTES TO MAKING THE WORLD A BETTER PLACE



WHAT WE MAKE — Versatile, high-quality, durable thermoplastic materials...not single-use plastics

HOW IT'S MADE — How we make our products reflects our overall philosophy of continuous environmental improvement

HOW IT'S USED — Our thermoplastics play an important role in advancing human well-being, energy conservation and quality of life

These suggestions and data are based on information we believe to be reliable. They are offered in good faith, but without guarantee, as conditions and methods of use are beyond our control. We recommend that the prospective user determines the suitability of our materials and suggestions before adopting them on a commercial scale.

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