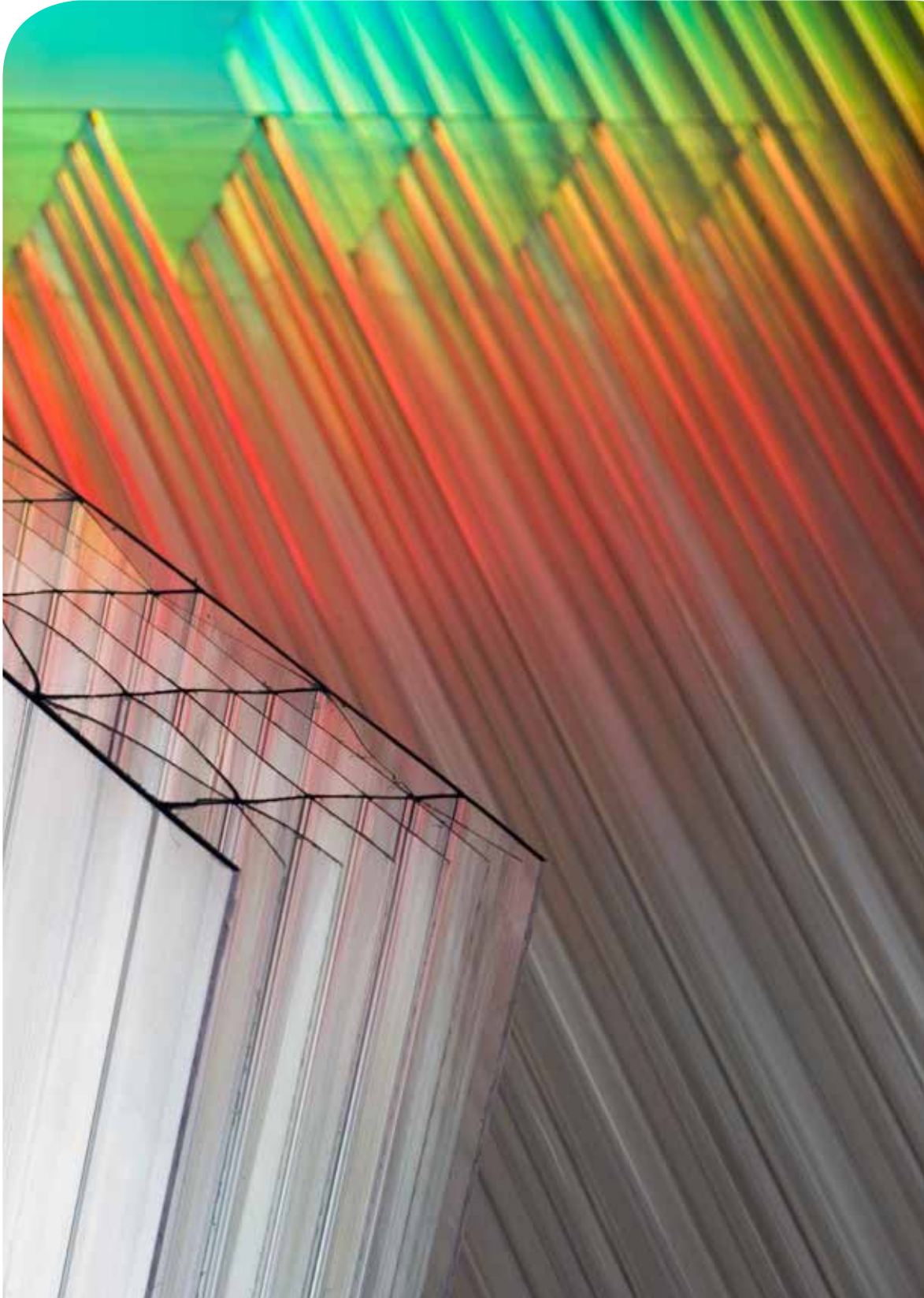
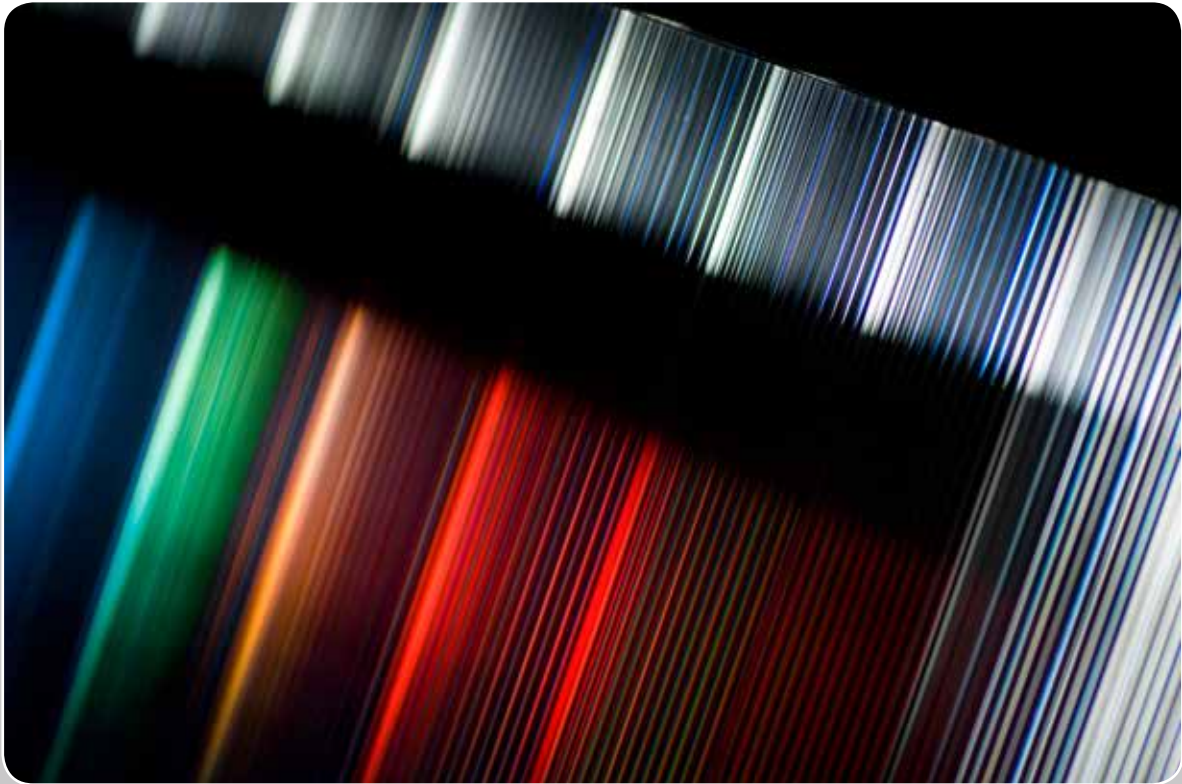




Polygal

Polycarbonate Extruded Multi Wall Sheets
User Guidebook





About the Plazit-Polygal Group

The Plazit-Polygal Group is a world leading manufacturer and supplier of plastic sheets, bringing together expert professionals committed to providing high quality, reliable products and solutions designed to meet customer needs. Both Plazit and Polygal started to manufacture extruded plastics sheets in 1973. Plazit began as a producer of extruded solid sheets, first from Poly Methyl Methacrylate (PMMA) and later from Polycarbonate (PC), while Polygal was the world pioneer in the manufacturing of PC multi-wall sheets.

From modest beginnings, both companies expanded their operations worldwide and grew to become world leaders in the plastic sheeting market. In 2010 Plazit acquired in Spain a PMMA cast production facility (today Plazit Iberica) adding cast PMMA sheets to its range of products. In 2011 Plazit and Polygal merged to form the Plazit Polygal Group. What started 40 years ago as small rural community workshops, has become a worldwide international group.

Today, The Plazit-Polygal Group's production facilities are spread around the globe (Israel, USA, Chile, Bulgaria, Russia and Spain) with more than 750 employees from different countries. A team of highly skilled professionals and modern laboratory facilities provide 24/7 customer technical support, engage in continuous product and process improvement, research and development of new products. Plazit- Polygal Group is a member of the CEFIC (European Chemical Industry Council), which groups the leading PMMA producers in the world, of EPSE (European Polycarbonate Sheet Extrusion) which groups the leading Polycarbonate extrusion producers in the world and of EPDA (European Plastics Distribution Association). Plazit-Polygal is certified ISO9001.

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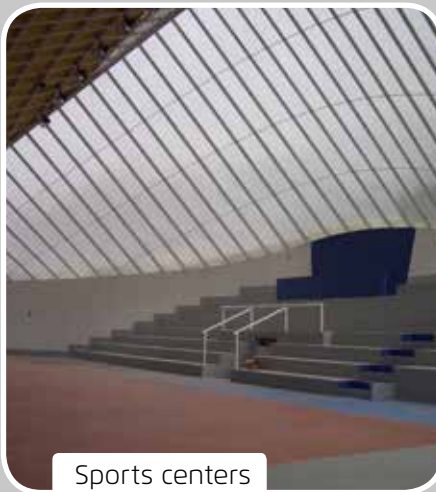
Commercial buildings



Industrial complexes



Transportation stations



Sports centers



Urban spaces



Public buildings



Agriculture

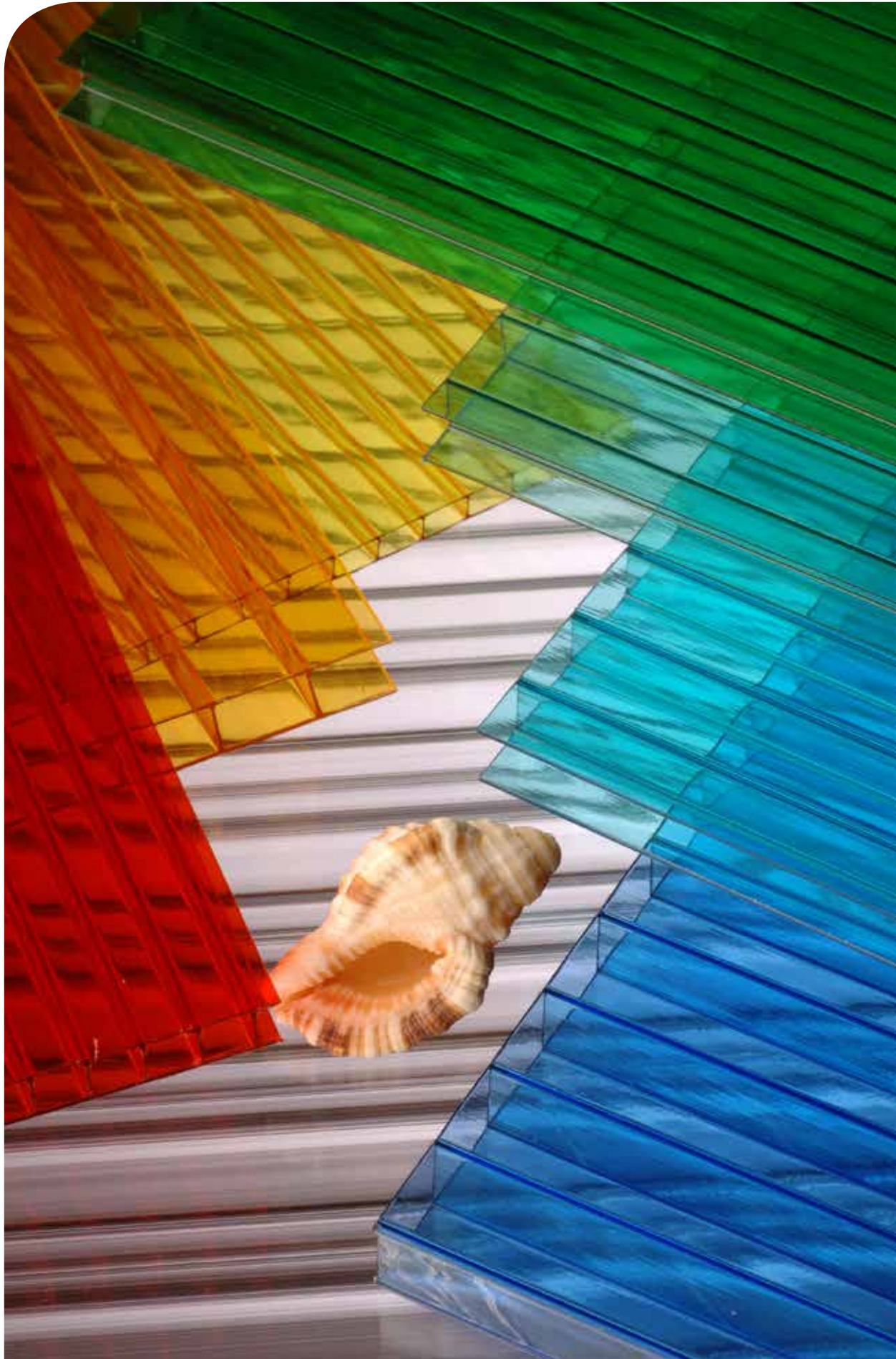


Home environment



Curtain Walls

Products Groups



1. Products groups description

1.1 Dimensions weights and colors

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 engineering applications. When extruded in multi wall sheet form, it's optical and impact properties in particular render this material an ideal candidate for a wide range of roofing applications.

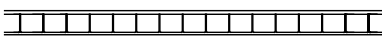

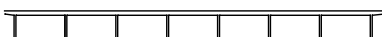


Standard sheet length: 6000mm, 12000mm.

Maximum length: subject to shipping constraints.

1.2 Standard products dimensions and weights

Standard Sheets double and triple layered, manufactured in various colors and degrees of transparency, designed for use in most conventional roofing and glazing applications. Standard sheets are manufactured with different thickness, ranging from 4 to 16 mm

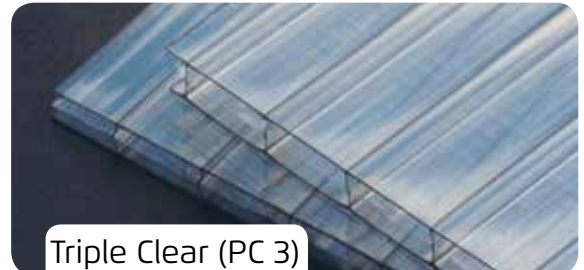
Standard sheets dimensions and weights

Structure	Thickness (mm)	Standard Weight (g/m ²)	Standard width (mm)
	4	800	980 1050 1200 1220 1250 2100
	6	1300	
	8	1500	
	10	1700	
	16	2700	

1.3 Special structured products

Special structured sheets - developed to emphasize different characters of MW sheet: load resistance, thermal insulation, light transmission etc.

Triple-Clear (PC3) - Specially manufactured with a clear tint appearance, provides excellent thermal insulation, highly flexible, yet virtually unbreakable, Anti-Fog coating that 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, ranging from 8 to 10 mm



Titan Sky's internal cross-brace structure gives these sheets twice the strength and rigidity of equivalent standard polycarbonate sheets. Titan Sky provides a quality solution that is both intelligent and advanced for use where withstanding heavy loads is required. Titan Sky sheets are manufactured with different thickness, ranging from 10 to 16 mm



Selectogal (RFX) enables the controlled penetration of heat and the transmission of pleasant daylight into buildings, while reducing heating and lighting costs. Selectogal's sophisticated prismatic structure enables it to reflect most of the sun's heat in the summer, yet allows increased penetration of solar heat in the winter. Selectogal sheets are manufactured with thickness 16 mm



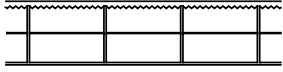
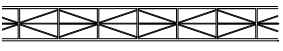

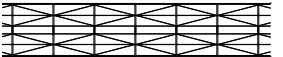
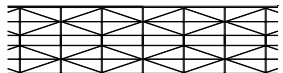
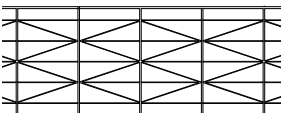
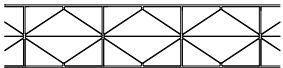
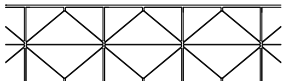
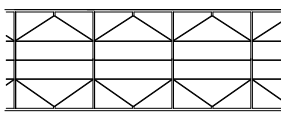


Thermogal: unique inner X-brace structure provides extra-strength, rigidity and thermal insulation. Available in different widths and colors. Ideal for low-pitched roofs and for glazing in closed structures with large-span openings. Thermogal sheets are manufactured with different thickness, ranging from 20 to 32 mm



Thermogal Super: 16, 20 and 32 mm polycarbonate multi wall sheets. A 32 mm Thermogal Super with-11 walls (a 16 and 20 mm 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, this product 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.



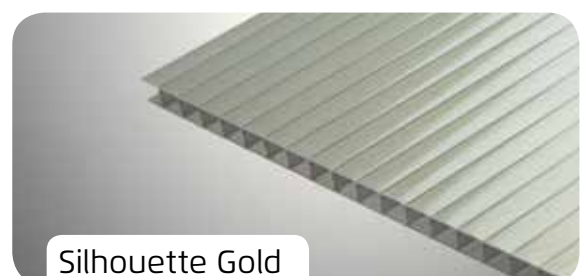
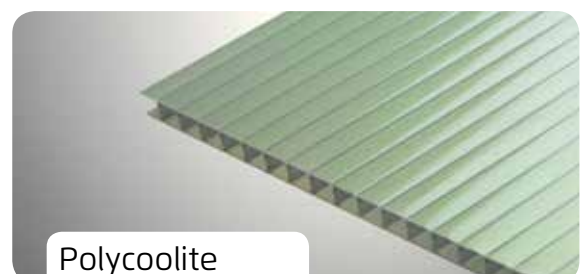
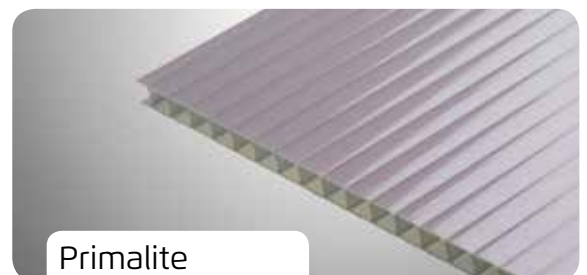
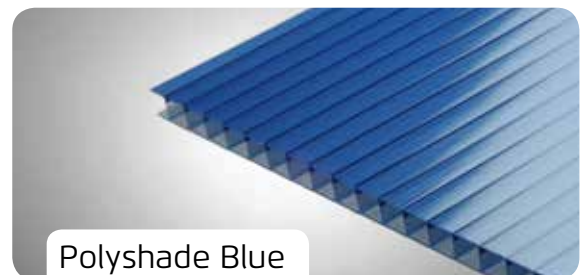
Special structured sheets dimensions and weights

Name	Structure	Thickness (mm)	Standard Weight (g/m ²)	Standard width (mm)
Selectogal (RFX)		16	3000	1050 1200
Titan Sky		10	1750	1050 1200
		16	2500	2100
Thermogal Super		16	2700	1250
		20	3200	
		32	3800	1250
Thermogal		20	3000	1200 2100
		25	3500	
		32	3800	980 1200
Triple Clip (PC3)		8	1650	1830 2100
		10	1750	

1.4 Special layered sheets

Special selective layers of polycarbonate PC sheets, developed by Polygal, are one of the most advanced achievements in this field. Such layers make it possible to control the quality of light penetrating an enclosed space, by absorbing and reflecting some part of solar radiation.

The **PolyShade** layer of polycarbonate structured sheets produces a special metallic shading effect. The PolyShade 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. The PolyShade layered sheets are manufactured with different colors: silver, metallic blue, metallic green and copper; and of different thickness, ranging from 8 to 16 mm



Primalite - unique selective layer that selectively reflects a large portion of the Near Infra-Red solar radiation, while transmitting more of the visible light radiation. The Primalite layered sheets are manufactured with different thickness, ranging from 8 to 32 mm

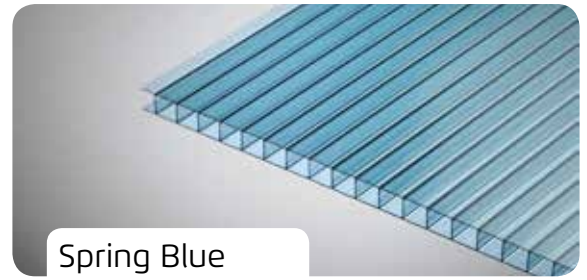
Polycoolite - selective layer is specifically designed to supply plants natural solar light needs for photosynthesis. It blocks the UV, supplies high blue and red reflects heat from the unused green. It reflects undesirable excess heat from the infrared range.

Silhouette with its sophisticated and lustrous exterior surface, radiates elegance and good taste, available in a variety of formats, the Silhouette sheet features outstanding reflective qualities and selectivity making it an excellent choice and suitable for all daylight coverings. The Silhouette layered sheets are manufactured with different thickness, ranging from 8 to 32 mm

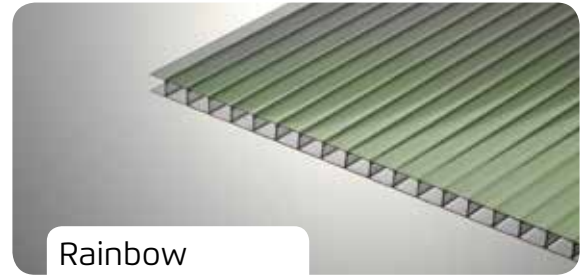
Spring - A transparent sheet with a special co-extrusion layer on the external side of the sheet under the UV protective layer "Spring" blocks the invisible IR solar radiation & heat. Result - lower temperatures (less heat enters the structure), but still allows maximum light to enter the structure. The Spring layered sheets are manufactured with different colors: blue and green, and different thickness, ranging from 8 to 32 mm

Rainbow - Special optical affects in Polygal's Rainbow sheets combine with the angle of the light to change the sheet color (e.g. from purple to green), thus the Rainbow sheets by Polygal present a unique harmony that is both dynamic and varied.

Anti-Fog: Polygal sheet can be anti-fog coated upon requested. This factory applied, solicon-based coating, combines long lasting anti-fogging properties with excellent adhesion and great stability in environmental chemicals. When used in greenhousing application, polygal pcss increases light transmission and protection against plant diseases, by eliminating condensed water dripping.



Spring Blue

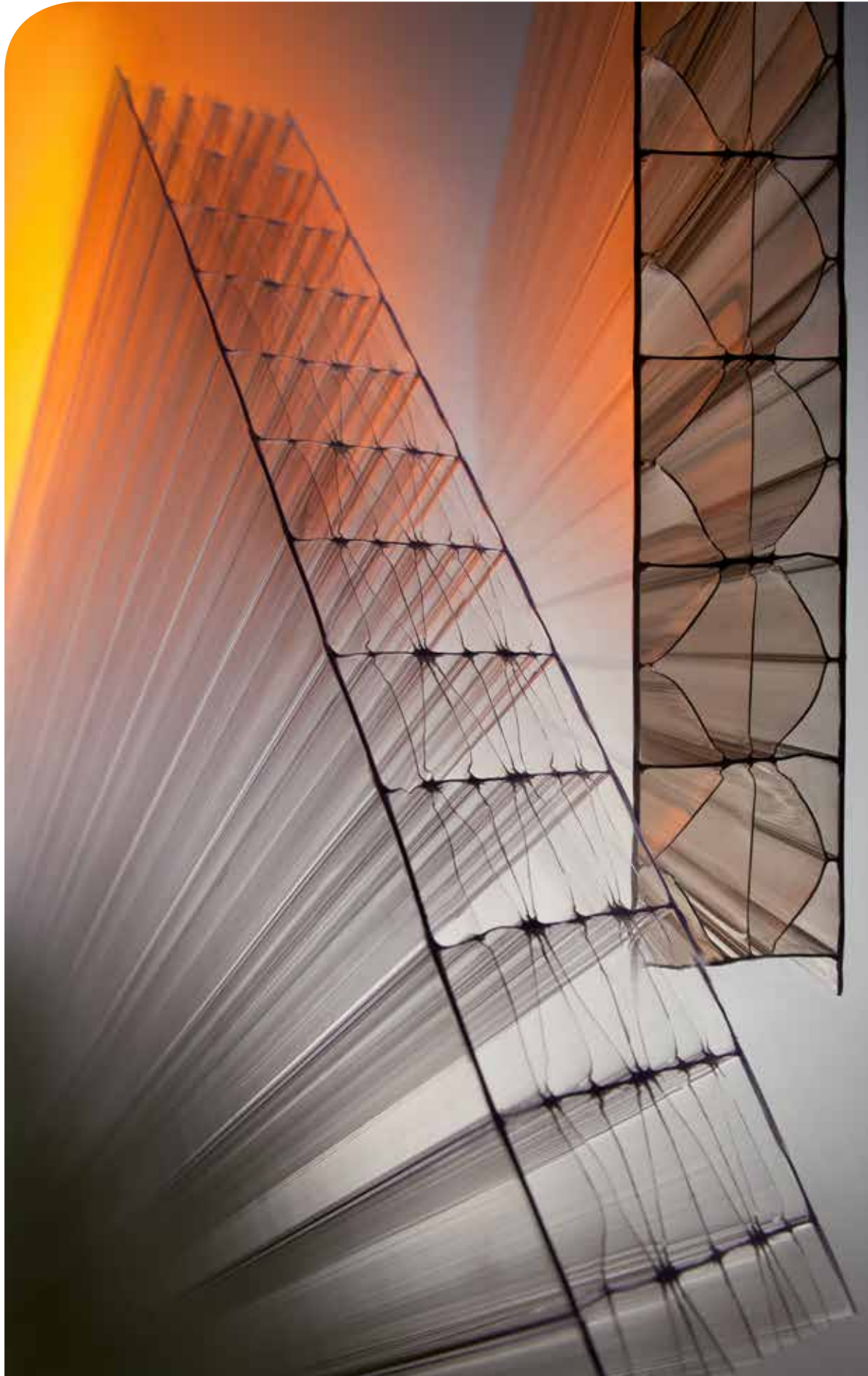


Rainbow



Rainbow

Thermal Properties



2. Thermal properties

2.1 Service temperature and thermal expansion

Service Temperature

Polygal MWPC can be installed in a diversity 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 to +85°C (according to EN 13650). PVC has a maximum service temperature of 60°C.

Thermal Expansion/Contraction

The coefficient of linear expansion of polycarbonate material is $6.7 \cdot 10^{-5} \text{m}/(\text{m} \cdot ^\circ\text{C})$. This is high relative to that of most other materials in conjunction with which it is normally used. As a consequence, careful allowance must be made for the thermal expansion of Polygal polycarbonate multi wall sheets, both longitudinally and laterally. In practical terms, it is necessary to allow 2.5mm/m length or width for thermal expansion in clear and whites and 4.5 mm/m in dark sheets.

2.2 Thermal insulation and U-Value

Thermal Insulation definition is the resistance to heat transfer as a result of temperature differences between two material bodies.

In the case of MWPC, the thermal insulation is important in application in which there is a difference between the outside to the inside air temperature.

Examples for the importance of thermal insulation can be seen in applications with close structures, such as sunrooms and swimming pools, whereas in roofing for open structures such as bus station and canopy the thermal insulation has no meaning.

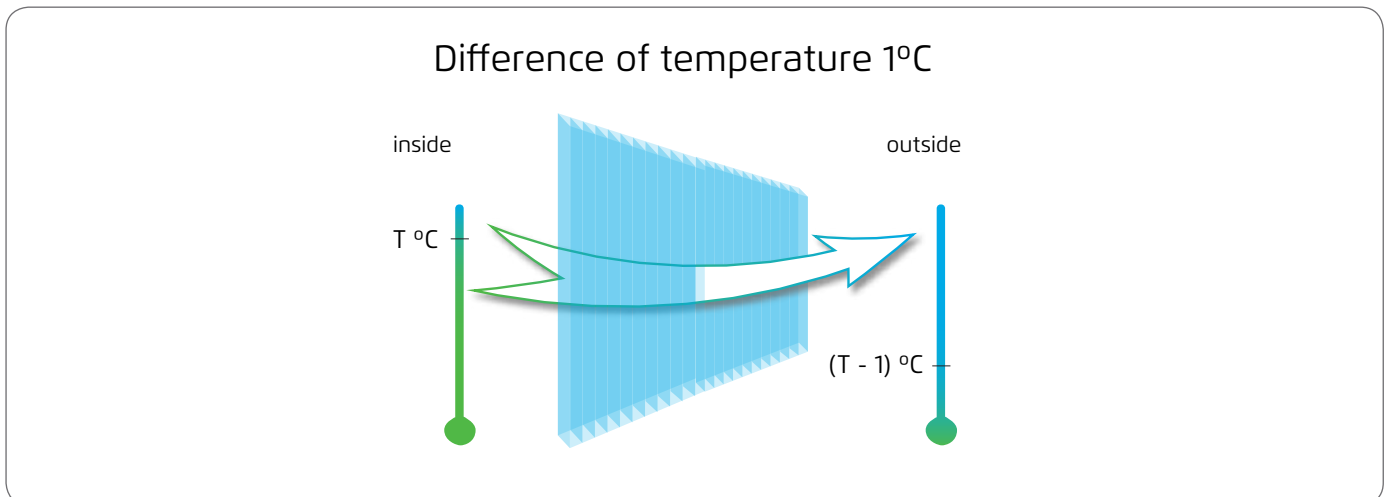
U or K-Value is the coefficient which determines heat loss in the glazing walls of a building. As the U-Value decrease the thermal insulation increase.

Definition: Heat flow rate through a wall of 1 square meter at a temperature difference of one degree Celsius between the two environments.

Unit: $\text{W}/(\text{m}^2 \cdot ^\circ\text{C})$

$$U = 1/R$$

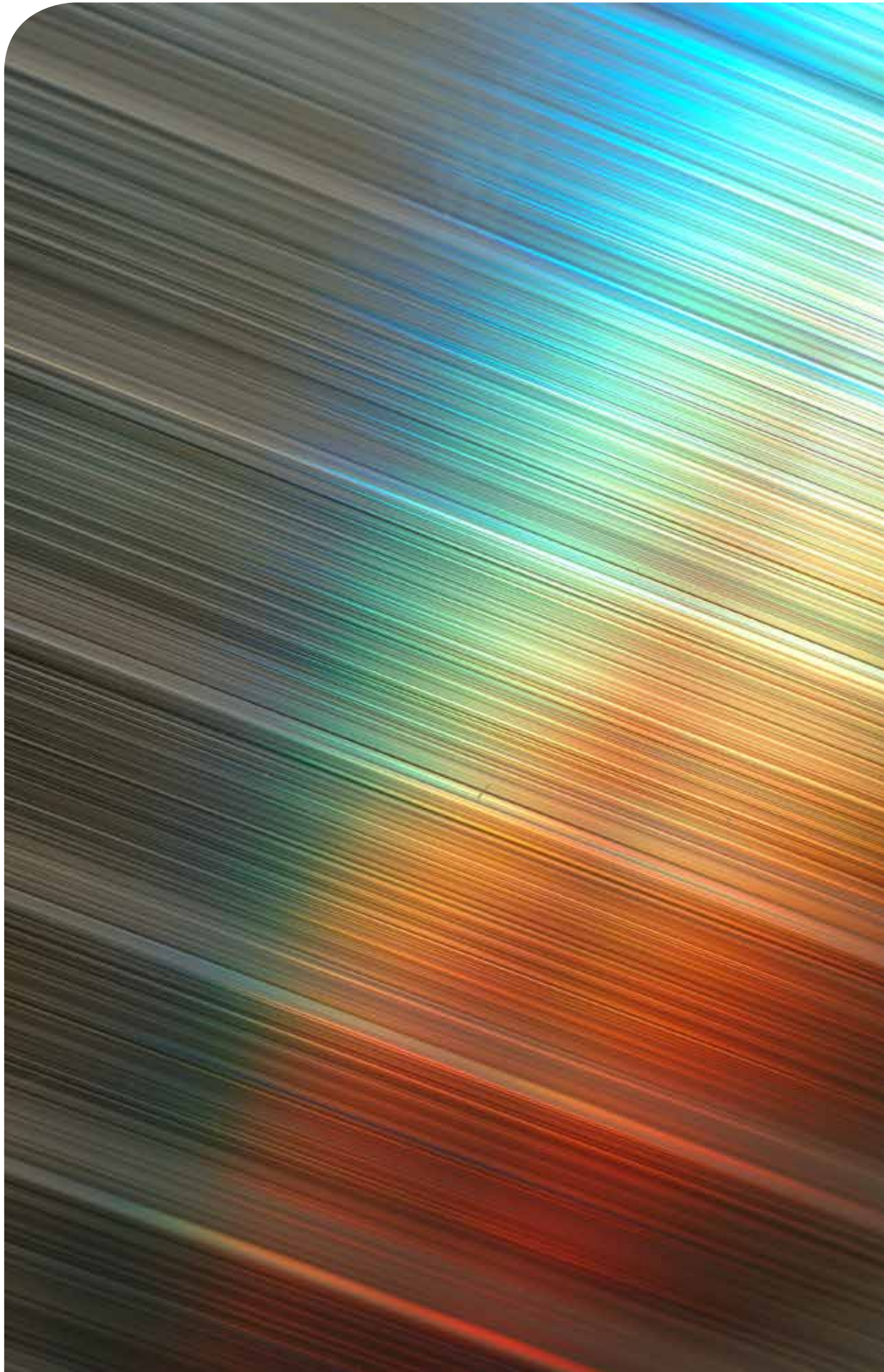
R - thermal resistance ($\text{m}^2 \cdot ^\circ\text{C}/\text{W}$)



Name	Structure	Thickness (mm)	U-Value $W/(m^2 \cdot ^\circ C)$
Standard		4	3.9
		6	3.6
		8	3.3
		10	3.0
		16	2.3
Selectogal (RFX)		16	2.3
Titan Sky		10	2.4
		16	2.1
Thermogal Super		16	1.7
		20	1.5
		32	1.0
Thermogal		20	1.9
		25	1.7
		32	1.3
Triple Clip (PC3)		8	2.8
		10	2.6



Optical Properties



3. Optical properties

3.1 Electro-Magnetic Waves

Electro-magnetic wave is a physical phenomenon in which energy advances in the space through alternating electric and magnetic fields.

The properties of the waves largely depend on its wavelength.

They are divided to various ranges by the wavelength, from the long to the short:

Radio waves, micro waves, Infra-Red (IR) heat radiation, visible light, Ultra-Violet (UV) light, X-Ray (Roentgen) radiation, Gama radiation, cosmic radiation.

Also, it is customary to divide it to Non-ionizing radiation (long to UV) and Ionizing radiation (wavelength shorter than UV).

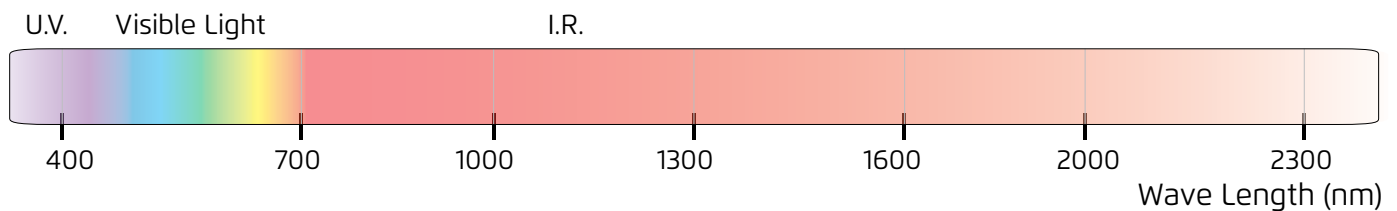
The Ionizing radiation causes chemical changes in molecules and biological damages. The Non-ionizing radiation causes heat in the material.

3.2 Solar Radiation

We are interested 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 but we can feel it as heat.

The visible light is the waves at the range of 400-700 nanometer (nm). When we go through the wavelength from 400 nm and up, we gradually see all the rainbow colors, starting with violet and blue and finish with red. The light beyond the violet is called ultra-violet (UV) and it is invisible.

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.



3.3 Light and material interaction

When a light ray impinges the surface of material, part of it is reflected from the material surface. The rest of it is penetrating into the material. If the material is opaque to light, the entire penetrating light is absorbed within the material and transforms to heat. If however, the material is transparent or partially transparent to light, the penetrating light advances inside the material, part of it is absorbed and turns to heat while the rest impinges the second surface. Part of the light that impinges the surface is reflected back into the material and continue to be absorbed while the other part escapes to the space out of the material.

Therefore, the light that impinge the material is partially reflected, partially absorbed and partially transmitted. The sum of energies of the reflected, absorbed and transmitted light is equal to the energy of the impinging light.

3.4 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 we refer to, but it is not the only one.

There are artificial light sources such as electric lighting with different characteristics.

According to the standard (EN 16153), we use two transmission properties:

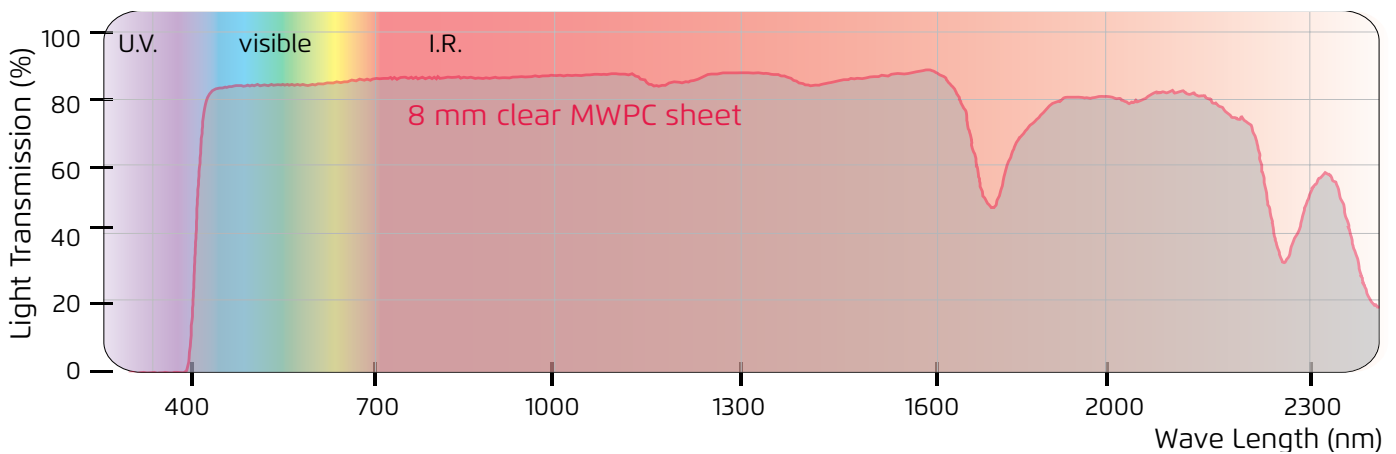
- T_e is the solar transmission of the product
- T_v is the visible transmission

The light sources for the two are different. The light source for T_e is similar to the sun's light in the range of 350-2400 nm, while the light for T_v is a standard source designated D65, in the range of 350-750 nm.

3.5 Properties of Transparent Polycarbonate (PC)

PC 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 is a desirable one, since the UV radiation is harmful to the human body.

The spectral transmission graph of clear PC is given here:



3.6 Geometry of Transmission and Reflection

Light that impinges the PC surface is reflected, partially in a specular reflection (as mirror) and partially in a diffused reflection at various directions.

Also the light that pass the PC 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, is the Haze property of the sheet which describes the light diffusing property of it.

3.7 The Sheet Standard Optical Properties

In the sheet standard (EN 16153), the solar and the visible transmission are designated $T_{v, n-h}$ and $T_{e, n-h}$, where the n-h indicates a normal (perpendicular) light source and hemispherical (half sphere) total light collection. The letter e indicates Solar (energy) properties while the letter v indicates Visible properties.

3.8 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 T_v and T_e are changed by the color.

When the color exists in the volume of the sheet, the absorption is taking place in the entire sheet, 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.

3.9 Colors with Special Spectral Properties

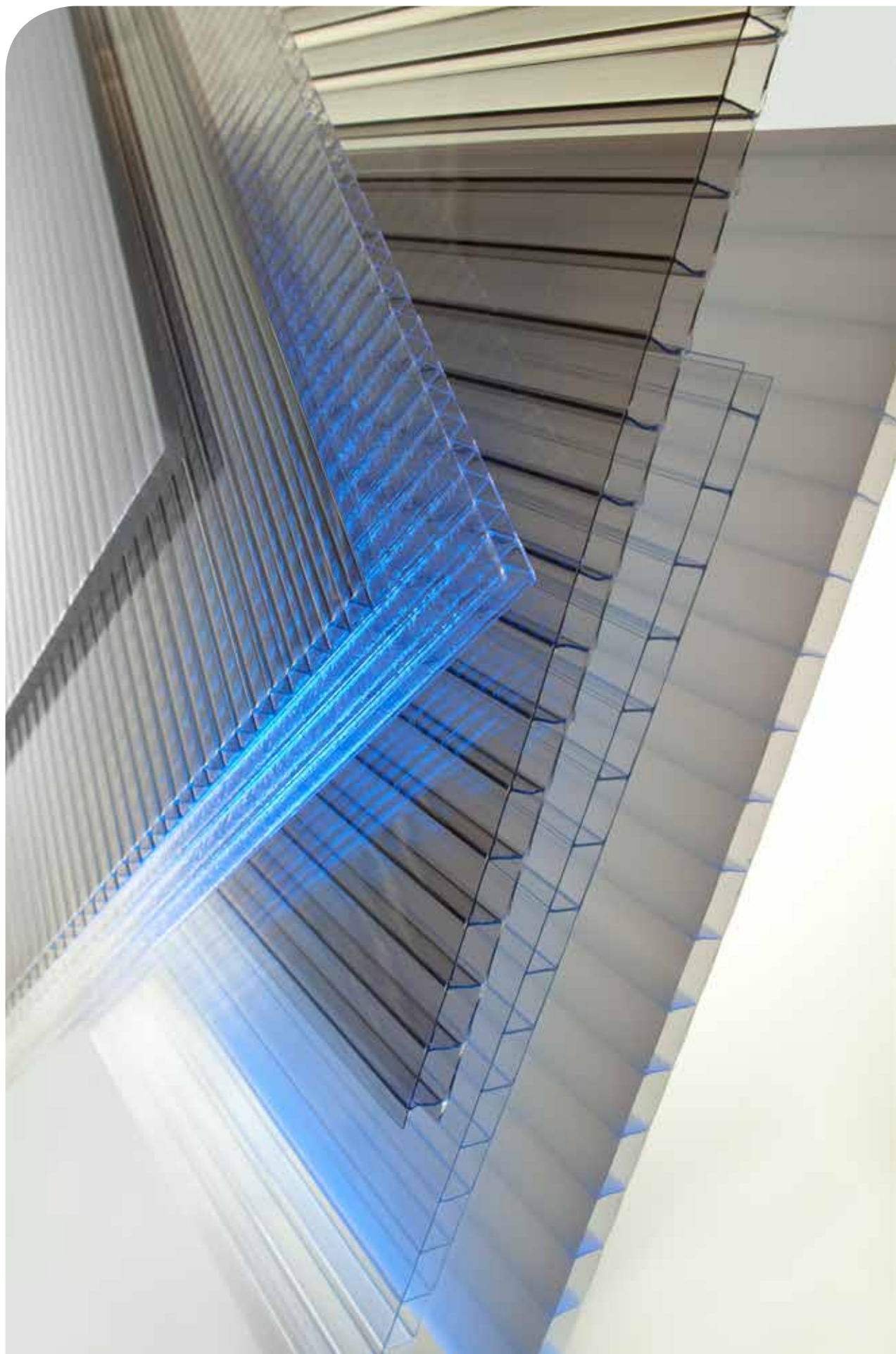
Within Plazit Polygal Group products, MW Polygal sheets, there are colors with special spectral properties:

- a. Spring - Absorbs solar radiation in the IR range, converting the transmitted light to be "cooler". The sheet has a light green tint.
- b. Primalite – is an IR reflecting color which converts the transmitted light to be "cooler" with greenish tint, while the reflected light has pink tint with high proportion of IR.
- c. Pearl color thin layer with gentle silk appearance.
- d. PolyShade has a thin color layer at the outer surface with shiny metal appearance with improved solar properties
- e. Rainbow – reflects various colors at different viewing angles – an interesting attractive visual effect.

3.10 The Standard Thermal - Optical Properties

- **U-Value** - The thermal transmittance of the sheet
- **SHGC** and g-Value – The percentage of total solar energy that pass the sheet.
- **SC** – Shading Coefficient – the ratio between the SHGC of the sheet and that of clear 4 mm glass.

Technical Information



4. Technical information

General Properties	Method	Units	Value
Density	ISO 1183	g/cm ³	1.2
Light transmission (Depending on thickness)	ASTM D 1003	%	81 - 90
Refractive index	ISO 489		1,585
Mechanical			
Tensile Strength at yield	ISO 527-2	MPa	60
Tensile Modulus	ISO 527-2	MPa	2300
Elongation at break	ISO 527-2	%	>100
Elongation at yield		%	6
Flexural Modulus	ISO 178	MPa	2330
Charpy Un-notched	ISO 179	kJ/m ²	Not Break
Izod Impact notched	ISO 180a	kJ/m ²	>65
Thermal			
Temp of deflection (HDT) Under load of 1.8MPa	ISO 75-1	°C	130
Vicat softening temp (50°C/h 50N)	ISO 306	°C	144
Thermal conductivity	DIN52612	W/m x °C	0.2
Coefficient of linear thermal expansion 0-50°C	ISO 11359	mm/(m x 1/°C)	0.070
GWFI (Glow-Wire Flammability index)	IEC60695-2	°C	900
Electrical			
Volume Resistivity	IES 60093	Ω x cm	3 x 10 ¹⁴
Surface Resistivity, dry	IEC 60093	Ω	6 x 10 ¹⁵
Dissipation Factor 1Mhz	IEC 60250		0.009
Dissipation Factor 100Hz	IEC 60250		0.0006

4.1 Acoustic

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

Sheet Thickness (mm)	Sound reduction Values (dB)
4	15
6 - 8	18
10	19
16	21
20	22
25 - 32	23

4.2 Chemical resistance

Polygal sheets have been successfully used in combination with building materials and glazing components. The chemical stability depends on many factors such as concentration of the chemical agents and on expose temperature. Considering the complexity of chemical computability, all chemicals which come into contact with polycarbonate should always be tested.

Polycarbonate is sensitive to the impact of several chemical substances, such as mineral acids of various concentrations, organic acids, salt solutions, fats, liquid and gaseous ammonia, amino acids, solvents, adhesives and dyes. The degree of sensitivity to chemical substances depends on such factors as concentration, temperature, duration of contact with the sheet surface, load impact, as well as on the presence in the sheet of internal strains including those caused at the sheet's fitting to the supporting structure. When a necessity arises of using a substance absent from the polycarbonate's Table of Chemical Compatibility, the plant laboratory of Plazit Polygal Group is able to conduct appropriate tests and to issue conclusions on the possibility of its use. In particular, special caution should be exercised with respect to using adhesives, silicones and other sealants due to the possibility of the material's fast destruction. In any event, a high quality mechanical coupling would be preferable.

The impact on polycarbonate of such substances, widely used in the construction industry, has the following mechanism: at a direct contact, the substance penetrates the material and destroys the links between polymer chains, making them shorter. As a result, micro cracks appear in the polycarbonate, the strains are concentrating at such locations and the cracks are further developing. Under this mechanism's action, combined with the impact of external loads (cold bending, snow, wind and other loads), the micro cracks are widening and the polycarbonate becomes fragile quite soon (under load – in a matter of several days).

The polycarbonate's destruction under impact of untested and probably non-compatible chemical substances displays a characteristic pattern and can therefore be identified at a laboratory check. The "self healing" practice, whereas the cracks are sealed using improvised means, is only capable of exacerbating the problem. That is why on the detection of cracks and of increased material's fragility, particularly in the areas where silicones, thermo washers and sealing tapes of the coupling profiles are used, it is essential to apply to the company's laboratory for examining the materials contacting with the polycarbonate.

Whenever it is necessary to glue the polycarbonate sheets and seal them, the Plazit-Polygal experts may recommend the double sided adhesive tapes and the company tested silicones, the list of which is available on demand. Plazit Polygal Group offers lab service for testing chemical stability of gaskets and sealants which have been approved.

Chemical Compatibility Chart

of polycarbonate products at room temperature: **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
- Trichloroacetic 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%

Chemical Compatibility Chart

of polycarbonate products at room temperature: **Chemicals**

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

Chemical Compatibility Chart

of polycarbonate products at room temperature: [Chemicals](#)

- 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

Chemical Compatibility Chart

of polycarbonate products at room temperature: [Germicides](#)

- | | |
|-----------------------|--------------------------|
| + Baktol, 5% | + Oktozon, 1% |
| - Carboic 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 |

Chemical Compatibility Chart

of polycarbonate products at room temperature: [Detergents](#)

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

Chemical Compatibility Chart of polycarbonate products at room temperature: Technical Oils & Lubricants

- + Aral BG[®]58
- + Automatic switch grease
- + Baysilon[®]-silicone oils
- + BP Energol HL 100[®]
- + BP Energol EM 100[®]
- + BP H LR 65[®]
- + Brake fluid (ATE)
- + Burnishing oil Brunofix[®]
- Camphor oil
- + Cable insulating oil IG 1402
- + Cable insulating oil KH 190
- + Calcium soap fat
- + Castor oil
- + Contact oil 611
- ± Diesel oil
- Drilling oil
- + Esso Estic 42-45[®]
- + Fish oil
- + Grease R Z Darina[®]
- ± Heating fuel oil
- + Hydraulic oil Vac HLP 16
- ± Jet propulsion fuel JP4 (kp 97-209°C)Skydrol 500 A[®]
- + Mobil DTE oil light[®]

- + Mobil special oil 10 w 30[®]
- + Molikote[®]-paste
- + Molikote[®]-powder
- + Nato-turbine oil 0-250
- + Naphtenic lubricating oil
- + Paraffin oil
- + Polyran[®] MM25 (lubricating oil)
- + Rape seed oil
- + Renocalor N[®]
- + Sewing machine oil
- + Shell Spriax 90 EP[®]
- + Shell Tellus 33[®]
- + Silicone fluid
- + Sodium soap fat
- + Texaco Regal oil BRUO[®]
- + Texaco Regal oil CRUO[®]
- + Train oil
- + Turbo oil 29
- ± Shell Tellus 11-33[®]
- ± Turpentine oil
- ± Valvoline WA 4-7
- ± Varnish

Chemical Compatibility Chart of polycarbonate products at room temperature: Technical Oils & Lubricants

- + Aral BG[®]58
- + Automatic switch grease
- + Baysilon[®]-silicone oils
- + BP Energol HL 100[®]
- + BP Energol EM 100[®]
- + BP H LR 65[®]
- + Brake fluid (ATE)
- + Burnishing oil Brunofix[®]
- Camphor oil
- + Cable insulating oil IG 1402
- + Cable insulating oil KH 190
- + Calcium soap fat
- + Castor oil
- + Contact oil 611
- ± Diesel oil

- Drilling oil
- + Esso Estic 42-45[®]
- + Fish oil
- + Grease R Z Darina[®]
- ± Heating fuel oil
- + Hydraulic oil Vac HLP 16
- ± Jet propulsion fuel JP4 (kp 97-209°C)Skydrol 500 A[®]
- + Mobil DTE oil light[®]
- + Mobil special oil 10 w 30[®]
- + Molikote[®]-paste
- + Molikote[®]-powder
- + Nato-turbine oil 0-250
- + Naphtenic lubricating oil
- + Paraffin oil
- + Polyran[®] MM25 (lubricating oil)

Chemical Compatibility Chart

of polycarbonate products at room temperature:

Technical Oils & Lubricants

- + Rape seed oil
- + Renocalor N®
- + Sewing machine oil
- + Shell Spriax 90 EP®
- + Shell Tellus 33®
- + Silicone fluid
- + Sodium soap fat
- + Texaco Regal oil BRUO®

- + Texaco Regal oil CRUO®
- + Train oil
- + Turbo oil 29
- ± Shell Tellus 11-33®
- ± Turpentine oil
- ± Valvoline WA 4-7
- ± Varnish

Chemical Compatibility Chart

of polycarbonate products at room temperature:

Adhesives & Sealing Materials

- ± All-purpose glue
- + Cellux® - adhesive film
- + Gypsum
- + Insulating tape
- + Perbunan C®
- + Putty
- + Rubber (softener-free)
- + Terostat®
- + Tesafilm
- + Tesamoll®
- + Sea 210

- + Silpruf
- + Serbaseal MP
- + Dow Corning 917
- + Dow Corning 3793 (w.)
- + Dow Corning 7098
- + Dow Corning 791
- + Parasilico PL (cl.)
- + Proglaze
- + 3M 431 -aluminum tape
- + Gerlinger 712 -aluminum tape

Chemical Compatibility Chart

of polycarbonate products at room temperature:

Polishing Agents & Antistatics

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

4.3 Fire performances

Polygal Sheets have received high ratings in several major European, American and other fire performance tests. More detailed information and official test reports are available from your local Service Centre or authorized dealer.

Flammability

*Classifications depend on sheet type and thickness.

Method	Classification*
BS 476/7	Class 1
DIN 4102	B-1 (10&16 mm)
NSP 92501	M-1, M-2
ASTM D-635	CC-1
ASTM-E-84	Class A
EN 13501	B, s1, d0

4.4 UV protection

Polycarbonate sheets are a perfect material for construction. They are lightweight, durable, aesthetic and easy to install. However, polycarbonate disadvantage is its sensitivity to ultraviolet radiation from sunlight.

One of the properties of the polymer is its ability to absorb ultraviolet radiation. However, under its influence, polycarbonate degrades and is rapidly destroyed; it leads to yellowing, blushing and reduction in the strength of the material.

During the material production and study, technology of polycarbonate sheet protection against UV was changed. In the early years, to protect the polycarbonate from solar radiation a lacquer was applied. The disadvantages of this coating were cracking, blushing and uneven distribution over the surface of the sheet. Later, application of special protective coating by coextrusion was developed.

Protective coextrusion layer, which is an integral part of the sheet, is a polycarbonate, enriched with a special active additive. The greater is the concentration of the additive, the more effective and thinner can be coextrusion layer.

Therefore, the question about the coextrusion layer thickness of UV-protection, without reference to concentration of active additive in polycarbonate, is not correct. This layer may be 100 microns, but the amount (concentration) of the active substance is so small that the sheet does not serve half of the claimed life.

For the convenience of layer thickness checking during production, an optical additive can be introduced in the coextrusion layer along with the active additive. The optical additive can be seen under an ordinary ultraviolet lamp or, for example, under lamplight of currency testing device.

Presence of optical additive does not mean existence of active additive, which protects polycarbonate against UV, and moreover, say nothing about its concentration.

It is known that some manufacturers of defective products, in order to reduce production costs, produce sheets with coextrusion layer containing only an optical additive. Thus, in fact the sheets are not protected from exposure to UV and accordingly, from destruction. So when buying you have to be extremely careful.

Some manufacturers claim that their polycarbonate has a UV-additive in the product substance. All manufacturers of polycarbonate feedstock enter into pellets small percentage of UV-stabilizing agents to maintain the raw feedstock during transportation and storage. Concentration of the stabilizing additive is very small and in no way is sufficient to provide necessary protection to finished product.

That is, if the manufacturer claims that the UV additive is contained only in the polycarbonate substance, then this sheet is not at all protected against UV. In order to achieve necessary protection, concentration of UV additives in the polycarbonate substance should be so high that the cost of such a sheet will be exorbitant. There is no manufacturer in the world that works on this principle. Today there is no better way to protect polycarbonate sheets for a guaranteed period of their service life than coextrusion.

The warranty provided by the Plaza Polygal Company is an indication that the produced material will not lose its physical, mechanical and optical properties (i.e. preserves its impact resistance, do not become turbid, do not turn yellow) during the guaranteed period.

Summarizing all the above, we can say that in choosing polycarbonate it is insufficient to know only the thickness of the UV protection layer, because the buyer has no opportunity to verify the effectiveness of the product protection. In this case, trust the manufacturer guarantees.

It is important to remember:

Side of the sheet protected from ultraviolet radiation is referred to as "external." Care should be taken on the compliance of the manufacturer's recommendations for sheets installation. Otherwise, the complaint will not be accepted by manufacturer.

4.5 Impact strength – hail resistance

Small Hard Body Impact Test:

It is a falling dart impact test, in which a 250-gram dart is dropped from a height of 1 meter onto a 300x300 mm sample. A failure occurs when the sheet surface is braked, cracked or penetrated.

The test is done according to EN ISO 6603-1 in which the dart tip diameter is 20mm. The result of the test is Passed if the ten samples taken from three different sheets had no failure.

The energy developed in this test is 2.45 Joule, which is more than three times the energy of a 20mm ice ball with a speed of 20 m/sec.

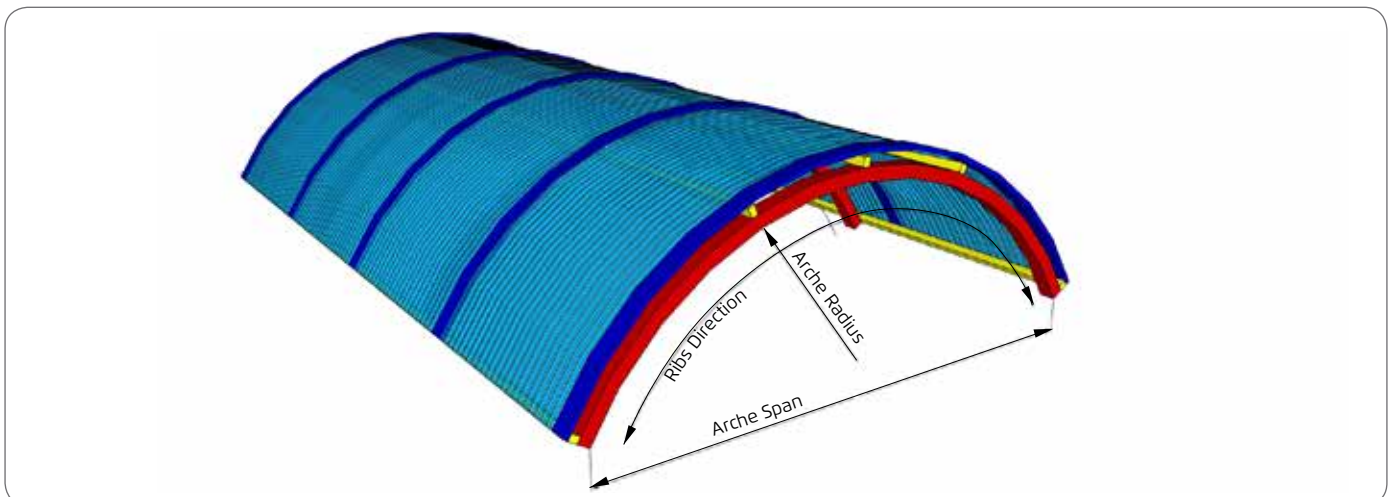
4.6 Bending the sheet

Polygal sheet can be successfully cold curved over curved support glazing profiles, to suit many glazing applications, e.g. domes, roof-lights, etc. Providing the radius is not 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 longitudinally, never across the width of the sheet.

Sheet Thickness (mm)	Minimum cold bending radius* (mm)
4	700
6	1050
8	1400
10	1750
16	2800
20	3500
25	4370
32	5600

* Valid for sheets with standard weight only

Termogal Super structured MWPC sheets intended for use in flat structures only.



4.7 Durability

The durability of the sheet is demonstrated, according to EN 16153, by testing the sheet properties before, during and after artificial ageing.

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 (300 nm to 2500 nm) to consider:

- 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 Plazit-Polygal products data relate to the 18 GJ/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.

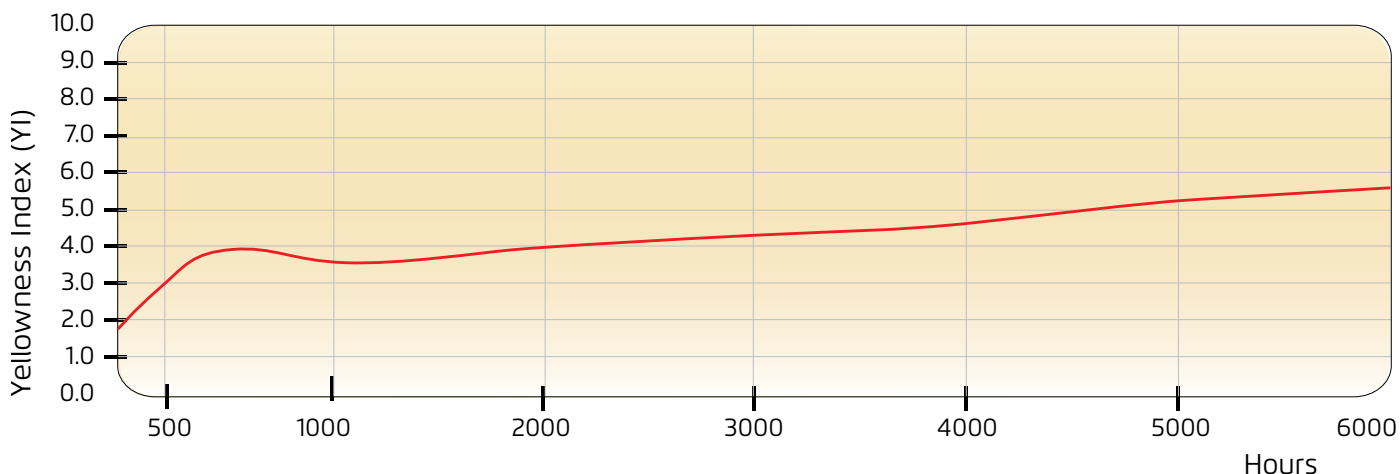
A clear product is classified ΔA when the variation in YI is less than 10 units and the variation in LT is less than 5% of the unexposed sample.

A colored product which has the same PC material as the clear product and the same UV protection, is classified ΔD without further testing.

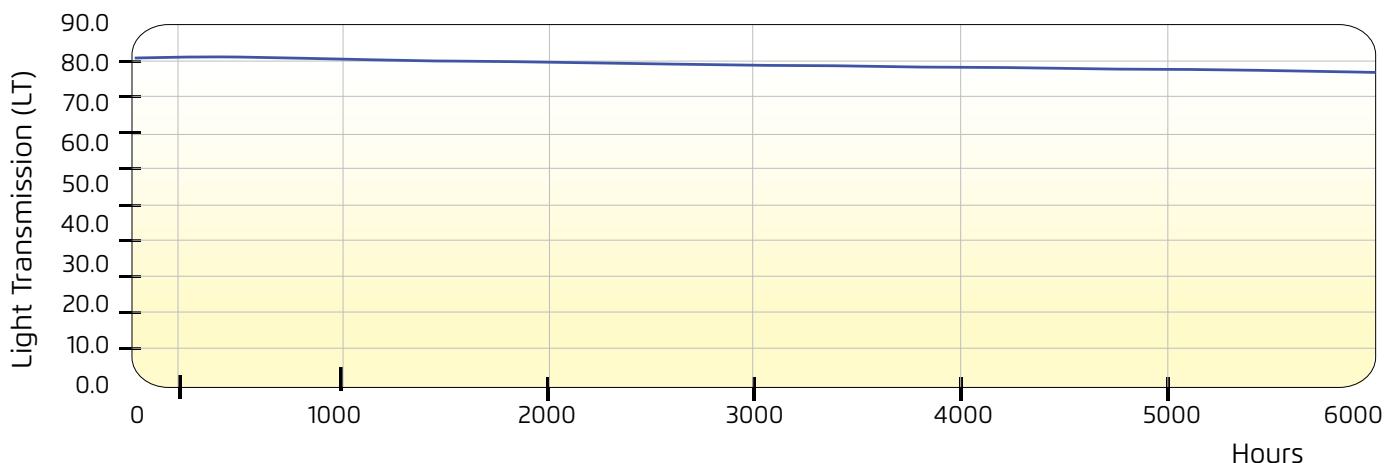
Regarding the mechanical properties (E-Modulus and tensile strength), a sample which has been classified according to the above, is assumed to lose less than 10% of its original value.

See below a typical graph of YI and LT vs exposure time:

Yellowness Index



Light Transmission



User Guide



5. User guide information

5.1 Packaging

Plazit - Polygal products are generally delivered in 20' and 40' box containers, protected on both sides by polyethylene sheets against scratching, and secured to prevent damage from movement within the container. The sheet ends are sealed with masking tape to prevent dust and insects from entering into the fluting of the sheets.

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. Sheets must be stored away from exposure to sunlight and according to the company's storage guidelines.

5.2 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, sheets should be covered with an opaque material (cardboard, wood, EPDM sheet etc.) that provides protection from the sun.

Outdoors, storage of sheets exposed to sun light will cause the protective polyethylene film to bake onto the sheet, and it WILL NOT BE ABLE TO BE REMOVED.

Outdoors, DO NOT store sheets under flexible PVC coverings.

5.3 Cleaning

Polygal Sheets – standard and specialized – 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.

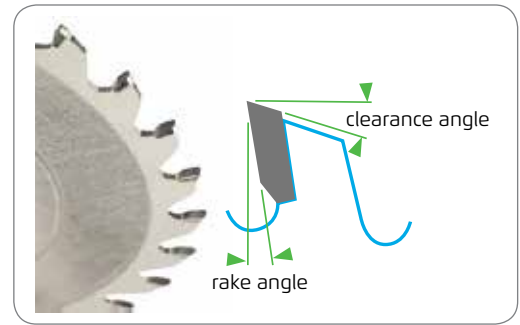
5.4 Additional Operations

Cutting - Polygal Multi wall 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. Saw dust should be blown out of the channels using clean compressed air. Circular saws should have fine-toothed panel blades. Thinner gauges can be cut with a box knife. It is important that the knife is sharp.

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	-
Tooth spacing	2-5 mm	1.5 - 2.5 mm



Drilling - Holes can be drilled by a power drill using standard high speed steel twist drills or drills with an 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 40 mm 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.

Drilling recommendations

Hole diameter (mm)	Speed (rev/min)
20° - 30°	327
15°	0.5°
180 - 250 m/min	200 - 250 m/min
1800 - 2400 m/min	-
2-5 mm	1.5 - 2.5 mm

Bonding - Adhesive bonding can be accomplished by using chemically and physically compatible elastomeric adhesives. Polygal Multi Wall sheets can be bonded to various plastics, glass, metals and other materials. Choice of the bonding agent depends on flexibility, heat resistance, appearance, etc.

Cold forming - Polygal Multi Wall sheets can be easily sprung into arches. The arch must be parallel to the ribs (see Section 4.6, page 29 for minimum radius)

Thermo forming - prior to forming Polygal Multi Wall sheets, it should be pre-dried for 1/2 hour at 125°C (257°F). Polygal sheet can be thermo formed to take a permanent set using strip heaters, hot or cold tools, free forming and vacuum forming. Optimum temperatures should be determined by trial. As a starting point heat tools to 135°C (275°F) and sheet to 170°C (338°F). Execute form or pull vacuum when surface skin starts to sag. Do not allow ribs to sag. Polygal Multi Wall sheets pre-laminated with a decorative material, should be heated from the bare side.

6. Installation Guide

6.1 Planning the Supporting Structure

- Install the sheets with the ribs parallel to rain water flow and with a slope of at least 10°. In wall and gable applications always ensure that the ribs are positioned vertically.
- Supporting beams must be at least 40 mm wide to ensure good anchorage of sheets and fastening accessories.
- In case of arched structure, check the smallest permissible cold bending radius (R) according to the sheets thickness.
- Ensure that a qualified professional checks and approves the structure before execution.

6.2 Preparing the Supporting Structure

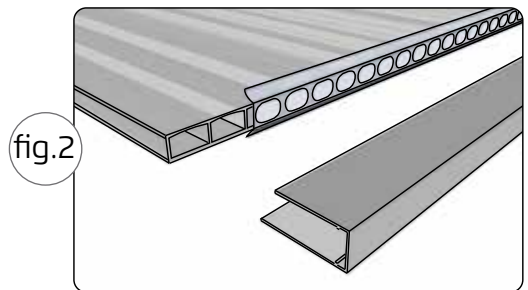
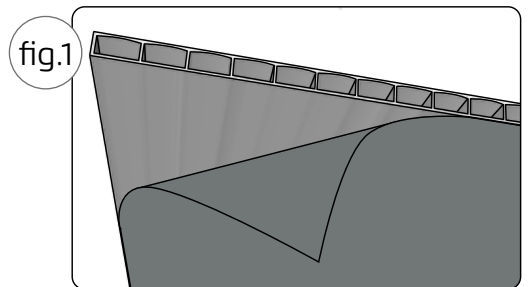
- Complete all the metalwork and painting before beginning sheet installation work.
- Check the dimensions on site, and plan the roofing requirements before ordering Polygal products for the project.

6.3 Preparing the Sheets

- Remove the grey protective film (fig.1).
- Fold back the printed sheet protection film 10 cm on each side.
- Attach Perforated Edge Tape (see Appendix 2) to the upper and lower edges of the sheet (fig.2).

6.4 Preparing the Edge Profiles

- Use an Aluminum Edge Profiles to protect the lower edge of the sheets (fig.2). For the upper edges protection also a Polycarbonate Edge Profiles can be used.
- Use a metal saw to cut the aluminum Edge Profiles into pieces matching the width of sheets to which they will be attached.
- Drill drainage channels to allow for the flow of condensed water along the profiles used for the bottom section of the building's roof.
- Attach the edge profile to the sheet with the short side on top of the sheet.



6.5 Sheets Installation

Step 1 – Place the sheets with the side protected by the printed film upwards. The sheet must be placed so that its top edge is strictly parallel to the ridge line.

Step 2 – Slide the base connecting profile underneath the sheet flank. This profile is fastened on the center line with screws to the lath in the places where they intersect. On the opposite side of the profile along the length, fit a spacer profile.

Step 3 – Position the connecting profile cap in place. For a Polycarbonate Connection Profiles 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 Profile with a applicable screws (see Appendix 3 - Connection Systems).

Step 4 - The structure fasten the next base profile and is attach by screws. Following this second sheet is placed, which is also being fasten along the lower purlin with screws and gaskets. After that, the next set, the third base profile. Only after that you can install the previous, second cap profile.

Continue to add sheets, and profiles until reaching the end of the building.

Step 5 - After completing installation, remove all the printed protective film from the sheets.

6.6 Finish and Fixing Reinforcements

- Place fixing screws with fixing gaskets (see Appendix 2) only in the support frame lines. Before installing the screws in the sheet, drill holes slightly larger diameter (3-4 mm more) to compensate for thermal expansion of the sheet.
- Do not over-tighten screws (fig.3).

For best results always use Polygal screws and accessories, designed especially for use with Polygal sheets.

The using of sealing materials that not recommended by the manufacturer may lead to damage of polycarbonate sheets. Such damage is not covered by the manufacturer's warranty.

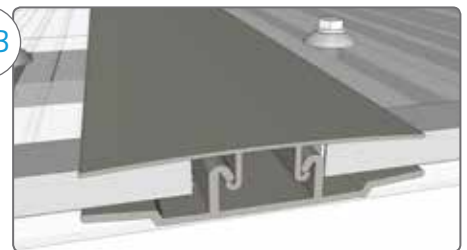
St.1



St.2



St.3



St.4



St.5

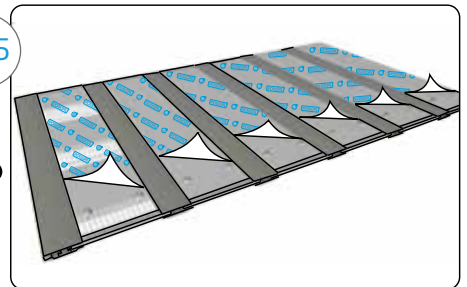
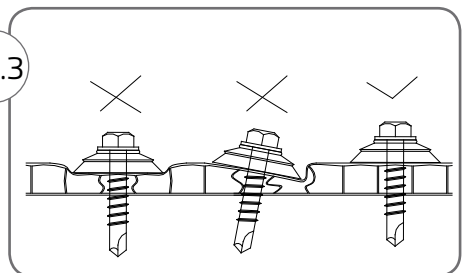


fig.3



Appendixes

Appendix 1: Load bearing capacity – wind and snow load

The information contained in the wind-load charts has been drafted on the basis of our best knowledge. Plazit-Polygal group reserve 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 their own architect, engineer or other professional consultant that the materials offered for sale meet the requirements and specifications of the particular project and use for which they are being purchased.

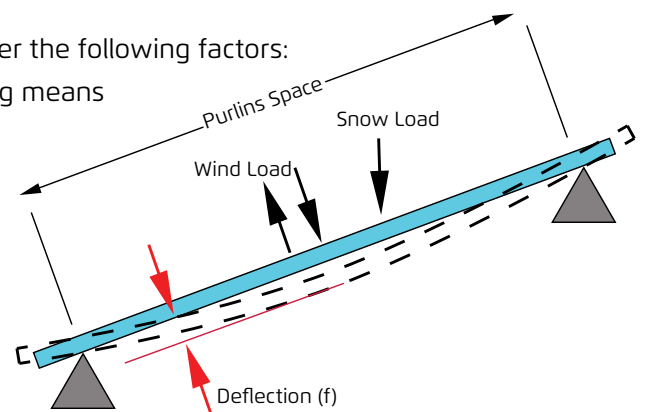
Should you visit or download contents from Plazit Polygal Group website, please note that it is your responsibility to ensure that you act in compliance with any local legislation or requirements applicable.

Presenting loading data of Polygal sheets requires to consider the following factors:

- Roof type: flat, arched, purlin supported and point fastening means
- Load direction: positive and negative
- The required local design load
- The allowed deflection of the sheet – usually 50 mm

After considering the factors above we should chose:

- The specific sheet to use (structure, thickness, weight)
- The distance between supports and sheet dimensions
- The support/clamp method (aluminum or PC profiles, point fastening)



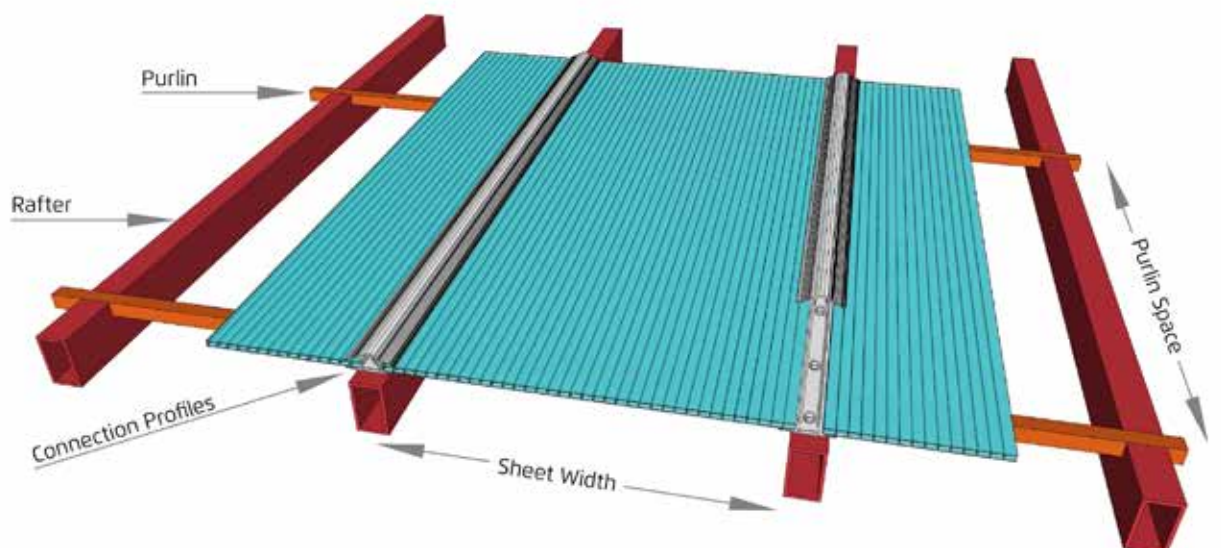
The following tables show the dimensions and loads of various sheets, considering the expected deflection, the buckling moment and the edge translations.

Four Sides Frame Flat Glazing (intermediate fields):

In this case, 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.

Supporting structure



Polygal Standard Sheet (PCSS) 6 mm, 1300 g/m²

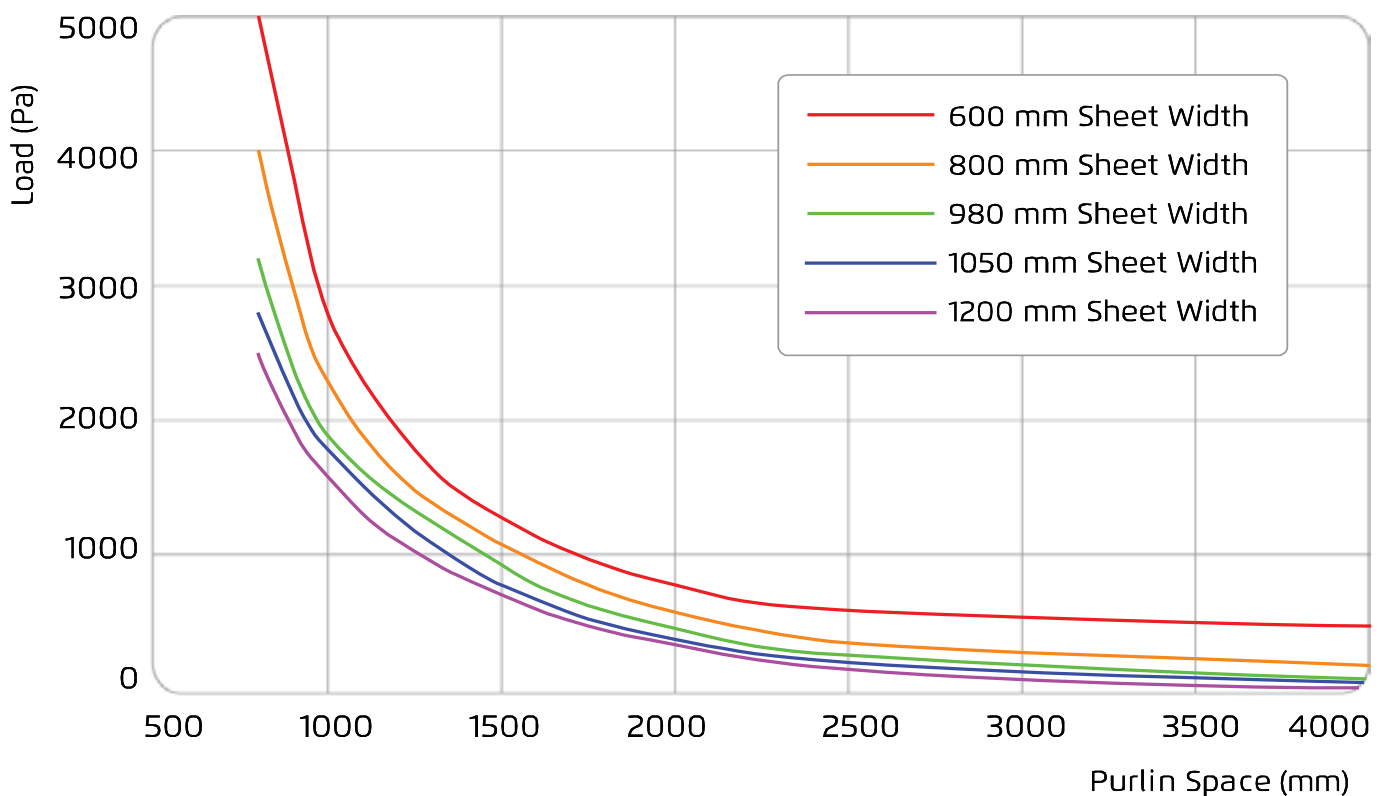
Positive Load (Pa) vs Purlin Space for various widths (f max=50 mm)

Purlin Space (mm)	Sheet Width (mm)				
	600	800	980	1050	1200
800	5000	4000	3200	2800	2500
900	3800	3000	2400	2200	1950
1000	2800	2300	1900	1800	1600
1250	1800	1500	1350	1200	1050
1500	1300	1100	950	800	730
1750	1000	800	650	550	500
2000	800	600	480	400	360
2400	630	400	300	250	200

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

	500	200	96	75	48
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Load vs Purlin Space PCSS 6mm, 1300kg/m²



Polygal Standard Sheet (PCSS) 8 mm, 1500 g/m²

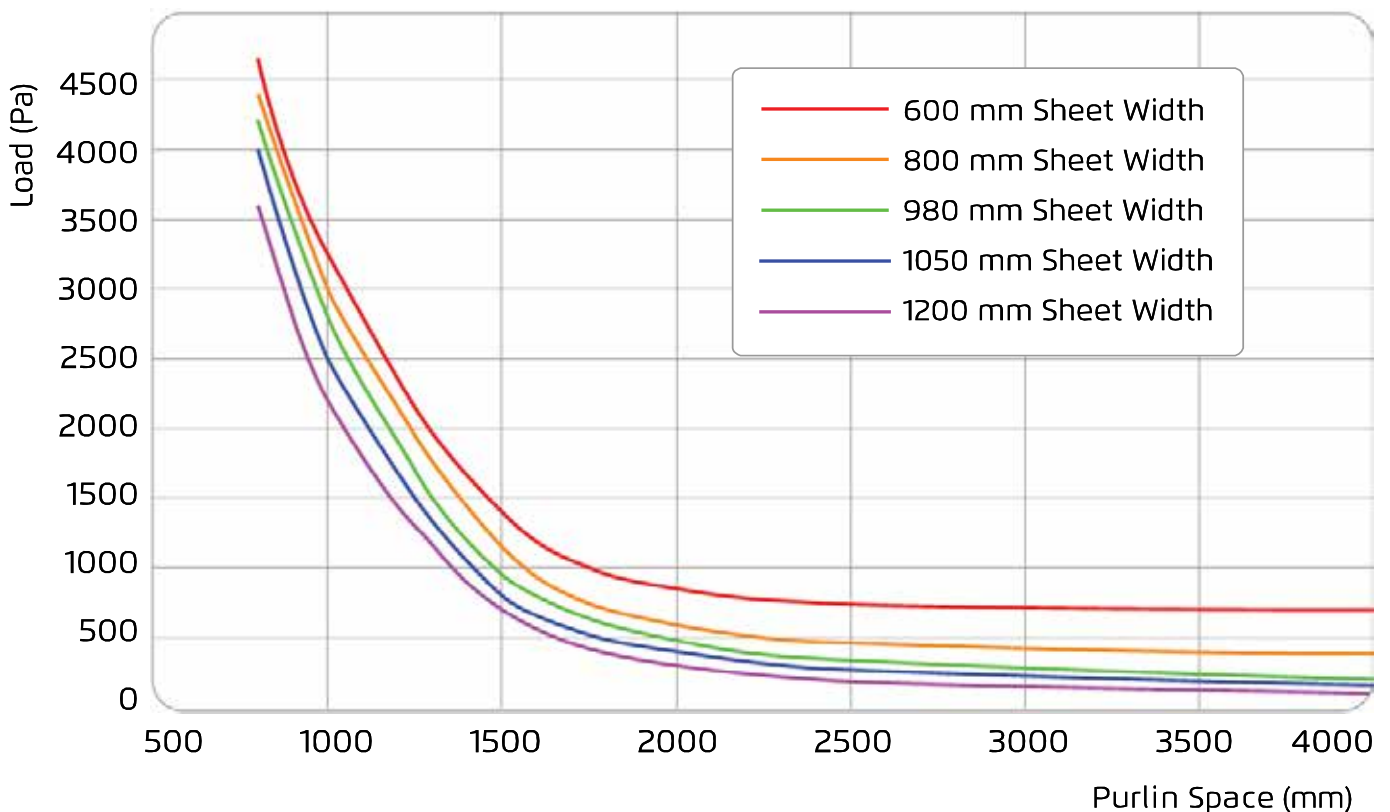
Positive Load (Pa) vs Purlin Space for various widths (f max=50 mm)

Purlin Space (mm)	Sheet Width (mm)				
	600	800	980	1050	1200
800	4650	4400	4200	4000	3600
900	3800	3700	3500	3200	2800
1000	3250	3000	2800	2500	2200
1250	2150	1950	1700	1500	1300
1500	1400	1150	950	800	700
1750	1000	750	650	520	420
2000	850	600	480	400	300
2400	750	470	350	280	200

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

	700	385	200	160	100
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Load vs Purlin Space PCSS 8 mm, 1500 g/m²



Polygal Standard Sheet (PCSS) 10mm, 1700 g/m²

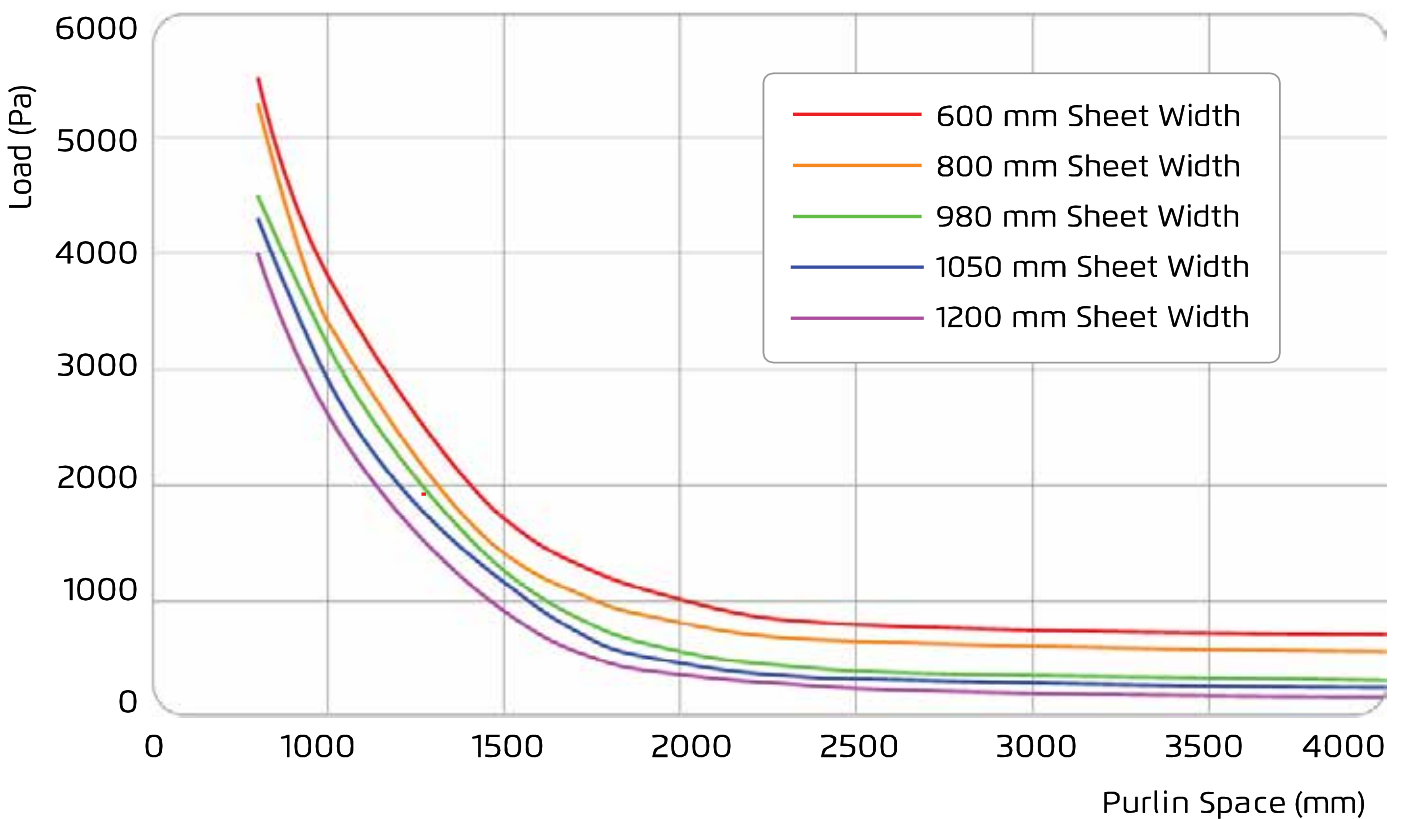
Positive Load (Pa) vs Purlin Space for various widths (f max=50 mm)

Purlin Space (mm)	Sheet Width (mm)				
	600	800	980	1050	1200
800	5500	5300	4500	4300	4000
900	4500	4250	3800	3600	3250
1000	3800	3400	3200	2900	2600
1250	2600	2200	2050	1800	1550
1500	1700	1400	1250	1150	900
1750	1250	1000	780	650	500
2000	1000	800	550	450	350
2400	800	650	400	320	250

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

	700	550	300	240	160
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Load vs Purlin Space PCSS 10 mm, 1700 g/m²



Polygal Standard Sheet (PCSS) 16 mm, 2700 g/m²

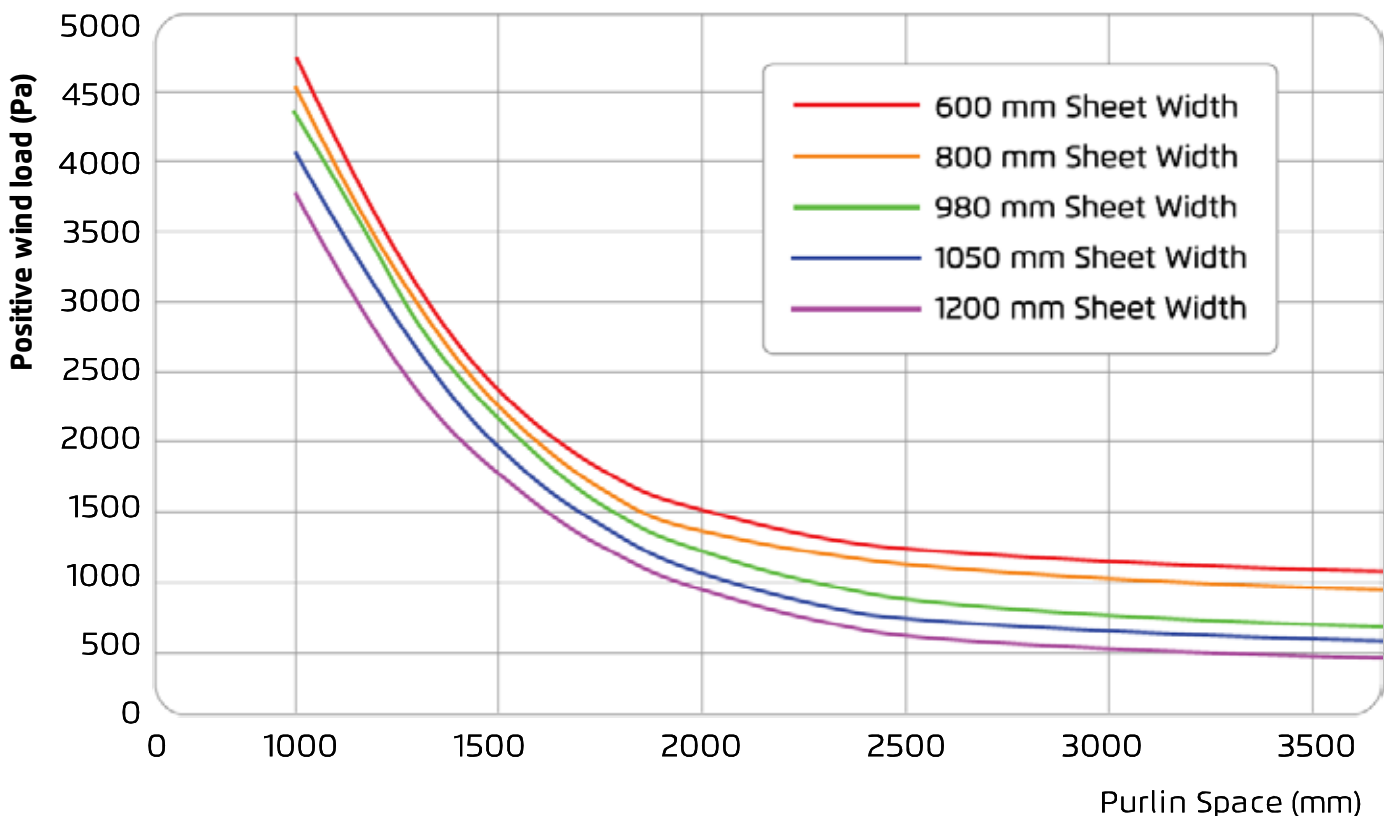
Positive Load (Pa) vs Purlin Space for various widths (f max=50 mm)

Purlin Space (mm)	Sheet Width (mm)				
	600	800	980	1050	1200
1000	4700	4500	4300	4000	3700
1250	3300	3100	3100	2800	2500
1500	2300	2200	2100	1900	1700
1750	1750	1600	1500	1350	1200
2000	1450	1300	1150	1000	900
2400	1200	1080	850	700	600

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

	1000	870	600	500	390
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Load vs Purlin Space PCSS 16/2700



Titan Sky (TSK) 10 mm, 1750 g/m²

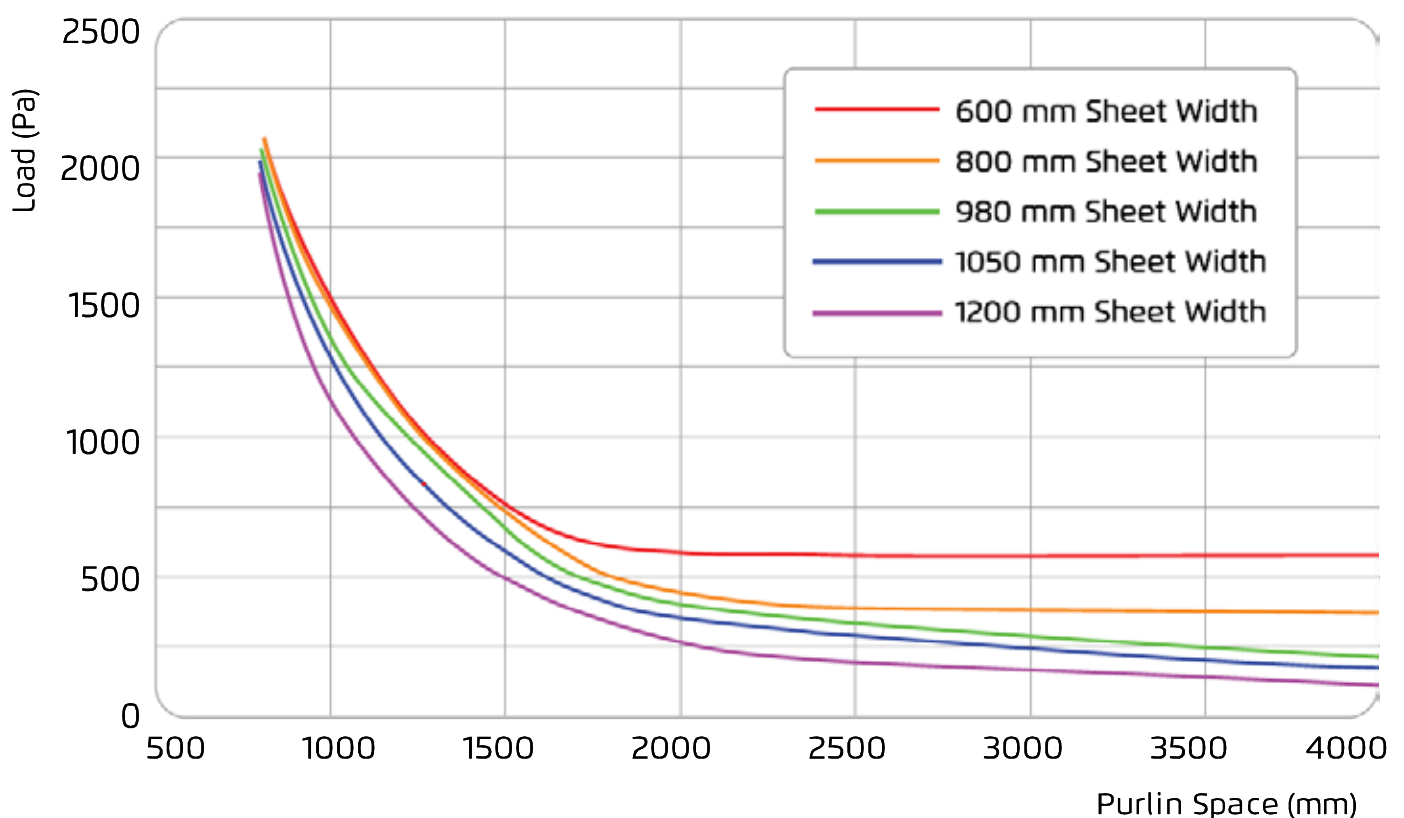
Positive Load (Pa) vs Purlin Space for various widths (f max=50 mm)

Purlin Space (mm)	Sheet Width (mm)				
	600	800	980	1050	1200
800	2070	2050	2030	2000	1950
900	1650	1700	1650	1600	1500
1000	1300	1400	1350	1250	1150
1250	900	980	930	850	740
1500	700	670	640	590	490
1750	630	500	470	430	350
2000	600	420	390	360	270
2400	580	370	330	300	200

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

	560	340	210	160	100
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Load vs Purlin Space Titan Sky (TSK) 10 mm, 1750 g/m²



Titan Sky (TSK) 16 mm, 2500 g/m²

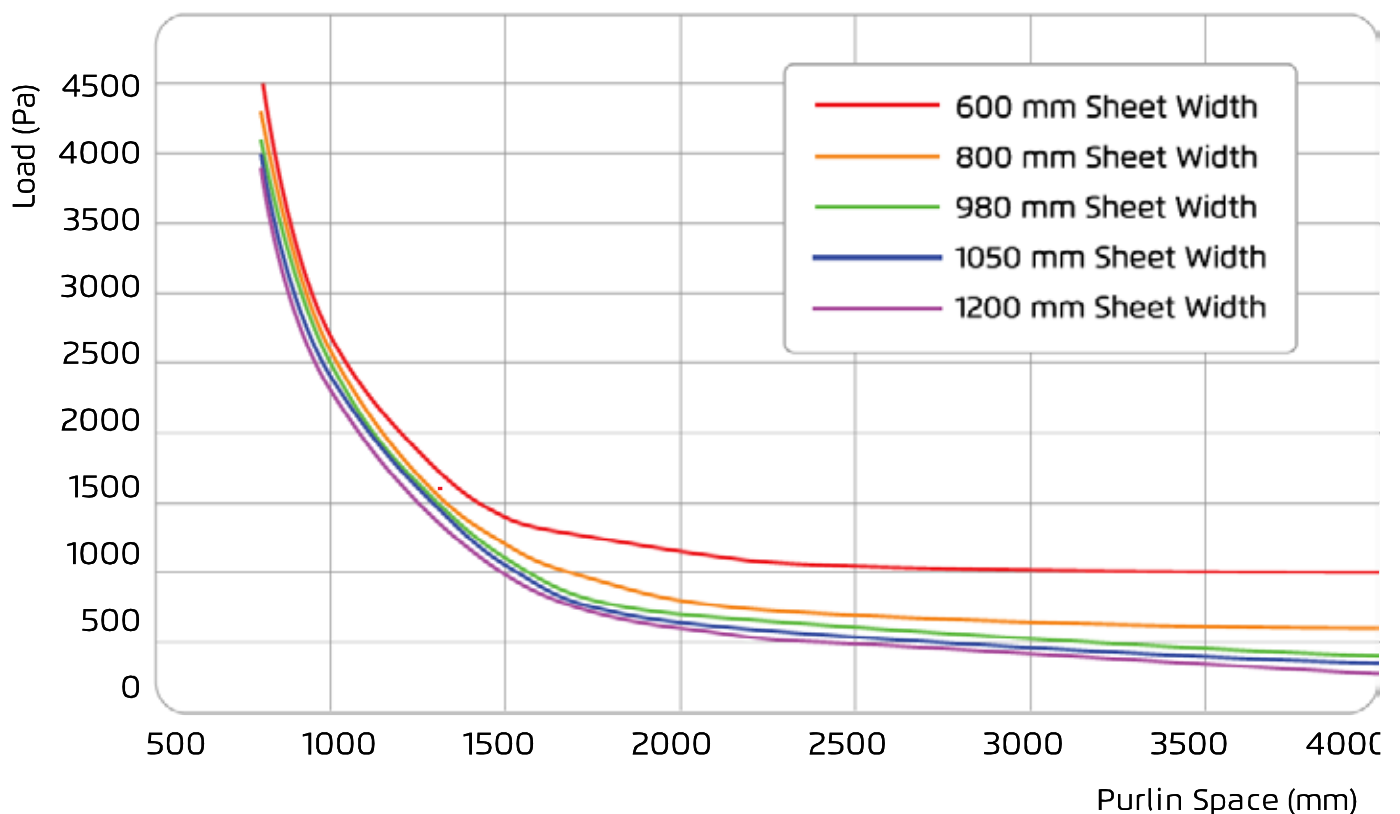
Positive Load (Pa) vs Purlin Space for various widths (f max=50 mm)

Purlin Space (mm)	Sheet Width (mm)				
	600	800	980	1050	1200
800	4500	4300	4100	4000	3900
900	3250	3150	3000	2900	2800
1000	2650	2580	2500	2400	2300
1250	1850	1690	1650	1600	1500
1500	1400	1200	1100	1050	1000
1750	1250	950	800	750	700
2000	1150	800	700	650	600
2400	1050	700	600	550	500

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

	1000	600	400	350	270
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Load vs Purlin Space Titan Sky (TSK) 16 mm, 2500 g/m²



Selectogal (RFX) 16 mm, 3000 g/m²

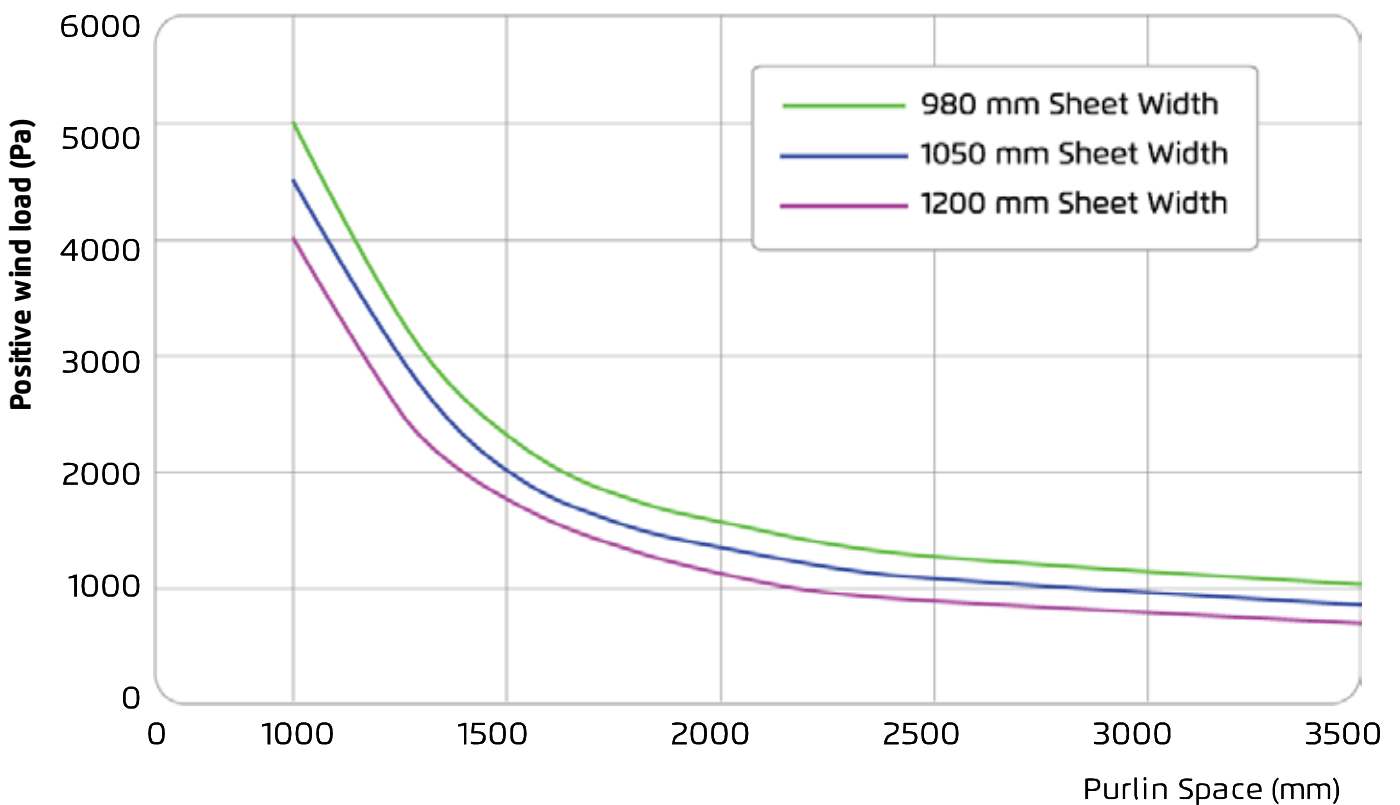
Positive Load (Pa) vs Purlin Space for various widths (f max=50 mm)

Purlin Space (mm)	Sheet Width (mm)		
	980	1050	1200
1000	5000	4500	4000
1250	3300	2950	2500
1500	2300	2000	1760
1750	1800	1560	1350
2000	1550	1350	1120
2400	1300	1100	900

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

	900	750	600
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Load vs Purlin Space Selectogal (RFX) STW 16/3000



Thermogal (TRM) 25 mm, 3500 g/m²

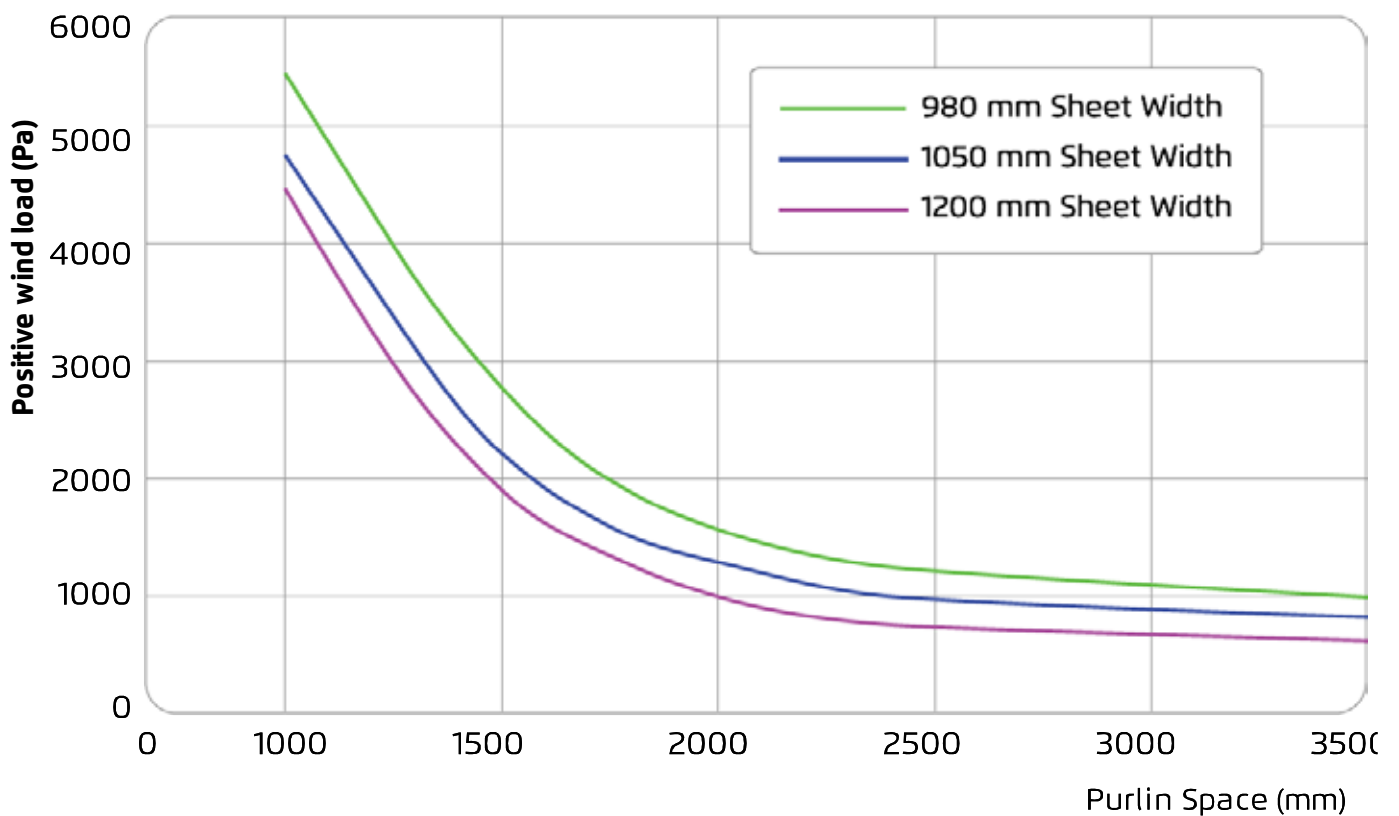
Positive Load (Pa) vs Purlin Space for various widths (f max=50 mm)

Purlin Space (mm)	Sheet Width (mm)		
	980	1050	1200
1000	5500	4800	4500
1250	4000	3400	3000
1500	2800	2200	1900
1750	2000	1600	1350
2000	1600	1300	1000
2400	1250	1000	750

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

	880	770	550
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Load vs Purlin Space Thermogal (TRM) 25/3500



Thermogal (TRM) 32 mm, 3800 g/m²

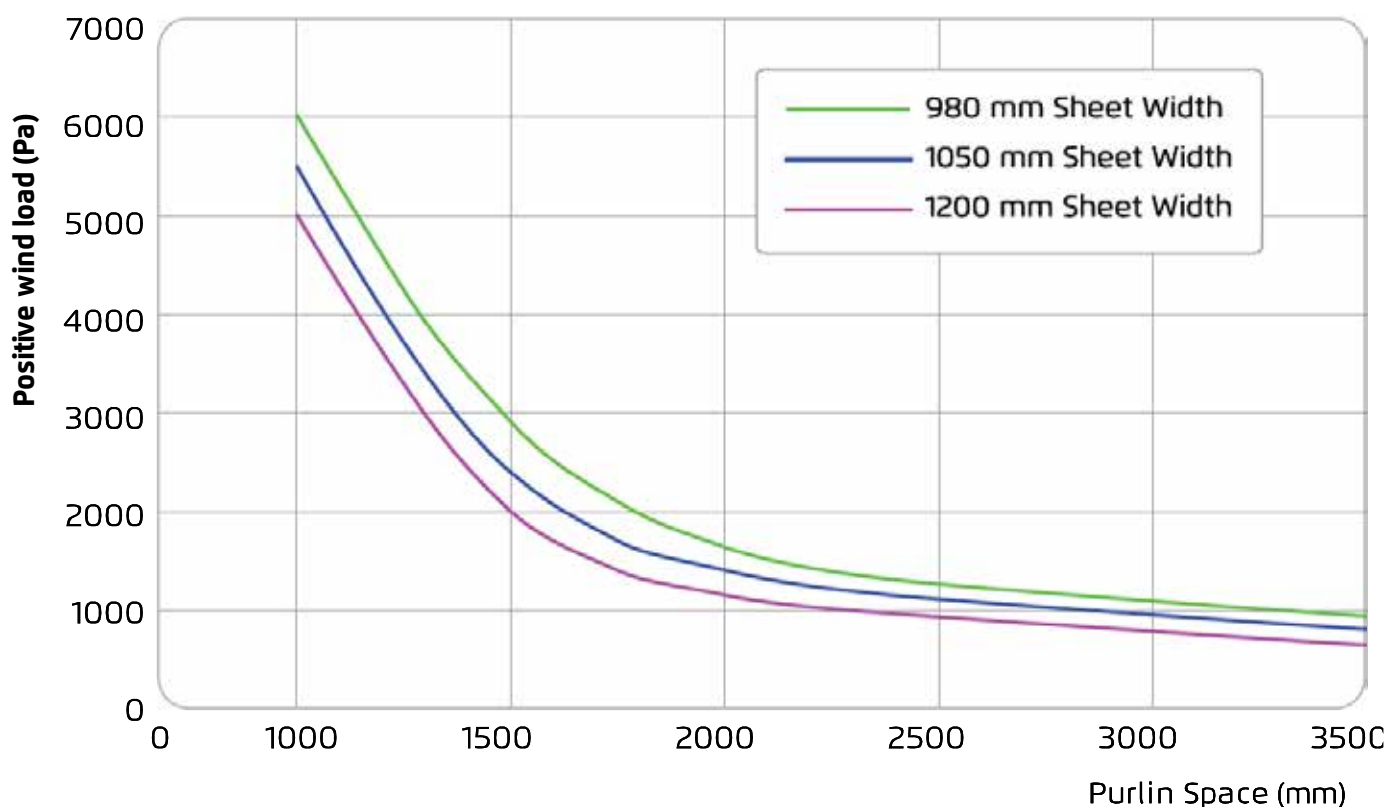
Positive Load (Pa) vs Purlin Space for various widths (f max=50 mm)

Purlin Space (mm)	Sheet Width (mm)		
	980	1050	1200
1000	6000	5500	5000
1250	4250	3700	3300
1500	2900	2400	2000
1750	2100	1700	1400
2000	1650	1400	1150
2400	1300	1140	950

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

	780	680	520
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Load vs Purlin Space Thermogal (TRM) 32/3800



Thermogal Super (TRMS) 32 mm, 3800 g/m²

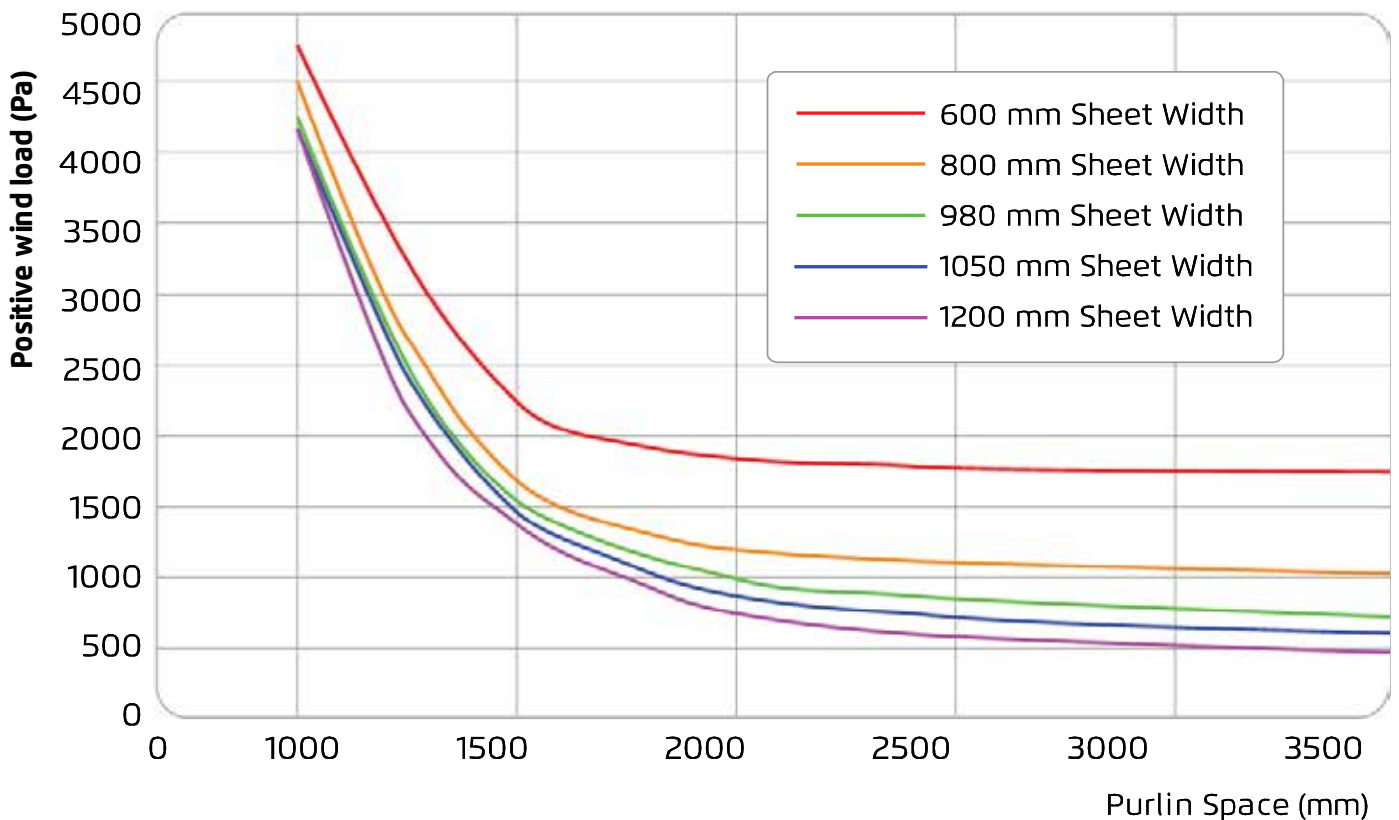
Positive Load (Pa) vs Purlin Space for various widths (f max=50 mm)

Purlin Space (mm)	Sheet Width (mm)				
	600	800	980	1050	1200
1000	4750	4500	4250	4200	4200
1250	3250	2700	2500	2450	2200
1500	2250	1700	1550	1475	1400
1750	1950	1350	1200	1100	1000
2000	1850	1200	1000	875	750
2400	1800	1125	870	750	600

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

	1750	990	660	570	440
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Load vs Purlin Space Thermogal Super (TRMS) 32/3800

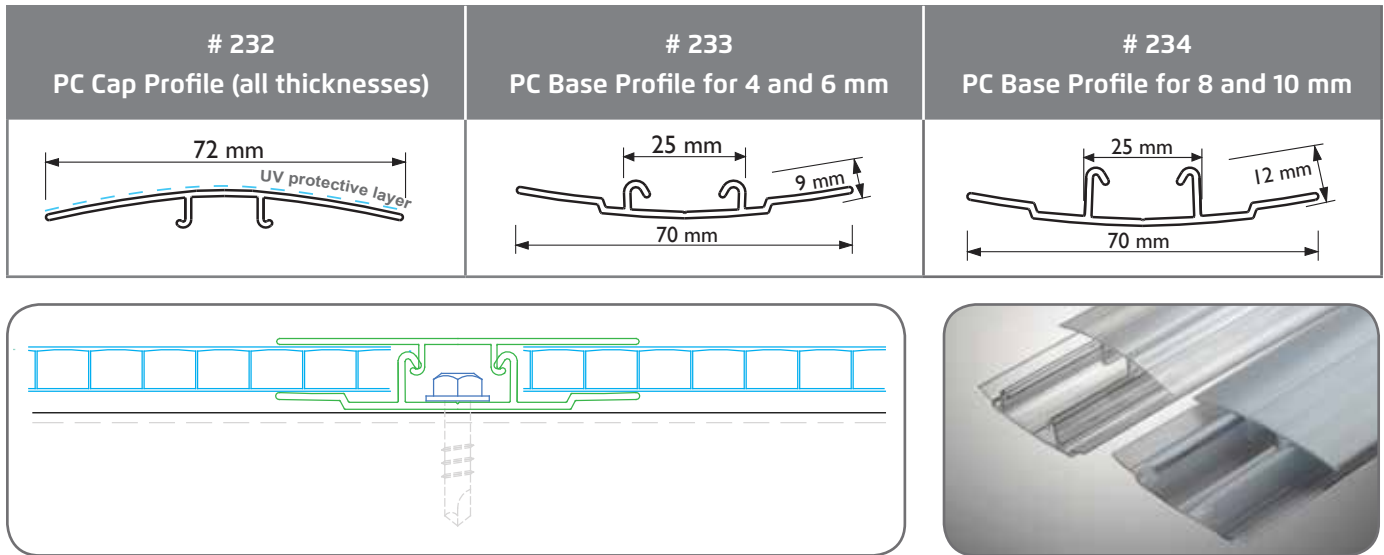


Appendix 2: Connection Systems

Polycarbonate connection profiles

Easy Clip (ECP) connection profiles – 6 to 10 mm sheets connection. For wide range of architectural projects. The system includes screws for fixing the base profile to the support structure - #411 for steel structures and #421 for wooden structures.

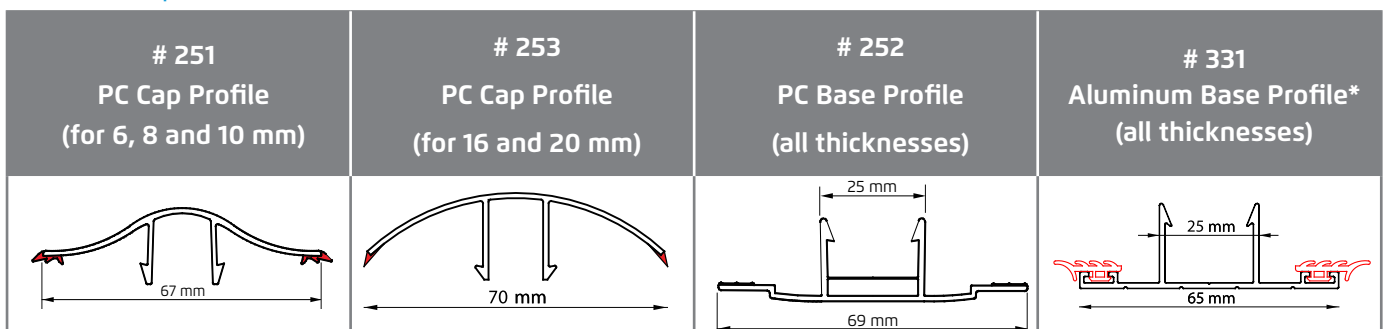
Technical Specifications



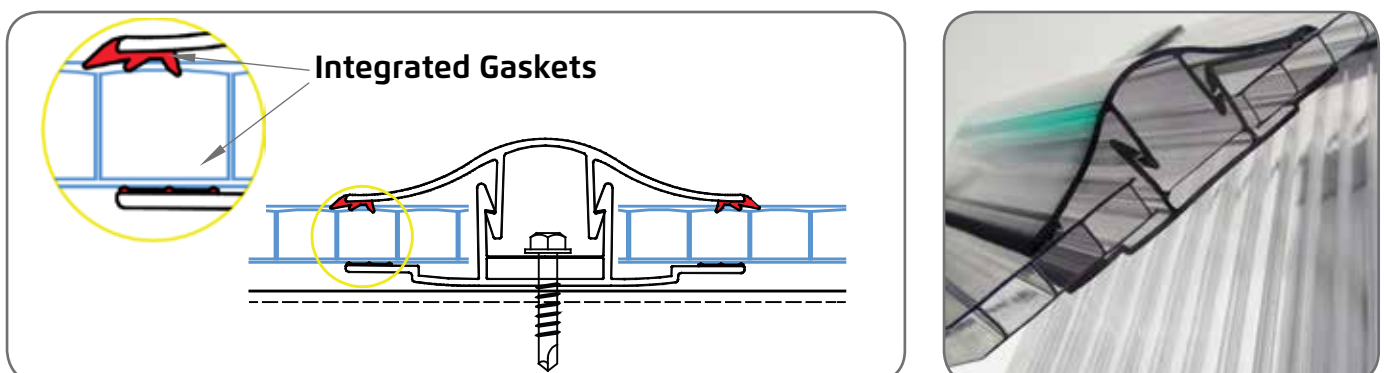
Gasket Clip (GCP) connection profiles with integrated gaskets – for connection of 6, 8, 10, 16 and 20 mm sheets, for wide range of architectural projects. Enables simple installation and a waterproof method for roofing.

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

Technical Specifications



* With EPDM Glazing gaskets (# 524)







Aluminum Glazing System

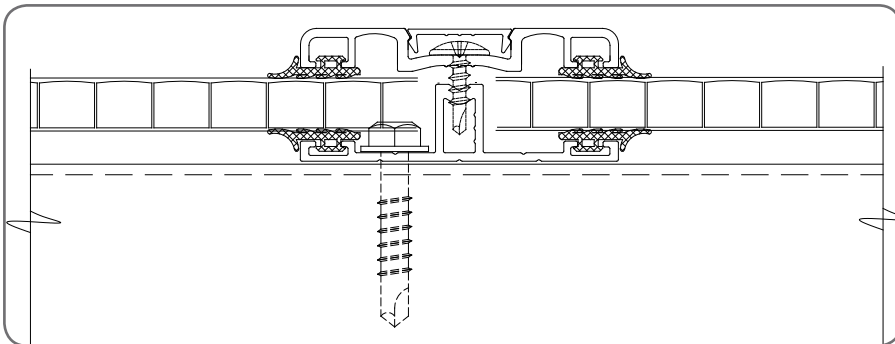
Mega Lock (MGL) glazing system – is specially designed for use in glazing with 6 to 25 mm polycarbonate multi wall sheets. The system has a rabbet depth of 20 mm, which enhances its fastening properties and prevents glazing failures due to wind and snow loads or thermal expansion. The profiles are interconnected by means of self drilling screws of different lengths. The system includes screws for fixing the base profile to the support structure - #411 for steel structures and #421 for wooden structures.

Wide range of architectural projects.

Technical Specifications

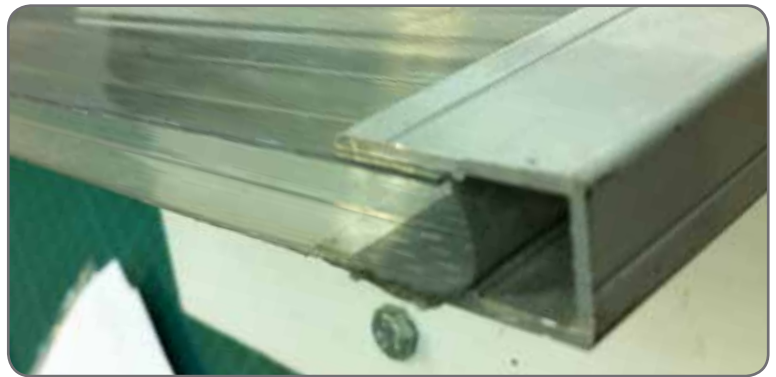
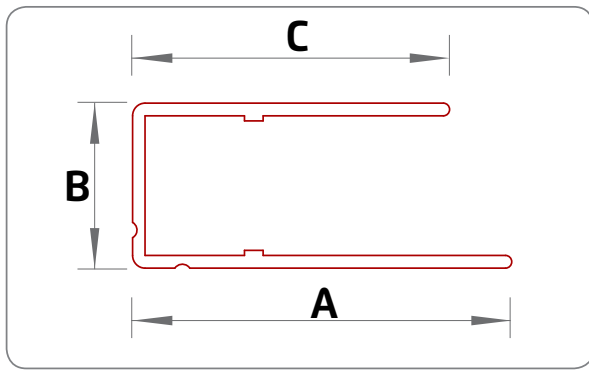
# 352 AL Cap Profile* (all thicknesses)	# 353 AL Base Profile* (all thicknesses)	#308 AL Cover Profile (all thicknesses)	#524 EPDM Glazing Gasket (all thicknesses)
			

* With EPDM Glazing gaskets (# 524)

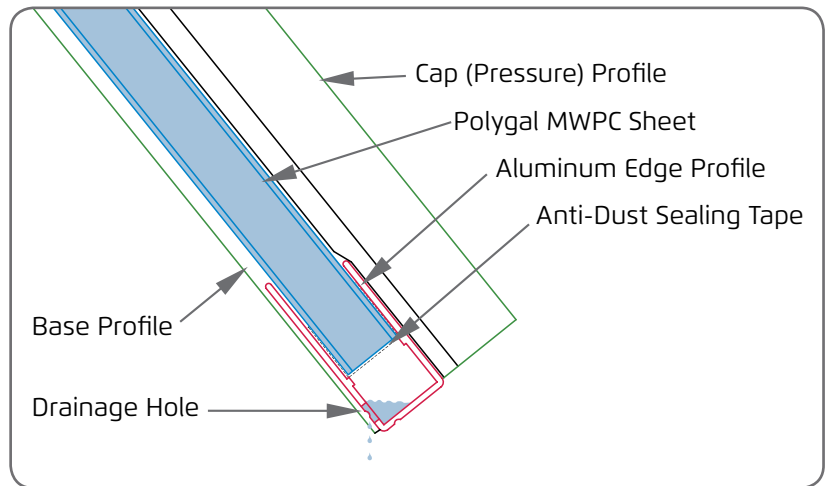


Finishing Accessories

Aluminum Edge Profiles

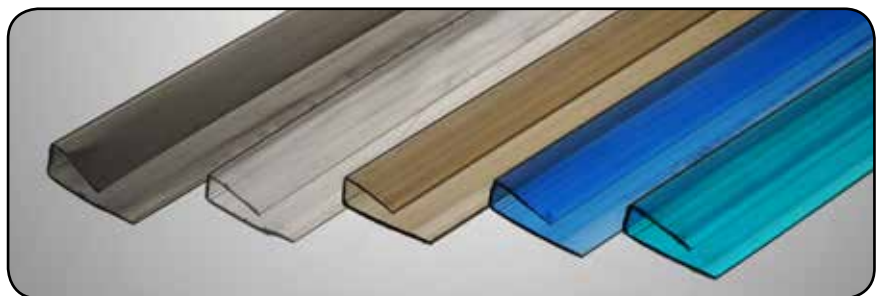
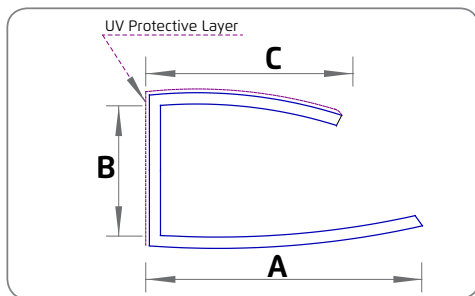


Suitable for sheets thickness (mm)	Cat #
6	327
8	311
10	312
16	313
20	328
25	314
32	320



Polycarbonate U-shape Edge Profiles

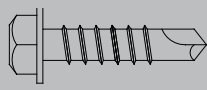
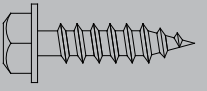
For trimming the sheets upper and lower edges U-shape aluminium or polycarbonate profiles should be used. (See drawing of edge detail in Appendix 4)



Edge Profiles Technical Specifications

Suitable for sheets thickness (mm)	Profile dimensions			Cat #
	A	B	C	
4	24.5	4.4	16.5	229
6	24.5	6.4	17.5	212
8	24.0	8.5	18.0	213
10	25.0	10.6	18.0	214
16	20.5	16.6	16.5	215
20	29	19	18	230

Screws Specifications

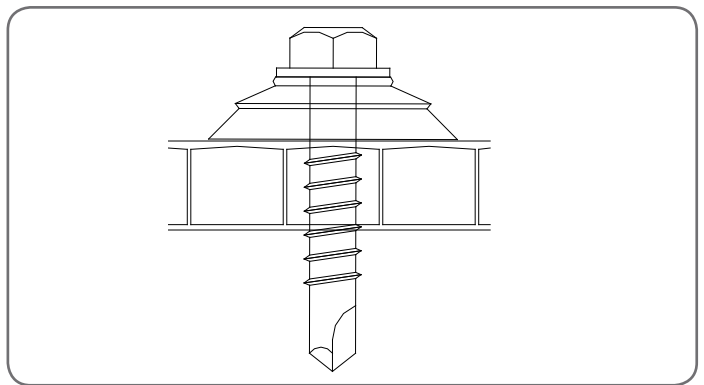
Cat. #	Screw	Description	Dimensions
400		Self drilling screw for connection of MWPC sheet to supporting structure	1/4 - 2'
411		Self drilling screw for connection of base profiles to supporting structure	1/4 - 1'
421		Wood screw for connection of base profiles to supporting structure	1/4 - 1 1/4"
422		Wood screw for connection of MWPC sheet to supporting structure	1/4 - 2'

EPDM + INOX Fixing 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 is non-woven tape system used for sealing the top and bottom edges of multiwall polycarbonate



and acrylic sheets.

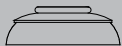
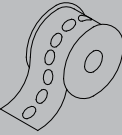
AntiDUST tape is specifically designed to stop mold, algae, insects and dust from accumulating within the walls of multiwall polycarbonate sheets.

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 without difficulty to the expansion and contraction of multiwall sheets

Seals Specifications

Cat. #	Item	Description	Dimensions
476		EPDM+INOX fixing dome (for using with screws #400 and #422)	∅ 25 mm
508		Antidust sealing tape for sheets edges (for 4, 6 and 8 mm sheets)	width 25 mm
509		Antidust sealing tape for sheets edges (for 10 and 16 mm sheets)	width 38 mm
510		Antidust sealing tape for sheets edges (for 20, 25 and 32 mm sheets)	width 50 mm
507		Silicone for sealing of polycarbonate sheets	

While sealing of polycarbonate sheets it is **not recommended** to use sealants have not been tested in the laboratory of the manufacturer. Such sealants can result in damage not allowing continued usage of polycarbonate sheets. Such damage is not covered by general warranty Plazit Polygal Group and not be taken into consideration.

Appendix 3: Sheets optical properties

* Light Transmission by ASTM D 1494

Clear sheets:

Thickness (mm)	Color	Structure	SHGC	Light Transmission (%) by ASTM D 1003
4	clear	standard	0.77	82
6	clear	Standard	0.75	80
8	clear	Standard	0.74	79
8	clear	Triple Clear (PC3)	0.69	77
10	clear	Standard	0.73	78
10	clear	Titan Sky	0.54	62 (79*)
16	clear	Standard	0.68	74 (86*)
16	clear	Titan Sky	0.52	61 (75*)
16	clear	Thermogal Super	0.36	42
16	clear	Selectogal (RFX)	0.35	75
20	clear	Thermogal	0.61	56
20	clear	Thermogal Super	0.36	40
25	clear	Thermogal	0.59	55 (79*)
32	clear	Thermogal	0.51	50 (73*)
32	clear	Thermogal Super	0.47	38 (60*)

Bronze colored sheets:

Thickness (mm)	Color	Structure	SHGC	Light Transmission (%) by ASTM D 1003
6	bronze	Standard	0.58	42
8	bronze	Standard	0.58	42
10	bronze	Standard	0.59	42
10	bronze	Titan Sky		42 or 30
16	bronze	Standard	0.56	42 (45*) or 30
16	bronze	Titan Sky	0.46	42 or 30
25	bronze	Thermogal	0.38	20
32	bronze	Thermogal	0.33	15

"White" group colors sheets:

Thickness (mm)	Color	Structure	SHGC	Light Transmission (%) by ASTM D 1003
6	ice	Standard	0.47	32
8	ice	Standard	0.49	32
10	ice	Standard	0.48	32
10	milk	Standard	0.14	5
8 and 10	high white	Standard	0.17	6
16	ice	Standard	0.48	32 (57*)
25	ice	Thermogal	0.36	20 (54*)
25	non glare (NGL)	Thermogal	0.38	20 (51*)
32	non glare (NGL)	Thermogal	0.38	15 (47*)
16	non glare bicolor	Selectogal (RFX)	0.28	32
32	non glare (NGL)	Thermogal Super		10

Turquoise colored sheets:

Thickness (mm)	Color	Structure	SHGC	Light Transmission (%) by ASTM D 1003
6	turquoise	Standard	0.59	52
8	turquoise	Standard	0.61	52
10	turquoise	Standard	0.61	52
16	turquoise	Standard	0.56	52

Blue colored sheets:

Thickness (mm)	Color	Structure	SHGC	Light Transmission (%) by ASTM D 1003
6	blue	Standard	0.64	30
8	blue	Standard	0.67	30
10	blue	Standard	0.67	30
16	blue	Standard	0.6	30

Green colored sheets:

Thickness (mm)	Color	Structure	SHGC	Light Transmission (%) by ASTM D 1003
6	green	Standard	0.53	30
8	green	Standard	0.57	42
10	green	Standard	0.58	42
16	green	Standard	0.55	42

3.3 Selective layered sheets optical properties

* Light Transmission by ASTM D 1494

Thickness (mm)	Color	Structure	SHGC	Light Transmission (%) by ASTM D 1003
6	PSD silver (volume)	Standard	0.3	18
8	PSD silver (volume)	Standard	0.32	18
8	PSD silver	Standard	0.29	18 (24*)
10	PSD silver	Standard	0.3	18 (24*)
16	PSD silver (volume)	Standard	0.23	18 (20*)
10	PSD silver (PSH)	Titan Sky	0.14	2 (6*)
16	PSD silver (PSH)	Titan Sky	0.1	2 (5*)
32	PSD silver	Thermogal	0.33	10
10	PSB (blue)	Standard	0.41	18
8	PSB (blue-Volume)	Standard	0.45	18
10	PSG (green)	Standard	0.32	18
8	PSC (couper)	Standard		18
8	Rainbow	Standard	0.43	15
8	IR green	Standard	0.52	70
8	IR blue	Standard	0.48	50
6	IR blue (volume)	Standard	0.6	55
8	IR blue (volume)	Standard	0.54	48
8	IR green (volume)	Standard	0.64	70
32	IR green	Thermogal	0.36	44 (47*)
32	IR blue	Thermogal Super	0.29	30
16	IR green	Titan Sky	0.27	48 (55*)
16	IR blue	Titan Sky	0.42	48

Thickness (mm)	Color	Structure	SHGC	Light Transmission (%) by ASTM D 1003
8	Primalite	Standard	0.39	45 (68*)
10	Primalite	Standard	0.38	45 (66*)
16	Primalite	Standard	0.27	32
16	PRL	Titan Sky	0.19	18
16	PNL	Titan Sky	0.32	20
25	Primalite	Thermogal	0.29	18
32	Primalite	Thermogal	0.24	15
8	Polycoolite	Standard	0.53	45 (63*)
10	Polycoolite	Standard	0.48	45
16	Polycoolite	Standard	0.43	32
16	Polycoolite	Titan Sky	0.27	25
8	Silhouette PRL	Standard	0.5	40
32	Silhouette PRL	Thermogal	0.34	10 (45*)
32	Silhouette PRL	Thermogal Super	0.27	8
8	Silhouette Gold	Standard	0.37	35 (63*)
6	Silhouette Gold (volume)	Standard	0.44	42
8	Silhouette Gold	Standard	0.4	35
10	Silhouette Gold	Standard	0.36	35 (61*)
32	Silhouette Gold	Thermogal	0.27	10 (43*)
32	Silhouette Gold	Thermogal Super	0.27	8
6	PNL (Volume)	Standard	0.42	35
8	PNL (Volume)	Standard	0.45	32
10	PNL (Volume)	Standard	0.47	35
8	PLM (Polymatt)	Standard	0.73	75





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