

Catalog

of Polycarbonate Sheets

2024



SOTON

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SOTON

SOTON is a reliable Ukrainian manufacturer of European-quality products. We have been successfully operating in the polycarbonate sheets market since 2003. SOTON's product line comprises both solid and multiwall polycarbonate sheets, manufactured via the extrusion method, with a total production capacity of 12,000 tons per year. The range of solid and multiwall polycarbonate products is sufficient to meet various customer needs.

Modern European equipment from Omipa (Italy) and Kuhne Group (Germany) is utilized in the production process. We exclusively source raw materials from leading global manufacturers - Covestro (TM Markolon), Trinseo (TM Calibre), and Sabic (TM LEXAN) - to produce high-quality goods.

SOTON is a recognized manufacturer in the European market. We conduct numerous deliveries for European clients and hold recommendation letters from partners. SOTON's products are certified according to European quality standards (EN 16153:2013 + A1:2015; EN16240:2014).

Additionally, SOTON has its own laboratory where regular testing and verification of manufactured products are carried out. As the leading producer of polycarbonate sheets in Ukraine, we offer a quality guarantee for our products, ranging from 10 to 15 conditional years of use.

SOTON prioritizes environmental protection by integrating innovative approaches into its manufacturing processes. Through our commitment to minimizing emissions, we strive to mitigate our environmental and public health impact. Our corporate philosophy is centered on playing a pivotal role in environmental preservation and shaping a sustainable future in Ukraine.



MULTIWALL POLYCARBONATE SHEETS

SOTON's multiwall sheets are extruded multi-layered polycarbonate sheets that take the form of a corrugated panel with a cellular structure. This material boasts numerous advantages, especially in construction applications.

SOTON's multiwall polycarbonate boasts exceptional strength and durability. These sheets withstand substantial loads and retain their integrity even under impact.



Among the crucial advantages of SOTON's sheets are their lightweight nature, excellent optical properties, high impact resistance, and resilience to severe weather conditions such as strong winds, rain, and ultraviolet radiation.

Ensuring energy efficiency in construction is a top priority today. Incorporating SOTON's polycarbonate sheets into building projects enables excellent thermal insulation. The multi-layered structure and hollow design of these sheets help minimize heat loss during the winter. UV protection in polycarbonate sheets is crucial, shielding them against harmful ultraviolet radiation, preventing damage, discoloration, and yellowing. This significantly extends the sheets' lifespan and reduces the risk of rapid deterioration.



The standard range of SOTON™ includes transparent and bronze polycarbonate with various structures and weights per square meter to meet our clients' needs, enabling a wide spectrum of sheets applications. Additionally, we manufacture polycarbonate sheets in opal color upon request.







Overall, SOTON™ multiwall polycarbonate is a versatile construction material that, due to its properties, is suitable for erecting both internal and external structures such as roofs, verandas, greenhouses, interior partitions, and more.



SOTON CLASSIC

SOTON CLASSIC multiwall sheets are high quality extruded sheets with an internal cross-sectional H-structure. The sheets' design comprises horizontal chambers, forming cells akin to horizontal partitions. SOTON CLASSIC stands as an ideal choice for construction applications and the renovation of residential as well as commercial spaces.

The main parameters of SOTON CLASSIC multiwall sheets

SOTON CLASSIC		4H/2	6H/2	8H/2	10H/2	16H/6	20H/6
Sheet Structure							
Sheet Thickness	mm	4	6	8	10	16	20
	acceptable deviation	+/- 0,5 mm					
Sheet Weight	g/m ²	800	1 300	1 500	1 700	2 500	2 800
	acceptable deviation	+/- 40	+/- 65	+/- 75	+/- 85	+/- 125	+/- 140
Standard Width of the Sheet	mm	2 100					
	acceptable deviation	-2/+6 mm					
Standard Length of the Sheet	mm	6 000 mm and 12 000 mm					
	acceptable deviation	0/+0,4% (24 - 48 mm)					

Colors



Clear



Bronze



Opal*



Effective service



Protection from ultraviolet radiation



Thermal insulation

Upon special request, SOTON can deliver sheets in non-standard sizes and unique colors directly from our production lines for specific projects. This gives our partners a competitive edge and reduces assembly expenses.

In our SOTON CLASSIC line, we provide multiwall polycarbonate sheets featuring a distinctive H/3 structure, offering a broader range of sheet variations for your project.

The technical specifications of SOTON CLASSIC sheets

Structure	Color	Thickness, mm	Weight per unit area (kg/m²)	Light transmission coefficient, % (+/- 5%)	Overall solar energy transmission coefficient, g, %	Sound insulation (sound reduction index), dB	Heat transmission, U, W/ m²·K	Thickness of the UV layer (µm)
H/2	Transparent	4	0,8	83	83	14	4,36	40
		6	1,3	81	81	17	3,96	50
		8	1,5	81	82	17	3,56	50
		10	1,7	81	81	18	3,48	50
	Bronze	4	0,8	10	58	14	4,36	40
		6	1,3	13	37	17	3,96	50
		8	1,5	12	59	17	3,56	50
		10	1,7	34	54	18	3,48	50
H/6	Transparent	16	2,5	59	60	21	1,82	50
		20	2,8	56	56	21	1,56	50
	Bronze	16	2,5	27	41	21	1,82	50
		20	2,8	-	-	21	1,56	50

General technical parameters

Indicator's Name	Unit of Measurement	Value
Vapor permeability, δ	10 ⁻⁵ mg/m*hr* Pa	≤ 3,8
Thermal linear expansion, α	10 ⁻⁵ K-1	≤ 6,5
Temperature Resistance	°C	-40 to +120
Reaction to fire		B-s1, d0

Our polycarbonate products adhere to the highest quality standards, meeting European (EN 16153:2013+A1:2015) and Ukrainian norms. Rigorous certification testing guarantees excellent quality and reliability for each product.


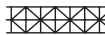


When consumers follow the prescribed guidelines for transportation, storage, and application, these products boast an effective service life of up to 15 years.

SOTON TITAN

The multiwall sheets within the **SOTON TITAN** line represent a modern engineering solution that offers exceptional strength despite their relatively light weight. The primary advantage of these sheets lies in their internal cross-sectional X-structure, enabling them to withstand significant loads while maintaining high light transmittance.

Due to their unique characteristics, SOTON TITAN sheets find wide application in the construction of commercial and industrial buildings where exceptional strength and material reliability are crucial. Moreover, their exceptional thermal insulation properties contribute to improving the energy efficiency of structures, thereby reducing expenses on heating and cooling. SOTON TITAN sheets stand as the best choice for those seeking a reliable and efficient architectural solution.

The main parameters of SOTON TITAN multiwall sheets

SOTON TITAN		8X/3	10X/3	16X/3	20X/3
Sheet Structure					
Sheet Thickness	mm	8	10	16	20
	acceptable deviation	+/- 0,5 mm			
Sheet Weight	g/m ²	1 550	1 700	2 500	3 000
	acceptable deviation	+/- 78	+/- 85	+/- 125	+/- 150
Standard Width of the Sheet	mm	2 100			
	acceptable deviation	-2/+6 mm			
Standard Length of the Sheet	mm	6 000 mm and 12 000 mm			
	acceptable deviation	0/+0,4% (24 - 48 mm)			

Colors



Clear



Bronze



Opal*



Effective service



Protection from ultraviolet radiation



Increased strength

Upon special request, SOTON can deliver sheets in non-standard sizes and unique colors directly from our production lines for specific projects. This gives our partners a competitive edge and reduces assembly expenses.

The technical specifications of SOTON TITAN sheets

Structure	Color	Thick- ness, mm	Weight per unit area (kg/m²)	Light transmis- sion coef- ficient, % (+/- 5%)	Overall so- lar energy transmis- sion coeffi- cient, g, %	Sound insulation (sound reduction index), dB	Heat transmis- sion, U, W/m²*K	Thickness of the UV layer (µm)
X/3	Transparent	8	1,55	65	67	18	3,32	50
		10	1,7	65	67	18	2,92	50
		16	2,5	35	56	11	1,92	50
	Bronze	8	1,55	6,5	56	18	3,32	50
		10	1,7	10	55	18	2,92	50
		16	2,5	1	41	11	1,89	50

General technical parameters

Indicator's Name	Unit of Measurement	Value
Vapor permeability, δ	10 ⁻⁵ mg/m*hr* Pa	≤ 3,8
Thermal linear expansion, α	10 ⁻⁵ K-1	≤ 6,5
Temperature Resistance	°C	-40 до +120
Reaction to fire		B-s1, d0

Our polycarbonate products adhere to the highest quality standards, meeting European (EN 16153:2013+A1:2015) and Ukrainian norms. Rigorous certification testing guarantees excellent quality and reliability for each product.


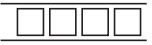


When consumers follow the prescribed guidelines for transportation, storage, and application, these products boast an effective service life of up to 15 years.

SOTON NANO

The multiwall sheets in the **SOTON NANO** line are the perfect engineering solution for projects prioritizing lightweight and efficiency. These sheets offer exceptional flexibility and adaptability, making them easy to shape into various constructions. This adaptability opens up countless possibilities for creative designs and architectural solutions.

The advantages of these sheets become particularly crucial in projects where the weight of the covering material holds significant importance. Using SOTON NANO multiwall sheets reduces structural loads, resulting in cost savings and optimizing material usage. Additionally, their lightweight nature simplifies transportation and installation processes.

The main parameters of SOTON NANO multiwall sheets

SOTON NANO		4H/2	6H/2	8H/2	10H/2
Sheet Structure					
Sheet Thickness	mm	4	6	8	10
	acceptable deviation	± 0,5 mm			
Sheet Weight	g/m ²	600	930	1 100	1 240
	acceptable deviation	± 30	± 46	± 55	± 62
Standard Width of the Sheet	mm	2 100			
	acceptable deviation	-2/+6 mm			
Standard Length of the Sheet	mm	6 000 mm and 12 000 mm			
	acceptable deviation	0/+0,4% (24 - 48 mm)			

Colors



Clear



Bronze



Opal*

Effective
serviceProtection from
ultraviolet radiationHigh
Flexibility

Upon special request, SOTON can deliver sheets in non-standard sizes and unique colors directly from our production lines for specific projects. This gives our partners a competitive edge and reduces assembly expenses.

The technical specifications of SOTON NANO sheets

Structure	Color	Thick- ness, mm	Weight per unit area (kg/m²)	Light trans- mission coefficient, % (+/- 5%)	Overall so- lar energy transmis- sion coeffi- cient, g, %	Sound insulation (sound reduction index), dB	Heat transmis- sion, U, W/m²*K	Thickness of the UV layer (µm)
H/2	Transparent	4	0,6	84	84	11	4,68	30
		6	0,93	82	82	14	3,88	35
		8	1,1	80	81	15	3,56	40
		10	1,24	80	81	17	3,45	40
	Bronze	4	0,6	14	14	11	4,68	30
		6	0,93	20	20	14	3,88	35
		8	1,1	38	58	15	3,56	40
		10	1,24	17	58	17	3,45	40

General technical parameters

Indicator's Name	Unit of Measurement	Value
Vapor permeability, δ	10 ⁻⁵ mg/m*hr* Pa	≤ 3,8
Thermal linear expansion, α	10 ⁻⁵ K-1	≤ 6,5
Temperature Resistance	°C	-40 to +120
Reaction to fire		B-s1, d0 / E*

* SOTON NANO sheets of 4mm thickness

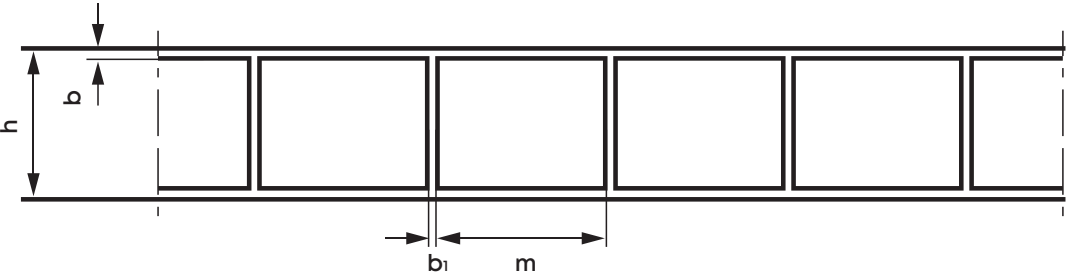
Our polycarbonate products adhere to the highest quality standards, meeting European (EN 16153:2013+A1:2015) and Ukrainian norms. Rigorous certification testing guarantees excellent quality and reliability for each product.

When consumers follow the prescribed guidelines for transportation, storage, and application, these products boast an effective service life of up to 10 years.

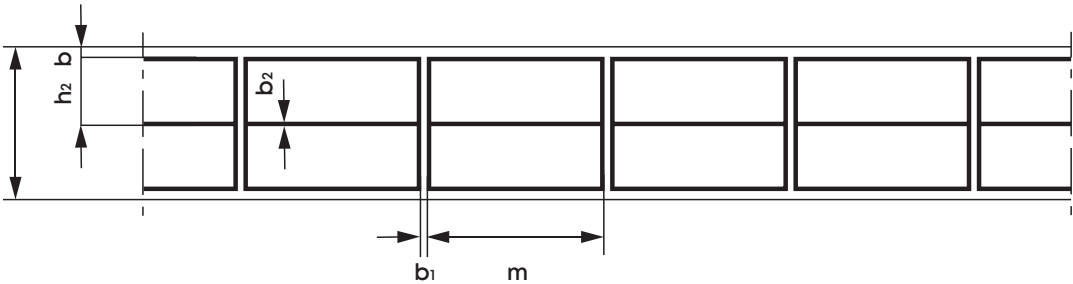
THE STRUCTURAL CHARACTERISTICS OF MULTIWALL POLYCARBONATE SHEETS



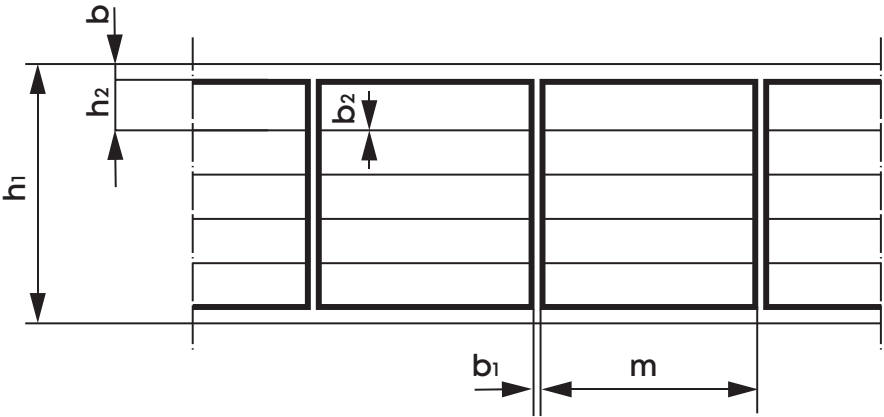
SOTON CLASSIC



Sheet structure	Sheet thickness, mm	Weight per unit area, g/m ²	Parameters, mm			
			Height, h	Thickness of horizontal walls, b	Thickness of vertical walls, b1	Distance between structures, m
H/2	4	800	4	0.35	0.2	6
	6	1 300	6	0.5	0.3	6
	8	1 500	8	0.5	0.6	10
	10	1 700	10	0.6	0.5	10

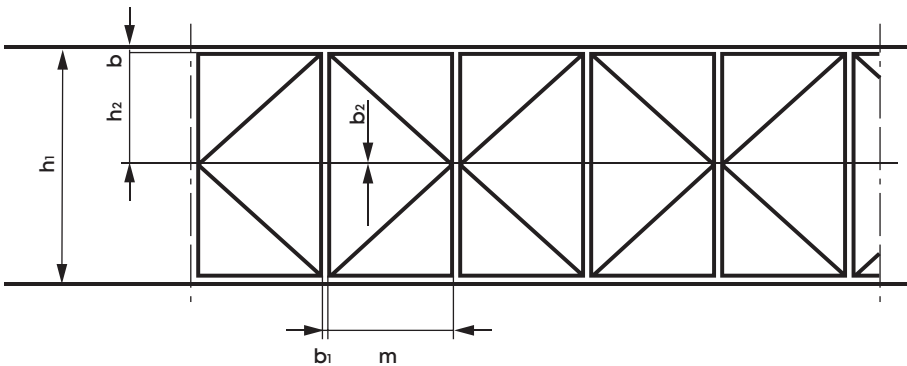


Sheet structure	Sheet thickness, mm	Weight per unit area, g/m ²	Parameters, mm					
			h1	h2	b	b1	b2	m
H/3	16	2 500	16	7,1	0,8	0,7	0,3	19,3



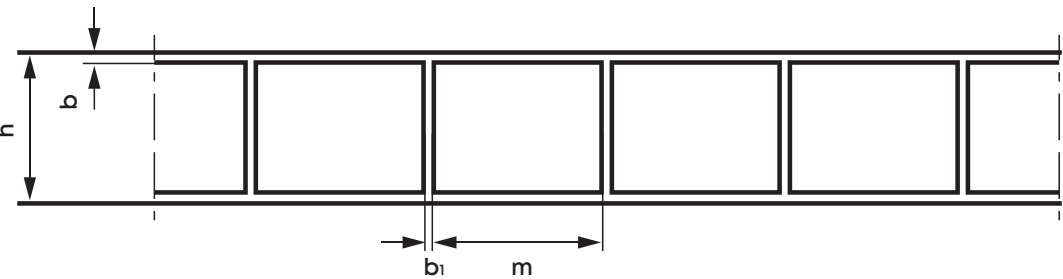
Sheet structure	Sheet thickness, mm	Weight per unit area, g/m ²	Parameters, mm					
			h1	h2	b	b1	b2	m
H/6	16	2 500	16	3,6	0,7	0,7	0,1	19,3
	20	2 800	20	3,54	1,0	0,8	0,08	20,0

SOTON TITAN



Sheet structure	Sheet thickness, mm	Weight per unit area, g/m ²	Parameters, mm					
			h_1	h_2	b	b_1	b_2	m
X/3	8	1 550	8	3.5	0.5	0.3	0.1	9.5
	10	1 700	10	4.5	0.5	0.3	0.1	9.5
	16	2 500	16	7.2	0.8	0.2	0.1	9.5

SOTON NANO

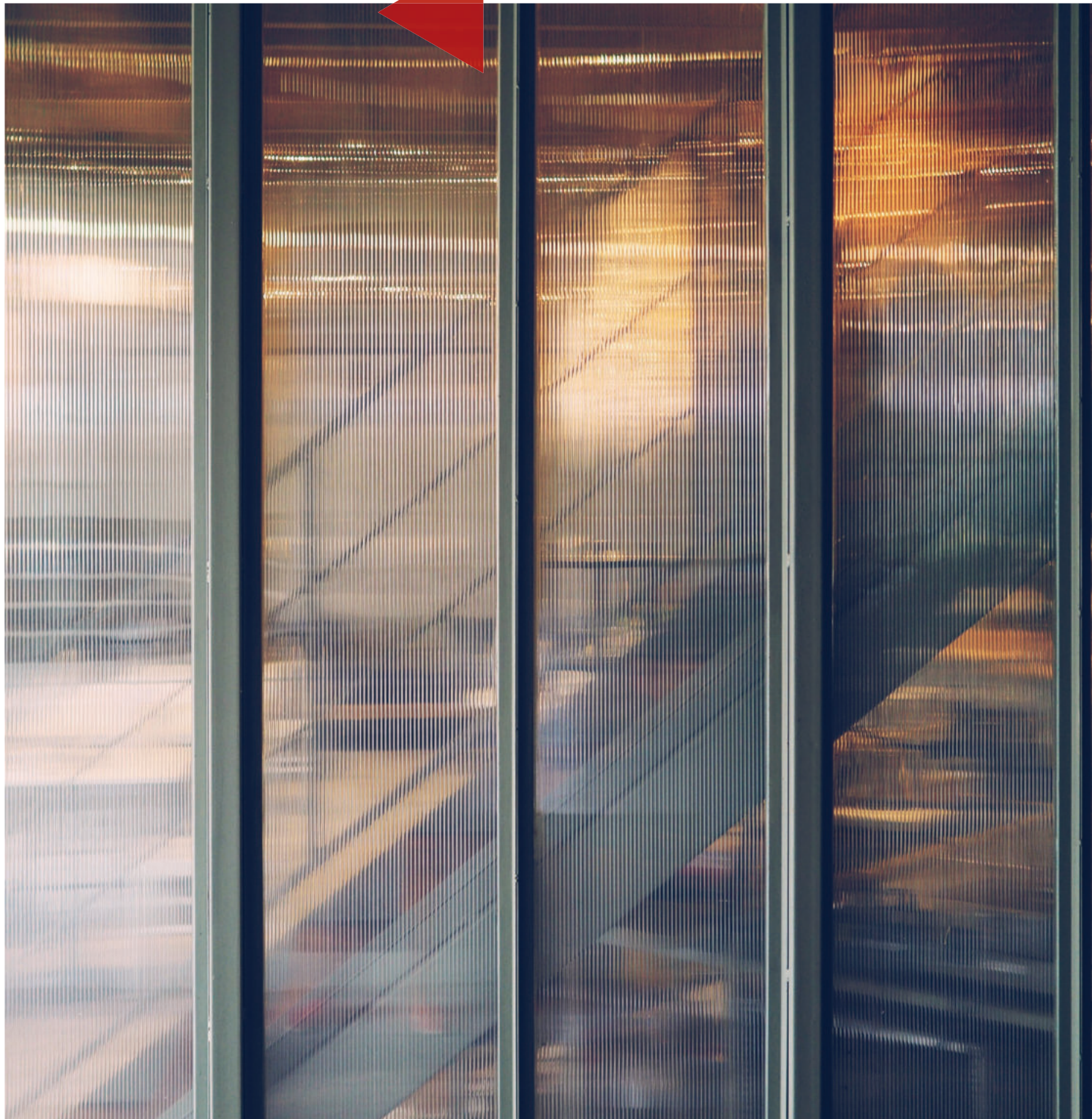


Sheet structure	Sheet thickness, mm	Weight per unit area, g/m ²	Parameters, mm			
			Height, h	Thickness of horizontal walls, b	Thickness of vertical walls, b_1	Distance between structures, m
H/2	4	600	4	0.2	0.2	6
	6	930	6	0.3	0.2	6
	8	1 100	8	0.4	0.4	10
	10	1 240	10	0.4	0.3	10

GUIDELINES FOR USING MULTIWALL SHEETS

Product line	Soton Classic						Soton Titan				Soton Nano			
Structure	2/H			6/H			3/X				2/H			
Area of application	4 mm	6 mm	8 mm	10 mm	16 mm	20 mm	8 mm	10 mm	16 mm	20 mm	4 mm	6 mm	8 mm	10 mm
Household greenhouses	X	X	X				X				X	X	X	X
Industrial greenhouses			X	X	X		X	X					X	X
Winter garden				X	X		X	X	X					X
Pool coverings				X	X			X	X	X				X
Verandas and terraces		X	X	X	X		X	X	X				X	X
Attached building canopies		X	X	X			X	X				X	X	X
Office partitions	X	X	X	X							X	X	X	X
Shower partitions	X	X	X	X							X	X	X	X
Coverings for sport halls and stadiums					X	X		X	X	X				
Canopy walls					X	X			X	X				
Coverings for parking sites				X	X	X	X	X	X	X				
Car wash partitions			X	X	X		X	X	X				X	X
Market coverings					X	X		X	X	X				
Coverings for public transportation areas				X	X	X	X	X	X	X				
Coverings for underground and above-ground pedestrian crossings					X	X		X	X	X				
Industrial coverings					X	X			X	X				
Soundproof panels				X	X	X	X	X	X	X				X

**INDUSTRIAL GREENHOUSES****COVERINGS FOR PUBLIC
TRANSPORTATION AREAS**



**OFFICE / HOSPITAL
PARTITIONS**

VERANDAS





**COVERINGS FOR SPORT HALLS
AND STADIUMS/ MARKET COVERINGS**

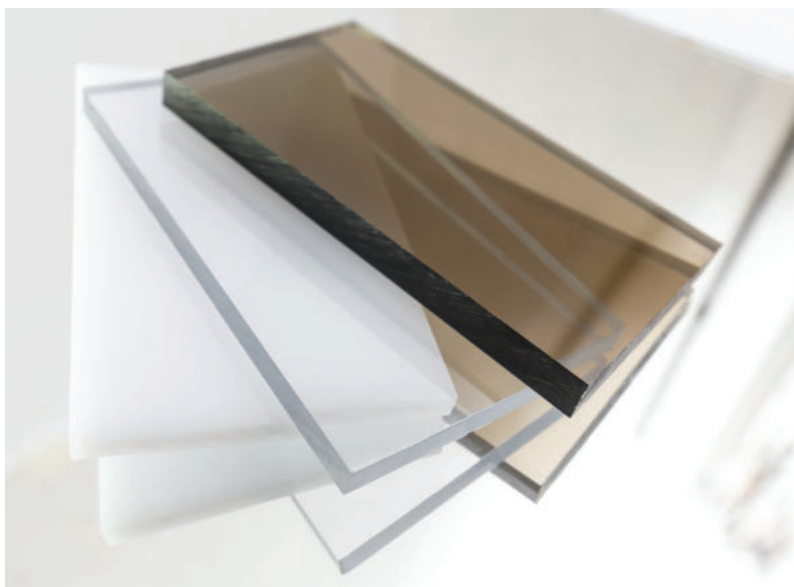
POOL COVERINGS



SOLID POLYCARBONATE SHEETS

SOTON Solid Polycarbonate Sheets are single-layered polycarbonate sheets with a homogeneous structure without hollow spaces or chambers. They are distinguished by their high strength, transparency, and resistance to external impacts.

Solid polycarbonate, renowned for its exceptional strength, offers unparalleled resistance against impacts, serving as an ideal safeguard for your property against wear and damages. It endures substantial loads while preserving its structural integrity, even when subjected to severe impacts.



The transparency of solid polycarbonate ensures maximum light penetration, allowing its use in creating spacious and well-lit spaces. Its exceptional thermal and sound insulation qualities contribute to the establishment of comfortable living and working environments.

Solid polycarbonate stands out for its lightweight properties and easy installation. It can be readily molded to fulfill specific design, advertising, and project requirements, serving as an excellent substitute for glass. Overall, solid polycarbonate is a reliable, versatile, and efficient material for construction and advertising projects.



Compared to glass and other materials, solid polycarbonate sheets are lighter, stronger, and more impact-resistant. They also provide better thermal insulation and ensure a safer environment as they do not shatter upon impact. Additionally, solid polycarbonate sheets have a simpler installation and assembly process compared to glass.

Overall, solid polycarbonate is a reliable, versatile, and efficient material for construction and advertising projects that demand transparency, strength, thermal insulation, and resistance to external conditions. It enables the development of functional, aesthetically pleasing, and environmentally friendly solutions tailored for diverse applications.



SOTON SOLID

Soton Solid polycarbonate is a reliable and versatile material for implementing various projects. Its main advantages include strength, transparency, and high resistance to external influences. Solid polycarbonate finds wide applications, often used in creating windows, doors, partitions, roofing, light-transmitting covers, alternative window systems, sun protection structures, design elements, and more.

The main parameters of SOTON SOLID sheets

	mm	2	3	4	5	6	8	10	12
Sheet thickness	acceptable deviation	+/- 0,1	+/- 0,15	+/- 0,2	+/- 0,25	+/- 0,6	+/- 0,8	+/- 1,0	+/- 1,2
	g/m ²	2 400	3 600	4 800	6 000	7 200	9 600	12 000	14 400
Sheet Weight	acceptable deviation	+/- 120	+/- 180	+/- 240	+/- 300	+/- 360	+/- 480	+/- 600	+/- 720
	mm	2050							
Standard Width of the Sheet	acceptable deviation	0/+6 mm							
	mm	3 050 mm and 6 100 mm							
Standard Length of the Sheet	acceptable deviation	0/+9 (3 050 mm); 0/+18 (>3050 mm)							

Colors



Clear



Bronze



Opal*



Effective service



Increased strength



Protection from ultraviolet radiation



High flexibility

Upon special request, SOTON can deliver sheets in non-standard sizes and unique colors directly from our production lines for specific projects. This gives our partners a competitive edge and reduces assembly expenses.

The technical specifications of SOTON SOLID sheets

Color	Thick- ness, mm	Weight per unit area, g/m2	Light transmis- sion coef- ficient, % (+/- 5%)	Overall so- lar energy transmis- sion co- efficient, g, % (+/- 5%)	Sound insulation (sound reduction index), dB	Heat transmis- sion, U, W/m ² *K	Reaction to fire	Thickness of the UV layer (µm)
Transparent	2	2,4	90	90	15	5,60	B-s1, d0	50
	3	3,6	88	88	16	5,50	B-s1, d0	50
	4	4,8	87	87	17	5,42	B-s2, d0	50
	5	6	88	89	20	-	B-s2, d0	50
	6	7,2	86	86	19	5,24	E	50
	8	9,6	84	84	21	5,03	E	50
	10	12	82	82	23	4,82	E	50
	12	14,4	82	79	32,2	4,40	E	50
Bronze	2	2,4	42	51	15	5,60	B-s1, d0	50
	3	3,6	51	49	16	5,50	B-s1, d0	50
	4	4,8	40	47	17	5,42	E	50
	5	6	5	-	20	-	E	50
	6	7,2	39	44	19	5,24	E	50
	8	9,6	31	41	21	5,03	E	50
	10	12	18	34	23	4,82	E	50
	12	14,4	-	-	-	4,40	E	50

General technical parameters

Indicator's Name	Unit of Measurement	Value
Vapor permeability, δ	10 ⁻⁵ mg/m*hr*Pa	≤ 3,8
Thermal linear expansion, α	10 ⁻⁵ K ⁻¹	≤ 6,5
Vicat softening temperature	°C	144
Temperature Resistance	°C	-40 to +120
Reaction to fire	-	
	2 – 3 mm	B-s1, d0
	3,5 – 5 mm	B-s2, d0
	5.5 – 12 mm	E

Our polycarbonate products adhere to the highest quality standards, meeting European (EN 16240:2014) and Ukrainian norms. When consumers follow the prescribed guidelines for transportation, storage, and application, these products boast an effective service life of up to 15 years.

GUIDELINES FOR USING SOLID SHEETS

Product line	Soton Solid							
Area of application	2 mm	3 mm	4 mm	5 mm	6 mm	8 mm	10 mm	12 mm
Winter gardens			X	X	X	X	X	
Pool coverings	X	X	X	X	X			
Verandas and terraces	X	X	X	X	X			
Attached building canopies	X	X	X	X				
Office partitions		X	X	X	X			
Protective screens (barriers, partitions) for cashier stations	X	X	X					
Shower partitions	X	X	X	X	X			
Coverings for sport halls and stadiums						X	X	X
Canopy walls					X	X		
Coverings for parking sites				X	X	X	X	
Car wash partitions		X	X	X	X			
Market coverings					X	X	X	X
Coverings for public transportation areas				X	X	X	X	X
Coverings for underground and above-ground pedestrian crossings					X	X	X	
Industrial coverings					X	X	X	X
Soundproof panels (noise barriers)			X	X	X	X	X	X
Advertising signs, billboards	X	X	X	X	X	X	X	X
Windows for buses, minibusses					X	X	X	X
Decorative elements	X	X	X	X	X	X		
Commercial shop windows and displays	X	X	X	X				
Automotive components, headlights, and others, by means of thermo- or vacuum molding	X	X						







**COVERINGS FOR ABOVE-GROUND
PEDESTRIAN CROSSINGS**



**OFFICE/HOSPITAL
PARTITIONS**



PATIO/ VERANDAS



ADVERTISING
ELEMENTS



COVERINGS FOR SPORTS HALLS AND STADIUMS/ MARKET COVERINGS





SOUNDPROOF PANELS


THERMAL / VACUUM FORMING OF LIGHTING ELEMENTS





SPECIAL OFFERS FROM SOTON FOR YOUR DESIGN SOLUTIONS:

To ensure the best customer experience, SOTON, upon client's request, manufactures polycarbonate sheets with a specially designed structure. These decorative panels are excellent for interior decoration, furniture, and more.



POLYCARBONATE

"CRACKED ICE"

Polycarbonate "Cracked Ice" is a semi-transparent polymeric material widely used for interior and exterior building finishes. The decorative panels feature a vivid pattern reminiscent of natural ice crystals on glass. Despite the embellishment, the material retains its physical and mechanical properties but with reduced light transmission.

To create this textured effect, a composite blend containing 30% glass-filled polymer mixture is employed. Through the manufacturing process glass fiber particles are blended with polycarbonate, modifying its structure to reveal fibers within the sheet. The interior of the panel resembles glass adorned with ice crystals, while the external surface maintains its smoothness.

Upon request, SOTON manufactures sheets with the "Cracked ice" effect for the entire available range of polycarbonate (both solid and multiwall). Polycarbonate "Cracked Ice" represents a popular and contemporary design solution, finding applications in various spheres:

- ▶ Implementing designer projects and architectural solutions.
- ▶ Filling internal cavities of railings, gates, doors, etc.
- ▶ Creating skylights.
- ▶ Erecting fences, canopies, gazebos, etc.
- ▶ As a substitute for glazing to ensure privacy (e.g., ground floor windows).
- ▶ Constructing decorations and creating adornments for restaurants, bars, etc.

Polycarbonate "Cracked Ice" is also offered in a bronze color option.

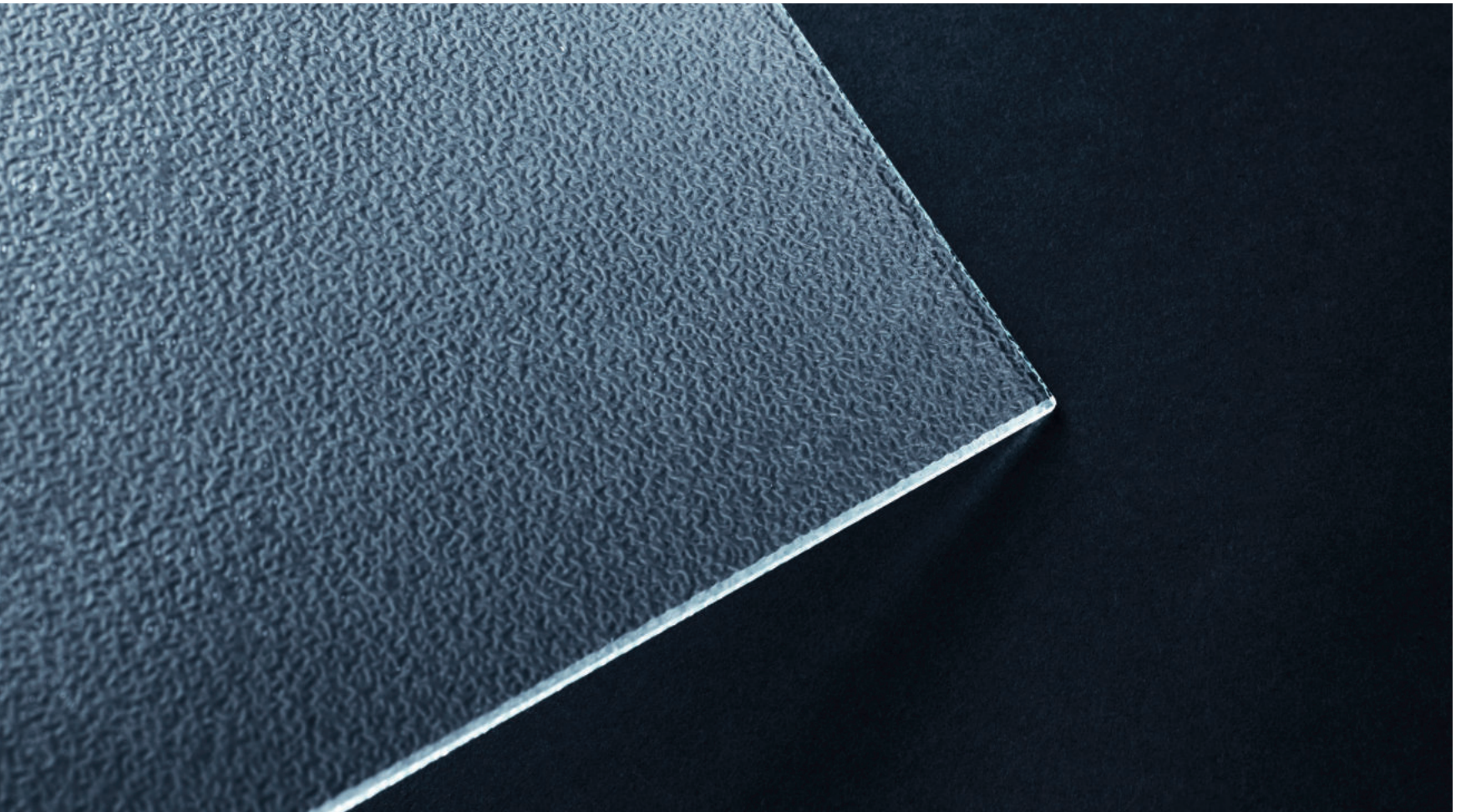




TEXTURED SOLID POLYCARBONATE SHEETS

Textured solid polycarbonate sheets are a special decorative type of polycarbonate that features a textured surface resembling various structures such as shagreen, leather, sand, and others. These visual effects add an extra decorative layer to the material, elevating its exterior appearance and rendering it more appealing and aesthetically pleasing.

"Shagreen" Polycarbonate is a textured solid polycarbonate distinguished by its surface structure, providing the material with an additional aesthetic appeal. The creation of the sheet texture involves a special roller with relief structure, used to shape the surface layer of the polycarbonate to match the texture of the roller (shagreen, leather, and sand). During the process, the material retains its physical and mechanical properties.



MULTIWALL POLYCARBONATE SHEETS "NO-DROP"



Ensuring the durability and quality of the material is crucial when constructing structures exposed to high humidity levels, such as greenhouses. That's why SOTON offers anti-condensation coated polycarbonate sheets - Multiwall polycarbonate sheets "no-drop".

Polycarbonate sheets with an anti-condensation coating are manufactured by applying a special liquid on the internal surface of the sheet. This coating prevents condensation and water stains from forming on the material's surface, thereby preventing potential damage caused by increased sheet weight.

Anti-condensation-coated polycarbonate sheets are commonly used:

- ▶ In enclosed spaces like pools with high humidity.
- ▶ In spaces with temperature fluctuations like winter gardens or greenhouses.
- ▶ In spaces where strict prevention of condensation on roofing's inner surface is required.



UNDERSTANDING THE TECHNICAL SPECIFICATIONS OF POLYCARBONATE SHEETS

The light transmission coefficient (%) measures the portion of light that passes through a material. It is expressed as a percentage and assesses how transparent the material is. For instance, if a material has a light transmission coefficient of 90%, it means that it allows 90% of incoming light while blocking only 10%. Such material is termed highly transparent. This coefficient is vital when choosing materials for different applications. For instance, in greenhouse construction, a higher light transmission coefficient is preferred to ensure ample natural light and better energy efficiency.

The total solar energy transmittance (g, %) accounts for all the energy emitted by the sun, including invisible ultraviolet and infrared radiation. This indicator is significant in determining the energy efficiency of buildings and materials. The higher the total solar energy transmittance, the more solar energy can penetrate through the material. This is vital in constructing buildings that utilize solar energy for heating, lighting, or power generation. It is also crucial in greenhouse design.

Sound insulation (sound reduction index), (dB) measures the level of sound pressure transmitted through a material or structure. Higher values indicate better sound insulation. This indicator is crucial in designing and constructing spaces where noise reduction is necessary: offices, hotels, residential buildings, classrooms, recording studios, and more.

Heat transmission, U ($\text{W}/\text{m}^2\cdot\text{K}$) indicates the amount of heat transmitted through a material or construction per unit of time. The lower the U-value, the better the material retains heat, reducing heat loss. Low U-values signify efficient insulation.

Thickness of the UV layer (μm) indicates the protective layer's thickness applied to the surface of polycarbonate sheets to shield them from ultraviolet (UV) radiation. The UV layer's thickness is crucial since it determines the effectiveness of shielding polycarbonate sheets from UV rays. The thicker the UV layer, the better the material is protected from ultraviolet radiation. This helps to maintain the color, brightness, and transparency of the sheets over an extended period of use. When selecting polycarbonate sheets for outdoor use, paying attention to the UV layer's thickness, especially when they are exposed to direct sunlight, is essential.

Vapor permeability (δ) denotes the polycarbonate's ability to allow water vapor to pass through its structure. Vapor permeability is crucial for materials used in structures where moisture accumulation might occur. For instance, when designing greenhouses, choosing polycarbonate sheets with the appropriate vapor permeability is critical. Excessive vapor permeability can lead to moisture loss, creating unfavorable conditions for plant growth, which is especially critical during the winter season. Conversely, too low vapor permeability contributes to excessive moisture and condensation accumulation, potentially causing fungal diseases in plants.

Thermal linear expansion (α) indicates the polycarbonate's ability to change dimensions with temperature variations. It determines the material's expansion or contraction concerning its original size during temperature fluctuations. Polycarbonate sheets may expand or contract, affecting their functionality and stability. When designing structures, considering the material's thermal linear expansion is crucial for selecting proper sheet-fixing methods to ensure the reliability and durability of polycarbonate constructions.

Vicat softening temperature (VST, °C) a measure of the thermal resistance of polymer materials. It indicates the temperature at which the material begins to soften. VST is essential for evaluating the thermal stability of polycarbonate materials and their ability to retain mechanical properties at high temperatures.

The fire reaction of materials is pivotal in assessing their fire safety. SOTON products are certified according to the European standard EN 13501-1, which categorizes the reaction to fire into various classifications. Primary classifications for reaction to fire encompass:

Class A	Non-combustible materials
Class B	Limited combustible materials
Class C	Materials with good fire resistance
Class D	Materials with moderate fire resistance
Class E	Materials with slight fire resistance
Class F	Materials that do not meet the criteria for classes C, D, or E. These materials have a high flame spread rate

In addition to the main classification, indicators related to smoke production and the release of burning droplets are included.

S1 and S2 indicate smoke production during combustion:

S1: Low smoke production - the material has low capability to produce smoke during combustion.

S2: Limited smoke production - the material has moderate capability to produce smoke during combustion.

D0 and D1 indicate the release of burning droplets during combustion:

D0: No release of burning droplets - the material does not release burning droplets during combustion.

D1: Limited release of burning droplets - the material releases a limited amount of burning droplets during combustion.

For example, SOTON CLASSIC multiwall polycarbonate sheets have a classification of B-s1, d0, indicating their limited combustibility, low level of smoke production, and absence of burning droplets, which are crucial factors in adhering to fire safety standards.

STORAGE AND TRANSPORTATION GUIDELINES

During transportation, loading, and unloading operations, handle SOTON multiwall polycarbonate sheets with care to avoid scratching and damaging the edges of the sheets. Each sheet should be placed in a horizontal position during loading and transportation and should be packaged in a way that minimizes the risk of damage.

Storage recommendations

1. Optimal storage for SOTON multiwall sheets involves a covered warehouse environment to shield them from direct sunlight and exposure to atmospheric elements.
2. Sheets should be stored facing outward with the side protected by packaging film featuring the applied logo, i.e., the side with UV protection.
3. Seal the edges of the structural sheets with protective tape. Note: Remove protective films and tapes only before installation.
4. Stacking pallets with sheets should not exceed more than 5 pallets per stack.
5. Transportation and storage of sheets together with chemical products are strictly prohibited.

6. Sheets should be stored at a distance of at least one meter from heating devices.
7. When stacking SOTON multiwall sheets of the same length, position them horizontally on top of each other. For sheets of varying lengths, place the longer ones at the stack's base to prevent any bending of edges due to insufficient support.
8. Place packed sheets on wooden pallets and keep them clear of pathways used by individuals or vehicles. Transportation of polycarbonate sheets on pallets must strictly adhere to a horizontal position. Additionally, it is prohibited to transport or store sheets in proximity to chemical substances.

MAINTENANCE RECOMMENDATIONS

To prolong the lifespan of structures made from solid polycarbonate sheets, it is recommended to periodically clean them using compatible household cleaners. This will help extend the life of the polymer material.

Different methods can be used for cleaning slightly soiled polycarbonate surfaces:

1. Ionization treatment: Ionizing the air around polycarbonate surfaces removes static charges. Afterward, dust can be removed using a vacuum cleaner or by gently wiping with a slightly damp soft cotton cloth. It is important to note that the antistatic effect from ionizers is inconsistent and can be nullified by rubbing or touching the sheet.

2. Antistatic agents treatment: Antistatic agents are alcohol or water solutions that create a thin antistatic coating on the surface of the polycarbonate sheet. They can be applied by spraying or wiping the surface with a cloth soaked in the antistatic solution. These agents are effective, especially after the solvent evaporates, leaving a conductive layer. Using antistatic cleansers works well as they not only prevent the buildup of static charges on the plastic surface but also effectively clean it from dust.

Overall, for cleaning polycarbonate sheets, it is recommended to use 100% cotton cloth and soft, neutral, non-abrasive cleansers mixed with water (mild dishwashing agents can be used). Avoid substances containing ammonia, caustic soda and chlorine, as they damage polycarbonate. Following these tips will help maintain polycarbonate structures in good condition for an extended period.

For heavily soiled polycarbonate surfaces and to remove marks, it is recommended to:

1. Use isopropyl alcohol: If isopropyl alcohol contains water and water droplets remain on the surface after the alcohol evaporates, they should be wiped dry with a cloth. This method is effective in removing marks left on polycarbonate after removing the protective film.

2. For further maintenance of polycarbonate sheets and dust removal, aerosol cleansers are recommended. They contain waxes and special compound solvents, leaving a glossy protective layer on the material. This layer helps prevent static buildup and effectively repels dust.

To ensure proper care of polycarbonate sheets, it is recommended to clean and polish them every one to two weeks using an aerosol cleanser and a soft 100% cotton cloth. This will ensure a long service life and preserve the aesthetic appearance of the polycarbonate surface.

For spot cleaning small areas:

Moisten the sheet with warm water. Add mild soap or household cleaner to the liquid. Use a soft cloth or sponge to remove dirt. To finish, rinse the surface of the polycarbonate sheet with cold water and dry it with a soft cloth.

For cleaning large areas:

Use high-pressure water jets and/or steam cleaners. While cleaning large areas, it is important to use only cleansers and additives recommended for use with polycarbonate.

Adhering to these recommendations is mandatory to ensure proper care for polycarbonate sheets and preserve them in excellent condition throughout their service life:

- ▶ Never use abrasive or highly alkaline agents to clean the sheets.
- ▶ Choose cleansers and additives compatible with the special coating developed to protect sheets from ultraviolet radiation.
- ▶ CAUTION: Avoid using alcohol-based substances to clean sheets with a protective UV coating.
- ▶ Do not use brushes, metallic fabrics, or other abrasive materials to clean sheet surfaces.
- ▶ Avoid washing sheets under direct sunlight or at elevated temperatures, as this may cause staining of the sheets.

By following these recommendations and cleaning methods, you can effectively maintain polycarbonate sheets and keep them in good condition for an extended period of use.

GUIDELINES FOR PROCESSING, INSTALLATION, AND UTILIZATION OF MULTIWALL POLYCARBONATE SHEETS

MECHANICAL PROCESSING

Cutting

Multiwall sheets can be cut using hand saws, band saws, and circular saws. Secure the sheet on a workbench to prevent vibration and uneven cuts. Use milling cutters recommended for plastic. Sheets up to 10 mm in thickness, can be easily cut with a sharp knife (work with a rigid support). For cutting angles (for pipes and ventilation) use a hacksaw or a jigsaw. Prevent dust and shavings entering the exposed flutes. If this occurs, remove them with vacuum cleaner or compressor.

If you need to reduce the width of the sheets, it is recommended to trim as close as possible to the last rib of rigidity to ensure optimal fixation of the multiwall sheet.

Drilling

Multiwall sheets can be drilled with standard sharp drills (ensuring an angle of 110° – 130°). While drilling, the sheet should tightly adhere to the working surface. Holes should be positioned at a distance of at least 40 mm from the edge of the sheet. To account for the thermal expansion effect of the sheet, the diameter of fastening holes, for a sheet with a length up to 2000 mm, should exceed the fastener's diameter by 6 mm. Holes for mushroom-shaped fasteners, should have a diameter of no less than 18 mm.

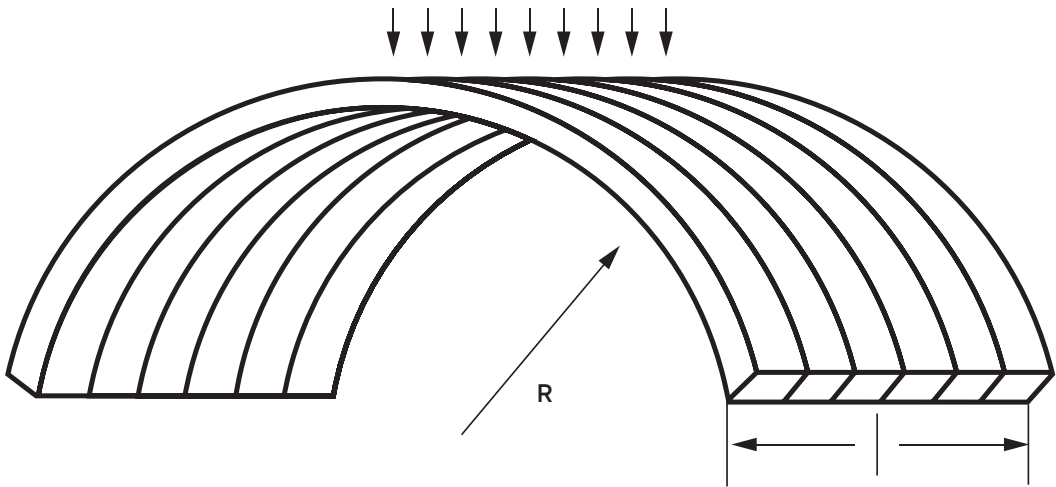


INSTALLATION OF MULTIWALL POLYCARBONATE SHEETS

Installation of multiwall sheets shall be carried out as the final step in the process. By this stage, the structure must be fully constructed. Always install the sheets with the UV protection layer facing outward (upwards), as indicated by corresponding markings. Walking directly on the sheets is prohibited. If necessary, place boards with minimum width of 50 cm on the working area in advance.

It is recommended to maintain a minimum inclination of 5° (approximately 90 mm/m) for multi-wall sheets to facilitate rainwater drainage.

Using sheets with open ends in the structure is not acceptable. Seal these ends using specialized tape (solid or perforated) and cover them with an end profile (aluminum or polycarbonate). Apply solid tape to the exposed ends of the upper section of sloped roofs and use perforated tape for the exposed ends of the lower section of sloped roofs and arched roofs. Multiwall sheets are well-suited for cold bending. Before rendering cold bending, ensure compliance with the minimum bending radius determined by the sheet thickness: $R=150 \cdot \text{sheet thickness (in mm)}$.



Sheet thickness, mm	4	6	8	10	16
Recommended bending radius, mm	700	900	1200	1500	2400

In areas where polycarbonate sheets bear high wind and snow loads, using thermal washers - mushroom-shaped fasteners made of polycarbonate - alongside the primary fastening system is essential. Do not overtighten the sheets during fastening.

The sheets are installed so that the ribs run vertically towards the roof's slope. The sheet's overhang on the roof should not exceed 50-60 mm. During installation, consider the thermal expansion coefficient, allowing for gaps to accommodate the sheet's free expansion, both lengthwise and widthwise, preventing sheet bending and internal stress. Avoid installing sheets damaged during transportation or handling. Just before installation, remove the protective film 50 cm away from the edge. After installation, it is recommended to completely remove the film.

The maximum permissible distance between the axes of supports in meters.

Sheet thickness	Load			
	80 kg/m²	100 kg/m²	120 kg/m²	140 kg/m²
6 mm	1,3	1,1	1,0	0,9
8 mm	1,7	1,5	1,4	1,3
10 mm	1,8	1,6	1,5	1,4
16 mm	2,1	1,9	1,7	1,5

WARNING!

- ▶ Strictly adhere to the polycarbonate installation guidelines.
- ▶ Do not overtighten the sheets during installation.
- ▶ Remember that SOTON™ multiwall polycarbonate sheets are UV resistant on one side only.
- ▶ Avoid contact of the protective UV layer with isopropyl-based solvents.
- ▶ Prevent contact of the sheets with acids.

For more detailed information regarding installation and maintenance recommendations for SOTON polycarbonate products, please contact our sales consultants or send an email to info@soton.com.ua.



GUIDELINES FOR PROCESSING, INSTALLATION, AND OPERATION OF SOLID POLYCARBONATE SHEETS

MECHANICAL PROCESSING

Forming

Solid polycarbonate is an excellent material for thermoforming via various methods. Additional technical information is available upon request.

Cold Bending

Solid polycarbonate sheets possess the flexibility to be cold-bent to a minimum radius exceeding 150 times the sheet's thickness. For smaller radius, thermoforming is the recommended approach.

The table presents the minimum bending radius values for solid polycarbonate sheets of varying thicknesses.

Sheet Thickness SOTON SOLID, mm	Minimum acceptable bending radius, mm
2	0,30
3	0,45
4	0,60
5	0,75
6	0,90
8	1,20
10	1,50
12	1,75

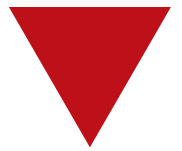
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Drilling

Using specialized drills designed for plastics is recommended. Nevertheless, standard metal drills can suffice if they have not been used with metal previously. Cooling is usually unnecessary during sheet drilling. However, for deeper holes, it is prudent to employ a compressed air stream for cooling and/or intermittently remove the drill to disperse heat and debris. Maintain a distance from the hole's center to the sheet's edge of at least twice the hole's diameter, never less than 6 mm.

Milling

Standard high-speed metal milling cutters can be used, provided they have sharp edges and an adequate rear angle.



INSTALLATION OF SOLID POLYCARBONATE



Ensuring a UV-protective layer covers both sides of a solid polycarbonate sheet, serves not only to shield the enclosed area from the penetration of harmful UV rays, which can be detrimental to human health, but also to safeguard the material itself from their damaging effects.

For outdoor use, only sheets with a UV-protective layer should be employed. It is optimal to install the sheets with a protective film and remove it immediately after installation (otherwise, it may stick to the sheet when exposed to sunlight).

For connecting solid sheets and anchoring them to the structure's frame, it is advisable to utilize a specialized aluminum connecting profile, specifically designed to meet the distinctive installation needs of solid polycarbonate.

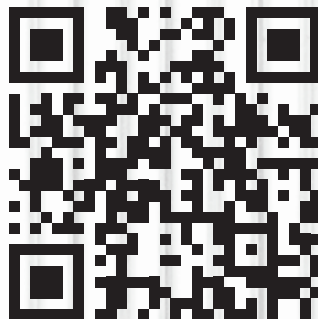
When installing polycarbonate sheets, provide a minimum gap of 5-6 mm to account for thermal expansion of each linear meter of clear sheet and 6-8 mm for each linear meter of colored sheet.

The recommended distances in meters between the centers of the joining profiles.

Load kg/m ²	Sheet Thickness, mm						
	3	4	5	6	8	10	12
60	0,40	0,55	0,62	0,75	1,00	1,20	1,43
80	0,375	0,48	0,565	0,675	0,90	1,075	1,325
100		0,425	0,525	0,625	0,84	1,00	1,25
120		0,40	0,495	0,595	0,79	0,93	1,19
140		0,375	0,47	0,56	0,75	0,89	1,125
160			0,45	0,54	0,72	0,85	1,075
180			0,43	0,51	0,69	0,82	1,03
200			0,42	0,50	0,66	0,79	1,00

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To verify the relevance of the information, please contact our sales consultants or write to info@soton.com.ua.



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