

**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 number one 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 in Ukraine and shaping a sustainable future.

## 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.

# 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 application, 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:

<b>Sheet thickness</b>	mm	2	3	4	5	6	8	10	12
	acceptable deviation	+/- 0,1	+/- 0,15	+/- 0,2	+/- 0,25	+/- 0,3	+/- 0,4	+/- 0,5	+/- 0,6
<b>Sheet Weight</b>	g/m <sup>2</sup>	2 400	3 600	4 800	6 000	7 200	9 600	12 000	14 400
	acceptable deviation	+/- 150	+/- 180	+/- 240	+/- 300	+/- 360	+/- 480	+/- 600	+/- 720
<b>Standard Width of the Sheet</b>	mm	2050							
	acceptable deviation	0/+6 mm							
<b>Standard Length of the Sheet</b>	mm	3 050 mm and 6 100 mm							
	acceptable deviation	0/+9 (3 050 mm); 0/+18 (>3050 mm)							

Colors: Clear Bronze Opal

*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.*

General technical parameters:

Indicator's Name	Unit of Measurement	Value
Vapor permeability, $\delta$	10 <sup>-5</sup> mg/m*hr*Pa	≤ 3,8
Thermal linear expansion, $\alpha$	10 <sup>-5</sup> K <sup>-1</sup>	≤ 6,5
Vicat softening temperature	°C	144
Temperature Resistance from	°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							
	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 sports 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, and structures	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				

## 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 (refer to Fig. 4).
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's 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:

- 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's important to note that the antistatic effect from ionizers is inconsistent and can be nullified by rubbing or touching the sheet.
- Antistatic agents treatment: Antistatic agents are alcohol or water solutions that create a thin antistatic film 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 cleaners 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's recommended to use 100% cotton cloth and soft, neutral, non-abrasive cleaners mixed with water (mild dishwashing agents can be used). Avoid substances containing ammonia, caustic soda, 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's recommended to:

- 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 also effective in removing marks left on polycarbonate after removing the protective film.
- For further cleaning and maintenance of polycarbonate sheets from dust, aerosol cleaners are recommended. These 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's recommended to clean and polish them every one to two weeks using an aerosol cleaner 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 of polycarbonate:**

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 of polycarbonate:**

Use high-pressure water jets and/or steam cleaners. During the cleaning process of large areas, it's important to use only cleaners 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 cleaners and additives compatible with the special coating developed to protect against 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 stains.

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 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 radii, 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

### Drilling

Using specialized drills designed for plastics is recommended. Nevertheless, standard metal drills can suffice if they haven't been used with metal previously. Cooling is usually unnecessary during sheet drilling. However, for deeper holes, it's 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 adhere to the sheet when exposed to sunlight).

For connecting solid sheets and anchoring them to the structure's frame, it's 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 <sup>2</sup>	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