



Extruded solid polycarbonate sheets

● **Resistance to chemicals**

Resistant	Acids: 5% acetic acid, 20% arsenious acid, 10% chromic acid. Alcohol: 96% ethyl alcohol, isoamyl alcohol, propargylic alcohol, sat. potassium aluminium alum, sat. chrome alum, sat. sodium bicarbonate, sat. Sodium disulphate, butyl, cinnamon, cement, cyclohexane, onion, sat. sodium chlorate, sat. aluminium chloride, sat. ammonium chloride, sat. magnesium chloride, sat. mercurious chloride, potassium chloride, sat. copper chloride, sulphuryl chloride, sat. zinc chloride, sat. cuprous chloride, decaline, sat. calcium nitrate, sat. potassium nitrate, olive oil, paraffin oil, castor oil, pentane, sat. potassium persulphate, tomato pulp. Sulphates: sat. aluminium sulphate, sat. magnesium sulphate, sat. manganese sulphate, sat. nickel sulphate, sat. potassium sulphate, sat. zinc sulphate, sat. ferric sulphate, Sat. sublimate, grapefruit juice, turpentine, sat. antimonyl trichloride, sulphur.
Not resistant	Acetaldehyde, acetone. Acids: concentrated acetic acid, benzylic acid, benzoic acid, butyric acid, phenic acid, 30% formic acid, conc. Propionic acid, 10% trichloroacetic acid, benzylic alcohol, aminational water acid, phenylethyl alcohol, benzene, benzol, bromobenzene, sat. potassium cyanide, cyclohexanone, cyclohexane, ethyl chlorohydrin, chloroform, ethyl chloride, phosphor chloride, creosol, dioxin, diethyl ether, ethylamine, phenol, sat. ammonium fluorine, dimethyl fluoramide, methyl methacrylate, acrylic nitrile, nitrobenzene, pyridine, 5% caustic potassium. Sat. potassium sulphocyanide, sat. ammonium sulphide, carbon sulphide, 5% caustic soda solution, styrol, tetrachlorethane, carbon tetra-chloride, tetrahydrofuran, tetraline, thiophene, toluene, phosphorous trichloride, xylene, xylol. Plasticizers: trimethyl acid esters, butylstearate, tricresylphosphate.
Limited resistance to: 30% acetic acid, conc. perchloric acid, ionifthalate, sulphuric dioxide.	

Macrolux C



Macrolux C

Extruded solid polycarbonate sheets



- Safety glazing**
- Protective screens**
- Skylights**
- Tunnels**
- Illuminated signs**
- Street signs**
- General purpose glazing**

The tolerance are in mm. For any other specific request, please contact EMP SA Sales Department.

All information, direction or advice given by EMP SA as to the performance characteristics, application design or use of its materials is given in good faith and to the best of its knowledge. However as EMP SA has no control over the use to which others put its materials, it does not accept any liability there from in connection with any services rendered by it or for the design characteristics or performance of the material either towards any purchaser or use thereof or towards any third party. Each user of the materials should make his own tests to determine the materials suitability for his use. Standard tolerance on weight $\pm 5\%$. Standard tolerance on thickness $\pm 1\text{mm}$ on average value. EMP SA reserves the right to change any of the data stated in this brochure at all time and without any previous announcement. This brochure has been translated in good faith from the Italian original. EMP SA will not take any responsibility for any errors or problems of interpretation of the translated text.

• Applications

Due to a unique combination of properties, **MACROLUX COMPACT** sheets guarantee outstanding levels of light transmission, impact strength and resistance to mechanical stresses, together with exceptional long-term chemical-physical stability. The material is easily fabricated/formed and is suitable for a wide variety of applications.

These characteristics make **MACROLUX COMPACT** sheets particularly suitable for applications in:

CONSTRUCTION: safety glazing, protective screens, skylights/domes, tunnels. The superior breakage resistance of **MACROLUX COMPACT** makes it an ideal choice where vandal-proofing and safety are concerns.

The product also benefits from optimum light transmission:

SIGNAGE: billboards, illuminated signs, street signs. Thanks to the exceptional impact resistance and ease of working, it is possible to obtain an infinite range of shapes and sizes by thermoforming, cold curving or machining.

ELECTRICITY: chassis, lampshades, electric panel covers. Here requirements for heat resistance, dimensional stability, shock resistance, resistance to atmospheric humidity, ease of fabrication and transparency are all satisfied by **MACROLUX COMPACT**.

MACHINERY: machine guarding, shatter-proof containers, shock resistant shields.

Amongst the many advantages, installation of this type of application is made easy thanks to the break resistant and transparent properties of **MACROLUX C** which allow the material to be cut or fixed with screws, nuts and bolts.

VEHICLES: glazing, windscreens, interior finish componentry, electrical parts. Excellent qualities of transparency, dimensional stability, impact resistance, ease of machining components.

HELMETS: body shields and visors. Superior impact resistance, optical transparency, long-term stability of properties. Lightweight, easily thermoformed.

INDUSTRY: shatterproof containers, both transparent and non transparent. Outstanding impact resistance, dimensional stability, ease of fabrication, possibility of sterilization, huge range of shapes and sizes obtainable.

• Mechanical Properties of Polycarbonate

Type of Test	Standard	Result
Specific weight	DIN 53479	1,2 gr/cm ³
Resilience at 23°C	DIN 53453	> 30 KJ/m ²
Impact Strength at 23°C	DIN 53453	Assenza di rotture
Impact Strength at -40°C	DIN 53453	Assenza di rotture
Modulus of elasticity	DIN 53457	2300 MPa
Resistance to breakage	DIN 53455	70 MPa
Yield point	DIN 53455	65 MPa
Bending strength	DIN 53452	130 MPa
Brinell Hardness (Bull HC30)	DIN 53456	145 NM/mm ²
Compression Load - absence of breaks	DIN 53454	> 80 M Pa

The data in the table illustrate how the main characteristics of **Macrolux C** sheets are:- durability and optimum resistance to all mechanical stresses, accidental and intentional, even if particularly heavy. As a result, **Macrolux C** sheets offer an excellent solution for applications requiring a high level of safety which cannot be obtained from other materials.

• Thermal Properties

Type of Test	Standard	Result
Coefficient of thermal linear expansion	VDE 0304-1	0,065 mm/m°C (-50° ÷ +90°C)
Thermal conductivity	VDE 0304-1	0.21 W/Km
Continual use temperature	-	115 ÷ 125°C
Specific heat	-	1.17 KJ/KgK
Softening temperature	DIN 53460	150°C
Melting point	-	240° - 260°C
Flash point	-	≈560°C

These are key values which illustrate two basic qualities: the first and most important is the stability of the sheets at temperature in the most demanding applications where other materials cannot be used. The second is the product's high expansion which is extremely important for the correct sizing of the sheets, whether contained in structures or metal profiles, or attached - fixed - stuck on other materials.

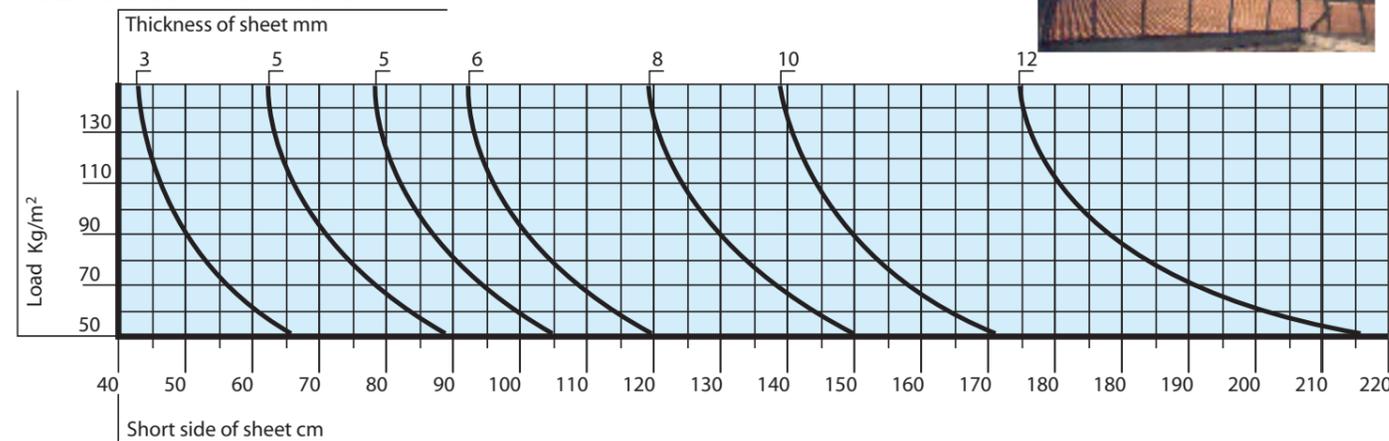
• Cold Curving

Many applications in construction, interior design and industry require this type of use.

This is possible, provided the **minimum radius of curvature is at least 150 times the thickness of the sheet.**



• Maximum load for flat solutions



(°) Sheets closed on 4 sides (°) Degree of safety from leakage = 1,5 (°) Maximum deflection allowed = 50 mm (°) Load equally distributed

Product Range

Thickness mm	L.T.	Colour	Code	Standard Size (width x length)
2	92%	Clear	P520/0010	2.050 x 3.050 - 2.050 x 6100 - 1220 x 2440*
3	90%	Clear	P530/0010	2.050 x 3.050 - 2.050 x 6100 - 1220 x 2440*
3	52%	Bronze	P530/0220	2.050 x 3.050 - 2.050 x 6100 - 1220 x 2440*
3	60%	Opal	P530/0332	2.050 x 3.050 - 2.050 x 6100 - 1220 x 2440*
4	88%	Clear	P540/0010	2.050 x 3.050 - 2.050 x 6100 - 1220 x 2440*
4	52%	Bronzo	P540/0220	2.050 x 3.050 - 2.050 x 6100 - 1220 x 2440*
4	52%	Opal	P540/0332	2.050 x 3.050 - 2.050 x 6100 - 1220 x 2440*
5	88%	Clear	P550/0010	2.050 x 3.050 - 2.050 x 6100 - 1220 x 2440*
5	52%	Bronze	P550/0220	2.050 x 3.050 - 2.050 x 6100 - 1220 x 2440*
5	46%	Opal	P550/0332	2.050 x 3.050 - 2.050 x 6100 - 1220 x 2440*
6	84%	Clear	P560/0010	2.050 x 3.050 - 2.050 x 6100 - 1220 x 2440*
6	52%	Bronze	P560/0220	2.050 x 3.050 - 2.050 x 6100 - 1220 x 2440*
8	87%	Clear	P580/0010	2.050 x 3.050 - 2.050 x 6100 - 1220 x 2440*
10	87%	Clear	P600/0010	2.050 x 3.050 - 2.050 x 6100 - 1220 x 2440*
12	86%	Clear	P620/0010	2.050 x 3.050 - 2.050 x 6100 - 1220 x 2440*

*subject to minimum production quantity

Sheets co-extruded on both sides available
- 10 year guarantee

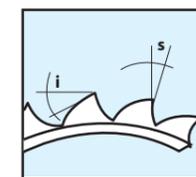
Colour code:
Clear 0010
Opal 0332
Bronze 0220

Macrolux C sheets are protected on both surfaces by PC film.

• Maintenance

The UV protection, co-extruded on both sides, guarantees the long-term stability of the optical and mechanical characteristics.

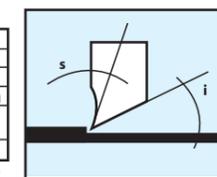
• Macrolux C can be fabricated/formed in the following ways:



▶ CUTTING

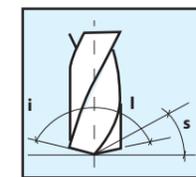
Saw	Circle	tape
Angle i	20° - 30°	20° - 30°
Angle s	15°	0,5°
Cut	10-15 mm/min	2-2,5 mm/min
Blade vel.	1800-2000 m/min	450-800 m/min
Pitch	6-8 mm	1,5 - 3 mm

For thickness of 3 mm we suggest circular saw



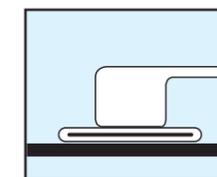
▶ MILLING

Use metal tools for milling
i = 20° - 25° s = 0° - 5°
Tool speed = 100 - 500 m/min
Cutting speed = 0.1 - 0.5 m/turn



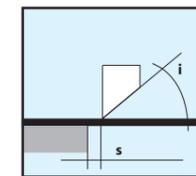
▶ DRILLING

hole diam. mm	Speed per minute	Progress. mm/turn
3		0,03 - 0,07
6	1000 - 1500	0,03 - 0,07
9	650	0,02 - 0,07
12	300 - 600	0,07
18	300	0,07



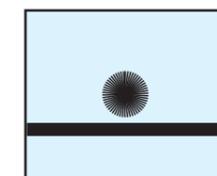
▶ GRINDING

Manual, mechanical (orbital)
Paper grain from 150 to 500
We recommend to use water and to make little pressure to avoid to overheat the sheet.



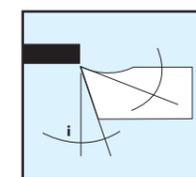
▶ SHEARING

We suggest max 3mm thickness for shearing
i > 45° s = 0,051 - 0,03 mm



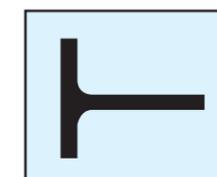
▶ POLISH

Use cloth disks cleaned and well dry
Rotation speed = 1450 rpm
In the initial phase we recommends to use chrome oxide abrasive paste



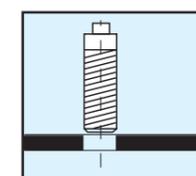
▶ TURN

i = 20° s = 0° - 5°
Speed = 500 - 1000 m/min
Cutting speed = 0,1 - 0,5 mm/turn



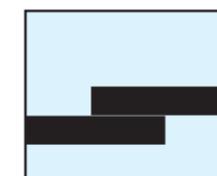
▶ WELDING

it is possible to weld only pieces of small dimensions.
Use hot air = 475° to 505°C
We suggest to desiccate the piece before the welding



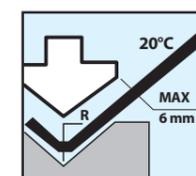
▶ SCREW THREAD

We suggest tools for metal working and to lubricate with machine oil



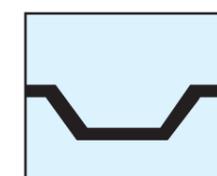
▶ GLUING

According to the use, the temperature and the materials to glue we recommend to check the best adhesive to use



▶ BENDING TO 20°

Sheet thickness mm	Bending radius mm	Bending angle
1 - 2	2	90°
3 - 4	3	90°
5 - 6	5	60°



▶ THERMOFORMING

All the thermoforming techniques can be applied respecting the following procedures:
Drying: 120°C
2mm = 4h; 3mm = 8h; 4mm = 13h; 5mm = 18h; 6mm = 24h
Heating: 185°C
Extraction angle: 7°
Retirement: 0.5 - 1%