

Cleaning

The sheets should be cleaned with a solution of warm water with a little neutral soap and rinsed with water employing a very soft sponge or chamois leather.

Sawing

The common types of saws employed in wood or metal carpentry provide good results when sawing polycarbonate sheets: disc, band, sabre, jigsaw, hewing and handsaw. Disc or band saws produce the best edges and can perform almost all cutting operations. Blade shape plays an important role in sawing plastics. It is recommended to employ a band saw with separated teeth because the empty space will facilitate the exit of the cut chips. The best results are obtained using teeth without any inclination and also somewhat jumped. To prevent the plastic from cracking or melting, the blade must be very sharp and the guide should be very close to the cut to prevent vibration.

Polishing

The sheet edges can be buffed using buffing paste, first with a rigid fabric disc and then with a soft cloth to produce the final finish. The surfaces to be glued should be cleaned with a soft cloth and alcohol to eliminate all dirt and grease. For perfect gluing of the surfaces to be joined, they must fit together well (without exerting force and without leaving any cavities) and should also be smooth and unpolished. Some adhesives can contract on drying. This effect can be compensated by cutting the joint at an angle, thus leaving space to be filled with a slight excess of adhesive.

Thermoforming

There are various thermoforming techniques that can be applied to polycarbonate sheets in order to obtain the desired shape once heated, using mechanical force, compressed air or a vacuum. Moulds can be made of plaster, water-cooled steel, cast aluminium or other materials, such as wood or epoxy. Pre-drying is necessary in a forced air circulation oven at 120°C because moisture can produce bubbles or other problems in surface appearance. Drying time depends on sheet thickness. All polycarbonate sheets use film to protect the surface from possible damage during production and transport. This protective film is not prepared to withstand high temperatures and must be removed prior to pre-drying, thermoforming or hot-bending.

Vacuum moulding

The thermoforming temperature must be between 185° and 205°C, depending on sheet thickness.

Drop-moulding

Temperature between 145° and 160°C.

Bending

Using two electric element heaters on both sides, (top and bottom), it becomes possible to bend at more precise angles. When the sheet reaches the correct temperature (above 155°C) a slight resistance will be noted to folding, this is when the sheet is easily bent. If it is attempted to bend the sheet before it has been sufficiently heated, cracks will appear that could lead to breakage. If, on the other hand, the sheet is over-heated, bubbles might appear along the section that is to be bent. All polycarbonate sheets use film to protect the surface from possible damage during production and transport. This protective film is not prepared to withstand high temperatures and must be removed prior to pre-drying, thermoforming or hot-bending.

Cold bending

- The maximum recommended angle is 90° for sheets having a thickness
- of less than 6 mm. This angle becomes 135° for sheets with a thickness
- greater than 135°. It is often necessary to bend in excess in order to achieve the desired angle.

Decoration

Printing

Polycarbonate sheets can be printed using most printing methods.

Painting

Polycarbonate can be painted without surface treatment.



Transport

Dirt and sharp angles may damage the surface in the case of friction.

- During transport, stable, flat pallets should always be used and the sheets secured to prevent sliding.
- The sheets must not be allowed to slide over each other during loading and unloading operations.
- They should be lifted by hand without any dragging or by suction-cup lifting equipment.



Storage

An incorrect storage position can lead to permanent deformation.

- The sheets should be stored in closed premises that guarantee normal environmental conditions.
- The sheets should be stored one on top of the other on flat horizontal surfaces and fully supported over their total area.
- The topmost panel should be covered with a sheet of polyethylene or cardboard etc.
- Polycarbonate sheets must not be stored in direct sunlight or under conditions of high humidity and/or temperature as this can have a negative effect of protective film adhesion.