

PS Manipulation

Cleaning

A solution of water and neutral detergent may be employed. They should always be cleaned and dried with a soft cloth with very little pressure.

Cutting: IMPORTANT!

Do not remove the protective film from the sheets before cutting, and once this has been accomplished blowing or suction should be employed to eliminate any chips.

Manual cutting

Cutting should always be carried out with a fine-blade saw, with the sheet firmly held in place to prevent vibration. The teeth should be well-sharpened.

Cutting with a blade

When cutting with a blade, this should be passed several times in order to achieve the desired depth (this should be a minimum of half the thickness), employing a uniform pressure.

The sheet must be firmly secured to prevent sliding. Afterwards, the sheet should be placed on a flat surface and gentle pressure applied until it breaks. Sandpaper may be employed to eliminate any burrs.

Sawing

Cutting recommendations for PS sheets

- Disc diameter: 350 - 400 mm
- Number of teeth: 84 – 106
- Rotation speed: 2,800 – 4,500 rpm
- Advance speed: 12 - 18 m/min

Type of teeth

Alternate teeth or combined straight and trapezoid.

The sheet must be firmly secured to prevent them rising up and causing cracks when the disc passes.

The translation speed should be as uniform as possible.

The disc must be regularly sharpened.

Polishing

Pre polishing is required to eliminate any marking caused by the cutting disc.

The following may be used:

- Rotating rigid fabric discs with buffing paste.
- Rotating soft fabric discs with buffing paste for the final finish.

Drilling

Metal and wood drill bits may be employed. The larger the diameter, the lower the speed.

A diameter of the hole that is approximately 1.5 mm larger than that of the screw to be used should be drilled to take sheet dilation into account.

The sheet must be firmly secured to prevent breaking. A sharp object can be employed to start the hole. In addition, air or water can be used for cooling purposes.

Gluing: IMPORTANT!

To prevent air bubbles, the glue should be allowed to stand for a while before application, until none can be seen.

Solvents

Various solvents can be used in the bonding of PS sheets. The most common is MEK (methyl-ethyl-ketone). Generally, aromatic solvents can be used. These solvents can be applied using a syringe or fine paintbrush. An ideal adhesive is a mixture of two parts methyl chloride and one part toluene. To facilitate gluing, 10% PS chips can be added to the mixture to thicken the adhesive,

Before carrying out the actual gluing operation the surfaces to be glued must be cleaned must be cleaned with alcohol.

Glues

These are solvent-free adhesives, with two components based on polyurethanes. They are transparent, odour-free and do not attack the plastic. They permit different types of plastic to be joined together and also plastics to other materials, such as glass, aluminium and steel etc.

Welding

PS sheets may be welded together using ultrasound or heat pulses. The welding quality will increase when the distance between the sonotrodes is decreased. High frequency welding is not possible because the material has low dielectric losses.

Thermoforming

The stresses that can be produced during this process must be controlled since they could produce heavy stress-related cracking.

The thermoforming vacuum temperatures must be above 120°C, with prior pneumatic or mechanical stretching.

All the sheets products 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 thermoforming or hot-bending.

Bending

The sheet should be locally heated with an electrical element and then quickly bent. It is a good idea to cool the part of the sheet that is closest to the bending line.

When bending thick sheets, it is recommended that both sides are heated, with the sheet being firmly secured after bending in order to maintain the exact position. Over time, it is possible for small cracks to appear in the area of the bend. We recommend that the smallest radius be twice the sheet thickness.

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Decoration

The sheet surface must be clean and free from grease, demoulding agents and any other contamination. Degreasing can be performed using a 50/50 mixture of isopropane and isobutanol.

PS sheets are easily printed, lacquered and painted using a wide range of products. They can also be decorated by means of silk-screening, lithography, metallization or hot-marking. It should be ensured that the PS sheet will not be attacked by solvents incorporated in the lacquers or varnishes and paint manufacturers should be consulted about products designed to cover PS.

Vacuum metallization

PS sheets can be vacuum metallised. It must be stressed that the obtained finish will depend of the surface shine of the sheet before this process is carried out.

The print film should be removed just prior to printing to prevent the surface from damage.