Working With Alupanel®

PERSPEX Distribution Ltd

Preparation

The surface protection film can often be left in place during fabrication and all marking-out drawn on the film.

Cleaning

Cleaning of Alupanel® sheets should not generally, be required until after fabrication. However, if the product is to be printed, it may be advisable to wash or degrease the surfaces to be printed with a mixture of 50% isopropyl alcohol (IPA) and water. After sufficient rinsing the sheets should be left for a short time prior to printing to allow the alcohol to evaporate. This cleaning has the benefit of removing all traces of static charge from the sheet after removal of the film which might otherwise attract dust.

Alupanel® is an extremely durable material that is unlikely to be compromised by any cleaning process that could be used on the material. However, for all general purpose cleaning, Alupanel® should be washed with products of a pH of 10 or less and which do not contain bleaches, ammonia or caustic ingredients. It is also recommended that users avoid abrasive materials or products so as not to compromise the finish of the material.

Sawing

Powered saws with blades having alternative teeth bevelled, as for aluminium, are particularly suitable for Alupanel® as are band saws, jig saws and fret saws.

Machining

Alupanel® is easy to machine. However, it is important that only light machining cuts are taken and if high speeds are used to achieve good surface quality, it may be necessary to stop the machine periodically to allow the part to cool. Alupanel® has low thermal conductivity and cannot be cooled easily with compressed air or any other means although compressed air is recommended during machining to keep the resulting heat at a low level.

Routing

Fixed head, moving head or portable standard woodworking routers are suitable for Alupanel® using the same cutter speeds as for aluminium. Routing can actually be performed dry but all swarf must be cleared and the cutter kept cool. Compressed air directed onto the cutter and workpiece would be preferred.

Alupanel® can subsequently be folded by hand if a 'v' shaped groove is first milled on the rear of the panel. A minimum thickness of 0.3mm of the polyethylene must be left on the back of the decorative face.

Cutting Tools

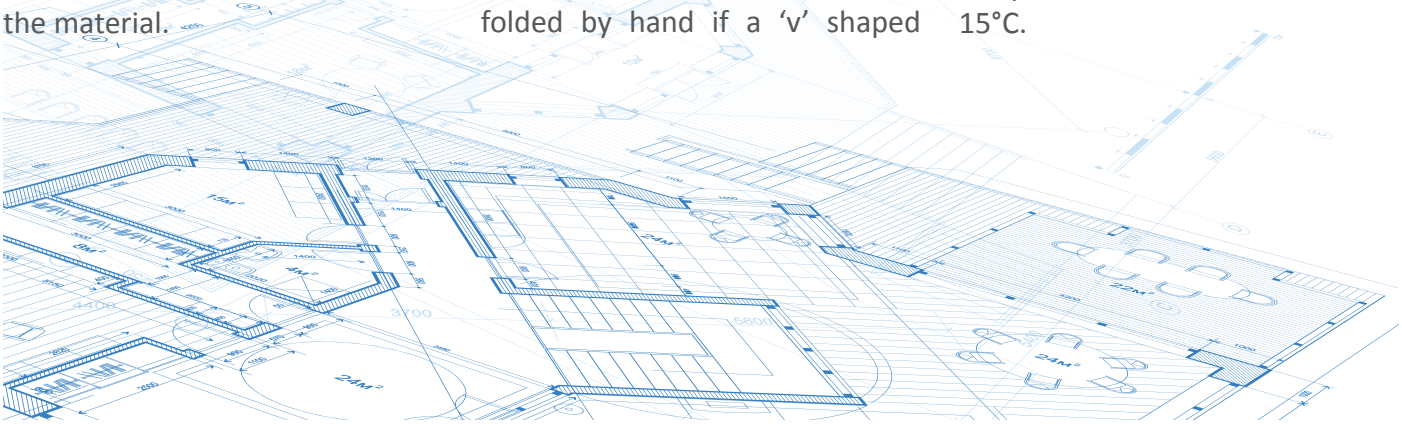
To achieve a good finish when cutting, all tools must be kept sharp. Most conventional tools for use with aluminium are suitable for use with Alupanel®.

Most power tools can also be used and HSS tool bits are suitable to achieve a good finish. For longer-life, tungsten carbide tipped blades and tool bits would be beneficial while for accurate work where a high degree of finish is required, diamond tipped tools would be particularly suitable.

For routing, HSS double-edged cutters are preferred, ground and honed with a back clearance angle of about 12° or greater.

Guillotining

Shear cutting using a guillotine is possible with Alupanel® but not recommended for thicknesses above 3mm as the cut edge may become rough and distorted. The sheets must be well clamped and should be sheared at room temperature, but not lower than 15°C.



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Die Cutting

Alupanel® can be die cut with steel rule dies. The steel rules must be kept sharp and the cut should be completely through the sheet with a stroke that will prevent damaging the cutting rule. Trials are recommended prior to full production to achieve the optimum setting.

For die cutting of printed sheets, the printed side should be facing upwards towards the cutting knives.

Drilling

Conventional twist drills for use with aluminium are suitable for use with Alupanel® and hole-saws or drill bits with a locating point may be used for larger holes greater than 12mm diameter. A small pilot hole should be drilled first to locate the drill and where possible, the work should be supported by a back stop made from either scrap Alupanel® or wood to prevent splintering the exit hole.

Line Bending

Bending can be performed with a panel folder when bending with a minimum inside radius of 15 times the panel thickness or a 3 roller panel bender which would be preferable for bending large internal diameters.

Alupanel® can also be cold formed in a pyramid roller, a press brake or over a clamped pipe. The process is similar to the forming of aluminium although due to the sensitive surface, care should be taken to ensure that the rollers are clean, smooth and free of defects.

Cold Curving

Alupanel® may also be installed with a stressed curve to create an arch as long as the curve and resulting stress is within a specified limit, typically fifteen times the thickness of the panel.

Pyramid Rollers

The Alupanel® should be rolled 3° to 5° tighter than that required to allow for a small amount of spring back. As an extra precaution, a film should be used between the panel and the rollers.

Press Brake

When forming with a press brake, the top tubular die should have a radius, equivalent to the finished inside radius desired and the bottom die or jaws should be wider than the top die by approximately two times the thickness of the panel. The bottom die should always have a protective pad to prevent damage to the surface of the panel.

Over a Clamped Pipe

Alupanel® may be formed over a pipe of the appropriate diameter that is securely clamped to the work table. A hinged leaf attached to the table will bend the panel easily.

Through Bolts

Bolts provide an excellent way to join Alupanel® to itself or to other materials. Galvanised, stainless steel or aluminium bolts, nuts and washers should be used to avoid dissimilar metal contact. Caution is also recommended in tightening the nut onto the bolt as the polyurethane core of the panel will compress and over-tightening will cause deformation of the metal skins. Lock nuts or double nuts with washers will prevent the nut from loosening over time.

Rivets

Rivets can be used to join Alupanel® to itself or other materials. For outdoor applications, aluminium blind rivets should be used to prevent corrosion and clearance holes should be used to account for thermal expansion.