



FABRICATION GUIDE

For accurate and precise manual folding of our ACM product, resulting in a good finish, we recommend to route the rear of the panels to 2.5 mm thick, going through the exterior Aluminium layer, and some of the Polyethylene core. Normally the panel is grooved and folded 25-70 mm from the edge.

Vertical Panel Saw

Equipped with specially shaped routing saw blades. The equipment needed is the same vertical saw as the one used for the cutting, but with a different saw blade and relevant equipment for adjusting the routing thickness. The use of a chip collector is essential.

Portable Circular Saw

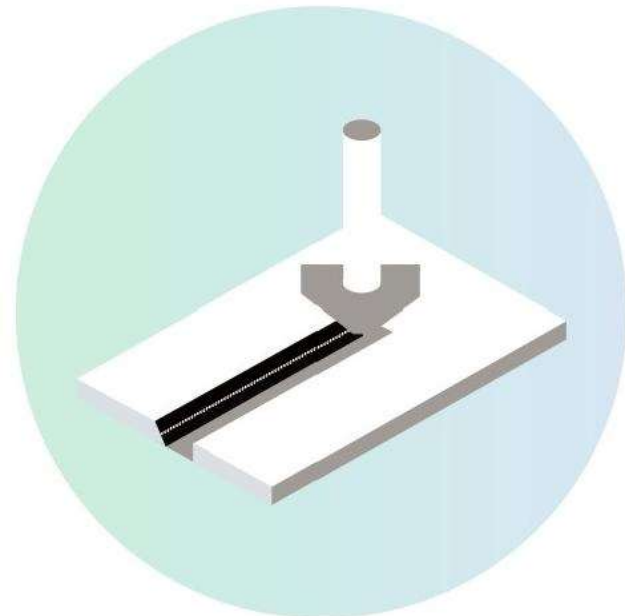
A portable circular saw equipped with a suitable routing disk can be used, but only for a limited amount of processes. Note that special care should be given to the stability of the portable circular saw during processing of the material, as well as the precision of the routings with the help of the chosen guided system..

These routers are commonly available on the market for wood processing. If they are equipped with special routing bits (carbide tipped cutter) the hand operated router can be used for a limited number of processes. In this case the stability of the tool and the guide-system considerably affect the quality of the routing.

Work directions

For shaped elements with a radius of between 2mm and 7 mm proceed as follows:

The shape of the groove and its respective depth determines the folding radius. Note that smooth bending (shape forming of elements) cannot be obtained without uniform thickness of polyethylene remaining.



CARBIDE SAW

By routing on just one side, ACM can be bent to create either an inside or outside corner. When a groove is bent at a 90° angle the bending radius of the final product will be 3-3.5mm and the element will elongate by 0.5-1.0mm. As such, the original panels should be cut shorter by that proportion.

TECHNICAL CHARACTERISTICS OF CARBIDE SAW-BIT

Outside Diameter: 305 , No of the Teeth 24, RPM 3000 to 5000.



Grooving equipment

For processing a small number of panels, a router and trimmer can be used. For processing large volumes, a circular saw and a grooving cutter are needed along with a lifter.



Note:

- 1) Panels with a skin thickness of less than .010" are not recommended for routing and folding.
- 2) Material thickness after routing should be usually between 1.5 times to 2 times of the skin thickness.

CORNER CUTTING AND BENDING

Wood chisel

A sharp hammer blow to a wood chisel allows you to cut out the small thickness at the bottom of a routing groove with no difficulty. The wood chisel must be wider than the part to be cut out. With a little experience, good clean joints can be easily achieved.

Punching

This technique is the most productive with the corners being cut out and the corner fast holes being put in a single operation



Minimum Bending Radius

The minimum bending radius for ACM without routing the back skin is forty times the thickness of the panel being curved, i.e. 4 mm panel thickness=160 mm minimum radius

Pyramid Roller

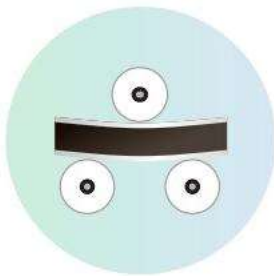
ACM can be cold formed in a pyramid roller, a press brake or over a clamped pipe. The process is similar to the forming of Aluminum; however, due to the sensitive surface, care should be taken to ensure rollers are clean, smooth and free of defects to avoid damage to the surface.

As an extra precaution, a protective film should be used between the panel and the rollers to further shield the panel surface. Do not pinch the ACM between the rollers. Roll the panel 3° to 5° tighter to allow for a small amount of Spring back that will occur. Once the sheet is curved; however, it will remain curved.

Press Break

When forming with a press brake, use a top die (tubular) with the radius desired and open the bottom die (jaws) approximately two times the thickness of the material plus film wider than the top die. The lower die should always have a protective pad of not less than 3 mm film.

Some adjustment of the lower jaws may be necessary to allow for varying bending properties between anodized and painted finish and for varying thicknesses. The radius of the top die will be the approximate inside radius of the finished panel.



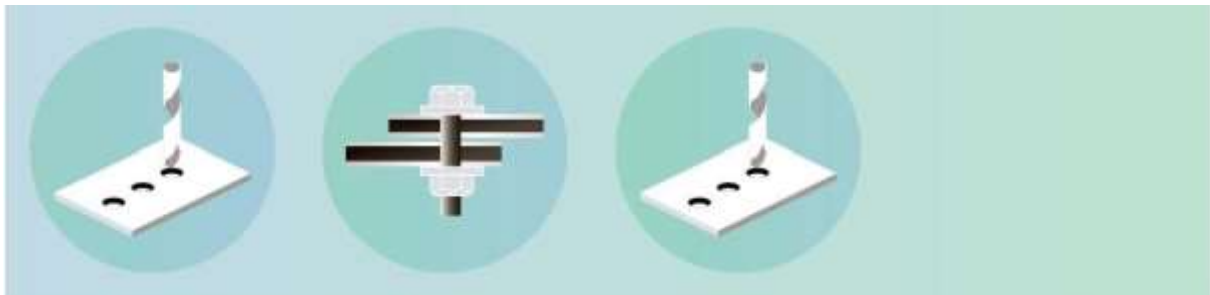
Bending Over a Clamped Pipe

ACM may be formed over a pipe of the proper diameter that is securely clamped to a work table. A hinged “leaf” attached to the end of the table will bend the material easily.

Drilling and Joining Techniques

ACM can be drilled with standard drills used for Aluminium and plastics.

Quick removal of chips can be achieved by a high RPM, slow feed speed and occasional lifting of the bit.



Working Specifications

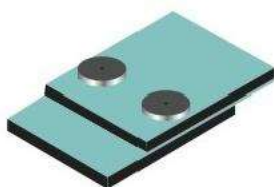
Drill Bit: Twist Drill, high speed steel.

Tip Angle: 100-140 degrees or counter-bone grind with centering tip.

Cutting Speed: 164 to 984 RPM.

Joining

A variety of different fasteners are used to fabricate and install ACM. Structural adequacy and selection of these fasteners are the responsibility of qualified engineers and, in most instances where architectural panels are used, certified calculations will be required by the Building Official. You may successfully use specific fasteners for panel load testing purposes in obtaining building code recognition. Please find below some important general information about joining techniques. Use the following guidelines when other elements come in direct contact with the surface of ACM.



Acceptable Joining Materials: Aluminium, plastic, stainless steel, plated or coated steel with cadmium or zinc.

Unacceptable joining materials: Copper, brass, bronze, iron, raw steel.

Unacceptable materials cause corrosion of joining surfaces due to electrolysis of dissimilar materials. Therefore, use “heavy” or “red” metals only with an electrically insulating intermediate layer. When joining elements are to be anodized, assemble the materials after the anodizing process. Proper consideration should be given to the thermal expansion characteristics of ACM when using any of the joining techniques.

Pop rivets

Pop rivets are often used to attach aluminium clip angles and other structural or ornamental elements to ACM. Because the rivet body will be in contact with the aluminium skin of the panel, it is recommended that either aluminium or stainless steel rivets be used to avoid dissimilar metals contacting. Ultimate shear and tensile strengths of various rivets are available from the rivet manufacturer. Please be advised that some building code jurisdictions do not endorse the use of pop rivets for structural connections