

## MECHANICAL PROCESSING

### Cutting/Saw

ALPOLIC®/fr can be easily cut using standard woodworking saws (i.e. circular hand saw or panel saw). A carbide tip blade made for aluminum and plastic is the most suitable for cutting ALPOLIC®/fr.

### Cutting/Shear

Square shear cutting is the easiest method for cutting large panels. Some shear droop may result at the cut part of the aluminum surface material.

For shear cutting ALPOLIC®/fr:  
Recommended rake angle for shear cutting as listed below.

Thickness of ALPOLIC®/fr	Clearance	Rake angle
3 mm	0.002"	1°
4 mm	0.002"	1° 30'
6 mm	0.008"	2° 30'

### Edge Finishing

When a smooth finished edge is required on ALPOLIC®/fr, the following equipment can be used to provide the specific requirements: woodworking planer or shaper, tenoning machine or milling machine.

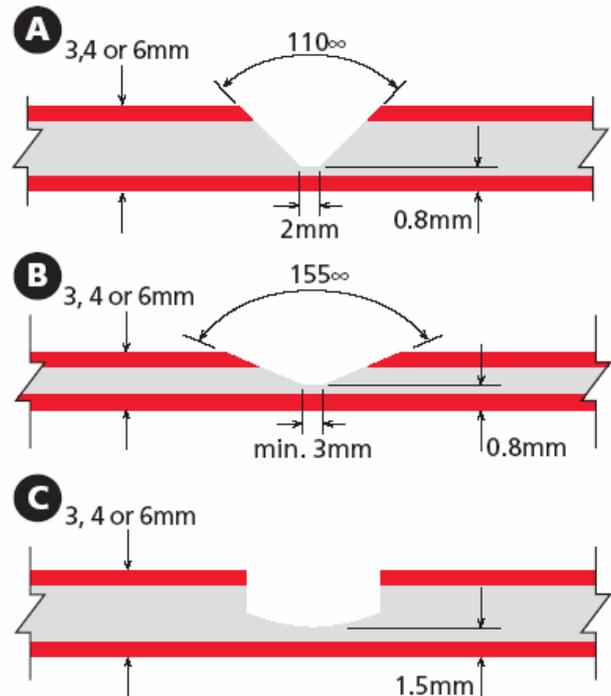
The edging process provides smooth, crisp, clean edges, to insure clean joint intersections or to create a detailed frame effect when angled.

### Processing

Because of ALPOLIC®/fr's composite makeup, the following process is required to fabricate sharp angle bends. This requires routing or cutting either a 'V' or 'U' groove in the ALPOLIC®/fr, as shown, to provide the required bend.

Observe the following recommendations in 'U' or 'V' cut processing:

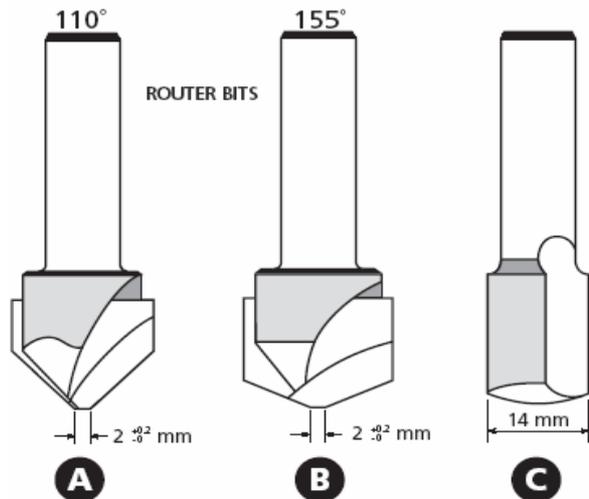
The 'U' or 'V' cut bottom should not reach to the back of the aluminum. Leave about 0.2 - 0.4 mm of mineral filled core.



### Router and Trimmer Tools

Use the bit as shown in the drawings below which correspond to the cut diagrams above.

Number of teeth : 2 - 4  
Rotation speed : 20,000 - 30,000 rpm  
Feeding speed : 10 - 16 ft/min.  
Material : Carbide



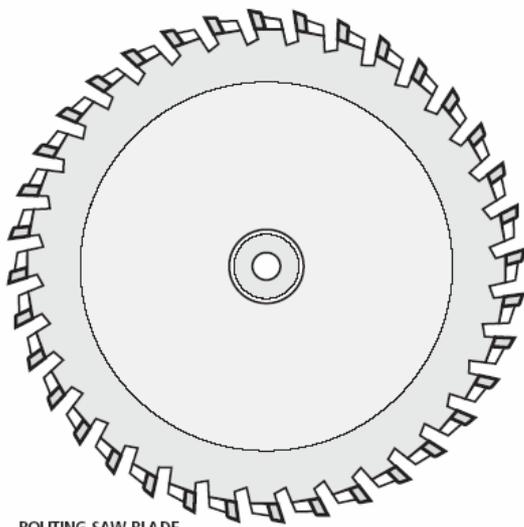
## MECHANICAL PROCESSING

### Saw/Milling Cutters

A router or trimmer is best suited for processing small quantities of ALPOLIC®/fr or at a construction site. When doing a larger quantity of ALPOLIC®/fr, a circular or panel saw with circular cutters are more efficient.

#### Carbide Tip Saw Example

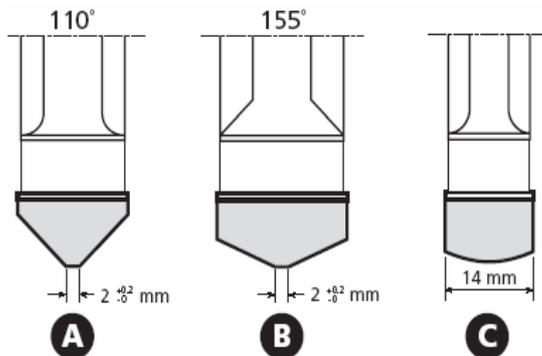
Outside diameter	: 12" 0
Number of teeth	: 36 (saw) 8 (grooving)
Rotation speed	: 3,000 - 5,000 rpm (variable motor)



ROUTING SAW BLADE

Observe the following recommendations in 'V' or 'U' cut processing:

The 'V' or 'U' cut bottom should not reach to the back of the aluminum. Leave about 0.2-0.4 mm of mineral filled core.



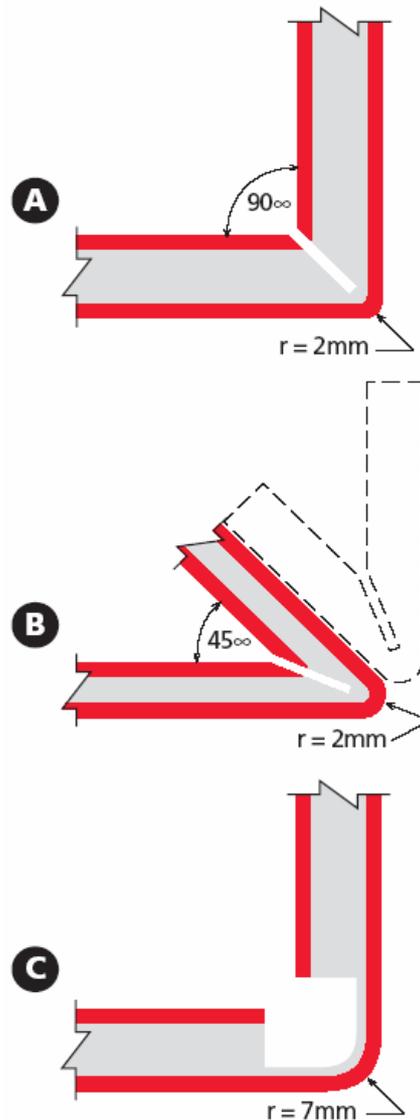
### Bending

ALPOLIC®/fr should be processed on a flat surface, void of irregularities, to insure

consistency in the depth of the 'V' or 'U' grooving. This will insure a smooth clean edge when bent.

If available, a plate or break press should be used to bend processed ALPOLIC®/fr. When this is not possible a simple bending jig made of wood or metal is recommended.

When ALPOLIC®/fr is processed with a 'V' groove and bent at 90°, the finished panel dimension will increase by approximately 3 mm. This should be factored into the panel dimensions before final fabrication. It is advisable to do a preliminary test to insure the proper adjustment necessary.



## MECHANICAL PROCESSING

### Curving

ALPOLIC®/fr can be easily curved using any of the following processes: Press Break, Roll Bender, Pipe Fixture. The following are guidelines and limitations for curving ALPOLIC®/fr panels.

### Press Brake

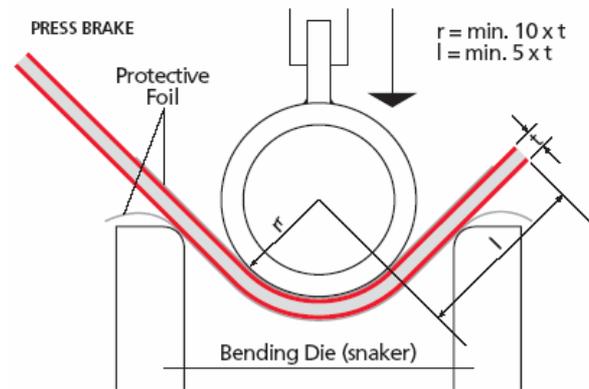
The minimum bending radius using a press brake is shown in the following table. The Minimum Bending Radius with a Press Brake, 90° Bending and Internal Radius

<i>Thickness of ALPOLIC®/fr</i>	<i>Traverse (Width)</i>	<i>Parallel (Length)</i>
3 mm	38 mm	51 mm
4 mm	38 mm	51 mm
6 mm	51 mm	76 mm

### Guidelines in bending process:

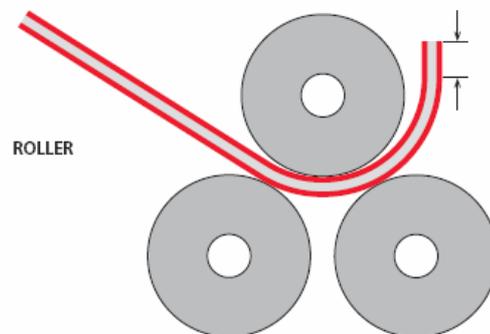
Because the aluminum surface material can be easily scratched, it is recommended that the following precautions be taken:

1. To prevent scratches, a protective pad should be used on the die of the press brake.
2. Pay attention to any scratches on the punch. It is recommended to use a fully polished punch.
3. To prevent scratching, it is best to leave the factory applied protective film on the ALPOLIC®/fr during processing. Be sure there are no air bubbles or wrinkles before processing.
4. With ALPOLIC®/fr, the volume of spring back varies somewhat in relationship to the bending direction, thickness, material temperature and the radius of the required bending angle.



### Bending with a Roller Bender:

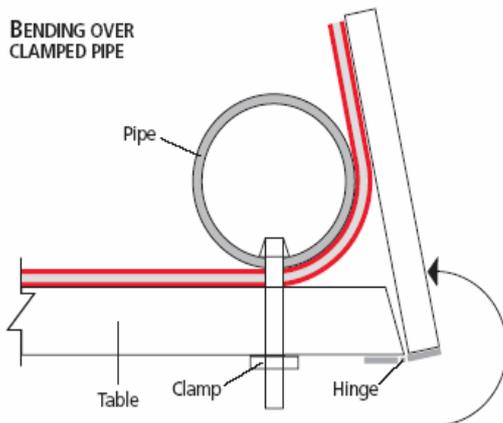
A Roller Bender enables a larger bending radius than a press brake. The bending angle is determined by the diameter of the roll and the distance between the rolls. However a flat surface will appear at the beginning and the end of the panel. When this is not acceptable it will be necessary to cut off and remove the flat surface, in the finish fabrication process.



## MECHANICAL PROCESSING

### Bending with Clamped Pipe Fixture

ALPOLIC®/fr can be bent over a pipe of the proper inside diameter that is securely clamped to a table. A hinged leaf attached to the end of the table will make bending easier. Initial bending beyond 90° may be required to compensate for any memory spring back.



Working Specifications:

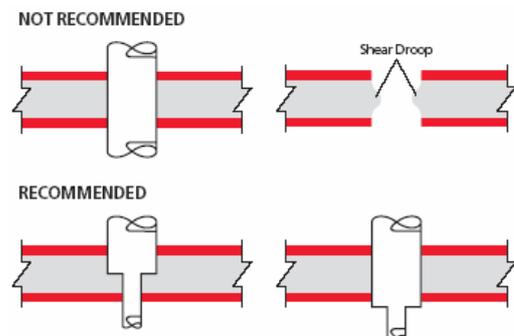
- Drill bit: Twist drill, high speed steel.
- Tip Angle: 100-140 degrees, or counter-bore grind with centering tip.
- Cutting Speed: 164 RPM to 984 RPM.

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

### Punching

Punching with a press sometimes causes shear droop in the aluminum surface material similar to shear cutting. It is preferable that the clearance of punch and die be made as small as possible (thickness of panel times 5%).

In the case of a small diameter hole (under 3mm) the tool may need to be modified as shown below to ensure that the core material is completely removed in the process.



### Drilling

ALPOLIC®/fr can be drilled with standard twist drills used for aluminium and plastics.