

Cutting and Machining KYDEX® Thermoplastic Sheet

For information applicable to KYDEX® FST please refer to 300 series technical briefs.

TB - 153-A

General Information

KYDEX® sheet can easily be cut and machined with conventional wood working and sheet metal shop tools; special tools designed for plastic fabrication are not necessary.

The following table contains the best conditions for various sawing operations.

| Type of Cut | Tool | Blade Type | Blade Parameters | Blade Speed |
|--------------------------------------|-------------------|---|--|------------------|
| Straight Cut | Circular Saw | Carbide Tipped Square and Advance tooth | 6-8 teeth/inch | 4500-9000 ft/min |
| Straight Cut in thin thicknesses | Circular Saw | Plywood Cutting | 6-8 teeth/inch Taper ground rim No set | 4500-9000 ft/min |
| Curved Cuts | Band Saw | Standard Metal Cutting | 8-14 teeth/inch | 6000 ft/min |
| Curved Cuts | Saber and Jig Saw | Veneer or Metal Cutting | 18 teeth/inch | 1200 strokes/min |
| Trimming and deflanging Formed Parts | Router | Veneer Cutting | 6-8 teeth/inch Taper ground rim No Set | 4500-9000 ft |

Along with these settings, it is important to remember that composition, thickness, and material temperature greatly affects the process of removing material. For example, thicker material will require a slower cutting speed and may also require a different type of cutting tool. Also, when routing, more than one pass may be required for a good part finish which is based on part thickness and type.

KYDEX, LLC

ISO 9001 and 14001 Certified

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Routing is an excellent way to shape plastic parts. Routers are either manual or automatic. Manual routers are air, electric, or pin. These are hand fed routers and use a high speed steel or carbide cutting tool. Automatic routers are CNC using three to five axes and a solid carbide cutting tool. A hold down is necessary to hold the piece being cut. Spoil boards are recommended for plastics machining and are basically a vacuum hold-down.

In general, there are two types of plastics that are machined; soft and hard. When machined with a router, soft plastics will have a curl chip while hard plastics will have a splintered wedge chip. It is suggested that soft plastics be machined with a spiral "O" flute using a climb cut (clockwise) direction and hard plastics with a double edge "V" flutes, spiral "O" flutes, or two/three edge finishers. One of these cutting tools may be used to mill the hard plastic in a conventional cut (counter clockwise) direction.

Amana Tool (www.amanatool.com) offers two different cutting tools for plastics; sawing and routing. They offer saw blades from 8-14" with a 2° negative hook. This modified triple chip (MTC) grind allows for a reduced tendency of "chip welding" or "melting" of the material being sawed. They also offer single and double "O" flutes for routing, which offer excellent chip ejection.

Onsrud offers a variety of tooling choices to machine KYDEX® sheet as well. The following are steps to access the Onsrud database on recommended cutting tools for KYDEX® sheet :

1. Go to www.plasticrouting.com
2. From the list on the left hand of the screen click on Router Bit Search
3. Under Router Bit Search, click on Company
4. In the company drop down list select Kleerdex Corp
5. From there select a KYDEX® sheet product and colour
6. Click the search button

A comprehensive list of cutting tools for selected KYDEX, LLC products and colour will appear on the screen with feed rates, cutting tool rpm, and other information.

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