

FABRICATING TIPS FOR EPE AND EPP FOAM MATERIALS.

All traditional fabricating processes can be used with EPE. EPE die cuts cleaner than both extruded PE and cross-link PE. EPE molded planks skive more like crosslink materials.

EPP can be saw cut, die cut, water cut, profile cut, hot wire and abrasive wire cut. EPP is stiffer and more brittle than EPE, extruded PE, and crosslink foams.

SKIVING OR SPLITTING 6" X 48" X 72" PLANKS:

Heavy duty skivers like the F&K machines work best with knurled steel pull rollers. Continuous sharpening of the razor edge cutting blade is also required. Angle a corner of the plank into the blade or lift the plank up as it enters the machine to reduce edge lipping.

EPE- skive all plank densities #1.3 - #4.2 pcf at 40-45 fpm at any thickness. Set the pull roll pressure so that the rollers are just touching the foam. Position the plank at an angle to the blade on higher densities and increase the roller loading.

EPP- run the speed at 20 fpm at maximum roll pressure. The higher the density the stiffer the material will be.

#1.3-#1.9 pcf. Cut up to 3" thick | #2.8 pcf: cut up to 2" thick. | #3.7 pcf: cut up to .50" thick

DIE CUTTING PLANKS:

Use 1.38"- 1.50" serrated steel rule on 5/8" wood base. Thicker parts typically require having taller die rule. Use the least amount of rubber die load ejector rubber material as possible. Ejector load is more critical on an automatic press than on a manual press.

Metal shim tape can be applied to the back side of the die in problem areas to help with cutting and part ejection. The wood base can also be drilled or channeled to help reduce compressed air pressure.

To decrease concavity load the outside perimeter of the cut-out with heavier load material than the inside cavity load material and move the load away from the edge of the rule. Add die load if the foam sticks to the die and won't eject. Press type, tonnage, rule loading, material thickness, inches of rule and the press operator will influence results.

EPE- cut all densities at 2" nominal depending on rule length. Maximum die rule length is about 1000", thickness between parts and plank sides is .25". EPE can be hinged cut successfully if the operator can control the depth of the cut. In most cases EPE has 50% less concavity than other PE materials.

EPP- successfully cut #1.3 and #1.9 depending on the amount of rule. Bevel the edges around all four sides of the cutting tool wood base and load the tool with polyurethane foam if you have edge crushing.

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SAW CUTTING:

For both EPE and EPP use a heat treated "Flexback" 10 raker tooth style cutting blade. Blades are one-sided, .020" gauge x .50" wide x 14 teeth per inch. Make sure that the blade guide is close to the foam in the machine to reduce blade deflection. Cutting speed depends on the density of material and quality of cut desired.

WATER JET EQUIPMENT:

For both EPE and EPP use #4, #6 or #10 size orifice heads based on the material, part thickness and density. The material thickness, material type and density influence speed. Most parts are run at 50% speed but thick high density parts may need to be run at 10%. Low density EPE can be up to 5" thick with a #4 head and mid density EPP can be cut up to 4" thick with a #10 head.

ROUTER:

Both EPE and EPP can be routed well. Parts need to be vacuumed during the cutting process to remove machined material.

Example: 5" deep case insert with multiple cavities. Use a standard up-cut, three flute blade bit traveling at 20,000 rpm at 350 fpm. Machine out 4" of the cavity depth with a 1" tool bit and then finish with .25" bit at slower speeds for final detail.

FLASH CUTTER:

One-sided angled cutting blades are 2", 3", and 4". Cuts single sheets from .003" - 4" thick. Machine cuts all 2" low densities and EPP13 at an average speed of 50% and 2", #1.9 EPP, at average speed of 10%.

KONGSBERG TABLES:

Cuts low density EPE and EPP materials. Use tungsten carbide coated cutting blades (VHM) to reduce friction and increase machine speeds by 50%.

HOT WIRE DOWN CUTTING EPP:

Down Cutting is very good at cutting lots of squares and rectangles with tight tolerances at the same time. Material can be stacked as high as the machine allows. Run .014 size wires just below red in color. Cutting speed is 3" - 4" inches per minute on low density EPP. The higher the foams density the slower the cutting speed. Black EPP may take slightly longer to cut than White. EPE can also be hot wire cut but the cutting changes the foams Class A compatible surface.