NEVER CUT THESE MATERIALS

Material	DANGER	Cause/Consequence
PVC (Poly Vinyl Chloride)/ vinyl/pleather/artificial leather	Emits pure chlorine gas when cut!	Don't ever cut this material as it will ruin the optics, cause the metal of the machine to corrode, and ruin the motion control system.
Thick (>1mm) Polycarbonate/Lexan	Cuts very poorly, discolors, & catches fire	Polycarbonate is often found as flat, sheet material. The window of the laser cutter is made of Polycarbonate because polycarbonate strongly absorbs infrared radiation! This is the frequency of light the laser cutter uses to cut materials, so it is very ineffective at cutting polycarbonate. Polycarbonate is a poor choice for laser cutting.
ABS	Emits cyanide gas and tends to melt	ABS does not cut well in a laser cutter. It tends to melt rather than vaporize, and has a higher chance of catching on fire and leaving behind melted gooey deposits on the vector cutting grid. It also does not engrave well (again, tends to melt).
HDPE/milk bottle plastic	Catches fire and melts	It melts. It gets gooey. Don't use it.
PolyStyrene Foam	Catches fire	It catches fire, it melts, and only thin pieces cut. This is the #1 material that causes laser fires!!!
PolyPropylene Foam	Catches fire	Like PolyStyrene, it melts, catches fire, and the melted drops continue to burn and turn into rock-hard drips and pebbles.
Fiberglass	Emits fumes	It's a mix of two materials that cant' be cut. Glass (etch, no cut) and epoxy resin (fumes)
Coated Carbon Fiber	Emits noxious fumes	A mix of two materials. Thin carbon fiber mat can be cut, with some fraying - but not when coated.

MATERIALS SAFE TO CUT & ETCH

Material	Warnings	Notes
Many woods	Be very careful about cutting oily woods, or very resinous woods as they also may catch fire.	Avoid oily/resinous woods
Plywood/Composite woods		These contain glue, and may not cut well
MDF/Engineered woods		These are okay to use but may experience a higher amount of charring when cut. Some MDF brands do not cut well at all
Paper, card stock	Watch for fire.	Cuts very well on the laser cutter, and also very quickly.
Cardboard, carton	Watch for fire.	Cuts well but may catch fire.
Cork		Cuts nicely, but the quality of the cut depends on the thickness and quality of the cork. Engineered cork has a lot of glue in it, and may not cut as well.
Acrylic/Lucite/Plexiglas/PMMA	Smells	Cuts extremely well leaving a beautifully polished edge.
Thin Polycarbonate Sheeting (<1mm)	Watch for smoking/burning	Very thin polycarbonate can be cut, but tends to discolor badly. Extremely thin sheets (0.5mm and less) may cut with yellowed/discolored edges. Polycarbonate absorbs IR strongly, and is a poor material to use in the laser cutter.
Delrin (POM)		Delrin comes in a number of shore strengths (hardness) and the harder Delrin tends to work better. Great for gears!
Kapton tape (Polyimide)		Works well, in thin sheets and strips like tape.
Mylar	Gold coated mylar will not work.	Works well if it's thin. Thick mylar has a tendency to warp, bubble, and curl
Solid Styrene	Keep it thin.	Smokes a lot when cut, but can be cut.
Depron foam	Must be constantly monitored.	Used a lot for hobby, RC aircraft, architectural models, and toys. 1/4" cuts nicely, with a smooth edge.
Gator foam	Not a fantastic thing to cut, but it can be cut if watched	Foam core gets burned and eaten away compared to the top and bottom hard paper shell
Cloth/felt/hemp/cotton	Not plastic coated or impregnated cloth!	They all cut well.
Leather/Suede	Real leather only! Not 'pleather' or other imitations!	Leather is very hard to cut, but can be done. Its easier if its thinner
Magnetic Sheet		Cuts beautifully
NON-CHLORINE-containing rubber	Beware of chlorine-containing rubber	Fine for cutting.
Teflon (PTFE)		Cuts OK in thin sheets
Carbon fiber mats/weave that has not had epoxy applied	You must not cut carbon fiber that has been coated!!	Can be cut, very slowly.
Coroplast ('corrugated plastic')		Difficult to cut because of the vertical strips.

MATERIALS SAFE ETCH ONLY

Material	Warnings	Notes
Glass	Find the right settings, engraved portions "chip" out easily	Green seems to work best...looks sandblasted.
Ceramic tile		
Anodized aluminum		Vaporizes the anodization away.
Painted/coated metals		Vaporizes the paint away.
Stone, Marble, Granite, Soapstone, Ony		Gets a white "textured" look when etched.