

## Safe Materials

Our laser engraver can cut or etch materials like wood, paper, cork, some kinds of plastics, marble, stone, tile, and glass. See below for a full list of Ignite Studio's pre-approved materials. Materials must VERIFIABLY be composed of safe materials.

Please note that while we have suggested safe materials to cut and engrave, Ignite staff do not have experience working with all outside materials and encourage testing various settings to achieve your desired results. "Maximum thickness" is for cutting all the way through, the laser bed can accommodate an 8" material height for engraving.

### Cutting

Material	Max thickness	Notes	WARNINGS!
Many hard woods	1/2"	Avoid oily/resinous woods	Be very careful cutting oily woods, or very resinous woods as they may catch fire.
Plywood/Composite woods	1/2"	These contain glue, and may not laser cut as well as solid wood.	None
MDF/Engineered woods	1/2"	These are okay to use but may experience a higher amount of charring when cut.	None
Paper, card stock	thin	Cuts very well on the laser cutter, and also very quickly. Tape down so paper does not move around during engraving.	Watch for fire.
Cardboard, carton	thicker	Cuts well but may catch fire.	Do not use double-corrugated cardboard. Watch for fire.
Cork	1/4"	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.	Avoid thicker cork.
Acrylic/Lucite/Plexiglass/PMMA	1/2"	Cuts extremely well leaving a beautifully polished edge.	None
Delrin (POM)	thin	Delrin comes in a number of shore strengths (hardness) and the harder Delrin tends to work better. Great for gears!	None

Material	Max thickness	Notes	WARNINGS!
Kapton tape (Polyimide)	1/16"	Works well, in thin sheets and strips like tape.	None
Mylar/PET (Polyethylene Terephthalate)	1/16"	Works well if thin. Thick mylar has a tendency to warp, bubble, and curl.	Gold coated mylar will not work. Use high speeds to avoid material melting.
Depron foam	1/4"	Used a lot for hobby, RC aircraft, architectural models, and toys. 1/4" cuts nicely, with a smooth edge.	Must be constantly monitored for flare-ups.
Cloth/felt/hemp/cotton		They all cut well.	No plastic coated, polyester or poly-mix cloth!
Leather/Suede	1/8"	Leather is very hard to cut, but can be if it's thinner than a belt (~1/8").	Real leather only! Not 'pleather' or other imitations!
NON-CHLORINE-containing rubber		Fine for cutting.	Beware chlorine-containing rubber!
Coroplast ('corrugated plastic')	1/4"	Difficult because of the vertical strips.	

## Engrave

All the above "cuttable" materials can be etched, in some cases very deeply.

In addition, you can engrave:

Material	Notes	WARNINGS!
Glass	Green glass seems to work best, looks sandblasted.	Schedule a Book-an-Expert to learn how to use the rotary attachment for round glasses.
Ceramic tile	Can etch away the glazed surface.	
Anodized aluminum	Vaporizes the anodization away.	
Painted/coated metals (like powder coated tumblers)	Vaporizes the paint away.	
Stone, Marble, Granite, Soapstone, Onyx, Brick	Gets a white "textured" look when etched.	

## NEVER CUT THESE MATERIALS

WARNING: Because many plastics are dangerous to cut, it is important to know what kind you are planning to use. *Make* has a How-To for identifying unknown plastics with a simple process here: [www.makezine.com/2011/09/22/identifying-unknown-plastics/](http://www.makezine.com/2011/09/22/identifying-unknown-plastics/)

Material	DANGER!	Cause/Consequence
Poly Vinyl Chloride / PVC Including vinyl, pleather/ artificial leather, polyester fabric (includes polyester ace- tate sheets, 100% cellulose acetate is OK)	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. It is also toxic to breathe.
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 material is the #1 cause 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 cannot 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.
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.
PETG	Cuts poorly, melts, emits noxious fumes	Creates "nauseating" odors, very smoky, burns on the cut edges, high likelihood of depositing melted plastic in laser bed.