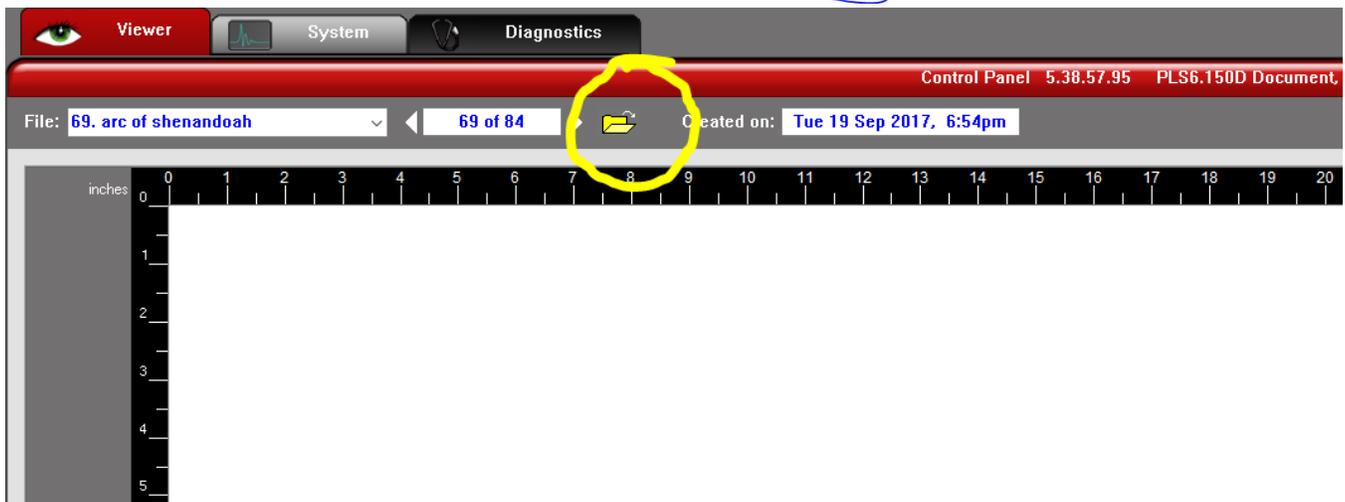
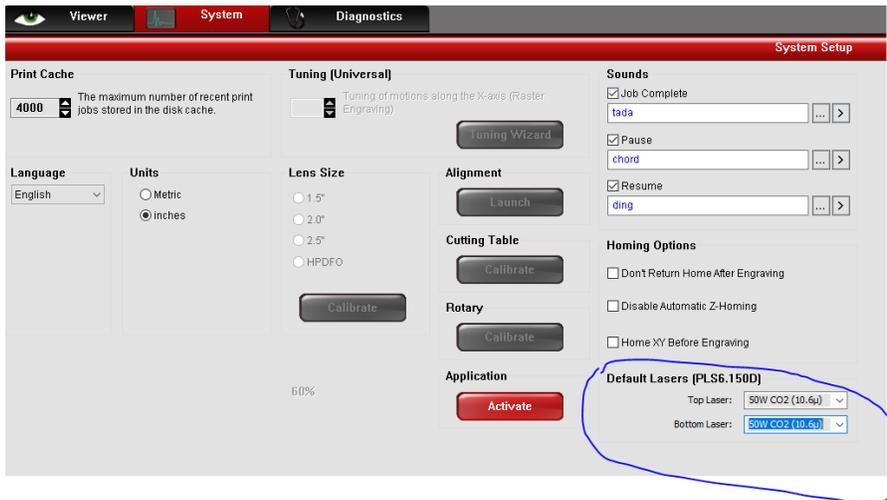


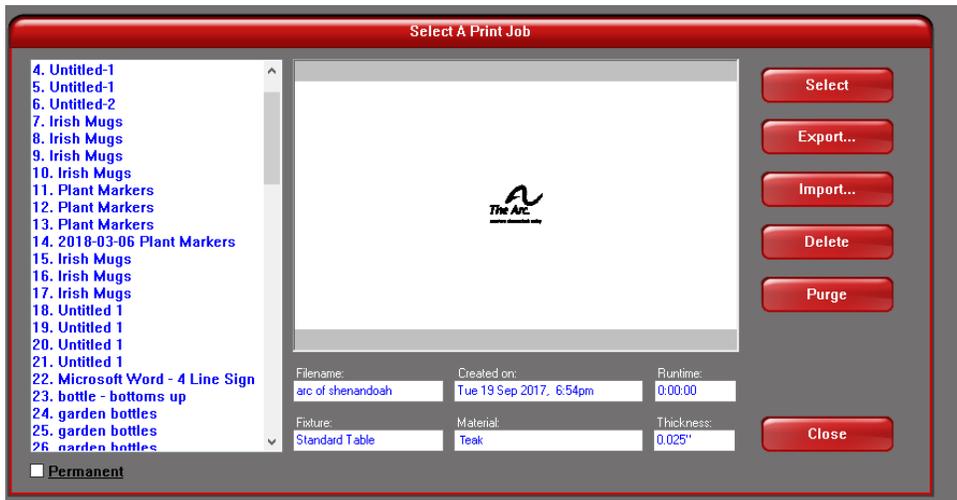
Laser Cutter ULS PLS6.150D

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Leesburg Lasercutter

The laser cutter we have is a ULS PLS6.150D laser. You can save some time and money by setting up your artwork on your home computer and uploading the resulting .emf file into the laser cutter's computer. You can do this by downloading and installing the laser print driver on your home computer. The drivers are available for download here <http://www.ulsinc.com/support/software-downloads>. Pick **UCP Installer** and follow the prompts for a **PLS 6.150D**. You should add the two 50W CO2 laser sources to get more accurate cut time estimates under the systems tab. Next, you will print your artwork to the **PLS 6.150D** from your art software. Check that both lasers are selected. You then will click on the file folder icon located at the top middle of the laser print driver screen. A dialog box should appear. Use the export to save your file to a thumb drive. When you get to the laser cutter computer open the laser print driver, click on the file folder icon and then import the .emf file. Click on the select button and you should be ready to run your file on the laser cutter.





The computer workstation in the 3-D printing room at Leesburg also has the laser print driver and CorelDRAW installed. You can follow the same process of printing to the print driver, saving the .emf file to a thumb drive and then importing the file onto the laser computer. There is no charge for using the 3-D printing room computer workstation.

The ULS website has a great materials list for what materials are good and not so good to laser here <http://www.ulsinc.com/materials/>

The below information was copied from http://atxhackerspace.org/wiki/Laser_Cutter_Materials and is also a good starting point on what materials can and cannot be cut.

Lasercutter Class Materials



Lasercutter Manual



PLS_User_Guide.pdf

Notes on Using Corel Draw

The version on the computers at the space is currently version 17 or X7

Best Places to Buy Acrylic:

<https://www.canalplastic.com/>

<https://www.tapplastics.com>

<https://www.inventables.com/categories/materials>

Laser Calendar

Book by logging into Makersmith.org and selecting Members Only Content and then [Laser Calendar Reservations](#). If you have any issue just email us at lasercutter@makersmiths.org

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](#).

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	Cut very poorly, discolor, catch fire	Polycarbonate is often found as flat, sheet material. The window of the laser cutter is made of Polycarbonate because polycarbonate <i>strongly absorbs infrared radiation!</i> 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.

Safe Materials

The laser can cut or etch. The materials that the laser can cut materials like wood, paper, cork, and some kinds of plastics. Etching can be done on almost anything, wood, cardboard, aluminum, stainless steel, plastic, marble, stone, tile, and glass.

Cutting

Material	Max thickness	Notes	WARNINGS!
Many woods	1/4"	Avoid oily/resinous woods	Be very careful about cutting oily woods, or very resinous woods as they also may catch fire.
Plywood /Composite woods	1/4"	These contain glue, and may not laser cut as well as solid wood.	
MDF /Engineered woods	1/4"	These are okay to use but may experience a higher amount of charring when cut.	
Paper, card stock	thin	Cuts very well on the laser cutter, and also very quickly.	
Cardboard, carton	thicker	Cuts well but may catch fire.	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 /Plexiglas /PMMA	1/2"	Cuts extremely well leaving a beautifully polished edge.	
Thin Polycarbonate Sheeting (<1mm)	<1mm	Very thin polycarbonate can be cut but tends to discolor badly. Extremely thin sheets (0.5 mm and less) may cut with yellowed/discolored edges. Polycarbonate absorbs IR strongly and is a poor material to use in the laser cutter.	Watch for smoking/burning
Delrin (POM)	thin	Delrin comes in a number of shore strengths (hardness) and the harder Delrin tends to work better. Great for gears!	
Kapton tape (Polyimide)	1/16"	Works well, in thin sheets and strips like tape.	
Mylar	1/16"	Works well if it's thin. Thick mylar has a tendency to warp, bubble, and curl	Gold-coated mylar will not work.
Solid Styrene	1/16"	Smokes a lot when cut, but can be cut.	Keep it thin.
Depron foam	1/4"	Used a lot for a hobby, RC aircraft, architectural models, and toys. 1/4" cuts nicely, with a smooth edge.	Must be constantly monitored.
Gator foam		Foam core gets burned and eaten away compared to the top and bottom hard paper shell.	Not a fantastic thing to cut, but it can be cut if watched.
Cloth/felt /hemp/cotton		They all cut well. Our "advanced" laser training class teaches lace-making.	Not plastic coated or impregnated cloth!
Leather/Suede	1/8"	Leather is very hard to cut, but can be if it's thinner than a belt (call it 1/8"). Our "Advanced" laser training class covers this.	Real leather only! Not 'pleather' or other imitations!
Magnetic Sheet		Cuts beautifully	
NON-CHLORINE-containing rubber		Fine for cutting.	Beware chlorine-containing rubber!
Teflon (PTFE)	thin	Cuts OK in thin sheets	

Carbon fiber mats/weave that has not had epoxy applied		Can be cut, very slowly.	You must not cut carbon fiber that has been coated!!
Coroplast ('corrugated plastic')	1/4"	Difficult because of the vertical strips. Three passes at 80% power, 7% speed, and it will be slightly connected still at the bottom from the vertical strips.	

Etching

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

In addition, you can etch:

Material	Notes	WARNINGS!
Glass	Green seems to work best... looks sandblasted.	You can do flat glass on the etching table. Take the rotary advanced class for round objects like wine glasses.
Ceramic tile		
Anodized aluminum	Vaporizes the anodization away.	
Painted/coated metals	Vaporizes the paint away.	
Stone, Marble, Granite, Soapstone, Onyx.	Gets a white "textured" look when etched.	100% power, 50% speed or less works well for etching.

Using colors other than Red, Black and Blue:

Power Control through Color Selection

As mentioned earlier your laser system uses colors to assign laser settings to different elements of the graphics you are printing. The materials database driver tab uses three colors: BLACK (raster objects), RED (vector cut objects) and BLUE (vector mark objects). The manual driver tab uses a color table of eight colors: BLACK, BLUE, RED, GREEN, CYAN, MAGENTA and ORANGE. These colors are defined in the RGB (Red-green-blue) color system using the following RGB values. In order to ensure that the colors you are using in your graphics will map appropriately in to the printer driver colors, you should learn how your graphic software defines colors and if possible use or set up an RGB pallet with the RGB values listed below.

		RED (R)	GREEN (G)	BLUE (B)
COLORS	BLACK	0	0	0
	RED	255	0	0
	GREEN	0	255	0
	YELLOW	255	255	0
	BLUE	0	0	255
	MAGENTA	255	0	255
	CYAN	0	255	255
	ORANGE	255	102	0