Suggested Material Settings

The laser cutters can cut materials up to **1/2"** thick, although with some denser materials, no thicker than **1/8"** is suggested. We have two tables with *sugg ested* settings for Vector Processes and Engraving Processes on acceptable materials, however, exact settings will vary so a materials test should always be performed. The settings provided should be used only as a **reference**, since they are settings previously used by our team, but won't necessarily work the same way with your own material.

Also take into consideration that due to natural variations in the pressure of the vacuum, it is expected that the laser cutters might lose power over the day. For example, if you cut something in the morning, it might need a little more power if you cut again in the afternoon.

These are only suggestions: Every type of material will react differently with the laser, even from one plastic to the next. Use these settings as your starting point then adjust one variable at a time until you achieve the result you desire. Settings for any material are a matter of personal preference. Not every material that can be run at high speed should be run at high speed. A better mark can often be achieved by slowing your laser and giving the laser longer to react to your material.

- Test your material: If you have a small area of the material you won't be using, or an extra item, take advantage of this area to test out your settings by engraving a small square or cutting a small circle. You can fine tune your settings in these areas.
- Similar materials use similar settings: When you are working with a material you aren't familiar with, think about a similar material and what settings you would use with that product.
- When in doubt, start low: Remember, you can always re-run your job as long as you don't move it in the machine.
- Run only one part of the file: If running a job on a new material, you can always just select one piece of the linework, like a piece of text, and run that part first to make sure your settings are perfect before running the whole file.

Review the Prohibited Materials listed on the Laser Cutter Policies page before purchasing or cutting material.

- The blue table covers cut settings for Vector Processes, which are for clean lines. If you wish to score/etch your material with clean lines, you will need to experiment with slightly weaker settings than the ones listed below. This is another reason running a materials test is imperative.
- The yellow table (under the blue table) covers Engrave Processes, which are for **raster** images. You will rarely, if ever, run an Engrave Process.

Vector (Cut/Etch) Process Settings

> ***Suggested* Settings – Always do a materials test before every new cutting session to determine the proper levels for your material. Settings in red shouldn't be changed without approval and assistance from Tech Desk Staff.**

Vector (Cut/Etch) Process					
Material	**Depth**	**Speed**	**Power**	**Frequency**	**Quality & Safety Notes**
Acrylic (Plexiglas)	1/8" (3 mm)	12	100	100	Vector cutting table (cross-hatched) must be used. A general rule of thumb for **cutting** acrylic is to relatively slow speed and high power; this produces a more flame-polished edge.
	1/4" (6 mm)	6	100	100	There are two types of acrylic: **cast** is better for engraving (it creates a frosted look when engraved) and **extruded** acrylic produces a much better flame polished edge.
	3/8" (9.5 mm)	3	100	100	Note from manual: Adjusting the standard focus distance so it is closer to the lens by about .080" (2 mm) will produce better edge quality when cutting 1/4" (6mm) acrylic and thicker. Two passes can be used for cutting thicker materials.
Bristol		90	80	25	
Chip	1 ply (0.5mm)	100	25	50	**Always check material thickness with a caliper.**
	2 ply (1mm)	70	50	50	
	4 ply (1.5mm)	35	50	50	
	6 ply (2mm)	25	50	50	
Corrugated cardboard	1/8" (3 mm)	100	60	50	**Always check material thickness with a caliper.**
	3/16" (4.5mm)	65	60	50	
	1/4" (6 mm)	60	60	50	
Leather	1/8" (3 mm)	60	100	50	
Mat Board (Crescent /Canson)		30	40	50	
Museum	1 ply	100	25	50	

Board (Strathmore)	2 ply	40	25	50	
	4 ply	25	25	50	
Plastic* **	2-Layer Laser Engraveable 1 /16" (1.5 mm)	10	40	100	
Plywood	1/4" (6mm) **max**	12	100	10	**Recent incidents of fire** indicate that this material requires caution and additional supervision if cutting is attempted. Additionally, glue and air pockets may prevent complete cut-through in some areas.
Twill		90	80	25	
Wood	Thin Veneer	50	80	10	Note from manual: When cutting wood, multiple passes may allow cutting of thicker materials. Using Color Mapping you can adjust the focus point between passes down to the center point of the cut for the best results. Always use the additional Sweep Air Assist when cutting.
	1/8" (3 mm)	25	100	10	
	1/4" (6mm)	13	100	10	
	3/8" (9.5 mm)	7	100	10	
	1/2" (12 mm)	4	100	10	

***Ask for approval/assistance for the exact plastic you want to cut.

(Raster) Engrave Process Settings

***Suggested* Settings – Always do a materials test before every new cutting session to determine the proper levels for your material. Settings in red shouldn't be changed without approval and assistance from Tech Desk Staff.**

Engrave Processes are for raster images only. Engraving information is located here.

(Raster) Engrave Process					
Material	**Type**	**DPI**	**Speed**	**Power**	**Quality & Safety Notes**
Acrylic (Plexiglas)	Photo	300	100	40	Vector cutting table (cross-hatched) must be used. There are two types of acrylic: **cast** is better for engraving (it creates a frosted look when engraved) and **extruded** acrylic produces a much better flame polished edge.
	Text / Clipart	300	100	60	
	Text / Clipart	500	100	55	
Alumamark	Engraving	300	100	20	**Engrave only.** Alumamark settings PDF.
	Engraving	500	100	10	
Anodized Aluminum	Photos /Clipart	400	100	35	**Engrave only.** This material is reflective, so avoid using full power. Use low power and high speed for crisp edges.
	Photos /Clipart	500	100	30	
	Text	500	100	40	
Brass (Painted)	Painted solid brass	300	100	25	**Engrave only. Must be painted.** Not magnetic. Ask for assistance from the Tech Desk when etching this material. Use low power and high speed. Blue paints are more difficult to remove. If the finished product has a shadow, use alcohol or lacquer thinner to clean the edges. This material can be tricky: if it's polished before being painted, you'll see a polished finished product. If the brass isn't polished before being painted, the result will be dull.
	Painted brass-coated steel	500	100	15	**Engrave only. Must be painted.** Magnetic. Ask for assistance from the Tech Desk when etching this material. Use low power and high speed. Blue paints are more difficult to remove. If the finished product has a shadow, use alcohol or lacquer thinner to clean the edges. This material is steel that has been coated with brass, that brass layer is polished, then a layer of lacquer is applied, then the paint is applied. When you etch it, you're exposing the polished brass that is protected from oxidation by the lacquer coating. This material is preferred over painted solid brass.

Cork		300	100	30	**Engrave only.**
Glass		300	35	100	**Engrave only.** Be sure that your material isn't actually leaded crystal. Jarvis dithering pattern and using 80% grayscale for black is recommended. Frosting is the result of etching this material. To dissipate heat from the engraving process, use either a wet sheet of newspaper/paper towel or a thin coat of dish soap.
Leather	Photo	300	100	20	
	Text / Clipart	500	100	25	
Marble	Photo Engraving	300	100	35	**Engrave only.**
	Text Engraving	500	100	45	
Plastic* **	Various	300	100	20	Ask for approval from the Tech Desk when etching this material.
	2-Layer Laser Engraveable 1/16" (1.5 mm)	300	100	40	
	2-Layer Laser Engraveable 1/16" (1.5 mm)	500	100	25	
Stainless Steel with Cermark Coating		500	45	100	**Engrave only. Must be coated with Cermark metal marking spray.**
Wood	Photo	500	70	100	Note from manual: When cutting wood, multiple passes may allow cutting of thicker materials. Using Color Mapping you can adjust the focus point between passes down to the center point of the cut for the best results. Always use the additional Sweep Air Assist when cutting.
	Clipart / Text	300	60	100	
	Clipart / Text	500	65	100	
	Deep Engrave	500	30	100	

***Ask for approval/assistance for the exact plastic you want to engrave.