

APPENDIX B: MATERIAL SETTINGS

Fusion Series Suggested Material Settings (CO2)

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Material	DPI/Freq.	30 watt	40 watt	50 watt	60 watt	75 watt	120 watt
Acrylic							
Photo Engraving	300 DPI	90s 60p	90s 55p	90s 50p	90s 45p	90s 40p	90s 30p
Text/Clipart Engraving	300 DPI	90s 80p	90s 75p	90s 70p	90s 65p	90s 60p	90s 55p
Text/Clipart Engraving	600 DPI	90s 75p	90s 70p	90s 65p	90s 60p	90s 55p	90s 50p
Cutting 1/8" (3 mm)	100 f	5s 100p	6s 100p	7s 100p	8s 100p	10s 100p	12s 100p
Cutting 1/4" (6 mm)	100 f	2s* 100p	3s* 100p	1s 100p	2s 100p	3s 100p	7s 100p
Cutting 3/8" (9.5 mm)	100 f			2s* 100p	3s* 100p	1s 100p	3s 100p
Cutting 1/2" (13 mm)	100 f						1s 100p
<p>Cutting Note: 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" (3mm) acrylic and thicker. Two passes can be used for cutting thicker materials. 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.</p> <p>* The Fusion has two sets of Speed control for vector cutting applications. Checking the Speed Comp selection box in the print driver will reduce the speed setting you have selected by one half. Speed Comp is most useful for speeds of 1 to 10. Example: Cut a square at 5% speed. Then repeat the job at 5% speed and also select Speed Comp. The second square will take twice as long to cut as the first square. Speed Comp gives you more slower speed setting to work with. Always use Air Assist when cutting.</p>							
Alumamark							
Engraving	300 DPI	90s 55p	90s 45p	90s 35p	90s 25p	90s 20p	90s 15p
Engraving	600 DPI	90s 45p	90s 35p	90s 25p	90s 15p	90s 10p	90s 5p
Anodized Aluminum							
Photos/Clipart	400 DPI	90s 55p	90s 50p	90s 45p	90s 40p	90s 35p	90s 30p
Photos/Clipart	600 DPI	90s 50p	90s 45p	90s 40p	90s 35p	90s 30p	90s 25p
Text	600 DPI	90s 60p	90s 55p	90s 50p	90s 45p	90s 40p	90s 35p
We find when engraving anodized aluminum, text appears best at 600 DPI, but photos and clipart can be engraved with great detail down to 400 DPI.							
Cork							
Engraving	300 DPI	90s 50p	90s 45p	90s 40p	90s 35p	90s 30p	90s 25p
Fleece							
Engraving	150 DPI	90s 35p	90s 30p	90s 25p	90s 20p	90s 15p	90s 10p
When engraving fabric, try changing the graphic to 80% gray and use the Jarvis dithering pattern for the best results. Every fabric you are cutting will need to have adjusted setting - find a small swatch of the fabric you can test first.							
Glass							
Engraving	300 DPI	15s 100p	20s 100p	25s 100p	30s 100p	35s 100p	40s 100p
When etching glass, try changing the graphic to 80% gray before engraving and using the Jarvis dithering pattern. You can also diffuse heat by covering the glass with a thin sheet of dish soap.							
Leather							
Photo Engraving	300 DPI	90s 40p	90s 35p	90s 30p	90s 25p	90s 20p	90s 15p
Text/Clipart Engraving	600 DPI	90s 45p	90s 40p	90s 35p	90s 30p	90s 25p	90s 20p
Cutting 1/8" (3 mm)	50 f	50s 100p	45s 100p	40s 100p	35s 100p	30s 100p	25s 100p
Mat Board							
Cutting	50 f	20s 60p	20s 50p	25s 40p	25s 30p	30s 40p	30s 30p

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Marble							
Photo Engraving	300 DPI	90s 55p	90s 50p	90s 45p	90s 40p	90s 35p	90s 25p
Text Engraving	600 DPI	90s 65p	90s 60p	90s 55p	90s 50p	90s 45p	90s 35p
Every marble is very different for settings. Start low and increase the power with a second run if you haven't used that marble before.							
Painted Brass							
Engraving	300 DPI	90s 45p	90s 40p	90s 35p	90s 30p	90s 25p	90s 15p
Engraving	600 DPI	90s 40p	90s 35p	90s 30p	90s 25p	90s 15p	90s 10p
Plastics							
Engraving	300 DPI	90s 40p	90s 35p	90s 30p	90s 25p	90s 20p	90s 15p
These settings work well with many plastics, including plastic phones and covers. Even one color plastic can achieve a great look when engraved.							
Plastic (2 Layer Laser Engraveable)							
Engraving	300 DPI	90s 80p	90s 75p	90s 70p	90s 65p	90s 40p	90s 35p
Engraving	600 DPI	90s 75p	90s 65p	90s 50p	90s 35p	90s 25p	90s 20p
Cutting 1/16" (1.5 mm)	100 f	10s 85p	10s 75p	10s 65p	10s 55p	10s 40p	20s 40p
Rubber Stamps							
Engraving	600 DPI	15s 100p	20s 100p	30s 100p	40s 100p	60s 100p	80s 100p
Cutting	100 f	5s 100p	10s 100p	15s 100p	20s 100p	25s 100p	30s 100p
Stainless Steel w/Cermark							
Engraving	600 DPI	20s 100p	25s 100p	30s 100p	35s 100p	45s 100p	55s 100p
Twill							
Cutting	25 f	50s 40p	50s 35p	70s 100p	90s 100p	90s 80p	90s 60p
Wood							
Photo Engraving	600 DPI	30s 100p	40s 100p	50s 100p	60s 100p	70s 100p	100s 100p
Clipart/Text Engraving	300 DPI	20s 100p	30s 100p	40s 100p	50s 100p	60s 100p	90s 100p
Clipart/Text Engraving	600 DPI	25s 100p	35s 100p	45s 100p	55s 100p	65s 100p	85s 100p
Deep Engraving	600 DPI	5s 100p	10s 100p	20s 100p	25s 100p	30s 100p	60s 100p
Thin Veneer (Cutting)	10 f	30s 100p	30s 80p	40s 100p	40s 90p	50s 80p	50s 60p
Cutting 1/8" (3 mm)	10 f	3s 100p	6s 100p	8s 100p	10s 100p	20s 100p	40s 100p
Cutting 1/4" (6 mm)	10 f	3s* 100p	1s 100p	2s 100p	3s 100p	5s 100p	12s 100p
Cutting 3/8" (9.5 mm)	10 f			2s* 100p	3s* 100p	1s 100p	8s 100p
Cutting 1/2" (12 mm)	10 f						3s 100p

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.

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- **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. Most anodized aluminums will react well with similar settings, as will most plastics.
- **When in doubt, start low:** Remember, you can always re-run your job as long as you don't move it in the machine. Let's say you're running a photograph in a one-of-a-kind wood plaque. Start with a lower power setting, look at the engraving, then run the project a second time at high speed and lower power a second time to add a little more depth if needed.
- **Run only one part of the file:** If running a job on a new material, you can always just select one piece of the engraving, like a piece of text, and run that part first to make sure your settings are perfect before running the whole file.



To print a copy of these settings to keep next to your laser, go to www.epiloglaser.com/material-settings.htm.