



Laser Cutter Guide

Epilog Mini Helix 24 | 40 CO2 Laser



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Before You Start

What does a laser cutter do?

A laser cutter is a machine that does two things: cuts through materials or engraves designs into their surface. You send a digital file to the computer, which reads your design and directs the laser along a precise path—cutting outlines or etching text, images, and patterns depending on your settings. This makes results highly precise and repeatable.

What can you make with a laser cutter?

With a laser cutter, you can create a wide range of custom and detailed projects, including:

- **Customized Items:** Keychains, picture frames, engraved glass, and etched or paint-removed designs on coated metal bottles.
- **Signage & Displays:** Acrylic or wood, point-of-purchase displays.
- **Personalized Gifts:** Engraved cutting boards, glass bottles, leather journals.
- **Prototyping:** Small-scale, detailed prototypes for design and manufacturing.

This makes it a popular tool for personalization, decoration, and small fabrication projects.

What to Expect

- **Average project time:** 45–90 minutes (depending on design complexity, material, and whether you are cutting, engraving, or both).
- **Skill level:** Beginner-friendly with staff assistance. Staff operate the laser cutter and help with settings.
- **Preparation:** Ensure your design file is properly set up with correct line weights before use. Accepted formats include PDF, SVG, AI, DXF, CDR, and PNG (for engraving). Have your design as close to final as possible before your booking time.

Note: Staff will run a test cut when using a new material to confirm safe and effective settings. Only MakerSpace staff can send jobs to the laser cutter.

Software & Files

All laser cutter projects are prepared and sent to the machine using **CorelDRAW** on the MakerSpace computers. Your design must be saved in a compatible file format so the machine knows whether to cut, engrave, or do both.

- **Cutting projects (vector files required):** Use these formats when your design needs to be cut all the way through the material: .PDF (vector-based), .CDR, .AI, .DXF, .SVG
- **Engraving-only projects:** Use these formats when your design will be engraved on the surface only: .PDF, .PNG, .JPG

For detailed file preparation instructions, see the *CorelDRAW Basics Guide*. For an explanation of vector vs. raster files, see the *Rasters & Vectors Guide*.

Supplies & Material

Materials for laser cutting can be purchased from BPL or brought from home (subject to staff approval).

Materials available at MakerSpace

- 1/8th inch Cast Acrylic sheets (various colours and sizes)
- 1/8th inch Plywood

Pricing information is available at the MakerSpace front desk. Please check our [website](#) or ask staff for current rates and stock. Prices include tax.

Bringing your own material

If you bring your own material, it must be on the MakerSpace approved list and checked by staff before use. Packaging or a receipt showing the material type will help speed up the approval process. Many sites will label clear plastic sheets as Acrylic as a marketing tactic when the sheets are a different material.

Materials that are NOT permitted include PVC, Vinyl, Polycarbonate, ABS, Chrome Tanned Leather and any material that produces toxic fumes when heated. Ask staff if you are unsure.

Materials List

Safe Materials	Engrave	Cut
Acrylic	Yes	Yes
Anodized Aluminium	Yes	No
Ceramic	Yes	No
Cloth	Yes	Yes
Cork	Yes	No
Fabric	Yes	Yes
Glass	Yes	No
Laser Safe Rubber	Yes	Yes
Leather	Yes	Yes
Marble	Yes	No
Metal – Painted	Yes	No
Mylar	Yes	Yes
Paper	Yes	Yes
Tile	Yes	No
Wood	Yes	Yes
Veneer - Wood	Yes	Yes

Safety

Approved Materials Only

All materials must be on the MakerSpace approved list and checked by staff before use. If you bring your own material, details like packaging and vendor information will help speed the assessment process up.

Smart Project Design

Very small or tightly packed cuts, especially on thin materials, can increase heat buildup. Staff can help adjust your design or break the job into stages if needed.

Proper Setup

Before starting a job, staff will help ensure:

- The material lies flat on the bed.
- The laser is focused correctly.
- Ventilation and air-assist are turned on.
- The cutting area is clear and ready.

Test Cuts

When using a new or unfamiliar material, small test cuts are done first to find safe, effective settings.

Getting Started

1. Prepare Your File

Before sending your design to the laser cutter, your file must be set up correctly, so the machine knows what to cut and what to engrave.

- Set cut lines to hairline.
- Anything thicker will engrave, not cut.
- Do a quick final check before printing (size, placement, colors/lines).

2. Place Your Material in the Laser Cutter

With the laser carriage at its home position, place your material onto the cutting bed.

- Align your material with the top-left corner of the cutting bed.
- If the material extends past the right side, lift the ruler so it can lie flat.
- If the material does not lie flat, it must be taped down.
- If it still won't sit flat after taping, the material is not suitable for laser cutting.

Note: Flat materials are essential for safe and accurate results.

3. Focus the Laser

Focusing ensures the laser beam is at the correct height for clean cuts and engravings. An incorrect focus is a fire risk.

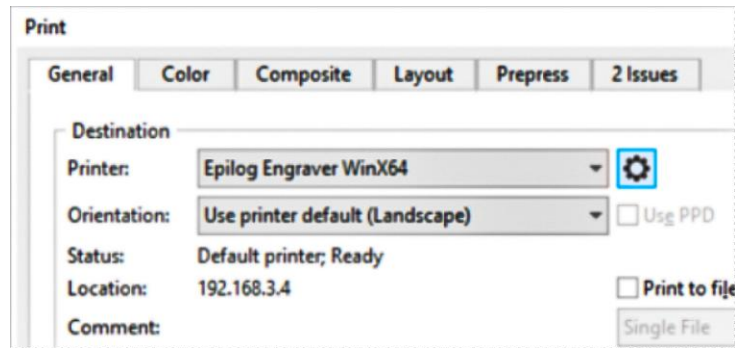
With staff assistance:

- Press Focus.
- Attach the metal focus guide with the arrow facing down.
- Use Up/Down to raise the bed until the material just touches the guide.
- Remove the metal guide.
- Press Reset

4. Send the File to the Laser Cutter

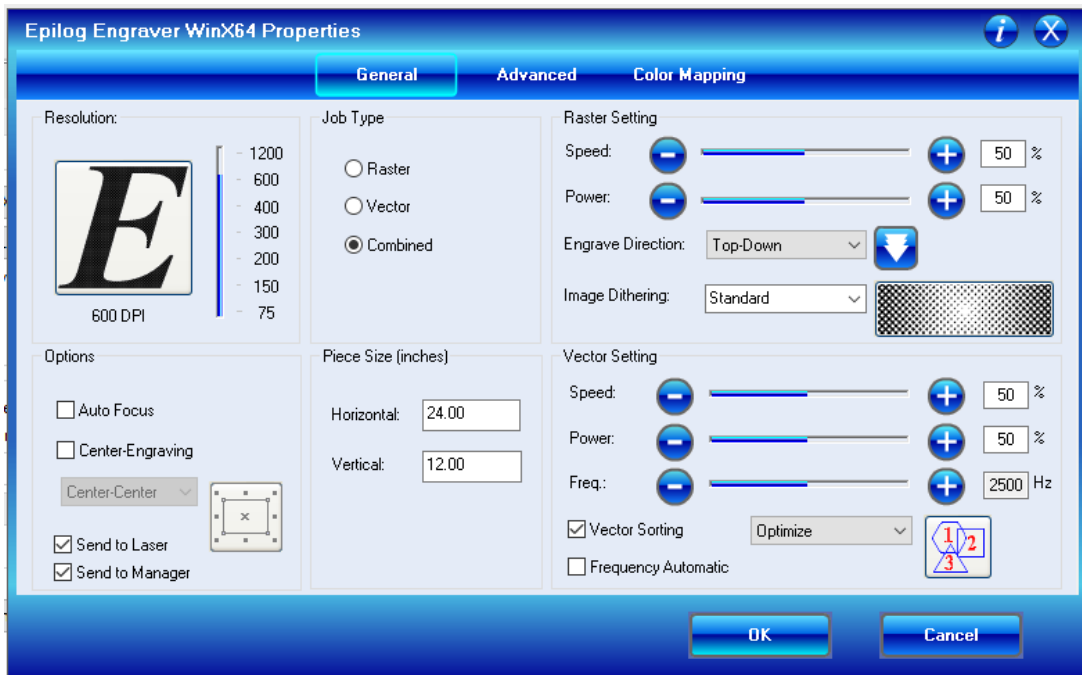
All files are sent to the laser cutter through CorelDRAW.

- Open your file and select File → Print
- Open the laser printer settings



A screenshot showing the laser printer settings screen.

- Enter the recommended settings based on the material being used. A laminated guide is provided with starting values (staff will confirm these settings).



A screenshot showing the Epilog Engraver WinX64 Properties screen.

Before starting any job:

- Turn on the air compressor
- Turn on the exhaust fan(s)

Note: Only MakerSpace staff can send jobs to the laser cutter.

Tips for Success

- **Keep a running tally of laser time.** Track how long each job takes so you can properly pay for your usage and better estimate costs for future projects.
- **Use transparent backgrounds for engraving.** If your image has a white background, the laser will possibly engrave it, leaving visible marks. Use a .PNG with a transparent background to avoid this.
- **Group engravings close together.** Engraving is generally slower than cutting. Placing all engraved elements near each other reduces the time the laser head spends travelling between areas. Consider breaking engravings up into small vertical sections.
- **Set cut lines to Hairline.** Any line thicker than Hairline (0.003" / 0.2 pt) will be engraved rather than cut. Double-check line weights in CorelDRAW before sending your file.
- **Watch for duplicate lines.** If two identical lines are stacked on top of each other, the laser will cut the same path twice. This can over-burn the material or cause unwanted charring. Check for duplicates in CorelDRAW.
- **Flat material is essential.** Material that is warped, curled, or uneven can produce inconsistent results, a fire or damage the machine. If the material does not lie flat after taping, it may not be suitable for laser cutting. Check with staff to be safe.
- **Start with a test cut.** When using a new material, it is best to run a small test cut first to find the right settings. This protects your material and ensures clean results.

Common Issues & Quick Fixes

Problem	What to Do
Laser engraved instead of cutting	The line weight is too thick. Cut lines must be set to Hairline (0.003" / 0.2 pt or smaller) in CorelDRAW. Anything thicker will engrave.
Cut did not go all the way through	The power or speed settings may need adjusting for the material. Staff will run a test cut and adjust – do not attempt to re-run the job yourself.
Engraving shows unwanted background	Your image likely has a white background instead of a transparent one. Use a .PNG with a transparent background, or remove the background in CorelDRAW or another photo editing program.
Design cut or engraved in the wrong position	Check that the material is aligned to the top-left corner of the cutting bed. Also verify the design placement in CorelDRAW matches where the material is positioned. The Corel document / page size may be incorrect.
Burn marks or charring on the material	Some materials char more than others. Staff can adjust speed and power settings, or mask the material with painter's tape before cutting to reduce scorch marks. Light char marks can be sanded off.
The laser cut the same line twice	There are likely two overlapping lines in your file. Select the area in CorelDRAW and check for duplicate objects stacked on top of each other. Delete the extra.

If anything goes wrong during a laser job, **notify staff immediately**. Only staff can send jobs and adjust laser settings.

Need More Help?

- Ask MakerSpace staff for assistance at All Levels Access hours.