

Laser Cutting and Etching at Harris County Public Library

How does laser cutting and etching work?



Laser cutters available in Harris County Public Library use a carbon dioxide laser beam to burn through (cut) or mark the surface (etch) of flat materials. The beam diameter is small and the positioning is very precise, so depending on the material used and the quality of the original artwork, lasers are capable of cutting and etching very fine details.

The lasers are capable of etching a variety of bitmap images (BMP, JPEG, PNG, etc.) in “raster mode” where the laser moves back-and-forth over the image area to “paint in” in the pixels.

The laser uses vector files (SVG, AI, PDF, etc.) for cutting and etching intricate line-art images in “vector mode” where the vectors define a specific path for the beam to follow.

Patrons are expected to provide their own materials to be cut or etched.

What materials can I use?

Natural Wood	Natural Fabric	Paper
Uncoated Cardboard	Tile, Stone & Glass (etch only)	Acrylic Plastic
Birch Craft Plywood	Natural Leather	Cork
Twill	Rubber Stamps	Corian

In general, these lasers are capable of cutting most wood and acrylic plastic up to ¼” thick. HCPL lasers are not capable of cutting or etching metal directly. Other materials are subject to Staff approval. PVC and other chloride-containing materials are prohibited. Materials or job settings that produce excessive smoke, odor, or flames will be restricted.

What software is used to create artwork and designs?

Most any program that will work with bitmap (BMP, JPG, PNG, etc.) images can be used to create or edit artwork for “raster” engraving. This includes simple tools like MS Paint or Microsoft Word up through professional-grade software such as the [GIMP](#) (free) or Adobe Photoshop. A wide range of images can be downloaded from the internet.

For cutting shapes, the laser cutter requires a ‘vector’ file. Vector shapes can be created and modified using [Inkscape](#) (free), or with a variety of CAD programs, including the free, browser-based [Tinkercad](#). Adobe Illustrator and CorelDRAW are popular commercial programs used to create vector art.

How can I use a laser cutter at a HCPL branch library?

Patrons who wish to use one of the library laser cutters are expected attend a free orientation class (check the Events Calendar for dates and times) and earn a “Laser Cutter Badge” created on HCPL’s Beanstack site for the laser cutter you wish to use. The orientation class covers the basic operation of laser cutters, the tools, and techniques to create the artwork files and HCPL’s Laser Cutter Policy. After earning the badge, patrons may reserve time to use that laser cutter. If you have already earned a Laser Cutter badge for a different laser cutter model than the one you wish to use you will earn a new badge during the hands-on portion of your orientation/reservation for the different model.

I have taken the orientation class – now what?

Schedule time to use a laser cutter at HCPL by simply visiting the [Maker Central](#) page and accessing (or creating) your Beanstack account. (This may be the same account you have used for HCPL's Summer Reading Program or other activities.) Signup and attend the Laser cutter orientation to earn your badge and click on "Rewards" within Beanstack to access the reservation form. Complete the reservation form and you will receive a confirmation of your schedule request after staff review.

If you have any questions, [please contact the branch library for assistance](#).

Which HCPL branches have laser cutters available for patron use?



Full Spectrum Muse Core Laser

- 40 watt CO2 laser
- Cutting & Engraving Area: 20" x 12" (508 x 305 m)
- Max Material Height: 2.5" (6 mm)
- Available at: Tomball Branch Library



Epilog Laser Mini24

- 60 watt CO2 laser
- Cutting & Engraving Area: 24" x 12" (610 x 305 m)
- Max Material Height: 5.5"
- Available at: HCPL Administration



Glowforge Pro

- 45 watt CO2 laser
- Cutting & Engraving Area: 11" x 19.5" (279 x 495 m)
- Max Material Height: 2" (6 mm)
- Available at: Evelyn Meador Branch Library



Dremel Digilab LC40

- 40 watt CO2 laser
- Engraving Area: 18.4" x 12" (467 x 305 mm)
- Cutting Area: 20" x 12" (508 x 305 m)
- Max Material Height: ¼" (6 mm)
- Available at: Maud Marks, Clear Lake Freeman, Parker Williams (coming soon)