



Laser Cutter

A laser cutter is a tool used to cut and etch flat material. It uses a tiny beam of concentrated light (a laser), about the width of a human hair, to cut away material. The library has a Glowforge Plus laser cutter. It is considered a class 1 laser and uses a CO2 laser to do the cutting.

Laser cutting can be dangerous if proper procedures are not followed. Please see the Safety section for more information.

Laser cutting can be used to create a wide variety of products. Some examples include:

- Personalized gifts
- Engraved photographs
- Decorations
- Parts for crafts
- Signs and Plaques
- Jewelry
- Toys
- Rapid prototyping

Training is required to use the laser cutter at Bozeman Public Library. Patrons need to have earned their Work Bench Card Laser Cutting badge by taking a quiz and completing a practice project. You can learn to use the laser cutter, necessary for the quiz and practice project, by attending a class at the library, by watching our recorded course online, or by reading through our training binder in the Work Bench.

There is no charge to use the machine, but patrons do need to provide their own approved material. Please see Materials section for approved materials.

The laser cutter may be reserved for up to 2 hours per day and can be done online. Reserving the laser cutting station reserves both the laser cutting machine and the computer used to prepare files for cutting. For walk in use of the laser cutter, please see the Creative Labs Info Desk to inquire about making an immediate reservation (Work Bench cardholders only).

General Questions

Where can I find patterns for laser cutting?

- There are lots of different places you can find laser cutting patterns:
 - The Glowforge catalogue (find "Free with Premium" designs; the Library has a premium subscription)
 - Etsy and other online sellers
 - Any SVG file for laser cutting
 - Any JPG image engraving

Can I design my own pattern?

- Yes, you can use any vector design program (like Illustrator or Inkscape) to design an SVG file for laser cutting. You can also draw something by hand and use the Glowforge camera to scan your drawing and then engrave your drawing on to an approved material.

Can I use the computer by the Glowforge for something else?

- No, the computer is exclusively for the design and assembly of laser cuts and managing the cutting process; reservations are required.

Safety Questions

Can I leave the laser cutter running while I go do something else?

- No, you must stay with and watch the laser cutter while it is operating. If you need to step away for any reason, pause the machine with its magic button; when the button is pressed again, the machine will continue where it left off.

What should I do if I see flames inside the laser cutter?

- Small flames and flare ups are a normal part of laser cutting. Flames are only a concern when they are sustained. If there is a sustained flame, lift the laser cutter lid causing the laser to stop and the head to move away. If the flames do not die, calmly use the provided Halotron fire extinguisher.

When does the filter need to be turned on?

- The filter should be turned on before the magic button is pressed to begin a print. The filter should always be on while the machine is actively cutting and remain on for a few minutes after the project has been removed. To turn on the filter, rotate the dial to the marked setting.

What should be done if smoke is coming out of the filter?

- Smoke coming from the filter means the filter is becoming more filled and the dial setting needs to be adjusted. Please let staff know when this happens.

Can the machine be paused?

- Yes, the machine can be paused by pressing the magic button. The machine will resume exactly where it paused when the button is pressed again.

Can a print be canceled?

- Yes, to cancel a print simply lift the lid of the machine. Canceled prints cannot be resumed.

Is there a minimum age to use the machine?

- Yes, all Work Bench machines and activities are restricted to persons 14 years or older. Children between the ages of 8 and 13 may accompany a parent or guardian who has a Work Bench card and the requisite badge.

Is eye protection needed when using the Glowforge?

- No, the Glowforge Plus machine is considered a class 1 laser and eye protection is not needed.

Is it safe to watch the laser cutting?

- Yes, you can watch the laser while it is working and you are required to be present the entire time. People with sensitive eyes may find it painful to look directly at the beam.

Are dangerous fumes produced by the laser?

- Dangerous fumes will not be produced when only approved materials are used. Some approved materials may result in an unpleasant smell, but the fumes are not harmful. If you have specific allergy or health concerns, consult with your doctor.

Material Questions

What materials can I put in the Glowforge?

- The only materials allowed in the Library's Glowforge are:
 - High quality plywood
 - Hardwood
 - Acrylic

- Untreated, unstained, vegetable (not chrome) tanned leather
- Cardboard free from ink, tape, and adhesives
- Paper and cardstock free from ink

Does my material need to be approved?

- Yes, your material must be shown to Creative Labs staff before being placed in the laser cutter.
 - Packaging or proof of purchase showing what the material is must be presented
 - If the material type cannot be confirmed, it will not be allowed inside the machine

Why can't I use any material I want?

- Many materials are not laser safe and can result in dangerous fumes, possibly lethal, and damage to the machine.

I saw online that Glowforge could cut a material not on your approved list. Can I bring that material in and use it?

- No, only materials on our approved list may be used in the Library. Glowforge can cut and engrave many materials, but not all are safe to use in our environment. The Library has an approved materials list that serves most purposes.

What will happen if I put unapproved material in the Glowforge?

- Your Work Bench card will be suspended and you will no longer be able to use the laser cutter or other Work Bench machines, equipment, and services. You may also be liable for damage to the Glowforge and for the medical costs of others in the area.

Is there a maximum thickness for material in the Glowforge?

- The Glowforge laser can cut approved material up to 1/2 in thick.
- Approved material up to 2 in thick can be engraved with the crumb tray removed.

What is the maximum dimensions of material that can be put in the Glowforge?

- The Glowforge bed can accommodate material up to 12x20 in. Material larger than this will need to be cut down to size elsewhere before being used.

Can I buy material for laser cutting at the library?

- Unfortunately, the Library does not have enough space to keep material in stock.

Where can I buy approved material?

- Approved material may be purchased from known online vendors such as:
 - Glowforge
 - Smokey Hills Design
 - Inventables
- Wherever you purchase material, be sure to keep documentation--a receipt, purchase order, packaging, etc.-- identifying the material.
- You may also save the website product description in case the receipt does not show the material type (such as non-chrome tanned leather).

I found some material at (thrift store, grandma's attic, uncle's barn, friend's cabin) that looks like it is good; can I use that?

- No, you must have documentation that verifies what the material is.

Can I use curved material like a cup?

- No, the Glowforge can only cut flat material.

What is the easiest material to use?

- Proofgrade material from Glowforge is the easiest material to use. It comes cut to the correct size, pre-masked, and with a QR code that lets the Glowforge know exactly what settings to use.

I'm in a hurry; where can I purchase materials locally that are laser safe?

- We are currently looking for this information but have not yet found a local vendor.

What is "masking"?

- Masking is when a layer of masking tape is applied to the material; masking helps reduce scorch marks. Masking is optional but some material, such as Proofgrade from Glowforge, comes pre-masked.

Is masking tape available at the library?

- Yes, we have a roll of 12 inch masking tape available for patrons using the laser cutter.

Is there a way to pin down light or warped material?

- Yes, we have wooden pins that insert into the crumb tray pinning the material in place.

Machine Questions

What are the speed and power settings for?

- Speed and power and what determine how deep the laser will go. Different speed and power settings are required to cut, score, and engrave on different materials.

Why did the Library choose a Glowforge laser cutter?

- The Glowforge is more user friendly than other laser cutters and we wanted it to be as easy to use as possible. The lid camera is particularly helpful when positioning designs.

What is the crumb tray/honeycomb?

- The crumb tray is the black tray in the bottom of the laser cutter. It has a honeycomb pattern to it which is why it is sometimes called the honeycomb. It catches the "crumbs" that come from laser cutting and also keeps the bottom of the machine safe from the laser.

Glowforge Premium Questions

Does the library have a Glowforge Premium subscription?

- Yes, we are subscribed to Glowforge Premium for one year, and then we will evaluate if it has been useful to patrons.

What does Glowforge Premium give us access to?

- Most of the tools found in the Glowforge app such as the shape and text tools
- Any design in the Glowforge Catalog that is marked "Free with Premium"
- Faster processing when sending the design to the machine

Can I purchase a non-premium design on the library's account?

- No, if you want to purchase a non-premium design from the Glowforge Catalog you will need to set up your own account, purchase the design, export it as a file and then import it into our Glowforge app, just like you would with a design purchased from anywhere else.

What tools are available in the Glowforge app?

- Images
- Shapes
- Text

- AI Generated images
- Outline tool
- Transform, flip, and rotate objects
- Patterned lines
- Puzzle maker
- Stamp maker