



Material Safety

How to know if your material is good to laser cut or engrave with the CO2 Laser or to be marked by the Fiber Laser.

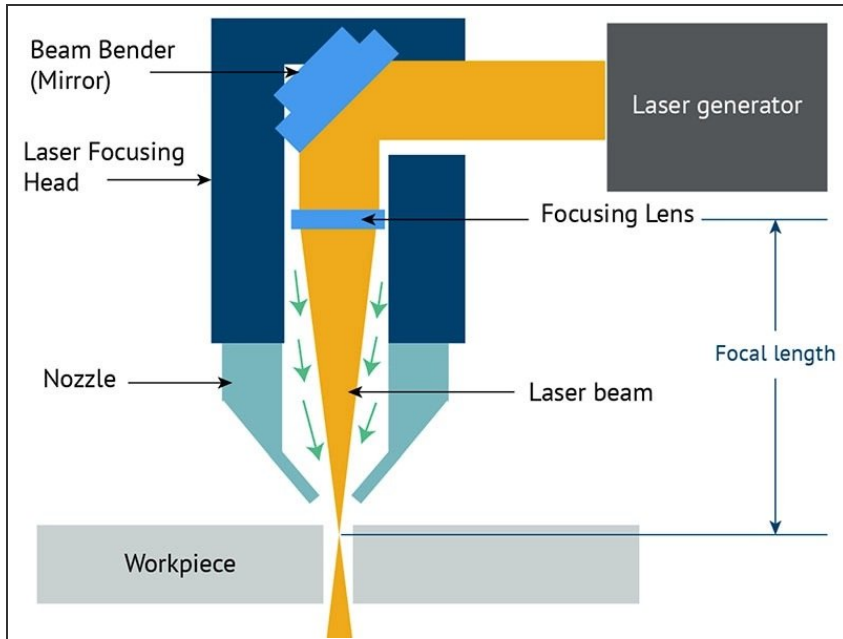
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Introduction

Knowing the material you are trying to cut or engrave is integral to proper laser machine usage. Some materials **CANNOT** be cut under any circumstances. If you have any questions, do not hesitate to ask for help on anything.

Step 1 — Material Safety Introduction



- Laser cutters work by vaporizing and melting materials. This process can release dangerous compounds so care needs to be taken when selecting materials to cut.

Step 2 — General Do's and Don'ts



⚠ If you **DON'T** know what your material is, **DO NOT CUT OR ENGRAVE IT**. This will damage the laser cutter and is a bad practice in general as you may cause the creation of unwanted gases from cutting.

- If you **DO** know what your material is, **ALWAYS** start with using the recommended settings either from Epilog or take a look at the premade material testing cards we have made.
- ✦ **ALWAYS** ask for help if you are unsure of the material you have or what type of laser you should use. Even if you are a little unsure, please **ASK**.
- If you have an unusual material that does not fit into any of the presets we have, finding the **Material Safety Data Sheet (MSDS)** for your material can tell you if laser processing it is a viable option.
- ① Things to look for include the **Hazardous decomposition products** section on the MSDS, for example on the Neoprene MSDS it calls out Hydrogen Chloride being emitted when the material is heated.

Step 3 — Materials that CAN be cut



- In general, follow the material settings that are provided by the manufacturer. While other materials that are not listed may be cut, it is important to know the effects of cutting the material in question with the laser cutter.
- ① The materials listed by Epilog are: Acrylic, Leather, Certain types of plastic (2 layer laser engravable), Twill, and Plywood/Wood.
- ① There are more compatible materials listed on the [machine page](#) for the Epilog Fusion Pro 36, however, there are not premade recipes for these materials at the moment.
- These can all be cut by the CO2 Laser.
- ① We have readily available sample cards for various different common materials that we cut with the Epilog.
 - These physical material cards let you see how the file you made will probably turn out and let you decide what parts of your file you want to change.

Step 4 — Materials that CANNOT be cut



- PVC (Poly Vinyl Chloride)/vinyl/pleather/artificial leather - emits chlorine gas when cut, which is harmful to both people and the machine.
- Mirrored Surfaces - Can reflect the laser causing damage to the user and the machine.
- Polycarbonate - Absorbs the 10.6 μm wavelength of all of the machines. It does not cut, only burns. Also smells really bad.
- ABS - Emits cyanide and tends to melt.
- PTFE - Produces a number of dangerous gases.

Step 5 — Halogenic Materials



- Halogenic materials contain halogens and can be very harmful to both user health and the optical system on the laser cutter.
- An example of a halogenic material is: Neoprene
- While these types of material CAN be cut, it is important to give enough time to properly ventilate the gases inside the laser cutter before opening the machine.
- ① Due to the way the filterbox is currently setup, this is not really viable, but is certainly doable in the AFL as long as the filterbox is used for a minute or two after cutting.

Step 6 — CO2 vs. Fiber



- This Epilog has both a CO2 and a Fiber Laser.
- The CO2 laser is the only laser that should be used for cutting.
- This should be done on APPROVED materials ONLY.
- The Fiber Laser is used for only marking and engraving materials. It is especially good at marking plastics and metals, but is not as good on natural materials such as wood.

This concludes the material safety for the Epilog Fusion Pro 36. If you have any additional questions on what types of materials we are able to cut, feel free to consult with a staff member.