

Laser Cutter Material Guidelines

Material Cutting & General Safety Information

The following text are excerpts from the manual provided with the Laser System. Cut at your own risk. The UIUC lab assumes no liability for materials lost whatsoever; whether due to user error, equipment error, or errors or omissions in our documentation. The UIUC lab also insists that you read these guidelines before you use the machines. Reading these guidelines and then using the machine assumes you have read this information and understand it.

SAFETY

NEVER LEAVE THE LASER SYSTEM RUNNING UNATTENDED FOR ANY REASON. Exposure to the laser beam can cause ignition of combustible materials. All laser cutting and engraving should be constantly supervised.

NEVER OPERATE THE LASER SYSTEM WITHOUT A PROPERLY INSTALLED AND OPERATING EXHAUST SYSTEM. Some materials when cut or engraved can produce fumes that are hazardous in concentrated amounts. Also make sure that your room is adequately ventilated as some materials will continue to produce fumes for several minutes to possible hours after the cutting or engraving process has been completed. Since many materials can produce toxic and possibly caustic fumes or residue, it is advisable to obtain the Materials Safety Data Sheet (MSDS) from the materials manufacturer. The MSDS discloses all of the hazards when handling or processing that material. The law requires all manufacturers to provide this information to anyone who requests it.

DO NOT ENGRAVE OR CUT PVC (polyvinylchloride) BASED Materials. The fumes are extremely toxic if you inhale them. The fumes are so caustic that it can chemically destroy the metal parts of the laser system. Damage to the laser system from this type of abuse ARE NOT covered under warranty.

DO NOT ENGRAVE OR CUT UNCOATED OF REFLECTIVE SURFACES. The laser beam can reflect off these materials causing damage to the laser system as well as being a safety hazard. Damage to the laser system from this type of abuse ARE NOT covered under warranty.

PRINTER DRIVER SETTING TIPS

Power Setting

- Higher burns deeper. Too much power sacrifices detail. Has no effect on running time.
- Lower burns shallower. Too little power sacrifices detail. Has no effect on running time.

Speed Setting

- Higher saves time. Burns shallower and reduces detail.
- Slower increases time. Burns deeper but too deep may reduce detail.

PPI Setting

- Higher increases the burning or melting effect. Produces finer detail if speed is not too fast. Has no effect of running time and very little effect on depth.
- Lower decreases the burning or melting effect. Reduces image detail if set too low. Has no effect on running time and very little effect on depth. Very low settings are used to perforate the material.

Rule of Thumb

- Doubling the power doubles the depth and halving the power halves the depth.
- Halving the speed doubles the depth and doubling the speed halves the depth.

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Materials

There are many variables that can affect the cutting and engraving process such as differences in the thickness of the material, density of the material, composition of the material, and the manufacturing processes used to make the material.

Please use these settings as a guideline or starting point, in most cases these setting should work out well, but sometimes may have to be adjusted to produce desirable results.

Below are the materials the manufacturer recommends use of. Please for a more detailed explanation of these materials refer to the books in the lab.

Safe to Cut and Score

Acrylic – Cast and Extrude

Acrylic – Mirrored

Cork

Delrin (Seal Press)

Leather

Mat Board

Plastic – Microsurfaced

Rubber Stamps

Vinyl – Sign (3 Mil)

Wood / Wood Inlay

Safe to Score ONLY

Aluminum – Anodized

Brass – Painted

Corian / Avonite / Fountainhead

Glass / Crystal

Marble

Melamine