



THE FACTS On Laser Cutters

Laser Cutters are machines that have the ability to engrave or cut a variety of materials. The process utilizes laser light to engrave materials using a fine spot diameter and short pulses.

HAZARDS

Fully enclosed laser cutters with interlock systems are considered low-risk, Class 1 lasers in accordance with ANSI Z136.1. This means they are safe to use when safety features are not manipulated. However, the lasers embedded inside the system are often considered Class 3B or Class 4. These lasers emit high energy and have the potential to create the following hazards:

- **Laser Light**
 - The high energy laser beam can cause severe eye damage and serious skin burns. The door is interlocked in such a way that the laser beam will be disabled when doors are open.
- **Fire**
 - Any operation of a laser system is a potential fire hazard. The laser beam can produce extremely high temperatures and significant amounts of heat while operating. Dirt and debris, poor quality cut, or mechanical failure may cause a fire. Any fire lasting more than half a second must be controlled. The first steps are to cancel the laser job and to open the door of the laser.
- **Air Contaminants**
 - Laser cutters will generate fumes, vapors, particulates, and metal fumes from substrate that can be toxic. All machines are required to have a filter system or be vented to the outside. Follow manufacturer's instructions.

If a new laser cutter is being set up in your space, contact the Office of Research Safety for a review.

656-0341

Occupational and Environmental Safety (OES) is a team of dedicated professionals who provide safety and compliance services to support Clemson University's core mission of research, teaching and public service. We accomplish this through collaboration and partnerships with the Clemson community and are committed to continuous improvement and exceptional customer service

MATERIALS ALLOWED

- | | | |
|-----------------|-----------|---------------------|
| - Coated Metals | - Wood | - Marble |
| - Wooden Veneer | - Acrylic | - Paper |
| - Matte Board | - Fabric | - Painted Metals |
| - Melamine | - Glass | - Tile |
| - Fiberglass | - Ceramic | - Cork |
| - Aluminum | - Delrin | - Corian |
| - Pressboard | - Cloth | - Anodized Aluminum |
| - Titanium | - Leather | - Mylar |
| | - Brass | |

MATERIALS NOT ALLOWED

The following materials are not allowed as recommended by the manufacturer because of their potential for fire hazards and/or toxic materials being released.

- | | |
|-------------------------|------------------------------|
| - Vinyl/PVC | - Construction grade plywood |
| - Rubber | - ABS |
| - Styrofoam/other foams | - Polycarbonate |

SAFETY TIPS

- Never bypass interlocks.
- Use manufacture's operating procedures.
- Ensure users are properly trained on potential hazards, operation, emergency procedures, and safety precautions.
- Remain with the laser cutter while it's operating.
- Ensure material being used is compatible with the laser.
- Have proper fire extinguisher in area.
- Ensure laser is equipped with the proper ventilation system. Do not use laser cutter if this system is not working.
- Keep laser cutter free of clutter and debris.
- Do not use the laser without the machine's focus lens in place.