

# FACT SHEET: Laser Cutters

## Safe Use and Operation



Laser cutters are devices that use high energy laser beams to precisely cut and engrave materials. Potential hazards include fires, electrical shock, and hazardous air contaminants. The laser should never be removed from its casing because it can cause severe eye damage or skin burns. Before purchasing a laser cutter, notify OEHS at [radsafety@tulane.edu](mailto:radsafety@tulane.edu) to receive approval.

### NEED TO KNOW:

1. Ensure area around the laser cutter is free from clutter and flammable materials.
2. **ALWAYS** visually inspect the interior before/after use and clean any debris or residue present.
3. Ensure material is approved before cutting.
4. Ensure properly maintained fire extinguisher is accessible.
5. **NEVER** leave an operating laser cutter unattended.
6. **NEVER** attempt to override laser safety interlocks.

### LASER CLASSIFICATION:

Laser cutters are classified as Class 1 laser systems according to the ANZI Z136.1 standard, as engineering controls keep the laser beam enclosed and inaccessible. However, the lasers themselves are usually Class 3B or Class 4 and typically invisible to the human eye, which means they can cause serious eye damage and skin burns without the engineering controls. *Therefore, **NEVER** modify or disable any safety features built into the cutter which could allow the beam to escape.* Extra caution is required for units that do not fully enclose the laser.

### FIRE HAZARD:

The high energy laser within laser cutters may create fumes and smoke inside the device and could cause a fire during cutting operations. The following steps will help reduce the potential for fires:

- Only cut approved materials. **NEVER** cut any oily or resinous material.
- Keep the area around the cutter free of clutter and flammable materials.
- **NEVER** leave the system unattended while cutting. One user must be present at all times.
- **ALWAYS** keep a properly maintained fire extinguisher in the area.
- Regularly vacuum the cutting deck and internal cavity of the cutter.

### LASER GENERATED AIR CONTAMINANTS (LGAC):

Laser cutters may generate fumes, vapors, and particulates from the laser beam interacting with cutting material. These LGAC's not only pose a health threat to those exposed but can damage the machine as well. The following steps will help reduce LGAC hazards:

- Only cut approved materials. **NEVER** cut chlorinated plastics (e.g. PVC and vinyl).
- Ensure proper ventilation. Do not use a laser cutter with a malfunctioning exhaust system or clogged air filter.
- Change filters as required and/or maintain local exhaust system to manufacturer's specifications.

### MORE INFO:



### OTHER SAFETY CONSIDERATIONS:

- Notify OEHS before purchasing laser cutters by completing and submitting the laser purchase request form; email [radsafety@tulane.edu](mailto:radsafety@tulane.edu) for a copy.
- Purchasing units with air assist is recommended. Air assist continuously blows air during cutting operations, keeping materials cool and the cavity clean, reducing potential hazards.
- All users must have documented operator training.
- Keep a logbook documenting who uses the laser cutter.
- **ALWAYS** follow manufacturer's operating instructions.

### ADDITIONAL RESOURCES:

- LIA: [ANSI Z136.1 - Safe Use of Lasers](#)
- Universal Laser Systems: [Safety and Environmental Considerations](#)
- Full Spectrum Laser: [Why Air Assist is Important for a Laser Cutter and Engraver](#)