COLUMBIA UNIVERSITY
IN THE CITY OF NEW YORK

Laser Cutter Safety

FAQ Sheet

Laser cutters are versatile, enclosed machines used to cut a variety of materials into complex 2-dimensional shapes using high-power lasers. They come in a variety of capabilities that vary based upon the physical bed size of the machine, the material used, and the power of the integrated laser(s).

Symbol indicating the presence of a laser hazard

General Safety Guidance:

1. **ALWAYS** refer to the manufacturer's instructions for safe equipment use.
2. **BEFORE** using a laser cutter, ensure that all users complete the shop specific training, and the RASCAL – TC7202 Laser Cutter Safety Training.
3. **CONSULT** the materials libraries from sources such as Epilog, Trotec and Universal Laser Systems as well as with the shop supervisor to discern which material is best for the user's specific project.
4. **NEVER** open a laser cutter while a job is actively running.
5. **NEVER** leave a laser cutter unattended while cutting, marking, or engraving is in progress. The laser may cause ignition of combustible materials which can lead to a fire.

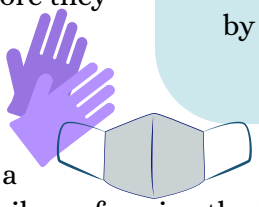
Installation & Maintenance Guidance:

A properly configured, installed, maintained, and operational particulate and fume exhaust system is mandatory when operating the laser system (e.g., BOFA Filter). Create a filter change-out schedule that changes the filters before they become oversaturated.

Fun FAQ!

The term L.A.S.E.R. is an acronym that stands for Light Amplification by Stimulated Emission of Radiation.

Personal Protective Equipment (PPE) Guidance:



Follow the specific PPE guidelines for your shop. When changing the laser cutter's filter, always wear gloves, safety glasses or goggles, and a nuisance dust mask. Personnel can ***choose*** to wear N95 respirators while performing the filter change, however, anyone opting to use an N95 ***must*** complete the RASCAL Training – TC5701: Voluntary N95 Respirator Use.

Incompatible Materials

Avoid using incompatible materials with laser cutters as they can produce hazardous gas, melt, or even ignite.

Material	Cause/Consequence
Polyvinyl Chloride (PVC) or Chlorinated plastics (vinyl, pleather/artificial leather, Sintra, Kydex)	Destroys the focus lens and mirrors, corrodes metal parts and motion control system.
Polycarbonate/Lexan, Polyvinyl Butyral (PVB)	Respiratory/Health Hazard
Acrylonitrile Butadiene Styrene (ABS)	Tends to melt rather than vaporize, leaving behind gooey deposits on the honeycomb bed. Easily bursts into flames.
Polystyrene Foam	Fire/Health Hazard

Have more questions? Reach out to EH&S at Labsafety@columbia.edu or give us a call

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