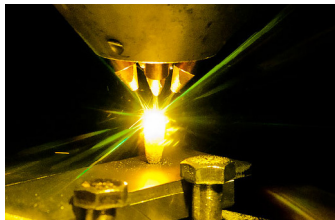


# FACT SHEET: Lasers

## Safe Use and Operation



LASER stands for Light Amplification by Stimulated Emission of Radiation. Lasers can emit radiation in the infrared, visible, and ultraviolet light spectrum, and have unique hazards that require specialized safety equipment/procedures.

### NEED TO KNOW:

1. Class 3B and 4 lasers are only allowed in approved laser areas. Prior to purchasing these lasers, please email the Laser Safety Officer for review ([radsafety@tulane.edu](mailto:radsafety@tulane.edu)).
2. Ensure laser safety eyewear has appropriate optical density.
3. **DO NOT** bring potentially reflective equipment or tools into the laser room.
4. Only personnel with required training may operate lasers.

### WHAT TYPES OF LASERS ARE AVAILABLE?

Lasers are classified by potential to cause injury to the eyes/skin. Lasers are subdivided into 5 main classes. It is important to know the class of the laser before operating. Even Class 2 lasers (e.g., laser pointers) can be dangerous if manufacturer's guidelines are not followed. Main classes of lasers are as follows:

- **Class 1:** Not hazardous to the eyes under normal circumstances. When viewed under magnification can cause eye damage (e.g., DVD devices and laser printers).
- **Class 2 (Low Power Lasers):** More power than a Class 1 but the normal blink reflex should protect eyes (e.g., range finding equipment).
- **Class 3R (Medium Power Lasers):** Emits up to 5 times more power than a Class 1 invisible laser and up to 5 times more power than a Class 2 visible laser. Can cause spot blindness, eye injuries, and/or skin burning.
- **Class 3B\* (Medium Power Lasers):** Direct viewing of beam can cause serious damage to the eye.
- **Class 4\* (High Power Lasers):** Most powerful. Can damage eyes, burn skin, and start fires (e.g., lasers used in surgery, research, and industrial applications).

\* Approval from the Laser Safety Officer (LSO) must be obtained before purchasing Class 3B and 4 lasers.

### HOW CAN I PROTECT MYSELF?

- Complete Laser Safety Training provided by OEHS and Operator Training provided by the laser PI/supervisor.
- Wear proper PPE: laser safety glasses, lab coat, non flammable materials. Additional PPE may be required depending on other hazards present.
- All areas where lasers are used must be pre-approved by the LSO and inspected to ensure it does not contain any reflective surfaces.
- Post proper signage and ensure access to laser area is secured.
- **DO NOT** operate a laser if fatigued, tired, or otherwise have impaired judgment.
- Once use of laser is complete, user must turn unit off and remove the key, placing it in a secure and controlled location.
- Remove any unnecessary clutter and trip hazards.
- Practice good housekeeping to ensure safest possible work environment.

### MORE INFO:



### KEY SAFETY PRECAUTIONS:

- Review procedures before operating laser and ensure control measures are in place.
- Conduct inspection to ensure no physical damage/missing parts.
- Ensure beam path is clear of anything except intended target.
- **NEVER** aim laser beam anywhere except the intended target; never look directly into the laser beam.

### ADDITIONAL RESOURCES:

- LIA/ANSI Z136.1: [Guidelines for Implementing a Safe Laser Program](#)
- OSHA: [Technical Manual - Section III: Chapter 6 - Laser Hazards](#)
- OSHA: [Laser Hazards](#)