

## Safety Corner

### Laser Safety

Laser is an acronym for “Light Amplification by Stimulated Emission of Radiation”. Often misinterpreted, the term “radiation” does not relate to radioactive materials or ionizing radiation; it refers to energy transfer by electromagnetic radiation.

International standard IEC 60825 prescribes required safety measures according to the classes of lasers:

- Class 1 lasers are safe under normal use, including the use of optical instruments.
- Class 1M lasers produce large-diameter beams or beams that are divergent and are safe for all conditions of use except when passed through magnifying optics such as microscopes and telescopes.
- Class 2 lasers are potentially hazardous to vision if stared at directly. Class-2 lasers are limited to 1 mW continuous wave, or more if the emission time is less than 0.25 seconds, or if the light is not spatially coherent. Many laser pointers are Class 2.
- Class 2M lasers are potentially hazardous when viewed with an optical instrument and stared into the beam.
- A Class 3R lasers are considered safe if handled carefully, with restricted beam viewing. Visible continuous lasers in Class 3R are limited to 5 mW. For other wavelengths and for pulsed lasers, other limits apply.
- Class 3B lasers are hazardous to vision but are normally safe when viewed via diffused reflections such as from a piece of paper. Class-3B lasers must be equipped with a key switch and a safety interlock. Protective eyewear is typically required where direct viewing may occur.
- Class 4 lasers are hazardous under both intrabeam and diffuse reflection viewing conditions. They may cause skin injuries and are potential fire hazards. Class 4 lasers must be equipped with a key switch and a safety interlock. Most industrial, scientific, military, and medical lasers are in this category.

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